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FINAL REMEDIAL INVESTIGATION REPORT MUNITIONS RESPONSE PROGRAM SITE 1
CARR POINT SHOOTING RANGE NS NEWPORT RI
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RESOLUTION CONSULTANTS

REMEDIAL INVESTIGATION REPORT
MRP SITE 1, CARR POINT SHOOTING RANGE
NAVAL STATION NEWPORT
RHODE ISLAND

FINAL

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LIST OF ACRONYMS AND ABBREVIATIONS

°C	Degrees Celsius
ARARs	Applicable or Relevant and Appropriate Requirements
AVS/SEM	Acid Volatile Sulfides/Simultaneously Extracted Metals
bgs	Below Ground Surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CLEAN	Comprehensive Long-Term Environmental Action, Navy
COC	Chain-of-Custody; Chemical of Concern
COPC	Chemical of Potential Concern
CSM	Conceptual Site Model
CTE	Central Tendency Exposure
CTO	Contract Task Order
DL	Detection Limit
DO	Dissolved Oxygen
DoD	Department of Defense
DQI	Data Quality Indicator
DRO	Diesel Range Organic
ELAP	Environmental Laboratory Accreditation Program
EPA	Environmental Protection Agency (United States)
ERA	Ecological Risk Assessment
FS	Feasibility Study
ft	Foot/feet
GRO	Gasoline Range Organic
GIS	Geographic Information System
GPS	Global Positioning System
HHRA	Human Health Risk Assessment
HI	Hazard Index
IDW	Investigation-Derived Waste
ILCR	Incremental Lifetime Cancer Risk
IR	Installation Restoration
LOD	Limit of Detection
LOQ	Limit of Quantitation

MCL	Maximum Contaminant Level
MRP	Munitions Response Program
MS/MSD	Matrix Spike/Matrix Spike Duplicate
MWR	Morale, Welfare and Recreation
NA	Not Applicable
NAVD	North American Vertical Datum
NAVFAC	Naval Facilities Engineering Command
NAVSTA	Naval Station
NEDD	Navy Electronic Data Deliverable
NIRIS	Naval Installation Restoration Information Solution
NTCRA	Non-time Critical Removal Action
NTR	Navy Technical Representative
NTU	Nephelometric Turbidity Unit
NWC	Naval Weapons Center
ORP	Oxidation-Reduction Potential
OU	Operable Unit
OUPV	Operator of Uninspected Passenger Vehicle
PAHs	Polycyclic or Polynuclear Aromatic Hydrocarbons
PAL	Project Action Limit
PCBs	Polychlorinated Biphenyls
PDF	Portable Document Format
PM	Project Manager
POC	Point of Contact
PQOs	Project Quality Objectives
PSF	Pellets per Square Foot
PVC	Polyvinyl Chloride
QA/QC	Quality Assurance/Quality Control
QSM	Quality Systems Manual
RAOs	Remedial Action Objectives
RI	Remedial Investigation
RIDEM	Rhode Island Department of Environmental Management
RME	Reasonable Maximum Exposure
RPD	Relative Percent Difference

RPM	Remedial Program Manager
RTC	Response to Comments
RV	Recreational Vehicle
RSL	Regional Screening Levels
SAP	Sampling and Analysis Plan
SASE	Study Area Screening Evaluation
SDG	Sample Delivery Group
SI	Site Investigation
SOPs	Standard Operating Procedures
SSO	Site Safety Officer
SVOCs	Semi-Volatile Organic Compounds
TAL	Target Analyte List
TAT	Turnaround Time
TBD	To Be Determined
TCL	Target Compound List
TCLP	Toxicity Characteristic Leaching Procedure
TOC	Total Organic Carbon
TPH	Total Petroleum Hydrocarbons
TDS	Total Dissolved Solids
TSS	Total Suspended Solids
UFP-QAPP	Uniform Federal Policy for Quality Assurance Project Plans
USGS	United States Geological Survey
VOCs	Volatile Organic Compounds
WAMS	Water Area Munitions Study

EXECUTIVE SUMMARY

This Remedial Investigation Report (RI) report is being submitted on behalf of the Naval Facilities Engineering Command (NAVFAC). It was prepared by Resolution Consultants under the Comprehensive Long-Term Environmental Action Navy (CLEAN) Contract No. N62470-11-D-8013. This RI was conducted in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) requirements. This RI report provides a summary of investigation activities conducted at Munitions Response Program (MRP) Site 1, the former Carr Point shooting range, located along the Defense Highway near the Portsmouth town line as part of Naval Station, Newport, Rhode Island. MRP Site 1 was identified for investigation due to the use of lead pellets and clay shooting targets (pigeons) during its former operation as a shooting range. The MRP Site 1 study area is used currently for recreational purposes, specifically as a camping ground with parking for recreational vehicles (RVs). The former shooting range was used by Navy personnel from 1967 to 1973, and subsequently by the Aquidneck Island Military Rod and Gun Club from 1975 to 1989. During its use, clay pigeons were launched toward Narragansett Bay, and shotguns were fired at the targets as they flew over the water. Targets and ammunition dropped into the water and adjacent shoreline, with shells and casings released at the firing points. Subsequently, shallow upland soils, shoreline sediment, and nearshore sediment required assessment for potential contamination.

The primary contaminants identified as being associated with the shooting range consisted of propellants from firing arms, polycyclic aromatic hydrocarbons (PAHs) within fragments from the clay pigeons, and lead from the lead pellets. Although not related to shooting activities, the RI field investigation included analysis of pesticides and polychlorinated biphenyls (PCBs) in one area adjacent to a former material storage area and where fill was placed in the early 1960s. The RI field investigation also included additional metals beyond lead based on previous detections of metals and potential risks identified in the Site Investigation (SI) conducted in 2009.

Site Investigations and Actions

The Navy's environmental response actions have included closing the skeet range in 1989, a site study in 2005, the SI in 2009/2010, a focused risk assessment in 2010, and the recent RI field investigation conducted in 2013/2014. The 2009/2010 SI revealed the presence of impacted upland soil. A human health risk assessment conservatively concluded there was likely risk to current site users (recreational campers) exposed to the upland soil in a focused area of the site. Subsequently, fencing was installed, followed by a non-time critical removal action (NTCRA) to remove the shallow soil (1 to 2-foot depths) from the areas where the shooting range activities were conducted.

RI Evaluation

This RI report incorporates the 2005 site study, data collected during the 2009/2010 SI, data collected during the 2013 NTCRA, and data collected as part of this 2013/2014 RI. In total, approximately 120 soil samples, 156 sediment samples, and 17 invertebrate samples were collected during the RI field investigation to supplement and refine the prior dataset. In addition, a groundwater monitoring well network consisting of 6 wells was established to assess potential groundwater impacts. The cumulative dataset was used to assess the extent of contamination and to evaluate potential risks to human and ecological receptors, based on current and theoretical future use exposure scenarios.

The conceptual site model (CSM), which was refined through this RI evaluation, is generally consistent with prior studies. Refinements include a better understanding of the distribution of skeet fragments and lead pellets. There were no visible fragments observed in the bay. Skeet fragments are concentrated on the beach within an accumulation of shell hash, south of the former shooting range. This accumulation area is consistent with the shallow characteristics of the nearshore basin, and the prevailing wind direction and shallow currents. Fragments are also visible throughout the surface of the study area, but to a lesser extent. Conversely, the lead pellets were identified within the bay, with a generally uniform distribution. The pellets are most concentrated in the nearshore former target area, and diminish within the overshoot area further from the shore.

The following bullets summarize key findings relative to achieving the RI goals and completing the RI phase of the CERCLA process.

- Distribution of Skeet Fragments/PAHs - The majority of skeet fragments and soil impacted with PAHs and lead was located in the former shooting range launching area (Arcs 1, 2, and 3). The 2013 NTCRA removed an estimated 1,800 cubic yards of soil from the former launching area based on the highest concentrations of PAHs and lead detected at that time. The post-excavation data, combined with the RI data, indicates that the NTCRA was successful in reducing cumulative risks to PAHs and lead in soil, with no unacceptable risks posed to current human health receptors (recreational users, trespassers, and onsite workers) by PAHs or lead. There are however potential risks to hypothetical future users (resident and on-site workers) as calculated in the risk assessment. The extent is mostly limited to the western portion of the site; however, additional data is necessary to bound the extent towards the north in the vegetated area beyond the camping area.

  Areas with higher PAH concentrations, such as the upland soil (along the current fence line, just west of the NTCRA removal area), pose a potential risk to plants and terrestrial

invertebrates. However, nearshore sediment collected from areas with the most fragments did not contain PAHs that exceeded ecological risk thresholds.

- Pellets and Lead in Soil and Sediment – The distribution of lead pellets found during the SI and RI phases shows that the majority of lead pellets are within the closest overshoot area, within 600 feet of the shoreline. The distribution of lead pellets is relatively well delineated on all boundaries of the former target and overshoots areas. Based on the distribution of lead pellets, there are potential risks associated with the ingestion of lead pellets by birds that forage for food on the seafloor.

  - Soil – The highest lead concentrations in soil (up to 29,900 mg/kg) were detected in a limited area, in the southwestern area of the site/shoreline. These relatively high concentrations are likely due to pieces of lead shot contained in the soil matrix, as field duplicate results did not match the field sample concentrations. The assessment of lead concentrations resulted in an unacceptable risk to current recreational users, but not to other human or ecological receptors evaluated.

  - Sediment – Lead concentrations in sediment did not result in unacceptable risk to human receptors evaluated. However, there are potential ecological risks to sediment invertebrates due to lead exposure.

  Additional data collected during the FS efforts related to lead in soil will bolster the data set that can be used to refine the remedial extent for lead in soil.

- Pesticides and PCBs in Soil - Relatively high concentrations of PCBs were detected in the southwest corner, immediately downgradient of the northeast corner of the former storage area (part of IR Site 22). This is the same area with lead concentrations – the convergence area of the two Carr Point sites. An elevated concentration of 270 mg/kg was detected at SB223 (0 to 1 feet) and 18 mg/kg at 3 to 4 feet bgs at that same location. Pesticides were detected in soil samples collected near the storage area, including sample location SB223 (maximum detected concentration of 4,4'-DDT – 19 mg/kg), coincidental with the elevated PCB concentrations. In this southwestern area, pesticides and PCBs pose potential human health and ecological risks. The highest concentrations of both pesticides and PCBs are located downgradient of the access road between MRP Site 1 and the former Carr Point Storage Area (IR Site 22). This is consistent with the CSM of former PCB handling in that area. Additional PCB data from soil samples in this area can be used to refine the remedial extent evaluated during the FS.

- Arsenic and Chromium in Soil – While not showing any general pattern of detections, the highest detected concentrations of arsenic and total chromium in surface soil were located in the southwestern area of the site, near the elevated lead detections and former fill area. Hexavalent chromium was detected at 2 of 8 subsurface soil sampling locations at low concentrations relative to total chromium. Hexavalent chromium was not detected at three surface soil sampling locations. A site-specific background evaluation is planned during the FS to support the selection of remedial goals. It is possible that these metals may be attributable to local background conditions.

- Metals in Groundwater - Based on risk assessment results, the two primary metals of interest in groundwater at MRP Site 1 are cobalt and manganese. The concentrations detected in groundwater pose potential risks/hazards (hazard index [HI] = 4 at one well and HI = 3 at two other wells) to theoretical future residential receptors using site water as a drinking water source. Additional data is needed to assess if these metals are present due to site-activity-related activities or natural conditions, as there is no clear pattern of detected concentrations. At 5 out of the 6 wells, there has only been one round of monitoring performed to date. Additional groundwater data will provide a more robust dataset for further evaluation in the FS.

Exceedances of EPA's human health target risk range of 10^{-4} to 10^{-6} or target HI level of 1 can be summarized for the following receptors/exposures:

- Current and Future Adolescent Trespasser – due to PCBs and lead in soil (southwestern area, as noted above)
- Current Recreational User – due to PCBs and lead in soil
- Current/Future Construction Worker – due to PCBs in soil
- Future On-site Worker – due to PCBs, PAHs, 4,4'-DDT, arsenic, and chromium in soil
- Future Resident – due to PCBs, PAHs, 4,4'-DDT, arsenic and chromium in soil; and due to cobalt and manganese in groundwater.

Potential ecological risks can be summarized for the following receptors/exposures:

- Terrestrial Plants and Soil Invertebrates – due to pesticides, total PCBs, and PAHs in a limited area (i.e., PCBs and pesticides are elevated near the shoreline and the boundary with IR Site 22 and PAHs are elevated along the western fenceline along the shore).
- Sediment Invertebrates – due to lead exposure, particularly along the shoreline. Based on the results of the toxicity testing and the elevated lead levels in sediment and shellfish collected from the shore, the nearshore area poses a higher risk than more offshore locations.
- Wildlife – due to 4,4'-DDT and PCBs in soil, but these risks are only expected to occur within a limited area (i.e., along the shoreline near IR Site 22).
- Birds and Pellets – Diving ducks, if foraging within approximately 600 feet of the shoreline over multiple days in a wintering season, have a relatively high probability of ingesting a lead pellet. Birds exposed along the shoreline have a much lower probability than the ducks, but over the course of a year, a pellet could be ingested. There are uncertainties about how many pellets need to be ingested to cause harm and what level of risk is acceptable.

<u>RI Summary</u>

The extent of soil, sediment, and groundwater impacts is defined by the cumulative dataset of prior and current investigatory data. There were no data gaps identified that require further assessment prior to the next step in the CERCLA process, although additional data needs may be identified during the Feasibility Study (FS) or Remedial Design (RD) phases of work. Potential risks to current and theoretical future receptors have been quantified. The next step is to conduct the FS for MRP Site 1, including the collection of additional data needed to support the FS and future determination of remedial extents. The data includes additional groundwater data, delineating lead and PCBs in soil in the southwestern corner, delineating lead in the northern area, and assessing background conditions for arsenic and chromium in soil.

Per CERCLA RI/FS guidance, the Navy will develop remedial action objectives (RAOs) and associated preliminary remedial goals (PRGs) in the FS, for the exposure scenarios which pose potential human health and/or ecological risks. The FS will then compare PRGs to chemical-specific applicable or relevant and appropriate requirements (ARARs), select appropriate remedial goals (RGs), and proceed with identifying candidate remediation alternatives to consider. Where reasonable, data and information related to the adjacent IR Site 22 will be considered for potential efficiencies with risk management and/or further CERCLA phases of work at each site.

1.0 INTRODUCTION

This Remedial Investigation Report (RI) report is being submitted on behalf of the Naval Facilities Engineering Command (NAVFAC). This RI report has been prepared by Resolution Consultants (Resolution), under contract with the U.S. Department of the Navy (Navy) and the Naval Facilities Engineering Command, under the Comprehensive Long-Term Environmental Action Navy (CLEAN) Contract No. N62470-11-D-8013. The following sections outline the purpose and scope of this report, and summarize the available information that contributes to refining the conceptual site model (CSM) and completing the RI.

1.1 Purpose and Scope

This RI Report was prepared under the Navy's Environmental Restoration Program (ERP), which generally parallels the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) process and follows the Navy's Environmental Restoration Program Manual (NERP) [DON, 2006]. This report specifically pertains to field investigations and data evaluations at the Former Carr Point Shooting Range, Munitions Response Program (MRP) Site 1, Operable Unit (OU) 9 located at the Naval Station (NAVSTA) Newport, Rhode Island.

The primary objective of the investigation was to refine the CSM and position the site for an appropriate response action per the Navy's ERP and the United States Environmental Protection Agency's (EPA's) CERCLA process. The specific goals of the investigation are listed below:

- Goal 1 – Refine the extent of historical releases from prior operations, including newly acquired data and data acquired from prior investigations and removal actions.
- Goal 2 – Evaluate the potential risk/hazard to human and ecological receptors exposed to impacted site media.

The data acquisition was conducted in accordance with an approved RI Work Plan, prepared in the form of a Sampling and Analysis Plan (SAP).

1.2 Site Description

The Former Carr Point Shooting Range is situated within a coastal portion of NAVSTA Newport, Rhode Island, off of the Defense Highway, in an area known as Carr Point. General site details are provided on Figures 1-1 through 1-3. MRP Site 1 is adjacent to the Former Carr Point Storage Area (IR Site 22), which is undergoing a separate investigation and will be the subject of a separate RI report. MRP Site 1 encompasses approximately 4 acres of land along an estimated 500-foot bank of

Narragansett Bay. The investigation also encompassed an estimated 17 acres of the adjacent East Passage of Narragansett Bay to assess potential offshore site impacts.

The upland portion of the site includes compacted gravel and a mostly level partially vegetated surface with dense vegetation along the perimeter. There is an embankment separating the upland area and the shoreline. The shoreline consists of sand, gravel, and cobbles mixed with shell and debris. Some of the debris includes casings and pieces of shooting targets (see additional text below for details).

The site is currently used as a Recreational Vehicle (RV) campground for Navy and Department of Defense (DoD) personnel, and has been since 1995. There is also an asphalt driveway that bisects the property, and six gravel parking spaces approximately 100 feet long each for RVs on the site. Water and electric hookups are located adjacent to each of the RV parking spaces. The RV Park is open from Memorial Day weekend through October for rental by DoD personnel and active/retired military and their families. Each family is allowed one two-week stay per season. It is not available for use by the general public. Current workers within MRP Site 1 include RV Park management and maintenance workers within the RV Park. There are no existing buildings on MRP Site 1, as shown on Figure 1-3.

It should be noted that the area at the end of the access road that divides the MRP Site 1 and the adjacent IR Site 22 was filled in the 1960s, according to historical information. The source or type of fill was not documented. It is also important to note that this area is also immediately adjacent to the former material storage area of IR Site 22. Materials stored there included PCB transformers among other constituents.

1.3 Operational History

MRP Site 1 was a recreational skeet-shooting range. The range was used by Navy personnel from 1967 to 1973, and subsequently by the Aquidneck Island Military Rod and Gun Club from 1975 to 1989 (Malcolm Pirnie, 2005). During its use, clay pigeons were launched toward Narragansett Bay, and shotguns were fired at the targets as they flew over the water. Targets and ammunition dropped into the water or adjacent shoreline, with shells and casings released at the firing points (Malcolm Pirnie, 2005).

On site remnants (concrete pads, walkways, etc.) and historic records indicated the presence of three firing arcs and fans at MRP Site 1. The “arcs” refer to onshore areas where participants fired at the targets, and the “fan” refers to offshore landing areas that were impacted by the lead shot

and targets (i.e. clay pigeon) fragments. The firing fan extends over the water approximately 20 degrees to the left of the southernmost range and 20 degrees to the right of the northernmost range.

The area of potential target fragment accumulation ("target area") was estimated to be 300 feet from the shooting area and the area for potential lead shot accumulation ("overshoot area") was estimated to be 600 feet beyond the target area (Malcolm Pirnie, 2005). Clay pigeon fragments and casings have been observed along the shoreline at the western edge of the former shooting range, and were also observed along the low cliffs and beach rocks and within the soil located adjacent to the embankment to the shoreline.

Buildings that historically existed at or very near the site included Building 187 (Fire House), Building 213 (Fire Auxiliary Headquarters), and Building 233 (Club House), as well as buildings shown but not identified on historic utility drawings provided by the Navy. No buildings are currently present at the site. Building 233 was the final building to be removed. It was demolished on March 15, 2011 as part of the NTCRA.

Further details related to the site history can be found in these reference documents: the Water Area Munitions Study (WAMS) Report (Malcolm Pirnie, 2005), the Site Investigation (SI) Report (Tetra Tech, 2010a) and the Recreational Risk Assessment Technical Memorandum (Tetra Tech, 2010b).

1.4 Previous Investigations

Key investigations that contributed to the cumulative dataset used to develop the RI field investigation and combine with the RI results are briefly described below.

<u>Water Area Munitions Study (2005)</u>

In 2005, the Navy completed a review of information related to the MRP Site 1 historic conditions and activities. Five primary sources of information were researched as part of the data collection effort for the WAMS: historical archives located at the National Archives; personal interviews including the Morale, Welfare and Recreation (MWR) Division and Naval Station Environmental and Public Works Departments; installation data repositories such as the Naval Weapons Center (NWC) Naval Historical Collection, visual survey in 2003 for evidence of munitions and explosives of concern (MEC) and munitions constituents (MC), and off-site data sources and repositories, such as local libraries and museums.

The data collection team conducted a visual survey of the former Carr Point Shooting Range as part of the data collection effort for the WAMS on August 12, 2003. The purpose of the visual survey was to identify any MEC ordnance-related materials (e.g., expended rounds, fragmentation, range debris, old targets), any evidence of MC (such as ground scarring, stressed vegetation, or chemical residue) and/or surface features that could provide additional information to aid in the characterization of the site. The data collection team walked the perimeter of what was believed to be the range bounds. This included walking down the embankment to the waterline along the beach (approximately 50 to 75 feet wide) and then back up to the access road (i.e., near Building 233). The team then traversed the range lengthwise. The team surveyed the entire former firing area of the range by walking transects. The global positioning system unit was used to gather data coordinates for the interior of the range.

The WAMs report concluded that there has been no prior environmental data collected as of the date of the report. It also recommended no further action related to MEC due to lack of evidence. It did recommend a site inspection for soil due to the possibility of lead in soil along with other potential constituents related to the shooting range activities.

Site Investigation (2009/2010)

Between May 2009 and January 2010, SI activities were completed at MRP Site 1. Results of the investigations were documented in the Site Investigation Report (Tetra Tech, 2010a). As part of SI activities, surface soil, subsurface soil, groundwater and sediment samples were collected from MRP Site 1. Note that the SI included investigation activities at the adjacent IR Site 22 in the same mobilization, but only MRP Site 1 related information is summarized below, and utilized in this RI.

Two discrete surface soil samples (0 to 1 foot below ground surface [bgs]) were collected for analysis of volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), pesticides, polychlorinated biphenyls (PCBs), metals, and total petroleum hydrocarbons (TPH), diesel range organics (DRO), and gasoline range organics (GRO). In addition, twenty four (24) surface soil samples were submitted for analyses of lead and polycyclic aromatic hydrocarbons (PAHs), a subset of SVOCs. Multi-incremental sampling techniques were utilized to collect additional surface soil samples (0 to 2 inches bgs) from the former firing arcs. The soil samples were submitted for analysis of propellants (2,4-dinitrotoluene, 2,6-dinitrotoluene, and nitroglycerin) and SVOCs, including PAHs. Multiple subsurface soils were collected from two soil borings for analysis of VOCs, SVOCs, pesticides, PCBs, metals, and TPH – DRO and GRO.

Sediment samples were collected from twenty (20) locations from Narragansett Bay in the area identified as the potential impact zone from the former firing arcs. The samples were collected from

0 to 0.5 and 0.5 to 1 foot bgs intervals, unless refusal was encountered before 1 foot bgs. Upon collection of the sediment samples, the samples were wet sieved (i.e., using a sea water rinse) to allow for the counting of lead pellets. The material passing through the sieve was retained for chemical analyses. Fifteen sediment samples were submitted for analysis of PAHs, while all 35 samples were submitted for analysis of metals.

One soil boring (SB01) was completed as a permanent groundwater monitoring well (MW01) at MRP Site 1. A groundwater sample was collected from this monitoring well for analysis of VOCs, SVOCs, pesticides, PCBs, total and dissolved metals, and TPH – DRO and GRO.

Based on the results of the SI, elevated concentrations of PAHs, metals, and propellants were detected in surface soil and elevated concentrations of PAHs were detected in subsurface soil at MRP Site 1. Elevated concentrations of VOCs and PAHs were not encountered in soil samples collected from the interval directly above the bedrock surface. Elevated concentrations of PAHs and metals, as well as lead pellets in excess of the established SI screening value of 10 pellets per square foot, were detected in sediment in the firing fan associated with MRP Site 1 in Narragansett Bay.

Focused Risk Assessment (2010)

A focused human health risk assessment was conducted in 2010 utilizing surface soil data collected during the SI, and documented in the Recreational Risk Assessment Technical Memorandum (Tetra Tech, 2010b). The risk assessment identified an area in the western portion of the site where PAH concentrations presented a risk to human health. Lead was also identified as a potential risk to human health. The locations of more significant risk were nearest the shoreline, and appeared to be associated with the location of the majority of clay pigeon fragments found within the soil. However, the memorandum noted that research demonstrates that bioavailability of PAHs from the target fragments is limited. The memorandum also noted that the risks shown were conservative for limited recreational use and were possibility overestimated. The basis of this assessment was used to develop near term remedial actions for risk reduction measures.

1.5 Previous Removal Actions

A Time Critical Removal Action (TCRA) was performed in 2010 following the risk assessment to construct a 6-foot high chain link fence to limit access to the areas with PAH concentrations above the risk levels (Navy, 2012).

Since the site continued to have regular use, the Navy determined that an excavation and cap rather than a fence would be more appropriate for the site. Thus, a non-time critical removal action

(NTCRA) was performed in May 2013 to remove the most impacted soils. Action levels used in the NTCRA were documented in the September 2012 Action Memorandum completed for MRP Site 1 (Tetra Tech, 2012). In March 2013, waste characterization samples were collected to produce a waste profile. Soil was excavated to a depth of 1 foot bgs across the action area, and confirmation samples were collected for analyses of PAHs and lead. Where analytical results indicated PAH concentrations were still above risk levels, soil was excavated to two feet bgs, and orange snow fencing was placed on the excavation floor to demarcate the boundary between clean fill and native soils potentially containing PAHs. The limits of the 1-foot (33,200 square feet) and the 2-foot (14,850 square feet) excavation areas are shown on Figure 1-3.

Approximately, 1,230 cubic yards of soil were excavated from the 1 foot excavation interval and approximately 550 cubic yards from the 2 foot excavation interval. The soil was transported off site as non-hazardous waste and disposed at the Rhode Island Resource Recovery Corporation of Johnston, Rhode Island. Complete documentation of confirmation soil sample results is included in the NTCRA Construction Completion Report (CCR), prepared by TerranearPMC [Appendix G].

No excavation floor samples contained constituents exceeding the proposed action limits, however, a few of the sidewall samples exceeded the action limits, but were located at the excavation limits and beyond the scope of the NTCRA. The results of the analyses on the samples obtained during the removal action, for soil that remains at the site including the sidewall samples referenced above, are incorporated into the dataset utilized in this RI report and assessment of risks (see Appendices A and B).

This section provides the list and description of the datasets available for use from prior site investigation efforts, removal actions, and the most recent RI event. Analytical results from these events have been incorporated into this report for the purposes of summary statistics, CSM refinement, and risk assessment.

<u>Soil Data</u>

Surface and subsurface soil samples and analyses were obtained from the following events:

- 2009/2010 Site Investigation
- 2013 Non-Time Critical Removal Action
- 2013/2014 Remedial Investigation (this report)

Soil data located in the 2013 removal action area, collected prior to the removal action, has been removed from the dataset used for evaluation. Those samples are no longer representative of site

conditions and have been subsequently replaced with either backfill, post-excavation soil data, or data collected during the 2013/2014 RI program.

Groundwater Data

Groundwater samples were collected during the following events:

- 2009/2010 Site Investigation
- 2013/2014 Remedial Investigation (this report)

Sediment Data

Sediment samples were collected during the following events:

- 2009/2010 Site Investigation
- 2013/2014 Remedial Investigation (this report)

A description of the RI investigation activities is provided in the next section.

2.0 STUDY AREA INVESTIGATION

This section provides an overview of the field investigation completed for the MRP Site 1 RI program. The field investigation was conducted between October 2013 and April 2014. Field procedures were consistent with the SAP (Resolution 2013), except as specifically noted in this section based on the field conditions encountered during implementation. Field logs and records are provided as appendices to this report, with key results summarized in the tables.

2.1 Site Investigation Planning

The planning phase of the RI field program consisted of collaboration among the Navy and regulatory agencies to ensure that the goals defined in the SAP would be achieved through completion of the site investigation. Refer to Figures 2-1 through 2-4 for locations investigated.

Walkover and Sampling Location Adjustment

An onsite field program kick-off meeting was conducted on November 21, 2013. In attendance were the Navy, including representatives from Norfolk and the Naval Station, as well as EPA Region I, Rhode Island Department of Environmental Management (RIDEM), Northeast Geophysical, and the Resolution Consultants Team. The upland work at Carr Point was discussed; soil boring and well installation locations were reviewed by the team along with general program logistics. Some of the sampling locations and depths shown in the SAP were adjusted during the walkover by consensus among the attendees. A summary of the changes is outlined below, and were not depicted in the SAP that had already been prepared.

During the site visit, an outfall associated with a drainage pipe which underlies the site was located. The pipe discharges at the upland bank along Narragansett Bay. The group agreed that the proposed soil sampling at the termination of this outfall was not needed because the outfall was not associated with potential MRP Site 1 contamination. It was connected to a stormwater pipeline that provided drainage of surface water from a culvert adjacent to Defense Highway, upgradient of the site.

While surface soil samples were collected from the locations along the shoreline (SB210, SB222, SB223, SB224, SB225, SB226, SB227, and SB301), the planned subsurface soil samples at these locations were not. After assessing the access path down to the beach and investigating other access points, the site walk attendees agreed a drill rig could not safely reach these boring locations along the beach. The group also agreed that collecting the samples at depth manually by hand auger was impractical due to the coarse material. It was determined that the beach area was

sufficiently vertically delineated by adjacent boring locations on the upland portion of the site, and subsurface samples on the beach were not needed.

Soil boring SB229 was added outside of the soil removal area, east of SB214, between SB220 and SB213 to delineate impacts by propellants. Soil boring SB324 was added east of SB301 and inside the gated RV storage area of IR Site 22 to delineate the material upgradient from the sample taken at SB301 (to be evaluated as part of the IR Site 22 RI). Boring SB325 was added to evaluate PCBs in the vicinity of sample location SB206 based on new historical information.

Site Preparation and Clearing

Site preparation work was necessary prior to the collection of sample locations SB208, SB209, SB211, SB212, and SB228 along the shoreline, as well as SB201 and SB213 on the northern portion of the site. In coordination with the Naval Station, approximately 500 feet of chain link fence along the shoreline on the western portion of the site was temporarily removed to provide access to sampling locations in that portion of the site. Small brush was also removed in carefully selected locations to provide the required access.

On April 10, 2014, the 500 feet of chain link fence along the shoreline was reinstalled by Liberty Fence of West Warwick, RI, the original installer. The fence was reinstalled to the pre-investigation configuration under Resolution supervision.

Geophysical Survey

Resolution contracted Northeast Geophysical Services (NGS) to perform a utility mapping and soil boring clearance survey at MRP Site 1 from November 18 through 22, 2013. The purpose of the survey was to:

- Detect and map underground utilities.
- Evaluate the potential presence or absence of utilities at proposed soil boring locations.
- Trace the path of the storm drain line discharging at the outfall located at the southwest corner of the site.
- Trace the path of the 23,000 volt electric cable shown on historic Navy drawings No. 14437-151 and No. 14435-151, coming from Tank Farm 4 and entering MRP Site 1 to the north of the Carr Point driveway by former Pole T75.

NGS used visual observation and a combination of detection equipment, depending on what was appropriate, to achieve the goals of the survey and what could not be used due to access limitation at each location. The equipment included an EM61-MK2 metal detector with data recorded on an Allegro CX field computer, a GSSI SIR-3000 ground penetrating radar (GPR) with a 400-MHz antenna and data logger, and a Radiodetection RD7000 utility/pipe locator. Soil boring clearance was performed by conducting a survey of a minimum 10-foot by 10-foot area around each boring. Anomalies or signals detected by the metal detector and/or pipe locator were marked on the ground. Tracing the storm drain line was performed by establishing a field survey grid over the suspected drain line. The 23,000 V electric cable was also traced using a survey grid.

Following the survey, four of the proposed soil boring locations (SB206, SB207, SB216, and SB220) were moved to avoid detected anomalies or mapped underground utilities. Utilities detected during the survey (water and electric) were marked on the ground, and then their positions permanently recorded by GPS. The former storm drain was traced from a concrete inlet along the railroad swale on the eastern side of the site to the outfall observed on the southwestern part of the site, and no connecting drain lines were detected. The former 23,000 volt electric cable does not cross the site and appears to end approximately 10 feet beyond the concrete monument. This is consistent with historic drawings. The results of the geophysical survey at MRP Site 1 (which also included IR Site 22) are documented in the April 2014 Report prepared by NGS, which is included as Appendix C.

NGS also identified a small manhole at the north end of the site, and an “apparent” abandoned drain line that runs to the north but could not be traced through the thick vegetation bordering the site. However, it appears NGS misidentified the structure. The Navy performed a review of historic drawings, engineering surveys, and a site inspection subsequent to the completion of the Utility Mapping and Clearance Surveys Report by NGS. The NGS report describes this as an “apparent abandoned drain line.....[that] appears to have originated near a former building location (Building 233)”. However, NGS did not have the historic drawings or the recent surveys to review when they completed their report. None of the historic drawings for the site indicate the presence of a drain line or associated structures in the area where the manhole was observed. Recent surveys by the civil engineering company Crossman Engineering (Crossman) of Warwick, RI, identified the structure as an electric hand hole and not a manhole for a drain line (Terranear 2013).

2.2 Soil Sample Collection

Refer to Figure 2-1 for RI soil sampling locations, as well as historical soil locations associated with the site. Consistent with the approved SAP, surface soil was collected at 0 to 1 and 1 to 2-foot intervals using a hand-auger, which was decontaminated between sample locations. This approach was used in the upland and shoreline areas. Subsurface soil samples were collected using either (1)

an HSA drilling rig equipped with a split-spoon sampler or (2) direct-push samplers (Geoprobe® macrocores). The drilling work was performed by Geosearch of Fitchburg, MA under the supervision of Resolution and in accordance with the SAP (Resolution, 2013a).

Soil samples were visually inspected for soil type and consistency and the presence of visible or olfactory indications of environmental impacts, and then were placed in plastic bags for headspace screening using a photoionization detector (PID), calibrated to benzene using isobutylene. Geologic data and PID readings were recorded using Earthsoft EDGE software using a Yuma Rugged reader tablet computer. The measurements were subsequently uploaded into the project database to generate summary tables and to create the geologic logs.

Soil samples were analyzed for the parameters listed in the SAP, and in accordance with the methods and procedures described in the SAP. In particular, soil samples collected for volatile organic compound analysis were collected in accordance with EPA Method 5035 using Terra Core® samplers. For other parameters, the discrete sampling interval was collected out of the sampling sleeve of each boring, homogenized, and then the sample was packaged. Since the locations for hexavalent chromium and propellant analyses were not chosen in the SAP, they were collected based on a spatial distribution. Several locations were placed in or near the firing arc where these parameters were expected to be detected, if present.

Quality assurance/quality control (QA/QC) samples collected consisted of equipment rinse blanks, field duplicates, matrix spikes and matrix spike duplicates. QA/QC sample frequencies followed the protocols outlined in the SAP, which generally consisted of one QA/QC sample per 20 field samples.

Sampling equipment (e.g., Geoprobe® shoe, split-spoon sampler, hand-auger barrel) was decontaminated between each sample using a non-phosphate detergent scrub and tap water rinse. Soil cuttings and decontamination water were collected, and transferred to 55-gallon drums, which were staged inside the locked gate adjacent to MRP Site 1 for subsequent transport and disposal (refer to IDW Management).

<u>Hollow-Stem Auger</u>

Soil borings advanced for the installation of monitoring wells were drilled using a conventional 4 1/4-inch, inside diameter (ID) HSA truck-mounted rig. Split-spoon samples (2-inch ID) were collected continuously from the ground surface to the termination depth of each boring. At well pairs, the deeper of the pairs were sampled while the adjacent shallow wells were advanced directly to depth with no sampling. For wells MW-1D and MW-12D, the termination depth was the bedrock surface at 25 to 40 feet bgs, respectively. For wells MW-11, MW-12, and MW-13, the

termination depth was approximately 7 feet below the groundwater table. Refer to the attached tables for a well construction summary. Geologic logs and well construction logs are provided in the appendices to this report.

Direct Push

Soil borings that were not converted to monitoring wells were drilled using a track-mounted direct push drilling rig. These locations were selected primarily to collect subsurface soil samples. Multiple borings were advanced in some locations to collect sufficient sample volume for laboratory analysis. Soil boring locations not accessible by the drill rigs were advanced by hand auger.

2.3 Sediment Sample Collection

The following information pertains to the efforts for the collection of sediment samples and related aquatic data assessment information. Refer to Figure 2-2 for RI sediment sampling locations, as well as historical sediment locations associated with the site. Figure 2-3 presents dive survey results associated with RI activities.

Underwater Habitat Survey

An ecological evaluation was conducted within the shallow water within the firing fans of the shooting range. The survey was conducted in November 2013 and included quantifying the extent of submerged aquatic vegetation (SAV) and viable macro invertebrate communities adjacent to MRP Site 1 and collecting shellfish tissue for chemical analyses. Activities included an underwater video camera survey to document available ecological habitats, SCUBA diving to collect shellfish and verify ecological habitats, and shore-based collection of shellfish.

Resolution scientific dive team members aboard an 18-foot Carolina Skiff® (survey vessel) conducted a topside underwater video survey using an Aqua-Vu® fish camera to document surficial habitat characteristics at proposed sediment sampling stations within the site boundary and at reference locations. Based on the high winds and cold air and water temperatures at the time of the survey, it was determined that the habitat evaluation would be conducted via the video system, rather than put divers in the water to execute the proposed dive transect/ quadrat methodology. Documentation at each station included water depth, grain size, and presence/absence of shell hash, living invertebrates, eelgrass and algal cover.

Locations that were deemed viable for shellfish collection based on substrate and presence of shellfish were noted during the underwater video survey and then selected for the SCUBA shellfish collection survey. Stations intended for shellfish collection efforts were pre-marked using anchor

weighted buoys. Locations were navigated to using a hand-held Panasonic CF-U1 Toughbook connected via Bluetooth to a Trimble Pro XT external GPS receiver with sub-meter accuracy. The Toughbook recorded data using ArcPad version 10.0. The survey vessel anchored on station and certified divers from Resolution conducted investigative scientific dive-surveys around each of the sampling locations. Information verifying ecological characteristics previously recorded during the video survey was relayed to the topside support staff using through water ultrasonic, communication.

Once ecological information was verified, divers began harvesting for shellfish using handheld clam rakes. There were several locations that were deemed inaccessible via boat due to the shallow water depths. These locations (SD101, SD102, SD122, SD123, SD124, SD303, and SD304) were re-visited at low tide and sampled from the beach. The same collection methods employed at the diver sampled locations (i.e., handheld clam rakes) were used at these locations.

Shellfish samples were collected from 17 locations (13 from within the site, and 4 from reference locations) in accordance with a Scientific Collector's Permit obtained from the Rhode Island Department of Environmental Management Division of Fish and Wildlife. Dominant species collected during the SCUBA collection survey included quahogs (Mercenaria mercenaria) and blue mussels (Mytilus edulis). Each sample for analysis was composed of a single species. Multiple individuals of a single species and similar size were composited to provide sufficient sample volume for analysis.

Sediment Collection

A sediment sampling program was conducted in December 2013 and April 2014 and included sampling sediments within the site to further evaluate the horizontal and vertical extent of potentially impacted sediments in this area. Sampling activities included vibracore sediment collection, geological analysis and sample logging, and sample collection for laboratory analysis.

Samples were collected from the skeet target area, which is 300 feet from shore and the overshoot area which is between 300 to 900 feet from shore, as well as 3 reference areas. In total, 14 locations were sampled from the target area, 18 locations were sampled in the overshoot area, and 12 locations sampled in designated reference locations. Locations were recorded using a portable differential GPS unit with sub-meter accuracy.

A pneumatically operated vibracore device was affixed to the A-frame of the survey vessel. Using a winch onboard the vessel, the vibracore device was lowered onto each sample location. Collection time and water depth were recorded at each station. Sediment cores were collected to a depth of 3 feet below the sediment surface or until refusal. When refusal occurred, any apparent obstacles

were recorded and additional attempts were made to core past the prior depth. After collection, sediment cores were transferred to the field team onshore where sample processing occurred.

In some instances, sampling locations were accessible at low tide. At stations located closest to the shoreline, the boat gained access during high tide and marked the sampling locations with weighted buoys. From shore, staff navigated to the weighted buoys during low tide and conducted sampling from land using a decontaminated shovel and bucket for collection.

The field sampling had planned to target a 0 to 0.5 foot bgs surface sediment horizon, but the field conditions (e.g., significant cobble, large rocks) did not allow for collection of samples or samples of sufficient volume from that horizon with either a power grab sampler or a vibracoring device. Therefore, the surface horizon was extended to 0 to 1 foot bgs.

For similar reasons, sample locations to the south did not extend beyond SD104 and SD130 due to the rocky nature of the surface there. Sample locations were added to the north of SD125 and SD128 because of the higher than expected pellet count in those samples. Because of the presence of a rocky surface in the north area making the collection of samples closer to SD104 and SD130 very difficult, the samples SD126 and SD133 were located further to the north than planned.

Sediment Sample Processing

Once a sediment core was transferred onshore it was placed in a clean core brace. The core liner was split using an electric pair of shears, the core was photographed, and geologic features were logged. The appropriate sampling horizon was then removed from the core and placed in a previously weighed stainless steel mixing bowl. Both the sediment and the bowl were then weighed again and the weight of the bowl was subtracted to determine the wet weight of the sediment.

Surficial samples for SEM and AVS (top 2 to 4 centimeters of sediment) were removed first from the un-homogenized sample to avoid disrupting the sulfides. Core samples from the appropriate horizon were homogenized in a stainless steel bowl. Samples for toxicity testing, total organic carbon (TOC), and grain size were removed from the homogenized sample, as needed (not all samples were analyzed for these parameters). Samples were then dry-sieved to remove pellets from the analytical chemistry samples. This process included pushing sediment through a #10 sieve (2mm) with a spatula or a gloved hand. The sediment collected during the dry sieving process was analyzed for PAHs and metals.

Material that remained on top of the sieve (i.e. larger than 2mm) was wet sieved using sea water to wash through fines, any remaining sediment, debris and/or possible shotgun pellets were placed in a sealable plastic bag and sent to the laboratory for the pellet count analysis.

For a sub-set of surficial samples collected during the December 2013 sampling event, samples were field-processed to remove pellets from analytical samples in two ways: dry sieved as described above (this method was used for all PAH and metals samples collected in 2013 and 2014) and wet sieved using seawater to wash material through the sieve with fine grained materials. The wet sieve process was used to approximate the approach used during the 2009 sampling to determine whether there was an appreciable difference in analytical chemistry results between the two methods. Appendix B provides an evaluation of the paired wet and dry sieved data available from the 2013 sampling. This evaluation identified minimal differences between the analytical results for the different processing methods. The 2013 wet sieved results for PAHs and inorganics were only used for comparative purposes in the evaluation presented in Appendix B (i.e., they were not considered quantitatively in the RI or the risk assessments).

Samples collected from the background/reference locations were not impacted by pellets and were not sieved prior to being placed into sample containers.

2.4 Benthic Community Sample Collection

Sediment samples were collected from two stations, SD112 and SD121, in December 2013. The benthic biology samples were collected using a power grab (hydraulic open/close mechanism) sampler. The proposed sampling methodology (Resolution, 2013a) included using four subcores (each 0.1m^3) to remove the required sample size from the large grab sampler. This was done for the sample collected at station SD121. The surface of the usable grab sample collected at station SD112 was covered with Crepidula shells and snails, and it was not possible to get the subcores through these organisms and deep enough into the sediment. As a result, approximately the entire grab sample was used to represent the benthic biology sample for this station. Therefore, the volume of sediment processed at the two stations is entirely different, and must be taken into consideration when looking at the raw data for counts as well as biomass.

<u>Benthic Sample Analysis</u>

Sample analysis was performed by Resolution Consultants in Woods Hole, Massachusetts. Prior to sorting, samples were transferred to 70 to 80% ethanol and stained with Rose Bengal to facilitate removal of small organisms from the sediment. The samples were sorted under a dissecting microscope and each organism was removed. The organisms were sorted into vials by major taxonomic groups that included polychaete families, oligochaetes, bivalves, gastropods, decapods,

amphipods, cumaceans, and nemerteans. Specimens were then counted and recorded on specially designed data sheets. A total of 3,674 organisms were sorted, identified and enumerated from the two samples. Each taxonomic group was wet-weight biomassed using a Mettler balance accurate to 0.001g.

Faunal Composition

Analyses were conducted for counts and biomass for each taxon per sample; percent of each sample composed by polychaetes, crustaceans, molluscs, and miscellaneous taxa; and similar percentages based on both samples combined together.

2.5 Monitoring Well Installation and Groundwater Sampling

One monitoring well was in-place from prior investigations (MW-1). Additional monitoring wells were installed during the RI field program to expand the groundwater monitoring network and assess groundwater conditions. Refer to Figure 2-4 for monitoring well locations associated with the site.

Monitoring Well Installation

Three (3) water table monitoring wells (MW-11, MW-12, and MW-13) and two deep overburden monitoring wells (MW-1D and MW-12D) were installed at MRP Site 1 in December 2013 to supplement the existing well network consisting of MW-1 installed in 2009. Table 3-1 presents well construction/location information.

The water table wells were constructed of 2-inch ID, schedule 40 PVC riser flush-threaded to 10 foot long, 0.010-inch slotted (10-slot) PVC well screen. The depth of the well screen was placed to intercept the groundwater table surface with approximately three feet of screen above and seven feet of screen below the water table to account for periodic water table elevation fluctuations. A minimum of 4 feet of riser extended between the top of the well screen and the ground surface to provide for sufficient sand pack above the well screen to minimize settling and help to reduce turbidity in the well. A silica sand pack was placed in the annular space around the well screens. The sand pack extended a minimum of 2 feet above the screened interval, and a 2-foot bentonite seal was placed above the sand pack to prevent infiltration of surface water into the monitoring wells. Remaining space above the bentonite seal was filled with bentonite grout placed with a tremi-pipe. The wells were capped with expansion plugs. Flush-mounted road boxes were placed in 2-foot by 2-foot cement aprons.

The deep overburden monitoring wells were constructed of 5-foot long, 0.010-inch slot well screen placed directly on top of the bedrock surface. The remainder of the well installation was consistent with the water table wells.

All procedures were consistent with the SAP (Resolution, 2013a). Well construction details are summarized on the tables provided, and are also included in the well construction logs provided in Appendix D.

Well Development

The five newly installed wells at MRP Site 1 were developed using the methods described in the SAP and associated Standard Operating Procedures (SOPs). The development was initiated a minimum of 24 hours after the completion of well construction to allow the materials to properly set and settle. Fine sediments were removed from wells using the surge and purge method. Wells were surged and then purged with an electric submersible pump. A surge block was also used as an additional surging method.

Water quality samples were collected during development using a calibrated multi-parameter water quality meter and Nephelometer. Wells were developed until greater than 10 well volumes were removed, or the purging time reached greater than two hours.

All down well equipment was decontaminated between wells with a non-phosphate detergent scrub and tap water rinse. Purge water was collected, and transferred to 55-gallon drums, which were staged inside the locked gate adjacent to MRP Site 1.

Groundwater Sampling

Groundwater samples were collected on December 18, 2013 from the five newly installed wells and the one existing well at MRP Site 1. Wells were gauged and sampled in accordance with EPA Region 1 Low-Flow Sampling Guidance, per the SAP and associated SOPs. Prior to collecting groundwater samples, the six monitoring wells were gauged for depth to water and depth to bottom using an electronic water level meter. Gauging results were used to calculate groundwater elevations, create groundwater elevation contours, and interpret groundwater flow direction and velocity. A peristaltic pump with dedicated polyethylene tubing was used to purge the wells. Water quality parameters were collected with a calibrated multi-parameter water quality meter and Nephelometer. Ferrous iron data was also collected using Ferrous Iron Reagent AccuVac® Ampules, and a colorimeter per the SAP.

Groundwater samples were analyzed for all parameters listed in the SAP (Resolution, 2013a), and in accordance with the methods and procedures described in the SAP. Quality assurance/quality control (QA/QC) samples collected consisted of equipment rinse blanks, field duplicates, matrix spikes and matrix spike duplicates. QA/QC sample frequencies followed the protocols outlined in the SAP, which generally consisted of one QA/QC sample per 20 field samples or one sample per week.

All purge water was collected, and transferred to 55-gallon drums, which were staged inside the locked gate adjacent to the site for subsequent transport and disposal (refer to IDW Management).

Hydraulic Conductivity Testing

On January 17, 2014, hydraulic conductivity testing was performed at three water table (MW-1, MW-11, and MW-12) and two deep overburden (MW-1D and MW-12D) monitoring wells. Solid slug test methods were used to perform falling head and rising head tests. Changing groundwater elevations were recorded throughout the tests at a minimum frequency of one measurement per 0.5 seconds using Level Troll 700 pressure transducers and data loggers with vented cables. Slug test data was analyzed using AQTESOLV® software produced by HydroSOLVE, Inc. Falling and rising head data were matched against the Bouwer-Rice solution (Bouwer and Rice, 1976) for unconfined (overburden) aquifers using the straight-line fitting method. Results of the hydraulic conductivity testing and continuous water level monitoring are discussed in Section 3.0.

2.6 Final Survey and Demobilization

Prior sampling locations and features were incorporated into the project geographic information system (GIS), with field verification to align the coordinate system. New sampling and monitoring well locations during the RI field program were surveyed using the same coordinate system, and subsequently incorporated into the project GIS to display all available information.

Well Survey and Sample Coordinates

Resolution contracted Alpha Surveying and Engineering, Inc. (Alpha), of Middleborough, MA to complete a survey of the new wells installed at MRP Site 1 in December 2013. Alpha completed the survey on January 15, 2014. The horizontal coordinates (northing and easting) are in the Rhode Island State Plane referenced to the North American Datum of 1983, CORS adjustment (NAD83/CORS). Two wells installed during the SI, MW-1 at MRP Site 1 and MW-3 at IR Site 22, were used by Alpha as elevation benchmarks based on the top of casing elevations provided on SI Tables 2-1 and 3-4. The vertical datum appears to be National Geodetic Vertical Datum of 1929 (NGVD29). While the vertical datum for these wells is not specified in SI tables, Note 2 on SI Figure 2-1, General Site Conditions, states, “Elevations, in U.S. survey feet, are referenced to the

National Geodetic Vertical Datum of 1929 (NGVD 29), as determined by SMC's G.P.S. observations, made June 17, 2009, using the KeyNetGPS Virtual Reference System (VRS)."

Soil borings and sediment sample locations were positioned in the field using global positioning system (GPS) coordinates from proposed investigation location figures in the SAP and a GPS receiver capable of sub-meter accuracy. Where proposed locations were moved due to access limitations and/or new locations were added, the new coordinates were recorded with the Trimble as each location was completed.

Investigation Derived Waste Management

Investigation derived waste (IDW) generated during the RI at MRP Site 1 included decontamination water, development water, monitoring well sampling purge water, soil cuttings from drilling, sediment, and plastic (used personal protective equipment [PPE] and plastic sheeting). IDW was stored in 55-gallon open top steel drums by media (water, solids, and plastics/PPE) as it was generated, and staged within the fenced area within IR Site 22. A total of 19 drums of IDW were generated from the MRP Site 1 field investigation (12 soil/sediment, 6 water, and 1 plastic/PPE).

Resolution contracted Capital Environmental Solutions, Inc. (Capital), of Bowie, Maryland to coordinate the transportation and disposal of IDW. On December 18, 2013, a composite sample of soil and a sample of water were collected from the drums for the waste characterization parameters specified by Capital to create a profile and select an appropriate disposal facility. On March 12, 2014, Capital arranged for Freehold Cartage, Inc., of Freehold New Jersey to transport the 19 drums as non-hazardous waste under a bill of lading (BOL) to Vexor Technology, Inc. in Medina, Ohio.

2.7 Field and Laboratory Analysis

Samples collected during the RI field program (2013/2014) were analyzed in accordance with the SAP. Laboratory analyses were conducted in accordance with the SAP and the DoD Quality Systems Manual (QSM) v4.2. Definitive analyses were conducted by laboratories accredited by DoD Environmental Laboratory Accreditation Program (ELAP) for the method and matrix.

Analyses of shellfish tissue samples were conducted for PAHs, Target Analyte List (TAL) metals, and percent lipids. Analyses and preparation was performed by ALS in Kelso, Washington using the following methods:

Analysis	Method
PAHs	SW-846 Method 8270 with GC/MS SIM
TAL Metals	SW-846 Methods 6010C (ICP-AES) and 6020 (ICP-MS), and EPA Method 1631E for mercury
Percent Lipids	ALS SOP Ext-Lipids (Based on EPA 2000 / Bligh & Dyer 1959)

Analyses of surface and subsurface soil samples were conducted for PAHs and TAL metals. In addition, a subset of samples was analyzed for hexavalent chromium, propellants, VOCs, SVOCs, organochlorine pesticides, PCB Aroclors, physical characteristics (consisting of TOC, pH, bulk density, porosity, conductivity and grain size), and pellet count. Analysis of soil samples was conducted by Katahdin Analytical Services in Scarborough, Maine for all analyses except grain size which was subcontracted to TestAmerica in Burlington, Vermont and hexavalent chromium by Method 7199, subcontracted to ALS in Rochester, NY. The following methods were used:

Analysis	Method
PAHs	SW-846 Method 8270 with GC/MS SIM
TAL Metals	SW-846 Methods 6010C (ICP-AES) and 6020 (ICP-MS), and 7471B (CVAA)
Hexavalent chromium	SW-846 Methods 7196 and 7199
Propellants	SW-846 Method 8330A
VOCs	SW-846 Method 8260B
SVOCs	SW-846 Method 8270D
Organochlorine pesticides	SW-846 Method 8081B
PCB Aroclors	SW-846 Method 8082A
TOC	SW-846 Method 9060 Modified
pH	SW-846 Method 9045D
Bulk density	ASTM D 2937-04
Total Porosity	Calculated from bulk density and specific gravity (ASTM D 854-06 – Method B)
Conductivity	SM2510B / CA-744
Grain size (sieve only)	ASTM D 422-63
Pellet count	Katahdin Analytical SOP CA-774-00

Analysis of hexavalent chromium was conducted using Method 7196 as the primary method. Analysis by Method 7199 was performed in addition to Method 7196 in the event of poor matrix spike performance.

Analysis of sediment samples from the site and background locations was conducted for PAHs and TAL Metals. Samples from the site were also analyzed for pellet count. Background samples were also analyzed for VOCs, SVOCs, pesticides, and PCB Aroclors. In addition, a subset of sediment samples was also analyzed for hexavalent chromium, acid volatile sulfides/simultaneously extracted metals (AVS/SEM), and physical characteristics (consisting of total organic carbon [TOC], pH, bulk density, porosity, conductivity and grain size). Analysis of sediment samples was conducted using the same analyses and laboratories as for soil with the following exceptions and additions: GC/MS SIM analysis was required in addition to full scan for the VOCs and SVOCs. AVS/SEM analysis was conducted using Katahdin Analytical SOP CA-738.

A subset of samples were also collected for sediment toxicity testing conducted with an estuarine crustacean, the amphipod *Leptocheirus plumulosus*, according to the method described in EPA's Method for Assessing the Chronic Toxicity of Marine and Estuarine Sediment-associated Contaminants with the Amphipod *Leptocheirus plumulosus* (USEPA, 2001b). 28-day tests were conducted using a laboratory control (negative control), three background/reference samples, five samples collected within the Target Area, and five samples collected within the Overshoot Area between 300 and 600 ft from shore. The testing was performed by EnviroSystems, Inc. in North Hampton, New Hampshire.

Analysis of groundwater samples from the site was conducted for PAHs and TAL Metals. In addition, a subset of samples was also analyzed for hexavalent chromium, salinity, alkalinity, anions, TOC, methane/ethane/ethane, total suspended solids, and total dissolved solids. Analysis of groundwater samples was also conducted by Katahdin Analytical Services in Scarborough, Maine.

Analysis	Method
PAHs	SW-846 Method 8270 with GC/MS SIM
TAL Metals	SW-846 Methods 6010C (ICP-AES) and 6020 (ICP-MS), and 7470A (CVAA)
Hexavalent chromium	SW-846 Methods 7196
Salinity (Laboratory)	Standard Methods for the Examination of Water and Wastewater Method 2520B
Alkalinity	Standard Methods for the Examination of Water and Wastewater Method 2320B
Anions (Chloride, Nitrate, Nitrite, Ortho-phosphate-P, Sulfate)	SW-846 Method 9056A
Total Organic Carbon	SW-846 Method 9060

Analysis	Method
Methane/Ethane/Ethene	RSK-175
Total Suspended Solids	Standard Methods for the Examination of Water and Wastewater Method 2540 D
Total Dissolved Solids	Standard Methods for the Examination of Water and Wastewater Method 2540C

2.8 Data Validation

Laboratory data results of samples collected during the RI field program (2013/2014) were validated by Resolution chemists according to EPA National and Region I data validation guidelines. Data validation memoranda are included in Appendix F. All matrices and analyses were validated with the exception of soil data for physical characteristics (porosity, bulk density, specific gravity, grain size, TOC, pH, conductivity) and pellet count; sediment data for grain size, TOC, and pellet count; and groundwater data for TOC, total suspended solids (TSS), and total dissolved solids (TDS).

Based on this validation process, some analytical results were qualified due to limitations inherent to sample matrix interferences or to field and or laboratory issues. Sample results qualified and appended with a “J” are considered approximate because of limitations identified during data validation. The direction of potential bias in the estimated results is signified by “+” for potential high bias or “-“ for potential low bias. A very limited number of non-detected results were rejected “R” as unusable as a result of validation. However, the sampling locations and analytical results are considered sufficient for characterizing the site and achieving the SAP objectives of defining the extent of contamination.

Results for benzidine and N-nitrosopyrrolidine were rejected in several soil and sediment samples because of poor recovery in the laboratory control spike and/or issues with calibration. Neither compound is expected to be a contributor of risk based on historical data or historical site activities. The results reported in all remaining samples were not detected. Therefore the rejection of results for these two compounds does not impact the data quality objectives.

Mercury results for the AVS/SEM analysis of the majority of sediment samples were rejected because samples were not analyzed within the holding time specified in the SAP. Bulk sediment mercury results were valid for use and were evaluated in the human health and ecological risk assessments. Mercury concentrations resulting from the SEM analytical method are not considered in the SEM/AVS calculations which are limited to the divalent metals (cadmium, copper, lead, nickel, zinc). Therefore, the rejected results do not impact the findings of the risk assessments.

3.0 PHYSICAL CHARACTERISTICS

Physical characteristics of the site have been compiled using a combination of literature review, prior reports and site data, and field measurements and observations during the RI field program. Key information is summarized in Tables 3-1 through 3-2 and Figures 3-1 through 3-2.

3.1 Demography and Land Use

No permanent buildings or residences are present on the site, although the site is used as an RV park in June, July, and August for Navy personnel. Baseball fields are adjacent to the site to the north, former Tank Farm 4 is located to the east, the Carr Point Storage Area (IR Site 22) is used for RV and trailer storage to the south, and Narragansett Bay borders the site to the west. The NAVSTA Newport MWR operates this storage area for Navy personnel to store vehicles, recreational vehicles and boats during off-season and other periods. Further details on current and potential site uses that were considered during this RI are provided in Section 3.6.

3.2 Surface Features

The topographic profile of the Carr Point area is generally level with a mean elevation of approximately 25 feet above sea level, with embankments and slopes to the shoreline and beach portions. Portions of Carr Point may have historically been filled to level areas for use (Tetra Tech, 2010a). For instance, on one plan an area of fill is located in the southwest area of MRP Site 1 boundary, between the site and the IR Site 22 boundary and its storage area fence line (approximately 10,000 square feet).

Ground cover is a predominately grass with shrubs and small trees along the north, east, and west perimeter. The western slope to the shoreline and the northern boundary are heavily vegetated.

There is also an asphalt driveway the bisects the property, and six gravel parking spaces approximately 100 feet long each for RVs on the site. Water and electric hookups are located adjacent to each of the RV parking spaces. Remnants for former site use, such as a concrete pad and buried utility lines, including a stormwater drain and utility manholes, exist throughout.

3.3 Geology

A description of regional and site-specific geology is provided below, as it pertains to this RI program. The location of a representative cross-section (Figure 3-1) and the associated geologic cross-sectional depiction (Figure 3-2) are provided for reference.

Regional Geology

Regional bedrock geology is presented on the Bedrock Geologic Map of Rhode Island (Hermes, et. al., 1994). NAVSTA Newport is located at the southeastern end of the Narragansett Basin, an ancient structural basin originating near Hanover, Massachusetts. The rocks of the Narragansett Basin are non-marine sedimentary rocks of Pennsylvanian age, predominately conglomerates, sandstones, shales, and anthracite. The bedrock of the Narragansett Basin has been divided into six units, which are, in descending stratigraphic order: the Dighton Conglomerate, the Purgatory Conglomerate, the Rhode Island Formation, the Wamsutta Formation, the Sachuest Arkose, and the Pondville Conglomerate. The Rhode Island Formation immediately underlies NAVSTA Newport. The Rhode Island Formation is the most extensive and thickest of the Pennsylvania formations in Rhode Island. In the southern portion of the basin, as in the vicinity of NAVSTA Newport, the unit is metamorphosed. Metasedimentary rocks, including metaconglomerates and metasandstones, as well as schist, carbonaceous schist, phyllites, and graphite are present within the formation (Tetra Tech, 2010a).

Overlying the Pennsylvanian rocks of the Narragansett Basin are surficial deposits of Pleistocene sediments. These Pleistocene sediments owe their origin to the Wisconsin glaciation that covered the area with ice several thousand feet thick. Glacial material consists of a loose till and outwash deposits characterized by sands, silty sands, and gravels. These deposits were derived from shale, sandstone, conglomerate, and in a few places, coal (TRC, 1992).

Till is the most extensive of the glacial deposits in Rhode Island. This glacial deposit is unstratified and widely heterogeneous in grain size distribution, typically comprised of fine (clay/silt/sand) and coarse (pebbles/cobbles/boulders) fractions (USDA SCS, 1981).

Regionally, the Upland till plains, the Narragansett till plains, and the Charlestown and Block Island end moraines are till deposits in Rhode Island. NAVSTA Newport is located on the Narragansett till plain. This glacial till deposit may have been derived from a sedimentary and meta-sedimentary rock provenance (USDA SCS, 1981).

In summary, the geologic layers underlying Carr Point generally consist of deep Newport Granite, overlain by Volcanic Basement Complex (metamorphosed felsic and mafic volcanics). These deep layers are overlain by unnamed “meta sediments” and a top layer of Narragansett “undifferentiated” sediments. The sediments are further defined as calcerous, pyritiferous phyllites and fine-grained sandstone.

Site Geology

Refer to Figures 3-1 and 3-2 for location and depiction of a representative site geologic cross section. The bedrock at MRP Site 1 was encountered at 31 and 42 feet at MW-01D and MW-12D, respectively, and is predominately a weathered Phyllite. This is consistent with the bedrock elevation contours of MRP Site 1 and IR Site 22. The lowest bedrock elevation is present along the northern boundary, indicting a north northwest dipping bedrock surface. A dense basal till of silt with little to trace angular gravel is present in a 5 to 8 feet thick layer on the bedrock surface. Above the till is a fine to medium sand, which includes gravel in some locations. A fill layer of sand in gravel also exists, however there is little anthropogenic material (with the exception of a few observations of old asphalt pieces at select borings) and its composition is similar to the underlying fine to medium sand unit which makes identifying the base of the fill difficult. Little organic matter is present except along the slope between the upland and bay/beach.

3.4 Hydrogeology

A description of regional and site-specific hydrogeology is provided below, as it pertains to this RI program. The monitoring well network and associated groundwater elevation contours are provided for reference.

Regional Hydrogeology

MRP Site 1 is located adjacent to Narragansett Bay. There are no inland surface water bodies within the boundary of MRP Site 1. Surface waters in the areas upgradient of the site (land occupied mostly by Tank Farms 3 and 4) drain primarily to Lawton Brook (the nearest inland surface water body located 0.3 miles to the southeast) and Normans Brook, respectively. Since the former Carr Point Shooting Range is located in between these areas, it is reasonable to conclude that surface water from the site also drains to Lawton Brook and Normans Brook. These two streams discharge directly into Narragansett Bay (Tetra Tech, 2010a).

Groundwater on Aquidneck Island is located in the unconsolidated glacial deposits of till and outwash and from the underlying Pennsylvanian bedrock. Throughout the area, depth to groundwater ranges from less than 1 foot to about 30 feet, depending upon the topographic location, time of year, and character of subsurface deposits. Seasonal water level fluctuations are common in the area. During the early spring the water table rises due to recharge from snowmelt and rainfall. In late spring and summer, the water table usually declines because rainfall either evaporates or is used by plants before it can reach the water table. During autumn the water table generally rises. Groundwater moves from areas of higher elevations to Narragansett Bay or the Sakonnet River (Tetra Tech, 2010a).

The State of Rhode Island Department of Environmental Management (RIDEM) has classified groundwater in Rhode Island to protect and restore the quality of the state's groundwater resources for use as drinking water and other beneficial uses, and to assure protection of the public health and welfare, and the environment (Tetra Tech, 2010a). The groundwater underlying MRP Site 1 is classified as Class GA, which is a RIDEM designation for groundwater that is "suitable for drinking water use without treatment." EPA requires the consideration of groundwater for use as drinking water because Rhode Island does not have an EPA-approved Comprehensive State Groundwater Protection Program.

Site Hydrogeology

Monitoring well construction details, groundwater gauging measurements, calculated groundwater elevations are summarized in Table 3-1. The wells have been grouped into two categories: water table wells, and deep overburden wells screened above the bedrock surface. Comprehensive groundwater gauging events were performed on December 13, 2013 and June 24, 2014. The depth to groundwater varies from 2.43 (MW-13) to 11.97 (MW-1) feet bgs with a saturated thickness ranging from 19 to 32 feet over the bedrock surface encountered from 31 to 42 feet bgs. Overburden groundwater flow direction is to the west northwest toward Narragansett Bay at an average hydraulic gradient of approximately 4.8×10^{-2} feet per feet (ft/ft) (measured perpendicular to groundwater flow).

The vertical hydraulic gradients summarized in Table 3-2 for the December 2013 and June 2014 gauging events were calculated at the water table and deep overburden well pairs at MW-01 / MW-01D and MW-12 / MW-12D. Positive numbers indicate an upward vertical gradient, and negative numbers indicate a downward gradient. Although a slight downward gradient (-0.027 ft/ft) was observed at MW-01 in December 2013, vertical gradients at MRP Site 1 were predominantly upward ranging from 0.088 ft/ft (MW-01, June 2014) to 0.102 ft/ft (MW-12, December 2013). This indicates that groundwater has a propensity to flow upward from the bedrock into the overburden at the site.

3.5 Narragansett Bay Conditions

Narragansett Bay is an embayment on the northern side of Rhode Island Sound. It is considered New England's largest estuary. Geologically, Narragansett Bay is a flooded coastal plain, formed by glaciers that carved channels through less-consolidated sediments, resulting in exposed bedrock that is visible in many locations within the bay. Aquidneck Island is the land form that remains between the East Passage and Sakonnet River. Carr Point is located on the west coast of Aquidneck Island, along the East Passage. Sources vary on the average depth of each inlet channel; however,

there is consistency in that the East Passage is the deepest of the three channels, and the only inlet suitable for large ships.

The ocean floor of the bay is relatively shallow in the vicinity of Carr Point, approximately 12 to 14 feet deep at 400 feet from the coast, with a gentle slope upwards to meet the shallow sloping coast. The beach itself is also a relatively shallow slope with evidence of swash marks on the sand. The waves range from spilling to moderately plunging, consistent with the shallow morphology of the near-coastal bay and shallow sloping beach. There are no visible or apparent sand bars or other barriers, which allows the wave energy to be concentrated at the coast. Cobbles, pebbles, gravel, and sand have also accumulated along the coast, in addition to the skeet fragments and seashells. The particle size distribution of seashells and skeet fragments is consistent with wave-dominated or tide-dominated shallow coasts. The larger particle sizes are closest to the shore and through the mean low tide (MLT) zone, with finer particle sizes further upland, at the mean high tide (MHT) zone. Note that skeet fragments were not observed on the sea floor during the dive survey.

Salinity within the bay ranges from 24 parts per thousand (ppt) near Providence Harbor, to 32 ppt at the mouth of the bay at Rhode Island Sound. With freshwater salinity expected to be in the vicinity of 0 ppt, the presence of 24 ppt near Providence Harbor (a fluvial point into the bay) would indicate that the tidal exchange is extensive. For these reasons, Narragansett Bay is considered to be tide-dominated, with a relatively high level of mixing and freshwater-to-saltwater exchange.

Wind Patterns

Researching local meteorological data from TF Green Memorial Airport (KPVD) provides comprehensive wind data for the area of interest. According to wind rose data, there is a significant northwest prevailing wind (wind coming from the northwest). The average wind speed in Narragansett Bay is 10 to 20 knots, which equates to an estimated 11.5 to 23 miles per hour (mph). Wind gusts have been recorded in the vicinity of 60 to 75 mph.

Currents and Water Circulation

The tidal cycle within Narragansett Bay is semi-diurnal. Two tidal cycles occur daily, with an estimated 4-foot difference in water level elevations. The average MHT ranges from 3.6 feet at the mouth of the bay to a slightly higher 4.6 feet where the rivers enter the system near Providence Harbor.

Accumulation of Skeet Fragments

These local estuary characteristics are consistent with a shallow current pattern that would move the fragments in a southeasterly direction from the bay to their present location south of the former launching area. There is evidence of longshore drift as well, from the north to the south along the coastline, as evidenced by the increased thickness of "shell hash" and fragment accumulation at the southern end of the beach. The local cuspate foreland also impacts the direction of wave energy. The cuspate foreland would be expected to create a pattern of coastal wave divergence to the south. The current characteristics, morphology, prevailing wind, and visual observations are consistent in supporting a CSM of skeet fragment transport and accumulation south of the former launching area. Fewer fragments are visible at or north of the former launching area and within the bay itself.

Sea Floor Conditions

The substrate within the site and at reference locations consisted of sand and gravel with larger cobble becoming prominent towards the beach. Large (>1 foot) boulders were noted in several locations and a boulder field was delineated along the southern boundary of the firing fan, which included several larger rock outcrops visible at low tide (shown on Figures 2-2 and 2-3).

Skeet fragments were not observed on the sea floor during the video or dive surveys at stations that extend past the low tide water line; however, fragments were seen on the beach above the water line during sampling at low tide. Shell hash was noted at every location and the species of shellfish observed varied from location to location within the site. Dominant shellfish species included slipper shells (Crepidula fornicata), quahogs (Mercenaria mercenaria), and blue mussels (Mytilus edulis). Other species observed included razor clams (Silqua patula), bay scallops (Aquipecten irradians), knobbed whelks (Busycon carica) and periwinkles (Littorina littorea). Numerous large spider crabs (Libinia emarginata) were also observed. Algal cover within the site and at reference locations was mixed; transient tufts of algae were noted as well as affixed algae such as rock weed (Ascophyllum nodosum) and the locally dominant SAV, eelgrass (Zoestra marina).

3.6 Potential Receptors and Exposure Pathways

The risk assessment exposure pathways graphic (also referred to as a risk assessment CSM; see Figure 3-3) is used to guide identification of appropriate exposure pathways and receptors for evaluation in the Human Health Risk Assessment (HHRA) and Ecological Risk Assessment (ERA). The purpose of the CSM is to identify source areas, potential migration pathways of site related

constituents from source areas to environmental media where exposure can occur, and potential human and ecological receptors.

The HHRA and ERA identify potential receptor groups and potential pathways for each potential exposure media and provide rationale for inclusion or exclusion of each potential receptor in consideration of remedial actions in the Feasibility Study (FS). There are both human and ecological receptors present at the site under various exposure scenarios.

Human Receptors

Human health receptors under various exposure pathways are summarized below. Refer to Section 6.0 (Risk Assessment) for additional details as well as the HHRA presented as Appendix A.

- Construction/utility worker
- On-site worker
- Trespasser
- Recreational user
- Hypothetical future on-site resident

Groundwater at the site is categorized by RIDEM as GA, suitable for potable use without treatment. However, groundwater at the site is not currently being used for potable use, there are no drinking water wells present on site, and the site is served by the municipal water supply.

Contact with surface water in Narragansett Bay is not considered to be a significant pathway of exposure to site-related chemicals due to the tidal influence. Therefore, surface water is not considered a media of concern and exposure to surface water will not be evaluated in the risk assessment.

Although shellfishing is currently prohibited in a large portion of Narragansett Bay, ingestion of shellfish may be a potentially complete pathway under a hypothetical future-use scenario if shellfish are present in surface water within MRP Site 1. Therefore, the shellfish ingestion pathway exists for hypothetical future residential receptors, assuming that future residents may collect shellfish on a recreational basis.

Ecological Receptors

It is anticipated that ecological receptors may come in contact with surface soil (0 to 1 foot bgs) and surface sediment (0 to 1 foot bgs) within MRP Site 1. In addition, as a result of historic skeet-shooting activities, birds may be exposed to lead pellets ingested intentionally as a source of grit or incidentally during ingestion of prey items. Ecological receptors are not exposed to groundwater so the pathway to this medium is not complete and will not be evaluated in the ecological evaluation. Exposure to site-related constituents in Narragansett Bay surface water is assumed to be negligible due to the tidal influence and will not be evaluated in the ecological evaluation. Refer to Section 6.0 (Risk Assessment) for an overview of the ERA presented in Appendix B.

4.0 NATURE AND EXTENT OF CONTAMINATION

Per the goals established in the SAP, this RI Report was prepared primarily to refine the extent of impact due to historical releases, including newly acquired data and data acquired from prior investigations and removal actions. It was also completed to evaluate the potential risk/hazard to human and ecological receptors exposed to impacted site media. During prior investigation and removal actions, PAHs and metals were identified as constituents that could cause risk in soil and sediment at the site.

Primary sources of contamination at the site consist of painted clay pigeons used as skeet range targets, associated clay pigeon fragments, and lead shot. Primary release mechanisms consist of direct discharge of materials to the surface soil in the former shooting range areas, as well as direct impacts into Narragansett Bay from airborne clay pigeons and lead shot. Secondary release mechanisms could include volatilization of certain PAHs, generation of fugitive dust from soil, chemical leaching into groundwater, groundwater discharge into Narragansett Bay, and food-chain uptake.

The 2010 SI identified elevated concentrations of PAHs, lead, and propellants in the surface soil, PAHs in the subsurface soil, and PAHs, metals (primarily lead), and lead shot in sediment. Although propellant residues (i.e., nitroglycerin) were reported during prior investigations (Tetra Tech, 2010a), they are considered to be limited to the clay pigeon launching/firing arc area and are not considered a potential compound of interest for other areas of the site. A portion of this area was included in the recent removal action that was undertaken to reduce site risks to soil.

The data from the RI is discussed below, and incorporated with historic data where relevant. All data with the exception of the rejected results are usable as qualified for the evaluation of risk and determination of nature and extent under CERCLA and EPA protocols. Additional detail is provided in the data validation reports presented in the appendices. A discussion of the results by media follows below. Summaries of analytical results are presented in the tables, including data collected during this RI and data collected during the SI and NTCRA.

4.1 Soil Conditions

Key constituents found in site soils are discussed below. Table 4-1 presents a summary of pellet counts in soil. Tables 4-3 through 4-10 present analytical results for soil samples collected during the RI, the SI and the NTCRA; separated by analytical compounds except where indicated. Figure 2-1 presents all soil sampling locations associated with the site.

Lead

Metals, including lead, one of the primary target constituents, were detected in all soil samples collected (see Tables 4-3, 4-7, and 4-8). Concentrations of lead in soil varied from low detections of 4.3 mg/kg to several concentrations at magnitudes higher than sample averages (refer to Figures 4-1 and 4-2 for a distribution of lead in shallow and subsurface soils). Note lead pellet counts listed on Table 4-1 and shown on Figure 4-16. Most elevated lead concentrations occur in the shallow samples. Several soil samples contain lead concentrations noticeably higher than the average lead concentrations, including sample concentrations above the EPA screening level of 400 mg/kg and the RIDEM Direct Exposure Criteria (DEC) values.

The relatively higher lead impacts fall within the southwestern area, at the convergence of MRP Site 1 and IR Site 22, and for the most part, in the shallow soils. This area is approximately 10,000 square feet in size. In two locations in this area, SB224 (10,900 mg/kg) and SB302 (29,900 mg/kg), elevated concentrations were detected that may be attributable to pieces of lead shot contained in the soil matrix. The concentrations in the field duplicates were greater than the field samples by more than an order of magnitude. To evaluate this further, the samples were crushed and then re-analyzed. The resulting concentrations of each crushed sample were an order of magnitude less, supporting the likelihood that the initial samples collected contained some piece of lead shot that caused an elevated concentration in each sample. In addition, the concentrations of lead in the sample intervals below the surface samples were orders of magnitude less. Lastly, another common metal used with lead bullets is antimony. This metal and arsenic were the only other elevated concentrations in the original sample, further supporting the likelihood that a bullet fragment was contained in the sample analyzed. Note that the original elevated concentrations from the field duplicate samples were used in the sample data for assessment of risks, despite the reasonable assumption that the concentrations are not completely reflective of the soil matrix itself.

The average lead concentration in surface soil (0 to 1 ft), including the elevated concentrations in SB224, SB302, and SB 223 (1,830 mg/kg), is 828 mg/kg, while the average without those three samples is reduced to 85 mg/kg. The average with the three highest concentrations removed, plus the NCTRA samples removed from the data set, is below 100 mg/kg. Similarly, when combining surface and subsurface soil (0 to 12 ft), the average lead concentration including the elevated locations is below 400 mg/kg, while the average without those three samples is below 50 mg/kg.

The elevated concentrations of lead are bounded mostly to the southwest with some locations further north of the southwest area. Additional samples within the southwest area would provide a

more refined dataset for determining extent within that area. Should remedial actions be required to the northern end of the site, additional samples would refine the extent in that area.

Arsenic

Arsenic was detected in all samples collected from soil. It can be naturally occurring, but is also known to have been an ingredient in herbicides and pesticides and can also be used to strengthen lead in lead shot and bullets. Arsenic was detected in soil from concentrations below 1 mg/kg to a maximum of 130 mg/kg at sample location SB302 (co-located with the maximum lead concentration) (see Figures 4-3 and 4-4 and Tables 4-3 and 4-8). The average concentration in the surface soil (0 to 1 ft) samples collected is 12 mg/kg.

The more elevated concentrations of arsenic in soil appear in the southwestern area where the lead concentrations are also elevated. It should also be noted that this southwestern area is known to be a small area of historic fill (Tetra Tech, 2010a). Outside of this focus area, the concentrations of arsenic do not appear to represent a pattern or appear to be related to a specific source. Values range up to 23.6 mg/kg in the shallow soil in this area.

Chromium

Hexavalent chromium was analyzed in a sub-set of soil samples to determine whether the more toxic hexavalent form of chromium was present at the site. Hexavalent chromium was analyzed, but not detected, in three surface soil locations (SB205, SB211, and SB229). However, hexavalent chromium was analyzed and detected in 2 out of 8 subsurface soil samples (locations MW12 (10 to 14 feet), in the northern portion of the site [0.26 mg/kg], and SB219 (3 to 5 feet) in the middle of the site [0.63 mg/kg]). Total chromium was not analyzed in the MW12 sample, but it was analyzed and detected (13.4 mg/kg) in the SB219 sample. This shows that, although not considered to be site-related, hexavalent chromium detections are limited and low relative to total chromium concentrations.

With respect to total chromium distribution at the site, the highest surface soil concentration was 30.1 mg/kg at SB223, which is in the southwestern area of the site, near the higher lead concentrations. The average total chromium concentration across the site is 13 mg/kg. Similar order-of-magnitude concentrations were found in subsurface soil (maximum detection = 34.2 mg/kg at SB211, along the shoreline, and average site concentration of 12 mg/kg).

PAHs

Consistent with historic results, PAHs were encountered in shallow soil and subsurface soils, with most of the detections in the shallow samples (see Tables 4-3, 4-7, 4-8 and 4-9). Locations with elevated concentrations of PAHs include those near asphalt and parking areas (see Figure 4-5 for a presentation of total PAHs in shallow soil based on order of magnitude). Locations with the most elevated concentrations, some 1 to 2 orders of magnitude above most locations, are situated within the fire arc, a short distance from the firing area along the shoreline. These locations specifically include SB209, SB211, SB212 and SB228, which are situated along the edge of the upland soil area and, based on site observations, contain the highest concentration of visible physical skeet fragments, which are known to contain PAHs. For comparison purposes, select PAHs were plotted on figures. The distribution of concentrations of benzo(a)anthracene, benzo(a)pyrene, and dibenz(a,h)anthracene are shown on Figures 4-6 through 4-11.

There are visible fragments in surface soil around the NTCRA area, as well as the adjacent wooded area north of where the majority of samples were collected. Surface soil samples were collected from areas where the majority of fragments were observed, such as the embankment between the firing area and shoreline. The concentration of visible target fragments appears to decrease in magnitude with distance to the north; however, the exact extent has not been refined beyond the vegetation boundary.

VOCs

VOCs were analyzed for in several samples from locations near the former storage area (IR Site 22) for potential impact from hazardous material storage. VOCs were not detected in the soil samples (see Table 4-5).

Propellants

During the SI, nine composite samples collected from the upper two–inches of surface soil in the three firing arcs (designated ARC-1, ARC-2, and ARC-3) were submitted for laboratory analyses of propellants. Two propellants, nitroglycerin and 2,4-dinitrotoluene were detected. Most of this soil was removed during the 2013 non-time critical removal action. During the RI, a subset of the soil samples collected was analyzed for propellants. With one exception (SB217), nitroglycerine was either not detected or detected at concentrations three orders of magnitude lower than those detected in 2009 in the shallow soil at locations within or near the firing area. No propellants were detected in subsurface soils.

PCBs and Pesticides

PCBs were detected in soil samples collected near former transformer and transformer oil handling areas, including the portion of the site immediately adjacent to the former material storage area (refer to Figures 4-12 and 4-13 and Table 4-4). PCBs are not considered constituents of concern from shooting operations, but were included as part of a comprehensive assessment of potential impacts at the site. Relatively high concentrations of PCBs were detected in the southwest corner, immediately downgradient of the northeast corner of the former storage area (part of IR Site 22). This is the same area with the elevated lead concentrations – the convergence area of the two sites. An elevated concentration of 270 mg/kg was detected at SB223 (0 to 1 feet) and 18 mg/kg at 3 to 4 feet bgs at that same location. Note that additional analyses for PCBs at sample locations within IR Site 22 were collected as part of a separate RI effort for that site and the data is under evaluation.

Pesticides were also included in the sample efforts to assess impact near the storage area. Few pesticides were detected in soil samples collected near the storage area, including sample location SB223 (maximum detected concentration of 4,4'-DDT – 19 mg/kg), coincidental with the elevated PCB concentrations (see Table 4-4). These results are consistent with the CSM for historic uses in this area of the site.

The elevated concentrations of PCBs are bounded mostly to the southwest, near sample locations within the IR Site 22 boundary that indicate elevated concentrations of PCBs. Additional samples within the southwest area would provide a refined dataset for determining extent within that area, should remedial actions be necessary.

4.2 Sediment Conditions in Skeet Target Area

One of the critical analyses conducted for the sediment samples collected at off-shore locations included lead pellet counts. Pellet count per square foot varied widely amongst the samples collected from the sediment within the anticipated firing fan. Locations in the center portion of the firing fan contained over 1,000 pellets per square foot in some locations. Refer to the data on Table 4-2 and to Figure 4-16 for a view of the distribution.

A total of 25 samples were collected from 14 locations located within the skeet target area (within 300 feet from the shoreline). Of these samples 14 were surficial samples (0 to 1 foot bgs), 7 samples were collected from the subsurface interval of 1 to 2 feet, and 4 samples were collected from the subsurface interval of 2 to 3 feet.

Figure 2-2 presents all sediment samples associated with the site. All RI phase samples were analyzed for PAHs and metals and grain size was analyzed at surficial sample locations SD102, SD116, SD117, SD118, SD122, SD128, SD129, SD130, and SD133. TOC was analyzed from all samples except for SD115 (2 to 3 feet), SD117 (1 to 2 and 2 to 3 feet), and SD 118 (2 to 3 feet). Refer to Tables 4-11 through 4-14 for RI phase sediment analytical results and Table 4-19 for SI phase sediment analytical results.

PAHs

PAHs were detected at all samples within the skeet target area (see Tables 4-11 and 4-19). Highest concentrations were located in samples nearest to the shoreline, specifically at sample locations SD101, SD123, SD130 and SD124, all within the top 1 foot of sediment (refer to Figure 4-14 for a distribution of total PAHs in sediment based on order of magnitude). There were also PAHs detected in the reference samples (maximum total = 6.9 mg/kg at SD303; see Table 4-13). This maximum reference concentration was above all but one maximum total at the site (9.5 mg/kg at the 2009 sampling location SD01; see Table 4-19). Hence, PAHs may be present in sediment from sources other than skeet fragments.

Metals

Metals were detected in all of the samples collected within the skeet target area, and at all horizons (see Tables 4-11 and 4-19). The highest concentrations of metals were located in samples collected closest to the shore. Sample locations SD101, SD102, SD103, SD122, and SD129 yielded high metals results in comparison to other samples collected at the site. For instance, lead and arsenic values were higher in these samples than others located further from shore. Lead was detected at the highest concentration (4,290 mg/kg) at sample location SD122, which is located along the shoreline. Refer to Figure 4-15 for a depiction of lead concentrations in sediment based on order of magnitude.

Hexavalent chromium was analyzed in a sub-set of sediment samples to determine whether the more toxic hexavalent form of chromium was present at the site. Hexavalent chromium was analyzed and detected in two of 11 locations (locations SD101 [1.2 mg/kg] and SD102 [0.42 mg/kg], both in the southern nearshore area). When compared to the total chromium results from those locations, hexavalent chromium composed 3.1% and 8.9% of the total chromium concentrations.

Lead Pellet Count Analysis

Lead pellets were found at several sample locations within the Skeet Target Area. Pellets were not found in abundance at locations closest to the shoreline (see Figure 4-16 and Table 4-2). The highest amount of lead pellets found during the RI was at SD103 (1,246 pellets per square foot [psf]), which falls on the southern edge of the Skeet Target Area. However, greater concentrations of pellets in the center of the area were encountered during the SI (over 2,000 pellets psf at location SD08; for instance).

Soil borings taken along the shoreline that were submitted for pellet count analysis yielded mixed results (see Table 4-1). In samples SB225, SB210, SB226, and SB227 no lead pellets were found. Samples SB224, SB222, and SB301 all resulted in lead pellet counts greater than 135 pellets psf, with a maximum value of 558 pellets psf. These locations are all towards the southwest corner, which is likely one of the furthest distances from the shooting area by land, from the direction of the shooting area, which likely contributed to the accumulating of pellets in that location. Refer to Figure 4-16 for a distribution of pellet count.

4.3 Sediment Conditions in Overshoot Area

The overshoot area spans along the western edge of the skeet target area, 300 to 900 feet or less from the shoreline. It is assumed that this area is the where higher concentration of pellets are located due to the overshoot projections. A total of 52 samples were collected from 18 locations within the overshoot area: 18 surficial samples were collected, 18 samples from 1 to 2 feet, and 16 from 2 to 3 feet into the subsurface.

Figure 2-2 presents all sediment samples associated with the site. All RI phase samples were analyzed for PAHs and Metals while grain size was analyzed at surficial sample locations SD104, SD105, SD109, SD110, SD111, SD112, SD119, SD120, SD121, SD131 and SD132. Grain size was also analyzed at subsurficial locations SD109 and SD121. TOC was analyzed from all surficial and subsurficial samples SD104, SD109, SD121, SD131, and SD132. Refer to Tables 4-11 through 4-14 for RI phase sediment analytical results and Table 4-19 for SI phase sediment analytical results.

PAHs

PAHs were detected at the highest concentration within the overshoot area at SD132 (1.6 mg/kg) which is the sample location that is closest to the shoreline within this sample area (see Tables 4-11 and 4-19). In general, PAHs in other samples within this area were similar to reference sample

values (refer to Figure 4-14 for a distribution of total PAHs in sediment based on order of magnitude; refer to Table 4-13 for reference sample analytical results).

Metals

Metals were detected at all of the samples collected within the overshoot area, and at all horizons (see Tables 4-1 and 4-19). Sample location SD105 yielded the maximum mercury result for the site (0.09 mg/kg) and SD132 resulted in the highest results for both potassium (1,090 mg/kg) and selenium (0.434 mg/kg). Sample location SD104 had the highest zinc value (139 mg/kg). In general, metals results from within the overshoot area were lower on average than the skeet target area, including specifically lead and arsenic. Refer to Figure 4-15 for a depiction of lead concentrations in sediment based on order of magnitude.

Lead Pellet Count Analysis

Lead pellets were found at 10 locations within the overshoot area during the RI, all within the 300 to 600 feet distance from shore boundary (see Figure 4-16 and Table 4-2). The highest pellet count was located at SD120, where 2,344 pellets psf were recorded, compared to a maximum of over 4,000 pellets psf at the SI location, SD11. Pellets were not found at sample locations within the 600 to 900 feet interval from shore range or from SD126 and SD133 which are located to the north of the site, bounding the pellets found in sediment to an area approximately 600 feet or less from the shooting area. Additional samples may be warranted between samples SD125 and SD128 and samples SD126 and SD133 for remedial extent purposes. Note that the sediment in this area was observed to be very dense during sample collection attempts.

4.4 Benthic Community Characteristics

Benthic organism counts and biomass measurements are presented in Table 4-17. The 3,674 specimens identified yielded 26 taxa in five phyla. Species of polychaete annelids were the most abundant with 1,893 individuals, accounting for 50% of all organisms identified. Polychaetes in 19 families were recorded with Polygordiidae (725) and Cirratulidae (671) contributing the most individuals. Gastropoda (mollusc) was also a common group with a total of 1,071 individuals recorded, accounting for 29% of all organisms identified. Most of these were the Crepidula from station SD112.

As is typical for benthic environments, crustaceans, bivalves, and oligochaetes were also present. Crustaceans from three orders were recorded (amphipods, cumaceans, and decapods), with 342 individuals, making up 9% of the total fauna. Of these, amphipods were the most common with

295 individuals. There were a total of 325 oligochaetes and 41 bivalves recorded. A small number of nemerteans (2) were also recorded from one sample.

Gastropods accounted for the majority of the biomass of both samples. Weight-wet biomass analysis weighs entire organisms without differentiating tissue mass from total mass. Therefore, the weight of mollusks with shells would be expected to be heavier than invertebrate organisms without shells.

4.5 Shellfish Tissue and Dive Survey Findings

Table 4-16 presents shellfish tissue analytical results. Table 4-18 presents dive survey habitat findings, with visual representation of the results on Figure 2-3. This information was applied in the human health and ecological risk assessments (see Appendices A and B for further information).

4.6 Groundwater Conditions

One of the objectives of the groundwater analyses was to determine the suitability of using the available groundwater for drinking water and irrigation purposes from a water quality perspective. Based on the evaluation of the water quality data, such as salinity (all non-detect in the samples), the water does not have characteristics of poor drinking water quality. Hence, under a future scenario, an exposure pathway for an onsite worker and a resident was considered possible (refer to the HHRA summarized in Section 6.1 and included as Appendix A). Figure 2-4 presents the locations of monitoring wells associated with the site.

Table 4-15 presents analytical data for unfiltered groundwater samples collected during the RI phase. Of the constituents of concern assessed in soil, PAHs were not detected in any of the 6 groundwater samples.

Total metals were detected at various concentrations. Although lead was not detected, several other heavy metals were: cobalt, copper, iron, manganese, and nickel. Along with lead, the metals arsenic, chromium, mercury, and zinc were not detected in the samples. A background evaluation has not been performed, leaving it unclear if the detected metals are related to site activities, as the metals are commonly detected in regional groundwater (see Section 5.2). Furthermore, the detections have not been confirmed with multiple rounds of sampling. The only other groundwater monitoring results available are from one well (MW-01) from the SI phase (see Table 4-20). When comparing the results from the SI phase, collected in June 2009, to the results from the RI phase, collected in December 2013, there is variation in metals concentrations that could potentially be caused by seasonal effects. For example, manganese was detected in 2009 at 1,040 ug/L, but at 389 ug/L in 2013, while cobalt was detected in 2009 at 4.7 ug/L, but at 7 ug/L in 2013. This shows

variability in metals concentrations. Additional evaluation of metals in groundwater is important because manganese and cobalt have been detected in several wells at concentrations above the respective EPA lifetime health advisory and acute exposure values. An additional evaluation may include an assessment of groundwater and soil conditions that may contribute to reducing conditions that can mobilize metals at concentrations above background. An evaluation of a possible off-site source can also provide further refinement information.

5.0 CHEMICAL FATE AND TRANSPORT

This section presents a discussion of properties that contribute to the fate and transport of selected chemicals in environmental media. Rather than presenting an extensive discussion for all parameters analyzed at MRP Site 1, this section focuses on only those parameters that significantly contribute to potential site-specific risks. The results of the human health and ecological risk assessments are presented in Section 6.0. The behavior of constituents also differs in the various environmental media due to a variety of factors. The fate of constituents depends on their physical and chemical properties, as well as the properties of the environmental medium into which the constituents are released at MRP Site 1. The following parameters are the primary contaminants of concern (COCs) identified for MRP Site 1.

- PAHs in soil
- Pesticides in soil
- PCBs soil
- Metals in soil (primarily arsenic, chromium, and lead)
- Metals in groundwater (primarily cobalt and manganese)
- Pellets and lead in sediment

It should be noted that while information below is based on supporting technical information and site knowledge, site specific information related to long term fate and transport of lead pellets and skeet fragments is non-specific. Lead pellets in soil and sediment and skeet fragments in soil have the potential to continue to contribute to the concentrations of related compounds, including lead and PAHs, to soil and sediment.

5.1 General Properties of Site Soil and Sediment

The physical characteristics of site soil and sediment influence the fate and transport behavior of individual constituents. The following sections provide general and site-specific details for soil and sediment, which are the two media that have received direct impacts from prior site operations. Groundwater is also a medium of concern; however, there were no known direct discharges to groundwater. Any chemical impacts to groundwater are attributed to natural fate and transport process of constituents that have migrated through either soil or sediment.

Soil Properties

Constituents in soil can migrate within the soil or between media (i.e., leaching to groundwater) via movement of pore water or can be transported by erosional processes or through re-suspension and deposition. Constituents in soil are subject to various physical, biological and chemical processes, such as biodegradation or chemical oxidation that may alter or degrade compounds to less toxic forms. Various physical and chemical properties of both the constituent and media govern fate and transport processes of constituents in the environment. For example, soils with higher organic matter or clay content have a higher sorptive capacity for certain types of constituents, and thus have reduced constituent mobility within the media or to groundwater. Rates of pore water and constituent transport within the soil are greater in soils with high permeability such as sandy soils, in contrast to soils with low permeability such as clayey or silty soils. A constituent's vapor pressure can determine whether or not it will remain in soil; constituents that have a higher vapor pressure (i.e., more volatile) will tend to transfer from the soil into the gaseous phase. Hydrophobic constituents (i.e., non-polar) tend to be less mobile in pore water because of their decreased solubility (Hemond and Fechner-Levy, 2000). Some of the major factors influencing a constituent's fate and transport ability in soils include sorption, volatilization, runoff and erosion, and leaching.

Sediment Properties

Many of the same properties associated with soils are also applicable to sediments. Sorption and erosion/runoff are the primary modes of transportation of constituents in sediment. The marine sediments of MRP Site 1 are characterized by two distinct types of sediment: the depositional offshore subtidal area and the high energy intertidal nearshore area. The subtidal sediments would tend toward a reducing environment, whereas the intertidal area is oxygenated, forming an oxidizing environment. These two different environments may impact the fate of site constituents.

Most transport of contaminants in a marine environment occurs when contaminants bound to particles are suspended and transported with wave action, tide flow, or wind processes. As introduced in Section 3.0, the characteristics of Narragansett Bay influence the transport of pellets and fragments that were historically discharged into surface water within the bay. The local estuary characteristics of the East Passage within Narragansett Bay are consistent with a shallow current pattern that would move the fragments in a southeasterly direction from the bay to their present location south of the former launching area. There is evidence of longshore drift as well, from the north to the south along the coastline, as evidenced by the increased thickness of shell hash and fragment accumulation at the southern end of the beach. The local cuspate foreland also impacts the direction of wave energy. The cuspate foreland would be expected to create a pattern of

coastal wave divergence to the south. The current characteristics, morphology, prevailing wind, and visual observations are consistent in supporting a CSM of skeet fragment transport and accumulation south of the former launching area. Fewer fragments are visible at or north of the former launching area and within the bay itself.

5.2 Fate and Transport Characteristics of Major Constituents

This subsection presents a brief description of the general properties of individual significant constituents that may drive their fate and transport in environmental media at MRP Site 1.

PCBs in Soil

PCBs are not a single compound, but a class of chlorinated organic compounds comprised of a biphenyl backbone with substitutions of one to 10 chlorine atoms. Although there are 209 possible unique patterns (or congeners) in which these chlorines can be substituted onto the biphenyl rings, in practice a set of about 120 PCB congeners can describe more than 99% of the total PCBs in all Aroclor formulations. PCBs can also be divided into homologue groups based on the number of chlorine substitutions on the biphenyl rings (mono-, di-, tri-, tetra-, penta-, hexa-, hepta-, octa-, nona-, or deca-chlorobiphenyl) (Frame et al., 1996; Shiu and Mackay, 1986).

PCBs are generally persistent in the environment, primarily due to their resistance to thermal and other degradation processes, low aqueous solubility and volatility, ability to substantially bioaccumulate in aquatic organisms, and high adsorptive affinity for soils and organic matter. They are typically highly resistant to biodegradation and when it does occur, it is a slow process.

The density, boiling point, and hydrophobicity of PCBs increases with increasing levels of chlorination. In general, the less chlorinated congeners will be more soluble and volatile. More chlorinated congeners are more hydrophobic and tend to accumulate in organic rich sediments, bioaccumulate up the food chain, and are fractionated into the fatty tissues in organisms to a higher degree (Frame et. al, 1996; Shiu and Mackay, 1986).

PCBs have low water solubility and adhere to soil and sediment particles rather than freely dissolving in water or volatilizing to air, and they have high octanol/water partitioning coefficients (K_{ow}) and are therefore lipophilic. Their hydrophobic nature means that PCBs are usually associated with the organic carbon fractions of soils and sediments (i.e., they concentrate in organic rich sediment, as opposed to sandy sediment) and they accumulate in fatty biological tissue. When organisms consume PCB-containing material (e.g., organic matter or other organisms) some become associated with the lipid fraction of the organism, and some may not be readily

metabolized or excreted. This process results in some of the PCBs biomagnifying, or increasing in concentration as PCBs are consumed by higher trophic level organisms, rather than being lost from the organism.

PCBs present at MRP Site 1 are likely from the use, maintenance, and storage of transformers and their waste oils on the site several decades ago. Aroclor-1260, the primary aroclor occurring on site, consists of a mix of generally highly chlorinated PCB congeners with 60% chlorine by mass. PCBs with heavy chlorination tend to be more hydrophobic and immobile than the lower chlorinated congeners. These heavily chlorinated congeners are also less likely to dechlorinate due to microbial or other mechanisms. The PCBs are not likely to migrate much beyond their current locations.

Pesticides in Soil

The source of pesticides at the site is not well documented, but is likely from the use of vector control and weed mitigation. These activities likely occurred when the firing range was active. While the specific chemical properties of pesticides differ slightly, Target Compound List (TCL) pesticides are all organochlorine pesticides and share many of the same properties that govern their environmental fate and transport. Like PAHs and PCBs, pesticides are hydrophobic and therefore tend to bind to soil and sediment particles rather than be freely dissolved in pore waters. They have low vapor pressures and Henry's law constants meaning they are unlikely to readily volatilize under normal conditions.

Pesticides applied to cropping systems can be degraded by microbial action and chemical reactions in the soil. Pesticides can also be immobilized through sorption onto soil organic matter and clay minerals. Biodegradation varies among various pesticides, but none do so readily. Pesticides are apt to accumulate in tissues of organisms due to their lipophilic nature. Like PCBs, pesticides may also bio-magnify in the food chain.

Pesticides can be taken up by pests or crop plants and either can be transformed to degradation products (which are often less toxic than the original compound) or, in some cases, can accumulate in plant or animal tissues. Pesticides are also prone to surface runoff in dissolved and particulate states, and can leach into the groundwater table. One of the site-related pesticides detected, DDT, is known to strongly sorb to clays and organic matter and is less likely to leach to groundwater. The major forces contributing to the transportation of pesticides at MRP Site 1 are erosion and wave action on pesticides bound to soil and sediment particles.

PAHs in Soil

PAHs are commonly found in the environment, stemming from petrogenic (associated with oils) and pyrogenic (associated with combustion) sources. The PAHs found at the MRP Site 1 are present most likely from the use of clay targets in the firing range area. Skeet or clay targets may contain up to 33% coal tar pitch and petroleum pitch, which are comprised of pyrogenic PAHs. The remaining composition is generally clay such as dolomitic limestone.

Pyrogenic PAHs are dominated by the larger ringed PAHs (i.e., high molecular weight PAHs [HMW PAHs]). HMW PAHs include several of the priority pollutant PAHs such as benzo(a)anthracene, benzo(b)fluoranthene, chrysene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, dibenz(a,h)anthracene and benzo(k)fluoranthene. These constituents are generally characterized as having low vapor pressures, low water solubility, and high octanol/water partitioning coefficients. As such, they are strongly sorbed to particles, particularly those with high organic carbon content. The potential for wind erosion is present, but the migration of these PAHs via volatilization or leaching is unlikely to be a major transport mechanism.

In clay targets, the PAHs tend to be stable; adsorbing to the limestone clay, further decreasing their potential transport and availability. The Interstate Technology Regulatory Council (ITRC) (2003) has documented several studies indicating that PAHs in clay targets and fragments are bound in the limestone matrix, practically eliminating their bioavailability. Baer et al. (1995) conducted studies using new and aged clay targets ground to small particles. These studies indicated PAHs from clay targets are simply not bioavailable (using leachate tests) or toxic to aquatic organisms (using laboratory toxicity tests). Still, additional transport of PAHs may occur as target pieces are further crushed overtime and become wind-blown, are mobilized by wildlife, or mobilized by other mechanical means such as raking and grass mowing.

Arsenic in Soil

Arsenic occurs in multiple valence states (As^{+3} and As^{+5}), and its fate and transport are affected by redox conditions. Arsenic geochemistry can be complex. However, the most common process that occurs in groundwater is sorption and/or co-precipitation controlled by redox. Arsenic is naturally present in many aquifers as part of iron oxide minerals (that is, sorbed onto these minerals or co-precipitated with them). Under reducing conditions, the iron in these minerals is reduced, the minerals dissociate, and the iron is present as a soluble ion in the water. When the iron minerals dissolve, the arsenic that is associated with them is also released into the groundwater. Under oxidizing conditions, as the iron forms insoluble molecules and leaves the groundwater, the arsenic

is also removed. The effectiveness of the arsenic sorption process is affected by the presence of other dissolved species, particularly those that compete for sorption sites, such as sulfate and phosphate. The groundwater pH also affects arsenic sorption.

Chromium in Soil

Chromium can be present in tri- and hexavalent oxidation states (Cr^{+3}, Cr^{+6}). It is typically in its trivalent state, which is more stable and less toxic. Naturally occurring hexavalent chromium is typically not common, as it requires highly oxygen-rich conditions and exhibits an affinity for conversion to trivalent chromium under most environmental conditions. It can be found in low proportions (to total chromium) in arid, alkaline soils or minerals. However, as soon as the ambient soil includes reduced iron, organic matter, or any other reducing agent, the hexavalent chromium is reduced to trivalent chromium (ATSDR, 2012; Canadian Council of Ministers of the Environment [CCME], 1999). Once converted to trivalent chromium, the electrochemical potential required to convert back to hexavalent chromium is quite high (CCME, 1999).

Hexavalent chromium does not remain in the environment in the same form it was deposited to the environment. Once in contact with the environment, reduction to trivalent chromium is effectively irreversible, particularly in moist areas with high organic matter (e.g., wetlands or riparian habitats).

Lead and Pellets in Soil and Sediment

Most often at small arms firing ranges, lead is the primary risk driver due to the large amount of lead bullets and fragments deposited after years of use. Lead bullets are often jacketed in copper and may contain other metals including antimony, arsenic, tin, and zinc (ITRC, 2005). These metals are therefore often co-located, with lead being present at the highest overall concentration (bullets may be up to 96.4% lead by weight [ITRC, 2003]). At MRP Site 1, various types of gun ammunition may have been used, although a primary type was the lead-shot filled shotgun casing.

Lead from bullet fragments may be transported by the physical actions of surface water and wind. This distribution would tend toward down-wind or down-current distribution. When exposed to moisture, an electrical connection may form causing galvanized corrosion of the metals. The oxidation of lead produces lead hydroxide and carbonate from elemental lead that will form a coating around bullet fragments. The rate of oxidation depends upon several factors including oxidation/reduction potential, pH, and oxygen content of the soil. While the presence of the coating around a bullet fragment limits further weathering, dissolution of the coating material can release lead to the soil. The dissolution of lead in the coating material dependents upon several factors

including pH, eH, the presence of carbonate, sulfate, sulfide, phosphate, and chloride, and the organic matter content of the soil. One estimate by Jorgensen and Willems suggests that 1% of the lead in bullet fragments can enter the soil by this method per year.

Lead and other metal compounds generally demonstrate the highest aqueous solubility in either acidic (pH<4) or alkaline (pH>11) conditions. When lead is in its dissolved state, it is more readily sorbed to charged clay particles in soils and sediment. Most commonly, the divalent Pb^{+2}, formed under acidic conditions, is sorbed to negatively charged clay particles. This most commonly occurs in anoxic conditions with low dissolved solids and carbonate alkalinity.

The majority of lead pellets found at MRP Site 1 are in the marine sediments. Marine sediments have their own unique characteristics that may influence the fate of lead in the pellets. Sediments tend to be oxidizing in the top few inches, and reducing in deeper horizons. The oxidizing shallow sediments will tend to corrode the lead pellet, forming an oxidizing surface layer. With time, hydrocerussite mineral deposits will form a coating on the surface, limiting further corrosion. The coating can dissolve and release lead to the sediments as described above. In the deeper, reducing sediment conditions, sulfide produced from reducing bacteria will bind with lead to form galena, a practically insoluble form of lead.

The conditions in the deeper waters of MRP Site 1 are subtidal with depositional sediments. The pellets existing in this area are likely stable under reducing conditions. In the shallow intertidal portion of the shoreline, the constantly changing conditions and continuous disturbance of sand may cause some slow reduction of lead pellets leading to low concentrations of lead in fine sediment and surface water. The wave actions in the intertidal area should mobilize lead pellets as well, moving them to the deeper, anaerobic sediments.

<u>Cobalt in Groundwater</u>

Cobalt occurs in Co^{+2} and Co^{+3} valence states. Its presence in groundwater systems is most commonly a function of co-precipitation and/or adsorption by iron and manganese oxide/oxyhydroxide minerals. Similar to arsenic, under reducing conditions, the iron and/or manganese in these minerals is reduced, the minerals dissociate, and the iron/manganese is present as a soluble ion in the water. When the minerals dissolve, the cobalt that is associated with them is also released into the groundwater. Under oxidizing conditions, as the iron and/or manganese form insoluble molecules which are removed from the groundwater, the cobalt is also removed. Cobalt is also affected by sorption to organic carbon. The effectiveness of all these

sorption processes can be influenced by a number of factors, including the redox conditions, the pH, the presence of other dissolved ions, and the presence of organic carbon.

Manganese in Groundwater

Manganese is a common occurrence in New England groundwater, and frequently detected with iron. Both iron and manganese are naturally-occurring and rarely anthropogenic; instead, they are derived from the natural soils and geologic materials in the subsurface. Many metals are able to form ions of two or more valence states. Both iron and manganese are both metals that can occur in different valence states (Fe^{+2}, Fe^{+3}, and Mn^{+2}, Mn^{+4}). Both of these ions are affected by redox conditions. In simple terms, when groundwater is aerobic or oxidized, iron and manganese ions will each form molecules that are relatively insoluble. Conversely, under anaerobic or reducing conditions (when there is little or no oxygen in groundwater), they are dissociated and are present as soluble ions in groundwater. Therefore, these constituents tend to be present and mobile in groundwater that is anaerobic, but immobile and not present in groundwater that is aerobic.

The fate and transport of most metals, including iron and manganese, are also affected by pH. Generally, metals can be more soluble at very high or low pH values. However, at typical groundwater pH values, the redox effects are much more important.

6.0 RISK ASSESSMENT

Human health and ecological risk assessments were completed using the cumulative dataset developed from this recent RI field program (2013/2014), as well as relevant data from prior events. As introduced earlier in this document, data collected from sampling locations that were excavated during the NTCRA were replaced with post-excavation data collected subsequent to the removal action. The following sections provide the results of the HHRA and Ecological Risk Assessment (ERA) for MRP Site 1. Specific risk assessment details, supporting calculations and references, and associated tables and figures are consolidated within the appendices provided.

6.1 Human Health Risk Assessment

The HHRA was conducted in accordance with Navy Human Health Risk Assessment Guidance (2008) and is included in its entirety as Appendix A to this report. The approach was consistent with Risk Assessment Guidance for Superfund (RAGS) (EPA, 1989) and other related guidance. Pursuant to Navy Policy 5090 Ser N453E/1U5951 (DON, 2001), the determination of human health risk at a site is clearly prescribed to ensure sufficient resources are allocated for the protection of human health. The tiers of evaluation that were followed to conduct the HHRA were the Tier 1A Human Health Risk-Based Screening Evaluation and the Tier II Baseline Human Health Risk Assessment (BHHRA).

The objective of the evaluation was the quantitative estimation of current and potential future risks and hazards to current and potential future human receptors who may contact chemicals in soil, sediment, and groundwater at MRP Site 1. In addition, potential contributions of shellfish tissue ingestion have been evaluated for potential future residents, should that scenario be considered.

The data used for the risk assessment included the data collected during the 2009 SI, the soil removal (NCTRA) confirmatory samples, and the RI data set. Per the Risk Assessment Work Plan Technical Memorandum (Resolution, 2013b) and the SAP (Resolution, 2013a), the following pathways were quantitatively evaluated for each exposure scenario:

Young child/adult recreational user scenario, current
- Ingestion pathways: surface soil, sediment
- Dermal contact pathways: surface soil, sediment
- Inhalation pathways: inhalation of particulates

Adolescent trespasser scenario, current
- Ingestion pathways: surface soil, sediment

Dermal contact pathways: surface soil, sediment
Inhalation pathways: inhalation of particulates

Adult onsite worker scenario, current
Ingestion pathways: surface soil
Dermal contact pathways: surface soil
Inhalation pathways: inhalation of particulates

Adult construction worker scenario, current/future
Incidental ingestion pathways: surface/subsurface soil, shallow groundwater
Dermal contact pathways: surface/subsurface soil, shallow groundwater
Inhalation pathway: particulates in outdoor air

Adolescent trespasser scenario, future
Ingestion pathways: surface/subsurface soil, sediment
Dermal contact pathways: surface/subsurface soil, sediment
Inhalation pathways: inhalation of particulates

Adult onsite worker scenario, future
Ingestion pathways: surface/subsurface soil, groundwater
Dermal contact pathways: surface/subsurface soil, groundwater
Inhalation pathways: inhalation of particulates

Young child/adult resident scenario, future
Ingestion pathways: surface/subsurface soil, sediment, groundwater, shellfish
Dermal contact pathways: surface/subsurface soil, sediment, groundwater
Inhalation pathways: inhalation of particulates

A summary of the results of the HHRA presented in Section 6.1 and included as Appendix A is shown below, beginning with receptors/exposure pathways which exceeded EPA's target risk range of 10^{-4} to 10^{-6} or target hazard index (HI) level of 1 and followed by receptors/exposure pathways which did not exceed the target levels.

Current and Future Trespasser

The current and future adolescent trespasser scenarios were evaluated assuming a trespasser would access the site twice a week for four hours a day during the six warmer months of the year (Reasonable Maximum Exposure [RME] scenario) and 1 day per week for two hours a day during the six warmer months of the year (Central Tendency Exposure [CTE] scenario). For both the current and future trespassers, there are potential unacceptable risks/hazards due to PCBs in the soil. For the current trespasser, the RME HI (7) is above the target HI of 1, while the CTE HI (0.8) is below the target HI of 1. For the future trespasser, the RME HI (7) is above the target HI of 1, while the CTE HI (0.5) is below the target HI of 1. The total receptor RME and CTE incremental lifetime cancer risks (ILCRs) for both the current ($7x10^{-5}$ and $1x10^{-5}$, respectively) and future scenarios ($5x10^{-5}$ and $6x10^{-6}$, respectively) do not exceed the EPA target risk range of 10^{-4} to 10^{-6}.

Current Recreational User

A current recreational user was assumed to be on-site two weeks per year (RME scenario) and one week per year (CTE scenario) while visiting the RV Park. As an exposure duration for the recreational users at the facility is difficult to determine, the combined child/adult residential exposure duration (26 years) defined in EPA's 2014 directive on standard default exposure factors (USEPA, 2014) was utilized as a conservative assumption for the RME scenario, while the CTE scenario was evaluated using an assumed combined exposure duration of 25 years. For the current recreational user, there are potential unacceptable risks/hazards to PCBs in the surface soil. The RME HI (10) is above the target HI of 1. The CTE HI (0.7) is below the target HI of 1. The total receptor RME and CTE ILCRs (1×10^{-4} and 2×10^{-5}, respectively) do not exceed the EPA target risk range of 10^{-4} to 10^{-6}.

Current/Future Construction Worker

A construction worker exposure scenario was evaluated to address potential exposures that could occur if soil was excavated. The exposure assumptions were developed in accordance with EPA guidance documents. For the construction worker, there are potential unacceptable risks to PCBs in the soil. The RME HI (20) and CTE HI (2) are both above the target HI of 1. The total receptor RME and CTE ILCRs (4×10^{-5} and 2×10^{-6}, respectively) do not exceed the EPA target risk range of 10^{-4} to 10^{-6}.

Future On-site Worker

A future on-site worker RME scenario was evaluated assuming a worker would be at the site for 250 days per year for 25 years, in accordance with EPA guidance, and would work outside for one half of the workday (four hours). The CTE scenario assumed a worker would be at the site for 219 days per year for 7 years and would also work outside for four hours per day. For the future on-site worker, there are potential unacceptable risks to PCBs, PAHs, DDT, arsenic and chromium in the soil. For the soil exposure pathway, the RME HI (20) is above the target HI of 1 due to PCBs. The CTE HI (1) does not exceed the target HI of 1. The total receptor RME ILCR (3×10^{-4}) exceeds the target risk range of 10^{-4} to 10^{-6} due to exposure to PCBs, PAHs, 4,4'-DDT, arsenic, and chromium in soil. It should be noted that if PCBs were not included in the calculation (i.e., if they were evaluated separately), the other primary risk drivers would not have cumulatively resulted in an exceedance of the target risk range. The total receptor CTE ILCR (6×10^{-6}) does not exceed the EPA target risk range of 10^{-4} to 10^{-6}.

Hypothetical Future Resident

The hypothetical future resident was evaluated using a combined child/adult 26-year exposure duration, as defined in EPA's 2014 directive on standard default exposure factors (USEPA, 2014), for the RME scenario, while the CTE scenario was evaluated using an assumed combined exposure duration of 25 years.. For the hypothetical future resident, there are potential unacceptable risks to PCBs, PAHs, DDT, arsenic and chromium in the surface soil. The RME HI (200) and CTE HI (20) are both above the target HI of 1 and based on exposure to PCBs in soil. The total receptor RME and CTE ILCRs (2×10^{-3} and 2×10^{-4}, respectively) both exceed or are at the top of the EPA target risk range of 10^{-4} to 10^{-6} due to exposure to PCBs, PAHs, 4,4'-DDT, arsenic and chromium in soil. There are also potential unacceptable risks to cobalt and manganese in the groundwater under a drinking water scenario. The maximum RME/CTE HI (4) (associated with well MW-01D) is above the target HI of 1 and based on exposure to cobalt and manganese in groundwater. MW-12 and MW-12D also resulted in RME HIs of 3 based on exposure to manganese in groundwater.

Additional Exposure Scenarios/Pathways

Risks/hazards were within or below EPA's target risk range of 10^{-4} to 10^{-6} or target HI level of 1 for the following:

- Current Adult Onsite Worker exposed to surface soil
- Future Adult Onsite Worker exposed to groundwater

- Hypothetical Future Resident exposed to shellfish tissue
- All sediment exposures

Lead evaluations were also performed for MRP Site 1. The lead evaluation is presented in Appendix A, Attachment F and summarized briefly here. Specifically, the USEPA (2003a) Adult Lead Model (ALM), as updated in 2009 (USEPA, 2009), as well as the IEUBK model for children (USEPA, 2002d) were used to evaluate potential risks associated with exposure of human receptors to lead in site-related media. The lead evaluation did not identify any exposure scenarios as having estimated lead risks above the USEPA target for the target blood concentration of 10 ug/dL. However, as an additional evaluation (see Attachment F of Appendix A), and as defined in the MRP Site 1 SAP (Resolution, 2013a), USEPA's model for evaluating Intermittent or Variable Exposures at Lead Sites (USEPA, 2003b) Equation 8 was used to derive screening levels for lead protective of adolescent trespasser and recreational child's exposure. While the calculated screening level was above the average lead concentration in sediment, the current (surface) soil CTE exposure point concentration (EPC) exceeds the protective level for recreational users, indicating the potential for unacceptable risks due to lead.

6.2 Ecological Risk Assessment

The Ecological Risk Assessment (ERA) was conducted in accordance with Navy Policy for Conducting Ecological Risk Assessments and Navy Guidance for Conducting Ecological Risk Assessments (DON, 1999a,b). The complete risk assessment approach, with data tables, and figures, is included as Appendix B. The approach was consistent with the eight step tiered approach presented in Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments, Interim Final (USEPA, 1997). As described in Navy guidance (DON, 1999a,b), a tiered approach that incorporates different levels of assessment complexity is used to evaluate the potential for ecological risk. The tiered approach may be implemented in its entirety depending upon the level and magnitude of risk that is determined in prior tiers.

The Tier 1 ecological Screening Risk Assessment (SRA) is being submitted with the RI report for regulatory review. Based on the results of the Tier 1 ecological SRA, the Navy has prepared a preliminary Tier 2, Step 3a Baseline Ecological Risk Assessment (BERA) to further assess the potential for adverse effects to ecological receptors at MRP Site 1. The Tier 2, Step 3a evaluation is frequently a free-standing evaluation conducted following agency review of the Tier 1 SRA scientific/management decision point (SMDP). However, in this instance, the MRP Site 1 SAP (Resolution, 2013a) developed by the Navy and regulatory agencies included the collection of site-

specific toxicity and background data, which are often components of a Tier 2 evaluation. The Tier 2, Step 3a evaluation provides additional information and context for the potential for adverse effects to ecological receptors associated with MRP Site 1.

The primary objective of the ERA for the site was to evaluate whether Chemicals of Potential Concern (COPCs) attributable to past operations have the potential to cause unacceptable adverse risk to ecological receptors. The ERA focuses on surface soil and sediment exposure pathways. Considerations included the following: chemicals in surface soil may be contacted directly by plants and invertebrates living in the soil; chemicals in sediment may be contacted directly by shellfish and other benthic invertebrates living in the sediment; wildlife foraging within the site could also be exposed directly to chemicals in soil and sediment through incidental ingestion of soil and sediment and indirectly by ingestion of contaminated prey items living at the site; and lead pellets present along the shoreline or in the sediment may pose a risk to birds that may ingest the material intentionally as grit or accidentally during foraging.

Environmental data used in the ERA include surface soil, sediment, and shellfish tissue collected by TetraTech, Terranear PMC, and Resolution Consultants on behalf of the Navy between 2009 and 2014. Pellet data was collected from the sediment by TetraTech in 2009 and from the sediment and soil by Resolution Consultants in 2013/2014. Data from 28-day sediment toxicity tests conducted with the amphipod *Leptocheirus plumulosus* in 2013 were also evaluated in the ERA. Site-specific background data were available for shellfish and sediment (i.e., sampling conducted concurrent with 2013/2014 RI program for use in the RI) and the NAVSTA background soil data set was also considered in the ERA. The analytical data set considered in the ERA is described in more detail in Section 2 of Appendix B and the data are presented in Attachment A of Appendix B.

The primary objective for a Tier 1 SRA is to determine which, if any, exposure pathways and COPCs warrant further evaluation in a more refined ERA. The SRA included comparisons of maximum detected concentrations of chemicals against conservative media-specific benchmarks and food web modeling using conservative assumptions (e.g., animals only forage on-site) to assess whether further evaluation was warranted for any exposure pathways and COPCs. Section 3.3 of Appendix B presents the conclusions and recommendations for the SRA. The Tier I SRA concluded that certain metals and PAHs at MRP Site 1 pose potential risk to plants, invertebrates, and/or wildlife. PCBs and some pesticides were also detected in soil at levels that may pose a risk to plants, invertebrates, and wildlife. In addition, lead pellets are present in the sediment and shoreline soil at levels above the screening level threshold identified for the protection of birds.

As described in Section 3.5 of Appendix B, based on the results of the Tier 1 ecological SRA, a Tier 2, Step 3a BERA was prepared to further assess the potential for adverse effects to ecological receptors associated with MRP Site 1. If necessary, an SMDP conference with the regulatory and Navy risk managers will be scheduled to discuss the Tier 1 results.

The purpose of Tier 2, Step 3a is to reevaluate COPCs that were retained in Tier 1 for further evaluation and to identify and eliminate from further consideration those COPCs that were retained because of the use of very conservative exposure scenarios. Using less conservative (but more realistic) Tier 2, Step 3a assumptions, the Tier 1 ecological SRA risk estimates were recalculated for the pathways and COPCs retained at the end of the Tier 1 SRA. Refinements included in the Tier 2, Step 3a evaluation included the use of the upper confidence limit (UCL) on the arithmetic mean (instead of the maximum concentrations), consideration of alternate media-specific benchmarks, and more realistic exposure assumptions for the wildlife receptors. The results of the sediment toxicity tests and background concentrations were also considered.

A summary of the results of the Tier 2, Step 3a evaluation is shown below, and details are provided in the ERA included as Appendix B. Section 4.3 of Appendix B describes the refinements included in the Tier 2, Step 3a evaluation and Section 4.4 presents the refined risk calculations. Uncertainties in the evaluation are discussed in Section 4.5, Sections 4.6 presents the risk characterization discussion, and Section 4.7 summarizes the results of the ERA.

<u>Terrestrial plants and soil invertebrates</u>

The benchmark comparisons in the Tier 2, Step 3a evaluation indicated the potential for risks to terrestrial plants and soil invertebrates; however, there are significant uncertainties about the true bioavailability and toxicity of the inorganics to plants and invertebrates. The presence of clean backfill material over a large portion of the site also serves to lower overall site risks. Therefore, potential risks to plants and invertebrates are not expected due to exposure to inorganics.

There are potential risks to plants and invertebrates due to pesticides (4,4-DDT, endosulfan I, endosulfan II, endosulfan sulfate, endrin, endrin ketone), total PCBs, as well as PAHs, but these risks are only expected to occur within a limited area (i.e., PCBs and pesticides are elevated near the shoreline and the boundary with IR Site 22 and PAHs are elevated along the western fenceline along the shore).

Sediment invertebrates

For sediment invertebrates, there are potential risks due to lead exposure, particularly along the shoreline. Although the SEM/AVS analyses indicated that divalent metals were generally not expected to be bioavailable and toxic, the sediment toxicity tests identified toxicity in three nearshore samples (SD102, SD122, and SD124). Based on the results of the toxicity testing and the elevated lead levels in sediment and shellfish collected from the shore, the nearshore area poses a higher risk than more offshore locations.

Wildlife

For wildlife exposed to COPCs in the upland portions of the site, there are potential risks due to antimony, 4,4'-DDT, and PCBs, but these risks are only expected to occur within a limited area (i.e., along the shoreline near IR Site 22) and antimony risks are likely over-estimated. For inorganics, consistent with the conclusions for plants and soil invertebrates, the uncertainties associated with bioavailability and the presence of clean backfill material over a large portion of the site indicate that the food web model HQs may over-estimate actual site risks due to inorganics. Therefore, unacceptable risks to birds and mammals are not expected due to exposure to inorganics.

For wildlife exposed to prey items from Narragansett Bay adjacent to MRP Site 1, no potential risks were identified in the Tier 2, Step 3a evaluation.

Birds and pellets

For birds exposed to lead pellets within the shoreline soil and the sediments of Narragansett Bay adjacent to MRP Site 1, there are a number of uncertainties associated with the evaluation (see below). However, the results indicate that diving ducks, if foraging within approximately 600 feet of the shoreline over multiple days in a wintering season, have a relatively high probability of ingesting a lead pellet. Birds exposed along the shoreline have a much lower probability than the ducks, but over the course of a year, a pellet could be ingested.

There are uncertainties about how many pellets need to be ingested to cause harm and uncertainties related to what level of risk is acceptable, but this evaluation indicates the potential for ingestion of pellets by birds exists along the shoreline and within Narragansett Bay adjacent to MRP Site 1. Refer to the ERA for additional details on the ingestion probabilities.

Uncertainties in the ERA

As described in more detail in Sections 3.2.2 and 4.5 of Appendix B, there are several potential sources of uncertainty in the ERA. In general, the assumptions made in multiple points in the SRA tend to err on the side of over-estimating risks. The more realistic exposure assumptions made in the Tier 2, Step 3a wildlife evaluation (e.g., ingestion rates linked to body weight, AUFs, EDs) help to refine some of these uncertainties. The media-specific benchmarks represent one source of uncertainty because they are typically based on laboratory studies conducted under conditions likely to increase bioavailability (e.g., low TOC soils, bioavailable forms of the tested chemical) relative to what would likely be found under field conditions (e.g., higher TOC, weathered chemicals). Therefore, the benchmarks may over-estimate risks.

There are several sources of uncertainty related to the pellet ingestion evaluation. The available probability models for evaluating pellet exposure were derived for use at upland firing ranges and pesticide applications in fields and it is uncertain whether the approach is also applicable to underwater exposures by diving ducks. There is also limited information available for the model input parameters for the diving ducks that may be present within Narragansett Bay (information is more readily available for upland birds). There are also uncertainties associated with what level of probability of ingesting a pellet is acceptable and whether a single pellet represents a toxic event.

7.0 SUMMARY AND CONCLUSIONS

A summary of the RI phase of the CERCLA process is presented in this section, with a specific focus on the nature extent of contamination and the resulting characterization of potential risks.

7.1 Nature and Extent of Contamination

The primary contaminants identified as being associated with the shooting range consisted of propellants from firing arms, polycyclic aromatic hydrocarbons (PAHs) within skeet fragments from the clay pigeons, and lead from the lead pellets. Although not associated with the typical shooting range activities, the RI field investigation included analysis of pesticides and PCBs based on potential materials handling and fill placement, adjacent to the shooting range, in a localized area of the site. The RI field investigation also included additional metals beyond lead based on previous detections of metals and potential risks identified in the SI. The distribution of these parameters and potential sources is summarized in the following sections.

Distribution of Skeet Fragments

As MRP Site 1 was used as a former shooting range, it is important to document the distribution of skeet fragments, as well as whether those fragments are associated with environmental impacts (such as soil contamination). The RI field program produced a significant expansion of the soil and sediment dataset, particularly relative to the distribution of skeet fragments, lead shot, and associated soil and sediment characteristics. Skeet fragments and soil impacted with PAHs and lead, located in the former shooting range launch areas (Arcs 1, 2 and 3) were removed during the 2013 NTCRA. The NTCRA removed an estimated 1,800 cubic yards of soil from the former launching areas. Note that for data evaluation purposes, the post-excavation soil data was used to replace prior data collected from locations that were excavated.

There are visible fragments in surface soil at the NTCRA area, near the edge of the shoreline and along parts of the beach, as well as the adjacent vegetative area north of where the majority of samples were collected. The COCs associated with the fragments are PAHs. Surface soil and sediment samples were collected from areas where the majority of fragments were observed.

PAHs in Soil and Sediment

As shown on Figure 4-5, the distribution of PAHs in soil is relatively well defined. PAHs are encountered in shallow soil and subsurface soils, with most of the detections in the shallow samples where skeet fragments are generally located. Locations with elevated concentrations of PAHs include those near asphalt and parking areas as well as areas with visible fragments. Locations with

the highest concentrations are from within the former firing arcs used during skeet shooting activities.

PAHs were detected in all sediment samples within the skeet target area (see Tables 4-11 and 4-19). The highest concentrations were located in samples nearest to the shoreline, all within the top one foot of sediment (refer to Figure 4-5). PAHs were also detected in the reference sample locations.

Pellets and Lead in Soil and Sediment

Similar to skeet fragments, documenting the distribution of lead pellets, particularly in the skeet range target and overshoot areas, is important in understanding the extent of site activities and whether those impacts are associated with environmental impacts (such as soil or sediment contamination).

Figure 4-16 shows that the majority of lead pellets are within the closest overshoot area, within 600 feet of the shoreline. The distribution of lead pellets is relatively well delineated on all boundaries of the former target and overshoots areas. When comparing lead distribution figures (soil – Figure 4-1; sediment – Figure 4-15) to the pellet count figure, there are some similarities with higher pellet counts and lead concentrations along the shoreline soil (highest in the southwest area of the shoreline) and some sediment locations showing both higher pellet counts and lead concentrations.

Most elevated lead concentrations occur in the shallow samples. Several soil samples contain lead concentrations noticeably higher than the average lead concentrations. The relatively higher lead impacts fall within the southwestern area, at the convergence of MRP Site 1 and IR Site 22, and for the most part, in the shallow soils. In two locations in this localized area, SB224 (10,900 mg/kg) and SB302 (29,900 mg/kg), elevated concentrations were detected that may be attributable to pieces of lead shot contained with the soil matrix. The concentrations in the field duplicates were less than the field samples by more than an order of magnitude. Evidence of historic fill in this area was presented during the SI phase (Tetra Tech, 2010a).

The average lead concentration in surface soil (0 to 1 ft), including the elevated concentrations in SB224, SB302, and SB 223 (1,830 mg/kg), is over 800 mg/kg, while the average without those three samples is below 100 mg/kg.

Pesticides and PCBs in Soil

The distribution of pesticides and PCBs in soil is shown in Section 4.0 (see Figure 4-12). PCB and pesticide evaluations/analysis was primarily focused on the former operational portions of MRP Site 1, near former transformer and transformer oil handling areas, including the portion of the site immediately adjacent to the former material storage area. PCBs and pesticides are not considered constituents of concern from shooting operations, but were included as part of a comprehensive assessment of potential impacts at the site. Relatively high concentrations of PCBs were detected in the southwest corner, immediately downgradient of the northeast corner of the former storage area (part of IR Site 22). This is the same area with the elevated lead concentrations, located at the convergence area of the two sites. An elevated concentration of 270 mg/kg was detected at SB223 (0 to 1 feet) and 18 mg/kg at 3 to 4 feet bgs at that same location.

Pesticides were also included in the sample analysis to assess impact near the storage area. Few pesticides were detected in soil samples collected near the storage area, including sample location SB223 (maximum detected concentration of 4,4'-DDT – 19 mg/kg), coincidental with the elevated PCB concentrations. These results are consistent with the CSM for historic uses in this area of the site, although routine pesticide use is not considered a CERCLA release.

Metals in Soil

Metals of potential interest in soil at MRP Site 1 include arsenic, chromium, and lead. Lead is discussed above in relation to pellet distribution. Arsenic has been a common finding at many of the NAVSTA Newport sites. It is naturally occurring, but is also known to have been an ingredient in herbicides and pesticides and can also be used to strengthen lead in lead shot and bullets. Arsenic was detected in soil from concentrations below 1 mg/kg to a maximum of 130 mg/kg at sample location SB302 (co-located with the maximum lead concentration) (see Figure 4-3). The more elevated concentrations of arsenic in soil appear in the southwestern area where the lead concentrations are also elevated.

Hexavalent chromium was analyzed in a sub-set of soil samples to determine whether the more toxic hexavalent form of chromium was present at the site. Hexavalent chromium was not detected in three surface soil locations (SB205, SB211, and SB229). However, hexavalent chromium was detected in 2 out of 8 subsurface soil samples (locations MW12 (10 to 14 feet), in the northern portion of the site [0.26 mg/kg], and SB219 (3-5 feet) in the middle of the site [0.63 mg/kg]). Total chromium was not analyzed in the MW12 sample, but it was analyzed and detected (13.4 mg/kg) in the SB219 sample. This shows that, although not considered to be site-related, hexavalent

chromium detections are limited and low relative to total chromium concentrations. With respect to total chromium distribution at the site, the highest surface soil concentration was 30.1 mg/kg at SB223, which is in the southwestern area of the site, near the elevated lead concentrations.

Propellants in Soil

During the RI, a subset of the soil samples collected was analyzed for propellants. With one exception (SB217), nitroglycerine was either not detected or detected at concentrations three orders of magnitude lower than those detected in 2009 in the shallow soil at locations within or near the firing area. Most of the soil associated with the SI locations was removed during the 2013 non-time critical removal action. No propellants were detected in subsurface soils.

Metals in Groundwater

Based on risk assessment results (see Section 6.1 and further discussion below), the two primary metals of interest in groundwater at MRP Site 1 are cobalt and manganese. As stated in Section 4.0, a background evaluation has not been performed, hence it is not certain if the detected metals are related to site activities, as the metals are commonly detected in regional groundwater. Furthermore, the detections have not been confirmed via temporal and seasonal variable sampling and analyses. The only well with historical monitoring results (MW-01) shows a decrease in manganese concentration and an increase in cobalt concentration, which could also be due to seasonal effects.

7.2 Fate and Transport Characteristics of Site Contaminants

The fate and transport of skeet fragments and lead pellets is driven by physical processes, such as erosion, ocean currents, and similar factors. The distribution of fragments and pellets are relatively widespread across the site, consistent with the CSM.

The primary organic COCs at MRP Site 1 consist of PAHs, pesticides, and PCBs. Based on their relatively high affinity for soil and sediment and inherent low solubility, the focus of investigation was their presence and concentrations in soil and sediment. The primary inorganic COCs at MRP Site 1 consist of arsenic, chromium, cobalt, lead, and manganese. Because each of these chemicals can exhibit different oxidation states and properties under different geochemical conditions, they were analyzed in soil, sediment, and groundwater. Arsenic, chromium, and lead were detected in soil, but not groundwater. The same can be said for PAHs.

The CSM is consistent in that COCs present in soil or sediment (PAHs, pesticides, PCBs, arsenic, chromium, and lead) do not appear to be leaching into groundwater.

7.3 Characterization of Potential Risks

Human health and ecological risk assessments were completed per the CERCLA process. Potential risks are posed to current and theoretical future human health receptors, as well as terrestrial and aquatic receptors. The following tables summarize the specific COCs identified as posing potential risks/hazards to the associated receptors shown.

Human Health Risk Assessment Summary

Per the Risk Assessment Work Plan Technical Memorandum (Resolution, 2013b) and the SAP (Resolution, 2013a), the following pathways were quantitatively evaluated for each exposure scenario:

- Young child/adult recreational user scenario, current – surface soil and sediment exposures
- Adolescent trespasser scenario, current – surface soil and sediment exposures
- Adult onsite worker scenario, current – surface soil exposures
- Adult construction worker scenario, current/future - surface/subsurface soil and shallow groundwater exposures
- Adolescent trespasser scenario, future - surface/subsurface soil and sediment exposures
- Adult onsite worker scenario, future - surface/subsurface soil and groundwater exposures
- Hypothetical young child/adult resident scenario, future - surface/subsurface soil, sediment, groundwater, and shellfish tissue exposures

A summary of the results of the HHRA is as follows:

<u>Current and Future Trespasser</u>

For both the current and future trespassers, there are potential unacceptable risks/hazards due to PCBs in the soil. For the current trespasser, the Reasonable Maximum Exposure (RME) HI (7) is above the target HI of 1 and for the future trespasser, the RME HI (7) is above the target HI of 1.

<u>Current Recreational User</u>

For the current recreational user, there are potential unacceptable risks/hazards to PCBs in the surface soil. The RME HI (10) is above the target HI of 1.

Current/Future Construction Worker

For the construction worker, there are potential unacceptable risks to PCBs in the soil. The RME HI (20) and Central Tendency Exposure (CTE) HI (2) are both above the target HI of 1.

Future On-site Worker

For the future on-site worker, there are potential unacceptable risks to PCBs, PAHs, DDT, arsenic and chromium in the soil. For the soil exposure pathway, the RME HI (20) is above the target HI of 1 due to PCBs. The total receptor RME ILCR (3×10^{-4}) exceeds the target risk range of 10^{-4} to 10^{-6} due to exposure to PCBs, PAHs, 4,4'-DDT, arsenic, and chromium in soil. It should be noted that if PCBs were not included in the calculation (i.e., if they were evaluated separately), the other primary risk drivers would not have cumulatively resulted in an exceedance of the target risk range.

Hypothetical Future Resident

For the hypothetical future resident, there are potential risks to PCBs, PAHs, DDT, arsenic and chromium in the surface soil. The RME HI (200) and CTE HI (20) are both above the target HI of 1 and based on exposure to PCBs in soil. The total receptor RME and CTE ILCRs (2×10^{-3} and 2×10^{-4}, respectively) both exceed or are at the top of the target risk range of 10^{-4} to 10^{-6} due to exposure to PCBs, PAHs, 4,4'-DDT, arsenic and chromium in soil.

There are also potential unacceptable risks to cobalt and manganese in the groundwater under a drinking water scenario. The maximum RME/CTE HI (4) (associated with well MW-01D) is above the target HI of 1 and based on exposure to cobalt and manganese in groundwater. MW-12 and MW-12D also resulted in RME HIs of 3 based on exposure to manganese in groundwater.

Additional Exposure Scenarios/Pathways

Risks/hazards were within or below EPA's target risk range of 10^{-4} to 10^{-6} or target HI level of 1 for the following:

- Current Adult Onsite Worker exposed to surface soil
- Future Adult Onsite Worker exposed to groundwater
- Hypothetical Future Resident exposed to shellfish tissue
- All sediment exposures

Lead evaluations were also performed for MRP Site 1. The lead evaluation did not identify any exposure scenarios as having estimated lead risks above the USEPA target for the target blood concentration of 10 ug/dL. However, as an additional evaluation, and as defined in the MRP Site 1 SAP (Resolution, 2013a), USEPA's model for evaluating Intermittent or Variable Exposures at Lead Sites (USEPA, 2003b) Equation 8 was used to derive screening levels for lead protective of adolescent trespasser and recreational child's exposure. While the calculated screening level was above the average lead concentration in sediment, the current (surface) soil CTE EPC exceeds the protective level for recreational users, indicating the potential for unacceptable risks due to lead.

Ecological Risk Assessment Summary

A summary of the results of the Tier 2, Step 3a ERA evaluation performed is shown below.

Terrestrial Plants and Soil Invertebrates

The benchmark comparisons in the Tier 2, Step 3a evaluation indicated the potential for risks to terrestrial plants and soil invertebrates; however, there are significant uncertainties about the true bioavailability and toxicity of the inorganics to plants and invertebrates. The presence of clean backfill material over a large portion of the site also serves to lower overall site risks. Therefore, potential risks to plants and invertebrates are not expected due to exposure to inorganics. There are potential risks to plants and invertebrates due to pesticides (4,4'-DDT, endosulfan I, endosulfan II, endosulfan sulfate, endrin, endrin ketone), total PCBs, as well as PAHs, but these risks are only expected to occur within a limited area (i.e., PCBs and pesticides are elevated near the shoreline and the boundary with IR Site 22 and PAHs are elevated along the western fence line that runs along the shore).

Sediment Invertebrates

For sediment invertebrates, there are potential risks due to lead exposure, particularly along the shoreline. Although the SEM/AVS analyses indicated that divalent metals were generally not expected to be bioavailable and toxic, the sediment toxicity tests identified toxicity in three nearshore samples (SD102, SD122, and SD124). Based on the results of the toxicity testing and the elevated lead levels in sediment and shellfish collected from the shore, the nearshore area poses a higher risk than more offshore locations.

Wildlife

For wildlife exposed to COPCs in the upland portions of the site, there are potential risks due to antimony, 4,4-DDT, and PCBs, but these risks are only expected to occur within a limited area (i.e., along the shoreline near IR Site 22) and antimony risks are likely over-estimated. For inorganics, consistent with the conclusions for plants and soil invertebrates, the uncertainties associated with bioavailability and the presence of clean backfill material over a large portion of the site indicate that the food web model HQs may over-estimate actual site risks due to inorganics. Therefore, unacceptable risks to birds and mammals are not expected due to exposure to inorganics.

For wildlife exposed to prey items from Narragansett Bay adjacent to MRP Site 1, no potential risks were identified in the Tier 2, Step 3a evaluation.

Birds and Pellets

For birds exposed to lead pellets within the shoreline soil and the sediments of Narragansett Bay adjacent to MRP Site 1, there are a number of uncertainties associated with the evaluation (see below). However, the results indicate that diving ducks, if foraging within approximately 600 feet of the shoreline over multiple days in a wintering season, have a relatively high probability of ingesting a lead pellet. Birds exposed along the shoreline have a much lower probability than the ducks, but over the course of a year, a pellet could be ingested. There are uncertainties about how many pellets need to be ingested to cause harm and uncertainties related to what level of risk is acceptable, but this evaluation indicates the potential for ingestion of pellets by birds exists along the shoreline and within Narragansett Bay adjacent to MRP Site 1.

7.4 Summary of Remedial Investigation Findings

The following paragraphs summarize key RI findings:

- Distribution of Skeet Fragments/PAHs - Skeet fragments and soil impacted with PAHs and lead located in the former shooting range launching areas were removed during the 2013 NTCRA. The NTCRA removed an estimated 1,800 cubic yards of soil from the former launching areas. PAH and lead impacts, including skeet fragments and lead pellets, remain in soil and sediment within the target and overshoot areas. The post-excavation data, combined with the RI data, indicates that the NTCRA was successful in reducing cumulative risks to PAHs and lead in soil, with no unacceptable risks posed to current human health receptors (recreational users, trespassers, and on-site workers) by PAHs or lead. There are; however, potential risks to hypothetical future users (resident and on-site workers).

Areas with higher PAH concentrations, such as the upland soil (along the current fence line, just west of the NTCRA removal area; see Figure 4-5), pose a potential risk to plants and terrestrial invertebrates. However, nearshore sediment collected from areas with the most visible fragments did not contain PAHs that exceeded ecological risk thresholds.

- Pellets and Lead in Soil and Sediment – Figure 4-16 presents the distribution of lead pellets found during the SI and RI phases. The results show that the majority of lead pellets are within the closest overshoot area, within 600 feet of the shoreline. The distribution of lead pellets is relatively well delineated on all boundaries of the former target and overshoots areas. Based on the distribution of lead pellets, there are potential risks associated with the ingestion of lead pellets by birds that forage for food on the seafloor.

  Lead concentrations in sediment did not result in unacceptable risk to human receptors evaluated. However, there are potential ecological risks to sediment invertebrates due to lead exposure.

  For soil, the highest lead concentrations (up to 29,900 mg/kg) were detected in a localized area, in the southwestern area of the site/shoreline (see Figure 4-1). These higher concentrations are likely due to pieces of lead shot contained in the soil matrix, as field duplicate results did not match the field sample concentrations.

  Inclusive of these elevated lead concentrations, there is an unacceptable risk to human receptors.

- Pesticides and PCBs in Soil - Relatively high concentrations of PCBs were detected in the southwest corner, immediately downgradient of the northeast corner of the former storage area (part of IR Site 22). This is the same area with the elevated lead concentrations – the convergence area of the two Carr Point sites (refer to Figure 4-12). An elevated concentration of 270 mg/kg was detected at SB223 (0 to 1 feet) and 18 mg/kg at 3 to 4 feet bgs at that same location. Pesticides were detected in soil samples collected near the storage area, including sample location SB223 (maximum detected concentration of 4,4'-DDT at 19 mg/kg), coincidental with the elevated PCB concentrations.

  In this southwestern area, pesticides and PCBs pose potential human health and ecological risks. The highest concentrations of both pesticides and PCBs are located downgradient of the access road, in an area where MRP Site 1 and the former Carr Point Storage Area (IR Site 22) converge and impacts from former site-related activities may have overlap. This is consistent with the CSM of former PCB handling in that area. Due to the unacceptable risks

posed by PCBs in soil, remedial actions will be necessary. Hence, additional samples are warranted for determining remedial extent; however, sufficient data exists for quantifying risks.

- Arsenic and Chromium in Soil – While not showing any general pattern of detections, the highest detected concentrations of arsenic and total chromium in surface soil were located in the southwestern area of the site, near the elevated lead detections and former fill area. Hexavalent chromium was detected at two of eight subsurface soil sampling locations at lower concentrations relative to total chromium. Hexavalent chromium was not detected at three surface soil sampling locations.
- Metals in Groundwater - Based on risk assessment results, the two primary metals of interest in groundwater at MRP Site 1 are cobalt and manganese. The concentrations detected in groundwater pose potential risks/hazards (HI = 4 at one well and HI = 3 at two other wells) to theoretical future residential receptors using site water as a drinking water source. The source of the metals or the cause of the conditions resulting in the metals concentrations is not certain, and it is not clear if these metals are site-activity-related. A clear pattern of detected concentrations is not discernable. At 5 out of the 6 wells, there has only been one round of monitoring performed to date.
- There were exceedances of EPA's human health target risk range of 10^{-4} to 10^{-6} or target HI level of 1 for the following receptors/exposures:
  - Current and Future Adolescent Trespasser – due to PCBs in soil (southwestern area, as noted above)
  - Current Recreational User – due to PCBs in soil (also an unacceptable risk due to lead in soil)
  - Current/Future Construction Worker – due to PCBs in soil
  - Future On-site Worker – due to PCBs, PAHs, 4,4'-DDT, arsenic, and chromium in soil
  - Hypothetical Future Resident – due to PCBs, PAHs, 4,4'-DDT, arsenic and chromium in soil. and due to cobalt and manganese in groundwater

Chemical of Concern	Current and Future Trespasser	Current Recreational User	Hypothetical Future Resident	Current/Future Construction Worker	Future on-site Worker
Potential Soil Impacts from Shooting Range Operations					
PAHs			✓		✓
Lead		✓			
Propellants(1)					
Potential Soil Impacts from Other Parameters Assessed					
Pesticides			✓		✓
PCBs	✓	✓	✓	✓	✓
Arsenic			✓		✓
Chromium			✓		✓
Cobalt(2)			✓		
Manganese(2)			✓		

Notes:
✓ Exceedance of EPA's target risk range of 10^{-4} to 10^{-6} or target HI level of 1.
(1) Propellants were identified as potential contaminants, but the cumulative dataset for those parameters does not pose risks to current or future human health receptors.
(2) Cobalt and manganese could pose potential drinking water exposure risks to a future resident.

- There were potential ecological risks for the following receptors/exposures:
  - Terrestrial Plants and Soil Invertebrates – due to pesticides, total PCBs, and PAHs in a limited area (i.e., PCBs and pesticides are elevated near the shoreline and the boundary with IR Site 22 and PAHs are elevated along the western fenceline along the shore).
  - Sediment Invertebrates – due to lead exposure, particularly along the shoreline. Based on the results of the toxicity testing and the elevated lead levels in sediment and shellfish collected from the shore, the nearshore area poses a higher risk than more offshore locations.
  - Wildlife – due to pesticides (4,4'-DDT, endosulfan sulfate) and PCBs in soil, but these risks are only expected to occur within a limited area (i.e., along the shoreline near IR Site 22).
  - Birds and Pellets – Diving ducks, if foraging within approximately 600 feet of the shoreline over multiple days in a wintering season, have a relatively high probability of ingesting a lead pellet. Birds exposed along the shoreline have a much lower probability than the

ducks, but over the course of a year, a pellet could be ingested. There are uncertainties about how many pellets need to be ingested to cause harm and uncertainties related to what level of risk is acceptable.

Chemical of Concern	Terrestrial plants (upland soil)	Invertebrates (upland soil)	Invertebrates (sediment)	Upland Wildlife (bioaccumulation)	Birds (foraging)
Potential Ecological Impacts from Shooting Range Operations					
Pellets					✓
PAHs	✓	✓			
Lead			✓		
Propellants(1)					
Potential Ecological Impacts from Other Parameters Assessed					
Pesticides	✓	✓		✓	
PCBs	✓	✓		✓	

Notes:
✓ Potential risks posed.
(1) Propellants were identified as potential contaminants, but the cumulative dataset for those parameters does not pose risks to ecological receptors.

Next Steps

The extent of soil, sediment, and groundwater impacts is defined by the cumulative dataset of prior and current investigatory data. Potential risks to current and theoretical future receptors have been quantified. Although data gaps for risk assessment were not identified, additional data enhancements have been discussed for collection during FS or Remedial Design (RD) phases of work to support alternatives for the management of potential risks. Additional data to collect during the FS to support the evaluation of remedial alternatives will include the following data elements:

- Refine the area of impact due to PCBs and lead in soil in the southwestern corner, within proximity to sample locations SB-223, -224, and -302. The data would be used in the FS to refine the limits of PCB and lead-impacted soil in terms of aerial extent and depth. Sample locations, parameters and proposed quantities will be provided in a Sampling and Analysis Plan developed for review, approval, and implementation for additional data collection.

- Refine the boundary to the north of the site that may have impacts from lead in soil. The data would be considered in the FS to refine the extent of lead, and bolster the knowledge of skeet fragments along the northern edge of the site. For example, after clearing access through the heavy vegetation currently bounding the northern edge of the site, several samples of soil will be collected for lead analysis, during which observations of skeet fragments will be recorded. The plan for additional data collection, including a figure showing existing conditions and observations from a spring 2015 walkover, will be included in the Sampling and Analysis Plan developed for review, approval, and implementation.
- Collect additional groundwater data to assess the presence of metals in groundwater and support the decision for further action. Data collected from additional sampling events would be considered in the FS to further assess whether concentrations of metals in groundwater are site-related, require further monitoring, and/or require a response action. Indicator parameters, such as TOC, will be evaluated as well. The well locations, parameters, and new wells (if determined necessary) will be included in the Sampling and Analysis Plan proposed for the additional work.
- Develop additional soil data for analysis of selected metals that pose potential risks (such as arsenic, chromium, and/or manganese) to increase the available dataset and further evaluate site-specific background conditions. The increased dataset would be used during the FS to support the selection of remedial goals and remedial extents.

The next step is to prepare a modification to the Sampling and Analysis Plan with sufficient details describing the proposed delineation efforts for the FS. The plan will include data needs based on the RI data and additional observations made at the site in the spring of 2015. Observations from the site walk(s) will be included in the sampling plan in support of the proposed field sampling efforts. The plan will be developed for review by the project stakeholders, including the regulatory agencies, prior to data collection. Once concurrence is reached on the modified Sampling and Analysis Plan, the data will be collected for use in the FS.

The FS will incorporate the newly collected soil and groundwater data. Based on the scheduled date for the submittal of the draft FS, it may incorporate a single additional round of groundwater. If additional rounds are determined to be needed, that data may be incorporated into a later version of the FS, part of the Proposed Remedial Action Plan, or the ROD, depending on concurrence with the project stakeholders.

As part of the FS, per CERCLA RI/FS guidance, the Navy will develop remedial action objectives (RAOs) and associated preliminary remedial goals (PRGs) for the exposure scenarios which pose potential human health and/or ecological risks. The FS will then compare PRGs to chemical-specific applicable or relevant and appropriate requirements (ARARs), select appropriate remedial goals (RGs), and proceed with identifying candidate remediation alternatives to consider. Where reasonable, data and information related to the adjacent IR Site 22 will be considered for potential efficiencies with risk management and/or further CERCLA phases of work at the site.

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Tables

Tables Notes

*	Indicates field duplicate sample
J	Value is estimated
U	Compound not detected at detection limit
+/-	Indicates value may be biased high or low
Mg/Kg	milligrams per kilograms
Ug/Kg	micrograms per kilograms
Ug/L	micrograms per liter
RDEC	RIDEM residential direct exposure criteria, show for comparison purposes
I/C DEC	RIDEM industrial/commercial direct exposure criteria, show for comparison purposes
GA Leach	RIDEM groundwater leachability value

Table 3-1
Well Construction and Groundwater Gauging Summary
MRP Site 1, Carr Point
NAVSTA Newport, Rhode Island

Groundwater Monitoring Well	Screened Interval (ft bgs)	Ground (FT NGVD29)	Top of Well Riser (FT NGVD29)	Northing (NAD83/CORS)	Easting (NAD83/CORS)	Depth to Water 18-Dec-13 feet	Depth to Water 24-Jun-14 feet	Groundwater Elevation 18-Dec-13 ft NGVD29	Groundwater Elevation 24-Jun-14 ft NGVD29
Water Table Wells									
MW-1	5 - 15	16.85	16.70	176628.31	384004.32	10.14	11.97	6.56	4.73
MW-11	7 - 17	16.51	16.19	176785.04	384066.62	8.33	10.37	7.86	5.82
MW-12	7 - 17	14.19	13.72	176995.73	384133.27	9.22	10.75	4.50	2.97
MW-13	5 - 15	22.17	21.88	176665.33	384274.24	2.43	5.32	19.45	16.56
Deep Overburden Wells									
MW-1D	25 - 30	16.96	16.31	176623.31	384002.24	10.14	10.31	6.17	6.00
MW-12D	35 - 40	14.21	13.84	177001.89	384134.02	6.89	8.96	6.95	4.88

Notes:
1. The well survey was completed January 15, 2014 by Alpha Surveying and Engineering, Inc. of Middleborough, MA.
2. Northing and Easting are in the Rhode Island State Plane Coordinates System referenced to the North American Datum of 1983, CORS Adjustment (NAD83/CORS).
3. Elevations are referenced to monitoring wells MW-1 and MW-3 installed and surveyed in 2009. Notes on figures in the SI indicates that elevations are referenced to the National Geodetic Vertical Datum of 1929 (NGVD).

Table 3-2
Vertical Hydraulic Gradients
MRP Site 1, Carr Point
NAVSTA Newport, Rhode Island

						Groundwater Elevations				Vertical Gradients			
		Screen Interval	Average Depth to Water	Screen Midpoint *	Distance Between Midpoints	Elevation (ft NAGD29)	Difference (ft)	Elevation (ft NAVD88)	Difference (ft)	Per Pair (ft/ft)	Average (ft/ft)	Per Pair (ft/ft)	Average (ft/ft)
Location	Well ID	(ft bgs)	(ft bgs)	(ft bgs)	(ft)	18-Dec-13		24-Jun-14		18-Dec-13		24-Jun-14	
MW-1	MW-1*	5-15	11.06	13.03	14.47	6.56	-0.39	4.73	1.27	- 0.027	+ 0.038	+ 0.088	+ 0.084
	MW-1D	25-30	-	27.50		6.17		6.00					
MW-12	MW-12*	7-17	9.99	13.49	24.01	4.50	2.45	2.97	1.91	+ 0.102		+ 0.080	
	MW-12D	35-40	-	37.50		6.95		4.88					

Notes:

1. ft - feet
2. bgs - below groundsurface
3. (-) indicates downward vertical gradients / (+) indicates upward vertical gradient.
4. * For water tables wells, screen midpoint has been repaced by well water column midpoint.
5. The well survey was completed January 15, 2014 by Alpha Surveying and Engineering, Inc. of Middleborough, MA.
6. Elevations are referenced to monitoring wells MW-1 and MW-3 installed and surveyed in 2009. Notes figures in the SI indicates that elevations are referenced to the National Geodetic Vertical Datum of 1929 (NGVD).

Table 4-1
Soil Analytical Results - Pellet Count
MRP Site 1, Carr Point
NAVSTA Newport, Rhode Island

	Location ID	SB210	SB222	SB224	SB225	SB226	SB227	SB301
	Depth Interval	0 - 1 ft	0 - 1 ft	0 - 1 ft	0 - 1 ft	0 - 1 ft	0 - 1 ft	0 - 1 ft
Pellet count	Count	0	120	52	0	0	0	29
Pellet weight	Percent	0	1.3	0.53	0	0	0	0.29

Table 4-2
Sediment Analytical Results - Pellet Count
MRP Site 1, Carr Point
NAVSTA Newport, Rhode Island

Location ID	Depth Interval (ft)	Pellet Count [a]	Pellet/ square ft [b]	
TARGET AREA				
SD01	0 - 0.5	6	39	[d]
SD01	0.5 - 1	2	13	[d]
SD02	0 - 0.5	5	32	[d]
SD02	0.5 - 1	0	no pellets	[d]
SD03	0 - 0.5	51	331	[d]
SD04	0 - 0.5	8	52	[d]
SD05	0 - 0.5	34	220	[d]
SD06	0 - 0.5	65	421	[d]
SD06	0.5 - 1	48	311	[d]
SD07	0 - 0.5	336	2179	[d]
SD07	0.5 - 1	12	78	[d]
SD08	0 - 0.5	586	3799	[d]
SD08	0.5 - 1	38	246	[d]
SD09	0 - 0.5	63	408	[d]
SD09	0.5 - 1	48	311	[d]
SD101	0 - 1	50	233	[c]
SD102	0 - 1	127	591	[c]
SD103	0 - 1	268	1246	[c]
SD115	0 - 1	119	553	[c]
SD115	1 - 2	12	56	[c]
SD115	2 - 3	14	65	[c]
SD116	0 - 1	30	140	[c]
SD116	1 - 2	47	219	[c]
SD117	1 - 2	0	no pellets	[c]
SD117	0 - 1	0	no pellets	[c]
SD118	1 - 2	73	340	[c]
SD118	2 - 3	30	140	[c]
SD118	0 - 1	7	33	[c]
SD122	0 - 1	2	9	[c]
SD123	0 - 1	2	9	[c]
SD124	0 - 1	0	no pellets	[c]
SD128	0 - 1	25	116	[c]
SD128	1 - 2	102	474	[c]
SD128	2 - 3	52	242	[c]
SD129	0 - 1	6	28	[c]
SD130	0 - 1	37	172	[c]
SD133	0 - 1	0	no pellets	[c]
SD133	1 - 2	10	47	[c]
OVERSHOOT AREA [300-600 ft]				
SD10	0 - 0.5	295	1913	[d]
SD10	0.5 - 1	288	1867	[d]
SD11	0 - 0.5	945	6127	[d]
SD11	0.5 - 1	506	3281	[d]
SD12	0 - 0.5	138	895	[d]
SD13	0 - 0.5	99	642	[d]
SD13	0.5 - 1	132	856	[d]
SD14	0 - 0.5	151	979	[d]
SD14	0.5 - 1	181	1174	[d]
SD15	0 - 0.5	312	2023	[d]
SD15	0.5 - 1	297	1926	[d]
SD16	0 - 0.5	114	739	[d]
SD16	0.5 - 1	350	2269	[d]
SD17	0 - 0.5	44	285	[d]
SD18	0 - 0.5	0	no pellets	[d]
SD18	0.5 - 1	1	6	[d]

Table 4-2
Sediment Analytical Results - Pellet Count
MRP Site 1, Carr Point
NAVSTA Newport, Rhode Island

Location ID	Depth Interval (ft)	Pellet Count [a]	Pellet/ square ft [b]	
SD19	0 - 0.5	5	32	[d]
SD19	0.5 - 1	1	6	[d]
SD20	0 - 0.5	0	no pellets	[d]
SD20	0.5 - 1	1	6	[d]
SD104	0 - 1	5	23	[c]
SD104	1 - 2	1	5	[c]
SD106	0 - 1	0	no pellets	[c]
SD106	1 - 2	0	no pellets	[c]
SD106	2 - 3	0	no pellets	[c]
SD111	0 - 1	0	no pellets	[c]
SD111	1 - 2	0	no pellets	[c]
SD111	2 - 3	0	no pellets	[c]
SD112	0 - 1	12	56	[c]
SD112	1 - 2	1	5	[c]
SD112	2 - 3	0	no pellets	[c]
SD113	0 - 1	139	646	[c]
SD113	1 - 2	1	5	[c]
SD113	2 - 3	0	no pellets	[c]
SD114	0 - 1	84	391	[c]
SD114	1 - 2	122	567	[c]
SD114	2 - 3	4	19	[c]
SD119	0 - 1	183	851	[c]
SD119	1 - 2	520	2418	[c]
SD120	0 - 1	504	2344	[c]
SD120	1 - 2	72	335	[c]
SD120	2 - 3	34	158	[c]
SD121	0 - 1	17	79	[c]
SD121	1 - 2	2	9	[c]
SD121	2 - 3	0	no pellets	[c]
SD125	0 - 1	108	502	[c]
SD125	1 - 2	12	56	[c]
SD125	2 - 3	0	no pellets	[c]
SD126	0 - 1	0	no pellets	[c]
SD126	1 - 2	0	no pellets	[c]
SD126	2 - 3	0	no pellets	[c,e]
SD131	0 - 1	0	no pellets	[c]
SD131	1 - 2	1	5	[c]
SD131	2 - 3	0	no pellets	[c]
SD132	0 - 1	184	856	[c]
SD132	1 - 2	120	558	[c]
SD132	2 - 3	89	414	[c]
OVERSHOOT AREA [beyond 600 ft]				
SD105	0 - 1	0	no pellets	[c]
SD105	1 - 2	0	no pellets	[c]
SD105	2 - 3	0	no pellets	[c,e]
SD107	1 - 2	0	no pellets	[c]
SD107	2 - 3	0	no pellets	[c]
SD107	0 - 1	0	no pellets	[c]
SD108	1 - 2	0	no pellets	[c]
SD108	2 - 3	0	no pellets	[c]
SD108	0 - 1	0	no pellets	[c]
SD109	0 - 1	0	no pellets	[c]
SD109	1 - 2	0	no pellets	[c]
SD109	2 - 3	0	no pellets	[c]
SD110	0 - 1	0	no pellets	[c]
SD110	1 - 2	0	no pellets	[c]
SD110	2 - 3	0	no pellets	[c]

[a] Number of pellets counted in a sample.
[b] Pellets per square foot is calculated based on the pellet count and surface area sampled.
[c] Calculated pellets per square foot = (pellet count)*(144 sq.in/(3 cores * 10.32 sq.in))
[d] Calculated pellets per square foot = (pellet count)*(144 sq.in/(8 cores * 2.7762 sq.in))
[e] Pellet count based on 2 core tubes.

Table 4-3
Summary of Soil Analytical Results - Metals and PAHs
MRP Site 1, Carr Point
NAVSTA, Newport, Rhode Island

			Location ID	SB01	SB01	SB01	SB09	SB09	SB09	SB09*	SB201	SB201	SB201	SB202	SB202	SB202	SB203	SB203	SB203	SB204	SB204	SB204	SB205*
			Sample Date	5/19/2009	5/19/2009	5/19/2009	5/18/2009	5/18/2009	5/18/2009	5/18/2009	12/9/2013	12/9/2013	12/9/2013	12/10/2013	12/10/2013	12/10/2013	12/10/2013	12/10/2013	12/10/2013	12/11/2013	12/11/2013	12/11/2013	12/11/2013
			Sample Interval	6 - 8 ft	20 - 22 ft	26 - 28 ft	6 - 8 ft	12 - 14 ft	38 - 40 ft	38 - 40 ft	3 - 5 ft	10 - 12 ft	0 - 1 ft	3 - 5 ft	6 - 8 ft	0 - 1 ft	3 - 5 ft	6 - 8 ft	0 - 1 ft	0 - 1 ft	3 - 5 ft	10 - 12 ft	3 - 5 ft
Metals (mg/Kg)	RDEC	I/C DEC	GA Leach																				
ALUMINUM	NA	NA	NA	9610	6040	4300	7370	5390	4810	3520	6000	7730	11700	8330	5990	11900	7740	5730	7640	13800	8220	6820	6840
ANTIMONY	10	820	NA	0.92 UJ	0.77 UJ	1.8 UJ	0.85 UJ	1.6 UJ	1.8 UJ	1.8 UJ	0.22 J	0.18 J	0.18 J	0.1 J	0.08 J	0.99 J	0.16 J	0.08 J	0.05 J	0.22 J-	0.13 J-	0.088 UJ	0.1 J-
ARSENIC	7	7	NA	8.7	6.7	18.7	7.5	7.3	22.3	26.8	12.4 J	13.5 J	7.5 J	9.2 J	4.4 J	8.5 J	17.6 J	3.0 J	7.2 J	22.5 J	9.6	1.8	8.6 J
BARIUM	5500	10000	NA	26 J	25 J	35 J	25.9 J	25.8 J	24.5 J	16.6 J	18.1	22.2	34.5	18.8	16.7	36.2	28.7	18.1	10.2	9.8	23.5	18.2	28.7
BERYLLIUM	1.5	1.5	NA	0.39	0.24 J	0.28	0.36	0.29	0.32	0.33	0.39	0.34	0.45	0.43	0.41	0.39	0.51	0.31	0.24	0.22	0.4	0.23	0.39 J-
CADMIUM	39	1000	NA	0.19 J	0.1 J	0.28	0.13 J	0.11 J	0.18 J	0.18 J	0.085 U	0.091 U	0.07 J	0.04 J	0.06	0.35	0.11	0.04 J	0.03 J	0.11 J	0.088 UJ	0.088 UJ	0.08 J
CALCIUM	EN	EN	EN	418 J	860 J	931 J	382 J	553 J	1300 J	1390 J	360	720	344	422 J+	482 J+	1970 J+	206 J+	107 J+	851 J+	2540 J	401 J	836 J	570 J
CHROMIUM VI	390	10000	NA																				
CHROMIUM, TOTAL	390	10000	NA	12 J	12.6 J	13.3 J	10.7 J	11.6 J	18.3 J	20 J	12.4 J	14.1 J	11.9 J	11 J	11.1 J	14.5 J	13.8 J	9.6 J	10 J	17.6 J-	12.4	11.2	9.9 J
COBALT	NA	NA	NA	10	11.1	24.4	11.2	17	29.2	33.4	15.9 J	12.5 J	9.4 J	12.8 J	18.6 J	8.7 J	24.7 J	10 J	8.5 J	23.6	16.6	6.7	13 J-
COPPER	3100	10000	NA	20.4 J	17 J	15 J	15 J	24.2 J	19.3 J	11.6 J	23.4	23.5	11.1	17	14.7	30.3	31.9	17.4	9.2	24.4 J+	20.6 J	8.5	20.7 J
IRON	NA	NA	NA	26800	18600	43300 J	22800	41700 J	47600 J	53900 J	42400 J	35800 J	20800 J	34600 J	41900 J	23600 J	21600 J	8480 J	16700 J	44800	38500	15400	26900
IRON, FERROUS	NA	NA	NA																				
LEAD	150	500	NA	18.3 J	8.4 J	6.5 J	9.1 J	6.5 J	5.7 J	5.5 J	10 J	10 J	19.8 J	8.8 J	6.7 J	132 J	14.6 J	6.2 J	7.5 J	21.3 J+	8.7	4.3	14.7 J
MAGNESIUM	EN	EN	EN	2180	2910	3290	1850	2540	2520	1730	1200 J	2950 J	1500 J	2170 J	1970 J	2720 J	788 J	807 J	2980 J	5160	2180	3020	1440
MANGANESE	390	10000	NA	442 J	215 J	728 J	394 J	966 J	1160 J	1520 J	516 J	938 J	606 J	441 J	548 J	340 J	796 J	319 J	242 J	555	520	288	461
MERCURY	23	610	NA	0.028 J	0.034 U	0.032 U	0.035 U	0.033 U	0.037 U	0.035 U	0.017 UJ	0.016 UJ	0.06 J-	0.014 U	0.014 U	0.11	0.019 U	0.015 U	0.016 U	0.006 J	0.014 UJ	0.012 U	0.015 UJ
NICKEL	1000	10000	NA	21.2	20.7	39.1	18.7	34.1	44.5	51	26 J	24.8 J	15.1 J	20.6 J	25 J	19.6 J	42.6 J	17.4 J	14.5 J	39.4 J-	24.9	14.1	21.6 J-
POTASSIUM	EN	EN	EN	266 J	865 J	777 J	541 J	464 J	1350 J	423 J	433 J	571 J	355 J	659 J	454 J	442 J	725 J	610 J	454 J	279 J+	524	785 J+	531 J+
SELENIUM	390	10000	NA	0.43	0.35	0.32 J	0.37 U	0.28 J	0.22 J	0.18 J	0.43 U	0.46 U	0.66	0.38	0.19 U	0.46	0.5 U	0.34 U	0.18 J	0.39 U	0.44 U	0.44 U	0.37 UJ
SILVER	200	10000	NA	0.18 U	0.15 U	0.16 U	0.17 U	0.16 U	0.18 U	0.18 U	0.02 J	0.03 J	0.1 J	0.02 J	0.03 J	0.42 J	0.03 J	0.02 J	0.02 J	0.04 J	0.03 J	0.01 J	0.02 J
SODIUM	EN	EN	EN	308 U	257 U	263 U	285 U	274 U	83.9 J	99.3 J	85 U	91 U	92 U	67 U	65 U	80 U	100 U	68 U	54 U	78 U	88 U	88 U	74 U
THALLIUM	5.5	140	NA	0.49 U	0.41 U	0.42 U	0.46 U	0.44 U	0.47 U	0.47 U	0.04 J	0.05 J	0.11	0.07 J	0.05 J	0.08	0.06 J	0.08	0.03 J	0.02 J	0.06 J	0.1	0.05 J
VANADIUM	550	10000	NA	15.9	15.6	19	13.8	15.6	18.4	16.2	18.3	16.9	22.5	18.2	25.4	26.6	22	13.2	12.6	16.4	18.1	15.3	14.2 J
ZINC	6000	10000	NA	66.8	40.9	112	51	71.5	222	282	60.3	57.6	39.5	47.3 J+	56 J+	123 J+	87.5 J+	36.6 J+	33.6 J+	80.9 J-	52 J	34.3 J-	48.9 J
PAHs (mg/Kg)																							
ACENAPHTHENE	43	10000	NA	0.41 U	0.34 U	0.36 U	0.39 U	0.36 U	0.39 U	0.39 U	0.011 U	0.011 U	0.0022 J	0.011 U	0.01 U	0.036	0.013 U	0.011 U	0.0087 J	0.0042 J	0.011 U	0.01 U	0.01 U
ACENAPHTHYLENE	23	10000	NA	0.41 U	0.34 U	0.36 U	0.39 U	0.36 U	0.39 U	0.39 U	0.011 U	0.011 U	0.012 U	0.011 U	0.01 U	0.01 J	0.013 U	0.011 U	0.0012 J	0.011 U	0.011 U	0.01 U	0.01 U
ANTHRACENE	35	10000	NA	0.41 U	0.34 U	0.36 U	0.39 U	0.36 U	0.39 U	0.39 U	0.0016 J	0.011 U	0.0041 J	0.011 U	0.01 UJ	0.073	0.013 UJ	0.011 U	0.0091 J	0.0056 J	0.0036 J	0.01 U	0.01 U
BENZO[A]ANTHRACENE	0.9	7.8	NA	0.056 J	0.34 U	0.36 U	0.39 U	0.36 U	0.39 U	0.39 U	0.023 U	0.022 U	0.025 U	0.022 U	0.01 U	0.58	0.013 U	0.011 UJ	0.055 J	0.042 J	0.021 U	0.01 U	0.0023 J
BENZO[A]PYRENE	0.4	0.8	240	0.082 U	0.068 U	0.072 U	0.027 J	0.073 U	0.077 U	0.078 U	0.011 U	0.011 U	0.025 J	0.011 UJ	0.01 U	0.71 J	0.013 UJ	0.011 UJ	0.04	0.05 J	0.021 UJ	0.01 UJ	0.01 UJ
BENZO[B]FLUORANTHENE	0.9	7.8	NA	0.053 J	0.34 U	0.36 U	0.39 U	0.36 U	0.39 U	0.39 U	0.011 U	0.0031 J	0.031	0.011 U	0.01 U	0.75 J	0.013 U	0.011 U	0.036	0.072 J	0.021 UJ	0.0034 J	0.021 U
BENZO[G,H,I]PERYLENE	0.8	10000	NA	0.41 U	0.34 U	0.36 U	0.39 U	0.36 U	0.39 U	0.39 U	0.011 UJ	0.011 UJ	0.025 UJ	0.011 UJ	0.01 UJ	0.24 J	0.013 UJ	0.011 UJ	0.025 J	0.025 J	0.0034 J	0.01 UJ	0.01 UJ
BENZO[K]FLUORANTHENE	0.9	78	NA	0.41 U	0.34 U	0.36 U	0.39 U	0.36 U	0.39 U	0.39 U	0.011 U	0.011 U	0.024 J	0.011 U	0.01 UJ	0.29 J	0.013 UJ	0.011 U	0.014 J	0.025 J	0.011 UJ	0.01 UJ	0.01 U
CHRYSENE	0.4	780	NA	0.054 J	0.068 U	0.072 U	0.078 U	0.073 U	0.077 U	0.078 U	0.011 U	0.011 U	0.024 J	0.011 U	0.01 U	0.75	0.013 U	0.011 U	0.14	0.059 J	0.011 U	0.01 U	0.01 U
DIBENZ[A,H]ANTHRACENE	0.4	0.8	NA	0.082 U	0.068 U	0.072 U	0.078 U	0.073 U	0.077 U	0.078 U	0.023 U	0.022 U	0.025 U	0.011 U	0.01 UJ	0.084 J	0.013 UJ	0.011 U	0.028	0.012 J	0.0049 J	0.01 UJ	0.01 U
FLUORANTHENE	20	10000	NA	0.11 J	0.34 U	0.36 U	0.39 U	0.36 U	0.39 U	0.39 U	0.0028 J	0.0022 J	0.029	0.022 U	0.01 U	0.82	0.013 U	0.011 UJ	0.027 J	0.068 J	0.021 U	0.02 U	0.01 U
FLUORENE	28	10000	NA	0.41 U	0.34 U	0.36 U	0.39 U	0.36 U	0.39 U	0.39 U	0.011 U	0.011 U	0.012 U	0.011 U	0.01 U	0.025 J	0.013 U	0.011 U	0.0059 J	0.011 U	0.011 U	0.01 U	0.01 U
INDENO[1,2,3-CD]PYRENE	0.9	7.8	NA	0.41 U	0.34 U	0.36 U	0.39 U	0.36 U	0.39 U	0.39 U	0.023 U	0.022 U	0.025 U	0.011 UJ	0.01 UJ	0.36 J	0.013 UJ	0.011 U	0.02 J	0.032 J	0.0056 J	0.01 UJ	0.01 U
NAPHTHALENE	54	10000	0.8	0.41 U	0.34 U	0.36 U	0.39 U	0.36 U	0.39 U	0.39 U	0.011 U	0.011 U	0.012 U	0.011 U	0.01 U	0.0088 J	0.013 U	0.011 U	0.0096 U	0.011 U	0.011 U	0.01 U	0.01 U
PHENANTHRENE	40	10000	NA	0.072 J	0.34 U	0.36 U	0.39 U	0.36 U	0.39 U	0.39 U	0.0038 J	0.011 U	0.019 J	0.011 U	0.01 U	0.33	0.013 U	0.011 U	0.18	0.038 J	0.0043 J	0.01 U	0.01 U
PYRENE	13	10000	NA	0.093 J	0.34 U	0.36 U	0.39 U	0.36 U	0.39 U	0.39 U	0.023 U	0.022 U	0.035	0.011 UJ	0.01 UJ	1.5	0.013 UJ	0.011 U	0.13	0.067 J	0.0062 J	0.0023 J	0.01 U
PAH, TOTAL	NA	NA	NA	0.44	0.34 U	0.36 U	0.027	0.36 U	0.39 U	0.39 U	0.0082	0.0053	0.19	0.022 U	0.01 U	6.6	0.013 U	0.011 U	0.72	0.5	0.028	0.0057	0.0023
Other SVOCs (mg/Kg)																							
BIS(2-ETHYLHEXYL)PHTHALATE	46	410	120	0.044 J	0.34 U	0.36 U	0.048 J	0.06 J	0.062 J	0.065 J													
BUTYLBENZYLPHTHALATE	NA	NA	NA	0.41 U	0.34 U	0.36 U	0.39 U	0.36 U	0.051 J	0.047 J													
CAPROLACTAM	NA	NA	NA	0.41 U	0.34 U	0.36 U	0.39 U	0.079 J	0.39 U	0.39 U													
Energetics (mg/Kg)																							
2,4-DINITROTOLUENE	0.9	8.4	NA																				
NITROGLYCERIN	NA	NA	NA																				

Table 4-3
Summary of Soil Analytical Results - Metals and PAHs
MRP Site 1, Carr Point
NAVSTA, Newport, Rhode Island

			Location ID	SB205*	SB205	SB205	SB205	SB206	SB206	SB206	SB208	SB208	SB208	SB209	SB209	SB209	SB209	SB210	SB211	SB211	SB211	SB212	SB212	SB212	SB212
			Sample Data	12/11/2013	12/11/2013	12/11/2013	12/11/2013	12/10/2013	12/10/2013	12/10/2013	12/9/2013	12/9/2013	12/9/2013	12/9/2013	12/9/2013	12/9/2013	12/9/2013	12/6/2013	12/9/2013	12/9/2013	12/11/2013	12/9/2013	12/9/2013	12/9/2013	12/9/2013
			Sample Interval	6 - 8 ft	3 - 5 ft	6 - 8 ft	0 - 1 ft	3 - 5 ft	6 - 8 ft	0 - 1 ft	3 - 5 ft	6 - 8 ft	0 - 1 ft	1 - 2 ft	3 - 5 ft	10 - 12 ft	0 - 1 ft	0 - 1 ft	3 - 5 ft	10 - 12 ft	0 - 1 ft	1 - 2 ft	3 - 5 ft	6 - 8 ft	0 - 1 ft
Metals (mg/Kg)	RDEC	I/C DEC	GA Leach																						
ALUMINUM	NA	NA	NA	5490	6380	4410	9950	9990	7820	9800	13900	9820	12200	10200	8650	6120	11900	6300	12000	6540	11800	10200	9400	7150	10600
ANTIMONY	10	820	NA	0.11 J-	0.12 J-	0.11 J-	0.62 J-	0.1 J	0.14 J	0.54 J	0.23 J	0.24 J	0.79 J	0.18 J	0.12 J	0.3 J	10.8 J	0.7 J	0.58 J	0.12 J	0.62 J	0.26 J	0.19 J	0.21 J	1.5 J
ARSENIC	7	7	NA	13.1 J	10.0 J	13.1 J	13.3 J	8.2 J	11.2 J	8.9 J	13.0 J	6.8 J	13.1 J	6.4 J	6.4 J	9.4 J	10.8 J	10.0 J	14.5 J	7.1 J	12.7 J	6.9 J	6.8 J	6.2 J	13.5 J
BARIUM	5500	10000	NA	18.8	23.6	17.9	22.1	37.1	27.1	26.6	12.1	34.5	13.9	24.8	26.2	62	15.2	15 J-	23	21.1	23.6	28.4	30.8	22	21.4
BERYLLIUM	1.5	1.5	NA	0.44 J-	0.35 J-	0.33 J-	0.56 J-	0.49	0.38	0.33	0.27	0.47	0.28	0.4	0.4	0.7	0.25	0.38 J-	0.35	0.36	0.35	0.43	0.41	0.4	0.26
CADMIUM	39	1000	NA	0.08 J	0.085 UJ	0.08 J	0.2 J	0.09	0.08	0.16	0.12	0.091 U	0.12	0.097 U	0.11 U	0.24	0.14	0.11	0.29	0.084 U	0.22	0.092 U	0.093 U	0.071 U	0.32
CALCIUM	EN	EN	EN	535 J	336 J	334 J	1420 J	1340 J+	457 J+	1420 J+	1600	979	2120	1020	424	293	2360	4500	1180	375	3320	967	949	295	29600
CHROMIUM VI	390	10000	NA				0.86 UJ														1.5 UJ				
CHROMIUM, TOTAL	390	10000	NA	10.9 J	10.2 J	8.6 J	13.2 J	12.3 J	12.2 J	11.2 J	21.5 J	13.5 J	18.3 J	12.6 J	10.6 J	9.3 J	18.1 J	12.8 J-	34.2 J	11.5 J	17.1 J	12.8 J	11.3 J	13.4 J	15.6 J
COBALT	NA	NA	NA	23 J-	10.9 J-	24.8 J-	17 J-	9.4 J	18.5 J	9.1 J	17.4 J	13.7 J	19.4 J	9.5 J	11 J	33.4 J	13.3 J	15 J-	12 J	14.4 J	13.7 J	10.7 J	9.7 J	18.8 J	9.7 J
COPPER	3100	10000	NA	23.4 J	19.6 J	23.1 J	256 J	10	25.6	22	20	16.8	18.6	14.2	12.4	23.4	32.8	25.3 J	57	20.4	31	18	13.5	28	26.4
IRON	NA	NA	NA	43400	31300	38800	51200	27200 J	45000 J	25000 J	43100 J	28800 J	33500 J	21700 J	20600 J	46000 J	31100 J	34400	36700 J	29600 J	31400 J	25700 J	23000 J	40200 J	30400 J
IRON, FERROUS	NA	NA	NA				3.7														0.88				
LEAD	150	500	NA	14.2 J	9.4 J	9.7 J	39.3 J	14.9 J	9.7 J	170 J	42.2 J	31.9 J	259 J	19.6 J	23.2 J	9.1 J	153 J	99.2 J	50.3 J	8.3 J	88.6 J	16.9 J	15.8 J	10 J	99.5 J
MAGNESIUM	EN	EN	EN	1330	1640	1080	2800	1670 J	2480 J	3100 J	5480 J	1720 J	4420 J	2020 J	1390 J	2290 J	4430 J	1910	3360 J	2090 J	4350 J	1780 J	1680 J	1240 J	5810 J
MANGANESE	390	10000	NA	757	325	916	705	618 J	612 J	394 J	564 J	898 J	594 J	373 J	423 J	3810 J	410 J	574	418 J	693 J	438 J	413 J	363 J	701 J	305 J
MERCURY	23	610	NA	0.015 UJ	0.016 UJ	0.015 UJ	0.032 UJ	0.04	0.016 U	0.03 J	0.028 UJ	0.14 J-	0.029 UJ	0.05 J-	0.03 UJ	0.015 UJ	0.05 J-	0.08	0.033 UJ	0.016 UJ	0.04 J-	0.036 UJ	0.03 UJ	0.033 UJ	0.21 J-
NICKEL	1000	10000	NA	34.9 J-	22.6 J-	33.9 J-	30.3 J-	23.8 J	34.1 J	18.7 J	38.2 J	14.7 J	36 J	17.8 J	16 J	51 J	28.9 J	26.9 J-	27.8 J	24.2 J	28.3 J	18 J	15.8 J	23.6 J	21.5 J
POTASSIUM	EN	EN	EN	458 J+	519 J+	446 J+	311 J+	354 J	665 J	393 J	258 J	284 J	294 J	353 J	394 J	416 J	288 J	650 J-	351 J	577 J	406 J	384 J	342 J	483 J	390 J
SELENIUM	390	10000	NA	0.26 J-	0.42 UJ	0.38 UJ	0.62 J-	0.52	0.37 U	0.37 U	0.42 U	0.46 U	0.48 U	0.48 U	0.53 U	0.43 U	0.48 U	0.5 UJ	0.46 U	0.42 U	0.54 U	0.54	1.2	0.35 U	0.43
SILVER	200	10000	NA	0.04 J	0.02 J	0.04 J	0.38	0.05 J	0.02 J	0.08 J	0.04 J	0.07 J	0.06 J	0.06 J	0.04 J	0.03 J	0.14 J	0.04 J	0.08 J	0.03 J	0.23 J	0.15 J	0.05 J	0.02 J	0.9 J
SODIUM	EN	EN	EN	52 U	85 U	75 U	48 U	79 U	74 U	74 U	84 U	91 U	96 U	97 U	110 U	87 U	95 U	143 UJ	92 U	84 U	110 U	92 U	93 U	71 U	84 U
THALLIUM	5.5	140	NA	0.05 J	0.05 J	0.04 J	0.07	0.09	0.06 J	0.06 J	0.02 J	0.09	0.03 J	0.09 J	0.09 J	0.06 J	0.05 J	0.06 J	0.06 J	0.06 J	0.05 J	0.09 J	0.1	0.26	0.15
VANADIUM	550	10000	NA	15.7 J	15.8 J	14.5 J	21.8 J	20.6	17.6	18.3	19.2	19.1	18.1	18.4	16.3	11.9	20.5	17.3 J-	20.8	15.2	21.2	20.5	17.6	19.2	19.4
ZINC	6000	10000	NA	65 J	55.3 J	57.5 J	75.2 J	41.5 J+	74 J+	64.8 J+	85.6	49.4	72.8	47.7	37.6	90.5	134	91.3	167	51.9	159	46.3	39	50.7	186
PAHs (mg/Kg)																									
ACENAPHTHENE	43	10000	NA	0.01 U	0.011 U	0.0099 U	0.0049 J	0.011 U	0.011 U	0.021 J	0.0037 J	0.012 U	0.015 J	0.0049 J	0.011 U	0.01 U	3.9	0.059	0.0022 J	0.006 J	2.8	0.078	0.0024 J	0.011 U	2.6
ACENAPHTHYLENE	23	10000	NA	0.01 U	0.011 U	0.0099 U	0.015 J	0.011 U	0.011 U	0.18	0.0058 J	0.012 U	0.0035 J	0.011 U	0.011 U	0.01 U	0.011 U	0.012 U	0.002 J	0.011 U	0.011 U	0.012 U	0.011 U	0.011 U	0.056 U
ANTHRACENE	35	10000	NA	0.01 U	0.011 U	0.0099 U	0.014 J	0.011 UJ	0.011 UJ	0.083	0.013 J	0.0017 J	0.022 J	0.0093 J	0.011 U	0.01 U	4.7	0.063	0.0054 J	0.0098 J	3.8	0.11	0.0039 J	0.0025 J	3.4
BENZO[A]ANTHRACENE	0.9	7.8	NA	0.01 U	0.011 U	0.02 U	0.18	0.011 U	0.011 U	0.77	0.073 J	0.015 J	0.21 J	0.057 J	0.0048 J	0.0026 J	20	0.53	0.21 J	0.052	16	0.55 J	0.022 U	0.022 U	14
BENZO[A]PYRENE	0.4	0.8	240	0.01 UJ	0.011 U	0.0099 U	0.18 J	0.011 UJ	0.011 UJ	0.94 J	0.061 J	0.013 J	0.21 J	0.071 J	0.0054 J	0.01 UJ	22 J	0.67	0.16 J	0.056	19 J	0.62 J	0.022 J	0.011 U	17
BENZO[B]FLUORANTHENE	0.9	7.8	NA	0.021 U	0.022 U	0.02 U	0.29 J	0.013 J	0.011 U	0.96 J	0.11 J	0.024 J	0.27 J	0.098 J	0.022 UJ	0.01 UJ	17 J	0.6	0.14 J	0.082	18 J	0.66 J	0.027	0.0039 J	15
BENZO[G,H,I]PERYLENE	0.8	10000	NA	0.01 UJ	0.011 UJ	0.0099 UJ	0.063 J	0.011 UJ	0.011 UJ	0.35 J	0.022 J	0.006 J	0.07 J	0.034 J	0.0024 J	0.01 UJ	11 J	0.21 J	0.054 J	0.025 J	7.9 J	0.23 J	0.022 UJ	0.022 UJ	12
BENZO[K]FLUORANTHENE	0.9	78	NA	0.01 U	0.011 UJ	0.0099 UJ	0.11	0.0044 J	0.011 UJ	1.1 J	0.039	0.012 U	0.091	0.034	0.011 U	0.01 U	18 J	0.57	0.024	0.028	16 J	0.68 J	0.022 J	0.011 U	11
CHRYSENE	0.4	780	NA	0.01 U	0.011 U	0.0099 U	0.26 J	0.011 U	0.011 U	1.4	0.099	0.013 J	0.3	0.078	0.011 U	0.01 U	27	0.8	0.6	0.058	22	0.84 J	0.026	0.011 U	19
DIBENZ[A,H]ANTHRACENE	0.4	0.8	NA	0.01 U	0.011 U	0.0099 U	0.042	0.011 UJ	0.011 UJ	0.23 J	0.016 J	0.0025 J	0.043	0.018 J	0.011 U	0.01 U	2.8 J	0.12	0.029	0.011 J	0.35	0.13	0.022 U	0.022 U	5.5
FLUORANTHENE	20	10000	NA	0.01 U	0.011 U	0.02 U	0.34	0.0026 J	0.011 U	1.4	0.15	0.031	0.27	0.084	0.022 U	0.01 U	20	0.52	0.069	0.09	18	0.74 J	0.026	0.0042 J	17
FLUORENE	28	10000	NA	0.01 U	0.011 U	0.0099 U	0.008 J	0.011 U	0.011 U	0.05	0.0072 J	0.012 U	0.011 J	0.0036 J	0.011 U	0.01 U	2.2 J	0.029	0.011 U	0.011 U	1.7	0.049	0.011 U	0.011 U	1
INDENO[1,2,3-CD]PYRENE	0.9	7.8	NA	0.01 U	0.011 UJ	0.0099 UJ	0.12	0.011 UJ	0.011 UJ	0.61 J	0.041	0.0094 J	0.12	0.05	0.0034 J	0.01 U	12 J	0.22	0.026	0.038	10 J	0.29	0.022 U	0.022 U	13
NAPHTHALENE	54	10000	0.8	0.01 U	0.011 U	0.0099 U	0.0026 J	0.011 U	0.011 U	0.0086 J	0.011 U	0.012 U	0.0042 J	0.011 U	0.011 U	0.01 U	2.7 U	0.021 J	0.011 U	0.011 U	2.8 U	0.016 J	0.0096 J	0.011 U	0.53
PHENANTHRENE	40	10000	NA	0.01 U	0.011 U	0.0099 U	0.18	0.011 U	0.011 U	1	0.085	0.012 J	0.22	0.05	0.005 J	0.01 U	18	0.28	0.044	0.05	16	0.57 J	0.034	0.0049 J	14
PYRENE	13	10000	NA	0.01 U	0.011 U	0.0099 U	0.53	0.011 UJ	0.011 UJ	2.8	0.15	0.026	0.32	0.076	0.022 U	0.02 U	36	0.77	0.1	0.065	26	0.91 J	0.029	0.022 U	26
PAH, TOTAL	NA	NA	NA	0.021 U	0.022 U	0.02 U	2.3	0.02	0.011 U	12	0.88	0.15	2.2	0.67	0.021	0.0026	210	5.5	1.5	0.57	180	6.5	0.2	0.016	170
Other SVOCs (mg/Kg)																									
BIS(2-ETHYLHEXYL)PHTHALATE	46	410	120																						
BUTYLBENZYLPHTHALATE	NA	NA	NA																						
CAPROLACTAM	NA	NA	NA																						
Energetics (mg/Kg)																									
2,4-DINITROTOLUENE	0.9	8.4	NA				0.049 U	0.05 U		0.047 U				0.047 U	0.047 U		0.043 U		0.047 U	0.047	0.05 U	0.043 U	0.044 U		0.05 U
NITROGLYCERIN	NA	NA	NA				0.39 U	0.4 U		0.38 U				0.38 U	0.36 U		0.34 U		0.38 U		0.44 J	0.34 U	0.35 U		0.27 J

Table 4-3
Summary of Soil Analytical Results - Metals and PAHs
MRP Site 1, Carr Point
NAVSTA, Newport, Rhode Island

			Location ID	SB213	SB213	SB213	SB213	SB214	SB214	SB214	SB215	SB215	SB215	SB216	SB216	SB217	SB217
			Sample Data	12/9/2013	12/9/2013	12/9/2013	12/9/2013	12/11/2013	12/11/2013	12/11/2013	12/11/2013	12/11/2013	12/11/2013	12/11/2013	12/11/2013	12/10/2013	12/10/2013
			Sample Interval	1 - 2 ft	3 - 5 ft	6 - 8 ft	0 - 1 ft	1 - 2 ft	3 - 5 ft	6 - 8 ft	1 - 2 ft	3 - 5 ft	10 - 12 ft	3 - 5 ft	6 - 8 ft	1 - 2 ft	3 - 5 ft
Metals (mg/Kg)	RDEC	I/C DEC	GA Leach														
ALUMINUM	NA	NA	NA	9170	8060	12100	9450		10500	6410	7640	9730	6780	7530	6730	10700	10100
ANTIMONY	10	820	NA	0.23 J	0.11 J	0.16 J	0.81 J		0.09 UJ	0.08 J-	0.57 J-	0.082 UJ	0.08 J-	0.073 UJ	0.15 J-	0.44 J	0.26 J
ARSENIC	7	7	NA	9.6 J	6.8 J	11.8 J	8.5 J		4.5 J	8.1 J	6.6 J	5.1 J	3.8 J	5.4 J	12.5 J-	6.6 J	13.8 J
BARIUM	5500	10000	NA	29.3	20.2	20	46.9		31.9	16.4	9.9	25.1	23.7	15.9	24.7	31.4	29.7
BERYLLIUM	1.5	1.5	NA	0.47	0.32	0.39	0.4		0.46 J-	0.38 J-	0.25 J-	0.42 J-	0.3 J-	0.31 J-	0.42 J-	0.39	0.39
CADMIUM	39	1000	NA	0.11	0.09 U	0.22	0.21		0.09 UJ	0.09 J	0.14 J	0.082 UJ	0.062 UJ	0.073 UJ	0.059 UJ	0.12	0.19
CALCIUM	EN	EN	EN	439	428	786	1790		726 J	330 J	1080 J	583 J	496 J	480 J	372 J	828 J+	756 J+
CHROMIUM VI	390	10000	NA							0.38 UJ							0.38 U
CHROMIUM, TOTAL	390	10000	NA	15.1 J	11.1 J	16.3 J	12.8 J		10.1 J	12.1 J	12.7 J	11 J	11.3 J	8.8 J	10.2 J-	10.8 J	12 J
COBALT	NA	NA	NA	12.7 J	9.3 J	14.3 J	10.1 J		7 J-	12.6 J-	21.9 J-	8.5 J-	12.3 J-	8 J-	14.4 J-	7.5 J	9.8 J
COPPER	3100	10000	NA	16.7	18.9	18.6	21.4		10.2 J	16.9 J	20.6 J	12.1 J	18 J	9.8 J	21.7 J-	12.2	16.3
IRON	NA	NA	NA	38200 J	24600 J	40200 J	50000 J		16600	24400	55900	19800	22900	17100	35900	21300 J	27700 J
IRON, FERROUS	NA	NA	NA														
LEAD	150	500	NA	12.8 J	7.3 J	8.4 J	114 J		10.2 J	7.6 J	18.6 J	8.7 J	6.1 J	5.3 J	9.3 J-	83.7 J	50.9 J
MAGNESIUM	EN	EN	EN	1830 J	2000 J	5280 J	2040 J		1480 J	1830 J	2580	1960 J	2580 J	1310	1390 J	1790 J	1910 J
MANGANESE	390	10000	NA	710 J	307 J	5750 J	627 J		294	413	826	168	452	492	424	337 J	551 J
MERCURY	23	610	NA	0.038 UJ	0.03 J-	0.017 UJ	0.07 J-		0.034 UJ	0.012 UJ	0.014 UJ	0.03 UJ	0.017 UJ	0.031 UJ	0.014 U	0.07	0.05
NICKEL	1000	10000	NA	23.9 J	17.8 J	45 J	17.3 J		13.5 J-	19.6 J-	42.2 J-	14 J-	18 J-	11.9 J-	21.2 J-	15.4 J	18.8 J
POTASSIUM	EN	EN	EN	364 J	398 J	426 J	502 J		390 J+	618 J+	216 J+	489 J+	845 J+	389 J+	562 J+	448 J	402 J
SELENIUM	390	10000	NA	0.55	0.45 U	0.41 U	0.56 U		0.5 J-	0.32 UJ	0.35 UJ	0.48 J-	0.31 UJ	0.36 UJ	0.41 J-	0.47	0.58
SILVER	200	10000	NA	0.06 J	0.03 J	0.03 J	0.23 J		0.06 J	0.01 J	0.04 J	0.03 J	0.05 J	0.03 J	0.03 J	0.07 J	0.07 J
SODIUM	EN	EN	EN	91 U	90 U	82 U	110 U		90 U	64 U	71 U	82 U	62 U	73 U	59 U	85 U	82 U
THALLIUM	5.5	140	NA	0.08 J	0.05 J	0.04 J	0.08 J		0.1	0.13	0.02 J	0.08	0.19	0.06 J	0.06	0.11	0.11
VANADIUM	550	10000	NA	23.2	16.3	16.6	23.6		17 J	15.3 J	13.9 J	16.4 J	15.8 J	12.9 J	16.5 J-	18.4	22
ZINC	6000	10000	NA	77.4	37.4	75.3	84.7		30.5 J	69.3 J	113 J	33.9 J	40.3 J	28.5 J	50.3 J-	48.2 J+	79.4 J+
PAHs (mg/Kg)																	
ACENAPHTHENE	43	10000	NA	0.011 U	0.01 U	0.0099 U	0.067	0.011 U	0.011 U	0.01 U	0.009 U	0.011 U	0.01 U	0.01 U	0.011 U	0.011 U	0.023 J
ACENAPHTHYLENE	23	10000	NA	0.011 U	0.01 U	0.0099 U	0.014 U	0.011 U	0.011 U	0.01 U	0.009 U	0.011 U	0.01 U	0.01 U	0.011 U	0.0072 J	0.0078 J
ANTHRACENE	35	10000	NA	0.0024 J	0.01 U	0.0019 J	0.09	0.011 U	0.011 U	0.01 U	0.009 U	0.011 U	0.01 U	0.01 U	0.011 U	0.011 UJ	0.038
BENZO[A]ANTHRACENE	0.9	7.8	NA	0.023 U	0.021 U	0.02 U	0.62 J	0.0042 J	0.011 U	0.0028 J	0.0068 J	0.011 U	0.01 U	0.01 U	0.0023 J	0.068	0.59
BENZO[A]PYRENE	0.4	0.8	240	0.023 U	0.01 U	0.0099 U	0.8 J	0.0056 J	0.011 UJ	0.0038 J	0.0073 J	0.011 UJ	0.01 UJ	0.01 UJ	0.011 UJ	0.064	0.4 J
BENZO[B]FLUORANTHENE	0.9	7.8	NA	0.024	0.0047 J	0.0099 U	0.86 J	0.011 U	0.011 U	0.02 U	0.018 U	0.022 U	0.01 U	0.01 U	0.011 UJ	0.085	0.24 J
BENZO[G,H,I]PERYLENE	0.8	10000	NA	0.023 UJ	0.01 UJ	0.0099 UJ	0.29 J	0.0024 J	0.011 UJ	0.01 UJ	0.0027 J	0.011 UJ	0.01 UJ	0.01 UJ	0.011 UJ	0.034 J	0.16 J
BENZO[K]FLUORANTHENE	0.9	78	NA	0.01 J	0.01 U	0.0099 U	0.83 J	0.011 U	0.011 U	0.01 U	0.009 U	0.011 U	0.01 U	0.01 U	0.011 UJ	0.031 J	0.096 J
CHRYSENE	0.4	780	NA	0.022 J	0.01 U	0.0099 U	1 J	0.011 UJ	0.011 UJ	0.01 UJ	0.0054 J	0.011 U	0.01 UJ	0.01 U	0.011 UJ	0.098	0.92
DIBENZ[A,H]ANTHRACENE	0.4	0.8	NA	0.023 U	0.021 U	0.02 U	0.13 J	0.011 U	0.011 U	0.01 U	0.009 U	0.011 U	0.01 U	0.01 U	0.011 UJ	0.029 J	0.11 J
FLUORANTHENE	20	10000	NA	0.013 J	0.0027 J	0.0019 J	0.62 J	0.0048 J	0.011 U	0.0044 J	0.009 J	0.011 U	0.01 U	0.01 U	0.011 U	0.086	0.27
FLUORENE	28	10000	NA	0.011 U	0.01 U	0.0099 U	0.039	0.011 U	0.011 U	0.01 U	0.009 U	0.011 U	0.01 U	0.01 U	0.011 U	0.011 U	0.014 J
INDENO[1,2,3-CD]PYRENE	0.9	7.8	NA	0.023 U	0.021 U	0.02 U	0.27 J	0.011 U	0.011 U	0.01 U	0.0036 J	0.011 U	0.01 U	0.01 U	0.011 UJ	0.045 J	0.35 J
NAPHTHALENE	54	10000	0.8	0.011 U	0.01 U	0.0099 U	0.019	0.011 U	0.011 U	0.01 U	0.009 U	0.011 U	0.01 U	0.01 U	0.011 U	0.011 U	0.016 J
PHENANTHRENE	40	10000	NA	0.0097 J	0.0021 J	0.0099 U	0.53 J	0.0032 J	0.011 U	0.0026 J	0.0053 J	0.011 U	0.01 U	0.01 U	0.011 U	0.054	0.21
PYRENE	13	10000	NA	0.023 U	0.021 U	0.0099 U	1.6 J	0.0044 J	0.011 U	0.0036 J	0.0084 J	0.011 U	0.01 U	0.01 U	0.011 U	0.11 J	1.1
PAH, TOTAL	NA	NA	NA	0.081	0.0095	0.0038	7.8	0.025	0.011 U	0.017	0.049	0.022 U	0.01 U	0.01 U	0.0023	0.71	4.5
Other SVOCs (mg/Kg)																	
BIS(2-ETHYLHEXYL)PHTHALATE	46	410	120														
BUTYLBENZYLPHTHALATE	NA	NA	NA														
CAPROLACTAM	NA	NA	NA														
Energetics (mg/Kg)																	
2,4-DINITROTOLUENE	0.9	8.4	NA	0.048 U	0.044 U		0.049 U	0.047 U	0.043 U		0.047 U	0.047 U		0.048 U		0.047 U	0.047 U
NITROGLYCERIN	NA	NA	NA	0.38 U	0.35 U		0.15 J	0.37 U	0.34 U		0.38 U	0.33 U		0.38 U		0.38 U	0.38 U

Table 4-3
Summary of Soil Analytical Results - Metals and PAHs
MRP Site 1, Carr Point
NAVSTA, Newport, Rhode Island

			Location ID	SB217		SB217		SB218		SB218		SB218		SB219		SB219		SB220*		SB220	
			Sample Data	12/10/2013		12/10/2013		12/11/2013		12/11/2013		12/11/2013		12/11/2013		12/11/2013		12/11/2013		12/11/2013	
			Sample Interval	6 - 8 ft		0 - 1 ft		1 - 2 ft		3 - 5 ft		0 - 1 ft		3 - 5 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft	
Metals (mg/Kg)	RDEC	I/C DEC	GA Leach																		
ALUMINUM	NA	NA	NA	6400		10400		9160		7170		9610		9080		11900		9780		8700	
ANTIMONY	10	820	NA	0.1	J	0.36	J	0.094	UJ	0.09	J-	0.34	J-	0.11	J-	0.43	J-	0.33	J-	0.32	J-
ARSENIC	7	7	NA	10.6	J	9.2	J	6.4	J	7.9	J	9.7	J	10.0	J	13.3	J	23.6	J	19.3	J
BARIUM	5500	10000	NA	23.1		28		18.4		23.9		19.7		20.4		18.9		23.5		22.8	
BERYLLIUM	1.5	1.5	NA	0.5		0.35		0.34	J-	0.39	J-	0.27	J-	0.44	J-	0.27	J-	0.4	J-	0.39	J-
CADMIUM	39	1000	NA	0.08	J	0.16		0.094	UJ	0.068	UJ	0.16	J	0.071	UJ	0.18	J	0.17	J	0.15	J
CALCIUM	EN	EN	EN	401	J+	1370	J+	793	J	374	J	2910	J	447	J	4520	J	1980	J	2330	J
CHROMIUM VI	390	10000	NA											0.63	J						
CHROMIUM, TOTAL	390	10000	NA	12.2	J	13	J	11.2	J	10.3	J	12.8	J	13.4	J	15.6	J	12	J	11.6	J
COBALT	NA	NA	NA	20.7	J	10.4	J	8.2	J-	14.2	J-	10.7	J-	12.5	J-	13.9	J-	11.5	J-	10.3	J-
COPPER	3100	10000	NA	27.5		18.1		12.3	J	19.8	J	16.9	J	17.5	J	42.6	J	20.4	J	17.4	J
IRON	NA	NA	NA	47600	J	26500	J	22200		30400		24200		34100		88500		25700		22200	
IRON, FERROUS	NA	NA	NA																		
LEAD	150	500	NA	9.8	J	133	J	10.6	J	8.7	J	114	J	9.2	J	63.3	J	51	J	43.4	J
MAGNESIUM	EN	EN	EN	1590	J	2870	J	1890		1880		3340		1950		10100		2540	J	2230	J
MANGANESE	390	10000	NA	847	J	473	J	332		478		378		378		462		448		387	
MERCURY	23	610	NA	0.018	U	0.05		0.029	UJ	0.015	UJ	0.032	UJ	0.033	UJ	0.02	J	0.04	J	0.03	J
NICKEL	1000	10000	NA	33.4	J	20.2	J	18.7	J-	22.3	J-	20	J-	19.1	J-	27.5	J-	21.4	J-	20.5	J-
POTASSIUM	EN	EN	EN	539	J	484	J	295	J+	523	J+	379	J+	454	J+	296	J+	372	J+	343	J+
SELENIUM	390	10000	NA	0.31	J	0.41		0.47	UJ	0.34	UJ	0.42	UJ	0.38	J-	0.4	UJ	0.39	J-	0.37	J-
SILVER	200	10000	NA	0.04	J	0.06	J	0.03	J	0.02	J	0.06	J	0.03	J	0.09		0.1		0.09	
SODIUM	EN	EN	EN	88	U	76	U	94	U	68	U	84	U	71	U	81	U	71	U	64	U
THALLIUM	5.5	140	NA	0.06	J	0.08		0.06	J	0.06	J	0.04	J	0.06	J	0.04	J	0.06	J	0.06	J
VANADIUM	550	10000	NA	19.8		19.7		16.1	J	15	J	19.4	J	19.3	J	21.2	J	17.7	J	16.4	J
ZINC	6000	10000	NA	102	J+	72.4	J+	44.8	J	52.7	J	67.2	J	45.8	J	82.6	J	90.4	J	86.5	J
PAHs (mg/Kg)																					
ACENAPHTHENE	43	10000	NA	0.011	U	0.024		0.01	U	0.011	U	0.011	J	0.01	U	0.0096	J	0.07	J	0.031	J
ACENAPHTHYLENE	23	10000	NA	0.011	U	0.086		0.01	U	0.011	U	0.03		0.01	U	0.0018	J	0.01	U	0.012	U
ANTHRACENE	35	10000	NA	0.011	UJ	0.092		0.01	U	0.011	U	0.026		0.01	U	0.017	J	0.1	J	0.058	J
BENZO[A]ANTHRACENE	0.9	7.8	NA	0.011	U	1.2		0.0046	J	0.021	U	0.29		0.01	U	0.12		1.1	J	0.36	J
BENZO[A]PYRENE	0.4	0.8	240	0.011	U	1.1	J	0.0046	J	0.011	U	0.26	J	0.01	U	0.14		1.1	J	0.35	J
BENZO[B]FLUORANTHENE	0.9	7.8	NA	0.011	U	1	J	0.02	U	0.011	U	0.47	J	0.021	U	0.2		0.81	J	0.52	J
BENZO[G,H,I]PERYLENE	0.8	10000	NA	0.011	UJ	0.25	J	0.01	UJ	0.011	UJ	0.12	J	0.01	UJ	0.067	J	0.29	J	0.13	J
BENZO[K]FLUORANTHENE	0.9	78	NA	0.011	UJ	0.31	J	0.01	U	0.011	U	0.14		0.01	UJ	0.08	J	0.31	J	0.16	J
CHRYSENE	0.4	780	NA	0.011	U	1.6		0.01	U	0.011	U	0.57		0.01	U	0.17		1.6	J	0.5	J
DIBENZ[A,H]ANTHRACENE	0.4	0.8	NA	0.011	UJ	0.21	J	0.01	U	0.011	U	0.08		0.01	U	0.034		0.21	J	0.085	J
FLUORANTHENE	20	10000	NA	0.011	U	1.4		0.0039	J	0.021	U	0.58		0.021	U	0.19		0.7		0.49	
FLUORENE	28	10000	NA	0.011	U	0.035		0.01	U	0.011	U	0.017	J	0.01	U	0.0059	J	0.035	J	0.019	J
INDENO[1,2,3-CD]PYRENE	0.9	7.8	NA	0.011	UJ	0.34	J	0.0025	J	0.011	U	0.19		0.01	UJ	0.09	J	0.56	J	0.24	J
NAPHTHALENE	54	10000	0.8	0.011	U	0.0097	J	0.01	U	0.011	U	0.0049	J	0.01	U	0.01	U	0.031	J	0.0066	J
PHENANTHRENE	40	10000	NA	0.011	U	0.99		0.0024	J	0.011	U	0.35		0.01	U	0.093		0.55	J	0.24	J
PYRENE	13	10000	NA	0.011	UJ	3.3		0.0042	J	0.011	UJ	0.96		0.0026	J	0.16		2.3	J	0.62	J
PAH, TOTAL	NA	NA	NA	0.011	U	12		0.022		0.021	U	4.1		0.0026		1.4		9.8		3.8	
Other SVOCs (mg/Kg)																					
BIS(2-ETHYLHEXYL)PHTHALATE	46	410	120																		
BUTYLBENZYLPHTHALATE	NA	NA	NA																		
CAPROLACTAM	NA	NA	NA																		
Energetics (mg/Kg)																					
2,4-DINITROTOLUENE	0.9	8.4	NA			0.05	U	0.043	U	0.046	U	0.048	U	0.042	U	0.049	U			0.049	U
NITROGLYCERIN	NA	NA	NA			4		0.34	U	0.37	U	0.38	U	0.34	U	0.39	U			0.55	J

Table 4-3
Summary of Soil Analytical Results - Metals and PAHs
MRP Site 1, Carr Point
NAVSTA, Newport, Rhode Island

			Location ID	SB220	SB222	SB223	SB223	SB224*	SB224	SB225	SB226	SB227	SB228	SB228	SB228	SB229	SB229	SB229	SB229*	SB301	SB302*	SB302	SB302	SB302	SB302
			Sample Data	12/11/2013	12/12/2013	12/12/2013	12/12/2013	12/6/2013	12/6/2013	12/6/2013	12/5/2013	12/5/2013	12/9/2013	12/9/2013	12/9/2013	12/10/2013	12/10/2013	12/10/2013	12/10/2013	12/6/2013	12/10/2013	12/10/2013	12/10/2013	12/10/2013	12/10/2013
			Sample Interval	3 - 5 ft	0 - 1 ft	0 - 1 ft	3 - 4 ft	0 - 1 ft	0 - 1 ft	0 - 1 ft	0 - 1 ft	0 - 1 ft	3 - 5 ft	6 - 8 ft	0 - 1 ft	1 - 2 ft	3 - 5 ft	0 - 1 ft	0 - 1 ft	0 - 1 ft	0 - 1 ft	3 - 5 ft	6 - 8 ft	8 - 10 ft	0 - 1 ft
Metals (mg/Kg)	RDEC	I/C DEC	GA Leach																						
ALUMINUM	NA	NA	NA	5670	8640	7450	8520	5230	6080	5010	3380	4190	8310	9390	8400	10500	9760	10900	9360	8070	9330	10300	7540	9780	11600
ANTIMONY	10	820	NA	0.1 J-	4.1 J-	6.5 J-	2.5 J-	189 J	2.4 J	0.63 J	0.33 J	0.26 J	0.3 J	0.077 UJ	2.3 J	0.28 J	0.12 J	1.1 J-	0.98 J-	0.79 J	396 J	0.08 J	0.12 J	0.12 J	0.34 J
ARSENIC	7	7	NA	6.4	15.9 J	5.9 J	4.9 J	48.9 J	8.3 J	7.6 J	3.9 J	5.2 J	6.4 J	4.6 J	10.3 J	4.9 J	10.8 J	7.3	7.5	8.3 J	130 J	9.4 J	12.5 J	9.1 J	5.1 J
BARIUM	5500	10000	NA	15.5	12.5	49.6	35.1	9.5 J-	13.6 J-	8.5 J-	6.7 J-	7.4 J-	22.8	20.1	25.5	29.8	24.3	33.4	30.8	11.5 J-	28.6	38.2	23.6	37.1	34.9
BERYLLIUM	1.5	1.5	NA	0.35	0.32 J-	0.35 J-	0.36 J-	0.24 J-	0.27 J-	0.24 J-	0.23 J-	0.36 J-	0.41	0.39	0.2	0.4	0.47	0.35	0.31	0.33 J-	0.36	0.45	0.43	0.34	0.38
CADMIUM	39	1000	NA	0.07 UJ	0.19 J	0.84 JJ	0.14 J	0.14 U	0.12 U	0.13 U	0.084 U	0.076 U	0.09 U	0.077 U	0.18	0.1	0.06 J	0.3	0.28	0.44	0.15	0.05 J	0.04 J	0.07	0.1
CALCIUM	EN	EN	EN	1080 J	1350 J	2280 J	1390 J	7700	4880	10000	342	8130	305	281	39500	1300 J+	215 J+	1510 J+	1400 J+	494	578 J+	350 J+	405 J+	479 J+	590 J+
CHROMIUM VI	390	10000	NA																0.31 U				0.33 U		
CHROMIUM, TOTAL	390	10000	NA	7.5	12.4 J	30.1 J	11 J	18 J-	12.4 J-	12.7 J-	9 J-	8.7 J-	11.1 J	12.1 J	14.1 J	11.2 J	11.3 J	13.9	11.3	11.5 J-	7.8 J	12 J	12.3 J	16.4 J	9.2 J
COBALT	NA	NA	NA	10.5	21.2 J-	10.8 J-	6.9 J-	12.3 J-	11.2 J-	9.3 J-	6.6 J-	7.5 J-	10.4 J	7.6 J	10.8 J	7 J	16.5 J	8.3	7.4	13.2 J-	5.4 J	16.2 J	19.2 J	13.3 J	6.4 J
COPPER	3100	10000	NA	14.6 J-	30.8 J	22.8 J	10.9 J	159 J	58.5 J	51.1 J	9.9 J	21.6 J	15	8.7	18.3	12.7	20.5	28.6	26.3	32.1 J	14	16.8	28.1	20.8	12.6
IRON	NA	NA	NA	22100	35500	23500	15900	39600	34200	31700	21500	28800	25100 J	18500 J	24900 J	17900 J	13000 J	21300	19500	29900	14600 J	29200 J	44700 J	32700 J	16100 J
IRON, FERROUS	NA	NA	NA																						
LEAD	150	500	NA	12.6 J+	496 J	1830 J	144 J	10900 J	417 J	177 J	8.2 J	32.3 J	16.6 J	7.7 J	216 J	24.5 J	10.3 J	125	113	48.2 J	29900 J	8.3 J	12.4 J	10.2 J	295 J
MAGNESIUM	EN	EN	EN	1450 J	3660 J	7180 J	2430 J	2960	2840	2610	1250	1790	1670 J	1740 J	25200 J	1750 J	962 J	2580	2250	3220	1500 J	1880 J	1410 J	4090 J	1750 J
MANGANESE	390	10000	NA	383	929	518	548	570	592	373	249	273	383 J	242 J	438 J	327 J	597 J	326	293	756	391 J	894 J	649 J	685 J	502 J
MERCURY	23	610	NA	0.03	0.012 UJ	0.19 J	0.05 J	0.07	0.07	0.04	0.05	0.03	0.029 UJ	0.036 UJ	0.04 J-	0.03 J	0.023 U	0.1	0.1	0.04	0.06	0.01 J	0.017 U	0.005 J	0.06
NICKEL	1000	10000	NA	13	33.7 J-	56.6 J-	13 J-	27.2 J-	26.1 J-	24.9 J-	14 J-	16.9 J-	16.3 J	11.8 J	20.6 J	14.3 J	24.8 J	18.5	17	29 J-	11.8 J	17.3 J	26.8 J	22.3 J	13.2 J
POTASSIUM	EN	EN	EN	684	494 J+	459 J+	353 J+	J-	376 J-	379 J-	258 J-	302 J-	376 J	342 J	328 J	395 J	658 J	415	319	484 J-	256 J	448 J	594 J	772 J	363 J
SELENIUM	390	10000	NA	0.35 U	0.3 J-	0.43 UJ	0.35 UJ	0.4 UJ	0.42 UJ	0.41 UJ	0.42 UJ	0.38 UJ	0.45 U	0.4	0.39 U	0.54	0.56 U	0.37	0.39 U	0.44 UJ	0.45	0.39	0.44	0.22 J	0.4 J
SILVER	200	10000	NA	0.02 J	0.04 J	0.1	0.07	0.62 J	0.04 J	0.03 J	0.02 J	0.03 J	0.05 J	0.02 J	0.07 J	0.1 J	0.02 J	0.38	0.35	0.04 J	0.86 J	0.07 J	0.02 J	0.02 J	0.09 J
SODIUM	EN	EN	EN	70 U	625	86.2 U	90.6	612 J-	585 J-	1860 J-	316 J-	598 J-	90 U	77 U	79 U	87 U	110 U	73 U	79 U	87 UJ	73 U	74 U	81 U	68 U	96 U
THALLIUM	5.5	140	NA	0.06 J	0.09	0.05 J	0.09	0.05 J	0.03 J	0.02 J	0.02 J	0.02 J	0.08 J	0.07 J	0.04 J	0.1	0.07 J	0.07 J	0.06 J	0.07 J	0.09	0.08	0.07 J	0.12	0.08 J
VANADIUM	550	10000	NA	12	13.4 J	19.7 J	15.4 J	15.3 J-	15.1 J-	15.2 J-	12 J-	15.6 J-	17	18.4	14.8	18.7	20.1	25.1	22.1	14.4 J-	14.4	18	18.2	21.8	15.9
ZINC	6000	10000	NA	39.6	71.3 J	433 J	58.5 J	153	101	116	54.7	81	45.3	29.7	66	43.3 J+	59.2 J+	113 J+	106 J+	78.2	54.4 J+	43.5 J+	69.8 J+	47.2 J+	55.5 J+
PAHs (mg/Kg)																									
ACENAPHTHENE	43	10000	NA	0.0023 J	0.0056 J	0.0037 J	0.0016 J	0.072 J	0.022 J	0.14	0.0028 J	0.019 J	0.011 U	0.011 U	18 J	0.0036 J	0.014 U	0.095 J	0.005 J	0.0026 J	0.0099 J	0.011 U	0.01 U	0.0089 U	0.0054 J
ACENAPHTHYLENE	23	10000	NA	0.011 U	0.0096 U	0.003 J	0.0099 U	0.0098 U	0.011 U	0.012 U	0.01 U	0.01 U	0.011 U	0.011 U	0.12 U	0.0025 J	0.014 U	0.017 J	0.01 U	0.01 U	0.0037 J	0.011 U	0.01 U	0.0089 U	0.0027 J
ANTHRACENE	35	10000	NA	0.0036 J	0.0081 J	0.011 J	0.0024 J	0.084 J	0.033 J	0.2	0.0041 J	0.03	0.0025 J	0.011 U	21 J	0.013 J	0.014 U	0.15 J	0.01 UJ	0.004 J	0.017 J	0.011 U	0.01 UJ	0.0026 J	0.0088 J
BENZO[A]ANTHRACENE	0.9	7.8	NA	0.028 J	0.068	0.094	0.02 U	0.41 J	0.18 J	1.3	0.029	0.15	0.022 U	0.0047 J	65 J	0.088	0.014 UJ	0.86 J	0.043 J	0.021 U	0.16 J	0.023 U	0.01 U	0.018 U	0.092 J
BENZO[A]PYRENE	0.4	0.8	240	0.03 J	0.073 J	0.092 J	0.02 UJ	0.48 J	0.23 J	1.5 J	0.039	0.18	0.022 UJ	0.0059 J	80 J	0.068 J	0.014 UJ	1.1 J	0.043 J	0.021 U	0.13 J	0.011 UJ	0.01 U	0.018 UJ	0.081 J
BENZO[B]FLUORANTHENE	0.9	7.8	NA	0.046 J	0.094 J	0.15 J	0.021 J	0.51 J	0.2 J	1.3 J	0.046	0.16	0.022 U	0.023 UJ	75 J	0.11	0.014 U	1.1 J	0.056 J	0.016 J	0.18 J	0.023 UJ	0.012 J	0.018 UJ	0.1 J
BENZO[G,H,I]PERYLENE	0.8	10000	NA	0.012 J	0.031 J	0.055 J	0.0078 J	0.12 J	0.087 J	0.68 J	0.02 UJ	0.076 J	0.0035 J	0.0028 J	32 J	0.038 J	0.014 UJ	0.75 J	0.041 J	0.021 UJ	0.045 J	0.011 UJ	0.01 UJ	0.0089 UJ	0.026 J
BENZO[K]FLUORANTHENE	0.9	78	NA	0.011 J	0.028 J	0.11 J	0.02 UJ	0.45 J	0.18 J	1.3 J	0.024	0.11	0.022 U	0.011 U	74 J	0.043 J	0.014 U	0.96 J	0.021 UJ	0.014 J	0.08 J	0.011 U	0.0037 J	0.018 U	0.078
CHRYSENE	0.4	780	NA	0.034 J	0.097 J	0.068	0.02 U	0.56 J	0.24 J	1.8	0.036	0.2	0.022 U	0.011 U	81 J	0.086	0.014 U	1.1 J	0.08 J	0.015 J	0.21 J	0.011 U	0.01 U	0.0089 U	0.1 J
DIBENZ[A,H]ANTHRACENE	0.4	0.8	NA	0.0045 J	0.01 J	0.032 J	0.02 UJ	0.081	0.049	0.23	0.02 U	0.041	0.022 UJ	0.011 U	15 UJ	0.027 J	0.014 U	0.34 J	0.024 J	0.021 U	0.028 J	0.023 UJ	0.01 UJ	0.018 UJ	0.022 UJ
FLUORANTHENE	20	10000	NA	0.041 J	0.074	0.16	0.023	0.58 J	0.21 J	1.3	0.038	0.16	0.022 U	0.023 U	100 J	0.12	0.014 UJ	1.1 J	0.021 UJ	0.024	0.2	0.023 U	0.01 U	0.018 U	0.15
FLUORENE	28	10000	NA	0.011 U	0.0035 J	0.0038 J	0.0099 U	0.039 J	0.013 J	0.09	0.01 U	0.012 J	0.011 U	0.011 U	9.2 J	0.012 U	0.014 U	0.058 J	0.0039 J	0.01 U	0.012 J	0.011 U	0.01 U	0.0089 U	0.01 J
INDENO[1,2,3-CD]PYRENE	0.9	7.8	NA	0.016 J	0.04	0.06 J	0.02 UJ	0.16	0.1	0.82 J	0.021	0.074	0.022 U	0.0034 J	44 J	0.053 J	0.014 U	0.82 J	0.027 J	0.021 U	0.052 J	0.023 U	0.01 UJ	0.018 U	0.036
NAPHTHALENE	54	10000	0.8	0.011 U	0.0096 U	0.0037 J	0.0031 J	0.026 J	0.0081 J	0.039	0.01 U	0.0032 J	0.011 U	0.011 U	3 J	0.012 U	0.014 U	0.02 J	0.01 U	0.01 U	0.0037 J	0.011 U	0.01 U	0.0089 U	0.0037 J
PHENANTHRENE	40	10000	NA	0.024 J	0.046	0.07	0.02 U	0.42 J	0.15 J	1	0.02 J	0.13	0.022 U	0.0036 J	86 J	0.048	0.014 U	0.76 J	0.15 J	0.021 J	0.15	0.023 U	0.01 U	0.018 U	0.11
PYRENE	13	10000	NA	0.038 J	0.073	0.24	0.031	0.72 J	0.23 J	2.2	0.036	0.2	0.022 U	0.023 U	100 J	0.098 J	0.014 U	2.2 J	0.25 J	0.025		0.023 U	0.01 UJ	0.018 U	0.18
PAH, TOTAL	NA	NA	NA	0.29	0.65	1.2	0.09	4.7	1.9	14	0.3	1.5	0.006	0.02	790	0.8	0.014 U	11	0.72	0.12	1.3	0.28 U	0.016	0.0026	0.98
Other SVOCs (mg/Kg)																									
BIS(2-ETHYLHEXYL)PHTHALATE	46	410	120			0.28 U	0.26 U													0.26 U	0.27 U	0.28 U		0.22 U	0.28 U
BUTYLBENZYLPHTHALATE	NA	NA	NA			0.28 U	0.26 U													0.26 U	0.27 U	0.28 U		0.22 U	0.28 U
CAPROLACTAM	NA	NA	NA			0.28 U	0.26 UJ													0.26 U	0.27 U	0.28 U		0.22 U	0.28 U
Energetics (mg/Kg)																									
2,4-DINITROTOLUENE	0.9	8.4	NA	0.049 U									0.048 U			0.042 U	0.046 U	0.049 U	0.042 U						
NITROGLYCERIN	NA	NA	NA	0.39 U									0.39 U			0.34 U	0.36 U	0.4 U	0.58 J						

Table 4-3
Summary of Soil Analytical Results - Metals and PAHs
MRP Site 1, Carr Point
NAVSTA, Newport, Rhode Island

			Location ID	MW-01D	MW-11	MW-11	MW-12	MW-12D	MW-13	MW-13	MW-13	MW-13	MW-13
			Sample Data	12/4/2013	12/3/2013	12/3/2013	12/2/2013	12/2/2013	12/4/2013	12/4/2013	12/4/2013	12/4/2013	12/4/2013
			Sample Interval	26 - 28 ft	4 - 6 ft	8 - 10 ft	10 - 14 ft	36 - 38 ft	0 - 1 ft	1 - 2 ft	3 - 5 ft	7 - 9 ft	11 - 13 ft
Metals (mg/Kg)	RDEC	I/C DEC	GA Leach										
ALUMINUM	NA	NA	NA		9580				18600	9670	12800	7750	
ANTIMONY	10	820	NA		0.08 J				0.36 J	0.15 J	0.16 J	0.06 J	
ARSENIC	7	7	NA		4.8 J				19.8 J	13.4 J	13.1 J	2.9 J	
BARIUM	5500	10000	NA		31				9.3	17.4	38	19.2	
BERYLLIUM	1.5	1.5	NA		0.56				0.26	0.39	0.72	0.31	
CADMIUM	39	1000	NA		0.074 U				0.14	0.09	0.14	0.072 U	
CALCIUM	EN	EN	EN		577				1700	773	927	1070	
CHROMIUM VI	390	10000	NA	0.32 U		0.32 U	0.26 J	U					0.33 U
CHROMIUM, TOTAL	390	10000	NA		11.9				27.6	13.8	21.4	10.8	
COBALT	NA	NA	NA		9.9				24.5	14.1	23.4	7.3	
COPPER	3100	10000	NA		9.7 J				34.7 J	36.1 J	30.3 J	13.8 J	
IRON	NA	NA	NA		15500 J-				48300 J-	30900 J-	49000 J-	17900 J-	
IRON, FERROUS	NA	NA	NA										
LEAD	150	500	NA		7.1 J				25.9 J	14.2 J	14.6 J	7.1 J	
MAGNESIUM	EN	EN	EN		1690				7650	3220	3710	3010	
MANGANESE	390	10000	NA		770				510	409	943	186	
MERCURY	23	610	NA		0.036 U				0.017 U	0.033 U	0.029 U	0.018 U	
NICKEL	1000	10000	NA		13.3				50.5	26	38.9	15.1	
POTASSIUM	EN	EN	EN		578				196	359	942	975	
SELENIUM	390	10000	NA		0.57				0.35 J	0.4	0.41 J	0.36 U	
SILVER	200	10000	NA		0.07 J				0.06 J	0.04 J	0.04 J	0.02 J	
SODIUM	EN	EN	EN		74 U				110 U	78 U	110 U	72 U	
THALLIUM	5.5	140	NA		0.11				0.03 J	0.04 J	0.09 J	0.1	
VANADIUM	550	10000	NA		18.2				22.1	15.9	29	16.8	
ZINC	6000	10000	NA		35.5				106	64.8	102	42	
PAHs (mg/Kg)													
ACENAPHTHENE	43	10000	NA		0.0023 J				0.0022 J	0.011 U	0.018 U	0.0098 U	
ACENAPHTHYLENE	23	10000	NA		0.011 U				0.011 U	0.011 U	0.018 U	0.0098 U	
ANTHRACENE	35	10000	NA		0.0039 J				0.0034 J	0.011 U	0.018 U	0.0098 U	
BENZO[A]ANTHRACENE	0.9	7.8	NA		0.023 U				0.028	0.0022 J	0.018 U	0.0098 U	
BENZO[A]PYRENE	0.4	0.8	240		0.021 J				0.029	0.011 U	0.018 U	0.0098 U	
BENZO[B]FLUORANTHENE	0.9	7.8	NA		0.028 J				0.063	0.0065 J	0.018 U	0.0098 U	
BENZO[G,H,I]PERYLENE	0.8	10000	NA		0.0054 J				0.019 J	0.011 U	0.018 U	0.0098 U	
BENZO[K]FLUORANTHENE	0.9	78	NA		0.014 J				0.015 J	0.011 U	0.018 U	0.0098 U	
CHRYSENE	0.4	780	NA		0.017 J				0.035	0.011 U	0.018 U	0.0098 U	
DIBENZ[A,H]ANTHRACENE	0.4	0.8	NA		0.0035 J				0.0052 J	0.011 U	0.018 U	0.0098 U	
FLUORANTHENE	20	10000	NA		0.023 U				0.046	0.003 J	0.018 U	0.0098 U	
FLUORENE	28	10000	NA		0.011 U				0.011 U	0.011 U	0.018 U	0.0098 U	
INDENO[1,2,3-CD]PYRENE	0.9	7.8	NA		0.018 J				0.022 J	0.011 U	0.018 U	0.0098 U	
NAPHTHALENE	54	10000	0.8		0.011 U				0.011 U	0.011 U	0.018 U	0.0098 U	
PHENANTHRENE	40	10000	NA		0.016 J				0.027	0.011 U	0.018 U	0.0098 U	
PYRENE	13	10000	NA		0.023 U				0.052	0.0034 J	0.018 U	0.0098 U	
PAH, TOTAL	NA	NA	NA		0.13				0.35	0.015	0.018 U	0.0098 U	
Other SVOCs (mg/Kg)													
BIS(2-ETHYLHEXYL)PHTHALATE	46	410	120										
BUTYLBENZYLPHTHALATE	NA	NA	NA										
CAPROLACTAM	NA	NA	NA										
Energetics (mg/Kg)													
2,4-DINITROTOLUENE	0.9	8.4	NA		0.05 U					0.049 U			
NITROGLYCERIN	NA	NA	NA		0.4 U					0.39 U			

Table 4-4
Summary of Soil Analytical Data - PCBs and Pesticides
MRP Site 1, Carr Point
NAVSTA, Newport, Rhode Island

			Location ID	SB01	SB01	SB01	SB09	SB09	SB09	SB09*	SB223	SB223	SB229*	SB301	SB302*	SB302	SB302	SB302	SB325	SB325
			Sample Data	5/19/2009	5/19/2009	5/19/2009	5/18/2009	5/18/2009	5/18/2009	5/18/2009	12/12/2013	12/12/2013	12/10/2013	12/6/2013	12/10/2013	12/10/2013	12/10/2013	12/10/2013	6/3/2014	6/3/2014
			Sample Interval	6 - 8 ft	20 - 22 ft	26 - 28 ft	6 - 8 ft	12 - 14 ft	38 - 40 ft	38 - 40 ft	0 - 1 ft	3 - 4 ft	0 - 1 ft	0 - 1 ft	0 - 1 ft	3 - 5 ft	8 - 10 ft	0 - 1 ft	0 - 1 ft	1- 2 ft
PCBs (mg/Kg)	RDEC	I/C DEC	GA Leach																	
AROCLOR-1254	10	10	10	0.02 U	0.017 U	0.018 U	0.019 U	0.018 U	0.019 U	0.02 U	1.9 U	0.18 U	0.0016 U	0.043 J	0.0018 U	0.0018 U	0.0017 U	0.0019 U	0.0017 U	0.002 U
AROCLOR-1260	10	10	10	0.0098 J	0.017 U	0.018 U	0.019 U	0.018 U	0.019 U	0.02 U	270 J	18 J	0.0016 UJ	0.0089 UJ	0.05	0.0018 U	0.0017 U	0.031	0.016 J	0.002 U
PCB, TOTAL	NA	NA	NA	0.0098	0.017 U	0.018 U	0.019 U	0.018 U	0.019 U	0.02 U	270	18	0.0019 U	0.043	0.05	0.0021 U	0.002 U	0.031	0.016	0.0024 U
Pesticides (mg/Kg)																				
4,4-DDE	NA	NA	NA	0.00082 U	0.00068 U	0.00072 U	0.00078 U	0.00073 U	0.00077 U	0.00078 U	0.037 U	0.081 J	0.062	0.0017 UJ	0.00064 J	0.00034 U	0.00033 UJ	0.00059 J		
BETA-BHC	NA	NA	NA	0.00041 U	0.00016 J	0.00036 U	0.00039 U	0.00036 U	0.00039 U	0.00039 U	0.019 U	0.0018 U	0.00016 UJ	0.00089 UJ	0.00018 U	0.00018 U	0.00017 UJ	0.00019 U		
ENDOSULFAN I	NA	NA	NA	0.00041 U	0.00034 U	0.00036 U	0.00039 U	0.00036 U	0.00039 U	0.00039 U	0.019 U	0.0018 U	0.0015 J	0.00089 UJ	0.00018 U	0.00018 U	0.00017 UJ	0.00019 U		
ENDOSULFAN II	NA	NA	NA	0.0008 J	0.0004 J	0.0018	0.0013	0.0017	0.0028	0.003	0.037 U	0.0035 U	0.00032 U	0.0017 UJ	0.00032 J	0.00034 U	0.00033 UJ	0.00028 J		
ENDOSULFAN SULFATE	NA	NA	NA	0.00082 UJ	0.00068 U	0.00072 U	0.00078 U	0.00073 U	0.00077 U	0.00078 U	12 J	0.85 J	0.00032 UJ	0.0017 UJ	0.0021 J	0.00034 U	0.00033 UJ	0.00038 UJ		
TRANS-CHLORDANE	0.5	4.4	1.4	0.00024 J	0.00034 U	0.00026 J	0.00039 U	0.00036 U	0.00039 U	0.00039 U										

Table 4-5
Summary of Soil Analytical Results – VOCs
MRP Site 1, Carr Point
NAVSTA, Newport, Rhode Island

			Location ID	SB01	SB01	SB01	SB09	SB09	SB09	SB09*	SB223	SB223	SB301	SB302*	SB302	SB302	SB302
			Sample Data	5/19/2009	5/19/2009	5/19/2009	5/18/2009	5/18/2009	5/18/2009	5/18/2009	12/12/2013	12/12/2013	12/6/2013	12/10/2013	12/10/2013	12/10/2013	12/10/2013
			Sample Interval	6 - 8 ft	20 - 22 ft	26 - 28 ft	6 - 8 ft	12 - 14 ft	38 - 40 ft	38 - 40 ft	0 - 1 ft	3 - 4 ft	0 - 1 ft	0 - 1 ft	3 - 5 ft	8 - 10 ft	0 - 1 ft
VOCs (mg/Kg)	RDEC	I/C DEC	GA Leach														
1,1,1,2-TETRACHLOROETHANE	2.2	220	NA								0.0042 UJ	0.0032 UJ	0.0028 UJ	0.003 UJ	0.0032 UJ	0.0015 UJ	0.0025 UJ
1,1,1-TRICHLOROETHANE	540	10000	11	0.0073 UJ	0.0042 U	0.0041 U	0.0045 U	0.0044 U	0.005 U	0.0046 UJ	0.0042 UJ	0.0032 UJ	0.0028 UJ	0.003 UJ	0.0032 UJ	0.0015 UJ	0.0025 UJ
1,1,2,2-TETRACHLOROETHANE	1.3	29	NA	0.0073 UJ	0.0042 UJ	0.0041 UJ	0.0045 U	0.0044 UJ	0.005 U	0.0046 UJ	0.0042 UJ	0.0032 UJ	0.0028 UJ	0.003 UJ	0.0032 UJ	0.0015 UJ	0.0025 UJ
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	NA	NA	NA														
1,1,2-TRICHLOROETHANE	3.6	100	0.1	0.0073 UJ	0.0042 U	0.0041 U	0.0045 U	0.0044 U	0.005 U	0.0046 UJ	0.0042 UJ	0.0032 UJ	0.0028 UJ	0.003 UJ	0.0032 UJ	0.0015 UJ	0.0025 UJ
1,1-DICHLOROETHANE	920	10000	NA	0.0073 UJ	0.0042 U	0.0041 U	0.0045 U	0.0044 U	0.005 U	0.0046 UJ	0.0042 UJ	0.0032 UJ	0.0028 UJ	0.003 UJ	0.0032 UJ	0.0015 UJ	0.0025 UJ
1,1-DICHLOROETHENE	0.2	9.5	0.7	0.0073 UJ	0.0042 U	0.0041 U	0.0045 U	0.0044 U	0.005 U	0.0046 UJ	0.0042 UJ	0.0032 UJ	0.0028 UJ	0.003 UJ	0.0032 UJ	0.0015 UJ	0.0025 UJ
1,1-DICHLOROPROPENE	NA	NA	NA								0.0042 UJ	0.0032 UJ	0.0028 UJ	0.003 UJ	0.0032 UJ	0.0015 UJ	0.0025 UJ
1,2,3-TRICHLOROBENZENE	96	10000	NA								0.0042 UJ	0.0032 UJ	0.0028 UJ	0.003 UJ	0.0032 UJ	0.0015 UJ	0.0025 UJ
1,2,3-TRICHLOROPROPANE	NA	NA	NA								0.0042 UJ	0.0032 UJ	0.0028 UJ	0.003 UJ	0.0032 UJ	0.0015 UJ	0.0025 UJ
1,2,4-TRICHLOROBENZENE	96	10000	140	0.0073 UJ	0.0042 UJ	0.0041 UJ	0.0045 U	0.0044 UJ	0.005 U	0.0046 UJ	0.0042 UJ	0.0032 UJ	0.0028 UJ	0.003 UJ	0.0032 UJ	0.0015 UJ	0.0025 UJ
1,2,4-TRIMETHYLBENZENE	NA	NA	NA								0.0042 UJ	0.0032 UJ	0.0028 UJ	0.003 UJ	0.0032 UJ	0.0015 UJ	0.0025 UJ
1,2-DIBROMO-3-CHLOROPROPANE	0.5	4.1	NA	0.0073 UJ	0.0042 UJ	0.0041 UJ	0.0045 U	0.0044 UJ	0.005 U	0.0046 UJ	0.0042 UJ	0.0032 UJ	0.0028 UJ	0.003 UJ	0.0032 UJ	0.0015 UJ	0.0025 UJ
1,2-DIBROMOETHANE	0.01	0.07	0.0005	0.0073 UJ	0.0042 U	0.0041 U	0.0045 U	0.0044 U	0.005 U	0.0046 UJ	0.0042 UJ	0.0032 UJ	0.0028 UJ	0.003 UJ	0.0032 UJ	0.0015 UJ	0.0025 UJ
1,2-DICHLOROBENZENE	510	10000	41	0.0073 UJ	0.0042 UJ	0.0041 UJ	0.0045 U	0.0044 UJ	0.005 U	0.0046 UJ	0.0042 UJ	0.0032 UJ	0.0028 UJ	0.003 UJ	0.0032 UJ	0.0015 UJ	0.0025 UJ
1,2-DICHLOROETHANE	0.9	63	0.1	0.0073 UJ	0.0042 U	0.0041 U	0.0045 U	0.0044 U	0.005 U	0.0046 UJ	0.0042 UJ	0.0032 UJ	0.0028 UJ	0.003 UJ	0.0032 UJ	0.0015 UJ	0.0025 UJ
1,2-DICHLOROETHENE, TOTAL	630	10000	3.3	UJ	U	U	U	U	U	UJ	0.0085 UJ	0.0065 UJ	0.0055 UJ	0.006 UJ	0.0065 UJ	0.003 UJ	0.005 UJ
1,2-DICHLOROPROPANE	1.9	84	0.1	0.0073 UJ	0.0042 U	0.0041 U	0.0045 U	0.0044 U	0.005 U	0.0046 UJ	0.0042 UJ	0.0032 UJ	0.0028 UJ	0.003 UJ	0.0032 UJ	0.0015 UJ	0.0025 UJ
1,3,5-TRIMETHYLBENZENE	NA	NA	NA								0.0042 UJ	0.0032 UJ	0.0028 UJ	0.003 UJ	0.0032 UJ	0.0015 UJ	0.0025 UJ
1,3-DICHLOROBENZENE	430	10000	41	0.0073 UJ	0.0042 UJ	0.0041 UJ	0.0045 U	0.0044 UJ	0.005 U	0.0046 UJ	0.0042 UJ	0.0032 UJ	0.0028 UJ	0.003 UJ	0.0032 UJ	0.0015 UJ	0.0025 UJ
1,3-DICHLOROPROPANE	1.9	84	0.1								0.0042 UJ	0.0032 UJ	0.0028 UJ	0.003 UJ	0.0032 UJ	0.0015 UJ	0.0025 UJ
1,4-DICHLOROBENZENE	27	240	41	0.0073 UJ	0.0042 UJ	0.0041 UJ	0.0045 U	0.0044 UJ	0.005 U	0.0046 UJ	0.0042 UJ	0.0032 UJ	0.0028 UJ	0.003 UJ	0.0032 UJ	0.0015 UJ	0.0025 UJ
2,2-DICHLOROPROPANE	1.9	84	0.1								0.0042 UJ	0.0032 UJ	0.0028 UJ	0.003 UJ	0.0032 UJ	0.0015 UJ	0.0025 UJ
2-BUTANONE	10000	10000	NA	0.073 UJ	0.042 U	0.041 U	0.045 U	0.044 U	0.05 U	0.046 UJ	0.021 UJ	0.016 UJ	0.014 UJ	0.015 UJ	0.016 UJ	0.0075 UJ	0.012 UJ
2-CHLOROTOLUENE	210	10000	NA								0.0042 UJ	0.0032 UJ	0.0028 UJ	0.003 UJ	0.0032 UJ	0.0015 UJ	0.0025 UJ
2-HEXANONE	NA	NA	NA	0.015 UJ	0.0084 U	0.0082 U	0.009 UJ	0.0088 UJ	0.01 UJ	0.0092 UJ	0.021 UJ	0.016 UJ	0.014 UJ	0.015 UJ	0.016 UJ	0.0075 UJ	0.012 UJ
4-CHLOROTOLUENE	210	10000	NA								0.0042 UJ	0.0032 UJ	0.0028 UJ	0.003 UJ	0.0032 UJ	0.0015 UJ	0.0025 UJ
4-ISOPROPYLTOLUENE	27	10000	NA								0.0042 UJ	0.0032 UJ	0.0028 UJ	0.003 UJ	0.0032 UJ	0.0015 UJ	0.0025 UJ
4-METHYL-2-PENTANONE	1200	10000	NA	0.015 UJ	0.0084 U	0.0082 U	0.009 U	0.0088 U	0.01 U	0.0092 UJ	0.021 UJ	0.016 UJ	0.014 UJ	0.015 UJ	0.016 UJ	0.0075 UJ	0.012 UJ
ACETONE	7800	10000	NA	0.073 UJ	0.042 U	0.0054 J	0.045 UJ	0.044 UJ	0.05 UJ	0.046 UJ	0.021 UJ	0.016 UJ	0.014 UJ	0.015 UJ	0.016 UJ	0.0075 UJ	0.012 UJ
BENZENE	2.5	200	0.2	0.0073 UJ	0.0042 U	0.0041 U	0.0045 U	0.0044 U	0.005 U	0.0046 UJ	0.0042 UJ	0.0032 UJ	0.0028 UJ	0.003 UJ	0.0032 UJ	0.0015 UJ	0.0025 UJ
BROMOBENZENE	NA	NA	NA								0.0042 UJ	0.0032 UJ	0.0028 UJ	0.003 UJ	0.0032 UJ	0.0015 UJ	0.0025 UJ
BROMOCHLOROMETHANE	NA	NA	NA								0.0042 UJ	0.0032 UJ	0.0028 UJ	0.003 UJ	0.0032 UJ	0.0015 UJ	0.0025 UJ
BROMODICHLOROMETHANE	10	92	NA	0.0073 UJ	0.0042 U	0.0041 U	0.0045 U	0.0044 U	0.005 U	0.0046 UJ	0.0042 UJ	0.0032 UJ	0.0028 UJ	0.003 UJ	0.0032 UJ	0.0015 UJ	0.0025 UJ
BROMOFORM	81	720	NA	0.0073 UJ	0.0042 U	0.0041 U	0.0045 U	0.0044 U	0.005 U	0.0046 UJ	0.0042 UJ	0.0032 UJ	0.0028 UJ	0.003 UJ	0.0032 UJ	0.0015 UJ	0.0025 UJ
BROMOMETHANE	0.8	2900	NA	0.015 UJ	0.0084 U	0.0082 U	0.009 U	0.0088 U	0.01 U	0.0092 UJ	0.0085 UJ	0.0065 UJ	0.0055 UJ	0.006 UJ	0.0065 UJ	0.003 UJ	0.005 UJ
CARBON DISULFIDE	NA	NA	NA	0.0073 UJ	0.0042 U	0.0041 U	0.0045 U	0.0044 U	0.005 U	0.0046 UJ	0.0042 UJ	0.0032 UJ	0.0028 UJ	0.003 UJ	0.0032 UJ	0.0015 UJ	0.0025 UJ
CARBON TETRACHLORIDE	1.5	44	0.4	0.0073 UJ	0.0042 U	0.0041 U	0.0045 U	0.0044 U	0.005 U	0.0046 UJ	0.0042 UJ	0.0032 UJ	0.0028 UJ	0.003 UJ	0.0032 UJ	0.0015 UJ	0.0025 UJ
CHLOROBENZENE	210	10000	3.2	0.0073 UJ	0.0042 U	0.0041 U	0.0045 U	0.0044 U	0.005 U	0.0046 UJ	0.0042 UJ	0.0032 UJ	0.0028 UJ	0.003 UJ	0.0032 UJ	0.0015 UJ	0.0025 UJ
CHLOROETHANE	NA	NA	NA	0.015 UJ	0.0084 U	0.0082 U	0.009 U	0.0088 U	0.01 U	0.0092 UJ	0.0085 UJ	0.0065 UJ	0.0055 UJ	0.006 UJ	0.0065 UJ	0.003 UJ	0.005 UJ
CHLOROFORM	1.2	940	NA	0.0073 UJ	0.0042 U	0.0041 U	0.0045 U	0.0044 U	0.005 U	0.0046 UJ	0.0042 UJ	0.0032 UJ	0.0028 UJ	0.003 UJ	0.0032 UJ	0.0015 UJ	0.0025 UJ

Table 4-5
Summary of Soil Analytical Results – VOCs
MRP Site 1, Carr Point
NAVSTA, Newport, Rhode Island

			Location ID	SB01	SB01	SB01	SB09	SB09	SB09	SB09*	SB223	SB223	SB301	SB302*	SB302	SB302	SB302
			Sample Data	5/19/2009	5/19/2009	5/19/2009	5/18/2009	5/18/2009	5/18/2009	5/18/2009	12/12/2013	12/12/2013	12/6/2013	12/10/2013	12/10/2013	12/10/2013	12/10/2013
			Sample Interval	6 - 8 ft	20 - 22 ft	26 - 28 ft	6 - 8 ft	12 - 14 ft	38 - 40 ft	38 - 40 ft	0 - 1 ft	3 - 4 ft	0 - 1 ft	0 - 1 ft	3 - 5 ft	8 - 10 ft	0 - 1 ft
VOCs (mg/Kg)	RDEC	I/C DEC	GA Leach														
CHLOROMETHANE	NA	NA	NA	0.015 UJ	0.0084 U	0.0082 U	0.009 U	0.0088 U	0.01 U	0.0092 UJ	0.0085 UJ	0.0065 UJ	0.0055 UJ	0.006 UJ	0.0065 UJ	0.003 UJ	0.005 UJ
CIS-1,2-DICHLOROETHENE	630	10000	1.7	0.0073 UJ	0.0042 U	0.0041 U	0.0045 U	0.0044 U	0.005 U	0.0046 UJ	0.0042 UJ	0.0032 UJ	0.0028 UJ	0.003 UJ	0.0032 UJ	0.0015 UJ	0.0025 UJ
CIS-1,3-DICHLOROPROPENE	NA	NA	NA	0.0073 UJ	0.0042 U	0.0041 U	0.0045 U	0.0044 U	0.005 U	0.0046 UJ	0.0042 UJ	0.0032 UJ	0.0028 UJ	0.003 UJ	0.0032 UJ	0.0015 UJ	0.0025 UJ
CYCLOHEXANE	NA	NA	NA	0.0073 UJ	0.0042 U	0.0041 U	0.0045 U	0.0044 U	0.005 U	0.0046 UJ							
DIBROMOCHLOROMETHANE	7.6	68	NA	0.0073 UJ	0.0042 U	0.0041 U	0.0045 U	0.0044 U	0.005 U	0.0046 UJ	0.0042 UJ	0.0032 UJ	0.0028 UJ	0.003 UJ	0.0032 UJ	0.0015 UJ	0.0025 UJ
DIBROMOMETHANE	NA	NA	NA								0.0042 UJ	0.0032 UJ	0.0028 UJ	0.003 UJ	0.0032 UJ	0.0015 UJ	0.0025 UJ
DICHLORODIFLUOROMETHANE	NA	NA	NA	0.015 UJ	0.0084 U	0.0082 U	0.009 U	0.0088 U	0.01 U	0.0092 UJ	0.0085 UJ	0.0065 UJ	0.0055 UJ	0.006 UJ	0.0065 UJ	0.003 UJ	0.005 UJ
ETHYLBENZENE	71	10000	27	0.0073 UJ	0.0042 U	0.0041 U	0.0045 U	0.0044 U	0.005 U	0.0046 UJ	0.0042 UJ	0.0032 UJ	0.0028 UJ	0.003 UJ	0.0032 UJ	0.0015 UJ	0.0025 UJ
HEXACHLOROBUTADIENE	8.2	73	NA								0.0042 UJ	0.0032 UJ	0.0028 UJ	0.003 UJ	0.0032 UJ	0.0015 UJ	0.0025 UJ
ISOPROPYLBENZENE	27	10000	NA	0.0073 UJ	0.0042 U	0.0041 U	0.0045 U	0.0044 U	0.005 U	0.0046 UJ	0.0042 UJ	0.0032 UJ	0.0028 UJ	0.003 UJ	0.0032 UJ	0.0015 UJ	0.0025 UJ
M- AND P-XYLENE	110	10000	540								0.0085 UJ	0.0065 UJ	0.0055 UJ	0.006 UJ	0.0065 UJ	0.003 UJ	0.005 UJ
METHYL ACETATE	NA	NA	NA	0.015 UJ	0.0084 U	0.0082 U	0.009 U	0.0088 U	0.01 U	0.0092 UJ							
METHYL CYCLOHEXANE	NA	NA	NA	0.0073 UJ	0.0042 U	0.0041 U	0.0045 U	0.0044 U	0.005 U	0.0046 UJ	0.0042 UJ	0.0032 UJ	0.0028 UJ	0.003 UJ	0.0032 UJ	0.0015 UJ	0.0025 UJ
METHYL TERT-BUTYL ETHER	390	10000	0.9	0.0073 UJ	0.0042 U	0.0041 U	0.0045 U	0.0044 U	0.005 U	0.0046 UJ	0.0042 UJ	0.0032 UJ	0.0028 UJ	0.003 UJ	0.0032 UJ	0.0015 UJ	0.0025 UJ
METHYLENE CHLORIDE	45	760	NA	0.015 UJ	0.0084 U	0.0082 U	0.009 U	0.0088 U	0.01 U	0.0092 UJ	0.021 UJ	0.016 UJ	0.014 UJ	0.015 UJ	0.016 UJ	0.0075 UJ	0.012 UJ
NAPHTHALENE	54	10000	0.8														
N-BUTYLBENZENE	NA	NA	NA								0.0042 UJ	0.0032 UJ	0.0028 UJ	0.003 UJ	0.0032 UJ	0.0015 UJ	0.0025 UJ
O-XYLENE	110	10000	540								0.0042 UJ	0.0032 UJ	0.0028 UJ	0.003 UJ	0.0032 UJ	0.0015 UJ	0.0025 UJ
PROPYLBENZENE	NA	NA	NA								0.0042 UJ	0.0032 UJ	0.0028 UJ	0.003 UJ	0.0032 UJ	0.0015 UJ	0.0025 UJ
SEC-BUTYLBENZENE	NA	NA	NA								0.0042 UJ	0.0032 UJ	0.0028 UJ	0.003 UJ	0.0032 UJ	0.0015 UJ	0.0025 UJ
STYRENE	13	190	2.9	0.0073 UJ	0.0042 U	0.0041 U	0.0045 U	0.0044 U	0.005 U	0.0046 UJ	0.0042 UJ	0.0032 UJ	0.0028 UJ	0.003 UJ	0.0032 UJ	0.0015 UJ	0.0025 UJ
TERT-BUTANOL	NA	NA	NA								0.021 UJ	0.016 UJ	0.014 UJ	0.015 UJ	0.016 UJ	0.0075 UJ	0.012 UJ
TERT-BUTYLBENZENE	NA	NA	NA								0.0042 UJ	0.0032 UJ	0.0028 UJ	0.003 UJ	0.0032 UJ	0.0015 UJ	0.0025 UJ
TETRACHLOROETHENE	12	110	0.1	0.0073 UJ	0.0042 U	0.0041 U	0.0045 U	0.0044 U	0.005 U	0.0046 UJ	0.0042 UJ	0.0032 UJ	0.0028 UJ	0.003 UJ	0.0032 UJ	0.0015 UJ	0.0025 UJ
TOLUENE	190	10000	32	0.0073 UJ	0.0042 U	0.0041 U	0.0045 U	0.0044 U	0.005 U	0.0046 UJ	0.0042 UJ	0.0032 UJ	0.0028 UJ	0.003 UJ	0.0032 UJ	0.0015 UJ	0.0025 UJ
TRANS-1,2-DICHLOROETHENE	1100	10000	3.3	0.0073 UJ	0.0042 U	0.0041 U	0.0045 U	0.0044 U	0.005 U	0.0046 UJ	0.0042 UJ	0.0032 UJ	0.0028 UJ	0.003 UJ	0.0032 UJ	0.0015 UJ	0.0025 UJ
TRANS-1,3-DICHLOROPROPENE	NA	NA	NA	0.0073 UJ	0.0042 U	0.0041 U	0.0045 U	0.0044 U	0.005 U	0.0046 UJ	0.0042 UJ	0.0032 UJ	0.0028 UJ	0.003 UJ	0.0032 UJ	0.0015 UJ	0.0025 UJ
TRICHLOROETHENE	13	520	0.2	0.0073 UJ	0.0042 U	0.0041 U	0.0045 U	0.0044 U	0.005 U	0.0046 UJ	0.0042 UJ	0.0032 UJ	0.0028 UJ	0.003 UJ	0.0032 UJ	0.0015 UJ	0.0025 UJ
TRICHLOROFLUOROMETHANE	NA	NA	NA	0.015 UJ	0.0084 U	0.0082 U	0.009 U	0.0088 U	0.01 U	0.0092 UJ	0.0085 UJ	0.0065 UJ	0.0055 UJ	0.006 UJ	0.0065 UJ	0.003 UJ	0.005 UJ
VINYL CHLORIDE	0.02	3	0.3	0.015 UJ	0.0084 U	0.0082 U	0.009 U	0.0088 U	0.01 U	0.0092 UJ	0.0085 UJ	0.0065 UJ	0.0055 UJ	0.006 UJ	0.0065 UJ	0.003 UJ	0.005 UJ
XYLENES, TOTAL	110	10000	540	0.0073 UJ	0.0042 U	0.0041 U	0.0045 U	0.0044 U	0.005 U	0.0046 UJ	0.013 UJ	0.0098 UJ	0.0082 UJ	0.009 UJ	0.0098 UJ	0.0045 UJ	0.0075 UJ

Table 4-6
Summary of Soil Analytical Results – TPH (2009)
MRP Site 1, Carr Point
NAVSTA, Newport, Rhode Island

		Location ID	SB01	SB01	SB01	SB09	SB09	SB09	SB09*
		Sample Date	5/19/2009	5/19/2009	5/19/2009	5/18/2009	5/18/2009	5/18/2009	5/18/2009
		Sample Interval	6 - 8 ft	20 - 22 ft	26 - 28 ft	6 - 8 ft	12 - 14 ft	38 - 40 ft	38 - 40 ft
Analytical Method (mg/kg)	RDEC	I/C DEC							
TPH-DIESEL RANGE	500	2500	17 J	13	7.7	9	8.9	9.3	7.6 J
TPH-TOTAL UNKNOWN GASOLINE RANGE ORGANICS	500	2500	3.2 U	3.8	11	51	4.3	4.4	6.8

Table 4-7
Summary of Surface Soil Analytical Results – Lead and PAHs (2010)
MRP Site 1, Carr Point
NAVSTA, Newport, Rhode Island

			Location ID	SS107	SS111	SS114	SS114	SS115	SS115*	SS116	SS116	SS117	SS118	SS118	SS119	SS120
			Sample Data	1/19/2010	1/19/2010	1/19/2010	1/19/2010	1/19/2010	1/19/2010	1/19/2010	1/19/2010	1/19/2010	1/19/2010	1/19/2010	1/19/2010	1/19/2010
			Sample Interval	0 - 0.5 ft	0 - 0.5 ft	0 - 0.5 ft	0.5 - 1 ft	0 - 0.5 ft	0 - 0.5 ft	0 - 0.5 ft	0.5 - 1 ft	0 - 0.5 ft	0 - 0.5 ft	0.5 - 1 ft	0 - 0.5 ft	0 - 0.5 ft
Metals (mg/Kg)	RDEC	I/C DEC	GA Leach													
LEAD	150	500	NA	63.4	60.4	75.7	25.7	64.2	72.7	48.5	28.5	96.6	118	82.5	61.9	59.5
PAHs (mg/Kg)																
2-METHYLNAPHTHALENE	123	10000	NA	0.348 U	0.369 U	0.33 U	0.296 U	0.328 U	0.389 U	0.383 U	0.344 U	0.442 U	0.347 U	0.376 U	0.337 U	0.353 U
ACENAPHTHENE	43	10000	NA	0.348 U	0.369 U	0.33 U	0.296 U	0.328 U	0.389 U	0.383 U	0.344 U	0.442 U	0.347 U	0.376 U	0.337 U	0.353 U
ACENAPHTHYLENE	23	10000	NA	0.071 J	0.369 U	0.059 J	0.296 U	0.369 D	0.118 J	0.383 U	0.344 U	0.442 U	0.347 U	0.376 U	0.337 U	0.353 U
ANTHRACENE	35	10000	NA	0.15 J	0.369 U	0.33 U	0.296 U	0.194 J	0.0676 J	0.383 U	0.344 U	0.442 U	0.09 J	0.0676 J	0.337 U	0.0762 J
BENZO[A]ANTHRACENE	0.9	7.8	NA	0.441	0.202 J	0.264 J	0.0592 J	0.823 J	0.251 J	0.14 J	0.137 J	0.318 J	0.45 J	0.349 J	0.25 J	0.361 J
BENZO[A]PYRENE	0.4	0.8	240	0.342 J	0.25 J	0.287 J	0.0592 J	0.785 J	0.277 J	0.141 J	0.121 J	0.324 J	0.504	0.333 J	0.249 J	0.412
BENZO[B]FLUORANTHENE	0.9	7.8	NA	0.364	0.245 J	0.282 J	0.0697 J	0.92 J	0.341 J	0.159 J	0.14 J	0.353 J	0.582	0.377	0.301 J	0.476
BENZO[G,H,I]PERYLENE	0.8	10000	NA	0.224 J	0.254 J	0.203 J	0.0632 J	0.553	0.216 J	0.105 J	0.0887 J	0.219 J	0.361	0.235 J	0.184 J	0.305 J
BENZO[K]FLUORANTHENE	0.9	78	NA	0.154 J	0.0818 J	0.114 J	0.296 U	0.36	0.112 J	0.0654 J	0.0603 J	0.15 J	0.225 J	0.148 J	0.12 J	0.176 J
CHRYSENE	0.4	780	NA	0.632	0.345 J	0.396 J	0.106 J	1.53 J	0.51 J	0.2 J	0.206 J	0.439 J	0.622 J	0.507 J	0.362 J	0.575 J
DIBENZ[A,H]ANTHRACENE	0.4	0.8	NA	0.0672 J	0.0557 J	0.0518 J	0.296 U	0.154 J	0.389 U	0.383 U	0.344 U	0.442 U	0.0788 J	0.0596 J	0.337 U	0.0714 J
FLUORANTHENE	20	10000	NA	0.761	0.291 J	0.365	0.0904 J	1.85 J	0.534 J	0.241	0.284 J	0.481	0.678	0.52	0.384	0.582
FLUORENE	28	10000	NA	0.0526 J	0.369 U	0.33 U	0.296 U	0.078 J	0.389 U	0.383 U	0.344 U	0.442 U	0.347 U	0.376 U	0.337 U	0.353 U
INDENO[1,2,3-CD]PYRENE	0.9	7.8	NA	0.222 J	0.215 J	0.201 J	0.0476 J	0.569	0.191 J	0.106 J	0.0917 J	0.223 J	0.373	0.223 J	0.191 J	0.308 J
NAPHTHALENE	54	10000	0.8	0.348 U	0.369 U	0.33 U	0.296 U	0.328 U	0.389 U	0.383 U	0.344 U	0.442 U	0.347 U	0.376 U	0.337 U	0.353 U
PHENANTHRENE	40	10000	NA	0.612	0.153 J	0.17 J	0.296 U	1.42 J	0.29 J	0.113 J	0.15 J	0.202 J	0.338 J	0.24 J	0.183 J	0.291 J
PYRENE	13	10000	NA	0.81	0.306 J	0.442	0.0996 J	2.26 J	0.651 J	0.218 J	0.259 J	0.502	0.633	0.524	0.375	0.548

Table 4-7
Summary of Surface Soil Analytical Results – Lead and PAHs (2010)
MRP Site 1, Carr Point
NAVSTA, Newport, Rhode Island

			Location ID	SS120	SS121	SS122	SS122*	SS122	SS123
			Sample Data	1/19/2010	1/19/2010	1/19/2010	1/19/2010	1/19/2010	1/19/2010
			Sample Interval	0.5 - 1 ft	0 - 0.5 ft	0 - 0.5 ft	0 - 0.5 ft	0.5 - 1 ft	0 - 0.5 ft
Metals (mg/Kg)	RDEC	I/C DEC	GA Leach						
LEAD	150	500	NA	45.2	23.2	100	157	22.7	36
PAHs (mg/Kg)									
2-METHYLNAPHTHALENE	123	10000	NA	0.305 U	0.298 U	0.331 U	0.345 U	0.323 U	0.298 U
ACENAPHTHENE	43	10000	NA	0.305 U	0.298 U	0.331 U	0.345 U	0.323 U	0.298 U
ACENAPHTHYLENE	23	10000	NA	0.305 U	0.0499 J	0.314 J	0.201 J	0.323 U	0.0733 J
ANTHRACENE	35	10000	NA	0.305 U	0.0522 J	0.218 J	0.128 J	0.323 U	0.0958 J
BENZO[A]ANTHRACENE	0.9	7.8	NA	0.118 J	0.559 J	0.878 J	0.423 J	0.0828 J	0.507 J
BENZO[A]PYRENE	0.4	0.8	240	0.109 J	0.528	0.713	0.439	0.0923 J	0.521
BENZO[B]FLUORANTHENE	0.9	7.8	NA	0.129 J	0.58	0.885	0.596	0.11 J	0.568
BENZO[G,H,I]PERYLENE	0.8	10000	NA	0.0909 J	0.382	0.52	0.341 J	0.0715 J	0.353
BENZO[K]FLUORANTHENE	0.9	78	NA	0.0608 J	0.255 J	0.326 J	0.208 J	0.0499 J	0.233 J
CHRYSENE	0.4	780	NA	0.168 J	0.731 J	1.3 J	0.725 J	0.151 J	0.686 J
DIBENZ[A,H]ANTHRACENE	0.4	0.8	NA	0.305 U	0.0737 J	0.115 J	0.0913 J	0.323 U	0.0758 J
FLUORANTHENE	20	10000	NA	0.221 J	0.857	1.47	0.889	0.156 J	0.81
FLUORENE	28	10000	NA	0.305 U	0.298 U	0.0602 J	0.345 U	0.323 U	0.298 U
INDENO[1,2,3-CD]PYRENE	0.9	7.8	NA	0.084 J	0.381	0.528	0.33 J	0.0681 J	0.338
NAPHTHALENE	54	10000	0.8	0.305 U	0.298 U	0.331 U	0.345 U	0.323 U	0.298 U
PHENANTHRENE	40	10000	NA	0.0778 J	0.299	0.84 J	0.467 J	0.0758 J	0.295 J
PYRENE	13	10000	NA	0.197 J	0.891	1.81 J	1.06 J	0.19 J	0.955

Table 4-8
Summary of Soil Excavation Analytical Results – Select Metals and PAHs (2013)
MRP Site 1, Carr Point
NAVSTA, Newport, Rhode Island

		Location ID	1A-01	1B-01	1B-01 DUP	1C-01	1C-02	1D-01	1D-02	1D-02 DUP	1E-01	1E-02	2A-01	2A-02	2B-01	2B-02	2B-02 DUP
		Sample Date	4/17/2013	4/17/2013	4/17/2013	4/17/2013	4/24/2013	4/18/2013	4/24/2013	4/24/2013	4/18/2013	4/24/2013	4/18/2013	4/24/2013	4/18/2013	4/25/2013	4/25/2013
		Depth	1 ft	1 ft	1 ft	1 ft **	2 ft	1 ft **	2 ft	2 ft	1 ft **	2 ft	1 ft **	2 ft	1 ft **	2 ft	2 ft
Metals (mg/Kg)	RDEC	I/C DEC															
ARSENIC	7	7	5.2	13	14	32	4.8	18	4.6	4.3	16	4.7	8.8	4.5	21	9.3	10
CHROMIUM, TOTAL	390	10000	9.6	12	12	22	12	18	11	10	18	10	14	11	16	10	10
LEAD	150	500	22	42	34	49	36	26	18	17	27	13	69	11	46	8.8	8.8
SVOCs (mg/Kg)																	
ANTHRACENE	35	10000	0.003 J	0.022	0.024	0.0012 J	0.0073 U	0.096	0.0072 U	0.0072 U	0.0045 J	0.007 U	0.12	0.0069 U	0.029	0.0007 J	0.0015 J
ACENAPHTHENE	43	10000	0.0012 J	0.0031 J	0.0027 J	0.0008 J	0.0073 U	0.073	0.0072 U	0.0072 U	0.0027 J	0.007 U	0.075	0.0069 U	0.013	0.0067 U	0.0068 U
ACENAPHTHYLENE	23	10000	0.0021 J	0.036	0.038	0.0065 U	0.0073 U	0.0036 J	0.0072 U	0.0072 U	0.0064 U	0.007 U	0.028	0.0069 U	0.013	0.0067 U	0.0007 J
BENZO(A)ANTHRACENE	0.9	7.8	0.024	0.067	0.068	0.0055 J	0.0012 J	0.55	0.001 J	0.0012 J	0.022	0.0011 J	0.57	0.0024 J	0.15	0.0039 J	0.0058 J
BENZO(A)PYRENE	0.4	0.8	0.031	0.082	0.079	0.0082	0.001 J	0.88	0.0008 J	0.001 J	0.032	0.001 J	0.82	0.0029 J	0.19	0.0042 J	0.0079
BENZO(B)FLUORANTHENE	0.9	7.8	0.02	0.093	0.092	0.0079	0.0012 J	0.85	0.001 J	0.0013 J	0.032	0.0013 J	0.94	0.0028 J	0.19	0.0044 J	0.01
BENZO(G,H,I)PERYLENE	0.8	10000	0.021	0.069	0.067	0.0066	0.0009 J	0.69	0.0072 U	0.0009 J	0.026	0.0009 J	0.63	0.0024 J	0.14	0.0033 J	0.012
BENZO(K)FLUORANTHENE	0.9	78	0.0061 J	0.036	0.037	0.0029 J	0.0073 U	0.32	0.0072 U	0.0072 U	0.0088	0.007 U	0.21	0.001 J	0.066	0.0019 J	0.0028 J
CHRYSENE	0.4	780	0.036	0.09	0.09	0.0072	0.001 J	0.64	0.0013 J	0.0019 J	0.034	0.0015 J	0.68	0.0029 J	0.21	0.006 J	0.012
DIBENZ(A,H)ANTHRACENE	0.4	0.8	0.0048 J	0.018	0.017	0.0018 J	0.0073 U	0.19	0.0072 U	0.0072 U	0.0077	0.007 U	0.17	0.0069 U	0.042	0.001 J	0.0033 J
FLUORANTHENE	20	10000	0.017	0.13	0.14	0.0077	0.0016 J	0.83	0.0014 J	0.0018 J	0.03	0.002 J	0.97	0.0029 J	0.2	0.0078	0.0094
FLUORENE	28	10000	0.001 J	0.0051 J	0.0058 J	0.0065 U	0.0073 U	0.038	0.0072 U	0.0072 U	0.0016 J	0.007 U	0.046	0.0069 U	0.0092	0.0067 U	0.001 J
INDENO(1,2,3-CD)PYRENE	0.9	7.8	0.01	0.05	0.05	0.0047 J	0.0073 U	0.54	0.0072 U	0.0072 U	0.017	0.007 U	0.49	0.0016 J	0.098	0.0022 J	0.0074
NAPHTHALENE	54	10000	0.023 U	0.022 U	0.023 U	0.022 U	0.024 U	0.0066 J	0.024 U	0.024 U	0.021 U	0.023 U	0.019 J	0.023 U	0.023 U	0.022 U	0.022 U
PHENANTHRENE	40	10000	0.013	0.06	0.066	0.0048 J	0.0011 J	0.44	0.0018 J	0.0044 J	0.019	0.0027 J	0.57	0.0021 J	0.13	0.0034 J	0.0058 J
PYRENE	13	10000	0.035	0.13	0.15	0.0078	0.0015 J	0.75	0.0013 J	0.0018 J	0.031	0.0019 J	0.88	0.003 J	0.23	0.0057 J	0.0076
1-METHYLNAPHTHALENE	NA	NA	0.023 U	0.0024 J	0.0031 J	0.022 U	0.024 U	0.0042 J	0.024 U	0.0055 J	0.021 U	0.023 U	0.0088 J	0.023 U	0.0038 J	0.022 U	0.022 U
2-METHYLNAPHTHALENE	123	10000	0.023 U	0.006 J	0.0065 J	0.022 U	0.024 U	0.0071 J	0.024 U	0.005 J	0.021 U	0.023 U	0.014 J	0.023 U	0.006 J	0.022 U	0.022 U
2-CHLORONAPHTHALENE	NA	NA	0.023 U	0.022 U	0.023 U	0.022 U	0.024 U	0.022 U	0.024 U	0.024 U	0.021 U	0.023 U	0.024 U	0.023 U	0.023 U	0.022 U	0.022 U

** Sample location was excavated during NTCRA

Table 4-8
Summary of Soil Excavation Analytical Results – Select Metals and PAHs (2013)
MRP Site 1, Carr Point
NAVSTA, Newport, Rhode Island

	2C-01	2D-01	2D-02	2E-01	2E-02	3A-01	3A-02	3B-01	3C-01	3D-01	3E-01	3E-02	4A-01	4B-01	4C-01	4D-01	4E-01	4E-01 DUP	5A-01
	4/20/2013	4/23/2013	4/26/2013	4/22/2013	4/25/2013	4/22/2013	4/25/2013	4/20/2013	4/20/2013	4/20/2013	4/19/2013	4/25/2013	4/19/2013	4/19/2013	4/20/2013	4/20/2013	4/19/2013	4/19/2013	4/26/2013
	1 ft	1 ft **	2 ft	1 ft **	2 ft	1 ft **	2 ft	1 ft	1 ft	1 ft	1 ft **	2 ft	1 ft	1 ft	1 ft	1 ft	1 ft	1 ft	1 ft
Metals (mg/Kg)																			
ARSENIC	8.5	25	7.2	5.5	7.3	11	7.6	5.7	2.2	3.2	5.5	7.6	4.9	3.6	2.9	1.2 J	6	5.5	7.2
CHROMIUM, TOTAL	14	19	10	12	11	16	10	10	9.2	8.4	12	12	9.3	8.7	8.3	12 J	8.9	10	9.9
LEAD	78	120	8.4	30	12	120	15	34	29	20	23	12	14	11	16	29	6.4	6.5	12
SVOCs (mg/Kg)																			
ANTHRACENE	0.036	0.037	0.0071 U	0.56	0.026 J	0.62	0.014	0.0013 J	0.0033 J	0.0026 J	0.39	0.007 U	0.12	0.14 U	0.0009 J	0.0072 U	0.0009 J	0.0037 J	0.0013 J
ACENAPHTHENE	0.028	0.015	0.0071 U	0.42	0.015	0.39	0.0045 J	0.0073 U	0.0018 J	0.0013 J	0.13	0.007 U	0.056	0.14 U	0.0073 U	0.0072 U	0.0069 U	0.0008 J	0.0067 U
ACENAPHTHYLENE	0.0027 J	0.0012 J	0.0071 U	0.073 U	0.007 U	0.07 U	0.011	0.0073 U	0.0078 U	0.0079 U	0.011 J	0.007 U	0.036 U	0.14 U	0.0073 U	0.0072 U	0.0069 U	0.0069 U	0.0067 U
BENZO(A)ANTHRACENE	0.18	0.15	0.0071 U	3.3	0.11 J	2.3	0.076	0.005 J	0.011	0.013	1.3	0.0007 J	0.5	0.034 J	0.0049 J	0.0009 J	0.0034 J	0.002 J	0.0046 J
BENZO(A)PYRENE	0.24	0.17	0.0071 U	4.4	0.16 J	2.6	0.07	0.0052 J	0.014	0.014	1.2	0.007 U	0.69	0.025 J	0.0049 J	0.0008 J	0.0047 J	0.0022 J	0.0054 J
BENZO(B)FLUORANTHENE	0.26	0.21	0.0071 U	4.3	0.16 J	2.7	0.1	0.0062 J	0.014	0.017	3.8	0.007 U	0.77	0.029 J	0.0059 J	0.0008 J	0.0053 J	0.0047 J	0.0083
BENZO(G,H,I)PERYLENE	0.18	0.14	0.0071 U	3.3	0.14 J	2	0.047	0.0036 J	0.012	0.01	1.1	0.007 U	0.55	0.022 J	0.0033 J	0.0072 U	0.004 J	0.0073	0.0044 J
BENZO(K)FLUORANTHENE	0.099	0.062	0.0071 U	1.1	0.058 J	1.2	0.035	0.0035 J	0.0068 J	0.0072 J	1.4	0.007 U	0.26	0.14 U	0.0022 J	0.0072 U	0.0019 J	0.0026 J	0.0034 J
CHRYSENE	0.17	0.16	0.0071 U	4.4	0.13 J	2.3	0.1	0.0051 J	0.011	0.013	4.9	0.007 U	0.92	0.13 J	0.0054 J	0.0072 U	0.0049 J	0.0054 J	0.0073
DIBENZ(A,H)ANTHRACENE	0.038	0.035	0.0071 U	0.76	0.038 J	0.46	0.017	0.0008 J	0.0018 J	0.0021 J	0.28	0.007 U	0.14	0.14 U	0.0007 J	0.0072 U	0.0009 J	0.0069 U	0.0011 J
FLUORANTHENE	0.26	0.26	0.0071 U	4.5	0.18 J	4.8	0.12	0.0095	0.021	0.021	13	0.0009 J	0.93	0.042 J	0.0096	0.001 J	0.0049 J	0.0068 J	0.0083
FLUORENE	0.012	0.011	0.0071 U	0.23	0.0072	0.28	0.0042 J	0.0073 U	0.0009 J	0.0079 U	0.13	0.007 U	0.033 J	0.14 U	0.0073 U	0.0072 U	0.0069 U	0.002 J	0.0067 U
INDENO(1,2,3-CD)PYRENE	0.14	0.11	0.0071 U	2.3	0.1 J	1.5	0.04	0.0029 J	0.0088	0.0083	0.94	0.007 U	0.37	0.14 U	0.0026 J	0.0072 U	0.0029 J	0.0017 J	0.0035 J
NAPHTHALENE	0.01 J	0.025 U	0.024 U	0.03 J	0.023 U	0.095 J	0.077	0.024 U	0.026 U	0.0033 J	0.12 U	0.024 U	0.12 U	0.47 U	0.024 U	0.024 U	0.023 U	0.023 U	0.022 U
PHENANTHRENE	0.13	0.14	0.0071 U	2.6	0.08 J	3	0.086	0.0043 J	0.012	0.0099	4	0.007 U	0.38	0.033 J	0.0051 J	0.0072 U	0.0045 J	0.0053 J	0.0038 J
PYRENE	0.23	0.24	0.0071 U	4.5	0.14 J	4	0.1	0.0072 J	0.017	0.017	11	0.0008 J	0.82	0.066 J	0.0076	0.0009 J	0.005 J	0.018	0.0081
1-METHYLNAPHTHALENE	0.0031 J	0.003 J	0.024 U	0.056 J	0.023 U	0.049 J	0.1	0.024 U	0.026 U	0.0029 J	0.12 U	0.024 U	0.12 U	0.47 U	0.024 U	0.024 U	0.0026 J	0.023 U	0.022 U
2-METHYLNAPHTHALENE	0.0036 J	0.0042 J	0.024 U	0.1 J	0.023 U	0.068 J	0.11	0.024 U	0.026 U	0.0026 J	0.12 U	0.024 U	0.013 J	0.47 U	0.024 U	0.024 U	0.0026 J	0.0025 J	0.022 U
2-CHLORONAPHTHALENE	0.026 U	0.025 U	0.024 U	0.24 U	0.023 U	0.23 U	0.022 U	0.024 U	0.026 U	0.026 U	0.12 U	0.024 U	0.12 U	0.47 U	0.024 U	0.024 U	0.023 U	0.023 U	0.022 U

** Sample location was excava

Table 4-8
Summary of Soil Excavation Analytical Results – Select Metals and PAHs (2013)
MRP Site 1, Carr Point
NAVSTA, Newport, Rhode Island

	5B-01	5C-01	5C-02	S12-01	SW10-02	SW1-01	SW11-02	SW13-01	SW13-01	SW2-02	SW3-02	SW4-01	SW5-01	SW6-01	SW7-02	SW8-02	SW9-02
	4/26/2013	4/26/2013	4/30/2013	5/1/2013	4/26/2013	4/24/2013	4/30/2013	5/1/2013	5/1/2013	4/24/2013	4/24/2013	4/25/2013	4/25/2013	4/25/2013	4/25/2013	4/25/2013	4/26/2013
	1 ft	1 ft **	2 ft	1 ft	2 ft	1 ft	2 ft	1 ft	1 ft	2 ft	2 ft	1 ft	1 ft	1 ft	2 ft	2 ft	2 ft
Metals (mg/Kg)																	
ARSENIC	6.2	32	10	8.7	88	4	5.1	14	15	0.48 J	12	7.6	6.8	2.4	8	1.6	10
CHROMIUM, TOTAL	12	14	7.8	11	13	5.1	9.9	14	14	5.2	6.9	9.8	9.5	5	8.1	5.6	12
LEAD	26	9.2	18	14	12	350	29	55	69	6	17	120	300	30	37	12	22
SVOCs (mg/Kg)																	
ANTHRACENE	0.0012 J	0.0018 J	0.001 J	0.0069 U	0.001 J	0.088	0.0073 U	0.27	0.05	0.007 U	0.45 J	0.14 J	0.054	0.053	0.019	0.0009 J	0.0069
ACENAPHTHENE	0.0088 U	0.0012 J	0.0072 U	0.0069 U	0.0066 U	0.012 J	0.0073 U	0.063 J	0.027	0.007 U	0.21 J	0.1 J	0.027	0.025	0.0044 J	0.0069 U	0.0025 J
ACENAPHTHYLENE	0.0088 U	0.0064 U	0.0072 U	0.0069 U	0.0066 U	0.068 U	0.0073 U	0.02 J	0.0094	0.007 U	0.034 U	0.012 J	0.0089	0.01	0.0091	0.001 J	0.0042 J
BENZO(A)ANTHRACENE	0.0041 J	0.0088	0.0042 J	0.0018 J	0.0052 J	0.27	0.0013 J	7.2	0.28	0.007 U	0.89 J	0.79 J	0.27	0.24	0.052	0.01	0.022
BENZO(A)PYRENE	0.0041 J	0.013	0.0037 J	0.0022 J	0.0073	0.29	0.0015 J	7.3	0.36	0.007 U	0.77 J	1 J	0.35	0.28	0.071	0.012	0.024
BENZO(B)FLUORANTHENE	0.006 J	0.013	0.0053 J	0.0024 J	0.0076	0.29	0.0016 J	3.5	0.34	0.007 U	0.97 J	1.1 J	0.36	0.38	0.12	0.015	0.033
BENZO(G,H,I)PERYLENE	0.0032 J	0.01	0.0023 J	0.0018 J	0.0055 J	0.22	0.0012 J	2.7	0.23	0.007 U	0.55 J	0.7 J	0.23	0.21	0.075	0.0086	0.019
BENZO(K)FLUORANTHENE	0.0028 J	0.0044 J	0.0023 J	0.0011 J	0.0034 J	0.12	0.0011 J	0.59	0.12	0.007 U	0.33 J	0.3 J	0.12	0.12	0.036	0.0051 J	0.012
CHRYSENE	0.0052 J	0.01	0.0042 J	0.0023 J	0.0052 J	0.26	0.0018 J	14	0.32	0.007 U	0.87 J	0.72 J	0.3	0.25	0.079	0.011	0.035
DIBENZ(A,H)ANTHRACENE	0.0009 J	0.0024 J	0.0072 U	0.0069 U	0.0012 J	0.061 J	0.0073 U	1.4	0.062	0.007 U	0.17 J	0.17 J	0.054	0.045	0.016	0.0021 J	0.0052 J
FLUORANTHENE	0.0088 J	0.012	0.01	0.0032 J	0.0056 J	0.51	0.0029 J	1.2	0.4	0.007 U	2.2 J	1.2 J	0.48	0.44	0.1	0.013	0.046
FLUORENE	0.0011 J	0.0064 U	0.0072 U	0.0069 U	0.0066 U	0.014 J	0.0073 U	0.049 J	0.014	0.007 U	0.2 J	0.068 J	0.02	0.016	0.0036 J	0.0069 U	0.0022 J
INDENO(1,2,3-CD)PYRENE	0.0028 J	0.0074	0.002 J	0.0013 J	0.0044 J	0.16	0.0009 J	0.94	0.18	0.007 U	0.45 J	0.56 J	0.18	0.17	0.061	0.0071	0.014
NAPHTHALENE	0.0069 J	0.021 U	0.0035 J	0.006 J	0.022 U	0.22 U	0.024 U	0.47 U	0.011 J	0.023 U	0.11 U	0.018 J	0.012 J	0.0064 J	0.0039 J	0.023 U	0.034
PHENANTHRENE	0.0082 J	0.0063 J	0.0035 J	0.0032 J	0.003 J	0.26	0.002 J	1.1	0.19	0.007 U	1.8 J	0.7 J	0.25	0.18	0.033	0.0046 J	0.06
PYRENE	0.0071 J	0.012	0.0073	0.003 J	0.0055 J	0.54	0.0027 J	4.5	0.41	0.007 U	1.7 J	1 J	0.4	0.43	0.098	0.014	0.042
1-METHYLNAPHTHALENE	0.0094 J	0.021 U	0.024 U	0.0036 J	0.022 U	0.22 U	0.024 U	0.47 U	0.0032 J	0.023 U	0.033 J	0.01 J	0.0072 J	0.0028 J	0.022 U	0.023 U	0.054
2-METHYLNAPHTHALENE	0.016 J	0.021 U	0.024 U	0.0044 J	0.022 U	0.22 U	0.024 U	0.47 U	0.0055 J	0.023 U	0.028 J	0.013 J	0.011 J	0.0031 J	0.0034 J	0.023 U	0.053
2-CHLORONAPHTHALENE	0.029 U	0.021 U	0.024 U	0.023 U	0.022 U	0.22 U	0.024 U	0.47 U	0.023 U	0.023 U	0.11 U	0.024 U J6	0.023 U	0.023 U	0.022 U	0.023 U	0.022 U

** Sample location was excava

Table 4-9
Summary of Shooting Range Launching Area Soil Analytical Results – SVOCs (2009)
MRP Site 1, Carr Point
NAVSTA, Newport, Rhode Island

			Location ID	SO-ARC1		SO-ARC1		SO-ARC1		SO-ARC2		SO-ARC2		SO-ARC2	
			Sample Data	5/14/2009		5/14/2009		5/14/2009		5/14/2009		5/14/2009		5/14/2009	
			Sample Interval	0 - 2 in		0 - 2 in		0 - 2 in		0 - 2 in		0 - 2 in		0 - 2 in	
PAHs (mg/Kg)	RDEC	I/C DEC	GA Leach												
ACENAPHTHENE	43	10000	NA	2.1	J	0.63	J	0.82	J	0.46	J	0.26	J	0.29	J
ACENAPHTHYLENE	23	10000	NA	2.2	U	2.9	U	2.2	U	2.4	U	2.1	U	2.3	U
ANTHRACENE	35	10000	NA	3.4	J	1	J	1.3	J	0.81	J	0.38	J	0.5	J
BENZO[A]ANTHRACENE	0.9	7.8	NA	19	J	5.8	J	7.4	J	4.4	J	2.3	J	2.9	J
BENZO[A]PYRENE	0.4	0.8	240	25	J	8.1	J	10	J	6.1		3.4		4.3	
BENZO[B]FLUORANTHENE	0.9	7.8	NA	25	J	9.2	J	11	J	6.3		3.7		4.9	
BENZO[G,H,I]PERYLENE	0.8	10000	NA	19	J	4.8	J	7.1	J	4.7		2.6		2.5	
BENZO[K]FLUORANTHENE	0.9	78	NA	10	J	3.3	J	4	J	2.2	J	1.3	J	1.6	J
CHRYSENE	0.4	780	NA	22	J	7.2	J	9.3	J	5.8	J	2.8	J	3.7	J
DIBENZ[A,H]ANTHRACENE	0.4	0.8	NA	5		2.3		2.5	J	2.1	J	0.41	UJ	0.45	UJ
FLUORANTHENE	20	10000	NA	24	J	8.4	J	9.5	J	6.3	J	3.6	J	4.2	J
FLUORENE	28	10000	NA	1.2	J	0.35	J	0.46	J	2.4	U	2.1	U	2.3	U
INDENO[1,2,3-CD]PYRENE	0.9	7.8	NA	19	J	5.3	J	7.1	J	5		2.9		3	
NAPHTHALENE	54	10000	0.8	0.52	J	2.9	U	0.24	J	2.4	U	2.1	U	2.3	U
PHENANTHRENE	40	10000	NA	14	J	4.6	J	5.6	J	3.6		1.9	J	2.4	
PYRENE	13	10000	NA	28	J	8.1	J	12	J	6.1		3.5		4.3	
Other SVOCs (mg/Kg)															
2,4-DINITROTOLUENE	0.9	8.4	NA	2.2	U	2.9	U	2.2	U	2.4	U	2.1	U	2.3	U
2,6-DINITROTOLUENE	0.9	8.4	NA	2.2	U	2.9	U	2.2	U	2.4	U	2.1	U	2.3	U
CARBAZOLE	NA	NA	NA	2.3	J	0.63	J	0.83	J	4.7	U	0.28	J	0.31	J
DIBENZOFURAN	NA	NA	NA	0.75	J	0.21	J	0.3	J	0.18	J	2.1	U	2.3	U
N-NITROSODIPHENYLAMINE	NA	NA	NA	0.92	J	0.45	J	0.56	J	0.42	J	2.1	U	0.5	J
Energetics (mg/Kg)															
2,4-DINITROTOLUENE	0.9	8.4	NA	0.16	J	0.13	J	0.13	J	0.098	J	0.3	U	0.3	U
NITROGLYCERIN	NA	NA	NA	16	J	12		11		7.5		7.6		7	

Table 4-10
Summary of Soil Analytical Results - Physical Characteristics
MRP Site 1, Carr Point
NAVSTA, Newport, Rhode Island

	Location ID	SB205	SB211*	SB211	SB214	SB217	SB219	SB229*	SB302	MW-01D	MW-01D	MW-11	MW-12	MW-12D	MW-12D	MW-13
	Sample Date	12/11/13	12/11/13	12/11/13	12/11/13	12/10/13	12/11/13	12/10/13	12/10/13	12/4/13	12/4/13	12/3/13	12/2/13	12/2/13	12/2/13	12/4/13
	Sample Interval	0 - 1 ft	0 - 1 ft	0 - 1 ft	5 - 8 ft	1 - 8 ft	3 - 5 ft	0 - 1 ft	6 - 8 ft	8 - 16 ft	22 - 30 ft	8 - 14 ft	10 - 14 ft	28 - 36 ft	36 - 38 ft	7 - 15 ft
Method/Parameters	Unit															
DENSITY	G_CC	1.55	1.48	1.65	1.6	1.54	1.8	1.39	1.51	1.79	2.03	1.71	1.95	1.94		1.96
PERCENT FINES	PCT	28.2	29.4	30.1	35.4	43.2	50.6	44.3	36	34.2	31.3	27	20.1	44.8		34.1
PERCENT GRAVEL	PCT	17.4	29.7	19.5	15.6	13.7	8	5.4	20.5	14.7	23.9	20.5	16.1	14.4		14.5
PERCENT SAND	PCT	54.4	40.9	50.4	49	43.1	41.4	50.3	43.5	51.1	44.8	52.5	63.8	40.8		51.4
PERCENT SAND, COARSE	PCT	12.3	11.2	15.2	6.6	7.9	0	4.5	8	8.7	9.6	8	13.4	5.9		6.6
PERCENT SAND, FINE	PCT	22.5	15.4	17	27.2	20.5	28.4	29.8	20.2	25.8	19.2	24.4	20.5	21.5		26.8
PERCENT SAND, MEDIUM	PCT	19.6	14.3	18.2	15.2	14.7	13	16	15.3	16.6	16	20.1	29.9	13.4		18
PH	PH					5.1		5.9	5.4							
POROSITY	PCT	41.2	42.7	38.3	41.6	43	34	45.5	44.2	34.6	26.4	37.9	28.5	29.7		28.1
SIEVE 1 INCH (25.4-MM)	PCT	0	0	0	0	0	0	0	0	0	11.2	0	0	0		0
SIEVE 1-1/2 INCH (37.5-MM)	PCT	0	0	0	0	0	0	0	0	0	0	0	0	0		0
SIEVE 2 INCH (50-MM)	PCT	0	0	0	0	0	0	0	0	0	0	0	0	0		0
SIEVE 3 INCH (75-MM)	PCT	0	0	0	0	0	0	0	0	0	0	0	0	0		0
SIEVE 3/4 INCH (19-MM)	PCT	0	0	0	0	0	0	0	0	3.4	0	0	0	8.8		0
SIEVE 3/8 INCH (9.5-MM)	PCT	9.1	17.5	7	11	9.4	3.2	0.6	12	2.3	3.1	9.6	7.5	2.3		9.2
SIEVE NO. 004 (4.75-MM)	PCT	8.3	12.2	12.5	4.6	4.3	4.8	4.8	8.5	9	9.6	10.9	8.6	3.3		5.3
SIEVE NO. 010 (2-MM)	PCT	12.3	11.2	15.2	6.6	7.9	0	4.5	8	8.7	9.6	8	13.4	5.9		6.6
SIEVE NO. 020 (850-UM)	PCT	10.3	7.7	11.1	6.5	7.2	5.9	6.7	7.2	8.4	9.1	9.3	13.8	6.9		8.2
SIEVE NO. 040 (425-UM)	PCT	9.3	6.6	7.1	8.7	7.5	7.1	9.3	8.1	8.2	6.9	10.8	16.1	6.5		9.8
SIEVE NO. 060 (250-UM)	PCT	8.9	5.7	6	9	7.2	9.1	10.6	8.1	7.8	5.8	9	11	6.4		9.8
SIEVE NO. 080 (180-UM)	PCT	4.6	3	3.1	5.3	4	5.8	6	4	4.1	3.4	4.5	3.6	4		5.2
SIEVE NO. 100 (150-UM)	PCT	2.4	1.7	2.1	3.5	2.4	3.9	3.4	2.1	2.9	2.4	3	1.8	2.8		2.9
SIEVE NO. 200 (75-UM)	PCT	6.6	5	5.8	9.4	6.9	9.6	9.8	6	11	7.6	7.9	4.1	8.3		8.9
SPECIFIC CONDUCTANCE	UMHO_CM	11	23	19	8.6	10	8.1	17	7.9	9	9.8	10	8.4		12	11
SPECIFIC GRAVITY	NONE	2.64	2.59	2.67	2.74	2.7	2.73	2.55	2.71	2.73	2.76	2.75	2.72	2.76		2.73
SULFIDE	MG_KG	18		18												
Void Ratio	NONE			0.6												

Table 4-11
Summary of Sediment Analytical Results - Metals and PAHs
MRP Site 1, Carr Point
NAVSTA Newport, Rhode Island

Location ID	SD101*	SD101	SD102	SD103	SD104	SD104	SD105	SD105	SD105	SD106	SD106	SD106	SD107
Sample Date	12/13/2013	12/13/2013	12/13/2013	12/13/2013	4/2/2014	4/2/2014	12/6/2013	12/6/2013	12/6/2013	12/10/2013	12/10/2013	12/10/2013	12/2/2013
Depth Interval	0 - 12 in	0 - 12 in	0 - 12 in	0 - 12 in	0 - 12 in	12 - 24 in	0 - 12 in	12 - 24 in	24 - 36 in	0 - 12 in	12 - 24 in	24 - 36 in	6 - 12 in
AVS/SEM (umol/g)													
ACID VOLATILE SULFIDES		< 0.10 U	< 0.098 U	6.7	< 0.091 UJ		0.17			0.80 J			
ANTIMONY		0.0153 J-	0.00350 J-	0.00220 J-			< 0.0010 U			< 0.00099 UJ			
CADMIUM		0.00022 J	0.000027 J	0.00034 J	0.00012 J		< 0.011 U			0.00014 J			
COPPER		0.253 J	0.0570 J	1.80 J	0.0319 J		0.014			0.028 J			
LEAD		1.48	0.131	0.213	0.0332		0.010 J+			0.024 J			
MERCURY		< 0.000030 UJ	R	R			R			R			
NICKEL		0.0990	0.0075	0.688	0.0413 J		< 0.0046 U			0.014 J			
ZINC		0.209 J-	0.0244 J-	0.272 J-	0.295 J		< 0.0076 U			0.11 J			
Carbon (ug/g)													
TOTAL ORGANIC CARBON		9300	16000	16000	7800	9100	6300			12000			
Metals (mg/Kg)													
ALUMINUM	5970	7990	6480	4800	3000	4680	4450	5580	5190	5850	5860	8160	5060
ANTIMONY	12.9 J	1.1 J	17.5 J	0.68 J	0.072 J-	0.12 J-	< 0.067 U	< 0.091 U	< 0.081 U	0.07 J-	0.21 J-	0.11 J-	0.05 J
ARSENIC	16.7	11.5	38.1	11.3	5.44 J-	23.7 J-	1.4	2.2	2.4	2.4	2.5	2.5	2.5
BARIUM	12.8	11.0	10.6	29.6	5.79	14.7	8.0	7.3	7.1	9.5 J	12.4 J	16.9 J	7.6
BERYLLIUM	0.34 J-	0.44 J-	0.33 J-	0.29 J-	0.238	0.529	0.17	0.20	0.19	0.24	0.20	0.34	0.25
CADMIUM	< 0.017 U	0.19 J	0.14 J	0.12 J	0.111	0.161	0.06 J	0.05 J	0.04 J	0.09 J	0.02 J	0.13	0.03 J
CALCIUM	1780	1990	2560	4820	4060	1770	2720	2100	1780	25600 J	5800 J	421 J	897
CHROMIUM VI		1.2	0.42 J		< 0.44 U								
CHROMIUM, TOTAL	16.2 J-	13.5 J-	13.5 J-	12.4 J-	15.1	22.3	11.5	11.8	13.4	14.3 J	12.9 J	13.1 J	8.8
COBALT	12.5	16.4	9.3	15.6	10.3	31.4	2.9	4.1	4.0	4.2	4.2	7.0	4.4
COPPER	565 J	39.1 J	92.2 J	43.5 J	9.24 J+	30.9 J+	7.1	7.5	6.2	10.2 J	6.5 J	16.4 J	33.5
IRON	43800	42600	36300	38200	24300	39700	8710	12100	11100	12400	12800	21100	9040
LEAD	1720 J	180 J	1830 J	128 J	10.6	14.9	12.8	9.7	10.2	18.0 J	10.5 J	8.4 J	5.2
MAGNESIUM	3160	3640	3040	4120	1500	1380	2130	2540	2490	3010	2770	3290	1890
MANGANESE	836	964	224	454	463	877	92.4	113	114	167 J+	145 J+	163 J+	105
MERCURY	0.01 J	0.01 J	0.02 J	0.01 J	0.012 J	< 0.016 U	0.09	0.04	0.06	0.03 J	0.01 J	< 0.020 UJ	0.02 J
NICKEL	30.5 J	32.6 J	23.6 J	33.7 J	22.4	47.9	7.2	10.1	10.2	9.4	10.4	14.9	8.8
POTASSIUM	636 J	556 J	967 J	824 J	427	653	659	590	623	997 J+	666 J+	774 J+	537
SELENIUM	< 0.42 UJ	< 0.35 UJ	< 0.43 UJ	< 0.32 UJ	0.23 J	0.35 J	< 0.34 U	< 0.46 U	< 0.41 U	0.14 J	0.1 J	3.6	0.14 J
SILVER	0.30 J	0.02 J	0.10 J	0.16 J	0.045 J	0.037 J	0.1	0.06 J	0.05 J	0.14 J	0.03 J	0.02 J	0.02 J
SODIUM	2440	1670	1540	2990	2190	1870	2840	1820	2220	3560	1880	1380	1760
THALLIUM	0.07 J	0.05 J	0.1	0.05 J	< 0.068 U	< 0.10 U	0.05 J	0.03 J	0.05 J	0.06 J	0.21	0.04 J	0.04 J
VANADIUM	27.1 J-	19.0 J-	22.0 J-	23.5 J-	14.8	17.0	10.2	11.3	12.3	15.3	14.6	12.5	13.1
ZINC	132 J-	98.2 J-	90.6 J-	117 J-	139 J	242 J	32.4	32.6	31.9	46.0 J	31.3 J	34.3 J	26.0
Solids (%)													
TOTAL SOLIDS	76	76	77	78	82	82	80	82	78	77	84	87	93
SVOCs (ug/Kg)													
ACENAPHTHENE	25 J	47 J	7.0 J	10 J	< 12 U	< 12 U	< 12 U	< 12 U	< 13 U	4.3 J	< 11 U	< 11 U	
ACENAPHTHYLENE	< 12 U	< 12 U	< 11 U	< 12 U	< 12 U	< 12 U	< 12 U	< 12 U	< 13 U	< 12 U	< 11 U	< 11 U	
ANTHRACENE	43	62	11 J	15 J	< 12 U	< 12 U	3.0 J	2.5 J	2.3 J	7.3 J	< 11 U	< 11 U	
BENZO[A]ANTHRACENE	280 J	380 J	74 J	98 J	5.5 J	< 12 U	18 J	12 J	13 J	42 J	8.0 J	5.1 J	
BENZO[A]PYRENE	270 J	370 J	80 J	94 J	6.5 J	< 12 UL	20 J	13 J	17 J	51 J	10 J	10 J	
BENZO[B]FLUORANTHENE	340 J	470 J	100 J	130 J	8.0 J	< 12 UJ	30	18 J	23 J	66 J	< 22 UJ	< 23 UJ	
BENZO[G,H,I]PERYLENE	100 J	130 J	36 J	36 J	2.9 J	< 12 U	9.0 J	5.5 J	7.9 J	24 J	5.2 J	6.4 J	
BENZO[K]FLUORANTHENE	120	160 J	34	44 J	< 12 U	< 12 U	12 J	< 12 U	5.3 J	22 J	< 11 U	< 11 U	
CHRYSENE	360	680	93	110 J	7.0 J	< 12 U	16 J	10 J	12 J	52	6.6 J	< 11 U	
DIBENZ[A,H]ANTHRACENE	69	87 J	19 J	19 J	2.6 J	< 12 U	2.8 J	< 12 U	2.6 J	14 J	3.1 J	3.9 J	
FLUORANTHENE	300	550	100	140 J	9.7 J	< 12 U	28	18 J	21 J	62	< 22 U	< 23 U	
FLUORENE	17 J	26	4.7 J	7.2 J	< 12 U	< 12 U	< 12 U	< 12 U	< 13 U	< 12 U	< 11 U	< 11 U	
INDENO[1,2,3-CD]PYRENE	180	220 J	51	49 J	< 24 UJ	< 12 UJ	12 J	7.8 J	11 J	37	7.1 J	9.2 J	
NAPHTHALENE	7.1 J	30 J	< 11 U	< 12 U	< 12 U	< 12 U	< 12 U	< 12 U	< 13 U	< 12 U	< 11 U	< 11 U	
PHENANTHRENE	200	270	60	77 J	3.4 J	< 12 U	14 J	12 J	12 J	32	6.0 J	2.9 J	
PYRENE	290 J	670 J	90 J	130 J	6.6 J	< 12 U	30	17 J	18 J	61	< 22 U	< 23 U	

Table 4-11
Summary of Sediment Analytical Results - Metals and PAHs
MRP Site 1, Carr Point
NAVSTA Newport, Rhode Island

Location ID	SD107	SD107	SD107	SD108	SD108	SD108	SD108	SD108	SD109	SD109	SD109	SD110*	SD110
Sample Date	12/2/2013	12/2/2013	12/10/2013	12/3/2013	12/3/2013	12/3/2013	12/3/2013	12/10/2013	12/3/2013	12/3/2013	12/3/2013	12/3/2013	12/3/2013
Depth Interval	12 - 24 in	24 - 36 in	0 - 12 in	6 - 12 in	6 - 12 in	12 - 24 in	24 - 36 in	0 - 12 in	0 - 12 in	12 - 24 in	24 - 36 in	12 - 24 in	0 - 12 in
AVS/SEM (umol/g)													
ACID VOLATILE SULFIDES			< 0.094 UJ					0.54 J	< 0.076 U				37
ANTIMONY			< 0.00085 UJ					< 0.00099 UJ	0.00021 J				0.0032
CADMIUM			0.000056 J					0.00011 J	< 0.00102 U				< 0.0024 U
COPPER			0.016 J					0.011 J	0.0130				0.102
LEAD			0.012 J					0.010 J	0.00825				0.110
MERCURY			< 0.000030 UJ					R	0.000074				< 0.000024 U
NICKEL			0.0065 J					0.011 J	0.0083				0.0581
ZINC			0.060 J					0.077 J	< 0.0621 U				0.728
Carbon (ug/g)													
TOTAL ORGANIC CARBON			11000					7200	36000	6400			12000
Metals (mg/Kg)													
ALUMINUM	5400	5510	4230	2930	3220	3010	3580	3550	3470	6520	4850	4660	4950
ANTIMONY	0.06 J	0.09	0.10 J-	0.05 J	0.05 J	0.05 J	0.07 J	0.08 J-	0.05 J	0.14 J	0.06 J	0.05 J	0.05 J
ARSENIC	2.8	3.4	2.5	1.3	1.4	1.4	2.0	1.5	1.4	2.6	2.9	1.8	2.0
BARIUM	6.9	8.1	4.8 J	5.1	5.8	5.5	6.2	5.4 J	6.2	4.9	7.0	6.3	8.8
BERYLLIUM	0.28	0.32	0.17	0.12	0.12	0.13	0.14	0.14	0.14	0.20	0.19	0.19	0.23
CADMIUM	0.02 J	0.02 J	0.06 J	< 0.095 U	< 0.10 U	< 0.090 U	< 0.076 U	0.04 J	< 0.082 U	< 0.060 U	< 0.099 U	< 0.079 U	0.08
CALCIUM	874	947	8010 J	1680	1530	2550	1840	940 J	2050	701	474	2560	19700
CHROMIUM VI													< 0.40 UJ
CHROMIUM, TOTAL	14.7	14.6	10.4 J	8.2	9.1	9.3	9.6	10.5 J	9.5	12.0	10.3	8.7	13.0
COBALT	6.4	8.6	3.4	2.0	2.2	2.3	2.3	2.5	2.2	4.5	3.0	2.2	2.8
COPPER	10.4	12.3	6.2 J	3.9	4.2	5.6	31.5	4.9 J	4.3	7.0	6.2	5.1	7.9
IRON	11000	11600	10900	6570	7050	6560	7640	7630	7180	18600	12200	7340	8950
LEAD	5.8	6.3	9.9 J	8.1	8.8	8.9	11.3	8.8 J	7.6	9.2	5.0	7.0	13.2
MAGNESIUM	2070	1990	2150	1500	1670	1510	1720	1890	1670	3390	2420	1860	2370
MANGANESE	113	115	91.4 J+	65.9	72.8	74.4	75.7	79.9 J+	78.0	132	166	68.8	98.1
MERCURY	0.008 J	0.006 J	0.03 J	0.02 J	0.03 J	0.02 J	0.03 J	0.02 J	0.02 J	0.02 J	< 0.014 U	0.02 J	0.06
NICKEL	13.6	14.6	7.5	5.6	5.8	6.0	5.9	7.6	6.8	11.0	9.0	6.4	7.9
POTASSIUM	492	540	514 J+	422	490	459	506	520 J+	492	449	536	562	869
SELENIUM	0.21 J	0.26 J	0.22 J	< 0.48 U	< 0.51 U	< 0.45 U	< 0.38 U	0.18 J	< 0.41 U	< 0.30 U	< 0.50 U	< 0.39 U	< 0.36 U
SILVER	0.02 J	0.02 J	0.06 J	0.05 J	0.06 J	0.06 J	0.08	0.05 J	0.04 J	0.03 J	0.01 J	0.05 J	0.12
SODIUM	1650	1260	2730	1960 J-	2200 J-	2070 J-	1960 J-	2560	2100 J-	1490 J-	2060 J-	2530 J-	3870 J-
THALLIUM	0.03 J	0.03 J	0.05 J	0.04 J	0.05 J	0.05 J	0.05 J	0.04 J	0.04 J	0.03 J	0.02 J	0.05 J	0.06 J
VANADIUM	15.0	15.3	9.9	7.6	8.4	8.6	9.2	9.5	8.7	14.1	10.5	9.4	12.4
ZINC	25.2	26.5	30.1 J	25.2	26.6	28.1	35.2	25.3 J	29.0	44.7	28.5	25.6	39.6
Solids (%)													
TOTAL SOLIDS	95	95	80	92	81	82	84	78	82	89	82	80	74
SVOCs (ug/Kg)													
ACENAPHTHENE	< 10 U	< 10 U	3.3 J			< 11 U	< 12 U	< 11 U	< 12 U	1.7 J	< 11 U	< 11 U	< 11 U
ACENAPHTHYLENE	< 10 U	< 10 U	< 11 U			< 11 U	< 12 U	< 11 U	< 12 U	< 10 U	< 11 U	< 11 U	< 11 U
ANTHRACENE	< 10 U	< 10 U	4.9 J			< 11 U	< 12 U	< 11 U	< 12 U	1.9 J	< 11 U	< 11 U	1.8 J
BENZO[A]ANTHRACENE	< 10 U	< 10 U	28			3.2 J	6.4 J	< 22 U	< 12 U	5.9 J	2.5 J	3.3 J	9.4 J
BENZO[A]PYRENE	< 10 U	< 10 U	35			3.8 J	5.9 J	< 11 U	< 12 U	5.0 J	< 11 U	< 11 U	15 J
BENZO[B]FLUORANTHENE	< 10 U	< 10 U	31			7.3 J	9.0 J	5.0 J	< 12 U	7.1 J	< 11 U	4.3 J	20 J
BENZO[G,H,I]PERYLENE	< 10 U	< 10 U	22 J			2.7 J	< 12 U	< 11 UJ	< 12 U	< 10 U	< 11 U	< 11 U	9.1 J
BENZO[K]FLUORANTHENE	< 10 U	< 10 U	22			< 11 UJ	3.8 J	< 11 U	< 12 U	3.5 J	< 11 U	< 11 U	8.9 J
CHRYSENE	< 10 UJ	< 10 UJ	33 J			< 11 U	2.6 J	3.4 J	2.8 J	2.6 J	< 11 U	< 11 U	13 J
DIBENZ[A,H]ANTHRACENE	< 10 U	< 10 U	11 J			< 11 U	< 12 U	5.8 J	< 12 U	< 10 U	< 11 U	< 11 U	3.5 J
FLUORANTHENE	< 10 U	< 10 U	31			4.0 J	8.6 J	< 22 U	3.1 J	9.7 J	2.6 J	3.8 J	16 J
FLUORENE	< 10 U	< 10 U	< 11 U			< 11 U	< 12 U	< 11 U	< 12 U	< 10 U	< 11 U	< 11 U	< 11 U
INDENO[1,2,3-CD]PYRENE	< 10 UJ	< 10 UJ	23 J			2.8 J	5.2 J	4.6 J	2.9 J	4.1 J	< 11 UJ	2.5 J	13 J
NAPHTHALENE	< 10 U	< 10 U	< 11 U			< 11 U	< 12 U	< 11 U	< 12 U	< 10 U	< 11 U	< 11 U	< 11 U
PHENANTHRENE	< 10 U	< 10 U	18 J			2.7 J	3.5 J	< 11 U	< 12 U	7.3 J	< 11 U	< 11 U	7.4 J
PYRENE	< 10 U	< 10 U	32			4.4 J	5.1 J	3.6 J	3.5 J	7.9 J	< 11 UJ	< 11 UJ	18 J

Table 4-11
Summary of Sediment Analytical Results - Metals and PAHs
MRP Site 1, Carr Point
NAVSTA Newport, Rhode Island

Location ID	SD110	SD110	SD111	SD111	SD111	SD112	SD112	SD112	SD112	SD113	SD113	SD113	SD114*
Sample Date	12/3/2013	12/3/2013	12/4/2013	12/4/2013	12/4/2013	12/4/2013	12/5/2013	12/5/2013	12/5/2013	12/5/2013	12/5/2013	12/5/2013	12/17/2013
Depth Interval	12 - 24 in	24 - 36 in	0 - 12 in	12 - 24 in	24 - 36 in	0 - 6 in	0 - 12 in	12 - 24 in	24 - 36 in	0 - 12 in	12 - 24 in	24 - 36 in	12 - 24 in
AVS/SEM (umol/g)													
ACID VOLATILE SULFIDES			2.1 J-				< 0.092 U			0.25			
ANTIMONY			< 0.00095 U				< 0.00095 U			< 0.00098 U			
CADMIUM			< 0.00103 U				< 0.0010 U			< 0.0011 U			
COPPER			0.0123				0.0153			< 0.0094 U			
LEAD			0.0126				0.012 J+			0.020 J+			
MERCURY			R				R			< 0.000024 UJ			
NICKEL			< 0.0069 U				< 0.0082 U			< 0.0064 U			
ZINC			0.100				0.11			< 0.064 U			
Carbon (ug/g)													
TOTAL ORGANIC CARBON			7000				5500			5000			
Metals (mg/Kg)													
ALUMINUM	4770	5810	3430	5320	7260		3200	3350	4510	3370	3490	3580	4130
ANTIMONY	0.05 J	0.04 J	0.06 J	0.06 J	< 0.076 U		< 0.081 U	< 0.086 U	< 0.074 U	0.10	0.07	0.1	0.10 J
ARSENIC	1.6	2.0	1.6	2.1	3.0		1.4	1.7	3.0	1.5	1.6	1.3	2.0
BARIUM	6.1	6.9	5.5	7.8	12.6		5.1	5.4	7.1	7.0	6.0	5.9	7.9
BERYLLIUM	0.17	0.24	0.15	0.21	0.28		0.12	0.12	0.18	0.14	0.14	0.15	0.18
CADMIUM	< 0.080 U	< 0.072 U	0.05 J	0.06 J	0.05 J		0.05 J	0.06 J	0.16	0.06 J	0.08	0.08 J	0.08 J
CALCIUM	2150	1380	4750	792	800		3570	756	532	821	2610	1710	921
CHROMIUM VI													
CHROMIUM, TOTAL	8.3	9.3	7.9	9.3	10.2		8.2	8.8	8.2	9.4	10.8	9.2	9.5
COBALT	2.3	2.4	2.3	2.6	3.4		2.2	2.2	2.6	2.3	2.5	2.5	2.6
COPPER	4.8	4.9	4.1	5.6	7.0		4.3	5.4	5.0	4.7	6.2	5.2	5.4
IRON	7710	8080	7420	8710	10800		7240	7210	8680	7270	8010	7250	8100
LEAD	6.6	5.1	7.6	6.9	6.2		9.2	8.0	4.2	23.6	14.6	8.9	18.9 J+
MAGNESIUM	1980	1940	1690	2040	2370		1650	1570	2050	1750	1620	1590	1710
MANGANESE	76.8	73.5	77.4	87.2	103		69.8	70.6	75.5	79.0	81.2	81.6	91.7 J+
MERCURY	0.02 J	0.008 J	0.05	< 0.028 U	< 0.032 U		0.06	0.03 J	0.01 J	0.07	0.04	0.04	0.02 J
NICKEL	6.4	7.9	5.6	7.5	9.4		6.0	6.2	7.4	6.7	7.4	6.8	7.5
POTASSIUM	550	556	465	676	703		430	472	725	523	506	486	599 J
SELENIUM	< 0.40 U	< 0.36 U	0.15 J	0.20 J	0.22 J		< 0.40 U	< 0.43 U	< 0.37 U	< 0.28 U	< 0.31 U	< 0.41 U	< 0.41 U
SILVER	0.05 J	0.03 J	0.04 J	0.03 J	0.03 J		0.04 J	0.04 J	0.02 J	0.06 J	0.08	0.04 J	0.04 J
SODIUM	2510 J-	2220 J-	2440	2320	2470		2480	1980	3120	3240	2500	1950	2100
THALLIUM	0.05 J	0.06 J	0.04 J	0.06 J	0.06 J		0.03 J	0.05 J	0.09	0.05 J	0.04 J	0.05 J	0.06 J
VANADIUM	9.2	10	8.6	11.7	12.5		8.0	8.6	10.6	9.2	10.3	9.2	10.9
ZINC	25.2	21.6	27.8	25.3	26.7		25.7	27.3	23.3	27.7	32.8	26.0	26.5
Solids (%)													
TOTAL SOLIDS	81	83	82	82	81		80	84	77	78	81	82	83
SVOCs (ug/Kg)													
ACENAPHTHENE	< 11 U	< 11 U	< 12 U	< 10 U	< 11 U		< 12 U	< 12 U	< 13 U	< 12 U	< 12 U	< 12 U	< 12 U
ACENAPHTHYLENE	< 11 U	< 11 U	< 12 U	< 10 U	< 11 U		< 12 U	< 12 U	< 13 U	< 12 U	< 12 U	< 12 U	< 12 U
ANTHRACENE	< 11 U	< 11 U	< 12 U	< 10 U	< 11 U		< 12 U	< 12 U	< 13 U	2.0 J	< 12 U	< 12 U	3.2 J
BENZO[A]ANTHRACENE	12 J	2.3 J	4.6 J	2.6 J	< 11 U		3.3 J	3.6 J	< 13 UJ	10 J	4.5 J	6.4 J	7.7 J
BENZO[A]PYRENE	10 J	< 11 UJ	6.2 J	< 10 U	< 11 U		< 12 U	< 12 UJ	< 13 UJ	12 J	4.8 J	5.6 J	8.0 J
BENZO[B]FLUORANTHENE	18 J	< 11 UJ	7.0 J	3.3 J	< 11 UJ		9.0 J	5.4 J	< 13 UJ	21 J	7.4 J	7.7 J	7.3 J
BENZO[G,H,I]PERYLENE	< 11 U	< 11 UJ	3.7 J	< 10 U	< 11 U		< 12 UJ	< 12 UJ	< 13 UJ	5.6 J	< 12 UJ	2.5 J	< 12 UJ
BENZO[K]FLUORANTHENE	10 J	< 11 U	4.4 J	< 10 U	< 11 U		4.3 J	< 12 U	< 13 U	6.5 J	< 12 U	< 12 U	< 12 U
CHRYSENE	19 J	< 11 U	6.4 J	< 10 U	< 11 U		< 12 U	< 12 U	< 13 U	5.5 J	< 12 U	< 12 U	8.0 J
DIBENZ[A,H]ANTHRACENE	2.3 J	< 11 UJ	< 12 U	< 10 U	< 11 U		< 12 U	< 12 U	< 13 U	2.7 J	< 12 U	< 12 U	< 12 U
FLUORANTHENE	60 J	2.6 J	7.0 J	3.0 J	< 11 U		3.7 J	4.8 J	2.4 J	12 J	7.0 J	9.1 J	13 J
FLUORENE	< 11 U	< 11 U	< 12 U	< 10 U	< 11 U		< 12 U	< 12 U	< 13 U	< 12 U	< 12 U	< 12 U	< 12 U
INDENO[1,2,3-CD]PYRENE	7.5 J	< 11 UJ	5.9 J	2.0 J	< 11 UJ		3.1 J	2.4 J	< 13 U	7.7 J	3.2 J	3.6 J	5.4 J
NAPHTHALENE	< 11 U	< 11 U	< 12 U	< 10 U	< 11 U		< 12 U	< 12 U	< 13 U	< 12 U	< 12 U	< 12 U	< 12 U
PHENANTHRENE	70	< 11 U	3.3 J	< 10 U	< 11 U		2.3 J	3.0 J	< 13 U	7.4 J	4.8 J	3.9 J	8.3 J
PYRENE	48 J	< 11 UJ	7.3 J	< 10 U	< 11 U		4.9 J	5.7 J	< 13 U	15 J	8.7 J	9.6 J	5.2 J

Table 4-11
Summary of Sediment Analytical Results - Metals and PAHs
MRP Site 1, Carr Point
NAVSTA Newport, Rhode Island

Location ID	SD114	SD114	SD114	SD115*	SD115	SD115	SD115	SD116	SD116	SD117	SD117	SD117	SD117
Sample Date	12/17/2013	12/17/2013	12/17/2013	12/17/2013	12/17/2013	12/17/2013	12/17/2013	4/2/2014	4/2/2014	12/3/2013	12/3/2013	12/3/2013	12/10/2013
Depth Interval	0 - 12 in	12 - 24 in	24 - 36 in	12 - 24 in	0 - 12 in	12 - 24 in	24 - 36 in	0 - 12 in	12 - 24 in	6 - 12 in	12 - 24 in	24 - 36 in	0 - 12 in
AVS/SEM (umol/g)													
ACID VOLATILE SULFIDES	< 0.098 U				< 0.092 U			< 0.091 UJ					< 0.098 UJ
ANTIMONY	0.000040 J				0.00033 J								< 0.0010 UJ
CADMIUM	0.00013 J				0.00015 J			0.00014 J					0.00013 J
COPPER	0.00958				0.0044 J			0.0087 J					0.0074 J
LEAD	0.0361				0.022 J			0.0423					0.028 J
MERCURY	< 0.000023 UJ				< 0.000023 UJ								R
NICKEL	0.00486				0.0057			0.00458 J					0.0077 J
ZINC	0.0558				0.034 J			0.0263 J					0.047 J
Carbon (ug/g)													
TOTAL ORGANIC CARBON	6700				9100	7500		7600	7700				5300
Metals (mg/Kg)													
ALUMINUM	3340	3980	4790	4040	3910	4440	4510	3310	3660	2930	3440	3510	3140
ANTIMONY	0.10 J	0.08 J	0.05 J	0.14 J-	0.25 J-	0.09 J-	0.07 J-	0.184 J-	0.223 J-	0.75	0.06 J	0.05 J	0.58 J-
ARSENIC	1.3	1.4	2.3	1.6	2.0	1.9	1.4	2.67 J-	3.15 J-	2.1	2.4	2.2	2.1
BARIUM	5.8	6.8	5.3	7.4	7.9	8.9	7.6	4.54	5.62	5.4	7.3	8.3	5.4 J
BERYLLIUM	0.15	0.17	0.23	0.18	0.16	0.18	0.21	0.149	0.176	0.16	0.18	0.23	0.14
CADMIUM	0.07 J	0.08	0.04 J	0.07 J	0.11	0.09	0.03 J	0.056 J	0.056 J	0.10	0.05 J	0.05 J	0.08 J
CALCIUM	857	1060	564	660	970	646	717	931	1490	1590	1380	1620	977 J
CHROMIUM VI													
CHROMIUM, TOTAL	9.9	9.2	8.3	8.0	8.4	8.5	11.8	7.09 B	7.45	11.1	8.5	8.2	11.5 J
COBALT	2.7	2.5	2.9	2.6	2.6	2.8	2.7	3.03	3.69	3.7	4.0	3.6	3.8
COPPER	5.0	4.9	5.9 J	4.2 J-	18.8 J-	5.2 J-	5.2 J-	4.56 J+	4.23 J+	20.0	5.2	33.4	7.0 J
IRON	7470	7210	7970	7800	7500	8120	8110	9760	10100	11500	10200	9600	11200
LEAD	21.2 J+	17.2 J+	5.2 J+	22.0 J	57.9 J	10.5 J	14.4 J	36.7	25.7	27.3	4.7	7.1	25.5 J
MAGNESIUM	1550	1740	1720	1710	1690	1850	1770	1630	1720	1500	1660	1760	1810
MANGANESE	86.4 J+	84.6 J+	86.7 J+	89.9	87.2	90.8	104	86.4 B	92.0	122	102	138	119 J+
MERCURY	0.02 J	0.02 J	0.009 J	0.009 J	0.01 J	< 0.017 UJ	0.005 J	0.0057 J	< 0.015 U	0.03	< 0.015 U	0.008 J	0.01 J
NICKEL	7.4	7.3	10.2	7.4	6.8	8.1	9.8	7.60	7.96	9.9	9.6	8.7	8.9
POTASSIUM	490 J	542 J	448 J	598	643	620	576	405	485	354	464	459	452 J+
SELENIUM	< 0.41 U	< 0.39 U	< 0.30 U	< 0.38 U	< 0.35 U	< 0.36 U	< 0.37 U	< 0.39 U	0.16 J	0.11 J	0.17 J	0.12 J	0.15 J
SILVER	0.06 J	0.03 J	0.02 J	0.02 J	0.05 J	0.02 J	0.01 J	0.049 J	0.015 J	0.07 J	0.02 J	0.02 J	0.05 J
SODIUM	2450	2020	1950	2190	2280	2280	2020	2170	2030	1890	2040	2180	3170
THALLIUM	0.05 J	0.06 J	0.04 J	0.07 J	0.07	0.07 J	0.04 J	< 0.077 U	< 0.090 U	0.04 J	0.04 J	0.04 J	0.04 J
VANADIUM	9.8	10.2	10.3	11.1	11.0	11.6	10.9	10.4	10.8	15.9	11.0	10.8	15.7
ZINC	28.6	26.6	25.7	24.5 J-	55.6 J-	27.5 J-	21.5 J-	25.2 J	23.5 J	47.1	30.3	31.7	36.3 J
Solids (%)													
TOTAL SOLIDS	78	84	83	83	82	84	80	82	83	83	83	81	77
SVOCs (ug/Kg)													
ACENAPHTHENE	< 12 U	< 12 U	< 12 U	< 12 U	< 11 U	< 12 U	< 12 U	< 12 U	< 11 U		< 11 U	< 12 U	2.6 J
ACENAPHTHYLENE	< 12 U	< 12 U	< 12 U	< 12 U	< 11 U	< 12 U	< 12 U	< 12 U	< 11 U		< 11 U	< 12 U	< 11 U
ANTHRACENE	4.2 J	< 12 U	< 12 U	< 12 U	1.8 J	< 12 U	< 12 U	< 12 U	< 11 U		< 11 U	< 12 U	3.2 J
BENZO[A]ANTHRACENE	20 J	8.2 J	< 12 U	5.4 J	11 J	2.3 J	2.6 J	< 24 U	< 22 U		5.8 J	< 12 U	< 22 U
BENZO[A]PYRENE	21 J	9.0 J	< 12 UJ	9.2 J	14 J	4.2 J	< 12 UJ	12 J	< 11 U		7.1 J	< 12 U	25
BENZO[B]FLUORANTHENE	14 J	8.2 J	< 12 UJ	11 J	18 J	5.3 J	4.9 J	13 J	2.9 J		5.2 J	< 12 U	24
BENZO[G,H,I]PERYLENE	10 J	< 12 UJ	< 12 UJ	2.9 J	5.6 J	< 12 UJ	< 12 UJ	7.2 J	< 11 U		< 11 U	< 12 U	15 J
BENZO[K]FLUORANTHENE	16 J	6.9 J	< 12 U	< 12 U	< 11 U	< 12 U	< 12 U	< 12 UJ	< 11 UJ		< 11 U	< 12 U	18 J
CHRYSENE	24 J	9.4 J	< 12 U	4.4 J	11 J	< 12 UJ	< 12 UJ	< 24 U	< 22 U		7.0 J	< 12 UJ	24 J
DIBENZ[A,H]ANTHRACENE	< 12 U	< 12 U	< 12 U	< 12 U	2.8 J	< 12 U	< 12 U	5.5 J	< 11 U		< 11 U	< 12 U	9.2 J
FLUORANTHENE	23 J	9.9 J	< 12 U	6.9 J	14 J	3.4 J	2.9 J	12 J	3.3 J		4.0 J	2.8 J	24
FLUORENE	< 12 U	< 12 U	< 12 U	< 12 U	< 11 U	< 12 U	< 12 U	< 12 U	< 11 U		< 11 U	< 12 U	< 11 U
INDENO[1,2,3-CD]PYRENE	13 J	6.0 J	< 12 U	4.1 J	7.6 J	< 12 U	< 12 U	14 J	4.4 J		2.7 J	< 12 UJ	18 J
NAPHTHALENE	< 12 U	< 12 U	< 12 U	< 12 U	< 11 U	< 12 U	< 12 U	< 12 U	< 11 U		< 11 U	< 12 U	< 11 U
PHENANTHRENE	16 J	6.1 J	< 12 U	3.6 J	7.8 J	< 12 U	< 12 U	5.9 J	< 11 U		3.0 J	< 12 U	16 J
PYRENE	18 J	3.5 J	< 12 U	8.4 J	13 J	3.4 J	2.9 J	10 J	3.0 J		3.4 J	< 12 U	25

Table 4-11
Summary of Sediment Analytical Results - Metals and PAHs
MRP Site 1, Carr Point
NAVSTA Newport, Rhode Island

Location ID	SD118	SD118	SD118	SD119	SD119	SD120	SD120	SD120	SD121	SD121	SD121	SD121	SD122
Sample Date	12/10/2013	12/10/2013	12/10/2013	12/6/2013	12/6/2013	12/5/2013	12/5/2013	12/5/2013	12/4/2013	12/4/2013	12/4/2013	12/4/2013	12/12/2013
Depth Interval	0 - 12 in	12 - 24 in	24 - 36 in	0 - 12 in	12 - 24 in	0 - 12 in	12 - 24 in	24 - 36 in	0 - 6 in	0 - 12 in	12 - 24 in	24 - 36 in	0 - 12 in
AVS/SEM (umol/g)													
ACID VOLATILE SULFIDES	1.8			1.2		1.7 J-				< 0.091 UJ			< 0.098 U
ANTIMONY	< 0.00098 U			0.0026		< 0.00092 U				< 0.00090 U			0.024
CADMIUM	0.00027 J			< 0.0011 U		< 0.00100 U				< 0.00098 U			0.00015 J
COPPER	0.018 J			0.018		0.0209				0.0102			5.2 J
LEAD	0.18 J			0.24 J+		0.0848				0.00946			0.74 J
MERCURY	R			R		R				0.000018 J			< 0.000024 UJ
NICKEL	0.014			0.011		< 0.0083 U				< 0.00615 U			0.081
ZINC	0.11			0.10		0.138				< 0.0582 U			0.26
Carbon (ug/g)													
TOTAL ORGANIC CARBON	8200	7500		9000		12000				8800	8900		16000
Metals (mg/Kg)													
ALUMINUM	3290	4790	4790	6830	5190	4470	5040	8230		3650	4400	4140	4740
ANTIMONY	0.41 J-	1.1 J-	3.9 J-	0.71	1.3	0.21	0.16	0.06 J		0.07 J	0.11	0.06 J	36.7
ARSENIC	1.3	8.1	8.0	3.6	3.7	2.1	2.3	3.3		1.8	3.7	2.5	19.0
BARIUM	6.8 J	9.8 J	13.0 J	9.5	6.7	8.8	6.4	7.9		6.4	6.8	7.7	26.6 J
BERYLLIUM	0.15	0.21	0.26	0.32	0.21	0.20	0.20	0.35		0.15	0.17	0.16	0.30
CADMIUM	0.03 J	0.05 J	0.03 J	0.06 J	0.06 J	0.12	0.06 J	0.03 J		0.08	0.08 J	0.03 J	0.07
CALCIUM	936 J	2040 J	834 J	18900	6610	2960	773	756		886	438	376	1520 J
CHROMIUM VI	< 0.36 UJ									< 0.34 UJ			< 0.39 UJ
CHROMIUM, TOTAL	9.5 J	14.8 J	15.0 J	13.3	14.7	11.9	9.7	11.6		10.4	9.8	6.6	11.1 J
COBALT	3.3	7.5	10.7	5.3	4.5	2.9	2.6	4.2		2.4	2.8	2.6	14.1
COPPER	5.9 J	15.5 J	15.5 J	7.7	7.6	8.2	5.7	8.5		5.6	4.6	4.9	25.8 J
IRON	11000	16800	24800	13800	11600	8560	8630	14900		7690	9690	10300	34700
LEAD	113 J	228 J	334 J	191	226	72.3	62.2	9.3		10.2	4.2	3.4	4290 J
MAGNESIUM	1830	2530	2830	2900	2320	2020	1950	2660		1710	2010	1920	2270
MANGANESE	105 J+	155 J+	192 J+	113	111	87.8	79.9	123		78.4	98.8	101	543
MERCURY	0.01 J	0.01 J	0.008 J	0.07	0.07	0.08	< 0.013 U	0.02 J		0.05	< 0.018 U	< 0.019 U	< 0.014 U
NICKEL	8.2	16.4	31.5	15.3	12.4	8.2	10.1	19.2		6.9	8.0	7.1	23.5
POTASSIUM	456 J+	569 J+	580 J+	554	587	713	599	648		519	575	516	359
SELENIUM	< 0.25 U	0.14 J	0.27 J	< 0.35 U	< 0.40 U	< 0.39 U	0.22 J	0.37 J		0.24 J	0.24 J	0.22 J	< 0.35 U
SILVER	0.03 J	0.06 J	0.05 J	0.07 J	0.07 J	0.13	0.04 J	0.02 J		0.07 J	0.01 J	0.02 J	0.15 J
SODIUM	2520	2250	1690	2860	2680	2560	2620	2470		1960	1870	1790	1940
THALLIUM	0.04 J	0.23	0.05 J	0.04 J	0.05 J	0.06 J	0.06 J	0.05 J		0.06 J	0.08 J	0.03 J	0.03 J
VANADIUM	11.1	18.7	18.8	13.7	13.2	11.4	10	12.6		9.7	10.6	8.7	17.7
ZINC	29.7 J	43.9 J	49.9 J	43.8	36.1	37.6	26.6	31.1		31.9	22.9	21.4	91.6 J
Solids (%)													
TOTAL SOLIDS	83	86	85	76	76	82	80	81		86	85	85	77
SVOCs (ug/Kg)													
ACENAPHTHENE	< 12 U	< 11 U	< 11 U	4.8 J	< 13 U	6.2 J	< 11 U	< 11 U		< 12 U	< 11 U	< 11 U	9.7 J
ACENAPHTHYLENE	< 12 U	< 11 U	< 11 U	< 13 U	< 13 U	< 11 U	< 11 U	< 11 U		< 12 U	< 11 U	< 11 U	1.8 J
ANTHRACENE	< 12 U	2.6 J	< 11 U	6.9 J	3.2 J	10 J	< 11 U	< 11 U		< 12 U	< 11 U	< 11 U	15 J
BENZO[A]ANTHRACENE	< 24 U	< 22 U	< 23 U	39	18 J	55	5.8 J	< 11 U		8.7 J	4.2 J	2.2 J	110
BENZO[A]PYRENE	4.4 J	14 J	< 11 U	52	23 J	74	6.6 J	< 11 U		11 J	< 11 U	< 11 U	110 J
BENZO[B]FLUORANTHENE	6.2 J	15 J	4.8 J	77	30	86	8.5 J	< 11 UJ		12 J	3.8 J	< 11 UJ	81
BENZO[G,H,I]PERYLENE	< 12 UJ	7.4 J	< 11 UJ	24 J	9.4 J	43	< 11 U	< 11 U		6.7 J	< 11 U	< 11 U	43 J
BENZO[K]FLUORANTHENE	< 12 U	9.2 J	< 11 U	19 J	7.5 J	31 J	4.4 J	< 11 U		8.1 J	< 11 U	< 11 U	68
CHRYSENE	5.8 J	16 J	3.2 J	43	18 J	69	3.5 J	< 11 U		12 J	< 11 U	< 11 U	120 J
DIBENZ[A,H]ANTHRACENE	< 12 U	5.9 J	< 11 U	7.3 J	3.2 J	15 J	< 11 U	< 11 U		3.2 J	< 11 U	< 11 U	29
FLUORANTHENE	< 24 U	< 22 U	< 23 U	47	25 J	74	7.0 J	< 11 U		13 J	6.7 J	2.1 J	120
FLUORENE	< 12 U	< 11 U	< 11 U	< 13 U	< 13 U	4.1 J	< 11 U	< 11 U		< 12 U	< 11 U	< 11 U	7.6 J
INDENO[1,2,3-CD]PYRENE	4.4 J	10 J	2.7 J	31	13 J	59 J	5.2 J	< 11 UJ		9.5 J	3.7 J	< 11 UJ	48
NAPHTHALENE	< 12 U	< 11 U	< 11 U	< 13 U	< 13 U	< 11 U	< 11 U	< 11 U		< 12 U	< 11 U	< 11 U	4.6 J
PHENANTHRENE	< 12 U	9.4 J	< 11 U	31	14 J	44	4.4 J	< 11 U		6.7 J	2.2 J	< 11 U	79
PYRENE	4.6 J	13 J	3.0 J	53	23 J	76	2.7 J	< 11 U		14 J	< 11 U	< 11 U	100 J

Table 4-11
Summary of Sediment Analytical Results - Metals and PAHs
MRP Site 1, Carr Point
NAVSTA Newport, Rhode Island

Location ID	SD123	SD124	SD125	SD125	SD125	SD126	SD126	SD126	SD128	SD128	SD128	SD129	SD130
Sample Date	12/12/2013	12/12/2013	12/11/2013	12/11/2013	12/11/2013	12/12/2013	12/12/2013	12/12/2013	4/1/2014	4/1/2014	4/1/2014	4/1/2014	4/1/2014
Depth Interval	0 - 12 in	0 - 12 in	0 - 12 in	12 - 24 in	24 - 36 in	0 - 12 in	12 - 24 in	24 - 36 in	0 - 12 in	12 - 24 in	24 - 36 in	0 - 12 in	0 - 12 in
AVS/SEM (umol/g)													
ACID VOLATILE SULFIDES	< 0.080 U	< 0.086 U	0.058 J			7.7			0.078 J-			< 0.091 UJ	0.098 J-
ANTIMONY	0.0016	0.00068 J	< 0.00093 U			0.0021							
CADMIUM	0.000066 J	0.000072 J	0.00027 J			0.000041 J			0.000062 J			< 0.00060 U	0.000090 J
COPPER	0.13 J	0.25 J	0.014 J			0.057 J			0.0064 J			0.0140 J	0.106 J
LEAD	0.53 J	0.22 J	0.027 J			0.041 J			0.0448			0.122	0.0982
MERCURY	R	< 0.000022 UJ	R			R							
NICKEL	0.040	0.016	0.0085			0.025			0.0035 J			0.0223 J	0.0723 J
ZINC	0.14	0.091	0.12			0.22			0.0292 J			0.0322 J	0.348 J
Carbon (ug/g)													
TOTAL ORGANIC CARBON	10000	9100	4900			11000			5700	6100	5700	14000	5900
Metals (mg/Kg)													
ALUMINUM	5510	5160	3380	3760	4720	4050	5270	5680	4180	4250	7220	7950	3720
ANTIMONY	0.23	0.58	0.10	0.08	0.04 J	0.05 J	0.05 J	0.06 J	0.13 J-	0.201 J-	0.14 J-	2.40 J-	0.430 J-
ARSENIC	8.1	9.9	1.8	2.3	2.1	2.0	3.0	3.0	1.73 J-	1.72 J-	2.81 J-	11.9 J-	5.67 J-
BARIUM	15.2 J	7.8 J	5.9 J	5.5 J	7.0 J	6.2 J	8.2 J	7.6 J	5.45	6.18	7.34	8.87	5.78
BERYLLIUM	0.22	0.31	0.13	0.14	0.19	0.17	0.22	0.22	0.193	0.155	0.288	0.342	0.268
CADMIUM	0.05 J	0.16	0.06 J	0.1	0.18	0.05 J	0.05 J	0.04 J	0.037 J	0.024 J	0.032 J	0.067 J	0.0971
CALCIUM	4840 J	2300 J	1120 J	474 J	1470 J	15500 J	12200 J	15200 J	782	804	546	1400	7790
CHROMIUM VI	< 0.38 U	< 0.34 UJ							< 0.44 U			< 0.46 U	< 0.48 U
CHROMIUM, TOTAL	10.2 J	12.0 J	8.3 J	8.1 J	8.7 J	11.4 J	13.5 J	13.0 J	14.8 B	7.68 B	10.3 B	13.2 B	12.6 B
COBALT	8.7	10.4	2.5	2.4	2.6	3.3	4.3	4.8	2.49	2.44	3.95	10.3	9.54
COPPER	31.6 J	42.0 J	4.4 J	4.1 J	4.2 J	6.7 J	9.8 J	8.1 J	5.88 J+	4.59 J+	9.60 J+	21.9 J+	33.4 J+
IRON	28600	39100	7830	7650	9090	9510	11500	13400	9100	8990	15500	37000	31100
LEAD	98.9 J	131 J	17.9 J	7.2 J	3.7 J	11.0 J	14.2 J	12.5 J	52.8	90.2	24.6	774	57.7
MAGNESIUM	2880	2280	1650	1840	2350	2090	2680	2660	1880	1920	3020	2980	2110
MANGANESE	273	481	85.6	80.8	89.0	106	133	140	84.8 B	89.1 B	127 B	1510 B	382 B
MERCURY	< 0.013 U	0.004 J	0.02 J	0.009 J	< 0.016 U	0.03 J	0.04 J	0.02 J	0.015 J	0.011 J	0.010 J	0.012 J	0.011 J
NICKEL	20.6	23.4	6.5	6.7	7.8	8.3	9.7	11.3	11.3	6.58	10.3	26.8	23.6
POTASSIUM	356	402	461	508	783	602	864	696	543	536	743	468	334
SELENIUM	< 0.31 U	< 0.30 U	< 0.41 U	< 0.22 U	< 0.32 U	< 0.36 U	< 0.30 U	< 0.46 U	< 0.42 U	< 0.40 U	< 0.42 U	< 0.46 U	< 0.26 U
SILVER	0.02 J	0.02 J	0.04 J	0.02 J	0.02 J	0.06 J	0.1 J	0.05 J	0.036 J	0.032 J	0.020 J	0.035 J	0.0706
SODIUM	757	1210	2290	1940	3400	3500	3990	2530	1870	2000	1960	645	1100
THALLIUM	0.02 J	0.03 J	0.04 J	0.06	0.09	0.04 J	0.05 J	0.04 J	< 0.084 U	< 0.079 U	< 0.085 U	< 0.091 U	< 0.053 U
VANADIUM	13.5	18.7	9.1	10.1	11.6	9.8	13.2	12.5	10.1	9.96	14.5	16.9	20.9
ZINC	83.4 J	110 J	28.7 J	24.4 J	19.9 J	30.8 J	35.9 J	34.5 J	21.8 J	21.2 J	27.4 J	82.8 J	84.1 J
Solids (%)													
TOTAL SOLIDS	95	88	81	84	74	80	79	80	85	84	84	80	75
SVOCs (ug/Kg)													
ACENAPHTHENE	32	44	< 12 U	< 12 U	< 13 U	< 12 U	2.9 J	< 12 U	< 12 U	< 11 U	< 12 U	19 J	8.5 J
ACENAPHTHYLENE	2.2 J	< 10 U	< 12 U	< 12 U	< 13 U	< 12 U	1.5 J	< 12 U	< 12 U	< 11 U	< 12 U	< 12 UJ	< 13 U
ANTHRACENE	60	56	< 12 U	< 12 U	< 13 U	3.0 J	6.9 J	3.4 J	2.5 J	< 11 U	< 12 U	38 J	14 J
BENZO[A]ANTHRACENE	420 J	400 J	5.3 J	4.5 J	< 13 U	12 J	34	18 J	< 24 U	< 23 U	< 12 U	240 J	88 J
BENZO[A]PYRENE	310 J	480 J	5.1 J	< 12 UJ	< 13 UJ	15 J	47 J	21 J	17 J	12 J	< 12 U	240 J	100 J
BENZO[B]FLUORANTHENE	260	320	7.6 J	6.8 J	4.6 J	15 J	51	21 J	18 J	12 J	< 12 U	200 J	110 J
BENZO[G,H,I]PERYLENE	130 J	160 J	< 12 UJ	< 12 UJ	< 13 UJ	4.9 J	22 J	8.1 J	9.5 J	6.4 J	< 12 U	95 J	64 J
BENZO[K]FLUORANTHENE	140	210	< 12 U	4.0 J	< 13 U	12 J	27	18 J	3.8 J	< 11 U	< 12 U	48 J	44 J
CHRYSENE	690 J	630 J	9.8 J	5.1 J	< 13 UJ	16 J	42 J	22 J	< 24 U	< 23 U	< 24 U	280 J	110 J
DIBENZ[A,H]ANTHRACENE	99	100	< 12 U	< 12 U	< 13 U	< 12 U	14 J	6.9 J	5.7 J	4.6 J	2.4 J	53 J	26 J
FLUORANTHENE	280	520 J	5.6 J	6.0 J	< 13 U	15 J	44	24 J	20 J	13 J	< 12 U	220 J	120
FLUORENE	24	26	< 12 U	< 12 U	< 13 U	< 12 U	< 12 U	< 12 U	< 12 U	< 11 U	< 12 U	14 J	6.3 J
INDENO[1,2,3-CD]PYRENE	130	190	< 12 U	3.4 J	< 13 U	9.3 J	28	14 J	17 J	13 J	< 12 UJ	120 J	100 J
NAPHTHALENE	5.6 J	17 J	< 12 U	< 12 U	< 13 U	< 12 U	< 12 U	< 12 U	< 12 U	< 11 U	< 12 U	4.4 J	< 13 U
PHENANTHRENE	240	300	3.5 J	3.5 J	< 13 U	9.5 J	25	13 J	10 J	6.7 J	< 12 U	160 J	68
PYRENE	560 J	840 J	5.5 J	5.5 J	< 13 UJ	13 J	39 J	18 J	17 J	11 J	< 12 U	210 J	88 J

Table 4-11
Summary of Sediment Analytical Results - Metals and PAHs
MRP Site 1, Carr Point
NAVSTA Newport, Rhode Island

Location ID	SD130*	SD131	SD131	SD131	SD132	SD132	SD132	SD133	SD133
Sample Date	4/1/2014	4/1/2014	4/1/2014	4/1/2014	4/2/2014	4/2/2014	4/2/2014	4/2/2014	4/2/2014
Depth Interval	0 - 12 in	0 - 12 in	12 - 24 in	24 - 36 in	0 - 12 in	12 - 24 in	24 - 36 in	0 - 12 in	12 - 24 in
AVS/SEM (umol/g)									
ACID VOLATILE SULFIDES	0.11 J-	1.8 J-			< 0.11 UJ			< 0.091 UJ	
ANTIMONY									
CADMIUM	0.000041 J	0.00036 J			0.00010 J			0.000026 J	
COPPER	0.125 J	0.0211 J			0.0176 J			0.0096 J	
LEAD	0.109	0.0179			0.0862			0.0450	
MERCURY									
NICKEL	0.0434 J	0.00965 J			0.00823 J			0.0023 J	
ZINC	0.212 J	0.135 J			0.0623 J			0.0288 J	
Carbon (ug/g)									
TOTAL ORGANIC CARBON	6400	11000	22000	33000	14000	13000	9400	6300	8200
Metals (mg/Kg)									
ALUMINUM	3630	5040	6710	9340	5550	5100	5510	3120	3780
ANTIMONY	0.604 J-	0.079 J-	0.042 J-	0.036 J-	0.449 J-	0.363 J-	0.156 J-	0.077 J-	0.13 J-
ARSENIC	5.92 J-	3.04 J-	3.31 J-	3.84 J-	3.69 J-	3.76 J-	5.31 J-	1.49 J-	1.71 J-
BARIUM	6.04	8.78	10.0	16.6	11.1	10.5	15.3	5.02	5.05
BERYLLIUM	0.276	0.227	0.327	0.495	0.264	0.229	0.220	0.138	0.178
CADMIUM	0.101	0.127	0.400	0.646	0.153	0.100	0.029 J	0.027 J	0.033 J
CALCIUM	8360	24100	2940	4130	4440	1420	602	858	610
CHROMIUM VI	< 0.50 U								
CHROMIUM, TOTAL	13.5 B	13.4 B	14.5 B	19.1 B	15.8	12.3	11.3	8.34 B	9.25 B
COBALT	9.08	3.08	3.60	4.96	4.30	4.94	8.32	2.68	3.14
COPPER	22.3 J+	8.62 J+	8.23 J+	11.1 J+	12.9 J+	10.1 J+	11.1 J+	5.23 J+	5.78 J+
IRON	32400	9850	13200	18500	13500	14000	19800	7970	9890
LEAD	59.4	15.1	7.84	7.69	135	100	36.7	29.6	27.7
MAGNESIUM	2110	2500	3430	4660	2610	2270	2320	1530	1820
MANGANESE	388 B	111 B	118 B	150 B	127	120	133	98.8 B	113 B
MERCURY	0.014 J	0.0574	0.023 J	0.012 J	0.0519	0.032	0.0089 J	0.012 J	0.011 J
NICKEL	20.7	8.17	10.8	14.7	11.4	11.9	17.7	6.93	8.36
POTASSIUM	346	1020	1440	2370	1090	703	636	465	471
SELENIUM	< 0.29 U	< 0.47 U	< 0.530 U	< 0.825 U	0.434	0.27 J	0.18 J	< 0.45 U	< 0.42 U
SILVER	0.051 J	0.129	0.044 J	0.057 J	0.169	0.068 J	0.024 J	0.037 J	0.027 J
SODIUM	1110	4040	5320	8700	3980	2290	1830	2260	1640
THALLIUM	< 0.059 U	< 0.094 U	0.160	0.254	< 0.084 U	< 0.078 U	< 0.058 U	< 0.090 U	< 0.085 U
VANADIUM	22.9	12.9	16.7	25.0	16.5	16.8	14.3	8.50	9.66
ZINC	94.1 J	40.4 J	32.5 J	38.6 J	50.6 J	37.8 J	38.8 J	26.7 J	26.8 J
Solids (%)									
TOTAL SOLIDS	74	74	67	55	74	80	82	80	85
SVOCs (ug/Kg)									
ACENAPHTHENE	12 J	4.2 J	< 15 U	< 18 U	16 J	3.8 J	< 12 U	2.4 J	< 12 U
ACENAPHTHYLENE	4.0 J	1.7 J	< 15 U	< 18 U	2.0 J	< 12 U	< 12 U	< 12 U	< 12 U
ANTHRACENE	21 J	8.9 J	2.0 J	< 18 U	28	7.0 J	< 12 U	4.2 J	1.7 J
BENZO[A]ANTHRACENE	150 J	34 J	< 30 U	< 18 U	140 J	37 J	4.0 J	33 J	< 23 U
BENZO[A]PYRENE	150 J	39 J	5.9 J	< 18 U	160 J	42 J	4.9 JL	35 J	13 J
BENZO[B]FLUORANTHENE	170 J	56 J	8.1 J	< 18 U	190 J	51 J	4.7 J	35 J	15 J
BENZO[G,H,I]PERYLENE	82 J	23 J	< 15 U	< 18 U	110 J	27 J	< 12 U	18 J	6.8 J
BENZO[K]FLUORANTHENE	42 J	14 J	< 15 U	< 18 U	75 J	16 J	< 12 U	8.0 J	< 12 U
CHRYSENE	180 J	39 J	< 30 U	< 18 U	160 J	45 J	5.9 J	43 J	< 23 U
DIBENZ[A,H]ANTHRACENE	38 J	8.0 J	3.6 J	4.0 J	42 J	7.3 J	< 12 U	10 J	4.2 J
FLUORANTHENE	180	63	16 J	< 18 U	230	67	6.2 J	44	17 J
FLUORENE	11 J	< 13 U	< 15 U	< 18 U	12 J	< 12 U	< 12 U	< 12 U	< 12 U
INDENO[1,2,3-CD]PYRENE	140 J	42 J	8.2 J	3.8 J	190 J	44 J	< 24 UJ	33 J	16 J
NAPHTHALENE	< 13 U	< 13 U	< 15 U	< 18 U	4.2 J	< 12 U	< 12 U	< 12 U	< 12 U
PHENANTHRENE	110	32	7.2 J	< 18 U	120	34	3.5 J	24 J	8.2 J
PYRENE	140 J	43 J	11 J	< 18 U	150 J	45 J	6.0 J	32 J	11 J

Table 4-12
Summary of Sediment Analytical Results - Physical Characteristics
MRP Site 1, Carr Point
NAVSTA Newport, Rhode Island

Location ID	SD102	SD104	SD105	SD109	SD109	SD110	SD111	SD112	SD112	SD116	SD117	SD118	SD118	SD119	SD120	SD121
Sample Date	12/13/2013	4/2/2014	12/6/2013	12/3/2013	12/3/2013	12/3/2013	12/4/2013	12/4/2013	12/5/2013	4/2/2014	12/10/2013	12/10/2013	12/10/2013	12/6/2013	12/5/2013	12/4/2013
Depth Interval	0 - 12 in	0 - 12 in	0 - 12 in	0 - 12 in	12 - 24 in	0 - 12 in	0 - 12 in	0 - 6 in	0 - 12 in	0 - 12 in	0 - 12 in	0 - 12 in	12 - 24 in	0 - 12 in	0 - 12 in	0 - 6 in
Grain Size (%)																
PERCENT FINES	16.7	5.6	8.5	3.7	6.2	7.5	13.7	5.5	4.3	2.0	8.1	10.3	21.4	20.9	9.7	3.5
PERCENT GRAVEL	46.7	45.1	0.8	1.3	32.8	8.0	16.6	3.3	3.6	3.8	0	39.0	5.9	4.5	3.2	0.7
PERCENT SAND	36.6	49.3	90.7	95.0	61.0	84.5	69.7	91.2	92.1	94.2	91.9	50.7	72.7	74.6	87.1	95.9
PERCENT SAND, COARSE	11.0	6.9	2.4	5.2	19.9	6.7	6.2	2.5	1.4	4.9	0.1	15.6	3.4	7.2	5.7	1.4
PERCENT SAND, FINE	11.3	35.5	59.2	67.3	20.5	41.6	45.4	72.5	82.4	77.3	90.6	21.5	55.4	50.6	62.1	74.4
PERCENT SAND, MEDIUM	14.3	6.9	29.1	22.5	20.6	36.2	18.1	16.2	8.3	12.0	1.2	13.6	13.9	16.8	19.3	20.1
SIEVE 1 INCH (25.4-MM)	11.2	12.7	0	0	16.5	0	0	0	0	0	0	12.6	0	0	0	0
SIEVE 1-1/2 INCH (37.5-MM)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SIEVE 2 INCH (50-MM)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SIEVE 3 INCH (75-MM)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SIEVE 3/4 INCH (19-MM)	8.0	11.6	0	0	2.1	0	8.3	0	1.5	0	0	2.7	0	0	0	0
SIEVE 3/8 INCH (9.5-MM)	15.8	11.9	0	0	3.0	6.1	6.0	1.2	1.2	0.4	0	10.3	3.1	0	0.2	0
SIEVE NO. 004 (4.75-MM)	11.7	8.9	0.8	1.3	11.2	1.9	2.3	2.1	0.9	3.4	0	13.4	2.8	4.5	3.0	0.7
SIEVE NO. 010 (2-MM)	11.0	6.9	2.4	5.2	19.9	6.7	6.2	2.5	1.4	4.9	0.1	15.6	3.4	7.2	5.7	1.4
SIEVE NO. 020 (850-UM)	7.1	4.2	7.5	6.4	12.5	10.5	5.2	3.4	1.9	5.4	0.2	7.2	4.2	6.5	6.5	4.5
SIEVE NO. 040 (425-UM)	7.2	2.7	21.6	16.1	8.1	25.7	12.9	12.8	6.4	6.6	1.0	6.4	9.7	10.3	12.8	15.6
SIEVE NO. 060 (250-UM)	6.2	22.4	28.5	53.6	15.7	33.7	35.2	62.2	64.4	38.5	26.6	7.4	19.2	17.6	18.4	28.5
SIEVE NO. 080 (180-UM)	2.2	8.9	13.2	10.0	3.3	4.6	6.8	8.7	14.9	23.6	39.0	3.6	11.8	11.5	19.8	29.3
SIEVE NO. 100 (150-UM)	0.8	2.1	7.2	2.1	0.8	1.5	1.7	0.9	2.0	8.1	13.7	3.4	6.8	9.3	11.8	11.2
SIEVE NO. 200 (75-UM)	2.1	2.1	10.3	1.6	0.7	1.8	1.7	0.6	1.0	7.1	11.3	7.1	17.6	12.2	12.1	5.3

Table 4-12
Summary of Sediment Analytical Results - Physical Characteristics
MRP Site 1, Carr Point
NAVSTA Newport, Rhode Island

Location ID	SD121	SD121	SD122	SD128	SD129	SD130	D130*	SD131	SD132	SD133
Sample Date	12/4/2013	12/4/2013	12/12/2013	4/1/2014	4/1/2014	4/1/2014	4/1/2014	4/1/2014	4/2/2014	4/2/2014
Depth Interval	0 - 12 in	12 - 24 in	0 - 12 in	0 - 12 in	0 - 12 in	0 - 12 in	0 - 12 in	0 - 12 in	0 - 12 in	0 - 12 in
Grain Size (%)										
PERCENT FINES	5.5	7.1	2.7	6.4	2.9	0.2	0.6	17.0	13.0	3.2
PERCENT GRAVEL	0.7	2.1	54.2	1.8	50.9	56.5	68.7	9.6	6.7	0
PERCENT SAND	93.8	90.8	43.2	91.8	46.2	43.3	30.7	73.4	80.3	96.8
PERCENT SAND, COARSE	2.7	7.0	11.6	3.4	10.3	10.9	6.4	7.6	5.6	0
PERCENT SAND, FINE	68.9	39.9	7.7	72.0	10.9	15.9	12.7	38.0	47.3	95.5
PERCENT SAND, MEDIUM	22.2	43.9	23.9	16.4	25.0	16.5	11.6	27.8	27.4	1.3
SIEVE 1 INCH (25.4-MM)	0	0	13.4	0	0	7.9	41.4	0	0	0
SIEVE 1-1/2 INCH (37.5-MM)	0	0	0	0	0	23.4	0	0	0	0
SIEVE 2 INCH (50-MM)	0	0	0	0	0	0	0	0	0	0
SIEVE 3 INCH (75-MM)	0	0	0	0	0	0	0	0	0	0
SIEVE 3/4 INCH (19-MM)	0	0	14.3	0	21.7	1.9	0	4.4	1.8	0
SIEVE 3/8 INCH (9.5-MM)	0	0.3	16.9	0	18.7	12.0	18.3	2.9	1.2	0
SIEVE NO. 004 (4.75-MM)	0.7	1.8	9.6	1.8	10.5	11.3	9.0	2.3	3.7	0
SIEVE NO. 010 (2-MM)	2.7	7.0	11.6	3.4	10.3	10.9	6.4	7.6	5.6	0
SIEVE NO. 020 (850-UM)	5.8	12.2	10.7	6.1	11.2	7.8	5.2	10.9	11.6	0
SIEVE NO. 040 (425-UM)	16.4	31.7	13.2	10.3	13.8	8.7	6.4	16.9	15.8	1.3
SIEVE NO. 060 (250-UM)	29.1	31.7	6.1	20.4	7.3	11.2	8.8	23.3	20.3	29.0
SIEVE NO. 080 (180-UM)	26.2	5.1	0.9	27.5	1.9	2.9	2.4	8.2	11.1	49.5
SIEVE NO. 100 (150-UM)	8.9	1.4	0.4	11.6	0.7	0.9	0.7	2.9	6.6	10.1
SIEVE NO. 200 (75-UM)	4.7	1.7	0.2	12.5	1.1	0.9	0.7	3.6	9.3	6.9

Table 4-13
Summary of Sediment Analytical Results - Reference Locations
MRP Site 1, Carr Point
NAVSTA Newport, Rhode Island

Location ID	SD301	SD302	SD302	SD302	SD303	SD303*	SD304	SD304*	SD305	SD305	SD305	D305*	SD306	SD306	SD306	SD307	SD307	SD307
Sample Date	4/2/2014	12/11/2013	12/11/2013	12/11/2013	12/13/2013	12/13/2013	12/13/2013	12/13/2013	12/12/2013	12/12/2013	12/12/2013	12/12/2013	12/12/2013	12/12/2013	12/12/2013	12/17/2013	12/17/2013	12/17/2013
Depth Interval	0 - 12 in	0 - 12 in	12 - 24 in	24 - 36 in	0 - 12 in	0 - 12 in	0 - 12 in	0 - 12 in	0 - 12 in	12 - 24 in	24 - 36 in	0 - 12 in	0 - 12 in	12 - 24 in	24 - 36 in	0 - 12 in	12 - 24 in	24 - 36 in
AVS/SEM (umol/g)																		
ACID VOLATILE SULFIDES	< 0.091 U	34 J			< 0.088 U	< 0.088 U	< 0.084 U		36			40	< 0.096 U			3.8 J		
ANTIMONY		0.00074 J-			0.00168 J-	0.00060 J-	0.00077 J-		0.00401 J-			0.00544 J-	< 0.00096 UJ			0.00045 J		
CADMIUM	0.00027 J	0.00072 J			< 0.00060 U	0.00014 J	0.000069 J		0.00087			0.00164	0.00018			0.00035 J		
COPPER	0.0129	0.11 J			0.0405 J	0.0344 J	0.0602 J		0.112 J			0.219 J	0.00930 J			0.0653		
LEAD	0.00498	0.071 J			0.0268	0.0236	0.0270		0.0896			0.136	0.00793			0.0493		
MERCURY		R			< 0.000026 UJ	< 0.000029 UJ	< 0.000028 UJ		R			R	R			< 0.000024 UJ		
NICKEL	0.0118	0.035 J			0.00546	0.0139	0.0188		0.0417 J			0.0834 J	< 0.0040 UJ			0.0226		
ZINC	0.0554	0.41 J			0.0464 J-	0.0579 J-	0.132 J-		0.523 J-			0.807 J-	0.0556 J-			0.325		
Carbon (ug/g)																		
TOTAL ORGANIC CARBON	9700	21000			7600	17000	17000		34000			31000	5400			16000		
Conventional (mg/Kg)																		
SULFIDE		310																
Metals (mg/Kg)																		
ALUMINUM	3230	5350	7740	5340	3680	4420	3840	3550	8970	15700	8900	13800	2740	3920	4420	6420	6900	7550
ANTIMONY	0.068 J-	0.08 J-	0.08 J-	0.06 J-	0.06 J	0.04 J	0.07 J	0.1 J	0.07 J	0.18 J	0.06 J	0.11 J	0.03 J	5.6 J	0.05 J	0.08 J	0.05 J	0.07 J
ARSENIC	2.07 J	3.4	2.2	1.7	2.2	1.7	5.7	5.7	5.5	11.6	5.5	8.1	1.2	2.7	6.0	3.4	2.7	2.8
BARIUM	5.65	10.7 J	7.0 J	6.1 J	4.1	5.2	7.6	6.5	25.3 J	38.1 J	19.3 J	44.8 J	5.2 J	7.5 J	9.0 J	13.0	7.2	17.6
BERYLLIUM	0.199	0.27	0.23	0.17	0.17 J-	0.18 J-	0.24 J-	0.23 J-	0.53 J-	0.88 J-	0.46 J-	0.77 J-	0.12 J-	0.18 J-	0.18 J-	0.34	0.25	0.38
CADMIUM	0.072 J	0.14	0.1	0.07 J	0.02 J	0.02 J	0.04 J	0.04 J	0.23	0.61	0.32	0.49	0.08 J	0.10	0.09	0.08 J	0.02 J	0.07
CALCIUM	590	31200 J	11600 J	19700 J	792	1250	8480	10100	154000 J	31400 J	17700 J	79000 J	950 J	2000 J	628 J	16600	10400	872
CHROMIUM VI	< 0.42 U	< 0.33 UJ			0.62 J	0.53 J												
CHROMIUM, TOTAL	7.53	19.0 J	14.9 J	9.3 J	7.7 J-	9.0 J-	9.1 J-	8.8 J-	31.0 J	65.1 J	29.6 J	72.2 J	6.8 J	9.9 J	7.8 J	16.6	9.8	10.3
COBALT	2.92	3.6	5.0	5.5	2.9	3.0	8.0	6.8	4.8	8.0	4.6	6.8	2.2	3.1	3.1	4.1	4.6	7.8
COPPER	4.65 B	14.3 J	9.2 J	4.3 J	6.6 J	9.0 J	14.1 J	11.3 J	25.4 J	42.4 J	15.4 J	73.3 J	3.7 J	6.8 J	3.4 J	14.6	5.7 J	25.3 J
IRON	9090	11100	15900	10400	13700	11400	27200	28300	15300	26900	15900	22500	6500	9220	9680	12500	13600	15000
IRON, FERROUS		1.0																
LEAD	6.00	22.2 J	12.9 J	4.9 J	10.1 J	15.1 J	11.1 J	10.9 J	38.0 J	82.0 J	34.0 J	84.5 J	7.0 J	9.9 J	3.6 J	20.0 J+	7.0 J+	7.6 J+
MAGNESIUM	1540	2950	3960	2590	1700	2030	1740	1680	4650	7290	4600	6450	1380	1780	1990	2670	2890	2960
MANGANESE	86.8 J-	127 J+	155 J+	101 J+	99.9	105	282	247	236	272	161	287	77.4	93.3	87.8	146 J+	142 J+	151 J+
MERCURY	0.0043 J	0.08 J	0.04 J	< 0.017 UJ	0.02 J	0.01 J	0.006 J	0.01 J	0.17 J	0.98 J	0.36 J	0.62 J	0.02 J	0.03 J	< 0.016 U	0.06	0.009 J	< 0.016 U
NICKEL	7.11	9.0	10.8	8.5	8.4 J	8.9 J	17.7 J	15.0 J	12.4 J	20.3 J	11.7 J	18.2 J	5.6 J	7.5 J	7.8 J	10.3	10.4	15.3
POTASSIUM	499 J+	1210 J+	738 J+	688 J+	322 J	472 J	328 J	316 J	2720 J	4460 J	2500 J	3940 J	467 J	624 J	675 J	1050 J	708 J	842 J
SELENIUM	0.17 J	0.33 J	0.11 J	0.28 J	< 0.28 UJ	< 0.37 UJ	< 0.33 UJ	< 0.31 UJ	0.76 J-	1.2 J-	< 0.64 UJ	0.88 J-	< 0.41 UJ	< 0.38 UJ	< 0.35 UJ	< 0.40 U	< 0.33 U	< 0.31 U
SILVER	0.039 J	0.27 J	0.08 J	0.02 J	0.03 J	0.04 J	0.03 J	0.03 J	0.44 J	0.44 J	0.14 J	0.90 J	0.05 J	0.08 J	0.02 J	0.11	0.02 J	0.02 J
SODIUM	2200 J+	4660	2560	2430	1750	2270	1420	1240	11600	15500	10100	12900	2710	2240	2120	3000	1810	1610
THALLIUM	< 0.080 U	0.07 J	0.06 J	0.08 J	0.02 J	0.02 J	0.02 J	0.02 J	0.14	0.24	0.13 J	0.20	0.05 J	0.07 J	0.09	0.05 J	0.03 J	0.06 J
VANADIUM	11.6	15.8	15.7	11.8	9.0 J-	9.6 J-	18.9 J-	18.1 J-	27.2 J-	47.5 J-	26.0 J-	38.7 J-	7.6 J-	12.2 J-	11.1 J-	15.2	12.8	14.5
ZINC	23.6	54.7 J	49.9 J	25.8 J	38.2 J-	36.1 J-	67.0 J-	59.0 J-	75.1 J	169 J	96.2 J	142 J	24.6 J	35.2 J	22.5 J	56.0	36.5	40.2
PCBs (ug/Kg)																		
AROCLOR-1016		< 1.7 U			< 1.9 U	< 2.0 U	< 1.8 U		< 3.0 U			< 3.2 U	< 2.0 U			< 1.9 U		
AROCLOR-1221		< 1.7 U			< 1.9 U	< 2.0 U	< 1.8 U		< 3.0 U			< 3.2 U	< 2.0 U			< 1.9 U		
AROCLOR-1232		< 2.0 U			< 2.2 U	< 2.3 U	< 2.2 U		< 3.5 U			< 3.8 U	< 2.3 U			< 2.3 U		
AROCLOR-1242		< 1.7 U			< 1.9 U	< 2.0 U	< 1.8 U		< 3.0 U			< 3.2 U	< 2.0 U			< 1.9 U		
AROCLOR-1248		< 1.7 U			< 1.9 U	< 2.0 U	< 1.8 U		< 3.0 U			< 3.2 U	< 2.0 U			< 1.9 U		
AROCLOR-1254		< 1.7 U			< 1.9 U	< 2.0 U	< 1.8 U		< 3.0 U			< 3.2 U	< 2.0 U			< 1.9 U		
AROCLOR-1260		< 1.7 U			180 J	96 J	< 1.8 U		< 3.0 U			< 3.2 U	< 2.0 U			< 1.9 U		
AROCLOR-1262		< 1.7 U			< 1.9 U	< 2.0 U	< 1.8 U		< 3.0 U			< 3.2 U	< 2.0 U			< 1.9 U		
AROCLOR-1268		< 1.7 U			< 1.9 U	< 2.0 U	< 1.8 U		< 3.0 U			< 3.2 U	< 2.0 U			< 1.9 U		

Table 4-13
Summary of Sediment Analytical Results - Reference Locations
MRP Site 1, Carr Point
NAVSTA Newport, Rhode Island

Location ID	SD301	SD302	SD302	SD302	SD303	SD303*	SD304	SD304*	SD305	SD305	SD305	D305*	SD306	SD306	SD306	SD307	SD307	SD307
Sample Date	4/2/2014	12/11/2013	12/11/2013	12/11/2013	12/13/2013	12/13/2013	12/13/2013	12/13/2013	12/12/2013	12/12/2013	12/12/2013	12/12/2013	12/12/2013	12/12/2013	12/12/2013	12/17/2013	12/17/2013	12/17/2013
Depth Interval	0 - 12 in	0 - 12 in	12 - 24 in	24 - 36 in	0 - 12 in	0 - 12 in	0 - 12 in	0 - 12 in	0 - 12 in	12 - 24 in	24 - 36 in	0 - 12 in	0 - 12 in	12 - 24 in	24 - 36 in	0 - 12 in	12 - 24 in	24 - 36 in
Pesticides (ug/Kg)																		
4,4-DDD	< 0.69 UJ	< 0.33 UJ			18 J	< 3.8 U	< 1.8 U		< 2.9 U			< 3.1 U	< 0.38 U			< 1.9 UJ		
4,4-DDE	0.067 J	0.17 J			< 3.7 U	< 3.8 U	< 1.8 U		0.49 J			< 3.1 U	< 0.38 U			< 1.9 UJ		
4,4-DDT	< 0.68 UJ	< 0.33 UJ			21 J	< 3.8 U	< 1.8 U		< 2.9 U			< 3.1 U	< 0.38 UJ			< 1.9 UJ		
ENDOSULFAN II	< 0.34 UJ	< 0.33 UJ			1.8 J	1.0 J	< 1.8 U		< 2.9 U			< 3.1 U	< 0.38 U			< 1.9 UJ		
ENDOSULFAN SULFATE	< 0.34 UJ	< 0.33 UJ			9.5 J	4.9 J	< 1.8 U		< 2.9 U			< 3.1 U	< 0.38 U			< 1.9 UJ		
ENDRIN	< 0.34 UJ	< 0.33 UJ			< 3.7 U	< 3.8 U	< 1.8 U		< 2.9 U			< 3.1 U	< 0.38 U			< 1.9 UJ		
ENDRIN ALDEHYDE	< 0.34 UJ	< 0.33 UJ			< 3.7 U	< 3.8 U	< 1.8 U		< 2.9 U			< 3.1 U	< 0.38 U			< 1.9 UJ		
ENDRIN KETONE	< 0.34 UJ	< 0.33 UJ			30 J	14 J	< 1.8 U		< 2.9 U			< 3.1 U	< 0.38 UJ			< 1.9 UJ		
Solids (%)																		
TOTAL SOLIDS	82	87	82	85	87	85	91	91	54	43	58	50	79	81	82	81	89	89
SVOCs (ug/Kg)																		
ACENAPHTHENE	< 12 U	< 11 U	< 11 U	< 11 U	81	50	2.0 J	< 11 U	4.1 J	7.4 J	2.8 J	< 20 U	< 12 U	3.8 J	< 12 U	< 12 U	< 11 U	< 11 U
ACENAPHTHYLENE	< 12 U	< 11 U	1.5 J	< 11 U	< 11 U	< 11 U	< 11 U	< 11 U	3.6 J	11 J	3.2 J	3.0 J	< 12 U	2.9 J	< 12 U	< 12 U	< 11 U	< 11 U
ANTHRACENE	< 12 U	2.2 J	3.2 J	< 11 U	120	78	3.7 J	2.8 J	11 J	37 J	11 J	8.2 J	< 12 U	8.3 J	< 12 U	2.8 J	< 11 U	< 11 U
BENZIDINE		R			< 1200 UJ	< 1200 UJ	< 1200 UJ		< 1900 UJ			< 2200 UJ	< 1300 UJ			R		
BENZO[A]ANTHRACENE	6.3 J	< 23 UJ	< 23 U	< 11 U	640	350 J	< 21 UJ	19 J	53 J	120 J	37 J	45 J	< 23 UJ	18 J	2.5 J	14 J	2.4 J	< 11 UJ
BENZO[A]PYRENE	7.1 JL	< 23 UJ	12 J	< 11 U	860	560 J	< 21 UJ	19 J	66 J	140 J	40 J	56 J	< 23 UJ	17 J	< 12 UJ	20 J	< 11 UJ	< 11 UJ
BENZO[B]FLUORANTHENE	8.0 J	< 23 UJ	15 J	< 11 U	720	560 J	< 29 UJ	26 J	120 J	240 J	66 J	98 J	< 23 UJ	25 J	< 12 UJ	36 J	< 11 UJ	13 J
BENZO[G,H,I]PERYLENE	3.8 J	3.5 J	4.8 J	< 11 UJ	280 J	180 J	12 J	9.2 J	35 J	57 J	20 J	30 J	3.2 J	11 J	< 12 UJ	9.8 J	< 11 UJ	< 11 UJ
BENZO[K]FLUORANTHENE	< 12 UJ	< 23 U	10 J	< 11 U	320 J	180 J	6.4 J	4.9 J	27 J	64	24 J	23 J	< 12 U	8.7 J	< 12 U	9.2 J	< 11 U	3.7 J
BENZOIC ACID		< 700 UJ			< 660 UJ	< 660 UJ	< 650 UJ		< 1100 UJ			< 1200 UJ	< 720 UJ			< 740 UJ		
BENZYL ALCOHOL		< 560 U			< 530 U	< 530 UJ	< 520 U		< 850 U			< 970 U	< 580 U			< 590 U		
BIS(2-CHLOROETHOXY)METHANE		< 280 UJ			< 270 UJ	< 270 UJ	< 260 UJ		< 430 UJ			< 480 UJ	< 290 UJ			< 300 UJ		
BIS(2-CHLOROETHYL)ETHER		< 280 UJ			< 270 U	< 270 UJ	< 260 U		< 430 U			< 480 UJ	< 290 U			< 300 UJ		
BIS(2-ETHYLHEXYL)PHTHALATE		< 280 U			< 270 U	< 270 UJ	< 260 U		< 430 U			< 480 U	< 290 U			< 300 U		
BUTYLBENZYLPHTHALATE		< 280 U			< 270 U	< 270 UJ	< 260 U		< 430 U			< 480 U	< 290 U			< 300 U		
CAPROLACTAM		< 280 U			< 270 U	< 270 UJ	< 260 U		< 430 UJ			< 480 U	< 290 U			< 300 U		
CARBAZOLE		< 280 U			< 270 U	< 270 UJ	< 260 U		< 430 U			< 480 U	< 290 U			< 300 U		
CHRYSENE	8.4 J	< 23 U	13 J	2.5 J	900 J	530 J	19 J	18 J	62	140 J	35 J	46	< 12 U	16 J	< 12 U	16 J	2.5 J	< 11 U
DIBENZ[A,H]ANTHRACENE	3.7 J	< 23 UJ	5.3 J	< 11 U	140	84	5.6 J	5.3 J	16 J	31 J	11 J	14 J	< 12 U	13 J	< 12 U	3.3 J	< 11 U	< 11 UJ
DIBENZOFURAN		< 280 UJ			< 270 U	< 270 UJ	< 260 U		< 430 U			< 480 U	< 290 U			< 300 U		
DIETHYLPHTHALATE		< 280 UJ			< 270 UJ	< 270 UJ	< 260 UJ		< 430 UJ			< 480 UJ	< 290 UJ			< 300 UJ		
DIMETHYL PHTHALATE		< 280 U			< 270 U	< 270 UJ	< 260 U		< 430 U			< 480 U	< 290 U			< 300 U		
DI-N-BUTYLPHTHALATE		< 280 U			< 270 U	< 270 UJ	< 260 U		< 430 U			< 480 U	< 290 U			< 300 U		
DI-N-OCTYLPHTHALATE		< 280 U			< 270 U	< 270 UJ	< 260 U		< 430 UJ			< 480 UJ	< 290 U			< 300 UJ		
FLUORANTHENE	10 J	< 23 U	< 23 U	< 11 U	690	600 J	28	26	99	190	63	75	< 23 U	23 J	2.3 J	24 J	3.7 J	< 11 U
FLUORENE	< 12 U	< 11 U	< 11 U	< 11 U	51	34	< 11 U	< 11 U	< 17 U	18 J	6.2 J	< 20 U	< 12 U	5.7 J	< 12 U	< 12 U	< 11 U	< 11 U
HEXACHLOROBENZENE		< 280 U			< 270 U	< 270 UJ	< 260 U		< 430 U			< 480 U	< 290 U			< 300 U		
HEXACHLOROBUTADIENE		< 280 UJ			< 270 U	< 270 UJ	< 260 U		< 430 U			< 480 U	< 290 U			< 300 U		
HEXACHLOROETHANE		< 280 UJ			< 270 U	< 270 UJ	< 260 U		< 430 U			< 480 U	< 290 U			< 300 U		
INDENO[1,2,3-CD]PYRENE	< 24 U	< 23 UJ	8.7 J	< 11 UJ	450	250	15 J	13 J	56	110	29 J	48	4.0 J	16 J	< 12 U	14 J	< 11 U	< 11 U
ISOPHORONE		< 280 UJ			< 270 U	< 270 UJ	< 260 U		< 430 U			< 480 U	< 290 U			< 300 U		
NAPHTHALENE	< 12 U	< 11 U	< 11 U	< 11 U	18 J	11 J	< 11 U	< 11 U	< 17 U	23 J	5.5 J	< 20 U	< 12 U	< 12 U	< 12 U	< 12 U	< 11 U	< 11 U
NITROBENZENE		< 280 U			< 270 U	< 270 UJ	< 260 U		< 430 U			< 480 U	< 290 U			< 300 U		
N-NITROSODIMETHYLAMINE		< 280 U			< 270 UJ	< 270 UJ	< 260 UJ		< 430 U			< 480 U	< 290 UJ			< 300 U		
N-NITROSODINPROPYLAMINE		< 280 U			< 270 U	< 270 UJ	< 260 U		< 430 U			< 480 U	< 290 U			< 300 U		
N-NITROSODIPHENYLAMINE		< 280 UJ			< 270 U	< 270 UJ	< 260 U		< 430 U			< 480 U	< 290 U			< 300 U		
N-NITROSOPYRROLIDINE		R			< 270 U	< 270 UJ	< 260 U		< 430 U			< 480 U	< 290 U			R		
PENTACHLOROPHENOL		< 700 UJ			< 660 UJ	< 660 UJ	< 650 UJ		< 1100 UJ			< 1200 UJ	< 720 UJ			< 740 UJ		
PHENANTHRENE	5.3 J	< 23 U	8.5 J	< 11 U	600	340	16 J	15 J	47	99	29 J	33 J	2.6 J	14 J	< 12 U	12 J	3.0 J	< 11 U
PHENOL		< 280 U			< 270 U	< 270 UJ	< 260 U		< 430 U			< 480 U	< 290 U			< 300 U		
PYRENE	9.0 J	< 23 U	14 J	< 11 U	1000	650 J	22 J	23 J	92 J	270	63	74 J	4.4 J	18 J	< 12 UJ	26	< 11 U	< 11 U
VOCs (ug/Kg)																		
ACETONE		120 J			< 11 UJ	< 11 UJ	< 12 UJ		120 J			170 J	< 12 UJ			< 12 UJ		
BENZENE		< 3.0 U			< 2.3 UJ	< 2.2 UJ	< 2.4 U		< 4.5 UJ			< 5.5 UJ	< 2.5 UJ			< 2.5 UJ		
BROMOBENZENE		< 3.0 UJ			< 2.3 UJ	< 2.2 UJ	< 2.4 U		< 4.5 UJ			< 5.5 UJ	< 2.5 UJ			< 2.5 UJ		
BROMOCHLOROMETHANE		< 3.0 U			< 2.3 UJ	< 2.2 UJ	< 2.4 U		< 4.5 UJ			< 5.5 UJ	< 2.5 UJ			< 2.5 UJ		
BROMODICHLOROMETHANE		< 3.0 U			< 2.3 UJ	< 2.2 UJ	< 2.4 U		< 4.5 UJ			< 5.5 UJ	< 2.5 UJ			< 2.5 UJ		
BROMOFORM		< 3.0 UJ			< 2.3 UJ	< 2.2 UJ	< 2.4 U		< 4.5 UJ			< 5.5 UJ	< 2.5 UJ			< 2.5 UJ		
BROMOMETHANE		< 6.0 U			< 4.6 UJ	< 4.5 UJ	< 4.8 U		< 9.0 UJ			< 11 UJ	< 5.0 UJ			< 5.0 UJ		
CARBON DISULFIDE		15 J			< 0.25 UJ	< 0.25 U	< 0.25 UJ		16 J			12 J	2.2 J			6.4 J		

Table 4-13
Summary of Sediment Analytical Results - Reference Locations
MRP Site 1, Carr Point
NAVSTA Newport, Rhode Island

Location ID	SD308	SD308	SD308	SD309	SD309	SD309	SD309*	SD310	SD310	SD310	SD312	SD312	SD312	SD313	SD313	SD313
Sample Date	12/17/2013	12/17/2013	12/17/2013	4/2/2014	4/2/2014	4/2/2014	4/2/2014	4/2/2014	4/2/2014	4/2/2014	4/3/2014	4/3/2014	4/3/2014	4/3/2014	4/3/2014	4/3/2014
Depth Interval	0 - 12 in	12 - 24 in	24 - 36 in	0 - 12 in	12 - 24 in	24 - 36 in	12 - 24 in	0 - 12 in	12 - 24 in	24 - 36 in	0 - 12 in	12 - 24 in	24 - 36 in	0 - 12 in	12 - 24 in	24 - 36 in
AVS/SEM (umol/g)																
ACID VOLATILE SULFIDES	35			0.067 J				0.67			0.26			0.53		
ANTIMONY	0.00380															
CADMIUM	0.0013 J			0.00018 J				0.00023 J			0.00010 J			0.00027 J		
COPPER	0.151			0.0109				0.0183			0.0086 J			0.0182		
LEAD	0.0787			0.00525				0.0126			0.00717			0.0152		
MERCURY	< 0.000034 UJ															
NICKEL	0.0720			0.00877				0.0118			0.00422			0.00772		
ZINC	0.516			0.0603				0.125			0.0618			0.116		
Carbon (ug/g)																
TOTAL ORGANIC CARBON	23000			6800	8800	5900	6100	8800	8600	8300	12000	8800	9000	13000	10000	10000
Conventional (mg/Kg)																
SULFIDE																
Metals (mg/Kg)																
ALUMINUM	9470	9450	4990	3330	3610	5310	3130	3720	5540	4660	7290	12800	14600	6260	7600	6220
ANTIMONY	0.09 J	0.1 J	0.05 J	0.13 J-	0.13 J-	0.078 J-	0.13 J-	0.060 J-	0.091 J-	0.12 J-	0.048 J-	0.037 J-	0.044 J-	0.057 J-	0.044 J-	0.058 J-
ARSENIC	5.0	5.3	1.4	2.87 J	2.44 J	3.59 J	4.86 J	2.54 J	3.22 J	7.30 J	2.03 J	1.48 J	8.37 J	2.56 J	2.24 J	2.37 J
BARIUM	24.6	21.4	5.7	6.94	6.43	8.20	7.28	6.62	7.57	10.7	11.7	12.0	19.7	12.5	10.0	8.75
BERYLLIUM	0.53	0.47	0.16	0.181	0.182	0.176	0.186	0.187	0.197	0.239	0.243	0.237	0.445	0.296	0.212	0.217
CADMIUM	0.20	0.26	0.08	0.0936	0.080 J	0.028 J	0.094 J	0.0907	0.0830	0.111	0.0773	0.036 J	0.015 J	0.172	0.0978	0.090 J
CALCIUM	74200	39700	1700	570	612	627	576	2890	1130	628	1210	901	821	6750	1620	1760
CHROMIUM VI																
CHROMIUM, TOTAL	29.1	30.4	9.5	8.68	8.84	11.8	9.00	10.5	11.7	9.27	15.0	20.7	21.1	16.1	14.4	12.1
COBALT	5.4	5.4	3.2	3.32	3.12	4.94	4.15	3.13	4.28	3.42	4.53	7.70	15.9	3.69	4.48	3.60
COPPER	22.0	28.6	4.0	5.08 B	4.62 B	5.83 B	5.90 B	6.84 B	5.36 B	5.38 B	7.92 B	6.00 B	32.4 B	11.0 B	4.38 B	5.13 B
IRON	16300	16800	9120	10600	10900	19700	13800	11000	13000	10700	13000	22400	25700	10800	13400	10800
IRON, FERROUS																
LEAD	39.4 J+	40.0 J+	5.6 J+	6.36	6.41	4.99	7.05	9.66	6.36	3.71	11.3	4.53	12.6	19.8	4.84	6.00
MAGNESIUM	4250	3990	2200	1600	1740	2500	1420	1760	2450	2040	3620	6490	6300	3050	3690	3000
MANGANESE	227 J+	204 J+	106 J+	101 J-	95.6 J-	126 J-	101 J-	103 J-	108 J-	89.7 J-	130 J-	199 J-	323 J-	116 J-	139 J-	115 J-
MERCURY	0.08	0.14	0.01 J	0.013 J	0.012 J	0.0054 J	0.015 J	0.030 J	0.0069 J	< 0.016 U	0.040	0.0046 J	< 0.014 U	0.0477	0.013 J	0.0084 J
NICKEL	13.4	15.6	8.9	8.29	7.91	11.0	9.86	8.08	9.10	7.94	11.1	17.9	29.5	9.57	10.8	9.20
POTASSIUM	2500 J	2140 J	526 J	532 J+	503 J+	374 J+	497 J+	636 J+	637 J+	978 J+	1080 J+	919 J+	1500 J+	1350 J+	982 J+	962 J+
SELENIUM	0.68	0.70	< 0.28 U	0.24 J	0.11 J	0.039 J	0.24 J	0.23 J	0.21 J	0.23 J	0.19 J	0.090 J	0.17 J	0.31 J	0.18 J	0.23 J
SILVER	0.41	0.58	0.04 J	0.031 J	0.030 J	0.015 J	0.033 J	0.081 J	0.035 J	0.023 J	0.0848	0.018 J	0.0096 J	0.178	0.024 J	0.038 J
SODIUM	9630	7510	2330	2670 J+	2160 J+	1320 J+	2060 J+	2210 J+	1560 J+	1580 J+	2530 J+	1780 J+	1540 J+	3830 J+	2400 J+	2630 J+
THALLIUM	0.12	0.15	0.05 J	< 0.068 U	< 0.096 U	< 0.086 U	< 0.095 U	< 0.087 U	< 0.081 U	0.122	0.0755	< 0.068 U	0.0834	0.100	0.0927	0.0984
VANADIUM	29.0	27.8	10.7	14.5	14.5	18.7	15.7	12.8	14.8	14.7	14.3	16.4	21.5	16.9	16.5	13.4
ZINC	86.3	97.2	29.2	31.8	29.0	35.5	33.5	39.2	33.8	20.2	39.2	47.6	53.9	53.6	30.4	28.2
PCBs (ug/Kg)																
AROCLOR-1016	< 2.7 U															
AROCLOR-1221	< 2.7 U															
AROCLOR-1232	< 3.2 U															
AROCLOR-1242	< 2.7 U															
AROCLOR-1248	< 2.7 U															
AROCLOR-1254	< 2.7 U															
AROCLOR-1260	< 2.7 U															
AROCLOR-1262	< 2.7 U															
AROCLOR-1268	< 2.7 U															

Table 4-13
Summary of Sediment Analytical Results - Reference Locations
MRP Site 1, Carr Point
NAVSTA Newport, Rhode Island

Location ID	SD308	SD308	SD308	SD309	SD309	SD309	SD309*	SD310	SD310	SD310	SD312	SD312	SD312	SD313	SD313	SD313
Sample Date	12/17/2013	12/17/2013	12/17/2013	4/2/2014	4/2/2014	4/2/2014	4/2/2014	4/2/2014	4/2/2014	4/2/2014	4/3/2014	4/3/2014	4/3/2014	4/3/2014	4/3/2014	4/3/2014
Depth Interval	0 - 12 in	12 - 24 in	24 - 36 in	0 - 12 in	12 - 24 in	24 - 36 in	12 - 24 in	0 - 12 in	12 - 24 in	24 - 36 in	0 - 12 in	12 - 24 in	24 - 36 in	0 - 12 in	12 - 24 in	24 - 36 in
Pesticides (ug/Kg)																
4,4-DDD	< 2.6 U			< 0.82 UJ				< 0.80 UJ			< 0.76 UJ			< 0.88 UJ		
4,4-DDE	0.62 J			< 0.41 UJ				0.11 J			0.098 J			0.23 J		
4,4-DDT	< 2.6 U			< 0.82 UJ				< 0.80 UJ			< 0.76 UJ			< 0.84 UJ		
ENDOSULFAN II	< 2.6 U			< 0.41 UJ				< 0.40 UJ			< 0.38 UJ			< 0.42 UJ		
ENDOSULFAN SULFATE	< 2.6 U			< 0.41 UJ				< 0.40 UJ			< 0.38 UJ			< 0.42 UJ		
ENDRIN	< 2.6 UJ			< 0.41 UJ				< 0.40 UJ			< 0.38 UJ			< 0.42 UJ		
ENDRIN ALDEHYDE	< 2.6 U			< 0.41 UJ				< 0.40 UJ			< 0.38 UJ			< 0.42 UJ		
ENDRIN KETONE	< 2.6 U			< 0.41 UJ				< 0.40 UJ			< 0.38 UJ			< 0.42 UJ		
Solids (%)																
TOTAL SOLIDS	58	59	84	79	84	88	84	82	83	83	82	85	89	75	79	80
SVOCs (ug/Kg)																
ACENAPHTHENE	5.4 J	10 J	< 12 U	< 12 U	< 11 U	< 11 U	< 12 U	< 12 U	< 12 U	< 12 U	< 12 U	< 12 U	< 11 U	< 13 U	< 12 U	< 12 U
ACENAPHTHYLENE	2.3 J	6.9 J	< 12 U	< 12 U	< 11 U	< 11 U	< 12 U	< 12 U	< 12 U	< 12 U	1.7 J	< 12 U	< 11 U	2.5 J	< 12 U	< 12 U
ANTHRACENE	11 J	23 J	< 12 U	< 12 U	< 11 U	1.6 J	< 12 U	2.7 J	< 12 U	< 12 U	8.4 J	3.5 J	< 11 U	3.8 J	1.8 J	< 12 U
BENZIDINE	R															
BENZO[A]ANTHRACENE	65 J	120 J	2.6 J	2.6 J	3.4 J	3.7 J	5.2 J	17 J	< 12 U	< 12 U	30	11 J	< 11 U	20 J	8.0 J	3.5 J
BENZO[A]PYRENE	87 J	120 J	< 12 UJ	< 12 UL	4.1 JL	< 11 UL	5.5 J	20 J	< 12 U	< 12 UL	29 L	9.4 JL	< 11 UL	20 J	8.5 J	< 12 U
BENZO[B]FLUORANTHENE	120 J	160 J	15 J	3.8 J	4.7 J	4.0 J	6.4 J	28 J	< 12 U	< 12 U	34	8.4 J	< 11 U	27 J	10 J	4.2 J
BENZO[G,H,I]PERYLENE	40 J	64 J	< 12 UJ	< 12 U	< 11 U	< 11 U	< 12 U	11 J	< 12 UJ	< 12 U	17 J	5.9 J	< 11 U	9.5 J	3.3 J	< 12 U
BENZO[K]FLUORANTHENE	50	69 J	4.4 J	< 12 UJ	< 11 UJ	< 11 UJ	< 12 UJ	4.7 J	< 12 UJ	< 12 UJ	18 J	5.9 J	< 11 U	10 J	< 12 UJ	< 12 U
BENZOIC ACID	< 1100 UJ															
BENZYL ALCOHOL	< 860 U															
BIS(2-CHLOROETHOXY)METHANE	< 430 UJ															
BIS(2-CHLOROETHYL)ETHER	< 430 UJ															
BIS(2-ETHYLHEXYL)PHTHALATE	< 430 U															
BUTYLBENZYLPHTHALATE	< 430 U															
CAPROLACTAM	< 430 U															
CARBAZOLE	< 430 U															
CHRYSENE	84 J	110	< 12 U	3.7 J	4.4 J	4.2 J	6.9 J	20 J	< 12 U	< 12 U	32	13 J	< 11 U	23 J	9.7 J	4.2 J
DIBENZ[A,H]ANTHRACENE	13 J	51 J	< 12 UJ	2.8 J	2.8 J	< 11 U	3.8 J	4.7 J	< 12 U	< 12 U	3.7 J	< 12 U	< 11 U	4.3 J	2.7 J	2.5 J
DIBENZOFURAN	< 430 U															
DIETHYLPHTHALATE	< 430 UJ															
DIMETHYL PHTHALATE	< 430 U															
DI-N-BUTYLPHTHALATE	< 430 U															
DI-N-OCTYLPHTHALATE	< 430 UJ															
FLUORANTHENE	110	180	3.1 J	4.3 J	5.1 J	14 J	9.6 J	29	< 12 U	< 12 U	58	11 J	< 11 U	48	20 J	8.9 J
FLUORENE	< 17 U	11 J	< 12 U	< 12 U	< 11 U	< 11 U	< 12 U	< 12 U	< 12 U	< 12 U	< 12 U	< 12 U	< 11 U	< 13 U	< 12 U	< 12 U
HEXACHLOROBENZENE	< 430 U															
HEXACHLOROBUTADIENE	< 430 U															
HEXACHLOROETHANE	< 430 U															
INDENO[1,2,3-CD]PYRENE	54	110	2.9 J	< 24 U	< 23 U	< 22 U	< 23 U	< 23 U	< 23 U	< 12 U	42	< 23 U	< 11 U	< 26 U	< 25 U	< 24 UJ
ISOPHORONE	< 430 U															
NAPHTHALENE	< 17 U	4.8 J	< 12 U	< 12 U	< 11 U	< 11 U	< 12 U	< 12 U	< 12 U	< 12 U	< 12 U	< 12 U	< 11 U	< 13 U	< 12 U	< 12 U
NITROBENZENE	< 430 U															
N-NITROSODIMETHYLAMINE	< 430 U															
N-NITROSODINPROPYLAMINE	< 430 U															
N-NITROSODIPHENYLAMINE	< 430 U															
N-NITROSOPYRROLIDINE	R															
PENTACHLOROPHENOL	< 1100 UJ															
PHENANTHRENE	46	100	< 12 U	< 12 U	2.4 J	6.4 J	4.0 J	13 J	< 12 U	< 12 U	21 J	< 12 U	< 11 U	21 J	8.2 J	3.8 J
PHENOL	< 430 U															
PYRENE	110	140	3.0 J	3.6 J	4.3 J	9.6 J	6.5 J	20 J	< 12 U	< 12 U	47	6.0 J	< 11 U	31 J	15 J	7.2 J
VOCs (ug/Kg)																
ACETONE	110 J															
BENZENE	< 3.8 UJ															
BROMOBENZENE	< 3.8 UJ															
BROMOCHLOROMETHANE	< 3.8 UJ															
BROMODICHLOROMETHANE	< 3.8 UJ															
BROMOFORM	< 3.8 UJ															
BROMOMETHANE	< 7.5 UJ															
CARBON DISULFIDE	5.8															

Table 4-14
Summary of Sediment Analytical Results - Reference Locations - Physical Characteristics
MRP Site 1, Carr Point
NAVSTA Newport, Rhode Island

Location ID	SD301	SD302	SD303	SD304	SD305	SD306	SD307	SD308	SD309	SD310	SD310	SD310	SD312	SD313
Sample Date	4/2/2014	12/11/2013	12/13/2013	12/13/2013	12/12/2013	12/12/2013	12/17/2013	12/17/2013	4/2/2014	4/2/2014	4/2/2014	4/2/2014	4/3/2014	4/3/2014
Depth Interval	0 - 12 in	0 - 12 in	0 - 12 in	0 - 12 in	0 - 12 in	0 - 12 in	0 - 12 in	0 - 12 in	0 - 12 in	0 - 12 in	12 - 24 in	24 - 36 in	0 - 12 in	0 - 12 in
Grain Size (%)														
PERCENT FINES	3.2	15.0	0.7	2.6	52.7	7.8	0.8	15.1	8.1	8.6	13.2	9.2	15.7	21.2
PERCENT GRAVEL	13.5	10.6	67.3	45.9	20.0	0.8	20.8	42.1	0.2	0.5	0	8.0	2.5	4.1
PERCENT SAND	83.3	74.4	32.0	51.5	27.3	91.4	78.4	42.8	91.7	90.9	86.8	82.8	81.8	74.7
PERCENT SAND, COARSE	10.2	16.1	4.7	10.3	8.8	0.4	10.0	10.3	1.4	1.3	0.7	3.3	4.1	4.2
PERCENT SAND, FINE	61.5	32.5	19.9	14.4	8.0	76.7	35.5	20.3	86.3	66.7	79.9	68.8	56.5	56.9
PERCENT SAND, MEDIUM	11.6	25.8	7.4	26.8	10.5	14.3	32.9	12.2	4.0	22.9	6.2	10.7	21.2	13.6
SIEVE 1 INCH (25.4-MM)	0	0	7.4	0	0	0	0	0	0	0	0	0	0	0
SIEVE 1-1/2 INCH (37.5-MM)	0	0	46.4	0	0	0	0	0	0	0	0	0	0	0
SIEVE 2 INCH (50-MM)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SIEVE 3 INCH (75-MM)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SIEVE 3/4 INCH (19-MM)	5.8	0	0	18.4	3.6	0	0	0	0	0	0	6.0	0	0
SIEVE 3/8 INCH (9.5-MM)	0.3	0.9	5.3	16.5	9.5	0.4	0	12.8	0	0	0	0.2	1.2	2.1
SIEVE NO. 004 (4.75-MM)	7.4	9.7	8.2	11.0	6.9	0.4	20.8	29.3	0.2	0.5	0	1.8	1.3	2.0
SIEVE NO. 010 (2-MM)	10.2	16.1	4.7	10.3	8.8	0.4	10.0	10.3	1.4	1.3	0.7	3.3	4.1	4.2
SIEVE NO. 020 (850-UM)	5.1	10.4	2.2	8.2	6.0	3.4	14.3	7.1	1.7	3.6	1.5	5.0	8.6	5.8
SIEVE NO. 040 (425-UM)	6.5	15.4	5.2	18.6	4.5	10.9	18.6	5.1	2.3	19.3	4.7	5.7	12.6	7.8
SIEVE NO. 060 (250-UM)	34.3	11.8	13.3	12.8	2.8	41.9	12.1	6.5	36.9	32.1	29.8	24.0	21.1	10.4
SIEVE NO. 080 (180-UM)	16.6	8.0	4.3	1	1.7	20.9	7.6	5.4	29.7	16.5	27.1	22.7	8.9	6.2
SIEVE NO. 100 (150-UM)	5.1	5.2	1.3	0.2	0.9	7.4	5.7	2.9	8.9	7.1	10.0	10.3	4.2	6.5
SIEVE NO. 200 (75-UM)	5.5	7.5	1	0.4	2.6	6.5	10.1	5.5	10.8	11.0	13.0	11.8	22.3	33.8

Table 4-15
Summary of Groundwater Analytical Results
MRP Site 1, Carr Point
NAVSTA Newport, Rhode Island

Location ID	MW-01	MW-01D	MW-11	MW-12	MW-12*	MW-12D	MW-13
Sample Date	12/18/2013	12/18/2013	12/18/2013	12/18/2013	12/18/2013	12/18/2013	12/18/2013
Carbon							
TOTAL ORGANIC CARBON	0.39	0.39		0.41	0.18	0.43	0.97
Conventional							
ALKALINITY, AS CACO3	44	77		81	85	76	71
CHLORIDE	39	32		33	33	31	40
NITRATE	0.58	< 0.025 U		< 0.025 U	< 0.025 U	< 0.025 U	1.2
NITRITE	< 0.025 U	< 0.025 U		< 0.025 U	< 0.025 U	< 0.025 U	< 0.025 U
ORTHO-PHOSPHATE	< 0.050 UJ	< 0.050 UJ		< 0.050 UJ	< 0.050 UJ	< 0.050 UJ	< 0.050 UJ
SALINITY	< 0.10 U	< 0.10 U		< 0.10 U	< 0.10 U	< 0.10 U	< 0.10 U
SULFATE	18	26		24	24	25	27
Metals (ug/L)							
ALUMINUM	605	67.4 J	32.1 J	42.6 J	44.6 J	< 300 U	416
ANTIMONY	< 1.0 U	0.84 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
ARSENIC	< 5.2 U	< 5.0 U	< 5.0 U	< 5.8 U	< 5.6 U	< 5.1 U	< 5.0 U
BARIUM	22.0 J	23.2 J	14.8 J	18.4 J	18.3 J	23.1 J	42.6 J
BERYLLIUM	0.06 J	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U
CADMIUM	0.06 J	0.05 J	0.05 J	< 0.20 U	0.07 J	0.03 J	0.15 J
CALCIUM	10700	15700	13400	28500	29000	21500	19700
CHROMIUM VI				< 0.0125 U	< 0.0125 U	< 0.0125 U	< 0.0125 U
CHROMIUM, TOTAL	< 5.0 U	< 4.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U
COBALT	7.0	9.5	0.37 J	1.6	1.5	3.5	3.2
COPPER	8.4	< 3.5 U	< 3.3 U	14.2	9.5	< 3.0 U	< 3.0 U
IRON	8830	9770	< 100 U	3320	3300	6560	387
LEAD	< 5.0 U	< 0.50 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U
MAGNESIUM	8480	9890	11200	12700	12700	11400	12300
MANGANESE	389	938	59.3	1150	1130	986	244
MERCURY	< 0.10 U	< 0.10 U	< 0.10 U	< 0.10 U	< 0.10 U	< 0.10 U	< 0.10 U
NICKEL	15.5	10.0	< 2.0 U	< 2.1 U	< 2.0 U	4.9	< 2.9 U
POTASSIUM	1620	2800	2080	2260	2250	1890	3110
SELENIUM	< 3.0 U	0.24 J	1.1 J	< 3.0 U	< 3.0 U	< 5.0 U	0.91 J
SILVER	< 0.40 U	< 0.40 U	< 0.40 U	< 0.40 U	< 0.40 U	< 0.40 U	< 0.40 U
SODIUM	26500	26000	14600	17100	16900	16400	35500
THALLIUM	< 0.40 U	< 0.40 U	< 0.40 U	< 0.40 U	< 0.40 U	< 0.40 U	< 0.40 U
VANADIUM	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U
ZINC	< 28.6 U	< 21.4 U	< 10 U	< 10 U	< 10 U	< 12.4 U	< 10 U
MNA (ug/L)							
ETHANE	< 2.0 U	< 2.0 U		< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U
ETHENE	< 2.0 U	< 2.0 U		< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U
METHANE	< 2.0 U	2.0 J		1.4 J	1.1 J	1.3 J	2.7 J
Solids							
TOTAL DISSOLVED SOLIDS	130	170		170	180	150	180
TOTAL SUSPENDED SOLIDS	26	24		2.0	3.2	3.6	10

Table 4-15
Summary of Groundwater Analytical Results
MRP Site 1, Carr Point
NAVSTA Newport, Rhode Island

Location ID	MW-01	MW-01D	MW-11	MW-12	MW-12*	MW-12D	MW-13
Sample Date	12/18/2013	12/18/2013	12/18/2013	12/18/2013	12/18/2013	12/18/2013	12/18/2013
SVOCs							
ACENAPHTHENE	< 0.097 U	< 0.094 U	< 0.094 U	< 0.094 U	< 0.094 U	< 0.094 U	< 0.094 U
ACENAPHTHYLENE	< 0.097 U	< 0.094 U	< 0.094 U	< 0.094 U	< 0.094 U	< 0.094 U	< 0.094 U
ANTHRACENE	< 0.097 U	< 0.094 U	< 0.094 U	< 0.094 U	< 0.094 U	< 0.094 U	< 0.094 U
BENZO[A]ANTHRACENE	< 0.097 U	< 0.094 U	< 0.094 U	< 0.094 U	< 0.094 U	< 0.094 U	< 0.094 U
BENZO[A]PYRENE	< 0.097 U	< 0.094 U	< 0.094 U	< 0.094 U	< 0.094 U	< 0.094 UJ	< 0.094 U
BENZO[B]FLUORANTHENE	< 0.097 UJ	< 0.094 UJ	< 0.094 UJ	< 0.094 UJ	< 0.094 UJ	< 0.094 UJ	< 0.094 UJ
BENZO[G,H,I]PERYLENE	< 0.097 U	< 0.094 U	< 0.094 U	< 0.094 U	< 0.094 U	< 0.094 UJ	< 0.094 U
BENZO[K]FLUORANTHENE	< 0.097 U	< 0.094 U	< 0.094 U	< 0.094 U	< 0.094 U	< 0.094 UJ	< 0.094 U
CHRYSENE	< 0.097 U	< 0.094 U	< 0.094 U	< 0.094 U	< 0.094 U	< 0.094 U	< 0.094 U
DIBENZ[A,H]ANTHRACENE	< 0.097 U	< 0.094 U	< 0.094 U	< 0.094 U	< 0.094 U	< 0.094 U	< 0.094 U
FLUORANTHENE	< 0.097 UJ	< 0.094 UJ	< 0.094 UJ	< 0.094 UJ	< 0.094 UJ	< 0.094 UJ	< 0.094 UJ
FLUORENE	< 0.097 U	< 0.094 U	< 0.094 U	< 0.094 U	< 0.094 U	< 0.094 U	< 0.094 U
INDENO[1,2,3-CD]PYRENE	< 0.097 U	< 0.094 U	< 0.094 U	< 0.094 U	< 0.094 U	< 0.094 U	< 0.094 U
NAPHTHALENE	< 0.097 U	< 0.094 U	< 0.094 U	< 0.094 U	< 0.094 U	< 0.094 U	< 0.094 U
PHENANTHRENE	< 0.097 U	< 0.094 U	< 0.094 U	< 0.094 U	< 0.094 U	< 0.094 U	< 0.094 U
PYRENE	< 0.097 UJ	< 0.094 UJ	< 0.094 UJ	< 0.094 UJ	< 0.094 UJ	< 0.094 UJ	< 0.094 UJ

Table 4-16
Summary of Shellfish Tissue Analytical Results
MRP Site 1, Carr Point
NAVSTA Newport, Rhode Island

Location ID	CRP-SD101	CRP-SD102	CRP-SD104	CRP-SD106	CRP-SD109	CRP-SD110	CRP-SD112	CRP-SD112	CRP-SD115	CRP-SD118
Tissue Type	blue mussel	blue mussel	quahog	quahog	quahog	quahog	quahog	quahog	quahog	quahog
Sample Date	11/19/2013	11/19/2013	11/6/2013	11/6/2013	11/5/2013	11/5/2013	11/5/2013	11/5/2013	11/6/2013	11/6/2013
INORGANICS (mg/kg)										
ALUMINUM	29.5	24.3	2.21	3.52	3.38	2.93	2.42	3.31	3.79	4.82
ANTIMONY	0.0190 J+	0.0287 J+	< 0.0043 U	< 0.0057 U	< 0.0044 U	< 0.0046 U	< 0.0045 U	< 0.0045 U	< 0.0050 U	< 0.0041 U
ARSENIC	3.58 J+	3.38 J+	2.53 J+	2.91 J+	3.81 J+	4.38 J+	3.00 J+	3.14 J+	2.18 J+	2.55 J+
BARIUM	0.219 J+	0.172 J+	0.205 J+	0.263 J+	0.277 J+	0.303 J+	0.153 J	0.282 J	0.284 J+	0.194 J+
BERYLLIUM	0.0021 J	0.0023 J	0.0025	0.0017 J	0.0052	0.0061	0.0061	0.0068	0.0025	0.0029
CADMIUM	0.149 J+	0.145 J+	0.0727 J+	0.0588 J+	0.0707 J+	0.116 J+	0.0983 J+	0.0771 J+	0.0737 J+	0.0982 J+
CALCIUM	651 J	1180 J	537 J	327 J+	377 J+	379 J+	468 J+	397 J+	340 J+	344 J+
CHROMIUM, TOTAL	0.550 J+	0.232 J+	0.081 J+	0.074 J+	0.247 J+	0.267 J+	0.330 J+	0.325 J+	0.090 J+	0.123 J+
COBALT	0.129 J+	0.120 J+	0.108 J+	0.175 J+	0.279 J+	0.146 J+	0.107 J+	0.149 J+	0.144 J+	0.136 J+
COPPER	1.50 J+	1.60 J+	0.580 J+	0.976 J+	0.931 J+	1.31 J+	0.866 J+	0.834 J+	0.787 J+	0.646 J+
IRON	82.0	79.3	11.3 J+	12.2 J+	7.84 J+	13.7 J+	6.33 J+	8.00 J+	11.5 J+	16.7 J+
LEAD	4.13 J	7.26 J	0.132 J	0.0692 J	0.0670 J	0.293 J	0.0841 J	0.0589 J	0.274 J	0.494 J
MAGNESIUM	763	796	887	815	795	920	870	899	841	941
MANGANESE	4.76 J+	3.62 J+	4.14 J+	3.03 J+	2.42 J+	7.42 J+	4.48 J	2.47 J	4.04 J+	4.40 J+
MERCURY	0.0152	0.0164	0.00701	0.00866	0.0249	0.03	0.026	0.0196	0.013	0.0146
NICKEL	0.465 J+	0.294 J+	0.472 J+	0.546 J+	0.810 J+	0.455 J+	0.585 J+	0.891 J+	0.685 J+	0.530 J+
POTASSIUM	1560 J+	1580 J+	998 J+	1330 J+	1050 J+	1170 J+	1040 J+	1070 J+	1170 J+	940 J+
SELENIUM	0.44	0.50	0.18	0.20	0.45	0.46	0.49	0.37	0.18	0.18
SILVER	0.0087	0.0087	0.0891 J-	0.106 J-	0.217 J-	0.274 J-	0.250 J-	0.260 J-	0.184 J-	0.122 J-
SODIUM	6370	6440	7540	6410	6200	7020	7010	7070	6920	7170
THALLIUM	< 0.0023 U	< 0.0023 U	< 0.00034 U	< 0.00046 U	< 0.0018 U	< 0.0018 U	< 0.0018 U	< 0.0018 U	< 0.0004 U	< 0.00033 U
VANADIUM	0.178 J+	0.169 J+	0.087 J+	0.057 J+	0.223 J+	0.223 J+	0.299 J+	0.354 J+	0.078 J+	0.104 J+
ZINC	12.8 J+	14.4 J+	8.77 J+	15.2 J+	12.0 J+	13.4 J+	7.91 J+	7.67 J+	9.87 J+	8.92 J+
POLYCYCLIC AROMATIC HYRDOCARBONS (PAHs) (mg/kg)										
ACENAPHTHENE	< 0.0014 UJ	< 0.0013 UJ	0.00019 J	0.00022 J	0.00016 J	0.000099 J	0.00011 J	0.000095 J	0.00013 J	0.00014 J
ACENAPHTHYLENE	0.00015 J	0.00015 J	0.00011 J	0.00013 J	0.00012 J	0.000094 J	0.00014 J	0.00011 J	0.00011 J	0.00016 J
ANTHRACENE	0.0019	0.0014	0.00015 J	0.00016 J	0.00030 J	0.00027 J	0.00026 J	0.00019 J	0.00013 J	0.00027 J
BENZO[A]ANTHRACENE	0.0067	0.0044	0.00040 J	0.00037 J	< 0.00024 UJ	< 0.00021 UJ	< 0.00020 UJ	< 0.00016 UJ	0.00040 J	< 0.00048 UJ
BENZO[A]PYRENE	0.015	0.0093	0.00035 J	0.00022 J	0.00019 J	0.00012 J	0.00012 J	0.000097 J	0.00034 J	0.00043 J
BENZO[B]FLUORANTHENE	0.018	0.011	0.00055	0.00055	0.00036 J	0.00023 J	0.00025 J	0.00019 J	0.00055	0.00065
BENZO[G,H,I]PERYLENE	0.012	0.0081	0.00038 J	0.00029 J	0.00028 J	0.00015 J	0.00018 J	0.00014 J	0.00036 J	0.00048 J
BENZO[K]FLUORANTHENE	0.0062	0.0043	0.00028 J	0.00024 J	0.00017 J	0.00014 J	0.00012 J	0.00012 J	0.00028 J	0.00029 J
CHRYSENE	0.029	0.014	0.00076 J	0.00065 J	0.00027 J	0.00020 J	0.00021 J	0.00017 J	0.00079 J	0.00083 J
DIBENZ[A,H]ANTHRACENE	0.0029	0.0018 J	< 0.00010 U	< 0.00010 U	< 0.00010 U	< 0.00010 U	< 0.00010 U	< 0.00010 U	< 0.00010 U	< 0.00010 U
FLUORANTHENE	0.017	0.012	0.0010	0.0012	0.00066	0.00047 J	0.00061	0.00044 J	0.00097	0.00093
FLUORENE	0.00078	0.00066	0.00033 J	0.00027 J	0.00030 J	0.00028 J	0.00032 J	0.00029 J	0.00028 J	0.00032 J
HPAH, TOTAL	0.14	0.083	0.0048	0.0047	0.0028	0.0019	0.0021		0.0049	0.0049
INDENO[1,2,3-CD]PYRENE	0.0096	0.0068	0.00021 J	0.00017 J	0.00017 J	0.00011 J	< 0.00010 U	< 0.00010 U	0.00022 J	0.00030 J
LPAH, TOTAL	0.011	0.0080	0.0014	0.0015	0.0015	0.00074	0.0014		0.0013	0.0016
NAPHTHALENE	< 0.0020 U	< 0.0020 U	< 0.00098 U	< 0.0010 U	< 0.00099 U	< 0.0010 U	< 0.00099 U	< 0.00099 U	< 0.0010 U	< 0.00099 U
PAH, TOTAL	0.15	0.091	0.0062	0.0062	0.0043	0.0027	0.0035		0.0062	0.0064
PHENANTHRENE	0.0080	0.0058	0.00062	0.00069	0.00060	< 0.00050 U	0.00054	< 0.00050 U	0.00067	0.00066
PYRENE	0.021	0.011	0.00088	0.0010	0.00073	0.00052	0.00059	0.00045 J	0.0010	0.00098
OTHER										
INITIAL GROUP WEIGHT	125	312	538	388	2148	535	1366	737	257	716
LIPIDS	0.61	0.41	0.13	0.29	0.20	0.21	0.23	0.20	0.19	0.16
TOTAL COUNT OF ORGANISMS	9	20	4	3	7	2	4	3	3	5
TOTAL SOLIDS	11.8	11.8	8.56	11.7	9.90	9.17	8.99	9.27	9.99	8.17

Table 4-16
Summary of Shellfish Tissue Analytical Results
MRP Site 1, Carr Point
NAVSTA Newport, Rhode Island

Location ID	CRP-SD121	CRP-SD122	CRP-SD123	CRP-SD124	CRP-SD301	CRP-SD302	CRP-SD303	CRP-SD304
Tissue Type	quahog	blue mussel	blue mussel	blue mussel	quahog	blue mussel	blue mussel	blue mussel
Sample Date	11/6/2013	11/19/2013	11/19/2013	11/19/2013	11/6/2013	11/6/2013	11/19/2013	11/19/2013
INORGANICS (mg/kg)								
ALUMINUM	2.90	23.8	31.5	30.7	6.77	29.4	21.8	16.7
ANTIMONY	< 0.0044 U	0.0111 J+	0.0123 J+	0.0131 J+	< 0.0056 U	< 0.0053 U	< 0.0007 U	< 0.0006 U
ARSENIC	3.48 J+	2.79 J+	3.63 J+	3.55 J+	3.60 J+	2.50 J+	3.46 J+	3.58 J+
BARIUM	0.150 J+	0.119 J+	0.155 J+	0.147 J+	0.280 J+	0.259 J+	0.0974 J+	0.106 J+
BERYLLIUM	0.0052	0.0018 J	0.0025 J	0.0021 J	0.0035	0.0023	0.0022 J	0.0018 J
CADMIUM	0.0772 J+	0.116 J+	0.132 J+	0.144 J+	0.0724 J+	0.0805 J+	0.138 J+	0.152 J+
CALCIUM	336 J+	558 J	3980 J	697 J	358 J+	920 J+	665 J	649 J
CHROMIUM, TOTAL	0.276 J+	0.509 J+	0.771 J+	0.603 J+	0.155 J+	0.207 J+	0.543 J+	0.634 J+
COBALT	0.0632 J+	0.121 J+	0.146 J+	0.145 J+	0.202 J+	0.0646 J+	0.0819 J+	0.111 J+
COPPER	0.707 J+	1.02 J+	1.35 J+	1.34 J+	1.26 J+	1.02 J+	0.920 J+	0.960 J+
IRON	7.88 J+	76.2	148	95.2	19.7 J+	57.6 J+	69.7	72.3
LEAD	0.0600 J	1.44 J	1.86 J	2.29 J	0.148 J	0.260 J	0.426 J	0.255 J
MAGNESIUM	871	781	748	804	817	862	748	752
MANGANESE	1.37 J+	3.77 J+	4.96 J+	4.95 J+	7.72 J+	5.97 J+	2.71 J+	2.60 J+
MERCURY	0.0225	0.0102	0.0110	0.0143	0.0153	0.0196	0.0171	0.0120
NICKEL	0.322 J+	0.384 J+	0.551 J+	0.462 J+	0.707 J+	0.171 J+	0.332 J+	0.406 J+
POTASSIUM	1060 J+	1460 J+	1700 J+	1670 J+	1370 J+	1270 J+	1620 J+	1740 J+
SELENIUM	0.40	0.42	0.42	0.52	0.25	0.40	0.44	0.50
SILVER	0.245 J-	0.0047	0.0056	0.0067	0.306 J-	0.0141 J-	0.0075	0.0064
SODIUM	7020	6700	6460	6740	6680	7170	6240	6290
THALLIUM	< 0.00035 U	< 0.0021 U	< 0.0028 U	< 0.0025 U	< 0.0023 U	< 0.0021 U	< 0.0026 U	< 0.0026 U
VANADIUM	0.348 J+	0.149 J+	0.202 J+	0.203 J+	0.123 J+	0.179 J+	0.149 J+	0.162 J+
ZINC	5.40 J+	10.8 J+	12.5 J+	12.1 J+	15.6 J+	8.69 J+	11.1 J+	12.8 J+
POLYCYCLIC AROMATIC HYRDO								
ACENAPHTHENE	0.000084 J	< 0.0034 UJ	< 0.0040 UJ	0.0026	0.00015 J	< 0.00074 UJ	< 0.0028 UJ	< 0.0024 UJ
ACENAPHTHYLENE	0.000096 J	0.00022 J	0.00047 J	0.0013	0.00013 J	0.00023 J	0.0011	0.00090 J
ANTHRACENE	0.00017 J	0.0064	0.0030 J	0.0080	0.00021 J	0.00053	0.0052	0.0031
BENZO[A]ANTHRACENE	< 0.00025 UJ	0.032	0.023	0.018	< 0.00031 UJ	0.00095	0.015	0.0030
BENZO[A]PYRENE	0.00017 J	0.04	0.027	0.029	0.00025 J	0.00093 J	0.02	0.0030
BENZO[B]FLUORANTHENE	0.00035 J	0.044	0.032	0.034	0.00049 J	0.0024 J	0.021	0.0042
BENZO[G,H,I]PERYLENE	0.00021 J	0.031	0.021	0.021	0.00028 J	0.0012 J	0.017	0.0027
BENZO[K]FLUORANTHENE	0.00013 J	0.015	0.01	0.012	0.00031 J	0.00073 J	0.0081	0.0018 J
CHRYSENE	0.00042 J	0.05	0.036	0.05	0.00037 J	0.0015	0.023	0.0049
DIBENZ[A,H]ANTHRACENE	< 0.00010 U	0.0081	0.0051	0.0053	< 0.00010 U	< 0.00050 U	0.0037	0.00054 J
FLUORANTHENE	0.00059	0.04	0.022	0.034	0.0012	0.0027	0.024	0.0087
FLUORENE	0.00025 J	0.0017	0.0032	0.0032	0.00036 J	0.00023 J	0.0012	0.00054
HPAH, TOTAL	0.0025	0.33	0.22	0.25	0.0041	0.014	0.17	0.037
INDENO[1,2,3-CD]PYRENE	0.00013 J	0.026	0.017	0.017	0.00018 J	0.0011 J	0.013	0.0021 J
LPAH, TOTAL	0.00060	0.031	0.022	0.035	0.0016	0.0021	0.023	0.01
NAPHTHALENE	< 0.00097 U	< 0.0020 U	< 0.0061 U	< 0.0020 U	< 0.00099 U	< 0.00097 U	< 0.0020 U	< 0.0020 U
PAH, TOTAL	0.0031	0.36	0.24	0.29	0.0056	0.016	0.19	0.047
PHENANTHRENE	< 0.00049 U	0.023	0.015	0.02	0.00073	0.0011	0.015	0.0057
PYRENE	0.00053	0.04	0.029	0.032	0.00097	0.0021	0.022	0.0059
OTHER								
INITIAL GROUP WEIGHT	949	178	100	310	1345	326	313	311
LIPIDS	0.16	0.33	0.61	0.58	0.21	0.49	0.61	0.43
TOTAL COUNT OF ORGANISMS	3	15	7	23	6	14	17	22
TOTAL SOLIDS	8.91	10.6	14.0	12.7	11.5	10.8	13.5	13.4

Table 4-17
Organism Counts
MRP Site 1, Carr Point
NAVSTA Newport, Rhode Island

Taxon	Class/Order/Family	Count	Biomass (g)
SD112			
Polychaete	Polygordiidae	499	0.237
Polychaete	Glyceridae	6	0.596
Polychaete	Chaetopteridae	3	0.013
Polychaete	Sigalionidae	1	0.008
Polychaete	Serpulidae	1	0.014
Polychaete	Orbiniidae	17	0.318
Polychaete	Spionidae	38	0.009
Polychaete	Terebellidae	2	0.011
Polychaete	Capitellidae	11	0.021
Polychaete	Nereididae	11	0.147
Polychaete	Phyllodocidae	57	0.012
Polychaete	Syllidae	6	0.001
Polychaete	Paraonidae	3	0.001
Polychaete	Cirratulidae	658	0.755
Polychaete	Oweniidae	1	0.001
Polychaete	Nephtyidae	20	0.112
Polychaete	Magelonidae	4	0.012
Polychaete	Pectinariidae	1	0.226
Polychaete	Ampharetidae	1	<0.001
Misc	Oligochaeta	121	0.018
Crustacean	Amphipoda	254	0.172
Crustacean	Caprellidae	11	0.001
Crustacean	Decapoda	36	34.355
Mollusc	Gastropoda	1044	802.286
Mollusc	Bivalvia	37	4.0
	Total All - SD112	2843	843.3
SD121			
Polychaete	Nephtyidae	26	0.236
Polychaete	Capitellidae	65	0.013
Polychaete	Orbiniidae	10	0.104
Polychaete	Magelonidae	6	0.005
Polychaete	Phyllodocidae	2	0.002
Polychaete	Nereididae	1	0.003
Polychaete	Glyceridae	2	0.005
Polychaete	Spionidae	176	0.076
Polychaete	Paraonidae	4	0.001
Polychaete	Cirratulidae	13	0.006
Polychaete	Chaetopteridae	22	0.142
Polychaete	Polygordiidae	226	0.051
Misc	Oligochaeta	204	0.031
Misc	Nemertea	2	<0.001
Crustacean	Decapoda	3	0.018
Crustacean	Cumacea	8	0.004
Crustacean	Amphipoda	30	0.317
Mollusc	Bivalvia	4	0.817
Mollusc	Gastropoda	27	18.83
	Total All - SD121	831	20.7
	Totals for SD112 + SD121	3674	864.0

Table 4-17
Organism Counts
MRP Site 1, Carr Point
NAVSTA Newport, Rhode Island

Class/Order/ Family	Count	Percent of Sample by Count
SD112		
Polygordiidae	499	
Glyceridae	6	
Chaetopteridae	3	
Sigalionidae	1	
Serpulidae	1	
Orbiniidae	17	
Spionidae	38	
Terebellidae	2	
Capitellidae	11	
Nereididae	11	
Phyllodocidae	57	
Syllidae	6	
Paraonidae	3	
Cirratulidae	658	
Oweniidae	1	
Nephtyidae	20	
Magelonidae	4	
Pectinariidae	1	
Ampharetidae	1	
Total Polychaete	1340	47.1%
Oligochaeta	121	
Total Misc	121	4.3%
Amphipoda	254	
Caprellidae	11	
Decapoda	36	
Total Crustacean	301	10.6%
Gastropoda	1044	
Bivalvia	37	
Total Mollusc	1081	38.0%
SD121		
Nephtyidae	26	
Capitellidae	65	
Orbiniidae	10	
Magelonidae	6	
Phyllodocidae	2	
Nereididae	1	
Glyceridae	2	
Spionidae	176	
Paraonidae	4	
Cirratulidae	13	
Chaetopteridae	22	
Polygordiidae	226	
Total Polychaete	553	66.5%
Oligochaeta	204	
Nemertea	2	
Total Misc	206	24.8%
Decapoda	3	
Cumacea	8	
Amphipoda	30	
Total Crustacean	41	4.9%
Bivalvia	4	
Gastropoda	27	
Total Mollusc	31	3.7%

Table 4-17
Organism Counts
MRP Site 1, Carr Point
NAVSTA Newport, Rhode Island

Class/Order/Family	Count	Taxon
Ampharetidae	1	Polychaete
Amphipoda	295	Crustacean
Bivalvia	41	Mollusc
Capitellidae	76	Polychaete
Chaetopteridae	25	Polychaete
Cirratulidae	671	Polychaete
Cumacea	8	Crustacean
Decapoda	39	Crustacean
Gastropoda	1071	Mollusc
Glyceridae	8	Polychaete
Magelonidae	10	Polychaete
Nephtyidae	46	Polychaete
Nereididae	12	Polychaete
Oligochaeta	325	Misc
Orbiniidae	27	Polychaete
Oweniidae	1	Polychaete
Paraonidae	7	Polychaete
Pectinariidae	1	Polychaete
Phyllodocidae	59	Polychaete
Polygordiidae	725	Polychaete
Serpulidae	1	Polychaete
Sigalionidae	1	Polychaete
Spionidae	214	Polychaete
Syllidae	6	Polychaete
Terebellidae	2	Polychaete
Nemertea	2	Misc
Total All	3674	
Total Polychaete	1893	
Polychaete %	52%	
Bivalve %	29%	

Class/Order/Family	Count	Percent by Count
Polychaetes	1893	51.5%
Bivalves	41	1.1%
Gastropoda	1071	29.2%
Amphipoda	295	8.0%
Cumacean	8	0.2%
Decapoda	39	1.1%
Nemertean	2	0.1%
Oligochaeta	325	8.8%
Total All	3674	100%

Table 4-18
Dive Survey Habitat Findings
MRP Site 1, Carr Point
NAVSTA Newport, Rhode Island

Shellfish Tissue Composite Summary

Location	Number of Individuals per Composite	Average Weight (g)	Average Length (mm)
Quahog composite			
SD104	4	134.5	772.5
SD106	3	129.3	723.3
SD109	7	306.9	978.6
SD110	2	267.5	925.0
SD112	4	341.5	1050.0
SD112 (field duplicate)	3	245.7	900.0
SD115	3	85.7	700.0
SD118	5	143.2	760.0
SD121	3	314.3	950.0
SD301	6	224.2	891.7
Blue mussel composite			
SD101	9	14.0	54.0
SD102	20	16.0	52.0
SD122	15	12.0	45.0
SD123	7	14.0	42.0
SD124	23	13.0	46.0
SD302	14	15.0	51.0
SD303	17	18.0	52.0
SD304	22	14.0	43.0

Table 4-19
Summary of Sediment Analytical Results (2009 SI)
MRP Site 1, Carr Point
NAVSTA Newport, Rhode Island

Location ID	SD01	SD01	SD02	SD02	SD03	SD03	SD04	SD05	SD06	SD06	SD06	SD07	SD07	SD08
Sample Date	6/19/2009	6/19/2009	6/19/2009	6/19/2009	6/18/2009	6/18/2009	6/18/2009	6/15/2009	6/15/2009	6/15/2009	6/15/2009	6/15/2009	6/15/2009	6/19/2009
Sample ID/Interval	CRP-SD01-0006	CRP-SD01-0612	CRP-SD02-0006	CRP-SD02-0612	CRP-SD03-0006-D	CRP-SD03-0006	CRP-SD04-0006	CRP-SD05-0006	CRP-SD06-0006-D	CRP-SD06-0006	CRP-SD06-0612	CRP-SD07-0006	CRP-SD07-0612	CRP-SD08-0006
Metals (mg/kg)														
ALUMINUM	3680 J	5070 J	4330	3380 J	2740	2850	3160	3560	4240	4020	4080	3850	4090	3460
ANTIMONY	1.3 J	3.3 J	1.6 J	< 1.8 UJ	< 0.62 UJ	0.29 J	< 0.62 UJ	< 0.92 U	< 0.9 U	< 0.92 U	< 0.9 U	0.42 J	< 0.9 U	0.87 J
ARSENIC	8.8	8.7	8.9	19.4	1.9	2	2.9	3	2.6	2.6	2.4	3.5 J	3.2	2.4
BARIUM	6.1	8.3	13.9	19.1	5.6	6.4	8	10.1	8.8	8.5	7.8	8.7	8.3	6.5
BERYLLIUM	0.28 J	0.33	0.26 J	0.32	0.13 J	0.13 J	0.19 J	0.21 J	0.21 J	0.2 J	0.19 J	0.25 J	0.22 J	0.14 J
CADMIUM	0.15 J	< 0.6 UJ	0.17 J	< 0.61 UJ	0.15 J	0.15 J	0.14 J	0.15 J	0.18 J	0.19 J	0.15 J	0.15 J	0.1 J	0.19 J
CALCIUM	7130	6380	11400	4910	1130	1240	1780	3460 J	3160 J	3530 J	1320 J	3820 J	943 J	7050
CHROMIUM, TOTAL	13.7	17.1	13.8	11.4	8.9	9.3	9.9	10.3	10.4	10.3	9.1	10	10.3	10.1
COBALT	7.6	10.4	9.3	18.8	3.3	3.3	4	3.8	3.2	3.2	3.4	3.3	3.6	3.1
COPPER	207	47.9	50.7	36.9	5.8	6.9	8.5	10.7	7.8	7.6	6.5	7	8	6.3
IRON	35200	35100	29600 J	44200	10500 J	10800	13600 J	13500 J	10900 J	10500 J	10100 J	11900 J	11900 J	10100 J
LEAD	215 J	223 J	424	71.2 J	37.6	33.2	43.3	58.3 J	44.3 J	46.1 J	50.1 J	136 J	29.5 J	230
MAGNESIUM	2400	2860	2570	3260	1470	1530	1890	1880	2040	1950	1930	1760	1980	1700
MANGANESE	299	411	437 J	2190	118 J	124 J	143 J	148 J	121 J	116 J	117 J	117 J	123 J	105 J
NICKEL	23.2	47.4	23.6	44.8	8	8.4	10.1	10.7	8.8	8.4	8.7	9.1	9.5	8
POTASSIUM	452 J	633 J	527 J	596 J	363 J	354 J	459 J	594 J	661 J	660 J	546 J	527 J	622 J	437 J
SELENIUM	< 0.78 UJ	< 0.78 UJ	< 0.41 UJ	< 2 U	< 0.27 UJ	< 0.27 U	< 0.27 U	< 0.4 UJ	< 0.39 UJ	< 0.4 U	< 0.39 U	< 0.39 U	< 0.39 UJ	< 0.4 UJ
SILVER	< 0.36 U	< 0.36 U	< 0.19 U	< 0.36 U	< 0.12 U	< 0.12 U	< 0.12 U	< 0.18 U	< 0.18 U	< 0.18 U	< 0.18 U	< 0.18 U	< 0.18 U	< 0.19 U
SODIUM	2670	2390	2550	1770	2770	2560	2880	2820	2530	2570	1770	2150	2440	2170
THALLIUM	< 0.96 U	< 0.96 U	< 0.5 U	< 0.97 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.49 U	< 0.48 U	< 0.49 U	< 0.48 U	< 0.48 U	< 0.48 U	< 0.49 U
VANADIUM	16	17.2	18	13.1	11.8	13.5	12.7	15.3 J	13.4 J	12.9 J	13.1 J	16.8 J	16.1 J	11.7
ZINC	89.3 J	72.4 J	99.7	65.1 J	39.9	40.3	43.3	48.7	41.4	40.5	34.9	40.4	39.7	38.4
SVOCs (ug/kg)														
2-METHYLNAPHTHALENE	< 250 U	< 240 U	< 250 U	< 240 U	< 250 U	< 250 U	< 250 U	< 250 U	< 240 U	< 240 U	< 240 U	< 240 U	< 240 U	< 250 U
ACENAPHTHENE	110 J	66 J	< 250 U	63 J	< 250 U	< 250 U	< 250 U	< 250 U	< 240 U	< 240 U	< 240 U	< 240 U	< 240 U	< 250 U
ACENAPHTHYLENE	< 250 U	< 240 U	< 250 U	< 240 U	< 250 U	< 250 U	< 250 U	< 250 U	< 240 U	< 240 U	< 240 U	< 240 U	< 240 U	< 250 U
ANTHRACENE	160 J	94 J	45 J	91 J	< 250 U	< 250 U	< 250 U	< 250 U	< 240 U	< 240 U	< 240 U	< 240 U	< 240 U	< 250 U
BENZO[A]ANTHRACENE	820	500	340	400	< 250 U	< 250 U	< 250 U	< 250 U	60 J	68 J	< 240 U	64 J	< 240 U	< 250 U
BENZO[A]PYRENE	1100 J	650	460	590	< 250 U	< 250 U	< 250 U	< 250 U	< 240 U	< 240 U	< 240 U	< 240 U	< 240 U	< 250 U
BENZO[B]FLUORANTHENE	1200 J	640	410	640	< 250 U	< 250 U	< 250 U	< 250 U	< 240 U	100 J	< 240 U	< 240 U	< 240 U	< 250 U
BENZO[G,H,I]PERYLENE	830 J	530	350	510	< 250 U	< 250 U	150 J	< 250 U	160 J	180 J	< 240 U	< 240 U	< 240 U	< 250 U
BENZO[K]FLUORANTHENE	440 J	220 J	140 J	240 J	< 250 U	< 250 U	< 250 U	< 250 U	< 240 U	< 240 U	< 240 U	< 240 U	< 240 U	< 250 U
CHRYSENE	930	650	450	460	< 250 U	< 250 U	< 250 U	< 250 U	65 J	76 J	< 240 U	62 J	< 240 U	< 250 U
DIBENZ[A,H]ANTHRACENE	< 250 UJ	280	< 250 U	< 240 U	< 250 U	< 250 U	< 250 U	< 250 U	< 240 U	< 240 U	< 240 U	< 240 U	< 240 U	< 250 U
FLUORANTHENE	1100	680	380	620	< 250 U	< 250 U	< 250 U	< 250 U	85 J	87 J	< 240 U	130 J	< 240 U	< 250 U
FLUORENE	81 J	39 J	< 250 U	39 J	< 250 U	< 250 U	< 250 U	< 250 U	< 240 U	< 240 U	< 240 U	< 240 U	< 240 U	< 250 U
INDENO[1,2,3-CD]PYRENE	910 J	580	420	590	< 250 U	< 250 U	< 250 U	< 250 U	< 240 U	< 240 U	< 240 U	< 240 U	< 240 U	< 250 U
NAPHTHALENE	< 250 U	< 240 U	< 250 U	< 240 U	< 250 U	< 250 U	< 250 U	< 250 U	< 240 U	< 240 U	< 240 U	< 240 U	< 240 U	< 250 U
PHENANTHRENE	750	430	250 J	380	< 250 U	< 250 U	30 J	< 250 U	54 J	52 J	35 J	110 J	< 240 U	< 250 U
PYRENE	1100	650	470	610	< 250 U	< 250 U	< 250 U	57 J	92 J	110 J	< 240 U	130 J	< 240 U	< 250 U

Table 4-19
Summary of Sediment Analytical Results (2009 SI)
MRP Site 1, Carr Point
NAVSTA Newport, Rhode Island

Location ID	SD08	SD09	SD09	SD10	SD10	SD10	SD11	SD11	SD12	SD13	SD13	SD14	SD14	SD15
Sample Date	6/19/2009	6/19/2009	6/19/2009	6/17/2009	6/17/2009	6/17/2009	6/16/2009	6/16/2009	6/18/2009	6/17/2009	6/17/2009	6/18/2009	6/18/2009	6/16/2009
Sample ID/Interval	CRP-SD08-0612	CRP-SD09-0006	CRP-SD09-0612	CRP-SD10-0006-D	CRP-SD10-0006	CRP-SD10-0612	CRP-SD11-0006	CRP-SD11-0612	CRP-SD12-0006	CRP-SD13-0006	CRP-SD13-0612	CRP-SD14-0006	CRP-SD14-0612	CRP-SD15-0006-D
Metals (mg/kg)														
ALUMINUM	3820	2920	2860	3840	3640	3530	4020	3860	4720	3270	3210	3210	3210	3110
ANTIMONY	0.32 J	< 0.91 UJ	0.33 J	< 0.91 UJ	< 0.91 UJ	0.34 J	0.29 J	0.51 J	0.41 J	< 0.63 UJ	< 0.62 UJ	< 0.62 UJ	< 0.93 UJ	< 0.93 U
ARSENIC	3.8	2.3	2.1	2.2	2.2	1.9	3	2.1	3.5	1.9	1.8	1.7	1.8	1.9
BARIUM	8.5	6.2	6.1	8	7.5	7	8.2	6.4	9.4	6.2	5.7	5.7	5.9	6.5
BERYLLIUM	0.17 J	0.16 J	0.14 J	0.16 J	0.17 J	0.15 J	0.21 J	0.18 J	0.22 J	0.14 J	0.13 J	0.12 J	0.14 J	0.14 J
CADMIUM	0.22 J	0.19 J	0.2 J	0.21 J	0.17 J	0.16 J	0.16 J	0.095 J	0.18 J	0.11 J	0.14 J	0.12 J	0.16 J	0.13 J
CALCIUM	1690	3540	2450	4930	2990 J	1370 J	6610 J	1030 J	7220	924 J	3480 J	835	672	1730 J
CHROMIUM, TOTAL	11.3	9.2	9.9	10.8	10	8.6	11.6	9.3	12.5	9.3	8.7	9.1	9.2	8.5
COBALT	3.7	3.5	3.2	2.6	2.4	2.2	2.7	2.6	3.3	2.4	2.4	2.4	2.4	2.2
COPPER	7.9	6.3	6.2	7.1	6.5	5.5	9.3	6.2	10.4	5	5.4	5	5.1	4.8
IRON	11700 J	11800 J	10600 J	8770	8540 J	7830 J	9940 J	10100 J	11500	8490 J	7800 J	7780	7880	7680 J
LEAD	54.4	43.1	70.5	73.3	61.3 J	109 J	152 J	169 J	99.7	20.9 J	23.5 J	27	39.4	49.1 J
MAGNESIUM	1810	1530	1460	1900	1810	1670	2070	1840	2380	1640	1600	1650	1660	1550
MANGANESE	109 J	127 J	115 J	92.2 J	94.9 J	89.8 J	107 J	112 J	120 J	92.5 J	86.6 J	81.5 J	84 J	86 J
NICKEL	9.1	8.8	8.1	7.2	7.2	6.7	8.6	8.2	8.9	6.7	6.6	6.2	6.9	7.2
POTASSIUM	507 J	430 J	401 J	603 J	617 J	500 J	768 J	476 J	773 J	481 J	429 J	443 J	438 J	506 J
SELENIUM	< 0.38 U	< 0.39 U	< 0.4 U	< 0.39 UJ	0.4 J	< 0.39 UJ	< 0.28 UJ	< 0.39 UJ	< 0.28 UJ	< 0.27 UJ	< 0.27 UJ	< 0.27 UJ	< 0.4 UJ	< 0.4 UJ
SILVER	< 0.18 U	< 0.18 U	< 0.18 U	< 0.18 U	< 0.18 U	< 0.18 U	0.11 J	< 0.18 U	< 0.13 U	< 0.13 U	< 0.12 U	< 0.12 U	< 0.19 U	< 0.19 U
SODIUM	2050	2150	1900	2630	2750	2120	3910	2030	3890	2670	2530	2690	2420	2520
THALLIUM	< 0.47 U	< 0.49 U	< 0.49 U	< 0.48 U	< 0.49 U	< 0.49 U	< 0.35 U	< 0.48 U	< 0.35 U	< 0.34 U	< 0.33 U	< 0.33 U	< 0.49 U	< 0.49 U
VANADIUM	13.6	12.1	11.1	10.4	10.3 J	9.5 J	13.3 J	12 J	12.2	10.2 J	9.1 J	8.7	8.9	9.1 J
ZINC	44.3	43.5	41.1	35.4	34.4	29.8	44.4	34.5	43.6	31.6	31.8	29.4	30.7	29.6
SVOCs (ug/kg)														
2-METHYLNAPHTHALENE	< 240 U	< 250 U	< 250 U											
ACENAPHTHENE	< 240 U	< 250 U	< 250 U											
ACENAPHTHYLENE	< 240 U	< 250 U	< 250 U											
ANTHRACENE	< 240 U	< 250 U	< 250 U											
BENZO[A]ANTHRACENE	< 240 U	< 250 U	110 J											
BENZO[A]PYRENE	< 240 U	< 250 U	< 250 UJ											
BENZO[B]FLUORANTHENE	< 240 U	< 250 U	< 250 UJ											
BENZO[G,H,I]PERYLENE	< 240 U	< 250 U	230 J											
BENZO[K]FLUORANTHENE	< 240 U	< 250 U	< 250 UJ											
CHRYSENE	< 240 U	< 250 U	120 J											
DIBENZ[A,H]ANTHRACENE	< 240 U	< 250 U	< 250 UJ											
FLUORANTHENE	< 240 U	< 250 U	170 J											
FLUORENE	< 240 U	< 250 U	< 250 U											
INDENO[1,2,3-CD]PYRENE	< 240 U	< 250 U	< 250 UJ											
NAPHTHALENE	< 240 U	< 250 U	< 250 U											
PHENANTHRENE	< 240 U	< 250 U	110 J											
PYRENE	< 240 U	< 250 U	180 J											

Table 4-19
Summary of Sediment Analytical Results (2009 SI)
MRP Site 1, Carr Point
NAVSTA Newport, Rhode Island

Location ID	SD15	SD15	SD16	SD16	SD17	SD18	SD18	SD19	SD19	SD20	SD20
Sample Date	6/16/2009	6/16/2009	6/17/2009	6/17/2009	6/16/2009	6/16/2009	6/16/2009	6/16/2009	6/16/2009	6/17/2009	6/17/2009
Sample ID/Interval	CRP-SD15-0006	CRP-SD15-0612	CRP-SD16-0006	CRP-SD16-0612	CRP-SD17-0006	CRP-SD18-0006	CRP-SD18-0612	CRP-SD19-0006	CRP-SD19-0612	CRP-SD20-0006	CRP-SD20-0612
Metals (mg/kg)											
ALUMINUM	3170	3600	3850	3540	4050 J	2910	2800	3150	3060	3340	3480
ANTIMONY	< 0.63 U	0.35 J	< 0.64 UJ	0.68 J	< 0.68 U	< 0.64 U	< 0.64 U	< 0.64 U	< 0.62 U	< 0.63 UJ	< 0.62 UJ
ARSENIC	1.9	3	2.6	2.8	3.9	1.7	1.7	2	1.8	1.9	1.9
BARIUM	6.1	7.2	8.3	7.4	11.1	5.4	5.5	5.8	5.6	6.6	6.6
BERYLLIUM	0.15 J	0.18 J	0.16 J	0.15 J	0.23 J	0.14 J	0.14 J	0.15 J	0.14 J	0.13 J	0.13 J
CADMIUM	0.11 J	0.15 J	0.21 J	0.21 J	0.2 J	0.068 J	0.08 J	0.095 J	0.094 J	0.15 J	0.17 J
CALCIUM	1660 J	1480 J	12400	5790	36100 J	626 J	604 J	894 J	1200 J	3120	2410
CHROMIUM, TOTAL	8.5	9	10.5	10.3	11.9	7.9	8.2	8.7	8.5	10	9.8
COBALT	2.2	2.2	2.7	2.5	3.1	1.9	1.9	2.1	2	2.5	2.5
COPPER	4.8	5.7	8.3	7.8	10.5	3.9	4.6	4.5	4.9	5.1	6.3
IRON	7840 J	10100 J	8380	7540	10800 J	7760 J	7660 J	8260 J	7640 J	7940	7890
LEAD	48.5 J	83.6 J	37.9	158	27.9 J	7.2 J	7.8 J	8.6 J	8.1 J	11	11.4
MAGNESIUM	1650	2010	1940	1640	2540	1570	1530	1670	1620	1700	1670
MANGANESE	89.5 J	92.5 J	89.8 J	79.5 J	134 J	92.5 J	86.9 J	93.6 J	90 J	83.9 J	82.4 J
NICKEL	7.8	9.4	8.3	8.6	8.5	5.8	5.9	6.3	6.2	6.5	7
POTASSIUM	512 J	646 J	663 J	542 J	922 J	460 J	451 J	514 J	465 J	488 J	477 J
SELENIUM	< 0.27 U	< 0.3 UJ	< 0.28 UJ	0.33 J	< 0.29 UJ	< 0.28 UJ	< 0.28 U	< 0.28 U	< 0.27 UJ	< 0.27 U	< 0.27 UJ
SILVER	< 0.13 U	< 0.14 U	< 0.13 U	0.058 J	0.086 J	< 0.13 U	< 0.13 U	< 0.13 U	< 0.12 U	< 0.13 U	< 0.12 U
SODIUM	2790	4530	3390	2190	4910	2800	2850	2940	2720	2590	2170
THALLIUM	< 0.34 U	< 0.36 U	< 0.34 U	< 0.34 U	< 0.36 U	< 0.34 U	< 0.34 U	< 0.34 U	< 0.33 U	< 0.33 U	< 0.33 U
VANADIUM	9.5 J	11.7 J	10	9.9	13.7 J	9.7 J	9.9 J	10.2 J	10 J	9.2	9.9
ZINC	30.8	32.5	38.4	35.1	41.8 J	26.5	29.6	29.5	31.1	31.8	33.4
SVOCs (ug/kg)											
2-METHYLNAPHTHALENE											
ACENAPHTHENE											
ACENAPHTHYLENE											
ANTHRACENE											
BENZO[A]ANTHRACENE											
BENZO[A]PYRENE											
BENZO[B]FLUORANTHENE											
BENZO[G,H,I]PERYLENE											
BENZO[K]FLUORANTHENE											
CHRYSENE											
DIBENZ[A,H]ANTHRACENE											
FLUORANTHENE											
FLUORENE											
INDENO[1,2,3-CD]PYRENE											
NAPHTHALENE											
PHENANTHRENE											
PYRENE											

Table 4-20
Summary of Groundwater Analytical Results (2009 SI)
MRP Site 1, Carr Point
NAVSTA Newport, Rhode Island

Event	MRP01 SI 2009
Sample Date	6/1/2009
Sample ID	CRP-MW01-0609
Metals (Filtered) (ug/L)	
ALUMINUM	116 J
ANTIMONY	< 3.8 U
ARSENIC	< 1.2 U
BARIUM	29
BERYLLIUM	< 1.2 U
CADMIUM	< 1.2 U
CALCIUM	11800
CHROMIUM, TOTAL	< 1.2 UJ
COBALT	4.7
COPPER	< 2.5 U
IRON	625 J
LEAD	< 0.75 U
MAGNESIUM	5420 J
MANGANESE	1040
MERCURY	< 0.2 U
NICKEL	8.1
POTASSIUM	1980
SELENIUM	< 1.6 U
SILVER	< 0.75 UJ
SODIUM	23100
THALLIUM	< 2 U
VANADIUM	< 3.1 U
ZINC	3.1 J
PCBs (ug/L)	
AROCLOR-1016	< 0.47 U
AROCLOR-1221	< 0.47 U
AROCLOR-1232	< 0.47 U
AROCLOR-1242	< 0.47 U
AROCLOR-1248	< 0.47 U
AROCLOR-1254	< 0.47 U
AROCLOR-1260	< 0.47 U
POLYCHLORINATED BIPHENYLS (PCBS)	U
Pesticides (ug/L)	
4,4-DDD	< 0.019 U
4,4-DDE	< 0.019 U
4,4-DDT	< 0.019 U
ALDRIN	< 0.0094 U
ALPHA-BHC	< 0.0094 U
ALPHA-CHLORDANE	< 0.0094 U
BETA-BHC	< 0.0094 U
DDT, TOTAL	U
DELTA-BHC	< 0.0094 U
DIELDRIN	< 0.019 U
ENDOSULFAN I	< 0.0094 U
ENDOSULFAN II	< 0.019 U
ENDOSULFAN SULFATE	< 0.019 U

Table 4-20
Summary of Groundwater Analytical Results (2009 SI)
MRP Site 1, Carr Point
NAVSTA Newport, Rhode Island

Event	MRP01 SI 2009
Sample Date	6/1/2009
Sample ID	CRP-MW01-0609
ENDRIN	< 0.019 U
ENDRIN ALDEHYDE	< 0.019 U
ENDRIN KETONE	< 0.019 U
HEPTACHLOR	< 0.0094 U
HEPTACHLOR EPOXIDE	< 0.0094 U
LINDANE	< 0.0094 U
METHOXYCHLOR	< 0.0094 U
TOXAPHENE	< 0.94 U
TRANS-CHLORDANE	0.0038 J
SVOCs (ug/L)	
1,1-BIPHENYL	< 4.7 U
1,4-DIOXANE	< 9.3 U
2,2'-OXYBIS(1-CHLOROPROPANE)	< 4.7 U
2,4,5-TRICHLOROPHENOL	< 4.7 U
2,4,6-TRICHLOROPHENOL	< 4.7 U
2,4-DICHLOROPHENOL	< 4.7 U
2,4-DIMETHYLPHENOL	< 19 U
2,4-DINITROPHENOL	< 47 U
2,4-DINITROTOLUENE	< 4.7 U
2,6-DINITROTOLUENE	< 4.7 U
2-CHLORONAPHTHALENE	< 4.7 U
2-CHLOROPHENOL	< 4.7 U
2-METHYLNAPHTHALENE	< 4.7 U
2-METHYLPHENOL	< 4.7 U
2-NITROANILINE	< 19 U
2-NITROPHENOL	< 4.7 U
3,3-DICHLOROBENZIDINE	< 4.7 U
3-NITROANILINE	< 19 U
4,6-DINITRO-2-METHYLPHENOL	< 19 U
4-BROMOPHENYL-PHENYLETHER	< 4.7 U
4-CHLORO-3-METHYLPHENOL	< 4.7 U
4-CHLOROANILINE	< 4.7 U
4-CHLOROPHENYL-PHENYLETHER	< 4.7 U
4-METHYLPHENOL	< 4.7 U
4-NITROANILINE	< 19 U
4-NITROPHENOL	< 19 U
ACENAPHTHENE	< 4.7 U
ACENAPHTHYLENE	< 4.7 U
ACETOPHENONE	< 4.7 U
ANTHRACENE	< 4.7 U
ATRAZINE	< 4.7 U
BENZALDEHYDE	< 4.7 U
BENZO[A]ANTHRACENE	< 4.7 U
BENZO[A]PYRENE	< 0.093 U
BENZO[B]FLUORANTHENE	< 4.7 U
BENZO[G,H,I]PERYLENE	< 4.7 U
BENZO[K]FLUORANTHENE	< 4.7 U

Table 4-20
Summary of Groundwater Analytical Results (2009 SI)
MRP Site 1, Carr Point
NAVSTA Newport, Rhode Island

Event	MRP01 SI 2009
Sample Date	6/1/2009
Sample ID	CRP-MW01-0609
BIS(2-CHLOROETHOXY)METHANE	< 4.7 U
BIS(2-CHLOROETHYL)ETHER	< 4.7 U
BIS(2-ETHYLHEXYL)PHTHALATE	< 9.3 U
BUTYLBENZYLPHTHALATE	< 4.7 U
CAPROLACTAM	< 4.7 UJ
CARBAZOLE	< 4.7 U
CHRYSENE	< 4.7 U
DIBENZ[A,H]ANTHRACENE	< 4.7 U
DIBENZOFURAN	< 4.7 U
DIETHYLPHTHALATE	< 4.7 U
DIMETHYL PHTHALATE	< 4.7 U
DI-N-BUTYLPHTHALATE	< 4.7 U
DI-N-OCTYLPHTHALATE	< 4.7 U
FLUORANTHENE	< 4.7 U
FLUORENE	< 4.7 U
HEXACHLOROBENZENE	< 0.093 U
HEXACHLOROBUTADIENE	< 4.7 U
HEXACHLOROCYCLOPENTADIENE	< 4.7 U
HEXACHLOROETHANE	< 4.7 U
INDENO[1,2,3-CD]PYRENE	< 4.7 U
ISOPHORONE	< 4.7 U
NAPHTHALENE	< 4.7 U
NITROBENZENE	< 4.7 U
N-NITROSODINPROPYLAMINE	< 4.7 U
N-NITROSODIPHENYLAMINE	< 4.7 U
PENTACHLOROPHENOL	< 0.093 U
PHENANTHRENE	< 4.7 U
PHENOL	< 4.7 U
PYRENE	< 4.7 U
TPH (mg/L)	
TPH-DIESEL RANGE	< 0.093 U
TPH-TOTAL UNKNOWN GASOLINE RANGE ORGANI	< 0.055 U
VOCs (ug/L)	
1,1,1-TRICHLOROETHANE	< 1 U
1,1,2,2-TETRACHLOROETHANE	< 1 U
1,1,2-TRICHLOROETHANE	< 1 U
1,1-DICHLOROETHANE	< 1 U
1,1-DICHLOROETHENE	< 1 U
1,2,4-TRICHLOROBENZENE	< 1 U
1,2-DIBROMO-3-CHLOROPROPANE	< 1 U
1,2-DIBROMOETHANE	< 1 U
1,2-DICHLOROBENZENE	< 1 U
1,2-DICHLOROETHANE	< 1 U
1,2-DICHLOROETHENE, TOTAL	U
1,2-DICHLOROPROPANE	< 1 U
1,3-DICHLOROBENZENE	< 1 U
1,4-DICHLOROBENZENE	< 1 U

Table 4-20
Summary of Groundwater Analytical Results (2009 SI)
MRP Site 1, Carr Point
NAVSTA Newport, Rhode Island

Event	MRP01 SI 2009
Sample Date	6/1/2009
Sample ID	CRP-MW01-0609
2-BUTANONE	< 10 UJ
2-HEXANONE	< 5 UJ
4-METHYL-2-PENTANONE	< 5 UJ
ACETONE	< 10 UJ
BENZENE	< 1 U
BROMODICHLOROMETHANE	< 1 U
BROMOFORM	< 1 U
BROMOMETHANE	< 2 U
CARBON DISULFIDE	< 1 U
CARBON TETRACHLORIDE	< 1 U
CHLOROBENZENE	< 1 U
CHLOROETHANE	< 2 U
CHLOROFORM	< 1 U
CHLOROMETHANE	< 2 U
CIS-1,2-DICHLOROETHENE	< 1 U
CIS-1,3-DICHLOROPROPENE	< 1 U
CYCLOHEXANE	< 1 U
DIBROMOCHLOROMETHANE	< 1 U
DICHLORODIFLUOROMETHANE	< 2 U
ETHYLBENZENE	< 1 U
ISOPROPYLBENZENE	< 1 U
METHYL ACETATE	< 2 UJ
METHYL CYCLOHEXANE	< 1 U
METHYL TERT-BUTYL ETHER	< 1 U
METHYLENE CHLORIDE	< 2 U
STYRENE	< 1 U
TETRACHLOROETHENE	< 1 U
TOLUENE	< 1 U
TRANS-1,2-DICHLOROETHENE	< 1 U
TRANS-1,3-DICHLOROPROPENE	< 1 UJ
TRICHLOROETHENE	< 1 U
TRICHLOROFLUOROMETHANE	< 2 U
VINYL CHLORIDE	< 2 U
XYLENES, TOTAL	0.37 J

Table 4-21
Summary of Backfill Analytical Results
MRP Site 1, Carr Point
NAVSTA Newport, Rhode Island

Lab Sample ID			L631829-01	
Client Sample ID			BACKFILL-DRY BRIDGE	
Collect Date			4/22/2013	
Method	Parameter	Units	Value	Qual
2540 G-2011	Total Solids	%	96	
602/8015	a,a,a-Trifluorotoluene(FID)	% Rec.	99	
8015D/GRO	TPH (GC/FID) Low Fraction	mg/kg	<0.12	
8260B	Acetone	mg/kg	<0.065	
8260B	Acrylonitrile	mg/kg	<0.013	
8260B	Benzene	mg/kg	<0.0013	
8260B	Bromobenzene	mg/kg	<0.0013	
8260B	Bromodichloromethane	mg/kg	<0.0013	
8260B	Bromoform	mg/kg	<0.0013	
8260B	Bromomethane	mg/kg	<0.0065	
8260B	n-Butylbenzene	mg/kg	<0.0013	
8260B	sec-Butylbenzene	mg/kg	<0.0013	
8260B	tert-Butylbenzene	mg/kg	<0.0013	
8260B	Carbon tetrachloride	mg/kg	<0.0013	
8260B	Chlorobenzene	mg/kg	<0.0013	
8260B	Chlorodibromomethane	mg/kg	<0.0013	
8260B	Chloroethane	mg/kg	<0.0065	
8260B	2-Chloroethyl vinyl ether	mg/kg	<0.065	
8260B	Chloroform	mg/kg	<0.0065	
8260B	Chloromethane	mg/kg	<0.0032	
8260B	2-Chlorotoluene	mg/kg	<0.0013	
8260B	4-Chlorotoluene	mg/kg	<0.0013	
8260B	1,2-Dibromo-3-Chloropropane	mg/kg	<0.0065	
8260B	1,2-Dibromoethane	mg/kg	<0.0013	
8260B	Dibromomethane	mg/kg	<0.0013	
8260B	1,2-Dichlorobenzene	mg/kg	<0.0013	
8260B	1,3-Dichlorobenzene	mg/kg	<0.0013	
8260B	1,4-Dichlorobenzene	mg/kg	<0.0013	
8260B	Dichlorodifluoromethane	mg/kg	<0.0065	
8260B	1,1-Dichloroethane	mg/kg	<0.0013	
8260B	1,2-Dichloroethane	mg/kg	<0.0013	
8260B	1,1-Dichloroethene	mg/kg	<0.0013	
8260B	cis-1,2-Dichloroethene	mg/kg	<0.0013	
8260B	trans-1,2-Dichloroethene	mg/kg	<0.0013	
8260B	1,2-Dichloropropane	mg/kg	<0.0013	
8260B	1,1-Dichloropropene	mg/kg	<0.0013	
8260B	1,3-Dichloropropane	mg/kg	<0.0013	
8260B	cis-1,3-Dichloropropene	mg/kg	<0.0013	
8260B	trans-1,3-Dichloropropene	mg/kg	<0.0013	
8260B	2,2-Dichloropropane	mg/kg	<0.0013	
8260B	Di-isopropyl ether	mg/kg	<0.0013	
8260B	Ethylbenzene	mg/kg	<0.0013	
8260B	Hexachloro-1,3-butadiene	mg/kg	<0.0013	
8260B	Isopropylbenzene	mg/kg	<0.0013	
8260B	p-Isopropyltoluene	mg/kg	<0.0013	
8260B	2-Butanone (MEK)	mg/kg	<0.013	
8260B	Methylene Chloride	mg/kg	<0.0065	
8260B	4-Methyl-2-pentanone (MIBK)	mg/kg	<0.013	
8260B	Methyl tert-butyl ether	mg/kg	<0.0013	
8260B	Naphthalene	mg/kg	<0.0065	
8260B	n-Propylbenzene	mg/kg	<0.0013	
8260B	Styrene	mg/kg	<0.0013	
8260B	1,1,1,2-Tetrachloroethane	mg/kg	<0.0013	
8260B	1,1,2,2-Tetrachloroethane	mg/kg	<0.0013	
8260B	1,1,2-Trichlorotrifluoroethane	mg/kg	<0.0013	
8260B	Tetrachloroethene	mg/kg	<0.0013	
8260B	Toluene	mg/kg	<0.0065	

Table 4-21
Summary of Backfill Analytical Results
MRP Site 1, Carr Point
NAVSTA Newport, Rhode Island

Lab Sample ID			L631829-01	
Client Sample ID			BACKFILL-DRY BRIDGE	
Collect Date			4/22/2013	
Method	Parameter	Units	Value	Qual
8260B	1,2,3-Trichlorobenzene	mg/kg	<0.0013	
8260B	1,2,4-Trichlorobenzene	mg/kg	<0.0013	
8260B	1,1,1-Trichloroethane	mg/kg	<0.0013	
8260B	1,1,2-Trichloroethane	mg/kg	<0.0013	
8260B	Trichloroethene	mg/kg	<0.0013	
8260B	Trichlorofluoromethane	mg/kg	<0.0065	
8260B	1,2,3-Trichloropropane	mg/kg	<0.0032	
8260B	1,2,4-Trimethylbenzene	mg/kg	<0.0013	
8260B	1,2,3-Trimethylbenzene	mg/kg	<0.0013	
8260B	Vinyl chloride	mg/kg	<0.0013	
8260B	1,3,5-Trimethylbenzene	mg/kg	<0.0013	
8260B	Xylenes, Total	mg/kg	<0.0039	
8260B	Toluene-d8	% Rec.	100	
8260B	Dibromofluoromethane	% Rec.	100	
8260B	4-Bromofluorobenzene	% Rec.	100	

Figures

RESOLUTION CONSULTANTS

Drawn:	JB	04/28/2015
Approved:	NT	04/28/2015
Project #:	60250336	

N

0 2,000 4,000
Scale in Feet

FIGURE 1-1
REGIONAL LOCATION

IR SITE 22, CARR POINT
NAVSTA NEWPORT, RHODE ISLAND

Path: W:\Govt\Projects\Navy CLEAN AECOM-EnSafe JV\Newport\GIS\Projects\Carr_Point\Site_1\RI\MXD\Fig_1_1_Regional_Location.mxd

RESOLUTION CONSULTANTS

Drawn:	JB	04/28/2015
Approved:	NT	04/28/2015
Project #:	60250336	

N

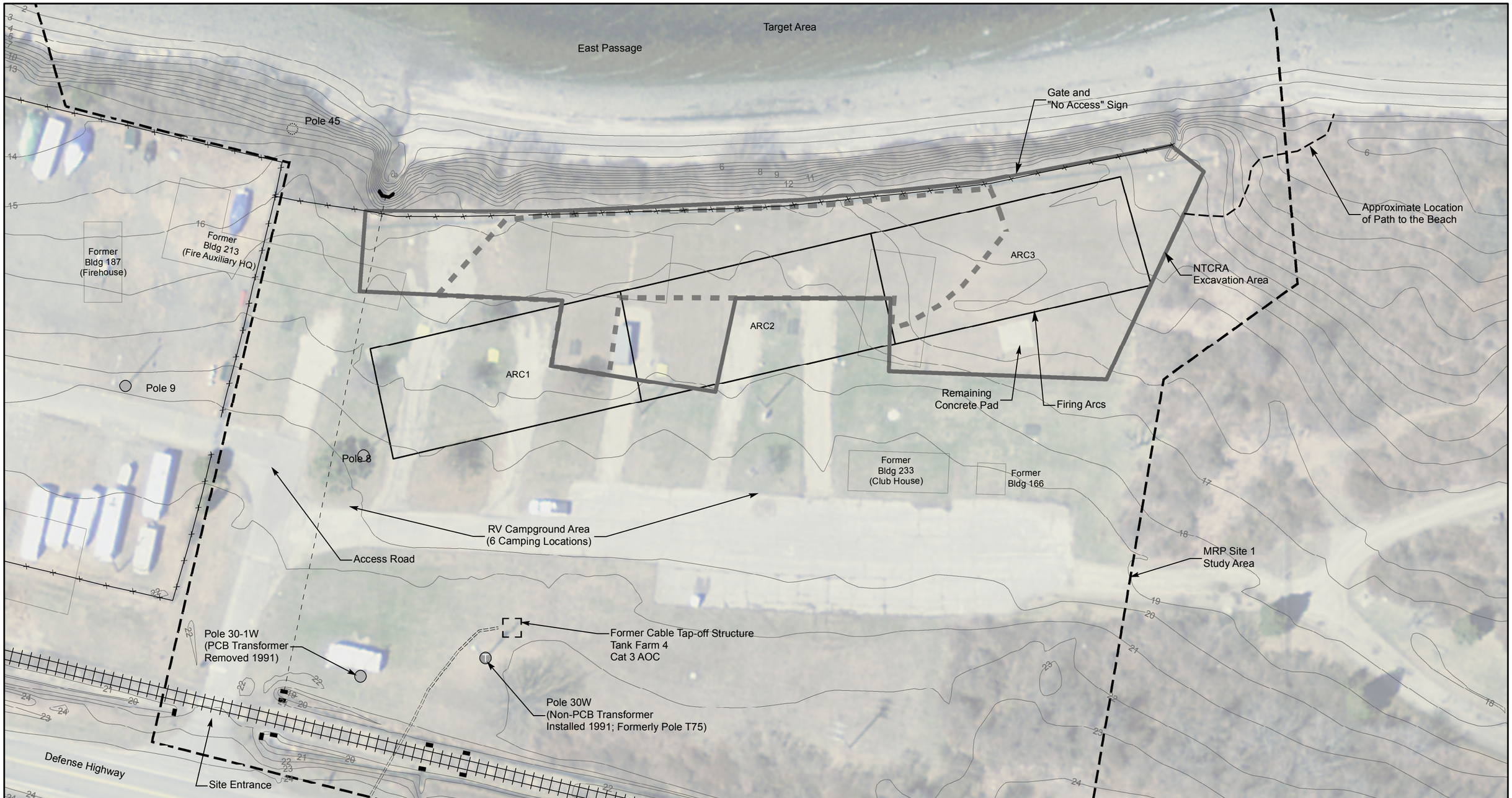
0 75 150

Scale in Feet

FIGURE 1-2
STUDY AREA

MRP SITE 1, CARR POINT
NAVSTA NEWPORT, RHODE ISLAND

Path: W:\Govt\Projects\Navy CLEAN AECOM-EnSafe JV\Newport\GIS\Projects\Carr_Point\Site_1\RI\MXD\Fig_1_2_Study_Area.mxd



RESOLUTION CONSULTANTS

Drawn:	JB	04/28/2015
Approved:	NT	04/28/2015
Project #:	60268619	

Legend

- Utility Pole
- Utility Pole with Transformer
- Former Pole with Transformer
- Former Cable Tap-off Structure
- Outfall
- Stormwater Culvert
- Stormwater Pipeline
- Fence Line
- Deactivated Buried Electric Cable
- MRP Site 1 Boundary
- 1 Ft Excavation
- 2 Ft Excavation
- Approximate Location of Former Building
- Topographic Contour Line (NAVD 88)

N

0 25 50

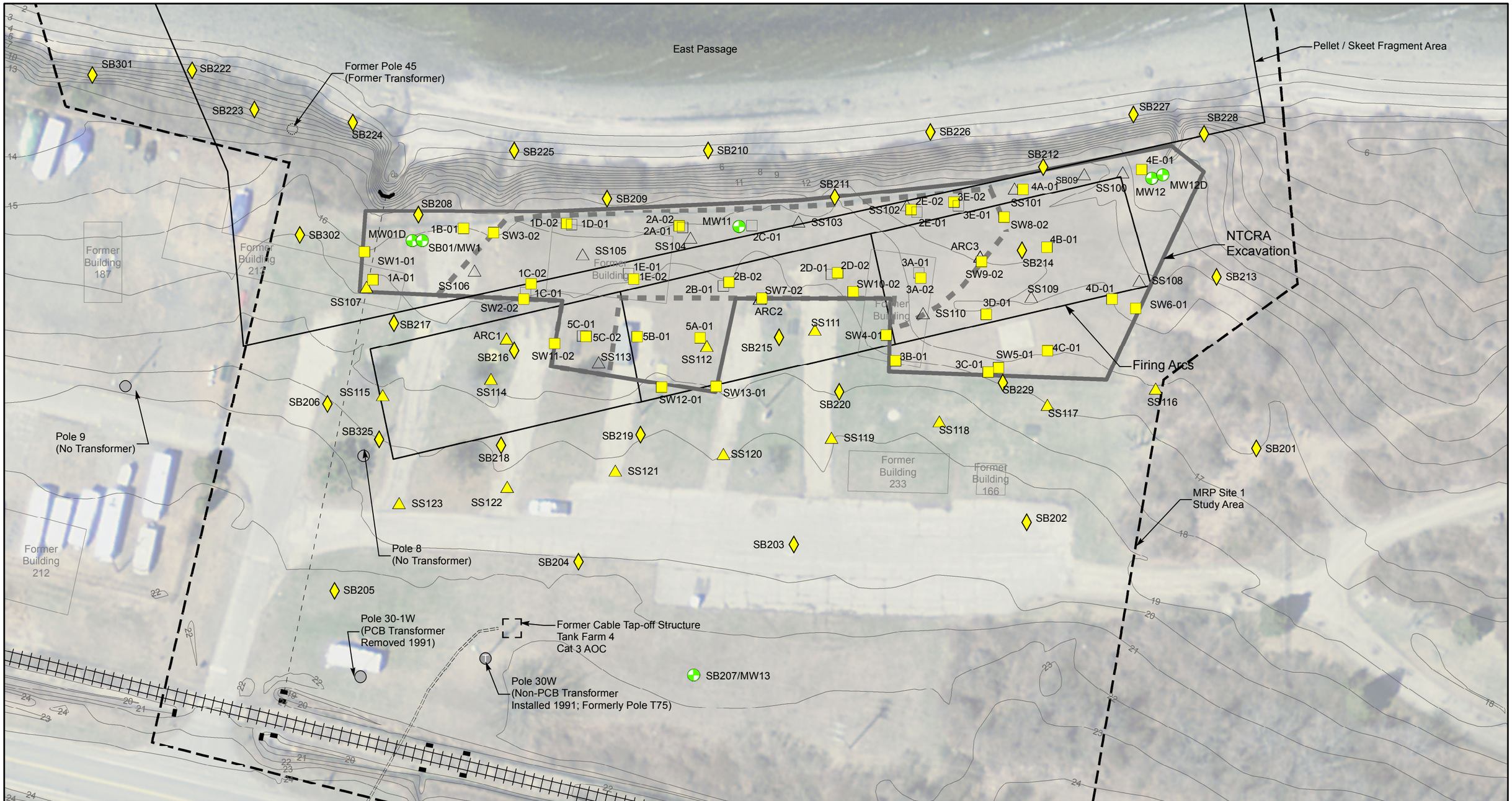
Scale in Feet

* Building numbers and uses where known are labeled based on historic drawings and previous investigations.

FIGURE 1-3
SITE FEATURES

MRP SITE 1, CARR POINT
NAVSTA NEWPORT, RHODE ISLAND

Path: W:\Govt\Projects\Navy CLEAN AECOM-EnSafe JV\Newport\GIS\Projects\Carr_Point\Site_1\RI\MXD\Fig_1_3_Site_Features.mxd



RESOLUTION CONSULTANTS

Drawn:	JB	04/28/2015
Approved:	NT	04/28/2015
Project #:	60250336	

Legend

- 2009/2010 SI Representative Samples
- 2009/2010 SI excavated Samples (Not Used)
- 2013 NTCRA Post-Excavation Samples
- 2013 NTCRA Post-Excavation Samples (Not Used)
- 2013/2014 RI Samples
- Monitoring Well Location
- MRP Site 1 Boundary
- 1 Ft Excavation
- 2 Ft Excavation
- Former Cable Tap-off Structure
- Utility Pole
- Utility Pole with Transformer
- Former Pole with Transformer
- Stormwater Culvert
- Outfall
- Stormwater Pipeline
- Topographic Contour Line (NAVD 88)

N

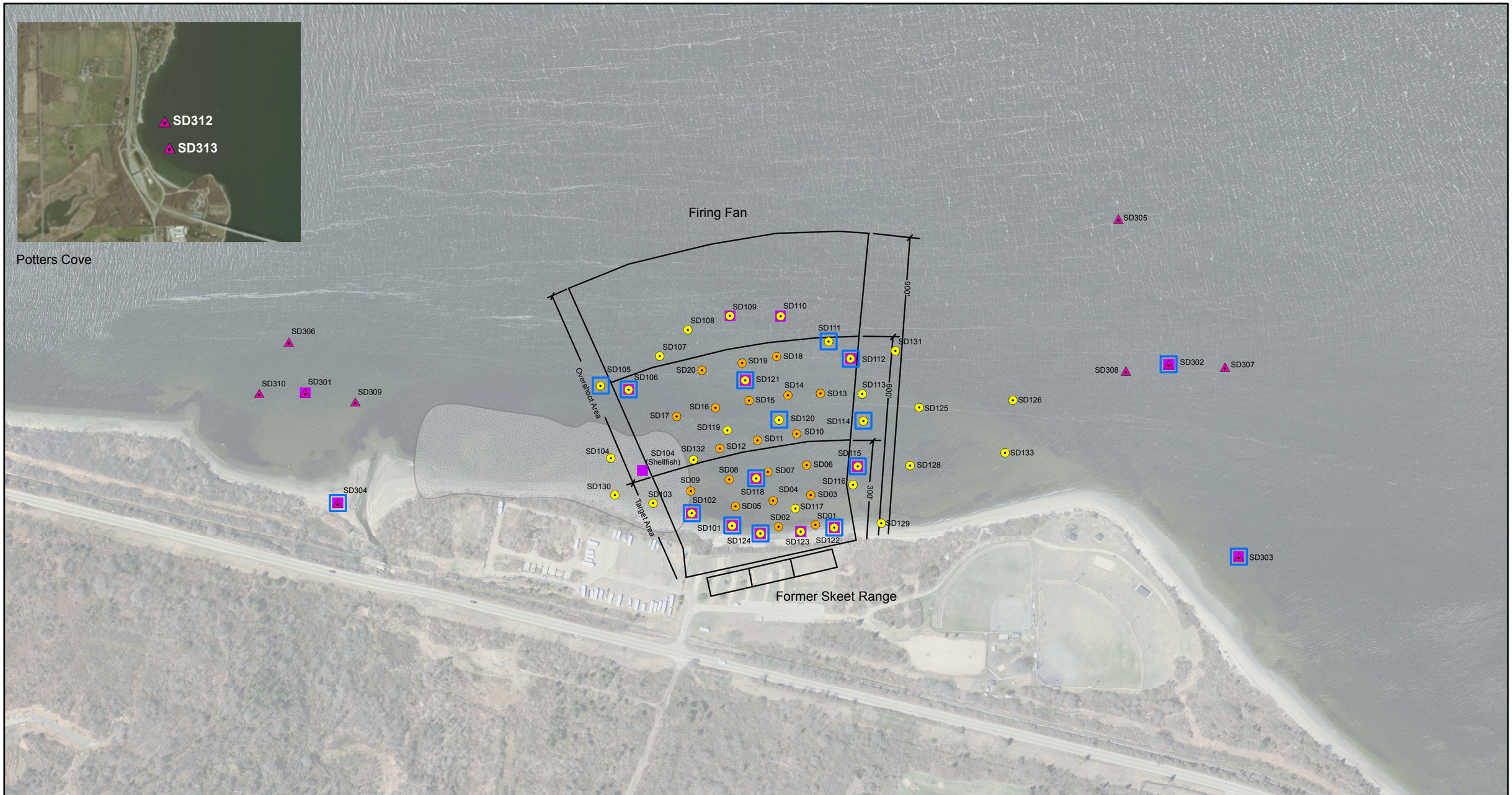
0 25 50

Scale in Feet

FIGURE 2-1
SOIL SAMPLE LOCATIONS

MRP SITE 1, CARR POINT
NAVSTA NEWPORT, RHODE ISLAND

Path: W:\Govt\Projects\Navy CLEAN AECOM-EnSafe JV\Newport\GIS\Projects\Carr_Point\Site_1\RI\MXD\Fig_2_1_Soil_Sample_Locations.mxd



RESOLUTION CONSULTANTS

Drawn:	KS	04/28/2015
Approved:	NT	04/28/2015
Project #:	60250336	

Legend

- 2013/2014 Sediment Location
- 2009/2010 Sediment Location
- 2013/2014 Reference Sediment Location
- 2013/2014 Shellfish Location
- 2013/2014 Leptocheirus Toxicity Test
- Area of Rock/Unconsolidated Sediment

N

0 150 300

Scale in Feet

FIGURE 2-2
SEDIMENT SAMPLING LOCATIONS

MRP SITE 1, CARR POINT
NAVSTA NEWPORT, RHODE ISLAND

W:\Govt\Projects\Navy CLEAN AECOM-EnSafe JV\Newport\GIS\Projects\Carr_Point\Site_1\RI\MXD\Fig_2_2_Sediment_Sample_Locations.mxd

RESOLUTION CONSULTANTS

Drawn: KNS	03/26/2015
Approved: NT	03/26/2015
Project #:	60250336

Legend

- Silt/Cobble
- Cobble
- Gravel
- Gravel/Cobble
- Not Recorded
- Rock/Gravel
- Sand
- Sand/Cobble
- Sand/Gravel/Cobble
- Sand/Silt/Cobble
- Sand/Gravel
- Shell Hash
- Silt/Gravel
- Algae
- Eelgrass
- Shellfish
- Macroinvertebrate Sample
- Area of Rock/Unconsolidated Sediment

N

0 150 300

Scale in Feet

FIGURE 2-3
DIVE SURVEY RESULTS

MRP SITE 1, CARR POINT
NAVSTA NEWPORT, RHODE ISLAND

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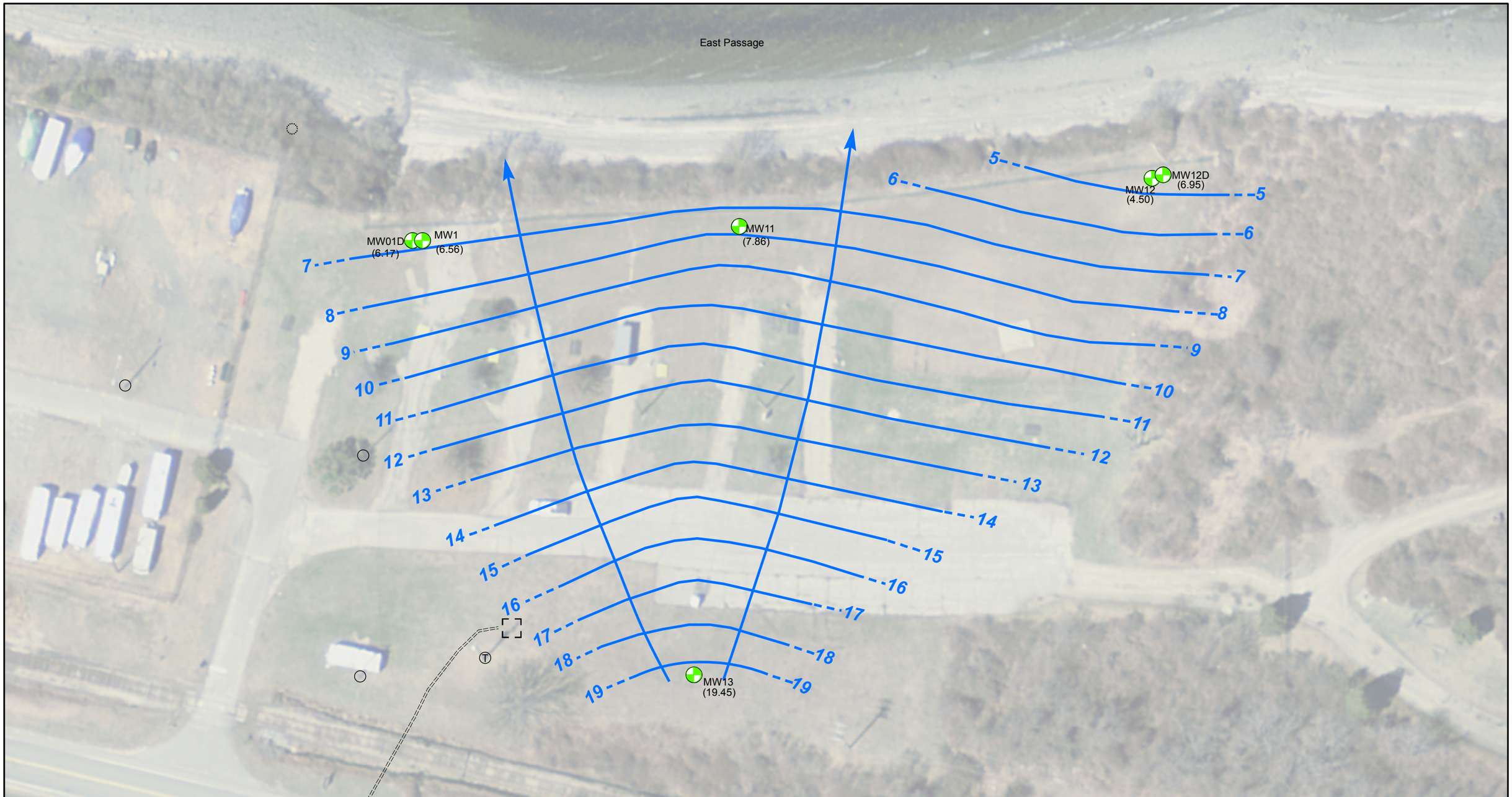


RESOLUTION CONSULTANTS

Drawn:	JB	04/28/2015
Approved:	NT	04/28/2015
Project #:	60250336	

Legend

- Monitoring Well Location
- Groundwater Contour
- Inferred Groundwater Contour
- Groundwater Flow Direction
- Utility Pole
- Utility Pole with Transformer
- Former Pole with Transformer
- Former Cable Tap-off Structure

(7.86) Groundwater Elevation (NGVD29)

NGVD29 National Geodetic Vertical Datum of 1929 (NGVD29)

Groundwater elevation contours based on groundwater elevations measured at wells screened across the water table. Groundwater elevations measured at deep overburden and the bedrock well are included for reference only.

N

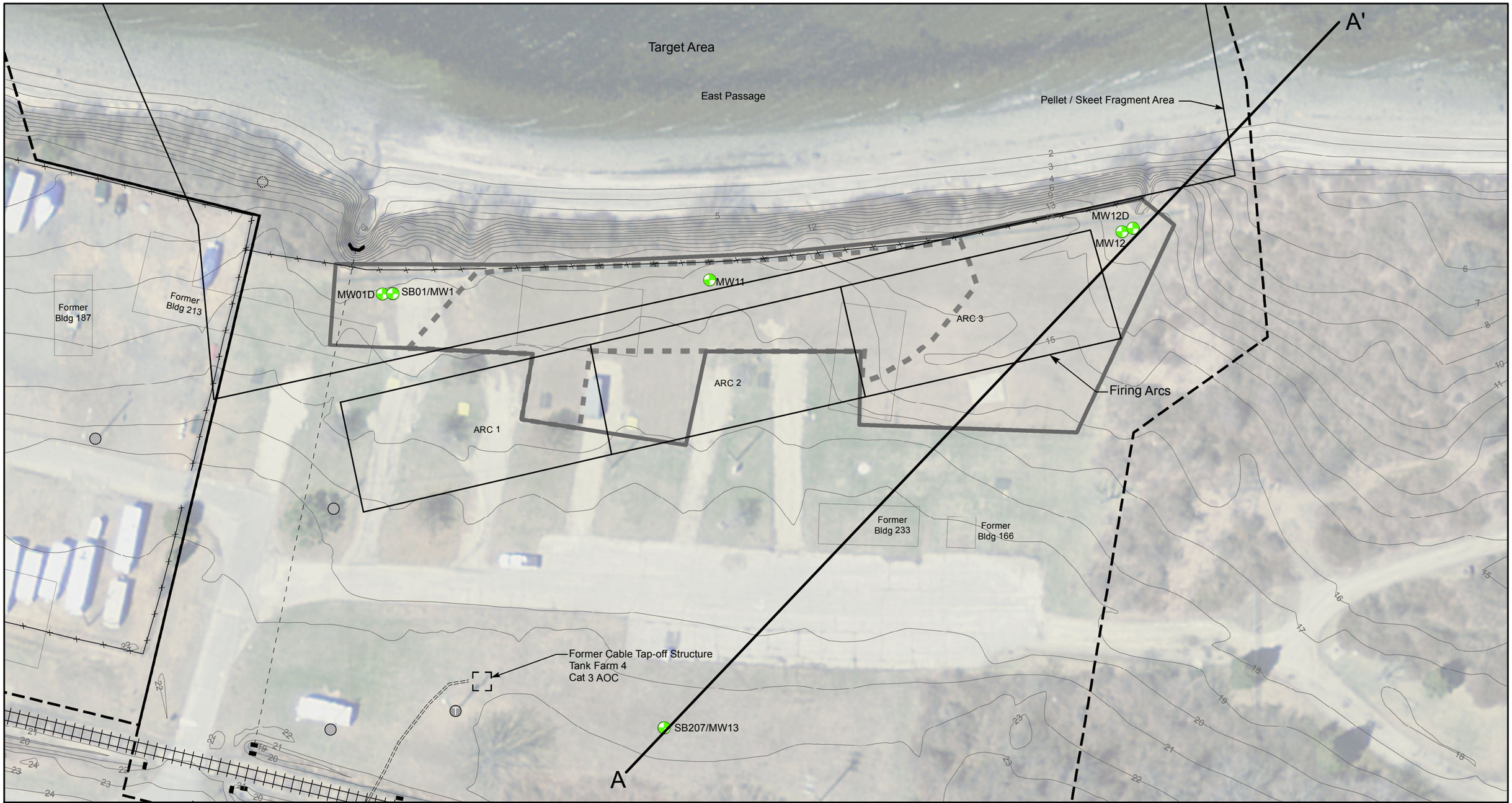
0 25 50

Scale in Feet

FIGURE 2-4
GROUNDWATER WELLS AND CONTOURS

MRP SITE 1, CARR POINT
NAVSTA NEWPORT, RHODE ISLAND

Path: W:\Govt\Projects\Navy CLEAN AECOM-EnSafe JV\Newport\GIS\Projects\Carr_Point\Site_1\RI\MXD\Fig_2_4_Monitoring_Wells_and_Contours.mxd



RESOLUTION CONSULTANTS

Drawn:	JB	04/28/2015
Approved:	NT	04/28/2015
Project #:	60250336	

Legend

- Monitoring Well Location
- Geologic Cross-Section Line A-A'
- Topographic Contour Line (NAVD 88)
- Utility Pole
- Utility Pole with Transformer
- Former Pole with Transformer
- MRP Site 1 Boundary
- 1 Ft Excavation
- 2 Ft Excavation
- Outfall
- Stormwater Culvert
- Former Cable Tap-off Structure
- Approximate Location of Former Building
- Stormwater Pipeline
- Deactivated Buried Electric Cable

N

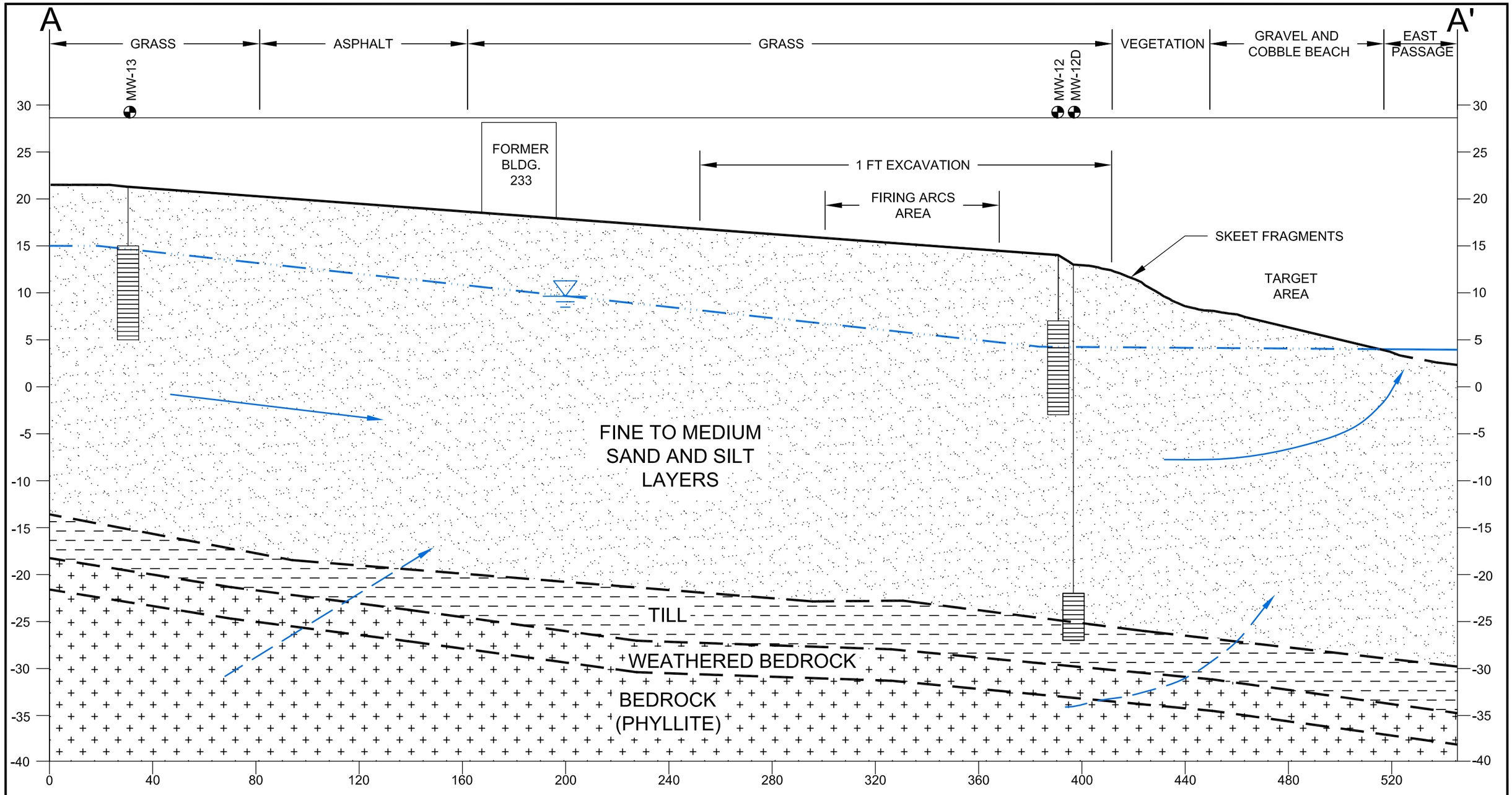
0 25 50

Scale in Feet

FIGURE 3-1
GEOLOGIC CROSS-SECTION LINE A-A'

MRP SITE 1, CARR POINT
NAVSTA NEWPORT, RHODE ISLAND

Path: W:\Govt\Projects\Navy CLEAN AECOM-EnSafe JV\Newport\GIS\Projects\Carr_Point\Site_1\RI\MXD\Fig_3_1_Geologic_Cross_Section_Line_A_A.mxd



RESOLUTION CONSULTANTS

Drawn:	J.M	04/29/2015
Approved:	J.M.	04/29/2015
Project #:	60268619	

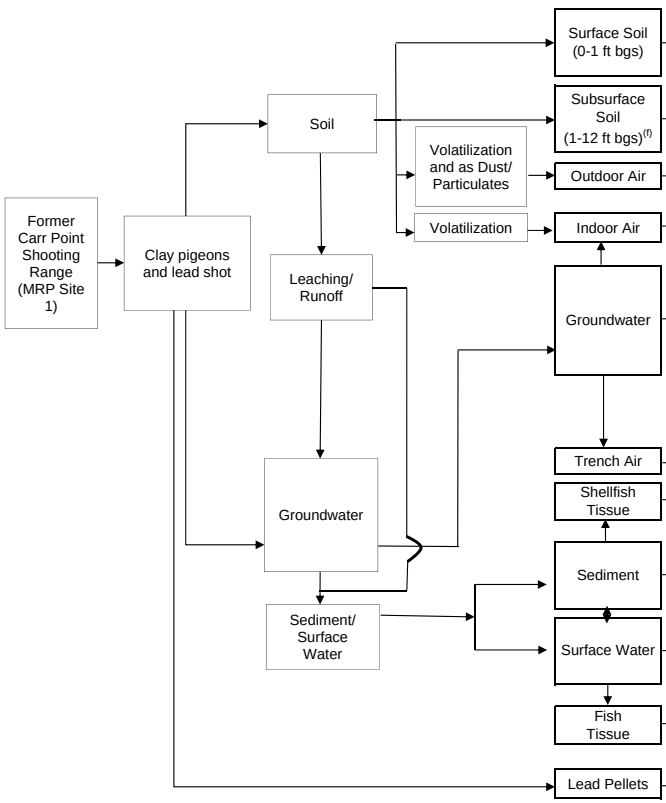
LEGEND

- GROUNDWATER TABLE (DASHED WHERE INFERED)
- STRATOGRAPHIC CONTACT (DASHED WHERE INFERRED)
- WELL RISER OR SOIL BORING
- TILL
- SAND AND SILT LAYERS
- BEDROCK
- WELL SCREEN (SLOTTED PIPE)
- GROUNDWATER FLOW DIRECTION (DASHED WHERE INFERRED)

FIGURE 3-2
GEOLOGIC CROSS SECTION A-A'

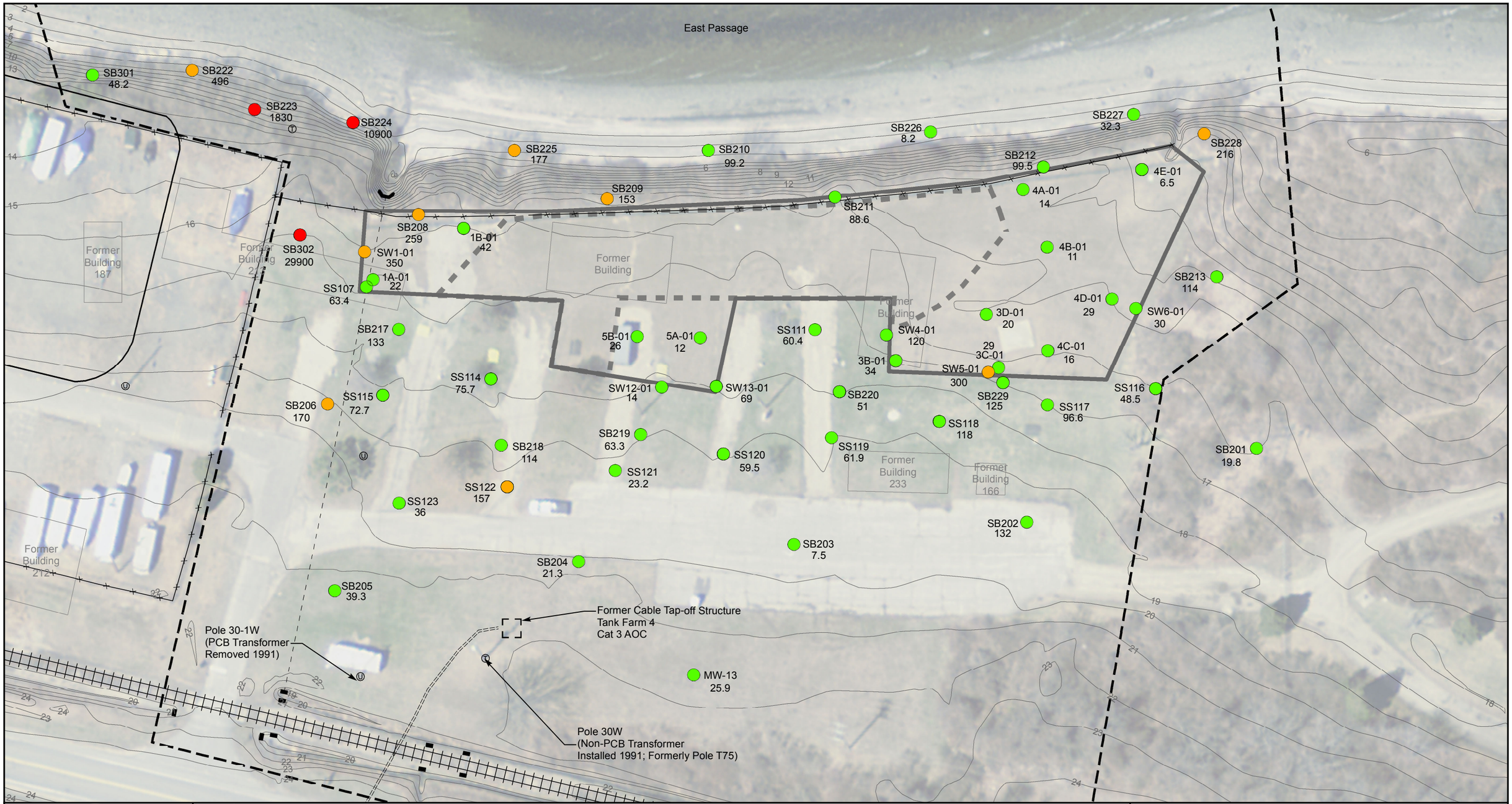
MRP SITE 1, CARR POINT
NAVSTA NEWPORT, RHODE ISLAND

Figure 3-3
Potential Exposure Pathways
Former Carr Point Shooting Range
NAVSTA, Newport, RI



Exposure Media	Potential Exposure Route	Potential Human Receptors/Exposure Pathways: Current On-Site Worker (b)	Current/ Future Construction Worker	Current Recreational Visitor	Current/ Future Trespasser	Future On-Site Worker (d)	Hypothetical Future On-Site Resident	Potential Ecological Receptors/Exposure Pathways: Terrestrial Plant Community	Soil Invertebrate Community	Fish and Aquatic Invertebrate Communities	Benthic Invertebrate Community	Avian and Mammalian Communities
Surface Soil (0-1 ft bgs)	Incidental Ingestion	●	●	●	●	●	●	○	○	○	○	●(j)
	Dermal / Direct Contact	●	●	●	●	●	●	●	●	○	○	○
Subsurface Soil (1-12 ft bgs)(f)	Incidental Ingestion	○	●	○	●(k)	●	●	○	○	○	○	○
	Dermal / Direct Contact	○	●	○	●(k)	●	●	○	○	○	○	○
Outdoor Air	Inhalation	●	●	●	●	●	●	○	○	○	○	○
Indoor Air	Inhalation	○(a)	○	○	○	●(e)	●(e)	○	○	○	○	○
Groundwater	Ingestion as Drinking Water	○	○	○	○	●(c,i)	●(c,i)	○	○	○	○	○
	Dermal / Direct Contact	○	●	○	○	○	●(c,i)	○	○	○	○	○
	Incidental Ingestion	○	●	○	○	○	○	○	○	○	○	○
	Inhalation of volatiles while bathing	○	○	○	○	○	●(c,i)	○	○	○	○	○
Trench Air	Inhalation	○	●	○	○	○	○	○	○	○	○	○
Shellfish Tissue	Ingestion	○	○	○	○	○	●	○	○	○	○	●(j)
Sediment	Incidental Ingestion	○	○	●(g)	●(g)	○	●(g)	○	○	●	●	●(j)
	Dermal / Direct Contact	○	○	●(g)	●(g)	○	●(g)	○	○	●	●	○
Surface Water	Incidental Ingestion	○	○	○	○	○	○	○	○	○	○	○
	Dermal / Direct Contact	○	○	○	○	○	○	○	○	○	○	○
Fish Tissue	Ingestion	○	○	○	○	○	○	○	○	○	○	●(h,j)
Lead Pellets	Ingestion	○	○	○	○	○	○	○	○	○	○	●(l)

Notes:
● Potentially complete pathway.
○ Pathway considered to be incomplete or insignificant.
ft bgs - feet below ground surface.
(a) No existing buildings on site.
(b) Includes maintenance worker and RV park staff.
(c) There are no potable water wells on site. Area is served by municipal water. Assessment of potability of groundwater is proposed.
(d) Assumes a future default worker scenario.
(e) Site Investigation Report (Tetra Tech, 2010a) indicates soil is not a source of volatiles. Groundwater data will be assessed for the potential for vapor intrusion.
(f) Subsurface soil is defined as soil between 1 ft and 12 ft or between 1 ft and the water table (if shallower than 12 ft).
(g) At the majority of the shoreline, sediment is covered by stones and therefore is not exposed for contact by humans, except for a small portion. However, it is proposed for evaluation in the HHRA as a conservative measure.
(h) Fish tissue concentrations will be modeled from sediment.
(i) Groundwater direct contact exposure scenarios are proposed for evaluation of hypothetical future use.
(j) Bioaccumulation pathway also expected to be potentially complete.
(k) Evalution of subsurface soil will be performed for the future use scenario only, assuming deeper soils may be brought to the surface and made available for contact during development for future use.
(l) Ingestion of lead shot is a potential exposure pathway for birds exposed to sediment. If pellets are observed within the upland, then ingestion of pellets will be considered as a potentially complete exposure pathway.



RESOLUTION CONSULTANTS

Drawn:	JB	04/28/2015
Approved:	NT	04/28/2015
Project #:	60250336	

Legend

- non-detect
- < R DEC and < I/C DEC
- > R DEC but < I/C DEC
- > R DEC and > I/C DEC
- MRP Site 1 Boundary
- 1 Ft Excavation
- 2 Ft Excavation
- Fenceline
- Outfall
- Stormwater Culvert
- Utility Pole
- Utility Pole with Transformer
- Existing Drain Line
- Topographic Contour Line (NAVD 88)

R = Residential
I/C = Industrial/Commercial
DEC = Direct Exposure Criteria (RIDEM, 2011)
Concentrations in mg/kg (ppm)
Shallow Soil = 0-1 Foot Depth
Subsurface Soil = 1-12 Feet Depth

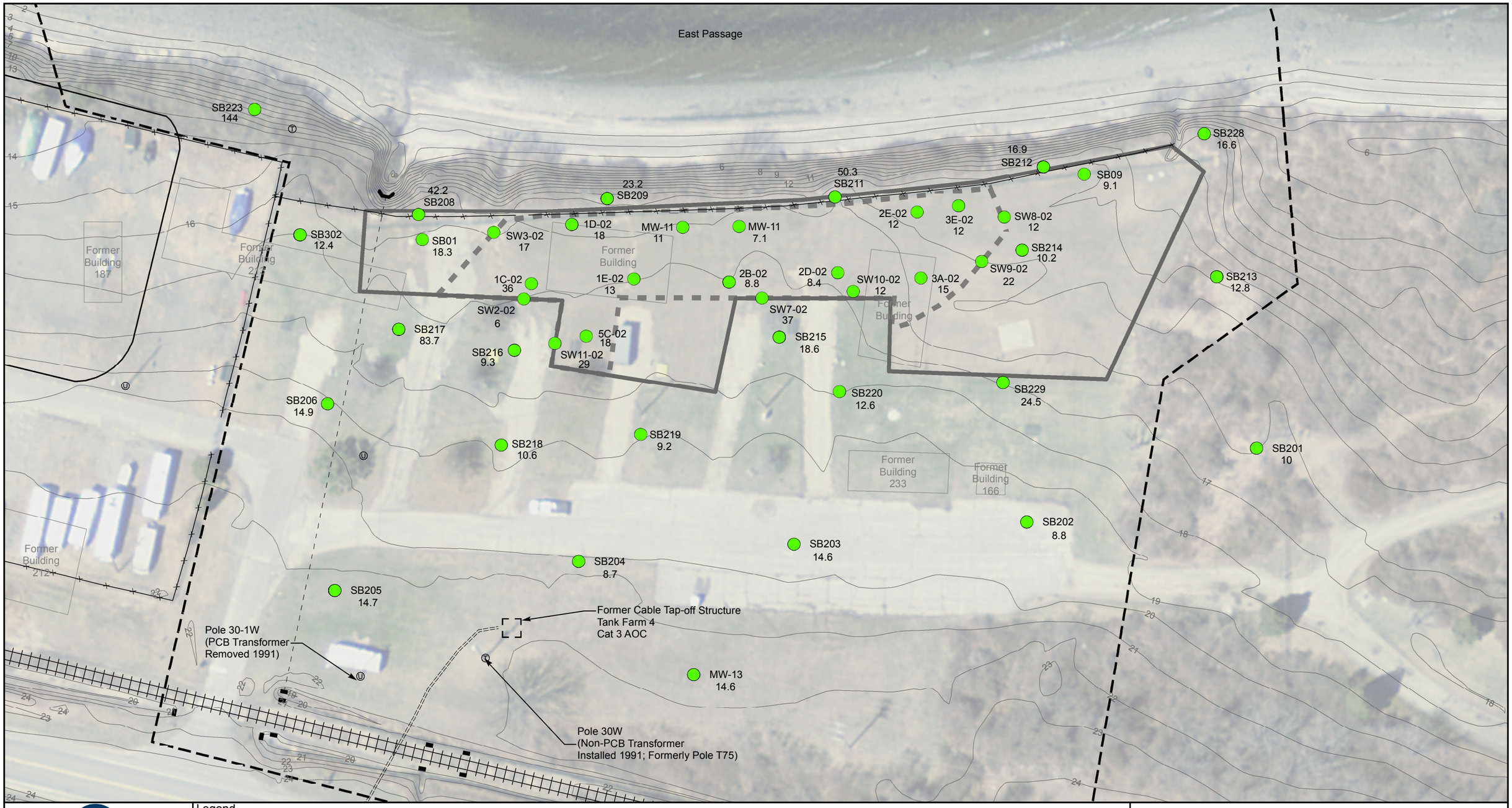
N

0 25 50
Scale in Feet

FIGURE 4-1
DISTRIBUTION OF LEAD IN SHALLOW SOIL

MRP SITE 1, CARR POINT
NAVSTA NEWPORT, RHODE ISLAND

Path: W:\Govt\Projects\Navy CLEAN AECOM-EnSafe JV\Newport\GIS\Projects\Carr_Point\Site_1\RI\MXD\Fig_4_1_Dist_of_Lead_Shallow_Soil.mxd



RESOLUTION CONSULTANTS

Drawn:	JB	04/28/2015
Approved:	NT	04/28/2015
Project #:	60250336	

Legend

- non-detect
- < R DEC and < I/C DEC
- > R DEC but < I/C DEC
- > R DEC and > I/C DEC
- MRP Site 1 Boundary
- 1 Ft Excavation
- 2 Ft Excavation
- Fenceline
- Outfall
- Stormwater Culvert
- Utility Pole
- Utility Pole with Transformer
- Stormwater Pipeline
- Topographic Contour Line (NAVD 88)

R = Residential
I/C = Industrial/Commercial
DEC = Direct Exposure Criteria (RIDEM, 2011)
Concentrations in mg/kg (ppm)
Shallow Soil = 0-1 Foot Depth
Subsurface Soil = 1-12 Feet Depth

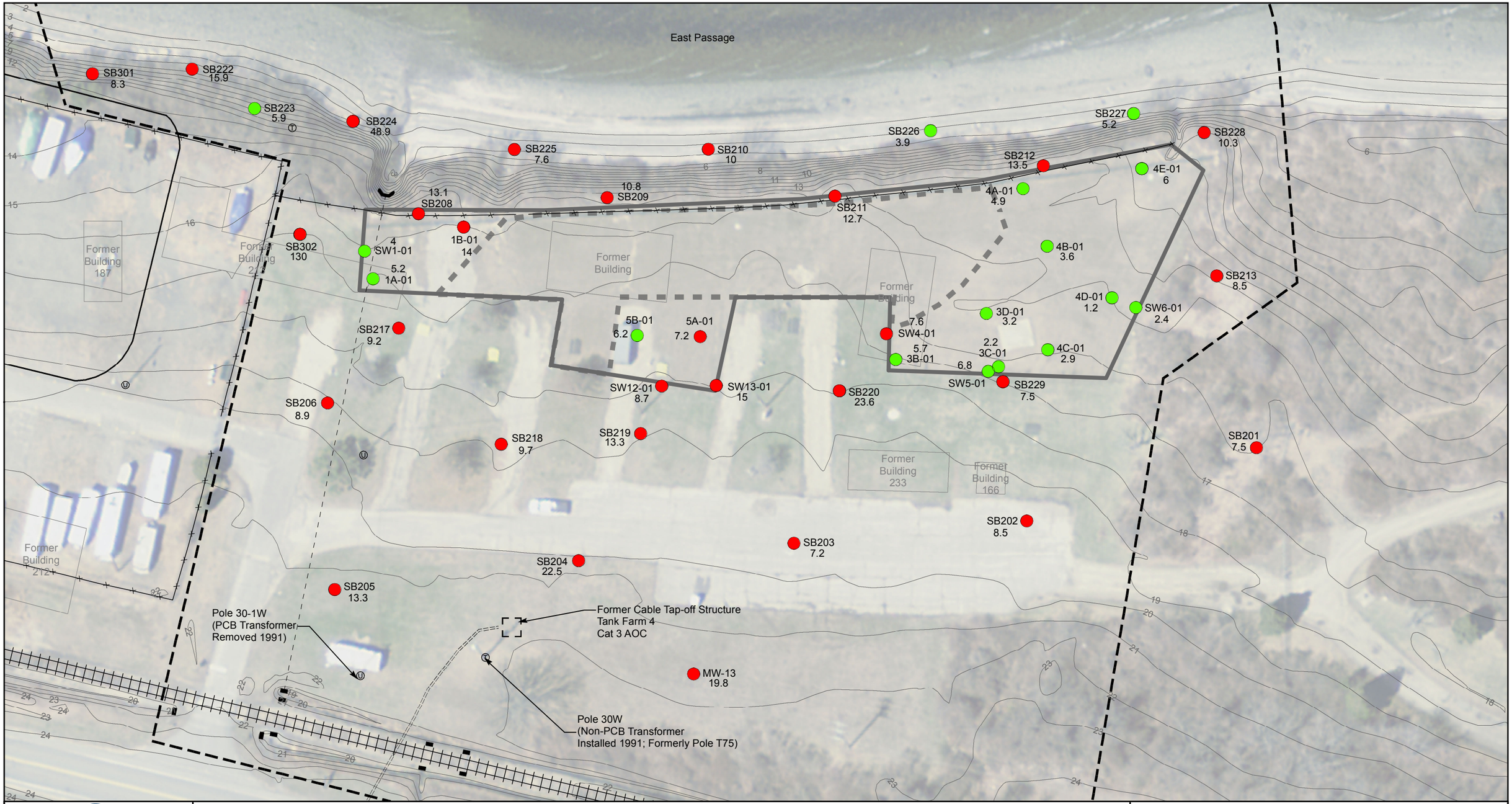
N

0 25 50
Scale in Feet

FIGURE 4-2
DISTRIBUTION OF LEAD IN SUBSURFACE SOIL

MRP SITE 1, CARR POINT
NAVSTA NEWPORT, RHODE ISLAND

Path: W:\Govt\Projects\Navy CLEAN AECOM-EnSafe JV\Newport\GIS\Projects\Carr_Point\Site_1\RI\MXD\Fig_4_2_Dist_of_Lead_Subsurface_Soil.mxd



RESOLUTION CONSULTANTS

Drawn:	JB	04/28/2015
Approved:	NT	04/28/2015
Project #:	60250336	

Legend

Arsenic (mg/kg)

- non-detect
- < R DEC and < I/C DEC
- > R DEC and > I/C DEC

- 1 Ft Excavation
- 2 Ft Excavation
- Fenceline
- Outfall
- Stormwater Culvert
- Utility Pole
- Utility Pole with Transformer
- Stormwater Pipeline
- Topographic Contour Line (NAVD 88)

R = Residential
I/C = Industrial/Commercial
DEC = Direct Exposure Criteria (RIDEM, 2011)
Concentrations in mg/kg (ppm)
Shallow Soil = 0-1 Foot Depth
Subsurface Soil = 1-12 Feet Depth

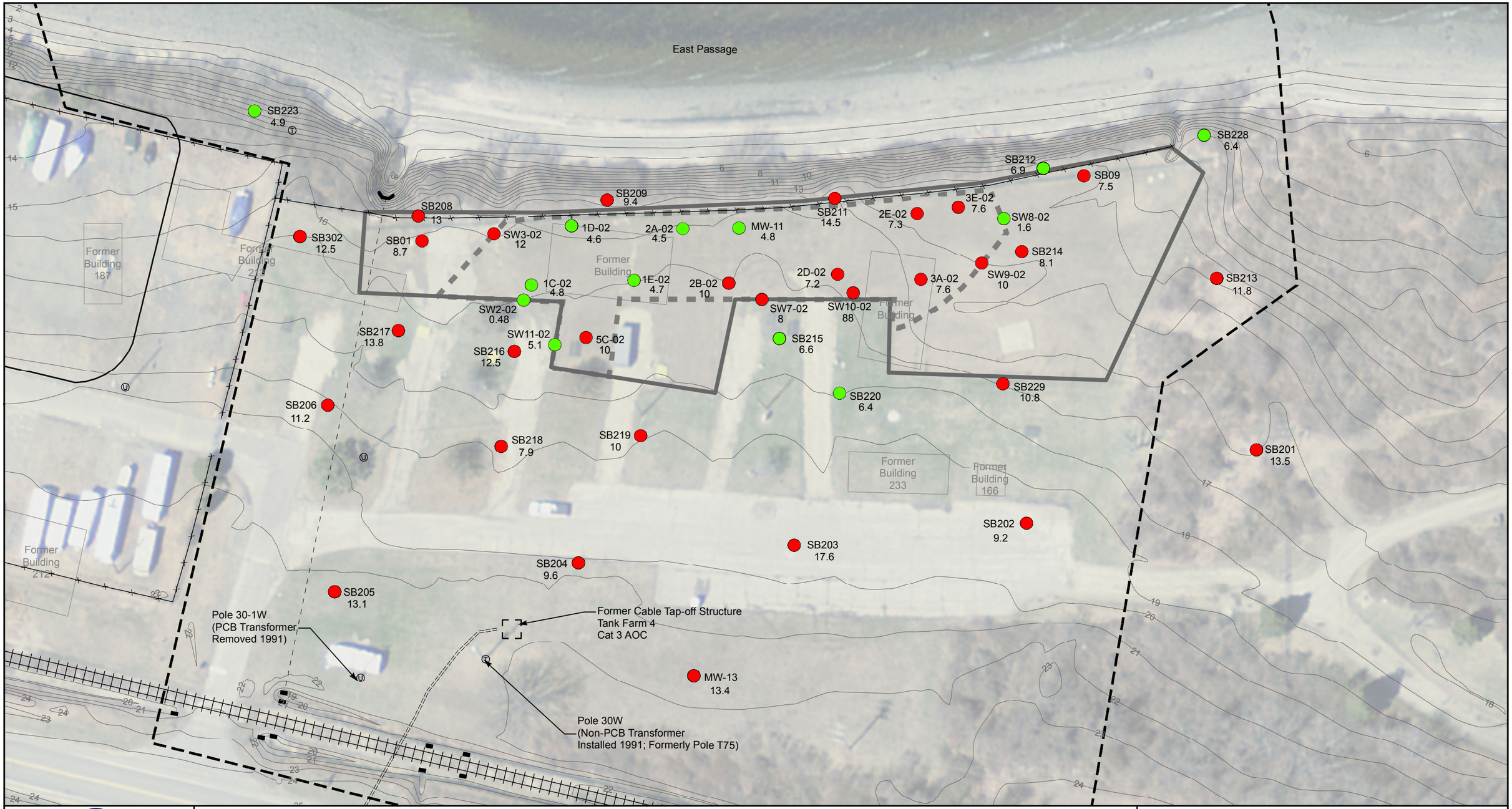
N

0 25 50
Scale in Feet

FIGURE 4-3
DISTRIBUTION OF ARSENIC IN SHALLOW SOIL

MRP SITE 1, CARR POINT
NAVSTA NEWPORT, RHODE ISLAND

Path: W:\Govt\Projects\Navy CLEAN AECOM-EnSafe JV\Newport\GIS\Projects\Carr_Point\Site_1\RI\MXD\Fig_4_3_Dist_of_Arsenic_Shallow_Soil_7ppm.mxd



RESOLUTION CONSULTANTS

Drawn:	JB	04/28/2015
Approved:	NT	04/28/2015
Project #:	60250336	

Legend

Arsenic (mg/kg)

- non-detect
- < R DEC and < I/C DEC
- > R DEC and > I/C DEC

- MRP Site 1 Boundary
- 1 Ft Excavation
- 2 Ft Excavation
- Fenceline
- Outfall
- Stormwater Culvert
- Utility Pole
- Utility Pole with Transformer
- Stormwater Pipeline
- Topographic Contour Line (NAVD 88)

R = Residential
I/C = Industrial/Commercial
DEC = Direct Exposure Criteria (RIDEM, 2011)
Concentrations in mg/kg (ppm)
Shallow Soil = 0-1 Foot Depth
Subsurface Soil = 1-12 Feet Depth

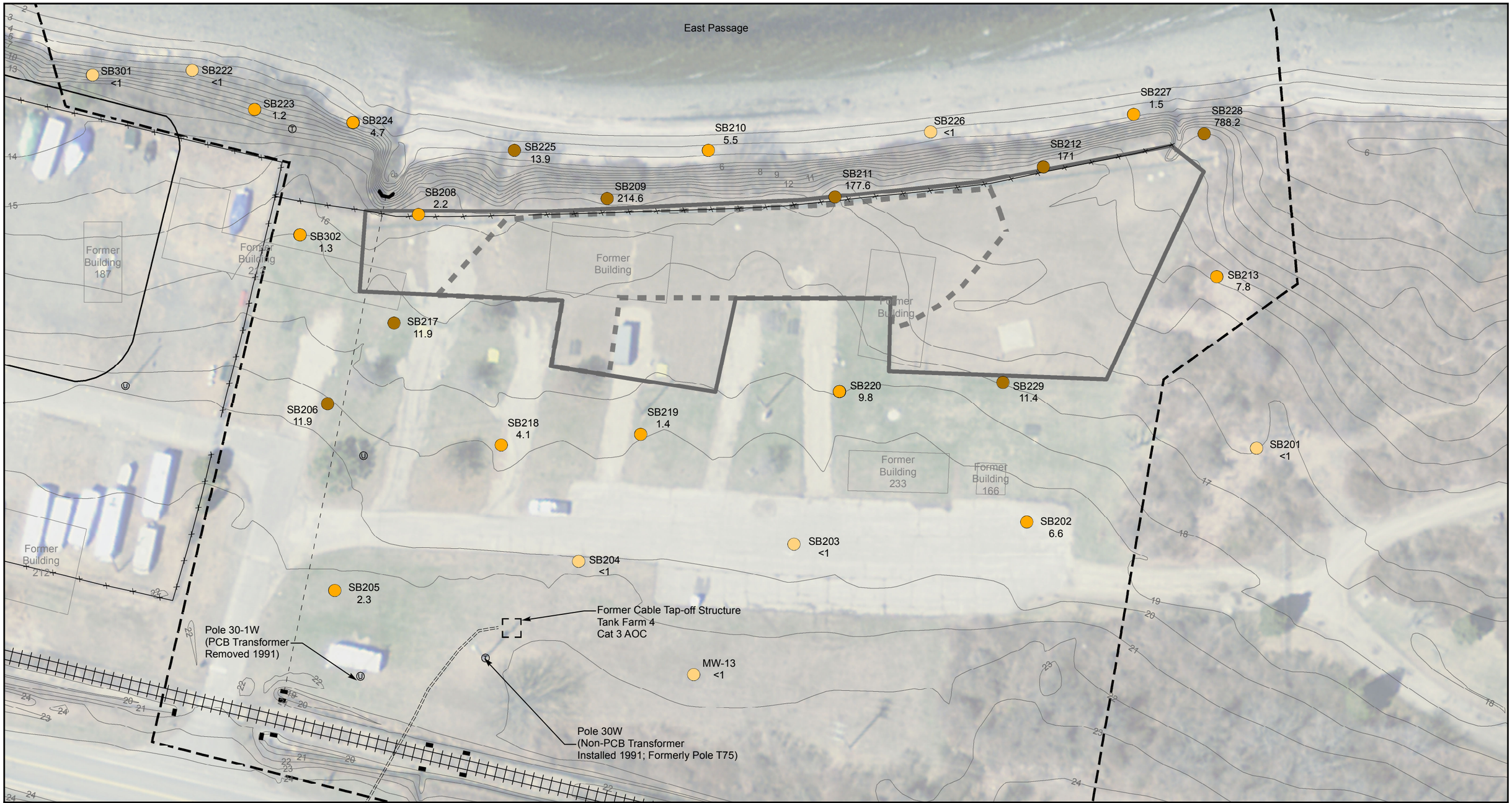
N

0 25 50
Scale in Feet

FIGURE 4-4
DISTRIBUTION OF ARSENIC IN SUBSURFACE SOIL

MRP SITE 1, CARR POINT
NAVSTA NEWPORT, RHODE ISLAND

Path: W:\Govt\Projects\Navy CLEAN AECOM-EnSafe JV\Newport\GIS\Projects\Carr_Point\Site_1\RI\MXD\Fig_4_4_Dist_of_Arsenic_Subsurface_Soil_7ppm.mxd



RESOLUTION CONSULTANTS

Drawn:	JB	04/28/2015
Approved:	NT	04/28/2015
Project #:	60250336	

Legend

Total PAHs (mg/kg)
- <1
- >1 and <10
- >10

- MRP Site 1 Boundary
- 1 Ft Excavation
- 2 Ft Excavation
- Fenceline
- Outfall
- Stormwater Culvert
- Utility Pole
- Utility Pole with Transformer
- Existing Drain Line
- Topographic Contour Line (NAVD 88)

Concentrations in mg/kg (ppm)
Shallow Soil = 0-1 Foot Depth
Subsurface Soil = 1-12 Feet Depth

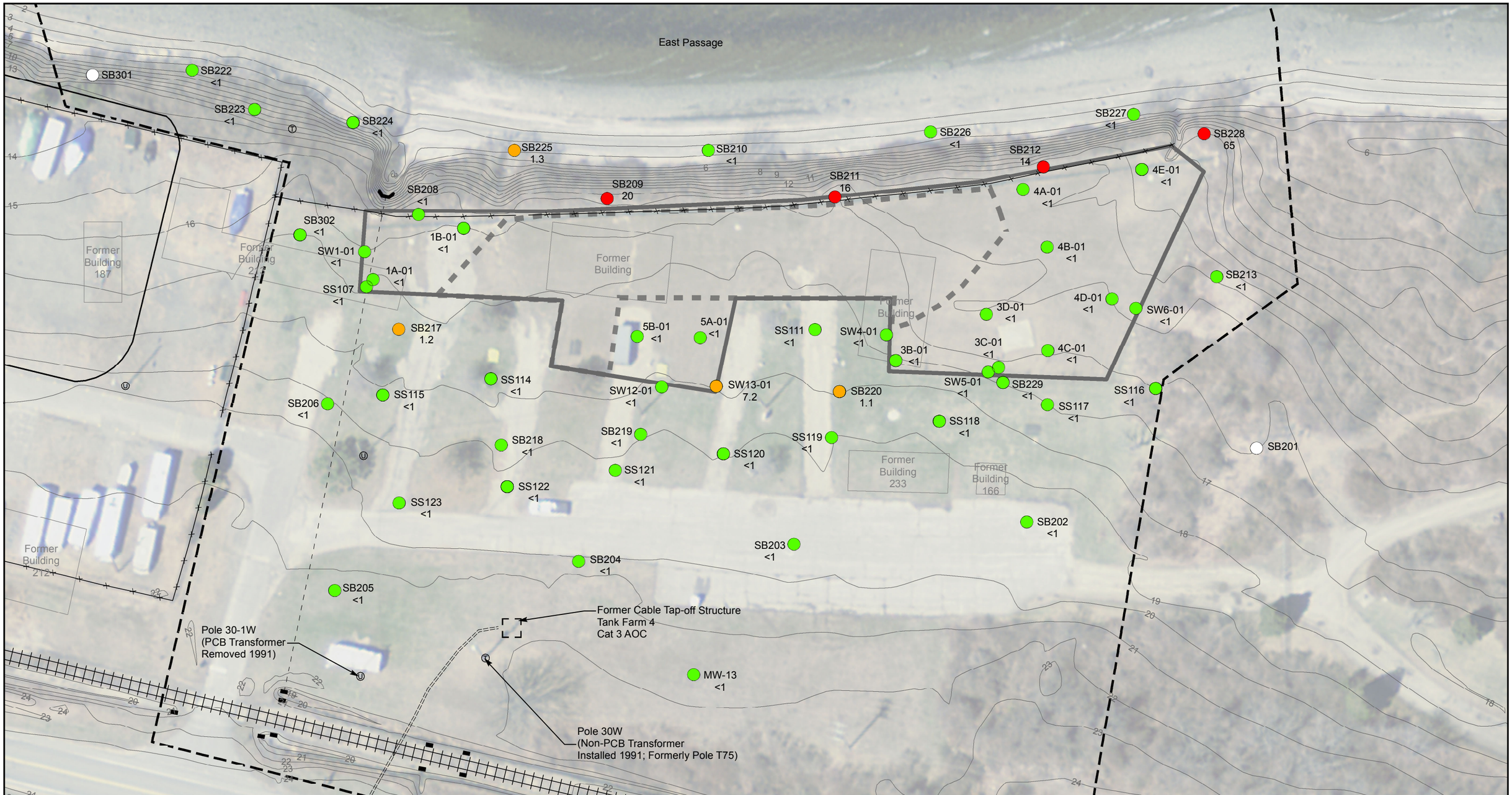
N

0 25 50
Scale in Feet

FIGURE 4-5
DISTRIBUTION OF PAHs IN SHALLOW SOIL

MRP SITE 1, CARR POINT
NAVSTA NEWPORT, RHODE ISLAND

Path: W:\Govt\Projects\Navy CLEAN AECOM-EnSafe JV\Newport\GIS\Projects\Carr_Point\Site_1\RI\MXD\Fig_4_5_Dist_of_PAHs_Shallow_Soil.mxd



RESOLUTION CONSULTANTS

Drawn:	JB	04/28/2015
Approved:	NT	04/28/2015
Project #:	60250336	

Legend

Benzo[a]anthracene (mg/kg)

- non-detect
- < R DEC and < I/C DEC
- > R DEC but < I/C DEC
- > R DEC and > I/C DEC

- Site 1 and IR Site 22 Boundary
- 1 Ft Excavation
- 2 Ft Excavation
- Outfall
- Stormwater Culvert
- Utility Pole
- Utility Pole with Transformer
- Fenceline
- Stormwater Pipeline
- Topographic Contour Line (NAVD 88)

R = Residential
I/C = Industrial/Commercial
DEC = Direct Exposure Criteria (RIDEM, 2011)
Concentrations in mg/kg (ppm)
Shallow Soil = 0-1 Foot Depth
Subsurface Soil = 1-12 Feet Depth

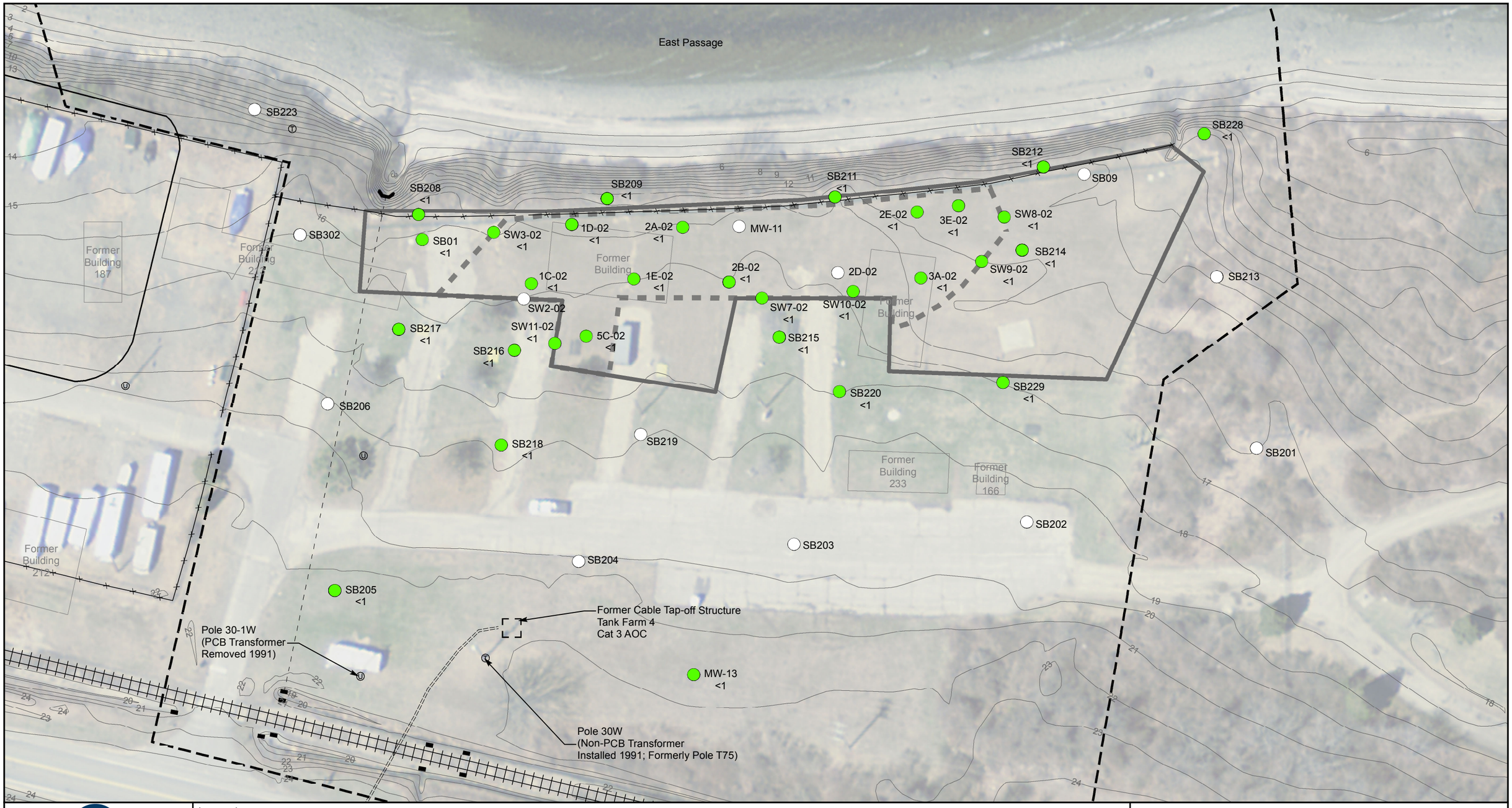
N

0 25 50
Scale in Feet

FIGURE 4-6
DISTRIBUTION OF BENZO[A]ANTHRACENE IN SHALLOW SOIL

MRP SITE 1, CARR POINT
NAVSTA NEWPORT, RHODE ISLAND

Path: W:\Govt\Projects\Navy CLEAN AECOM-EnSafe JV\Newport\GIS\Projects\Carr_Point\Site_1\RI\MXD\Fig_4_6_Dist_of_Benzo_a_anthracene_Shallow_Soil.mxd



RESOLUTION CONSULTANTS

Drawn:	JB	04/28/2015
Approved:	NT	04/28/2015
Project #:	60250336	

Legend

Benzo[a]anthracene (mg/kg)

- non-detect
- < R DEC and < I/C DEC
- > R DEC but < I/C DEC
- > R DEC and > I/C DEC

- Site 1 and IR Site 22 Boundary
- 1 Ft Excavation
- 2 Ft Excavation
- Outfall
- Stormwater Culvert
- Utility Pole
- Utility Pole with Transformer
- Fenceline
- Stormwater Pipeline
- Topographic Contour Line (NAVD 88)

R = Residential
I/C = Industrial/Commercial
DEC = Direct Exposure Criteria (RIDEM, 2011)
Concentrations in mg/kg (ppm)
Shallow Soil = 0-1 Foot Depth
Subsurface Soil = 1-12 Feet Depth

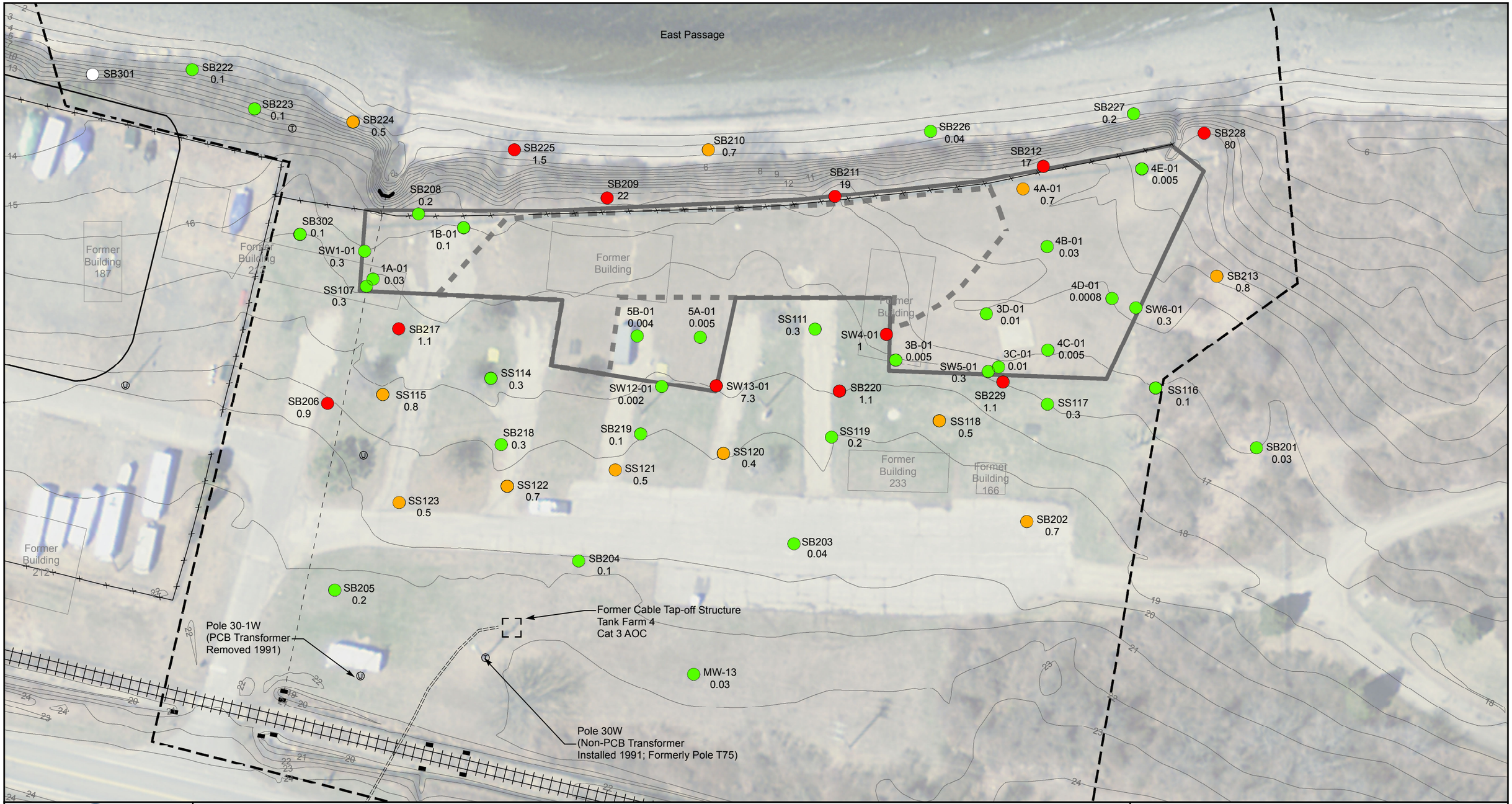
N

0 25 50
Scale in Feet

FIGURE 4-7
DISTRIBUTION OF BENZO[A]ANTHRACENE IN SUBSURFACE SOIL

MRP SITE 1, CARR POINT
NAVSTA NEWPORT, RHODE ISLAND

Path: W:\Govt\Projects\Navy CLEAN AECOM-EnSafe JV\Newport\GIS\Projects\Carr_Point\Site_1\RI\MXD\Fig_4_7_Dist_of_Benzo_a_anthracene_Subsurface_Soil.mxd



RESOLUTION CONSULTANTS

Drawn:	JB	04/28/2015
Approved:	NT	04/28/2015
Project #:	60250336	

Legend

Benzo[a]pyrene (mg/kg)

- non-detect
- < R DEC and < I/C DEC
- > R DEC but < I/C DEC
- > R DEC and > I/C DEC

- Site 1 and IR Site 22 Boundary
- 1 Ft Excavation
- 2 Ft Excavation
- Outfall
- Stormwater Culvert
- Utility Pole
- Utility Pole with Transformer
- Fenceline
- Stormwater Pipeline
- Topographic Contour Line (NAVD 88)

R = Residential
I/C = Industrial/Commercial
DEC = Direct Exposure Criteria (RIDEM, 2011)
Concentrations in mg/kg (ppm)
Shallow Soil = 0-1 Foot Depth
Subsurface Soil = 1-12 Feet Depth

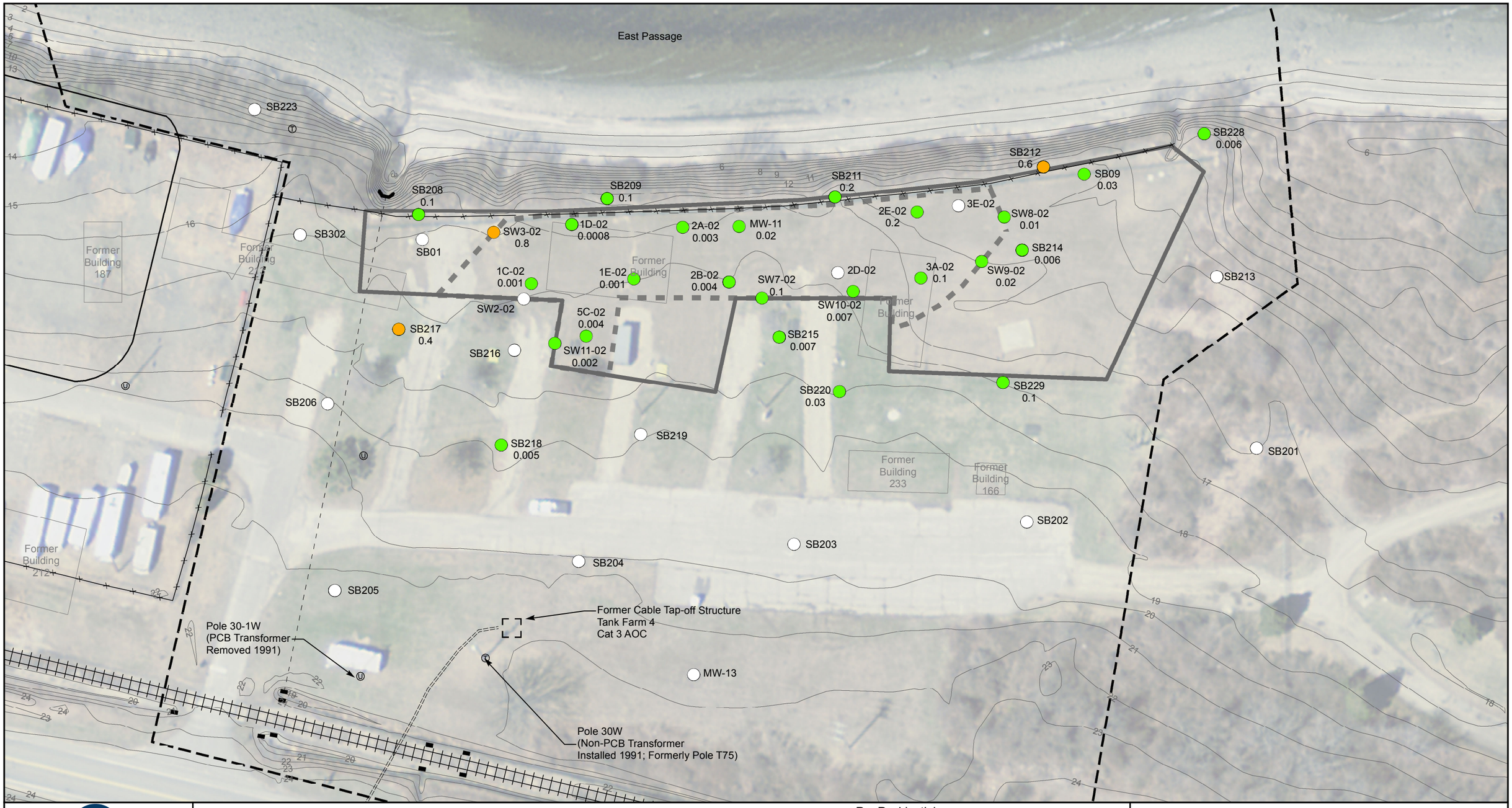
N

0 25 50
Scale in Feet

FIGURE 4-8
DISTRIBUTION OF BENZO[A]PYRENE
IN SHALLOW SOIL

MRP SITE 1, CARR POINT
NAVSTA NEWPORT, RHODE ISLAND

Path: W:\Govt\Projects\Navy CLEAN AECOM-EnSafe JV\Newport\GIS\Projects\Carr_Point\Site_1\RI\MXD\Fig_4_8_Dist_of_Benzo_a_pyrene_Shallow_Soil.mxd



RESOLUTION CONSULTANTS

Drawn:	JB	04/27/2015
Approved:	NT	04/27/2015
Project #:	60250336	

Legend

Benzo[a]pyrene (mg/kg)

- non-detect
- < R DEC and < I/C DEC
- > R DEC but < I/C DEC
- > R DEC and > I/C DEC

- Site 1 and IR Site 22 Boundary
- 1 Ft Excavation
- 2 Ft Excavation
- Outfall
- Stormwater Culvert
- Utility Pole
- Utility Pole with Transformer
- Fenceline
- Stormwater Pipeline
- Topographic Contour Line (NAVD 88)

R = Residential
I/C = Industrial/Commercial
DEC = Direct Exposure Criteria (RIDEM, 2011)
Concentrations in mg/kg (ppm)
Shallow Soil = 0-1 Foot Depth
Subsurface Soil = 1-12 Feet Depth

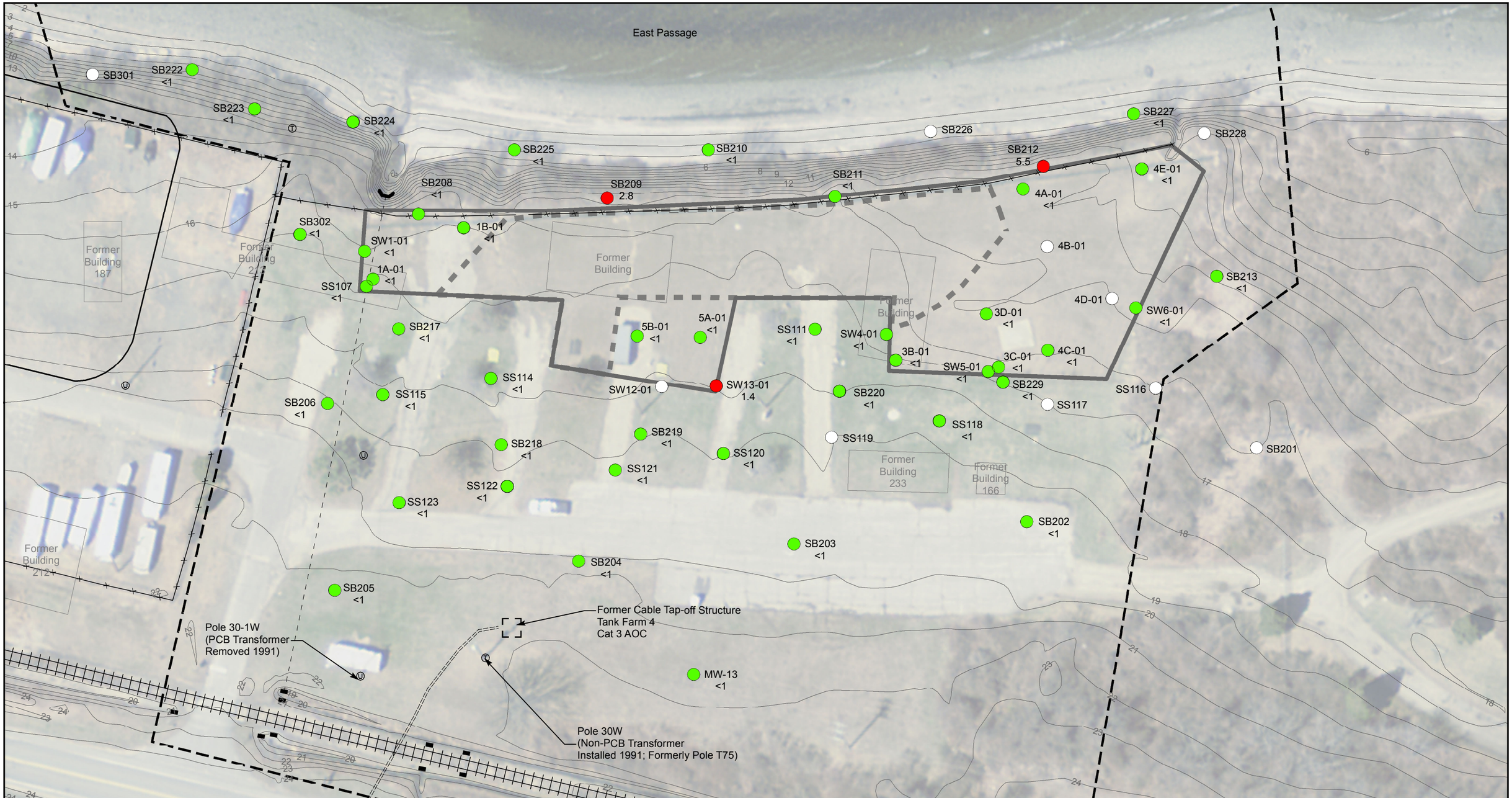
N

0 25 50
Scale in Feet

FIGURE 4-9
DISTRIBUTION OF BENZO[A]PYRENE
IN SUBSURFACE SOIL

MRP SITE 1, CARR POINT
NAVSTA NEWPORT, RHODE ISLAND

Path: W:\Govt\Projects\Navy CLEAN AECOM-EnSafe JV\Newport\GIS\Projects\Carr_Point\Site_1\RI\MXD\Fig_4_9_Dist_of_Benzo_a_pyrene_Subsurface_Soil.mxd



RESOLUTION CONSULTANTS

Drawn:	JB	04/28/2015
Approved:	NT	04/28/2015
Project #:	60250336	

Legend

Dibenz[a,h]anthracene (mg/kg)

- non-detect
- < R DEC and < I/C DEC
- > R DEC but < I/C DEC
- > R DEC and > I/C DEC

- Site 1 and IR Site 22 Boundary
- 1 Ft Excavation
- 2 Ft Excavation
- Outfall
- Stormwater Culvert
- Utility Pole
- Utility Pole with Transformer
- Fenceline
- Stormwater Pipeline
- Topographic Contour Line (NAVD 88)

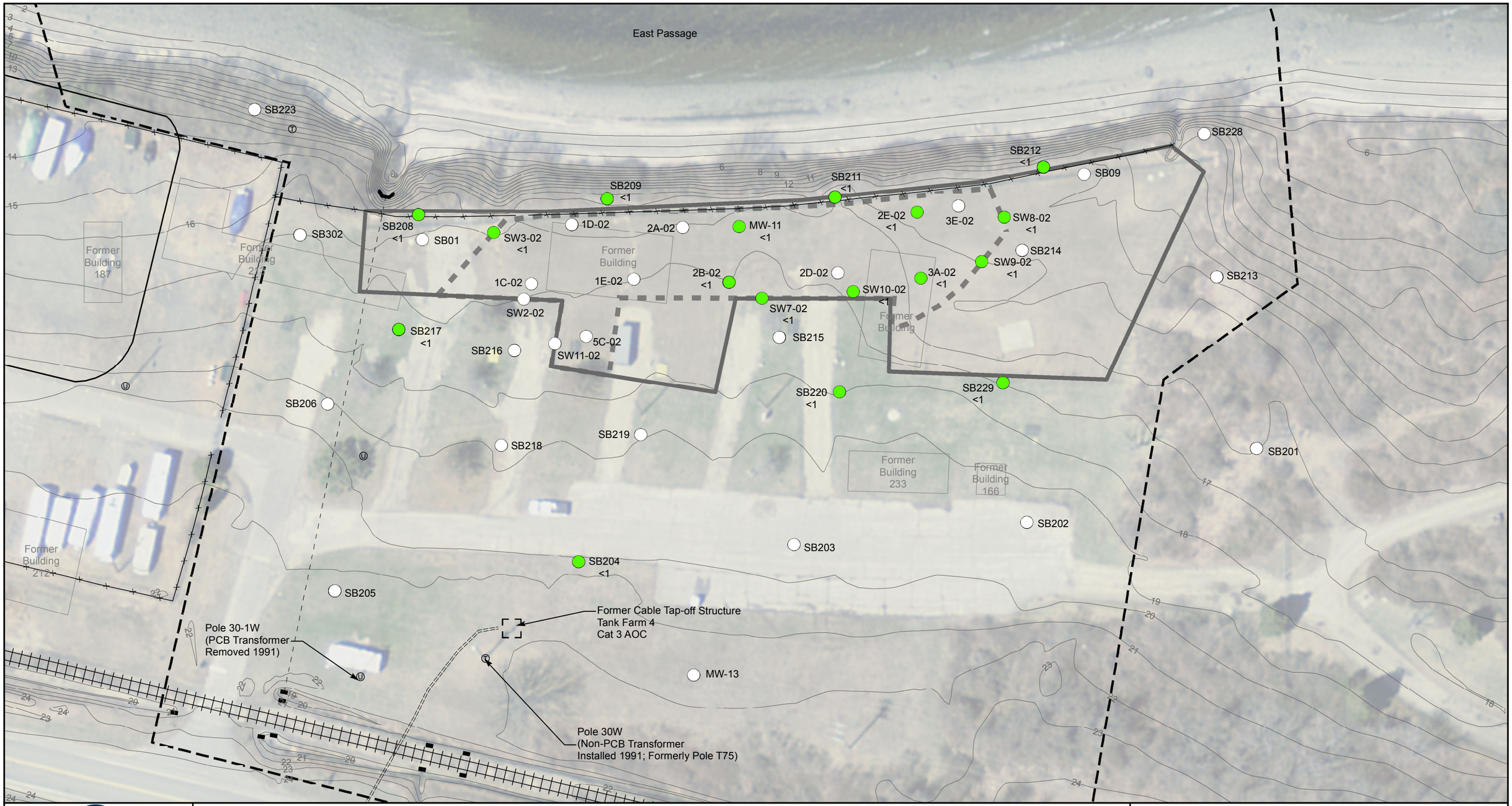
R = Residential
I/C = Industrial/Commercial
DEC = Direct Exposure Criteria (RIDEM, 2011)
Concentrations in mg/kg (ppm)
Shallow Soil = 0-1 Foot Depth
Subsurface Soil = 1-12 Feet Depth

N

0 25 50
Scale in Feet

FIGURE 4-10
DISTRIBUTION OF
DIBENZ[A,H]ANTHRACENE
IN SHALLOW SOIL
MRP SITE 1, CARR POINT
NAVSTA NEWPORT, RHODE ISLAND

Path: W:\Govt\Projects\Navy CLEAN AECOM-EnSafe JV\Newport\GIS\Projects\Carr_Point\Site_1\RI\MXD\Fig_4_10_Dist_of_Dibenza_ah_anthracene_Shallow_Soil.mxd



RESOLUTION CONSULTANTS

Drawn:	JB	04/28/2015
Approved:	NT	04/28/2015
Project #:	60250336	

Legend

Dibenz[a,h]anthracene (mg/kg)

- non-detect
- < R DEC and < I/C DEC
- > R DEC but < I/C DEC
- > R DEC and > I/C DEC

- Site 1 and IR Site 22 Boundary
- 1 Ft Excavation
- 2 Ft Excavation
- Outfall
- Stormwater Culvert
- Utility Pole
- Utility Pole with Transformer
- Fenceline
- Stormwater Pipeline
- Topographic Contour Line (NAVD 88)

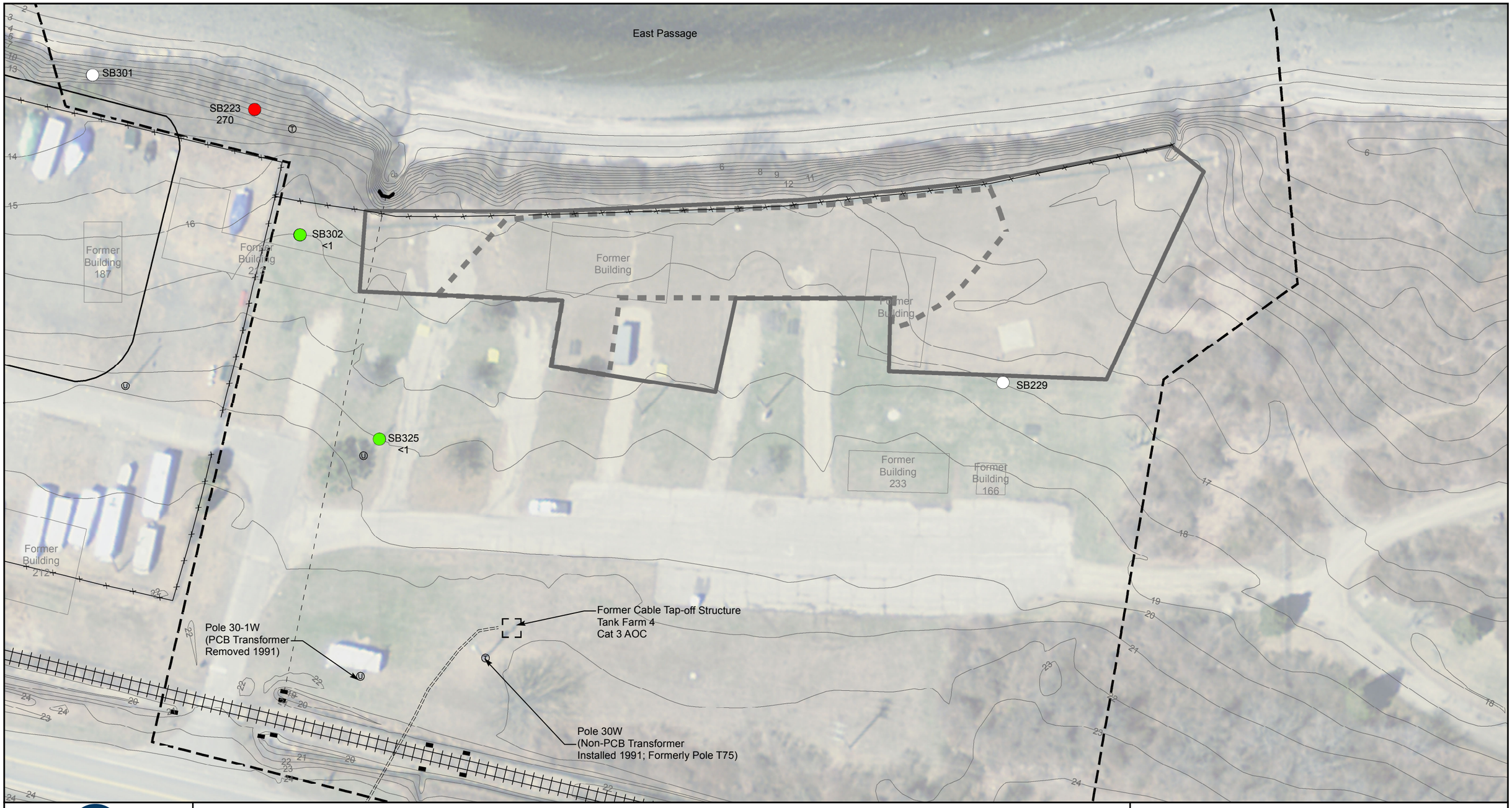
R = Residential
I/C = Industrial/Commercial
DEC = Direct Exposure Criteria (RIDEM, 2011)
Concentrations in mg/kg (ppm)
Shallow Soil = 0-1 Foot Depth
Subsurface Soil = 1-12 Feet Depth

N

0 25 50
Scale in Feet

FIGURE 4-11
DISTRIBUTION OF
DIBENZ[A,H]ANTHRACENE
IN SUBSURFACE SOIL
MRP SITE 1, CARR POINT
NAVSTA NEWPORT, RHODE ISLAND

Path: W:\Govt\Projects\Navy CLEAN AECOM-EnSafe JV\Newport\GIS\Projects\Carr_Point\Site_1\RI\MXD\Fig_4_11_Dist_of_Dibenza_ah_anthracene_Subsurface_Soil.mxd



RESOLUTION CONSULTANTS

Drawn:	JB	04/28/2015
Approved:	NT	04/28/2015
Project #:	60250336	

Legend

Aroclor-1260 (mg/kg)

- non-detect
- < R DEC and < I/C DEC
- > R DEC and > I/C DEC

- Site 1 and IR Site 22 Boundary
- 1 Ft Excavation
- 2 Ft Excavation
- Outfall
- Stormwater Culvert
- Utility Pole
- Utility Pole with Transformer
- Fenceline
- Stormwater Pipeline
- Topographic Contour Line (NAVD 88)

R = Residential
I/C = Industrial/Commercial
DEC = Direct Exposure Criteria (RIDEM, 2011)
Concentrations in mg/kg (ppm)
Shallow Soil = 0-1 Foot Depth
Subsurface Soil = 1-12 Feet Depth

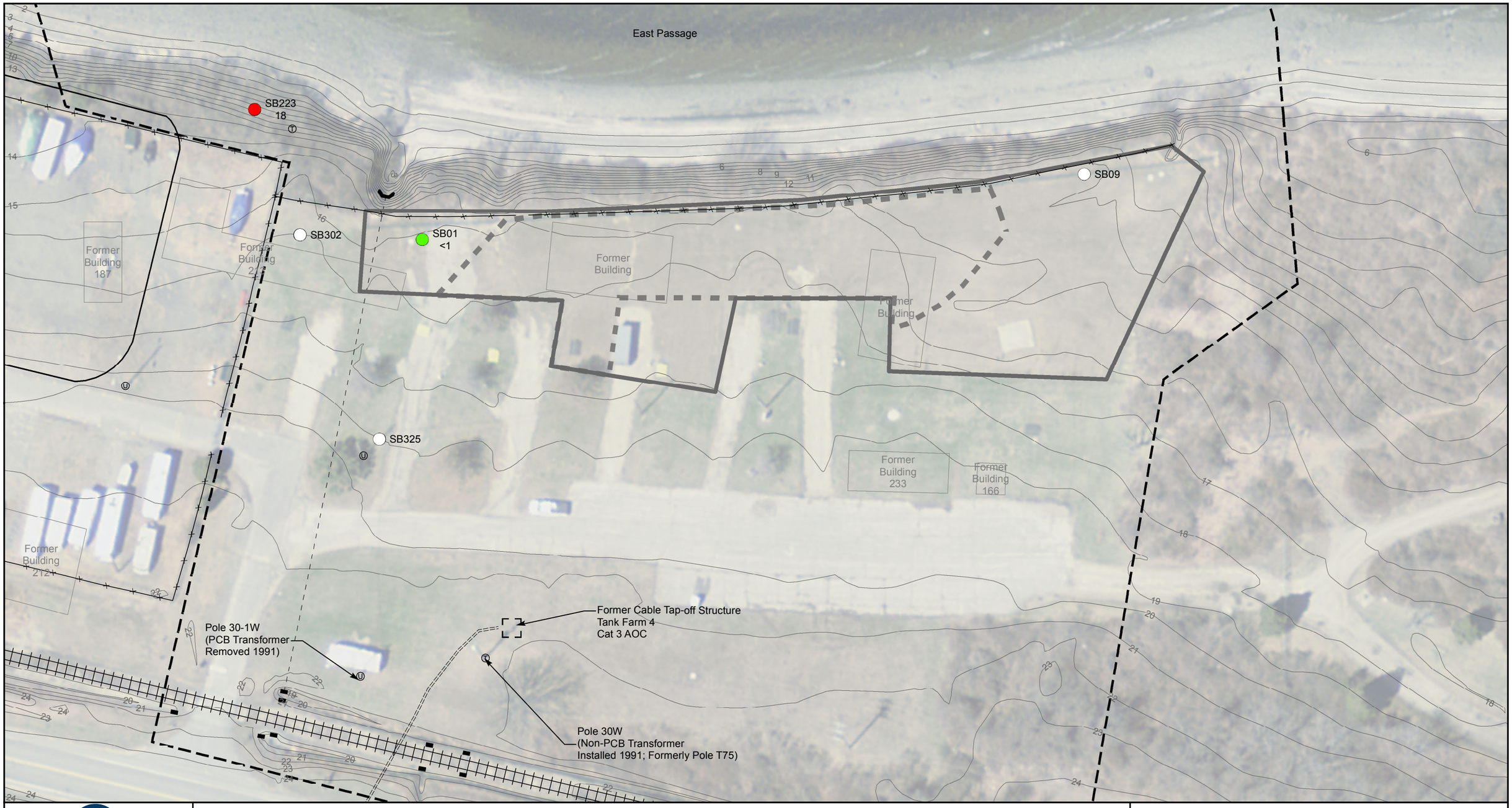
N

0 25 50
Scale in Feet

FIGURE 4-12
DISTRIBUTION OF AROCLOR-1260
IN SHALLOW SOIL

MRP SITE 1, CARR POINT
NAVSTA NEWPORT, RHODE ISLAND

Path: W:\Govt\Projects\Navy CLEAN AECOM-EnSafe JV\Newport\GIS\Projects\Carr_Point\Site_1\RI\MXD\Fig_4_12_Dist_of_Aroclor_1260_Shallow_Soil.mxd



RESOLUTION CONSULTANTS

Drawn:	JB	04/28/2015
Approved:	NT	04/28/2015
Project #:	60250336	

Legend

Aroclor-1260 (mg/kg)

- non-detect
- < R DEC and < I/C DEC
- > R DEC and > I/C DEC

- Site 1 and IR Site 22 Boundary
- 1 Ft Excavation
- 2 Ft Excavation
- Outfall
- Stormwater Culvert
- Utility Pole
- Utility Pole with Transformer
- Fenceline
- Stormwater Pipeline
- Topographic Contour Line (NAVD 88)

R = Residential
I/C = Industrial/Commercial
DEC = Direct Exposure Criteria (RIDEM, 2011)
Concentrations in mg/kg (ppm)
Shallow Soil = 0-1 Foot Depth
Subsurface Soil = 1-12 Feet Depth

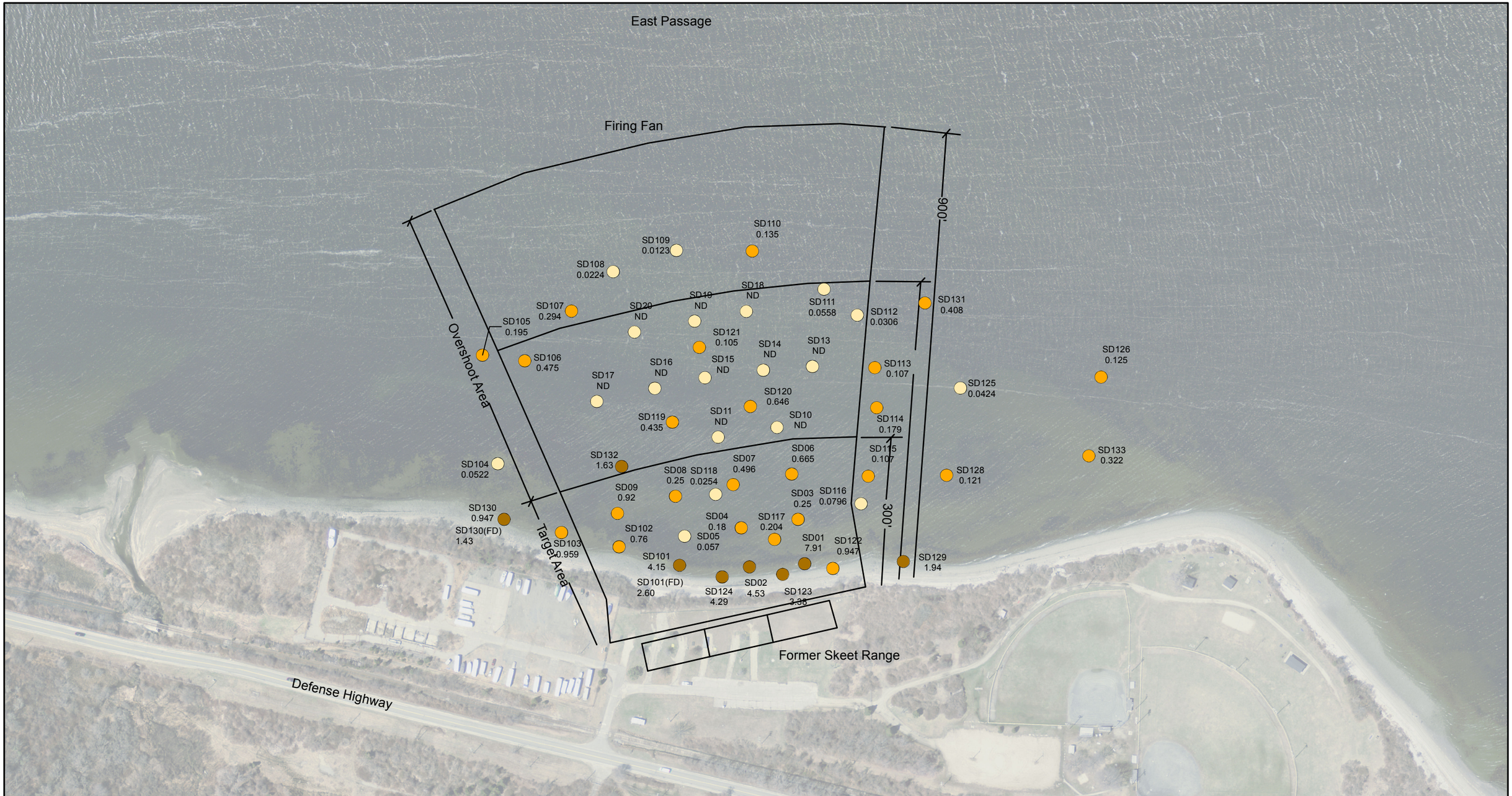
N

0 25 50
Scale in Feet

FIGURE 4-13
DISTRIBUTION OF AROCLOR-1260
IN SUBSURFACE SOIL

MRP SITE 1, CARR POINT
NAVSTA NEWPORT, RHODE ISLAND

Path: W:\Govt\Projects\Navy CLEAN AECOM-EnSafe JV\Newport\GIS\Projects\Carr_Point\Site_1\RI\MXD\Fig_4_13_Dist_of_Aroclor_1260_Subsurface_Soil.mxd



RESOLUTION CONSULTANTS

Drawn:	KS	04/28/2015
Approved:	NT	04/28/2015
Project #:	60250336	

Legend

Total PAHs (mg/kg)

- <0.1
- >0.1 and <1.0
- >1.0

ND - Concentrations of PAHs are below detection limits
SD110(FD) Sample Location (FD - Field Duplicate)
0.453 Total PAH Concentration
Shallow Sediment = 0-1 Foot Depth

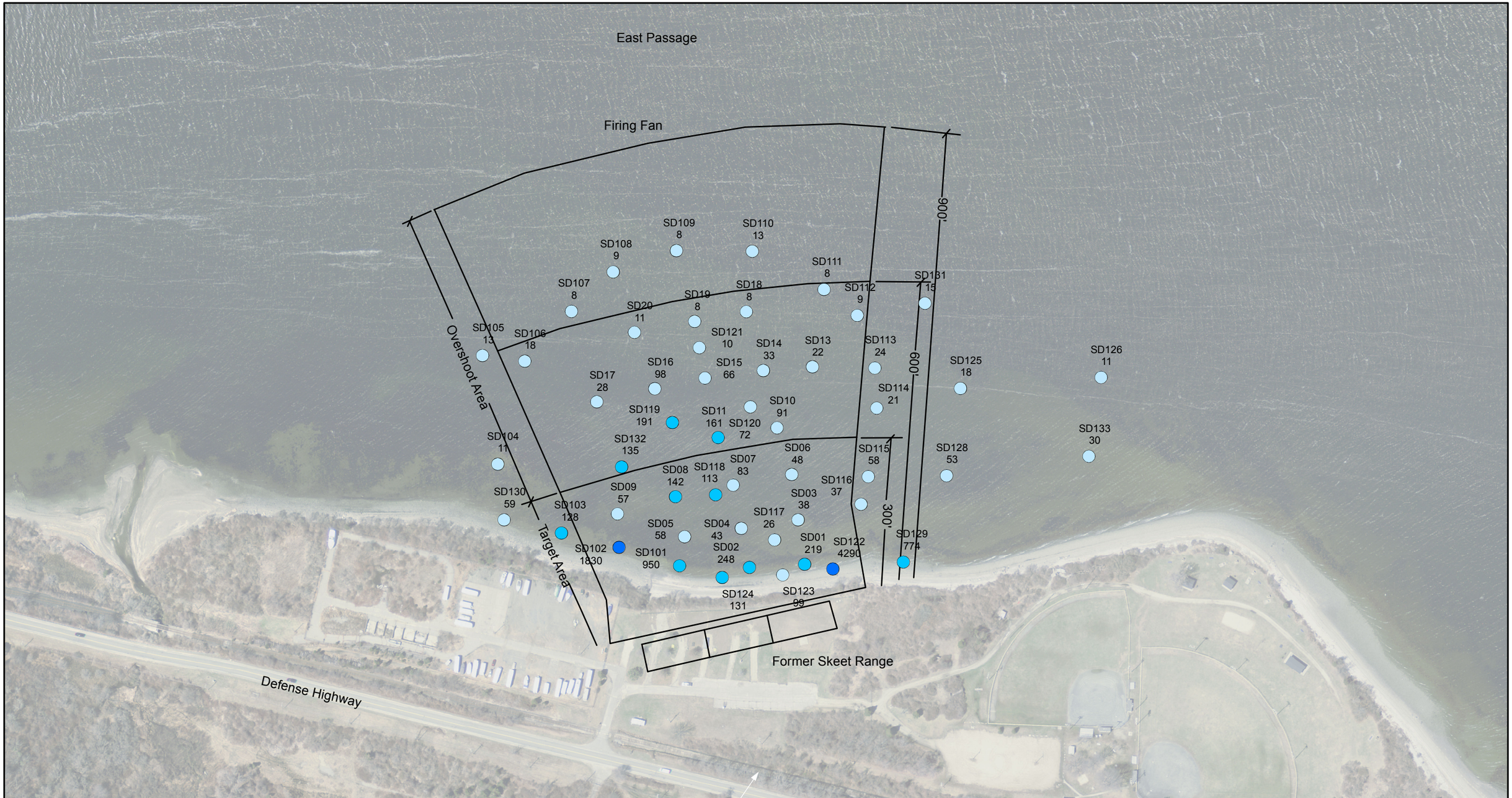
N

0 100 200
Scale in Feet

FIGURE 4-14
DISTRIBUTION OF PAHs
IN SHALLOW SEDIMENT

MRP SITE 1, CARR POINT
NAVSTA NEWPORT, RHODE ISLAND

W:\Govt\Projects\Navy CLEAN AECOM-EnSafe JV\Newport\GIS\Projects\Carr_Point\Site_1\RI\MXD\Fig_4_14_Dist_of_PAHs_in_Shallow_Sediment.mxd



RESOLUTION CONSULTANTS

Drawn:	KS	04/28/2015
Approved:	NT	04/28/2015
Project #:	60250336	

Legend

Lead (mg/kg)

- <100
- >100 and <1,000
- >1,000

Shallow Sediment = 0-1 Foot Depth

N

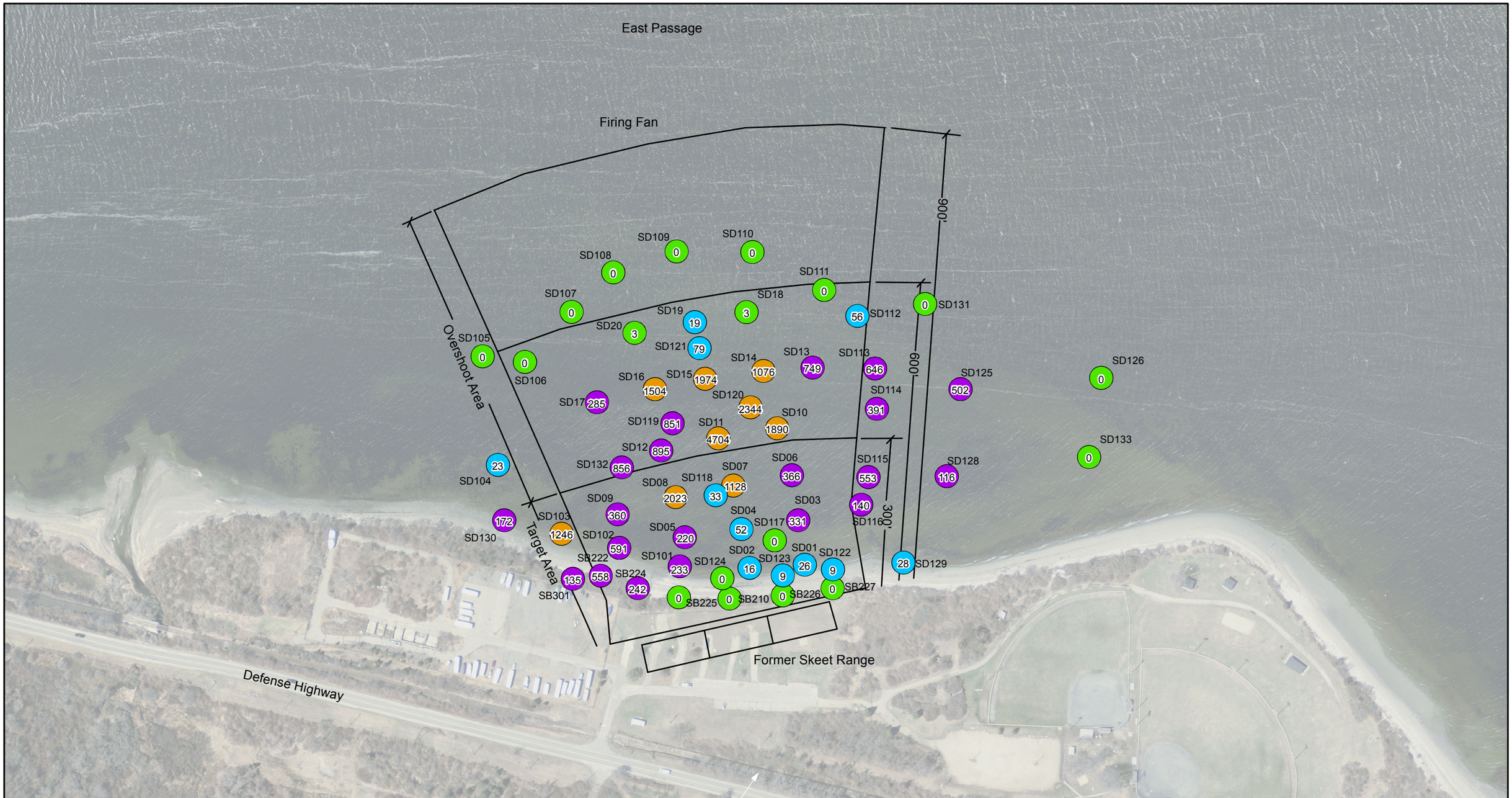
0 100 200

Scale in Feet

FIGURE 4-15
DISTRIBUTION OF LEAD IN SHALLOW SEDIMENT

MRP SITE 1, CARR POINT
NAVSTA NEWPORT, RHODE ISLAND

W:\Govt\Projects\Navy CLEAN AECOM-EnSafe JV\Newport\GIS\Projects\Carr_Point\Site_1\RI\MXD\Fig_4_15_Dist_of_Lead_in_Shallow_Sediment.mxd



RESOLUTION CONSULTANTS

Drawn:	KS	04/28/2015
Approved:	NT	04/28/2015
Project #:	60250336	

Legend

Pellet Count Per Square Foot

- 0 <7
- 50 7 - 100
- 500 101 - 1000
- 5000 >1000

Shallow Sediment = 0-1 Foot Depth

N

0 100 200

Scale in Feet

FIGURE 4-16
PELLET COUNTS IN SHALLOW SOIL AND SEDIMENT

MRP SITE 1, CARR POINT
NAVSTA NEWPORT, RHODE ISLAND

W:\Govt\Projects\Navy CLEAN AECOM-EnSafe JV\Newport\GIS\Projects\Carr_Point\Site_1\RI\MXD\Fig_4_16_Pellet_Counts_in_Soil_and_Sediment.mxd

Appendix A

Human Health Risk Assessment

APPENDIX A
HUMAN HEALTH RISK ASSESSMENT

MRP SITE 1, CARR POINT SHOOTING RANGE
REMEDIAL INVESTIGATION REPORT
NAVAL STATION NEWPORT
RHODE ISLAND

April 28, 2015

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1.0 INTRODUCTION

This appendix presents a human health risk assessment (HHRA) conducted for the Former Carr Point Shooting Range, Munitions Response Program (MRP) Site 1, Operable Unit (OU) 9 located at the Naval Station (NAVSTA) Newport, Rhode Island. Refer to the RI report text for site description and relative information.

The primary objective of the baseline HHRA for MRP Site 1 is to evaluate whether exposure to chemicals of potential concern (COPCs) attributable to past operations has impacted the environment at concentrations that may pose risk to human health above USEPA target levels.

The focus of the evaluation is the quantitative estimation of current and potential future risks and hazards to current and potential future human receptors who may contact chemicals in soil, sediment, and groundwater at MRP Site 1. In addition, potential contributions of shellfish tissue ingestion have been evaluated for potential hypothetical future residents.

The HHRA was conducted in accordance with Navy Human Health Risk Assessment Guidance (2008). This approach is consistent with Risk Assessment Guidance for Superfund (RAGS) (USEPA, 1989) and other related guidance. Additional guidance documentation includes, but is not limited to, the following:

- Navy Policy for Conducting Human Health Risk Assessments Under the Environmental Restoration Program (DON, 2001)
- Department of the Navy Environmental Restoration Program (NERP) Manual (DON, 2006)
- Navy Human Health Risk Assessment Guidance (DON, 2008)
- Navy Policy on the Use of Background Chemical Levels (DON, 2004)
- Risk Assessment Guidance for Superfund (RAGS), Volume 1, Human Health Evaluation Manual (Parts A, B, D, E, and F) (USEPA 1989, 1991a, 2001a, 2004)
- Human Health Evaluation Manual, Supplemental Guidance: Standard Default Exposure Factors, Memorandum (USEPA, 1991b)
- Exposure Factors Handbook (EFH) (USEPA, 2011)
- Human Health Evaluation Manual, Supplemental Guidance: Update of Standard Default Exposure Factors. February 6, 2014 (USEPA, 2014a)

- Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites (USEPA, 2002c)
- Human Health Toxicity Values in Superfund Risk Assessments (USEPA, 2003a)

Pursuant to Navy Policy 5090 Ser N453E/1U5951 (DON, 2001), the determination of human health risk at a site is clearly prescribed to ensure sufficient resources are allocated for the protection of human health. The Navy Policy for conducting HHRAs identifies a three-tiered approach that may be implemented in its entirety depending upon the level and magnitude of incremental risk or hazard that is determined in prior tiers. The tiers of evaluation that were followed to conduct the HHRA are as follows.

Tier IA – Human Health Risk-Based Screening Evaluation

The Tier IA includes the following:

- Identification and summarization of relevant datasets.
- Refinement of the Conceptual Site Model (CSM) for potentially complete exposure pathways for both current and future land uses.
- Identification of COPCs for further quantitative evaluation in the site-specific risk assessment (Tier II).

The Tier IB, Site-Specific Risk-Based Screening Evaluation is an optional tier which allows for development of and comparison to site-specific risk-based screening levels. This tier of evaluation was not conducted for the HHRA.

Tier II - Baseline Human Health Risk Assessment (BHHRA)

The Tier II includes the following:

- Data Evaluation and Reduction. Conducted in Tier IA.
- Exposure Assessment. Includes reevaluation of the CSM, if appropriate and necessary, and identification of potential receptors, pathways, and intake factors for both current and future land uses.
- Toxicity Assessment. Includes the hazard identification and dose-response assessment processes in which it is determined whether exposure to a chemical can cause an adverse health effect in humans; and where toxicity values and chemical-specific values for carcinogenic and non-carcinogenic COPCs are identified.

- Risk Characterization. Integrates the toxicity and exposure assessments to estimate risk associated with COPCs at the site and identifies risk-based chemicals of concern (COCs) above target risk/hazard levels.
- Uncertainty Analysis. Discusses the uncertainty associated with all aspects of the HHRA or limitations that may have a significant impact on the outcome of the HHRA due to an under- or over-estimation of risk.

Tier III – Risk Evaluation of Remedial Alternatives

A Tier III Risk Evaluation of Remedial Alternatives (RERA) is initiated when the results of the Tier I or Tier II assessment identify site-related risk-based COCs for the site. The Tier III includes the following:

- An evaluation of the potential human health risks associated with remedial alternatives.
- The development of site-specific risk-based cleanup levels (RBCLs) as necessary.

Section 3.0 of this document presents the Tier 1A Risk-Based Screening Evaluation. Section 4.0 of this document presents the Tier II BHHRA. The Tier III will be presented separately, if warranted.

Table 1 (Selection of Exposure Pathways) provides a conceptual model for MRP Site 1, identifying the exposure media, exposure points, receptors, and routes of exposure quantitatively evaluated as part of the HHRA.

2.0 DATA EVALUATION AND COPC SELECTION

The purpose of this section is the determination of the type and amount of chemicals present at the site and the selection of the COPCs with regard to human health. In addition, this section summarizes the methodology used to determine EPCs for COPCs in each medium.

2.1 Data Used in Risk Assessment

The following sections summarize the environmental data available for use for each of the media quantitatively evaluated in the HHRA. A listing of available samples and those used in the risk assessment are presented in Attachment A, along with tables showing analytical results.

Environmental data used in this HHRA include surface soil, subsurface soil, sediment, groundwater and shellfish tissue collected by TetraTech, Terranear PMC, or Resolution Consultants on behalf of the Navy between 2009 and 2014. A detailed discussion of the TetraTech sampling can be found in the Site Investigation Report (TetraTech, 2010) and the Construction Completion Report for the Non-Time Critical Removal Action (NTCRA; Terranear PMC, 2013) summarizes the post-excavation sampling conducted following the soil removal effort conducted in 2013. A detailed discussion of the 2013 and 2014 sampling events can be found in the main RI report.

Soil. Most investigations at MRP Site 1 have been related to use of the area as a shooting range, with focus on metals and polycyclic aromatic hydrocarbons (PAHs). There have been both surface and subsurface soil samples collected, down to depths of 40 ft bgs. A removal action negated some of the previously collected samples, but post-excavation samples have also been included in the data set. As defined in the Risk Assessment Work Plan Technical Memorandum for NAVSTA Newport, Rhode Island (Resolution, 2013a), evaluations in this risk assessment are focused on potential exposure to surface soils (0 to 1 ft bgs) and surface/subsurface soils (0 to 12 ft bgs). Attachment A presents the list of available samples and further description of inclusion/exclusion in the HHRA. Soil samples collected from depths greater than 12 feet below ground surface have not been included in the evaluation since it is unlikely that typical human activities will result in contact with and/or movement of these deeper soils during future excavation activities (Resolution, 2013a). This approach is also consistent with USEPA guidance (USEPA, 2001b) which recommends the inclusion of subsurface soil samples from depths that may reasonably be expected to be contacted or moved to the surface during typical activities anticipated at the site.

Surface soil data are summarized in Table 2.1 and surface/subsurface soil data are summarized in Table 2.2. The soil summary tables provide the frequency of detection, range of detection limits,

range of detected concentrations, and location of maximum detected result for each detected chemical.

Sediment. As the MRP Site 1 shooting arc extends out over Narragansett Bay, sediment samples were collected to evaluate exposure to any potential site-related contamination. While much of the area is covered with cobbles and there is a sign posted on the site restricting swimming in the bay, exposure to the sediments below has been conservatively evaluated in this risk assessment. Evaluations in this risk assessment are focused on potential exposure to near-shore sediments where wading may occur. Furthermore, shallow sediments (0 to 1 ft bgs) have been included in the evaluation, while deeper samples (collected for nature and extent evaluation purposes) have not been included, as they are not expected to be accessible to humans. Attachment A presents the list of available samples and further description of inclusion/exclusion in the HHRA.

Sediment data are summarized in Table 2.3. The sediment summary table provides the frequency of detection, range of detection limits, range of detected concentrations, and location of maximum detected result for each detected chemical.

Groundwater. Groundwater samples were collected at the site to determine any site-related impacts. While the groundwater at the site is not anticipated to be used as a drinking water supply, the HHRA evaluates the potential future use of groundwater as a potable water supply. In addition, shallow groundwater (represented via wells with top of screens above 12 feet bgs) exposures by a construction worker are evaluated in the HHRA. As volatile organic compounds (VOCs) were not analyzed at MRP Site 1 in groundwater (not required by the Sampling and Analysis Plan [SAP; Resolution, 2013b] as VOCs were not an expected/known analyte of concern based on historical site activities), VOC inhalation (either through vapor intrusion into future site buildings, or in trench air for a construction worker) has not been evaluated. Attachment A presents the list of available groundwater samples and further description of inclusion/exclusion in the HHRA.

Groundwater data are summarized in Table 2.4 (shallow groundwater) and Table 2.5 (site-wide groundwater). The summary tables provide the frequency of detection, range of detection limits, range of detected concentrations, and location of maximum detected result for each detected chemical.

Shellfish Tissue. Similar to sediment, shellfish tissue samples were collected to evaluate exposure to any potential site-related contamination. While much of the area is covered with cobbles and there is a sign posted on the site restricting shellfishing in the bay, ingestion of

shellfish tissue has been conservatively evaluated in this risk assessment. Attachment A presents the list of available samples.

Shellfish data are summarized in Table 2.6. The shellfish summary table provides the frequency of detection, range of detection limits, range of detected concentrations, and location of maximum detected result for each detected chemical.

2.2 Background

A background dataset of metals in soil was generated in 2007 to define typical metals conditions in various soil types at NAVSTA Newport (Tetra Tech, 2007). The data collected from the Merrimac Sandy Loam (MmA) soil types were used in the MRP Site 1 soil background evaluation. MmA is the dominant soil type at the site. There are also background data available from NAVSTA Newport that was generated during other site-specific investigations. These data were not used but may be considered in the future should the need to develop Remedial Action Objectives (RAOs) occur.

In addition, site-specific reference samples were collected for sediment and shellfish tissue and compared to site data using statistical tests to evaluate consistency between the data sets.

Appendix E of the RI Report provides the evaluation of background and site soil, sediment, and shellfish tissue data sets.

Due to the limited size of the background shellfish tissue dataset, statistical comparisons between background and site data sets were not conducted, but Appendix E evaluates the data using graphical comparisons. For shellfish tissue, arsenic, barium, selenium, and zinc concentrations at the site appear to be similar to background based on the graphical comparisons.

For surface soil, a sufficient number of samples was available to conduct statistical comparisons between background and site data sets. For surface soil, vanadium concentrations at the site were found to be less than or similar background concentrations.

For subsurface soil, a sufficient number of samples was available to conduct statistical comparisons between background and site data sets. For subsurface soil, chromium (total) concentrations at the site were found to be less than or similar background concentrations.

For sediment, a sufficient number of samples was available to conduct statistical comparisons between background and site data sets. For sediment, arsenic, cobalt, copper, manganese,

mercury, nickel, vanadium, and PAH concentrations at the site were found to be less than or similar background concentrations.

2.3 Data Treatment

Analytical data were evaluated/validated and qualified prior to use in the risk assessment. Data evaluation/validation included a comparison of the site data to corresponding blank (laboratory, field, equipment, and trip) concentration data. Data rejected by the evaluation ("R" qualified) were not used. Estimated values (e.g., "J" qualified) were used in the risk assessment without modification. If the value was flagged with "U" or "UJ", the result was considered a nondetected (an undetected) value.

Prior to using analytical data for a primary sample with an associated field duplicate, the analytical values for the primary sample and the field duplicate were combined together to provide a single set of values for the field duplicate pair. The following conventions were used for combining field duplicate samples together:

Where both the sample and the duplicate are detected, the resulting values will be the higher of the detected results.

Where both the sample and the duplicate are not detected, the resulting values will be the higher of the limit of detection (LOD).

Where one of the pair is reported as not detected and the other is detected, the detected concentration will be used.

Frequency of detection was calculated as the number of samples in which the chemical was detected over the total number of samples analyzed after the exclusion of rejected ("R" qualified) data and the resolution of duplicates as described above.

Additionally, for sediment and surface soil, there were locations where two samples existed in the 0 to 1 ft bgs interval (i.e., 0 to 0.5 ft and 0.5 to 1 ft). To establish consistency between data sets, as recent samples were collected from 0 to 1 ft bgs, the two sample intervals were combined to create a 0 to 1 ft bgs result. The combination of intervals was performed similarly to the resolution of duplicates described above, with the only difference being that where both the sample and the duplicate are detected, the resulting values will be the average of the detected results.

Chromium is most commonly present in the environment in the trivalent state because typical conditions in the environment favor the reduction of chromium from the hexavalent to the trivalent

state. However, a subset of soil, sediment, and groundwater samples were collected and analyzed for hexavalent chromium. There were limited detections of hexavalent chromium in sediment and subsurface soil. Therefore, total chromium results were conservatively estimated to be hexavalent chromium, including in surface soil (based on a limited data set and the subsurface soil detection) and shellfish tissue (based on the sediment detections).

3.0 TIER IA HUMAN HEALTH RISK BASED SCREENING EVALUATION

3.1 Identification of COPCs

The Tier IA COPC selection process includes identification of COPCs based on the chemical substances found at the site. This list was developed using the screening process described below. For each medium evaluated, all available and appropriate data from each media were used to select COPCs.

3.1.1 Selection Criteria

Soil

For each soil dataset, the maximum detected concentration of a chemical in soil was compared to the most current Regional Screening Levels (RSLs) published by USEPA (USEPA, 2015). The RSLs are based on a target excess lifetime cancer risk (ELCR) of $1x10^{-6}$ and a target HQ of 0.1. The RSLs based on a target hazard quotient (HQ) of 0.1 were utilized to account for cumulative effects of multiple compounds acting on the same target organ.

Residential soil RSLs were used for selection of COPCs for the residential, recreational user, and adolescent trespasser receptors. As defined in the Risk Assessment Work Plan Technical Memorandum (Resolution, 2013a), industrial RSLs were used to select COPCs for the worker receptors.

Groundwater

For each groundwater dataset, the maximum detected concentration of each chemical was compared to the following screening levels:

- USEPA Maximum Contaminant Levels (MCLs) (USEPA, 2012)
- USEPA Tap Water RSLs (USEPA, 2015); RSLs for non-carcinogenic chemicals were divided by ten to account for cumulative effects on the same target organ.

Although conservative for evaluation of a construction worker since it is not a drinking water scenario, the lower of the USEPA MCLs and USEPA Tap Water RSLs was used to select COPCs for further evaluation of the incidental ingestion, dermal contact, and inhalation via contact during excavation.

As noted earlier, VOCs were not analyzed in groundwater at MRP Site 1, so inhalation scenarios were not evaluated.

Sediment

Published human health screening levels for sediment are not available. Therefore, sediment screening levels were derived on a site-specific basis using the online USEPA RSL Calculator [http://epa-prgs.ornl.gov/cgi-bin/chemicals/csl_search] by altering the residential soil RSLs based on the exposure factors below, which were conservative (reasonable maximum exposure [RME]; see Section 4.0 for further discussion) inputs of site-specific sediment exposure for receptors at the site:

- Exposure frequency (days/year) – 52
- Exposure duration (years) – Adult – 20; Child – 6
- Exposure time (hours/day) – 0 (The inhalation pathway is not applicable for sediment; fugitive dust/particulates are not generated due to the sediment's water content)
- Skin surface area (cm^2/day) – Adult – 4780; Child – 1364
- Adherence factor (mg/cm^2) – 0.4
- Ingestion/intake rate (mg/day) – Adult – 100; Child – 200
- Body Weight (kg) – Adult – 80; Child – 15

Sediment screening levels for non-carcinogenic chemicals were divided by ten to account for potential cumulative effects on the same target organ. The screening level development calculation results are presented in Attachment B.

Shellfish Tissue

The maximum detected concentration of a chemical in shellfish tissue was compared to the most current RSLs provided by USEPA via the online RSL Calculator [http://epa-prgs.ornl.gov/cgi-bin/chemicals/csl_search].

Shellfish screening levels for non-carcinogenic chemicals were divided by ten to account for potential cumulative effects on the same target organ.

A maximum detected chemical concentration less than its screening and regulatory value(s) indicated that the excess lifetime cancer risk associated with exposure to that chemical concentration would be less than one in one million and the HQ associated with exposure would be less than 0.1. Chemicals detected at concentrations below their regulatory and screening criteria were, therefore, eliminated from further evaluation. Chemicals with maximum concentrations greater than the relevant screening and regulatory criteria were selected as COPCs (see Section 4.5 for discussion of site background).

Comparisons of maximum concentrations to screening and regulatory criteria are presented in the data summary tables for each medium (Tables 2.1 through 2.6). For certain analytes lacking compound-specific screening criteria (e.g., endrin ketone), a conservative surrogate compound was selected (e.g., endrin) and its screening criteria was used for COPC screening. Specific instances where surrogate assignments were made are identified in footnotes on Tables 2.1 through 2.6.

As defined in the Risk Assessment Work Plan Technical Memorandum for NAVSTA Newport, Rhode Island (Resolution, 2013a), essential nutrients (calcium, magnesium, potassium, and sodium) will not be retained as COPCs.

3.1.2 Chemicals Selected as COPCs

This subsection describes the chemicals selected as COPCs and refers to lists of the selected chemicals. Tables 2.1 through 2.6 list all chemicals detected in each medium as well as the chemicals selected as COPCs based on comparison to screening and regulatory criteria. The maximum detected results for the following compounds were selected as COPCs:

Surface Soil (non-worker scenarios): benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene, nitroglycerin, 4,4'-DDT, aroclor-1260, aluminum, antimony, arsenic, chromium, cobalt, iron, lead, manganese, and thallium

Surface Soil (worker scenarios): benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene, 4,4'-DDT, aroclor-1260, antimony, arsenic, chromium, iron, and lead

Subsurface Soil (non-worker scenarios): benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene, nitroglycerin, 4,4'-DDT, aroclor-1260, aluminum, antimony, arsenic, chromium, cobalt, iron, lead, manganese, and thallium

Subsurface Soil (worker scenarios): benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene, 4,4'-DDT, aroclor-1260, antimony, arsenic, chromium, iron, lead, and manganese

Sediment: benzo(a)pyrene, benzo(b)fluoranthene, dibenz(a,h)anthracene, antimony, arsenic, chromium, cobalt, iron, lead, and manganese

Shallow Groundwater: cobalt, iron, and manganese

Groundwater: antimony, cobalt, iron, and manganese

Shellfish Tissue: benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene, arsenic, chromium, cobalt, iron, lead, and mercury

4.0 TIER II BASELINE HUMAN HEALTH RISK ASSESSMENT

The development of the risk assessment as a baseline to human health is presented in the following sections.

4.1 Determination of Exposure Point Concentrations

To evaluate the magnitude of potential human exposures, the concentration of each COPC in each exposure medium is estimated. An estimate of this concentration is referred to as an exposure point concentration (EPC). EPCs for evaluation of the RME and central tendency exposure (CTE) scenarios for each dataset were calculated as described below.

Soil, sediment, and shellfish tissue EPCs and groundwater EPCs for evaluation of the construction/utility worker exposure pathways were equal to the 95% upper confidence limit (95% UCL) on the arithmetic mean concentration or the maximum concentration, whichever is lower (USEPA, 2002a). Prior to EPC calculation, data were reviewed to determine if there are any potential hot spots at the site. None were determined to exist. USEPA's ProUCL Version 5.0.00 software (USEPA, 2013b) was used to calculate the 95% UCL. Based on information presented in the ProUCL guidance (USEPA, 2013a) regarding minimum sample size and frequency of detection, UCLs were calculated where at least 10 samples and at least 6 detects are available. When the minimum sample size and number of detects were not met for a dataset, or if the UCL was greater than the maximum detected concentration, the maximum detected concentration was used as the EPC for the RME scenario. In those cases, the arithmetic mean concentration was used as the EPC for the CTE scenario. ProUCL output is contained in Attachment C.

Groundwater EPCs for evaluation of the on-site worker and hypothetical future on-site residential exposure pathways were established on a well-by-well basis, using maximum detected concentrations. Results from multiple sampling events may be averaged within a well to account for potential variations in concentration over time.

EPCs for COPCs in fugitive dust (outdoor air) were predicted by combining soil EPCs with a particulate emission factor (PEF) calculated in accordance with USEPA guidance (2002c).

Tables 3.1.RME/CT through 3.6.RME/CT present the EPCs that were selected for each medium's list of COPCs.

4.2 Exposure Assessment

The purpose of the exposure assessment is the quantification of the extent, frequency, and duration of actual or potential exposure to chemicals by pathways relevant to the site and activities of the potential receptors.

As part of the exposure assessment, current and potential future exposure pathways were determined through which identified populations may potentially be exposed to COPCs at MRP Site 1.

An exposure pathway describes the course a chemical follows while moving through environmental media to the receptor. An exposure pathway may consist of a mechanism of release of contaminants to an environmental medium (e.g., soil), an exposure route (e.g., ingestion), and a receptor (e.g., groundskeeper). An exposure pathway is considered complete when contact by a receptor with contaminated media may occur under current site conditions or in the future. For purposes of this risk assessment, only potentially complete exposure pathways were quantitatively evaluated.

USEPA (1989 and 1991a) guidance requires that plausible exposures under both current and future land-use scenarios be evaluated in a risk assessment. Table 1 presents a summary of the current and potential future exposure routes quantitatively evaluated in the HHRA as well as the human receptors.

As described in the Sampling and Analysis Plan for the site (Resolution, 2013b), primary sources of contamination at the site consist of painted clay pigeons, associated clay pigeon fragments, and lead shot. Propellants may also exist in soils within portions of the clay pigeon launching/firing arc area that were not addressed as part of a recent removal action. Primary release mechanisms consist of direct discharge of materials to the surface soil in the former shooting range areas, as well as direct impacts into Narragansett Bay from airborne clay pigeons and lead shot. Secondary release mechanisms could include volatilization of certain PAHs, generation of fugitive dust from soil, chemical leaching into groundwater, groundwater discharge into Narragansett Bay, and food-chain uptake.

For future land-use scenarios, it is assumed that there would be some level of construction to convert the area to the desired use. Therefore, it is assumed that current subsurface soils may be brought to the surface and become available for exposure by future receptors.

The following summarizes the pathways quantitatively evaluated for each exposure scenario:

Young child/adult recreational user scenario, current
- Ingestion pathways: surface soil, sediment
- Dermal contact pathways: surface soil, sediment
- Inhalation pathways: inhalation of particulates

Adolescent trespasser scenario, current
- Ingestion pathways: surface soil, sediment
- Dermal contact pathways: surface soil, sediment
- Inhalation pathways: inhalation of particulates

Adult onsite worker scenario, current
- Ingestion pathways: surface soil
- Dermal contact pathways: surface soil
- Inhalation pathways: inhalation of particulates

Adult construction worker scenario, current/future
- Incidental ingestion pathways: surface/subsurface soil, shallow groundwater
- Dermal contact pathways: surface/subsurface soil, shallow groundwater
- Inhalation pathway: particulates in outdoor air

Adolescent trespasser scenario, future
- Ingestion pathways: surface/subsurface soil, sediment
- Dermal contact pathways: surface/subsurface soil, sediment
- Inhalation pathways: inhalation of particulates

Adult onsite worker scenario, future
- Ingestion pathways: surface/subsurface soil, groundwater
- Dermal contact pathways: surface/subsurface soil, groundwater
- Inhalation pathways: inhalation of particulates

Young child/adult hypothetical resident scenario, future

Ingestion pathways: surface/subsurface soil, sediment, groundwater, shellfish tissue

Dermal contact pathways: surface/subsurface soil, sediment, groundwater

Inhalation pathways: inhalation of particulates

4.2.1 Calculation of Dose

The purpose of the exposure assessment is to identify exposure equations to be used in the risk assessment and to document assumptions made for each of the parameters used in these equations. USEPA guidance documents used in this exposure assessment include RAGS, Part A (USEPA, 1989); Exposure Factors Handbook (USEPA, 1997; 2011); Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites (USEPA, 2001b); RAGS Part E (Supplemental Guidance for Dermal Risk Assessment) (USEPA, 2004); and Supplemental Guidance: Update of Standard Default Exposure Factors (USEPA, 2014a).

Equations are presented for the calculation of chronic daily intake (CDI) values for the ingestion, dermal contact, and inhalation pathways of exposure. The equations are used for calculating a lifetime average daily dose (LADD) relevant to cancer risk (i.e., cancer intake) or for calculating an average daily dose (ADD) relevant to noncancer hazard (i.e., noncancer intake). The medium-specific equations used for the calculation of carcinogenic and noncarcinogenic intakes of the COPCs are presented in Tables 4.1.RME/CT to 4.8.RME/CT.

The quantification of potential non-cancer hazards and cancer risks associated with the groundwater pathway followed Exhibit 1-2 in the USEPA (2004) RAGS Part E guidance. Specifically, if dermal assessment was not recommended in USEPA (2004) RAGS Part E, no further evaluation of the dermal pathway was conducted for that constituent. Additional data/documentation related to the dermal pathway is provided in Attachment E. In that attachment, based on the RAGS Part E guidance, a comparison of dermal exposure to drinking exposure is performed. If the dermal/drinking fraction is greater than or equal to 10%, then the analyte is evaluated dermally. The attachment presents which analytes are evaluated dermally for each receptor and exposure point.

USEPA guidance (USEPA, 2012b) recommends the use of site-specific bioavailability data to adjust exposure estimates in site-specific HHRAs when the medium of exposure in the exposure assessment differs from the medium of exposure associated with the toxicity value (i.e., CSF and RfD). In the absence of reliable site-specific data, the default assumption is that the bioavailability of a chemical is the same in an exposure medium at a site (e.g., soil, water, etc.) as it is in the

exposure medium used to derive the toxicity value. For arsenic, published toxicity values in USEPA's IRIS database are based upon exposure to arsenic in water (USEPA, 2014b). Therefore, use of these toxicity factors without adjustment assumes that the bioavailability of arsenic in soil is the same as the bioavailability of arsenic in water (relative bioavailability (RBA) of 100%). However, recent bioavailability studies conducted in animal models show that bioavailability of arsenic in soil is typically less than that of highly water soluble forms of arsenic (USEPA, 2012b). Therefore, assuming an RBA of 100% for evaluation of arsenic in soil will result in an overestimation of risk. As a result of this recent research, USEPA released guidance recommending a default RBA for arsenic in soils of 60% be used where site-specific arsenic bioavailability assessment is not feasible (USEPA, 2012b). This RBA factor (0.6) has been applied for ingestion of soil/sediment at this site.

The exposure parameters used for each of the receptors evaluated in the risk assessment are presented in Tables 4.1.RME/CT to 4.8.RME/CT. While many of the parameters were initially defined in either the Risk Assessment Work Plan Technical Memorandum for NAVSTA Newport, Rhode Island (Resolution, 2013a) or the Sampling and Analysis Plan for MRP Site 1 (Resolution, 2013b), changes to guidance regarding default exposure parameters required refinement of parameters. The rationale/reference for each of the exposure parameters presented in Tables 4.1.RME/CT to 4.8.RME/CT are included in Attachment D.

4.3 Toxicity Assessment

The toxicity assessment presented here was conducted in accordance with USEPA guidance and considers chronic (long-term) and subchronic (less-than-lifetime) exposures for carcinogenic and noncarcinogenic COPCs. The toxicity criteria were obtained from USEPA's Integrated Risk Information System (IRIS) (USEPA, 2014b). This source lists the most recent toxicity values recommended by USEPA for use in human health risk assessments. In the event that toxicity values for a COPC were not available through IRIS, Provisional Peer-Reviewed Toxicity Values (PPRTVs) obtained from USEPA via the USEPA National Center for Environmental Assessment (NCEA) in Cincinnati, Ohio were used. Values from IRIS are the preferred criteria, if available, followed by NCEA provisional values. For this site's COPCs, toxicity values from California EPA's Office of Environmental Health and Hazard Assessment (OEHHA) Toxicity Criteria Database (CalEPA, 2012) were also used.

Where published dose-response values are not available for a chemical, dose-response values will be selected based on surrogate chemicals (i.e., chemicals with structural similarities) will be identified. The chosen surrogate will be referenced in the summary table(s) of dose-response values.

4.3.1 Toxicity Information for Noncarcinogenic Effects

Systemic toxic effects other than cancer can be associated with exposures to chemicals. Reference doses (RfDs), for oral exposures, and reference concentrations (RfCs), for inhalation exposures, are the toxicity values that are used to evaluate the potential of developing noncarcinogenic effects as a result of exposure to potentially toxic chemicals. RfDs and RfCs have been developed on the premise that there are protective mechanisms that must be overcome before an appreciable risk of adverse health effects is manifested during a defined exposure period. It is assumed that there is a threshold dose that must be exceeded before adverse effects can occur.

Chemicals classified as carcinogens may also produce other systemic effects. These chemicals were also evaluated for potential noncarcinogenic toxic effects and were included in the determination of chronic toxicity HQs, which characterize noncancer hazards. Carcinogenic effects, however, are usually manifested at levels that are significantly lower than those associated with systemic toxic effects; thus, cancer is usually the predominant adverse effect for contaminants that may elicit carcinogenic as well as noncarcinogenic responses.

Table 5.1 summarizes the oral noncarcinogenic toxicity values (i.e., RfDs) and the corresponding critical effects for the COPCs at the site. This table contains both chronic and subchronic toxicity values. Subchronic toxicity values are applicable to the construction worker scenario where exposures are expected to occur over a brief (i.e., 1 year) duration. Chronic toxicity values are applicable to all other receptors whose exposures are expected to occur over a longer interval of time. Subchronic toxicity values are not found in IRIS. Instead, subchronic toxicity values have been developed from chronic toxicity values. According to EPA guidance (USEPA, 1989), if a chronic toxicity value has been developed based on subchronic data, a subchronic toxicity value may be developed by removal of the uncertainty factor used to extrapolate from subchronic to chronic exposures (typically a factor of 10). If subchronic data are not available and the chronic toxicity value is derived from chronic data, the chronic toxicity value is adopted as the subchronic toxicity value. Table 5.2 summarizes the inhalation noncarcinogenic toxicity values (i.e., RfCs) and the corresponding critical effects for COPCs at the site.

4.3.2 Toxicity Information for Carcinogenic Effects

The potential for human carcinogenic effects is evaluated based on the chemical-specific slope factors (SFs) and unit risk (UR) values along with the weight-of-evidence classification (categories A through E) of the USEPA. The SF and UR values are the toxicity values that quantitatively define the dose-response relationship of a known or suspected carcinogen. The SF and UR values are a mathematical extrapolation of the slope of the dose-response curve from high doses administered

to animals (or the exposures observed in epidemiological studies) to the low doses commonly experienced in the environment. The USEPA has developed SFs and URs for chemicals classified as carcinogens, based on the premise that there is no threshold, i.e., there is no level of exposure below which there is no risk of a carcinogenic effect.

USEPA's Guidelines for Carcinogen Risk Assessment (USEPA, 2005a) classifies human carcinogenic potential as "known/likely", "cannot be determined", and "not likely" to replace the weight of evidence categories A through E. The proposed guidelines also acknowledge that the mode of action of a carcinogen may involve both threshold and non-threshold mechanisms.

Table 6.1 summarizes the oral carcinogenic toxicity values (i.e., SFs) and the corresponding weight-of-evidence classifications. Table 6.2 summarizes the inhalation carcinogenic toxicity values (URs) for volatile COPCs.

The quantitative evaluation of potential risks for carcinogens with a mutagenic mode of action (i.e., carcinogenic PAHs, hexavalent chromium) followed the USEPA guidance entitled *Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens* (USEPA, 2005b). Specifically, the quantification of cancer risks for child receptors involves the use of age-dependent adjustment factors (ADAFs). An ADAF of 10 was used for exposures occurring less than 2 years of age, an ADAF of 3 was used for exposures occurring between 2 and less than 16 years of age, and an ADAF of 1 was used for exposures occurring after 16 years of age (USEPA, 2005b). These ADAFs were used to quantify potential cancer risks for young children and adolescents for all exposure pathways (i.e., ingestion, dermal contact, and inhalation). This approach was used for all carcinogenic PAHs and total chromium, evaluated as hexavalent chromium.

4.3.3 Adjustment of Toxicity Factors

No RfDs or SFs are available for evaluating dermal exposure. Therefore, carcinogenic and non-carcinogenic risks associated with dermal exposure may be evaluated using an oral SF or RfD, adjusted such that the toxicity value is appropriate for the dermal pathway. As detailed by USEPA (1989), for purposes of evaluating dermal exposure, it is generally necessary to adjust an oral toxicity factor (i.e., RfD or SF) from an administered (i.e., applied) dose to an absorbed (i.e., internal) dose. Because the toxicity values for the COPCs at the site are expressed as orally administered doses (i.e., applied or intake-based), it is necessary to adjust both the RfDs and SFs for these substances in estimating exposure on an absorbed-dose basis when assessing dermal exposure.

The oral RfDs and oral SFs for each COPC were modified according to the following equations (USEPA, 1989) for use in assessing dermal exposure:

$$ERfD_o = RfD_o \times BF_{o,a}$$

$$ESF_o = SF_o/BF_{o,a}$$

where:

$ERfD_o$ = effective absorbed-dose oral RfD for each chemical (i.e., adjusted dermal RfD)

RfD_o = oral RfD for each chemical

$BF_{o,a}$ = absolute oral bioavailability factor for each chemical (i.e., oral to dermal adjustment factor)

ESF_o = effective absorbed-dose oral SF for chemical (i.e., adjusted dermal SF)

SF_o = oral SF for each chemical

Tables 5.1 and 6.1 present the oral to dermal adjustment factors used to adjust the oral toxicity criteria for the COPCs evaluated in the dermal exposure pathways. Oral bioavailability values used were obtained from USEPA (2004). No adjustment for oral absorption efficiency has been applied to any COPC with an absorption efficiency of greater than 50%.

4.4 Risk Characterization

Risk characterization combines estimates of exposure with toxicity data to develop estimates of the probability that an adverse effect will occur under the specified conditions of exposure. The risk characterization was divided into three phases: 1) risk estimation; 2) risk description; and 3) uncertainty analysis.

Risk estimation is undertaken by combining the toxicity factors and exposure assessment equations to calculate estimates of risks. Noncarcinogenic risks are reported as pathway-specific hazard indices (HIs), which are the sum of individual COPC hazard quotients (HQs) for that pathway. Only HQs from COPCs that affect the same target organ are summed to generate HIs. Estimates of carcinogenic risks are reported as incremental (above background) lifetime cancer risks (ILCRs). Current practice considers carcinogenic risks to be additive when assessing exposure to a mixture of hazardous substances. Risk description entails several discussions, including the relative contributions of individual exposure pathways to the total risk for each medium. The significance of the risk estimates are relative to risk management criteria set forth in USEPA policy. The uncertainty analysis describes and quantifies, where possible, the impact of data uncertainty and variability, exposure assumptions, and toxicity values on estimates of risk.

4.4.1 Risk Estimation

Noncancer risk is estimated by means of a HQ. To calculate noncarcinogenic HQs, the ADDs, calculated as described in subsection 4.2.2, were divided by the RfDs as follows:

$$HQ = ADD / RfD$$

The sum of this ratio for all chemicals within an exposure point and pathway that have the same target organ or type of toxicity is termed the pathway HI. The HI is useful as a reference point for gauging potential effects of environmental exposures to complex mixtures. In general, HIs that are less than 1 are not of regulatory concern; however, a HI of greater than 1 does not automatically indicate that an adverse effect will occur and should not automatically be interpreted as posing an unacceptable risk to the exposed population.

The total pathway HI for each exposure point was calculated by summing the HQs for COPCs having similar systemic effects. Total HIs for each receptor, by medium, were calculated by summing the total pathway HIs across pathways within the media (e.g., summing dermal and ingestion soil risks). As a first approximation, all COPCs are assumed to have additive effects. Total pathway HIs, assuming additivity of effects, are presented in Appendix G on Tables

7.1.RME/CT through 7.15.RME/CT. In cases where the total pathway HI for a receptor may exceed 1, only COPCs having similar systemic effects (i.e., target organs) are summed for each pathway and medium. Target organ HIs are presented in Appendix G Tables 9.1.RME/CT through 9.19.RME/CT.

The quantification of potential non-cancer hazards and cancer risks associated with the groundwater pathway followed Exhibit 1-2 in the USEPA (2004) RAGS Part E guidance. Specifically, if dermal assessment was not recommended in USEPA (2004) RAGS Part E, no further evaluation of the dermal pathway was conducted for that constituent. Documentation related to the dermal pathway is provided in Attachment E.

The cancer risk of each receptor is estimated for each medium by means of an ILCR. USEPA (1991a) states that where the cumulative incremental current or future carcinogenic risk to an individual is less than 10^{-4}, action generally is not warranted unless there are adverse environmental impacts.

To calculate the ILCR, the chemical- and pathway-specific LADDs, calculated as described in subsection 4.2.2, were multiplied by SFs as follows:

$$ILCR = SF \times LADD$$

The resulting value represents the incremental upper-bound probability that an individual could develop cancer over his or her lifetime due to exposure to potential carcinogens under the conditions specified in the exposure scenario. For example, carcinogenic risk levels of 10^{-6} and 10^{-4} represent an incremental chance of one-in-one-million and one-in-ten-thousand, respectively, that an individual could contract cancer over a lifetime.

The cancer risk for each pathway (e.g., the soil ingestion pathway) was calculated by summing the risks from each COPC at each exposure point within the pathway, while receptor risks for each medium were calculated by summing ILCRs for each pathway within the medium (e.g., the soil incidental ingestion and dermal contact pathways). Pathway ILCRs are presented in Appendix G Tables 7.1.RME/CT through 7.15.RME/CT. The total receptor ILCRs are presented in Appendix G Tables 9.1.RME/CT through 9.19.RME/CT.

Table 7 provides a comprehensive summary of cancer risks and noncarcinogenic hazards for the exposure pathways evaluated.

4.4.2 Risk Description

This subsection summarizes the human health risks potentially associated with exposures to media associated with MRP Site 1. Individual chemical-specific carcinogenic risks are expressed as probabilities of contracting cancer (i.e., ILCRs), while noncarcinogenic hazards are expressed as HIs. The child and adult hypothetical resident and recreational user ILCRs have been summed to present the total receptor cancer risk. However, because the child is the most sensitive receptor for the estimation of noncarcinogenic hazard, only the child receptor HIs have been presented on Table 7 and Table 9s for the residential and recreational user scenarios.

4.4.2.1 Description of HI Estimates

HI estimates represent the risk of health effects other than cancer from exposure to chemicals at the site. When a receptor-specific HI for an exposure medium exceeded 1, HIs were segregated by target organ and evaluated as to whether target organ-specific HIs exceed risk management criteria. Table 7 provides a comprehensive summary of the noncarcinogenic hazards by receptor, media, and exposure pathway.

Current Young Child/Adult Recreational User. The estimated HIs for the combined surface soil and sediment exposure pathways are listed for the current young child/adult recreational user in Table 7. The hazards are also presented in Appendix G Tables 7.1.RME/CT and 9.1.RME/CT. The RME HI (10) is above the target HI of 1 and is based on exposure to PCBs in surface soil. The CTE HI (0.7) does not exceed the target HI of 1.

Current Adult Onsite Worker. The estimated HIs for the surface soil exposure pathway are listed for the current adult onsite worker in Table 7. The hazards are also presented in Appendix G Tables 7.3.RME/CT and 9.2.RME/CT. The RME and CTE HIs (0.9 and 0.01, respectively) do not exceed the target HI of 1.

Current Adolescent Trespasser. The estimated HIs for the combined surface soil and sediment exposure pathways are listed for the current adolescent trespasser in Table 7. The hazards are also presented in Appendix G Tables 7.4.RME/CT and 9.3.RME/CT. The RME HI (7) is above the target HI of 1 based on exposure to PCBs in surface soil. The CTE HI (0.8) does not exceed the target HI of 1.

Current/Future Adult Construction Worker. The estimated HIs for the combined surface/subsurface soil and shallow groundwater exposure pathways are listed for the current/future construction worker in Table 7. The hazards are also presented in Appendix G

Tables 7.5.RME/CT, 7.6.RME/CT, and 9.4.RME/CT. The RME HI (20) and CTE HI (2) are both above the target HI of 1 and based on exposure to PCBs in soil.

Future Adolescent Trespasser. The estimated HIs for the combined surface/subsurface soil and sediment exposure pathways are listed for the future adolescent trespasser in Table 7. The hazards are also presented in Appendix G Tables 7.12.RME/CT and 9.5.RME/CT. The RME HI (7) is above the target HI of 1 based on exposure to PCBs in soil. The CTE HI (0.5) does not exceed the target HI of 1.

Future Adult Onsite Worker. The estimated HIs for the surface/subsurface soil and the groundwater exposure pathways are listed for the future adult onsite worker in Table 7. Each of six individual monitoring wells was evaluated separately to account for the potential installation of a potable water supply in the various areas of the site. The hazards are also presented in Appendix G Tables 7.9.RME/CT, 7.13.RME/CT, 9.6.RME/CT, and 9.8.RME/CT through 9.13.RME/CT. For the soil exposure pathway, the RME HI (20) is above the target HI of 1 based on exposure to PCBs in soil. The CTE HI (1) does not exceed the target HI of 1. For the groundwater exposure pathway, the maximum RME/CTE HI is 0.7 (associated with well MW-01D), which is below the target HI of 1.

Future Hypothetical Young Child/Adult Resident. The estimated HIs for the combined surface/subsurface, sediment, and shellfish tissue ingestion exposure pathways are listed for the future hypothetical young child/adult resident in Table 7. Each of six individual monitoring wells was evaluated separately to account for the potential installation of a potable water supply in the various areas of the site. The hazards are also presented in Appendix G Tables 7.8.RME/CT through 7.11.RME/CT, 7.14.RME/CT, 7.15.RME/CT, 9.7.RME/CT, and 9.14.RME/CT through 9.19.RME/CT. For the soil, sediment, and shellfish tissue exposure pathways, the RME HI (200) and CTE HI (20) are both above the target HI of 1 and based on exposure to PCBs in soil. For the groundwater exposure pathway, the maximum RME/CTE HI (4) (associated with well MW-01D) is above the target HI of 1 and based on exposure to cobalt and manganese in groundwater. MW-12 and MW-12D also resulted in RME HIs of 3 based on exposure to manganese in groundwater. Other total HIs were either below the target HI of 1 or were above, but did not show individual target organ HIs greater than the target HI of 1 (see Table 7 and Table 9s).

Lead Evaluation. A lead evaluation was conducted for MRP Site 1. The lead evaluation is presented in Attachment F and summarized briefly here. Specifically, the USEPA (2003b) Adult Lead Model (ALM), as updated in 2009 (USEPA, 2009), as well as the IEUBK model for children

(USEPA, 2002b) were used to evaluate potential risks associated with exposure of human receptors to lead in site-related media. The lead evaluation did not identify any exposure scenarios as having estimated lead risks above the USEPA target for the target blood concentration of 10 ug/dL. However, as an additional evaluation (see Attachment F), and as defined in the MRP Site 1 SAP (Resolution, 2013b), USEPA's model for evaluating Intermittent or Variable Exposures at Lead Sites (USEPA, 2003c) Equation 8 was used to derive screening levels for lead protective of adolescent trespasser and recreational child's exposure. While the calculated screening level was above the average lead concentration in sediment, the current (surface) soil CTE EPC exceeds the protective level for recreational users, indicating the potential for unacceptable risks due to lead.

4.4.2.2 Description of ILCR Estimates

Estimates of ILCR represent the incremental risk of cancer from the site, as described in subsection 4.4.1. For each receptor, pathway- and medium-specific ILCRs for COPCs are summed and presented as total receptor risks. ILCRs were summed for the young child and adult hypothetical resident and recreational user to derive a total receptor risk for the receptor. Table 7 provides a comprehensive summary of the total receptor cancer risks. Although unacceptable risk at this site is designated by an exceedance of the USEPA target risk range of 10^{-4} to 10^{-6}, the following paragraphs also present exceedances of RIDEM's risk limit (1×10^{-5}) as well as the COPCs which contribute to the exceedance of RIDEM's risk limit (i.e., COPCs that have an ILCR greater than 1×10^{-6}).

Current Young Child/Adult Recreational User. The estimated ILCRs for the combined surface soil and sediment exposure pathways are listed for the current young child/adult recreational user in Table 7. The ILCRs are also presented in Appendix G Tables 9.1.RME/CT. The total receptor RME and CTE ILCRs (1×10^{-4} and 2×10^{-5}, respectively) do not exceed the USEPA target risk range of 10^{-4} to 10^{-6}. The RIDEM risk limit of 1×10^{-5} is exceeded for both the RME and CTE scenarios, with the following COPCs contributing to the exceedance: PAHs, PCBs, and chromium in surface soil; and chromium in sediment.

Current Adult Onsite Worker. The estimated ILCRs for the surface soil exposure pathway are listed for the current adult onsite worker in Table 7. The ILCRs are also presented in Appendix G Tables 9.2.RME/CT. The total receptor RME and CTE ILCRs (2×10^{-5} and 7×10^{-8}, respectively) do not exceed the USEPA target risk range of 10^{-4} to 10^{-6}. The RIDEM risk limit of 1×10^{-5} is exceeded for the RME scenario, with the following COPCs contributing to the exceedance: PAHs and PCBs in surface soil.

Current Adolescent Trespasser. The estimated ILCRs for the combined surface soil and sediment exposure pathways are listed for the current adolescent trespasser in Table 7. The ILCRs are also presented in Appendix G Tables 9.3.RME/CT. The total receptor RME and CTE ILCRs (7×10^{-5} and 1×10^{-5}, respectively) do not exceed the USEPA target risk range of 10^{-4} to 10^{-6}. The RIDEM risk limit of 1×10^{-5} is exceeded for the RME scenario, with the following COPCs contributing to the exceedance: PAHs and PCBs in surface soil.

Current/Future Adult Construction Worker. The estimated ILCRs for the combined surface/subsurface soil and shallow groundwater exposure pathways are listed for the current/future construction worker in Table 7. The ILCRs are also presented in Appendix G Tables 9.4.RME/CT. The total receptor RME and CTE ILCRs (4×10^{-5} and 2×10^{-6}, respectively) do not exceed the USEPA target risk range of 10^{-4} to 10^{-6}. The RIDEM risk limit of 1×10^{-5} is exceeded for the RME scenario, with the following COPCs contributing to the exceedance: PAHs and PCBs in soil.

Future Adolescent Trespasser. The estimated ILCRs for the combined surface/subsurface soil and sediment exposure pathways are listed for the future adolescent trespasser in Table 7. The ILCRs are also presented in Appendix G Tables 9.5.RME/CT. The total receptor RME and CTE ILCRs (5×10^{-5} and 6×10^{-6}, respectively) do not exceed the USEPA target risk range of 10^{-4} to 10^{-6}. The RIDEM risk limit of 1×10^{-5} is exceeded for the RME scenario, with the following COPCs contributing to the exceedance: PAHs and PCBs in soil.

Future Adult Onsite Worker. The estimated ILCRs for the surface/subsurface soil and the groundwater exposure pathways are listed for the future adult onsite worker in Table 7. Each of six individual monitoring wells was evaluated separately to account for the potential installation of a potable water supply in the various areas of the site. The ILCRs are also presented in Appendix G Tables 9.6.RME/CT, and 9.8.RME/CT through 9.13.RME/CT. For the soil exposure pathway, the total receptor CTE ILCR (6×10^{-6}) does not exceed the USEPA target risk range of 10^{-4} to 10^{-6}. The total receptor RME ILCR (3×10^{-4}) exceeds the USEPA target risk range due to exposure to PCBs, PAHs, 4,4'-DDT, arsenic and chromium in soil. It should be noted that if PCBs were not included in the calculation (i.e., if they were evaluated separately), the other primary risk drivers would not have cumulatively resulted in an exceedance of the USEPA target risk range. The RIDEM risk limit of 1×10^{-5} is exceeded for the RME scenario, with the following COPCs contributing to the exceedance: PAHs, PCBs, 4,4'-DDT, arsenic, and chromium in soil. For the groundwater exposure pathway, there were no carcinogenic COPCs, thereby resulting in no calculated ILCRs.

Future Hypothetical Young Child/Adult Resident. The estimated ILCRs for the combined surface/subsurface, sediment, and shellfish tissue ingestion exposure pathways are listed for the future hypothetical young child/adult resident in Table 7. Each of six individual monitoring wells was evaluated separately to account for the potential installation of a potable water supply in the various areas of the site. The hazards are also presented in Appendix G Tables 9.7.RME/CT, and 9.14.RME/CT through 9.19.RME/CT. For the soil, sediment, and shellfish tissue exposure pathways, the total receptor RME and CTE ILCRs (2×10^{-3} and 2×10^{-4}, respectively) both exceed or are at the top of the USEPA target risk range of 10^{-4} to 10^{-6} due to exposure to PCBs, PAHs, 4,4'-DDT, arsenic and chromium in soil. The RIDEM risk limit of 1×10^{-5} is exceeded for both the RME and CTE scenarios, with the following COPCs contributing to the exceedance: PAHs, PCBs, 4,4'-DDT, arsenic, and chromium in soil; PAHs, arsenic, and chromium in sediment; and PAHs, arsenic, and chromium in shellfish tissue. For the groundwater exposure pathway, there were no carcinogenic COPCs, thereby resulting in no calculated ILCRs.

4.5 Description of Uncertainties

Estimation of risks to human health that may result from exposure to chemicals in the environment is a complex process that often requires the combined efforts of multiple disciplines. Each assumption, whether regarding the toxicity value to use for a particular chemical or the value of a parameter in an exposure equation, has a degree of variability and uncertainty associated with it. In each step of the risk assessment process, beginning with the data collection and analysis and continuing through the toxicity assessment, exposure assessment, and risk characterization, conservative assumptions are made that are intended to be protective of human health and to ensure that risks are not underestimated. For MRP Site 1, there is a probability of overestimating health risks or hazards for a number of reasons. The following subsections provide a discussion of the key uncertainties that may affect the final estimates of human health risk in this risk assessment. Uncertainties are arranged by topic.

4.5.1 Environmental Sampling and Analysis

The process of environmental sampling and analysis results in uncertainties from several sources, including errors inherent in sampling procedures or analytical methods. One area of uncertainty is sampling procedures. Since it is not possible to sample the entire area of interest at a given site, several samples are taken from each medium within a site, and the results are considered to be representative of the chemicals present throughout the site. This assumption may overestimate or underestimate risk.

Analytical methods also involved uncertainties. Due to uncertainty of quantification, individual chemicals were sometimes listed as detected, but with the value qualified as estimated by laboratory qualification or validation procedures. The estimated value was used in the risk assessment. This uncertainty may either over or underestimate risk, depending on how close the estimated value is to the true value. However, for this HHRA, most data sets evaluated included a high number of samples and use of a 95% UCL of the mean limits the concern of underestimating the risk.

With respect to determining exposure point concentrations for this evaluation, one assumption was that the concentrations of chemicals in the medium evaluated would remain constant over time. Depending on the properties of the chemical and the medium in which it was detected, this assumption may overestimate risks, depending on the degree of chemical degradation to less toxic species or transport to other media. Conversely, environmental bioactivation of chemicals to more toxic chemicals was also not considered. Therefore, this assumption may underestimate risk if bioactivation mechanisms are significant. However, this is not expected for the chemicals associated with MRP Site 1.

4.5.2 Selection of Chemicals for Evaluation

A comparison of maximum detected chemical concentrations to USEPA RSLs and MCLs was conducted. RSLs are conservative risk-based values that are used when selecting COPCs so as not to omit a chemical that might contribute significantly to risk. Chemicals whose maximum concentrations were below their respective screening value were not carried through the assessment. It is unlikely that this risk-based screening excluded chemicals that would be of concern, based on the conservative exposure assumptions and conservatively derived toxicity criteria that are the basis of the screening criteria. Although following this methodology does not provide a quantitative risk estimate for all chemicals, it focuses the assessment on the chemicals accounting for the greatest risks (i.e., chemicals whose maximum concentrations exceeded their respective RSLs). Although the overall risk estimates are uncertain, it is not expected that actual risks will be significantly greater than estimated risks given that a reasonable effort was made to characterize current and future potential health risks given current knowledge.

4.5.3 Toxicological Data

Uncertainty is associated with the toxicity values and toxicity information available to assess potential adverse effects.

One of the major contributors to uncertainty is the accuracy of the toxicity values used. A cancer potency value is a mathematical extrapolation of the slope of the dose-response curve from high doses administered to animals (or the exposures observed in epidemiological studies) to the low doses commonly experienced in the environment. The USEPA has developed potency values for chemicals classified as carcinogens, based on the premise that there is no threshold, i.e., there is no level of exposure below which there is no risk of a carcinogenic effect. USEPA's Guidelines for Carcinogen Risk Assessment (USEPA, 2005a) acknowledges that the mode of action of a carcinogen may involve both threshold and non-threshold mechanisms. To the extent that the approach used to develop the potency estimate is incorrect, the extrapolated risks may be over- or underestimates. However, it should be noted that in the derivation of toxicity values, conservative assumptions are employed. Therefore, toxicity values tend to be biased toward overestimating risk.

For dermal exposure pathways, the absence of dermal toxicity criteria necessitated the use of oral toxicity data. To calculate risk estimates for the dermal pathway, absolute oral bioavailability factors that reflect the toxicity study conditions were used to modify the oral toxicity criteria. For the chemicals with oral absorption exceeding 50%, a default oral absorption factor of 100% was used. The risk estimates for the dermal pathways may be over- or underestimated depending on how closely these values reflect the difference between the oral and dermal routes. Dermal absorption fractions (USEPA, 2004), which estimate the penetration of soil- associated compounds through the skin, are additionally used to assess dermal exposures for soil. These estimates are uncertain, and may result in either an overestimation or underestimation of risk.

Chronic toxicity values, developed based on continuous lifetime exposures, were used for the evaluation of discontinuous, less-than-lifetime exposures (e.g., the onsite worker). Therefore, total receptor risk estimates may be overestimated, with the degree of overestimation dependent on the degree of deviation from a continuous lifetime exposure scenario.

Toxicity values were lacking for a small number of COPCs. For example, there are no non-carcinogenic toxicity values (i.e., RfDs) for the carcinogenic PAHs. However, the noncarcinogenic effects of these compounds are likely to be adequately protected against by the evaluation of carcinogenic risks (i.e., carcinogenic effects appear at a lower dose than non-carcinogenic effects). The lack of toxicity values for some COPCs contributes to an underestimation of risk and hazard.

4.5.4 Exposure Assessment

The primary areas of uncertainty affecting exposure parameter estimation involve the assumptions regarding exposure pathways, the estimation of exposure point concentrations, and the parameters used to estimate chemical doses. The uncertainties associated with these various sources are discussed below.

The parameter values used to describe the extent, frequency, and duration of exposure are associated with some uncertainty. Actual risks for some individuals within an exposed population may vary from those predicted depending upon the actual exposure durations, intake rates (e.g., soil ingestion rates), or body weights. The exposure assumptions were selected to produce a reasonable upper-bound estimate of exposure in accordance with USEPA guidelines. Therefore, exposures and estimated potential risks for the evaluated receptors are likely to be representative of reasonable upper-bound exposures.

The quantification of potential non-cancer hazards and cancer risks associated with the groundwater pathway followed Exhibit 1-2 in the USEPA (2004) RAGS Part E guidance. Specifically, if dermal assessment was not recommended in USEPA (2004) RAGS Part E, no further evaluation of the dermal pathway was conducted for that constituent. While this process removes evaluation of analytes which contribute minimally to the dermal pathway, it nonetheless could result in an underestimate of potential risks.

As presented in Attachment F, if future lead evaluations include use of a lower target blood concentration (i.e., 5 ug/dL), there would be exceedances of the 5% goal by the current adult recreational user (13% for soil and 15% for sediment), construction worker (18%), and future onsite worker (8.2%).

4.6 Risk Summary and Conclusions

An overall summary of cancer and noncancer risk estimates for the receptors evaluated at MRP Site 1 is presented in Table 7. Risks and hazards for exposures to sediment and shellfish tissue are all at or below USEPA's target risk range of 10^{-4} to 10^{-6} or target hazard index level of 1. A lead evaluation did not identify any exposure scenarios as having estimated lead risks above the USEPA target. However, the current (surface) soil CTE EPC exceeds the calculated protective level for recreational users, indicating the potential for unacceptable risks due to lead. Risks and hazards were found to be above USEPA's target risk range of 10^{-4} to 10^{-6} or target hazard index level of 1 for the following exposure scenarios:

- Current Young Child/Adult Recreational User – PCBs in surface soil
- Current and Future Adolescent Trespasser – PCBs in surface soil
- Current/Future Adult Construction Worker – PCBs in soil
- Future Onsite Worker – PCBs, PAHs, 4,4-DDT, arsenic and chromium in soil
- Future Hypothetical Young Child/Adult Resident - PCBs, PAHs, 4,4-DDT, arsenic and chromium in soil; cobalt and manganese in groundwater

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TABLES

TABLE 1

SELECTION OF EXPOSURE PATHWAYS

CARR POINT - MRP SITE 1

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age (1)	Exposure Route	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Current	Soil	Surface Soil	MRP Site 1	Onsite Worker	Adult	Dermal	Quant	Workers performing low frequency maintenance or on-site access control may be exposed to soil.
						Inhalation	Quant	Workers performing low frequency maintenance or on-site access control may be exposed to soil.
						Ingestion	Quant	Workers performing low frequency maintenance or on-site access control may be exposed to soil.
				Recreational User	Adult	Dermal	Quant	Site is currently used as an RV campling park. Soil exposures currently occur.
						Inhalation	Quant	Site is currently used as an RV campling park. Soil exposures currently occur.
						Ingestion	Quant	Site is currently used as an RV campling park. Soil exposures currently occur.
					Young Child	Dermal	Quant	Site is currently used as an RV campling park. Soil exposures currently occur.
						Inhalation	Quant	Site is currently used as an RV campling park. Soil exposures currently occur.
						Ingestion	Quant	Site is currently used as an RV campling park. Soil exposures currently occur.
				Trespasser	Adolescent	Dermal	Quant	Trespassers may access the site and be exposed to soil.
						Inhalation	Quant	Trespassers may access the site and be exposed to soil.
						Ingestion	Quant	Trespassers may access the site and be exposed to soil.
	Sediment	Sediment	MRP Site 1	Trespasser	Adolescent	Dermal	Quant	Trespassers may access the site and be exposed to nearshore sediment.
						Ingestion	Quant	Trespassers may access the site and be exposed to nearshore sediment.
				Recreational User	Adult	Dermal	Quant	Site is currently used as an RV campling park. Sediment exposures are possible.
						Ingestion	Quant	Site is currently used as an RV campling park. Sediment exposures are possible.
					Young Child	Dermal	Quant	Site is currently used as an RV campling park. Sediment exposures are possible.
						Ingestion	Quant	Site is currently used as an RV campling park. Sediment exposures are possible.
Current/Future	Soil	Surface/ Subsurface Soil	MRP Site 1	Construction Worker	Adult	Dermal	Quant	Assumes construction or utility maintenance activites occur currently or will occur in the future.
						Inhalation	Quant	Assumes construction or utility maintenance activites occur currently or will occur in the future.
						Ingestion	Quant	Assumes construction or utility maintenance activites occur currently or will occur in the future.
	Groundwater	Shallow Groundwater	MRP Site 1	Construction Worker	Adult	Dermal	Quant	Contact with shallow groundwater during excavation may occur.
						Ingestion	Quant	Incidental ingestion of shallow groundwater may occur during excavation activites.
		Trench Air	MRP Site 1	Construction Worker	Adult	Inhalation	None	Volatile compounds not detected in groundwater.

TABLE 1

SELECTION OF EXPOSURE PATHWAYS

CARR POINT - MRP SITE 1

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age (1)	Exposure Route	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Future	Soil	Surface/ Subsurface Soil	MRP Site 1	Onsite Worker	Adult	Dermal	Quant	Future development of site could include commercial/industrial development.
						Inhalation	Quant	Future development of site could include commercial/industrial development.
						Ingestion	Quant	Future development of site could include commercial/industrial development.
				Trespasser	Adolescent	Dermal	Quant	Trespassers may access the site and be exposed to soil.
						Inhalation	Quant	Trespassers may access the site and be exposed to soil.
						Ingestion	Quant	Trespassers may access the site and be exposed to soil.
				Resident	Adult	Dermal	Quant	Assumes future on-site residence is constructed.
						Inhalation	Quant	Assumes future on-site residence is constructed.
						Ingestion	Quant	Assumes future on-site residence is constructed.
					Young Child	Dermal	Quant	Assumes future on-site residence is constructed.
						Inhalation	Quant	Assumes future on-site residence is constructed.
						Ingestion	Quant	Assumes future on-site residence is constructed.
	Sediment	Sediment	MRP Site 1	Trespasser	Adolescent	Dermal	Quant	Trespassers may access the site and be exposed to nearshore sediment.
						Ingestion	Quant	Trespassers may access the site and be exposed to nearshore sediment.
				Resident	Adult	Dermal	Quant	Assumes future on-site residence is constructed and that exposure to nearshore sediment is possible.
						Ingestion	Quant	Assumes future on-site residence is constructed and that exposure to nearshore sediment is possible.
					Young Child	Dermal	Quant	Assumes future on-site residence is constructed and that exposure to nearshore sediment is possible.
						Ingestion	Quant	Assumes future on-site residence is constructed and that exposure to nearshore sediment is possible.
	Groundwater	Groundwater	MRP Site 1	Onsite Worker	Adult	Ingestion	Quant	Future use of groundwater as a potable water supply is possible.
						Dermal	Quant	Future use of groundwater as a potable water supply is possible.
				Resident	Adult	Dermal	Quant	Assumes site groundwater used as a drinking water supply
						Inhalation	None	Volatile compounds not detected in groundwater.
						Ingestion	Quant	Assumes site groundwater used as a drinking water supply
					Young Child	Dermal	Quant	Assumes site groundwater used as a drinking water supply
						Inhalation	None	Volatile compounds not detected in groundwater.
						Ingestion	Quant	Assumes site groundwater used as a drinking water supply
		Indoor Air	MRP Site 1	Onsite Worker	Adult	Inhalation	None	Volatile compounds not detected in groundwater.
				Resident	Adult	Inhalation	None	Volatile compounds not detected in groundwater.
					Young Child	Inhalation	None	Volatile compounds not detected in groundwater.
	Shellfish Tissue	Shellfish Tissue	MRP Site 1	Resident	Adult	Ingestion	Quant	Assumes future potential residents collect shellfish on a recreational basis.
					Young Child	Ingestion	Quant	Assumes future potential residents collect shellfish on a recreational basis.

TABLE 2.1
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
CARR POINT - MRP SITE 1

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Surface Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (1)	Maximum Concentration (Qualifier) (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (N/C) (4)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (5)
MRP Site 1 - Rec. User & Trespasser															
	90-12-0	1-METHYLNAPHTHALENE	0.0026	0.01 J	mg/kg	MRP1-PES-SW4-01_1_1	9 / 18	0.022 - 0.47	0.01	N/A	17 C	N/A	N/A	N	BSL
	91-57-6	2-METHYLNAPHTHALENE	0.0026	0.016 J	mg/kg	MRP1-PES-5B-01_1_1	10 / 33	0.022 - 0.47	0.016	N/A	23 N	N/A	N/A	N	BSL
	83-32-9	ACENAPHTHENE	0.00082	18 J	mg/kg	CRP-SB228_0_1	38 / 57	0.0067 - 0.442	18	N/A	350 N	N/A	N/A	N	BSL
	208-96-8	ACENAPHTHYLENE	0.0012	0.369	mg/kg	CRP-SS115_0_0.5	23 / 57	0.0067 - 0.442	0.369	N/A	350 N	N/A	N/A	N	BSL
	120-12-7	ANTHRACENE	0.00092	21 J	mg/kg	CRP-SB228_0_1	49 / 57	0.0069 - 0.442	21	N/A	1700 N	N/A	N/A	N	BSL
	56-55-3	BENZO[A]ANTHRACENE	0.00089	65 J	mg/kg	CRP-SB228_0_1	55 / 57	0.021 - 0.025	65	N/A	0.15 C	N/A	N/A	Y	ASL
	50-32-8	BENZO[A]PYRENE	0.00077	80 J	mg/kg	CRP-SB228_0_1	56 / 57	0.021	80	N/A	0.015 C	N/A	N/A	Y	ASL
	205-99-2	BENZO[B]FLUORANTHENE	0.00077	75 J	mg/kg	CRP-SB228_0_1	57 / 57	N/A	75	N/A	0.15 C	N/A	N/A	Y	ASL
	191-24-2	BENZO[G,H,I]PERYLENE	0.0018	32 J	mg/kg	CRP-SB228_0_1	53 / 57	0.0072 - 0.025	32	N/A	170 N	N/A	N/A	N	BSL
	207-08-9	BENZO[K]FLUORANTHENE	0.0011	74 J	mg/kg	CRP-SB228_0_1	55 / 57	0.0072 - 0.14	74	N/A	1.5 C	N/A	N/A	Y	ASL
	218-01-9	CHRYSENE	0.0023	81 J	mg/kg	CRP-SB228_0_1	56 / 57	0.0072	81	N/A	15 C	N/A	N/A	Y	ASL
	53-70-3	DIBENZ[A,H]ANTHRACENE	0.00073	5.5	mg/kg	CRP-SB212_0_1	47 / 57	0.0069 - 15	5.5	N/A	0.015 C	N/A	N/A	Y	ASL
	206-44-0	FLUORANTHENE	0.001	100 J	mg/kg	CRP-SB228_0_1	57 / 57	N/A	100	N/A	230 N	N/A	N/A	N	BSL
	86-73-7	FLUORENE	0.00085	9.2 J	mg/kg	CRP-SB228_0_1	36 / 57	0.0067 - 0.442	9.2	N/A	230 N	N/A	N/A	N	BSL
	193-39-5	INDENO[1,2,3-CD]PYRENE	0.0013	44 J	mg/kg	CRP-SB228_0_1	53 / 57	0.0072 - 0.14	44	N/A	0.15 C	N/A	N/A	Y	ASL
	91-20-3	NAPHTHALENE	0.0026	3 J	mg/kg	CRP-SB228_0_1	24 / 57	0.0096 - 2.8	3	N/A	3.8 C	N/A	N/A	N	BSL
	85-01-8	PHENANTHRENE	0.0032	86 J	mg/kg	CRP-SB228_0_1	56 / 57	0.0072	86	N/A	170 N	N/A	N/A	N	BSL
	129-00-0	PYRENE	0.00086	100 J	mg/kg	CRP-SB228_0_1	57 / 57	N/A	100	N/A	170 N	N/A	N/A	N	BSL
	55-63-0	NITROGLYCERIN	0.15	4	mg/kg	CRP-SB217_0_1	7 / 12	0.34 - 0.39	4	N/A	0.62 N	N/A	N/A	Y	ASL
	72-55-9	4,4-DDE	0.00064	0.062	mg/kg	CRP-SB229_0_1	2 / 4	0.0017 - 0.037	0.062	N/A	1.6 C	N/A	N/A	N	BSL
	50-29-3	4,4-DDT	0.0061	19 J	mg/kg	CRP-SB223_0_1	3 / 4	0.0017	19	N/A	1.9 C	N/A	N/A	Y	ASL
	959-98-8	ENDOSULFAN I	0.0015 J	0.0015 J	mg/kg	CRP-SB229_0_1	1 / 4	0.00019 - 0.019	0.0015	N/A	37 N	N/A	N/A	N	BSL
	33213-65-9	ENDOSULFAN II	0.00032	0.00032 J	mg/kg	CRP-SB302_0_1	1 / 4	0.00032 - 0.037	0.00032	N/A	37 N	N/A	N/A	N	BSL
	1031-07-8	ENDOSULFAN SULFATE	0.0021	12 J	mg/kg	CRP-SB223_0_1	2 / 4	0.00032 - 0.0017	12	N/A	37 N	N/A	N/A	N	BSL
	72-20-8	ENDRIN	0.0018	0.0018	mg/kg	CRP-SB229_0_1	1 / 4	0.00038 - 0.037	0.0018	N/A	1.8 N	N/A	N/A	N	BSL
	53494-70-5	ENDRIN KETONE	0.0016 J	0.0016 J	mg/kg	CRP-SB302_0_1	1 / 4	0.00032 - 0.037	0.0016	N/A	1.8 N	N/A	N/A	N	BSL
	76-44-8	HEPTACHLOR	0.0015 J	0.0015 J	mg/kg	CRP-SB229_0_1	1 / 4	0.00019 - 0.019	0.0015	N/A	0.12 C	N/A	N/A	N	BSL
	72-43-5	METHOXYCHLOR	0.0088 J	0.0088 J	mg/kg	CRP-SB229_0_1	1 / 4	0.0019 - 0.19	0.0088	N/A	31 N	N/A	N/A	N	BSL
	11097-69-1	AROCLOR-1254	0.043	0.043 J	mg/kg	CRP-SB301_0_1	1 / 5	0.0016 - 1.9	0.043	N/A	0.11 N	N/A	N/A	N	BSL
	11096-82-5	AROCLOR-1260	0.016	270 J	mg/kg	CRP-SB223_0_1	3 / 5	0.0016 - 0.0089	270	N/A	0.24 C	N/A	N/A	Y	ASL
	7429-90-5	ALUMINUM	3380	18600	mg/kg	MW-13_0_1	27 / 27	N/A	18600	N/A	7700 N	N/A	N/A	Y	ASL
	7440-36-0	ANTIMONY	0.05	396 J	mg/kg	CRP-SB302_0_1	27 / 27	N/A	396	N/A	3.1 N	N/A	N/A	Y	ASL

TABLE 2.1
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
CARR POINT - MRP SITE 1

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Surface Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (1)	Maximum Concentration (Qualifier) (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (N/C) (4)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (5)
MRP Site 1 - Rec. User & Trespasser	7440-38-2	ARSENIC	1.2	130 J	mg/kg	CRP-SB302_0_1	45 / 45	N/A	130	N/A	0.67 C	N/A	N/A	Y	ASL
	7440-39-3	BARIUM	6.7	49.6	mg/kg	CRP-SB223_0_1	27 / 27	N/A	49.6	N/A	1500 N	N/A	N/A	N	BSL
	7440-41-7	BERYLLIUM	0.2	0.56 J-	mg/kg	CRP-SB205_0_1	27 / 27	N/A	0.56	N/A	16 N	N/A	N/A	N	BSL
	7440-43-9	CADMIUM	0.03	0.84 J	mg/kg	CRP-SB223_0_1	23 / 27	0.076 - 0.14	0.84	N/A	7 N	N/A	N/A	N	BSL
	7440-70-2	CALCIUM	342	39500	mg/kg	CRP-SB228_0_1	27 / 27	N/A	39500	N/A	N/A	N/A	N/A	N	NUT
	7440-47-3	CHROMIUM, TOTAL	5	30.1 J	mg/kg	CRP-SB223_0_1	45 / 45	N/A	30.1	N/A	0.3 C	N/A	N/A	Y	ASL
	7440-48-4	COBALT	6.4	24.5	mg/kg	MW-13_0_1	27 / 27	N/A	24.5	N/A	2.3 N	N/A	N/A	Y	ASL
	7440-50-8	COPPER	9.2	256 J	mg/kg	CRP-SB205_0_1	27 / 27	N/A	256	N/A	310 N	N/A	N/A	N	BSL
	7439-89-6	IRON	16100	88500	mg/kg	CRP-SB219_0_1	27 / 27	N/A	88500	N/A	5500 N	N/A	N/A	Y	ASL
	7439-92-1	LEAD	6.5	29900 J	mg/kg	CRP-SB302_0_1	57 / 57	N/A	29900	N/A	400 L	N/A	N/A	Y	ASL
	7439-95-4	MAGNESIUM	1250	25200 J	mg/kg	CRP-SB228_0_1	27 / 27	N/A	25200	N/A	N/A	N/A	N/A	N	NUT
	7439-96-5	MANGANESE	242	929	mg/kg	CRP-SB222_0_1	27 / 27	N/A	929	N/A	180 N	N/A	N/A	Y	ASL
	7439-97-6	MERCURY	0.006	0.21 J-	mg/kg	CRP-SB212_0_1	21 / 27	0.012 - 0.032	0.21	N/A	2.3 N	N/A	N/A	N	BSL
	7440-02-0	NICKEL	13.2	56.6 J-	mg/kg	CRP-SB223_0_1	27 / 27	N/A	56.6	N/A	150 N	N/A	N/A	N	BSL
	7440-09-7	POTASSIUM	196	650 J-	mg/kg	CRP-SB210_0_1	27 / 27	N/A	650	N/A	N/A	N/A	N/A	N	NUT
	7782-49-2	SELENIUM	0.18	0.66	mg/kg	CRP-SB201_0_1	11 / 27	0.37 - 0.56	0.66	N/A	39 N	N/A	N/A	N	BSL
	7440-22-4	SILVER	0.02	0.9 J	mg/kg	CRP-SB212_0_1	27 / 27	N/A	0.9	N/A	39 N	N/A	N/A	N	BSL
	7440-23-5	SODIUM	316	1860 J-	mg/kg	CRP-SB225_0_1	5 / 27	48 - 143	1860	N/A	N/A	N/A	N/A	N	NUT
	7440-28-0	THALLIUM	0.02	0.15	mg/kg	CRP-SB212_0_1	27 / 27	N/A	0.15	N/A	0.078 N	N/A	N/A	Y	ASL
	7440-62-2	VANADIUM	12	26.6	mg/kg	CRP-SB202_0_1	27 / 27	N/A	26.6	N/A	39 N	N/A	N/A	N	BSL
	7440-66-6	ZINC	33.6	433 J	mg/kg	CRP-SB223_0_1	27 / 27	N/A	433	N/A	2300 N	N/A	N/A	N	BSL
MRP Site 1 - Onsite Worker															
	90-12-0	1-METHYLNAPHTHALENE	0.0026	0.01 J	mg/kg	MRP1-PES-SW4-01_1_1	9 / 18	0.022 - 0.47	0.01	N/A	73 C	N/A	N/A	N	BSL
	91-57-6	2-METHYLNAPHTHALENE	0.0026	0.016 J	mg/kg	MRP1-PES-5B-01_1_1	10 / 33	0.022 - 0.47	0.016	N/A	300 N	N/A	N/A	N	BSL
	83-32-9	ACENAPHTHENE	0.00082	18 J	mg/kg	CRP-SB228_0_1	38 / 57	0.0067 - 0.442	18	N/A	4500 N	N/A	N/A	N	BSL
	208-96-8	ACENAPHTHYLENE	0.0012	0.369	mg/kg	CRP-SS115_0_0.5	23 / 57	0.0067 - 0.442	0.369	N/A	4500 N	N/A	N/A	N	BSL
	120-12-7	ANTHRACENE	0.00092	21 J	mg/kg	CRP-SB228_0_1	49 / 57	0.0069 - 0.442	21	N/A	23000 N	N/A	N/A	N	BSL
	56-55-3	BENZO[A]ANTHRACENE	0.00089	65 J	mg/kg	CRP-SB228_0_1	55 / 57	0.021 - 0.025	65	N/A	2.9 C	N/A	N/A	Y	ASL
	50-32-8	BENZO[A]PYRENE	0.00077	80 J	mg/kg	CRP-SB228_0_1	56 / 57	0.021	80	N/A	0.29 C	N/A	N/A	Y	ASL
	205-99-2	BENZO[B]FLUORANTHENE	0.00077	75 J	mg/kg	CRP-SB228_0_1	57 / 57	N/A	75	N/A	2.9 C	N/A	N/A	Y	ASL
	191-24-2	BENZO[G,H,I]PERYLENE	0.0018	32 J	mg/kg	CRP-SB228_0_1	53 / 57	0.0072 - 0.025	32	N/A	2300 N	N/A	N/A	N	BSL
	207-08-9	BENZO[K]FLUORANTHENE	0.0011	74 J	mg/kg	CRP-SB228_0_1	55 / 57	0.0072 - 0.14	74	N/A	29 C	N/A	N/A	Y	ASL
	218-01-9	CHRYSENE	0.0023	81 J	mg/kg	CRP-SB228_0_1	56 / 57	0.0072	81	N/A	290 C	N/A	N/A	N	BSL
	53-70-3	DIBENZ[A,H]ANTHRACENE	0.00073	5.5	mg/kg	CRP-SB212_0_1	47 / 57	0.0069 - 15	5.5	N/A	0.29 C	N/A	N/A	Y	ASL
	206-44-0	FLUORANTHENE	0.001	100 J	mg/kg	CRP-SB228_0_1	57 / 57	N/A	100	N/A	3000 N	N/A	N/A	N	BSL
	86-73-7	FLUORENE	0.00085	9.2 J	mg/kg	CRP-SB228_0_1	36 / 57	0.0067 - 0.442	9.2	N/A	3000 N	N/A	N/A	N	BSL
	193-39-5	INDENO[1,2,3-CD]PYRENE	0.0013	44 J	mg/kg	CRP-SB228_0_1	53 / 57	0.0072 - 0.14	44	N/A	2.9 C	N/A	N/A	Y	ASL

TABLE 2.1
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
CARR POINT - MRP SITE 1

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Surface Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (1)	Maximum Concentration (Qualifier) (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (N/C) (4)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (5)
MRP Site 1 - Onsite Worker	91-20-3	NAPHTHALENE	0.0026	3 J	mg/kg	CRP-SB228_0_1	24 / 57	0.0096 - 2.8	3	N/A	17 C	N/A	N/A	N	BSL
	85-01-8	PHENANTHRENE	0.0032	86 J	mg/kg	CRP-SB228_0_1	56 / 57	0.0072	86	N/A	2300 N	N/A	N/A	N	BSL
	129-00-0	PYRENE	0.00086	100 J	mg/kg	CRP-SB228_0_1	57 / 57	N/A	100	N/A	2300 N	N/A	N/A	N	BSL
	55-63-0	NITROGLYCERIN	0.15	4	mg/kg	CRP-SB217_0_1	7 / 12	0.34 - 0.39	4	N/A	8.2 N	N/A	N/A	N	BSL
	72-55-9	4,4-DDE	0.00064	0.062	mg/kg	CRP-SB229_0_1	2 / 4	0.0017 - 0.037	0.062	N/A	6.8 C	N/A	N/A	N	BSL
	50-29-3	4,4-DDT	0.0061	19 J	mg/kg	CRP-SB223_0_1	3 / 4	0.0017	19	N/A	8.6 C	N/A	N/A	Y	ASL
	959-98-8	ENDOSULFAN I	0.0015 J	0.0015 J	mg/kg	CRP-SB229_0_1	1 / 4	0.00019 - 0.019	0.0015	N/A	490 N	N/A	N/A	N	BSL
	33213-65-9	ENDOSULFAN II	0.00032	0.00032 J	mg/kg	CRP-SB302_0_1	1 / 4	0.00032 - 0.037	0.00032	N/A	490 N	N/A	N/A	N	BSL
	1031-07-8	ENDOSULFAN SULFATE	0.0021	12 J	mg/kg	CRP-SB223_0_1	2 / 4	0.00032 - 0.0017	12	N/A	490 N	N/A	N/A	N	BSL
	72-20-8	ENDRIN	0.0018	0.0018	mg/kg	CRP-SB229_0_1	1 / 4	0.00038 - 0.037	0.0018	N/A	25 N	N/A	N/A	N	BSL
	53494-70-5	ENDRIN KETONE	0.0016 J	0.0016 J	mg/kg	CRP-SB302_0_1	1 / 4	0.00032 - 0.037	0.0016	N/A	25 N	N/A	N/A	N	BSL
	76-44-8	HEPTACHLOR	0.0015 J	0.0015 J	mg/kg	CRP-SB229_0_1	1 / 4	0.00019 - 0.019	0.0015	N/A	0.51 C	N/A	N/A	N	BSL
	72-43-5	METHOXYCHLOR	0.0088 J	0.0088 J	mg/kg	CRP-SB229_0_1	1 / 4	0.0019 - 0.19	0.0088	N/A	410 N	N/A	N/A	N	BSL
	11097-69-1	AROCLOR-1254	0.043	0.043 J	mg/kg	CRP-SB301_0_1	1 / 5	0.0016 - 1.9	0.043	N/A	1 C	N/A	N/A	N	BSL
	11096-82-5	AROCLOR-1260	0.016	270 J	mg/kg	CRP-SB223_0_1	3 / 5	0.0016 - 0.0089	270	N/A	1 C	N/A	N/A	Y	ASL
	7429-90-5	ALUMINUM	3380	18600	mg/kg	MW-13_0_1	27 / 27	N/A	18600	N/A	110000 N	N/A	N/A	N	BSL
	7440-36-0	ANTIMONY	0.05	396 J	mg/kg	CRP-SB302_0_1	27 / 27	N/A	396	N/A	47 N	N/A	N/A	Y	ASL
	7440-38-2	ARSENIC	1.2	130 J	mg/kg	CRP-SB302_0_1	45 / 45	N/A	130	N/A	3 C	N/A	N/A	Y	ASL
	7440-39-3	BARIUM	6.7	49.6	mg/kg	CRP-SB223_0_1	27 / 27	N/A	49.6	N/A	22000 N	N/A	N/A	N	BSL
	7440-41-7	BERYLLIUM	0.2	0.56 J-	mg/kg	CRP-SB205_0_1	27 / 27	N/A	0.56	N/A	230 N	N/A	N/A	N	BSL
	7440-43-9	CADMIUM	0.03	0.84 J	mg/kg	CRP-SB223_0_1	23 / 27	0.076 - 0.14	0.84	N/A	98 N	N/A	N/A	N	BSL
	7440-70-2	CALCIUM	342	39500	mg/kg	CRP-SB228_0_1	27 / 27	N/A	39500	N/A	N/A	N/A	N/A	N	NUT
	7440-47-3	CHROMIUM, TOTAL	5	30.1 J	mg/kg	CRP-SB223_0_1	45 / 45	N/A	30.1	N/A	6.3 C	N/A	N/A	Y	ASL
	7440-48-4	COBALT	6.4	24.5	mg/kg	MW-13_0_1	27 / 27	N/A	24.5	N/A	35 N	N/A	N/A	N	BSL
	7440-50-8	COPPER	9.2	256 J	mg/kg	CRP-SB205_0_1	27 / 27	N/A	256	N/A	4700 N	N/A	N/A	N	BSL
	7439-89-6	IRON	16100	88500	mg/kg	CRP-SB219_0_1	27 / 27	N/A	88500	N/A	82000 N	N/A	N/A	Y	ASL
	7439-92-1	LEAD	6.5	29900 J	mg/kg	CRP-SB302_0_1	57 / 57	N/A	29900	N/A	800 L	N/A	N/A	Y	ASL
	7439-95-4	MAGNESIUM	1250	25200 J	mg/kg	CRP-SB228_0_1	27 / 27	N/A	25200	N/A	N/A	N/A	N/A	N	NUT
	7439-96-5	MANGANESE	242	929	mg/kg	CRP-SB222_0_1	27 / 27	N/A	929	N/A	2600 N	N/A	N/A	N	BSL
	7439-97-6	MERCURY	0.006	0.21 J-	mg/kg	CRP-SB212_0_1	21 / 27	0.012 - 0.032	0.21	N/A	35 N	N/A	N/A	N	BSL
	7440-02-0	NICKEL	13.2	56.6 J-	mg/kg	CRP-SB223_0_1	27 / 27	N/A	56.6	N/A	2200 N	N/A	N/A	N	BSL
	7440-09-7	POTASSIUM	196	650 J-	mg/kg	CRP-SB210_0_1	27 / 27	N/A	650	N/A	N/A	N/A	N/A	N	NUT
	7782-49-2	SELENIUM	0.18	0.66	mg/kg	CRP-SB201_0_1	11 / 27	0.37 - 0.56	0.66	N/A	580 N	N/A	N/A	N	BSL

TABLE 2.1
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
CARR POINT - MRP SITE 1

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Surface Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (1)	Maximum Concentration (Qualifier) (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (N/C) (4)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (5)
MRP Site 1 - Onsite Worker	7440-22-4	SILVER	0.02	0.9 J	mg/kg	CRP-SB212_0_1	27 / 27	N/A	0.9	N/A	580 N	N/A	N/A	N	BSL
	7440-23-5	SODIUM	316	1860 J-	mg/kg	CRP-SB225_0_1	5 / 27	48 - 143	1860	N/A	N/A	N/A	N/A	N	NUT
	7440-28-0	THALLIUM	0.02	0.15	mg/kg	CRP-SB212_0_1	27 / 27	N/A	0.15	N/A	1.2 N	N/A	N/A	N	BSL
	7440-62-2	VANADIUM	12	26.6	mg/kg	CRP-SB202_0_1	27 / 27	N/A	26.6	N/A	580 N	N/A	N/A	N	BSL
	7440-66-6	ZINC	33.6	433 J	mg/kg	CRP-SB223_0_1	27 / 27	N/A	433	N/A	35000 N	N/A	N/A	N	BSL

Notes:
Refer to Attachment A for samples included in data set. Where two sample depths (e.g., 0-0.5 ft and 0.5-1 ft) were available for one location, samples combined to form one composite result for the location.
N/A = Not Applicable or Not Available
[1] Due to processing limitations associated with combining different depth samples, minimum detection qualifiers and composite detection qualifiers are unavailable.
Organic Data Qualifiers
J = The compound was positively identified; however, the associated numerical value is an estimated concentration only. (+ and - indicate bias)
Inorganic Data Qualifiers
J = The compound was positively identified; however, the associated numerical value is an estimated concentration only. (+ and - indicate bias)
[2] The maximum detected concentration was used. Duplicate samples were averaged prior to the identification of maxima.
[3] Background values were not used for COPC screening purposes, although they may be considered in the risk characterization portion of the risk assessment.
[4] Screening toxicity values are the USEPA (January 2015) Regional Screening Levels (RSLs) for Residential Soil (for Rec. User screening) and Industrial Soil (for Worker screening).
C = Carcinogen
N = Noncarcinogen (adjusted to a hazard quotient of 0.1)
L = lead
The RSL values for noted analytes are as follows:
RSL for mercuric chloride has been used for mercury.
RSL for chromium (VI) used for chromium, as there were detections in soil.
RSL for pyrene has been used for benzo(g,h,i)perylene and phenanthrene.
RSL for endrin has been used for endrin ketone.
RSL for endosulfan has been used for endosulfan I, endosulfan II, and endosulfan sulfate.
RSL for acenaphthene has been used for acenaphthylene.
[5] Codes used for rationale are as follows:
Selection Reason: Above Screening Levels (ASL)
Deletion Reason: Essential Nutrient (NUT)
Below Screening Level (BSL)

TABLE 2.2
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
CARR POINT - MRP SITE 1

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Surface/Subsurface Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (1)	Maximum Concentration (Qualifier) (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (N/C) (4)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (5)
MRP Site 1 - Resident & Trespasser															
	90-12-0	1-METHYLNAPHTHALENE	0.0026	0.1	mg/kg	MRP1-PES-3A-02_2_2	13 / 35	0.022 - 0.47	0.1	N/A	17 C	N/A	N/A	N	BSL
	91-57-6	2-METHYLNAPHTHALENE	0.0026	0.11	mg/kg	MRP1-PES-3A-02_2_2	15 / 55	0.022 - 0.47	0.11	N/A	23 N	N/A	N/A	N	BSL
	83-32-9	ACENAPHTHENE	0.00082	18 J	mg/kg	CRP-SB228_0_1	54 / 128	0.0066 - 0.442	18	N/A	350 N	N/A	N/A	N	BSL
	208-96-8	ACENAPHTHYLENE	0.00072	0.369 J	mg/kg	CRP-SS115_0_0.5	33 / 128	0.0066 - 0.442	0.369	N/A	350 N	N/A	N/A	N	BSL
	120-12-7	ANTHRACENE	0.00089	21 J	mg/kg	CRP-SB228_0_1	77 / 128	0.0069 - 0.442	21	N/A	1700 N	N/A	N/A	N	BSL
	56-55-3	BENZO[A]ANTHRACENE	0.00074	65 J	mg/kg	CRP-SB228_0_1	91 / 128	0.007 - 0.39	65	N/A	0.15 C	N/A	N/A	Y	ASL
	50-32-8	BENZO[A]PYRENE	0.00077	80 J	mg/kg	CRP-SB228_0_1	89 / 128	0.007 - 0.082	80	N/A	0.015 C	N/A	N/A	Y	ASL
	205-99-2	BENZO[B]FLUORANTHENE	0.00077	75 J	mg/kg	CRP-SB228_0_1	93 / 128	0.007 - 0.39	75	N/A	0.15 C	N/A	N/A	Y	ASL
	191-24-2	BENZO[G,H,I]PERYLENE	0.00089	32 J	mg/kg	CRP-SB228_0_1	85 / 128	0.007 - 0.41	32	N/A	170 N	N/A	N/A	N	BSL
	207-08-9	BENZO[K]FLUORANTHENE	0.00099	74 J	mg/kg	CRP-SB228_0_1	80 / 128	0.007 - 0.41	74	N/A	1.5 C	N/A	N/A	Y	ASL
	117-81-7	BIS(2-ETHYLHEXYL)PHTHALA	0.044	0.048 J	mg/kg	CRP-SB09_6_8	2 / 8	0.22 - 0.28	0.048	N/A	38 C	N/A	N/A	N	BSL
	218-01-9	CHRYSENE	0.001	81 J	mg/kg	CRP-SB228_0_1	85 / 128	0.007 - 0.078	81	N/A	15 C	N/A	N/A	Y	ASL
	53-70-3	DIBENZ[A,H]ANTHRACENE	0.00073	5.5	mg/kg	CRP-SB212_0_1	67 / 128	0.0069 - 15	5.5	N/A	0.015 C	N/A	N/A	Y	ASL
	206-44-0	FLUORANTHENE	0.00092	100 J	mg/kg	CRP-SB228_0_1	97 / 128	0.007 - 0.39	100	N/A	230 N	N/A	N/A	N	BSL
	86-73-7	FLUORENE	0.00085	9.2 J	mg/kg	CRP-SB228_0_1	46 / 128	0.0066 - 0.442	9.2	N/A	230 N	N/A	N/A	N	BSL
	193-39-5	INDENO[1,2,3-CD]PYRENE	0.00089	44 J	mg/kg	CRP-SB228_0_1	80 / 128	0.007 - 0.41	44	N/A	0.15 C	N/A	N/A	Y	ASL
	91-20-3	NAPHTHALENE	0.0026	3 J	mg/kg	CRP-SB228_0_1	32 / 128	0.0089 - 2.8	3	N/A	3.8 C	N/A	N/A	N	BSL
	85-01-8	PHENANTHRENE	0.0011	86 J	mg/kg	CRP-SB228_0_1	94 / 128	0.007 - 0.39	86	N/A	170 N	N/A	N/A	N	BSL
	129-00-0	PYRENE	0.00079	100 J	mg/kg	CRP-SB228_0_1	93 / 128	0.007 - 0.39	100	N/A	170 N	N/A	N/A	N	BSL
	55-63-0	NITROGLYCERIN	0.15	4	mg/kg	CRP-SB217_0_1	7 / 36	0.33 - 0.4	4	N/A	0.62 N	N/A	N/A	Y	ASL
	72-55-9	4,4-DDE	0.00064	0.081 J	mg/kg	CRP-SB223_3_4	2 / 9	0.00033 - 0.037	0.081	N/A	1.6 C	N/A	N/A	N	BSL
	50-29-3	4,4-DDT	0.00074	19 J	mg/kg	CRP-SB223_0_1	4 / 9	0.00033 - 0.0017	19	N/A	1.9 C	N/A	N/A	Y	ASL
	959-98-8	ENDOSULFAN I	0.0015 J	0.0015 J	mg/kg	CRP-SB229_0_1	1 / 9	0.00017 - 0.019	0.0015	N/A	37 N	N/A	N/A	N	BSL
	33213-65-9	ENDOSULFAN II	0.00032	0.0013	mg/kg	CRP-SB09_6_8	3 / 9	0.00032 - 0.037	0.0013	N/A	37 N	N/A	N/A	N	BSL
	1031-07-8	ENDOSULFAN SULFATE	0.0021	12 J	mg/kg	CRP-SB223_0_1	3 / 9	0.00032 - 0.0017	12	N/A	37 N	N/A	N/A	N	BSL
	72-20-8	ENDRIN	0.0018	0.0018	mg/kg	CRP-SB229_0_1	1 / 9	0.00033 - 0.037	0.0018	N/A	1.8 N	N/A	N/A	N	BSL
	53494-70-5	ENDRIN KETONE	0.0016 J	0.0016 J	mg/kg	CRP-SB302_0_1	1 / 9	0.00032 - 0.037	0.0016	N/A	1.8 N	N/A	N/A	N	BSL
	76-44-8	HEPTACHLOR	0.0015 J	0.0015 J	mg/kg	CRP-SB229_0_1	1 / 9	0.00017 - 0.019	0.0015	N/A	0.12 C	N/A	N/A	N	BSL
	72-43-5	METHOXYCHLOR	0.0088 J	0.0088 J	mg/kg	CRP-SB229_0_1	1 / 9	0.0017 - 0.19	0.0088	N/A	31 N	N/A	N/A	N	BSL
	5103-74-2	TRANS-CHLORDANE	0.00024 J	0.00024 J	mg/kg	CRP-SB01_6_8	1 / 2	0.00039	0.00024	N/A	1.8 C	N/A	N/A	N	BSL
	11097-69-1	AROCLOR-1254	0.043	0.043 J	mg/kg	CRP-SB301_0_1	1 / 11	0.0016 - 1.9	0.043	N/A	0.11 N	N/A	N/A	N	BSL
	11096-82-5	AROCLOR-1260	0.0098	270 J	mg/kg	CRP-SB223_0_1	5 / 11	0.0016 - 0.019	270	N/A	0.24 C	N/A	N/A	Y	ASL
	7429-90-5	ALUMINUM	3380	18600	mg/kg	MW-13_0_1	80 / 80	N/A	18600	N/A	7700 N	N/A	N/A	Y	ASL
	7440-36-0	ANTIMONY	0.05	396 J	mg/kg	CRP-SB302_0_1	72 / 80	0.073 - 0.92	396	N/A	3.1 N	N/A	N/A	Y	ASL

TABLE 2.2
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
CARR POINT - MRP SITE 1

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Surface/Subsurface Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (1)	Maximum Concentration (Qualifier) (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (N/C) (4)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (5)
MRP Site 1 - Resident & Trespasser	7440-38-2	ARSENIC	0.48	130 J	mg/kg	CRP-SB302_0_1	115 / 115	N/A	130	N/A	0.67 C	N/A	N/A	Y	ASL
	7440-39-3	BARIUM	6.7	62	mg/kg	CRP-SB209_10_12	80 / 80	N/A	62	N/A	1500 N	N/A	N/A	N	BSL
	7440-41-7	BERYLLIUM	0.2	0.72	mg/kg	MW-13_3_5	80 / 80	N/A	0.72	N/A	16 N	N/A	N/A	N	BSL
	7440-43-9	CADMIUM	0.03	0.84 J	mg/kg	CRP-SB223_0_1	51 / 80	0.059 - 0.14	0.84	N/A	7 N	N/A	N/A	N	BSL
	7440-70-2	CALCIUM	107	39500	mg/kg	CRP-SB228_0_1	80 / 80	N/A	39500	N/A	N/A	N/A	N/A	N	NUT
	7440-47-3	CHROMIUM, TOTAL	5	34.2 J	mg/kg	CRP-SB211_3_5	115 / 115	N/A	34.2	N/A	0.3 C	N/A	N/A	Y	ASL
	7440-48-4	COBALT	6.4	33.4 J	mg/kg	CRP-SB209_10_12	80 / 80	N/A	33.4	N/A	2.3 N	N/A	N/A	Y	ASL
	7440-50-8	COPPER	8.5	256 J	mg/kg	CRP-SB205_0_1	80 / 80	N/A	256	N/A	310 N	N/A	N/A	N	BSL
	7439-89-6	IRON	8480	88500	mg/kg	CRP-SB219_0_1	80 / 80	N/A	88500	N/A	5500 N	N/A	N/A	Y	ASL
	7439-92-1	LEAD	4.3	29900 J	mg/kg	CRP-SB302_0_1	127 / 127	N/A	29900	N/A	400 L	N/A	N/A	Y	ASL
	7439-95-4	MAGNESIUM	788	25200 J	mg/kg	CRP-SB228_0_1	80 / 80	N/A	25200	N/A	N/A	N/A	N/A	N	NUT
	7439-96-5	MANGANESE	168	5750 J	mg/kg	CRP-SB213_6_8	80 / 80	N/A	5750	N/A	180 N	N/A	N/A	Y	ASL
	7439-97-6	MERCURY	0.005	0.21 J-	mg/kg	CRP-SB212_0_1	33 / 80	0.012 - 0.038	0.21	N/A	2.3 N	N/A	N/A	N	BSL
	7440-02-0	NICKEL	11.8	56.6 J-	mg/kg	CRP-SB223_0_1	80 / 80	N/A	56.6	N/A	150 N	N/A	N/A	N	BSL
	7440-09-7	POTASSIUM	196	975	mg/kg	MW-13_7_9	80 / 80	N/A	975	N/A	N/A	N/A	N/A	N	NUT
	7782-49-2	SELENIUM	0.18	1.2	mg/kg	CRP-SB212_3_5	33 / 80	0.19 - 0.56	1.2	N/A	39 N	N/A	N/A	N	BSL
	7440-22-4	SILVER	0.01	0.9 J	mg/kg	CRP-SB212_0_1	78 / 80	0.17 - 0.18	0.9	N/A	39 N	N/A	N/A	N	BSL
	7440-23-5	SODIUM	90.6	1860 J-	mg/kg	CRP-SB225_0_1	6 / 80	48 - 308	1860	N/A	N/A	N/A	N/A	N	NUT
	7440-28-0	THALLIUM	0.02	0.26	mg/kg	CRP-SB212_6_8	78 / 80	0.46 - 0.49	0.26	N/A	0.078 N	N/A	N/A	Y	ASL
	7440-62-2	VANADIUM	11.9	29	mg/kg	MW-13_3_5	80 / 80	N/A	29	N/A	39 N	N/A	N/A	N	BSL
	7440-66-6	ZINC	28.5	433 J	mg/kg	CRP-SB223_0_1	80 / 80	N/A	433	N/A	2300 N	N/A	N/A	N	BSL
MRP Site 1 - Onsite Worker & Const. Wrkr.															
	90-12-0	1-METHYLNAPHTHALENE	0.0026	0.1	mg/kg	MRP1-PES-3A-02_2_2	13 / 35	0.022 - 0.47	0.1	N/A	73 C	N/A	N/A	N	BSL
	91-57-6	2-METHYLNAPHTHALENE	0.0026	0.11	mg/kg	MRP1-PES-3A-02_2_2	15 / 55	0.022 - 0.47	0.11	N/A	300 N	N/A	N/A	N	BSL
	83-32-9	ACENAPHTHENE	0.00082	18 J	mg/kg	CRP-SB228_0_1	54 / 128	0.0066 - 0.442	18	N/A	4500 N	N/A	N/A	N	BSL
	208-96-8	ACENAPHTHYLENE	0.00072	0.369 J	mg/kg	CRP-SS115_0_0.5	33 / 128	0.0066 - 0.442	0.369	N/A	4500 N	N/A	N/A	N	BSL
	120-12-7	ANTHRACENE	0.00089	21 J	mg/kg	CRP-SB228_0_1	77 / 128	0.0069 - 0.442	21	N/A	23000 N	N/A	N/A	N	BSL
	56-55-3	BENZO[A]ANTHRACENE	0.00074	65 J	mg/kg	CRP-SB228_0_1	91 / 128	0.007 - 0.39	65	N/A	2.9 C	N/A	N/A	Y	ASL
	50-32-8	BENZO[A]PYRENE	0.00077	80 J	mg/kg	CRP-SB228_0_1	89 / 128	0.007 - 0.082	80	N/A	0.29 C	N/A	N/A	Y	ASL
	205-99-2	BENZO[B]FLUORANTHENE	0.00077	75 J	mg/kg	CRP-SB228_0_1	93 / 128	0.007 - 0.39	75	N/A	2.9 C	N/A	N/A	Y	ASL
	191-24-2	BENZO[G,H,I]PERYLENE	0.00089	32 J	mg/kg	CRP-SB228_0_1	85 / 128	0.007 - 0.41	32	N/A	2300 N	N/A	N/A	N	BSL
	207-08-9	BENZO[K]FLUORANTHENE	0.00099	74 J	mg/kg	CRP-SB228_0_1	80 / 128	0.007 - 0.41	74	N/A	29 C	N/A	N/A	Y	ASL
	117-81-7	BIS(2-ETHYLHEXYL)PHTHALA	0.044	0.048 J	mg/kg	CRP-SB09_6_8	2 / 8	0.22 - 0.28	0.048	N/A	160 C	N/A	N/A	N	BSL
	218-01-9	CHRYSENE	0.001	81 J	mg/kg	CRP-SB228_0_1	85 / 128	0.007 - 0.078	81	N/A	290 C	N/A	N/A	N	BSL
	53-70-3	DIBENZ[A,H]ANTHRACENE	0.00073	5.5	mg/kg	CRP-SB212_0_1	67 / 128	0.0069 - 15	5.5	N/A	0.29 C	N/A	N/A	Y	ASL
	206-44-0	FLUORANTHENE	0.00092	100 J	mg/kg	CRP-SB228_0_1	97 / 128	0.007 - 0.39	100	N/A	3000 N	N/A	N/A	N	BSL
	86-73-7	FLUORENE	0.00085	9.2 J	mg/kg	CRP-SB228_0_1	46 / 128	0.0066 - 0.442	9.2	N/A	3000 N	N/A	N/A	N	BSL
	193-39-5	INDENO[1,2,3-CD]PYRENE	0.00089	44 J	mg/kg	CRP-SB228_0_1	80 / 128	0.007 - 0.41	44	N/A	2.9 C	N/A	N/A	Y	ASL

TABLE 2.2
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
CARR POINT - MRP SITE 1

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Surface/Subsurface Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (1)	Maximum Concentration (Qualifier) (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (N/C) (4)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (5)
MRP Site 1 - Onsite Worker & Const. Wrkr.	91-20-3	NAPHTHALENE	0.0026	3 J	mg/kg	CRP-SB228_0_1	32 / 128	0.0089 - 2.8	3	N/A	17 C	N/A	N/A	N	BSL
	85-01-8	PHENANTHRENE	0.0011	86 J	mg/kg	CRP-SB228_0_1	94 / 128	0.007 - 0.39	86	N/A	2300 N	N/A	N/A	N	BSL
	129-00-0	PYRENE	0.00079	100 J	mg/kg	CRP-SB228_0_1	93 / 128	0.007 - 0.39	100	N/A	2300 N	N/A	N/A	N	BSL
	55-63-0	NITROGLYCERIN	0.15	4	mg/kg	CRP-SB217_0_1	7 / 36	0.33 - 0.4	4	N/A	8.2 N	N/A	N/A	N	BSL
	72-55-9	4,4-DDE	0.00064	0.081 J	mg/kg	CRP-SB223_3_4	2 / 9	0.00033 - 0.037	0.081	N/A	6.8 C	N/A	N/A	N	BSL
	50-29-3	4,4-DDT	0.00074	19 J	mg/kg	CRP-SB223_0_1	4 / 9	0.00033 - 0.0017	19	N/A	8.6 C	N/A	N/A	Y	ASL
	959-98-8	ENDOSULFAN I	0.0015 J	0.0015 J	mg/kg	CRP-SB229_0_1	1 / 9	0.00017 - 0.019	0.0015	N/A	490 N	N/A	N/A	N	BSL
	33213-65-9	ENDOSULFAN II	0.00032	0.0013	mg/kg	CRP-SB09_6_8	3 / 9	0.00032 - 0.037	0.0013	N/A	490 N	N/A	N/A	N	BSL
	1031-07-8	ENDOSULFAN SULFATE	0.0021	12 J	mg/kg	CRP-SB223_0_1	3 / 9	0.00032 - 0.0017	12	N/A	490 N	N/A	N/A	N	BSL
	72-20-8	ENDRIN	0.0018	0.0018	mg/kg	CRP-SB229_0_1	1 / 9	0.00033 - 0.037	0.0018	N/A	25 N	N/A	N/A	N	BSL
	53494-70-5	ENDRIN KETONE	0.0016 J	0.0016 J	mg/kg	CRP-SB302_0_1	1 / 9	0.00032 - 0.037	0.0016	N/A	25 N	N/A	N/A	N	BSL
	76-44-8	HEPTACHLOR	0.0015 J	0.0015 J	mg/kg	CRP-SB229_0_1	1 / 9	0.00017 - 0.019	0.0015	N/A	0.51 C	N/A	N/A	N	BSL
	72-43-5	METHOXYCHLOR	0.0088 J	0.0088 J	mg/kg	CRP-SB229_0_1	1 / 9	0.0017 - 0.19	0.0088	N/A	410 N	N/A	N/A	N	BSL
	5103-74-2	TRANS-CHLORDANE	0.00024 J	0.00024 J	mg/kg	CRP-SB01_6_8	1 / 2	0.00039	0.00024	N/A	8 C	N/A	N/A	N	BSL
	11097-69-1	AROCLOR-1254	0.043	0.043 J	mg/kg	CRP-SB301_0_1	1 / 11	0.0016 - 1.9	0.043	N/A	1 C	N/A	N/A	N	BSL
	11096-82-5	AROCLOR-1260	0.0098	270 J	mg/kg	CRP-SB223_0_1	5 / 11	0.0016 - 0.019	270	N/A	1 C	N/A	N/A	Y	ASL
	7429-90-5	ALUMINUM	3380	18600	mg/kg	MW-13_0_1	80 / 80	N/A	18600	N/A	110000 N	N/A	N/A	N	BSL
	7440-36-0	ANTIMONY	0.05	396 J	mg/kg	CRP-SB302_0_1	72 / 80	0.073 - 0.92	396	N/A	47 N	N/A	N/A	Y	ASL
	7440-38-2	ARSENIC	0.48	130 J	mg/kg	CRP-SB302_0_1	115 / 115	N/A	130	N/A	3 C	N/A	N/A	Y	ASL
	7440-39-3	BARIUM	6.7	62	mg/kg	CRP-SB209_10_12	80 / 80	N/A	62	N/A	22000 N	N/A	N/A	N	BSL
	7440-41-7	BERYLLIUM	0.2	0.72	mg/kg	MW-13_3_5	80 / 80	N/A	0.72	N/A	230 N	N/A	N/A	N	BSL
	7440-43-9	CADMIUM	0.03	0.84 J	mg/kg	CRP-SB223_0_1	51 / 80	0.059 - 0.14	0.84	N/A	98 N	N/A	N/A	N	BSL
	7440-70-2	CALCIUM	107	39500	mg/kg	CRP-SB228_0_1	80 / 80	N/A	39500	N/A	N/A	N/A	N/A	N	NUT
	7440-47-3	CHROMIUM, TOTAL	5	34.2 J	mg/kg	CRP-SB211_3_5	115 / 115	N/A	34.2	N/A	6.3 C	N/A	N/A	Y	ASL
	7440-48-4	COBALT	6.4	33.4 J	mg/kg	CRP-SB209_10_12	80 / 80	N/A	33.4	N/A	35 N	N/A	N/A	N	BSL
	7440-50-8	COPPER	8.5	256 J	mg/kg	CRP-SB205_0_1	80 / 80	N/A	256	N/A	4700 N	N/A	N/A	N	BSL
	7439-89-6	IRON	8480	88500	mg/kg	CRP-SB219_0_1	80 / 80	N/A	88500	N/A	82000 N	N/A	N/A	Y	ASL
	7439-92-1	LEAD	4.3	29900 J	mg/kg	CRP-SB302_0_1	127 / 127	N/A	29900	N/A	800 L	N/A	N/A	Y	ASL
	7439-95-4	MAGNESIUM	788	25200 J	mg/kg	CRP-SB228_0_1	80 / 80	N/A	25200	N/A	N/A	N/A	N/A	N	NUT
	7439-96-5	MANGANESE	168	5750 J	mg/kg	CRP-SB213_6_8	80 / 80	N/A	5750	N/A	2600 N	N/A	N/A	Y	ASL
	7439-97-6	MERCURY	0.005	0.21 J-	mg/kg	CRP-SB212_0_1	33 / 80	0.012 - 0.038	0.21	N/A	35 N	N/A	N/A	N	BSL
	7440-02-0	NICKEL	11.8	56.6 J-	mg/kg	CRP-SB223_0_1	80 / 80	N/A	56.6	N/A	2200 N	N/A	N/A	N	BSL
	7440-09-7	POTASSIUM	196	975	mg/kg	MW-13_7_9	80 / 80	N/A	975	N/A	N/A	N/A	N/A	N	NUT
	7782-49-2	SELENIUM	0.18	1.2	mg/kg	CRP-SB212_3_5	33 / 80	0.19 - 0.56	1.2	N/A	580 N	N/A	N/A	N	BSL
	7440-22-4	SILVER	0.01	0.9 J	mg/kg	CRP-SB212_0_1	78 / 80	0.17 - 0.18	0.9	N/A	580 N	N/A	N/A	N	BSL

TABLE 2.2
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
CARR POINT - MRP SITE 1

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Surface/Subsurface Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (1)	Maximum Concentration (Qualifier) (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (N/C) (4)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (5)
MRP Site 1 - Onsite Worker & Const. Wrkr.	7440-23-5	SODIUM	90.6	1860 J-	mg/kg	CRP-SB225_0_1	6 / 80	48 - 308	1860	N/A	N/A	N/A	N/A	N	NUT
	7440-28-0	THALLIUM	0.02	0.26	mg/kg	CRP-SB212_6_8	78 / 80	0.46 - 0.49	0.26	N/A	1.2 N	N/A	N/A	N	BSL
	7440-62-2	VANADIUM	11.9	29	mg/kg	MW-13_3_5	80 / 80	N/A	29	N/A	580 N	N/A	N/A	N	BSL
	7440-66-6	ZINC	28.5	433 J	mg/kg	CRP-SB223_0_1	80 / 80	N/A	433	N/A	35000 N	N/A	N/A	N	BSL

Notes:
Refer to Attachment A for samples included in data set. Where two sample depths (e.g., 0-0.5 ft and 0.5-1 ft) were available for one location, samples combined to form one composite result for the location.
N/A = Not Applicable or Not Available

[1] Due to processing limitations associated with combining different depth samples, minimum detection qualifiers and composite detection qualifiers are unavailable.
Organic Data Qualifiers
J = The compound was positively identified; however, the associated numerical value is an estimated concentration only. (+ and - indicate bias)
Inorganic Data Qualifiers
J = The compound was positively identified; however, the associated numerical value is an estimated concentration only. (+ and - indicate bias)

[2] The maximum detected concentration was used. Duplicate samples were averaged prior to the identification of maxima.

[3] Background values were not used for COPC screening purposes, although they may be considered in the risk characterization portion of the risk assessment.

[4] Screening toxicity values are the USEPA (January 2015) Regional Screening Levels (RSLs) for Residential Soil (for Resident and Trespasser screening) and Industrial Soil (for Worker screening).
C = Carcinogen
N = Noncarcinogen (adjusted to a hazard quotient of 0.1)
L = lead
The RSL values for noted analytes are as follows:
RSL for mercuric chloride has been used for mercury.
RSL for chromium (VI) used for chromium, as there were detections in soil.
RSL for pyrene has been used for benzo(g,h,i)perylene and phenanthrene.
RSL for endrin has been used for endrin ketone.
RSL for endosulfan has been used for endosulfan I, endosulfan II, and endosulfan sulfate.
RSL for chlordane has been used for trans-chlordane.
RSL for acenaphthene has been used for acenaphthylene.

[5] Codes used for rationale are as follows:
Selection Reason: Above Screening Levels (ASL)
Deletion Reason: Essential Nutrient (NUT)
Below Screening Level (BSL)

TABLE 2.3
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
CARR POINT - MRP SITE 1

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (1)	Maximum Concentration (Qualifier) (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (N/C) (4)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (5)
MRP Site 1															
	83-32-9	ACENAPHTHENE	0.007	0.088	mg/kg	CRP-SD01_0_1	10 / 10	N/A	0.088	N/A	2330 N	N/A	N/A	N	BSL
	208-96-8	ACENAPHTHYLENE	0.0018	0.004 J	mg/kg	CRP-SD130_0_1	3 / 10	0.01 - 0.25	0.004	N/A	2330 N	N/A	N/A	N	BSL
	120-12-7	ANTHRACENE	0.011	0.127	mg/kg	CRP-SD01_0_1	10 / 10	N/A	0.127	N/A	11700 N	N/A	N/A	N	BSL
	56-55-3	BENZO[A]ANTHRACENE	0.074	0.66	mg/kg	CRP-SD01_0_1	10 / 10	N/A	0.66	N/A	0.895 C	N/A	N/A	N	BSL
	50-32-8	BENZO[A]PYRENE	0.08	0.875	mg/kg	CRP-SD01_0_1	10 / 10	N/A	0.875	N/A	0.0895 C	N/A	N/A	Y	ASL
	205-99-2	BENZO[B]FLUORANTHENE	0.081	0.92	mg/kg	CRP-SD01_0_1	10 / 10	N/A	0.92	N/A	0.895 C	N/A	N/A	Y	ASL
	191-24-2	BENZO[G,H,I]PERYLENE	0.036	0.68	mg/kg	CRP-SD01_0_1	10 / 10	N/A	0.68	N/A	1170 N	N/A	N/A	N	BSL
	207-08-9	BENZO[K]FLUORANTHENE	0.034	0.33	mg/kg	CRP-SD01_0_1	10 / 10	N/A	0.33	N/A	8.95 C	N/A	N/A	N	BSL
	218-01-9	CHRYSENE	0.093	0.79	mg/kg	CRP-SD01_0_1	10 / 10	N/A	0.79	N/A	89.5 C	N/A	N/A	N	BSL
	53-70-3	DIBENZ[A,H]ANTHRACENE	0.019	0.28	mg/kg	CRP-SD01_0_1	9 / 10	0.25	0.28	N/A	0.0895 C	N/A	N/A	Y	ASL
	206-44-0	FLUORANTHENE	0.1	0.89	mg/kg	CRP-SD01_0_1	10 / 10	N/A	0.89	N/A	1550 N	N/A	N/A	N	BSL
	86-73-7	FLUORENE	0.0047	0.06	mg/kg	CRP-SD01_0_1	10 / 10	N/A	0.06	N/A	1550 N	N/A	N/A	N	BSL
	193-39-5	INDENO[1,2,3-CD]PYRENE	0.048	0.745	mg/kg	CRP-SD01_0_1	10 / 10	N/A	0.745	N/A	0.895 C	N/A	N/A	N	BSL
	91-20-3	NAPHTHALENE	0.0044	0.03 J	mg/kg	CRP-SD101_0_1	5 / 10	0.011 - 0.25	0.03	N/A	777 N	N/A	N/A	N	BSL
	85-01-8	PHENANTHRENE	0.06	0.59	mg/kg	CRP-SD01_0_1	10 / 10	N/A	0.59	N/A	1170 N	N/A	N/A	N	BSL
	129-00-0	PYRENE	0.09	0.875	mg/kg	CRP-SD01_0_1	10 / 10	N/A	0.875	N/A	1170 N	N/A	N/A	N	BSL
	7429-90-5	ALUMINUM	3720	7990	mg/kg	CRP-SD101_0_1	10 / 10	N/A	7990	N/A	52600 N	N/A	N/A	N	BSL
	7440-36-0	ANTIMONY	0.23	36.7	mg/kg	CRP-SD122_0_1	10 / 10	N/A	36.7	N/A	21.1 N	N/A	N/A	Y	ASL
	7440-38-2	ARSENIC	5.92	38.1	mg/kg	CRP-SD102_0_1	10 / 10	N/A	38.1	N/A	3.9 C	N/A	N/A	Y	ASL
	7440-39-3	BARIUM	6.04	29.6	mg/kg	CRP-SD103_0_1	10 / 10	N/A	29.6	N/A	10500 N	N/A	N/A	N	BSL
	7440-41-7	BERYLLIUM	0.22	0.44 J	mg/kg	CRP-SD101_0_1	10 / 10	N/A	0.44	N/A	105 N	N/A	N/A	N	BSL
	7440-43-9	CADMIUM	0.05	0.19 J	mg/kg	CRP-SD101_0_1	10 / 10	N/A	0.19	N/A	47.5 N	N/A	N/A	N	BSL
	7440-70-2	CALCIUM	1400	8360	mg/kg	CRP-SD130_0_1	10 / 10	N/A	8360	N/A	N/A	N/A	N/A	N	NUT
	7440-47-3	CHROMIUM, TOTAL	10.2	16.2 J	mg/kg	CRP-SD101_0_1	10 / 10	N/A	16.2	N/A	2.06 C	N/A	N/A	Y	ASL
	7440-48-4	COBALT	8.7	16.4	mg/kg	CRP-SD101_0_1	10 / 10	N/A	16.4	N/A	15.8 N	N/A	N/A	Y	ASL
	7440-50-8	COPPER	21.9	565 J	mg/kg	CRP-SD101_0_1	10 / 10	N/A	565	N/A	2110 N	N/A	N/A	N	BSL
	7439-89-6	IRON	28600	43800	mg/kg	CRP-SD101_0_1	10 / 10	N/A	43800	N/A	36900 N	N/A	N/A	Y	ASL
	7439-92-1	LEAD	59.4	4290 J	mg/kg	CRP-SD122_0_1	10 / 10	N/A	4290	N/A	400 L	N/A	N/A	Y	ASL
	7439-95-4	MAGNESIUM	2110	4120	mg/kg	CRP-SD103_0_1	10 / 10	N/A	4120	N/A	N/A	N/A	N/A	N	NUT
	7439-96-5	MANGANESE	224	1510 B	mg/kg	CRP-SD129_0_1	10 / 10	N/A	1510	N/A	1260 N	N/A	N/A	Y	ASL
	7439-97-6	MERCURY	0.004	0.02 J	mg/kg	CRP-SD102_0_1	6 / 8	0.013 - 0.014	0.02	N/A	15.8 N	N/A	N/A	N	BSL
	7440-02-0	NICKEL	20.6	35.3	mg/kg	CRP-SD01_0_1	10 / 10	N/A	35.3	N/A	1050 N	N/A	N/A	N	BSL
	7440-09-7	POTASSIUM	346	967 J	mg/kg	CRP-SD102_0_1	10 / 10	N/A	967	N/A	N/A	N/A	N/A	N	NUT
	7440-22-4	SILVER	0.02	0.3 J	mg/kg	CRP-SD101_0_1	8 / 10	0.36	0.3	N/A	263 N	N/A	N/A	N	BSL
	7440-23-5	SODIUM	645	2990	mg/kg	CRP-SD103_0_1	10 / 10	N/A	2990	N/A	N/A	N/A	N/A	N	NUT
	7440-28-0	THALLIUM	0.02	0.1	mg/kg	CRP-SD102_0_1	6 / 10	0.059 - 0.97	0.1	N/A	0.526 N	N/A	N/A	N	BSL
	7440-62-2	VANADIUM	13.5	27.1 J	mg/kg	CRP-SD101_0_1	10 / 10	N/A	27.1	N/A	265 N	N/A	N/A	N	BSL
	7440-66-6	ZINC	80.85	132 J	mg/kg	CRP-SD101_0_1	10 / 10	N/A	132	N/A	15800 N	N/A	N/A	N	BSL

TABLE 2.3
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
CARR POINT - MRP SITE 1

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (1)	Maximum Concentration (Qualifier) (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (N/C) (4)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (5)

Notes:
Refer to Attachment A for samples included in data set. Where two sample depths (e.g., 0-0.5 ft and 0.5-1 ft) were available for one location, samples combined to form one composite result for the location.
N/A = Not Applicable or Not Available
[1] Due to processing limitations associated with combining different depth samples, minimum detection qualifiers and composite detection qualifiers are unavailable.
Organic Data Qualifiers
J = The compound was positively identified; however, the associated numerical value is an estimated concentration only.
Inorganic Data Qualifiers
J = The compound was positively identified; however, the associated numerical value is an estimated concentration only.
B = The reported value was obtained from a reading less than the contract required detection limit (CRDL) but greater than or equal to the instrument detection limit (IDL).
[2] The maximum detected concentration was used. Duplicate samples were averaged prior to the identification of maxima.
[3] Background values were not used for COPC screening purposes, although they may be considered in the risk characterization portion of the risk assessment.
[4] Screening toxicity values were generated using the USEPA (January 2015) Regional Screening Level (RSL) calculator for soil, using sediment exposure parameters (see text for further description).
C = Carcinogen
N = Noncarcinogen (adjusted to a hazard quotient of 0.1)
L = lead
The RSL values for noted analytes are as follows:
RSL for chromium (VI) used for chromium, as there were detections in sediment.
RSL for mercuric chloride has been used for mercury.
RSL for pyrene has been used for benzo(g,h,i)perylene and phenanthrene.
RSL for acenaphthene has been used for acenaphthylene.
[5] Codes used for rationale are as follows:
Selection Reason: Above Screening Levels (ASL)
Deletion Reason: Essential Nutrient (NUT)
Below Screening Level (BSL)
Frequency of Detection below 5% (FOD)

TABLE 2.4
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Shallow Groundwater

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (1)	Maximum Concentration (Qualifier) (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (N/C) (4)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (5)
MRP Site 1															
	7429-90-5	ALUMINUM	32.1 J	605	ug/L	MW-01	4 / 4	N/A	605	N/A	2000 N	N/A	N/A	N	BSL
	7440-39-3	BARIUM	14.8 J	42.6 J	ug/L	MW-13	4 / 4	N/A	42.6	N/A	380 N	2000	MCL	N	BSL
	7440-41-7	BERYLLIUM	0.06 J	0.06 J	ug/L	MW-01	1 / 4	0.2	0.06	N/A	2.5 N	4	MCL	N	BSL
	7440-43-9	CADMIUM	0.05 J	0.15 J	ug/L	MW-13	4 / 4	N/A	0.15	N/A	0.92 N	5	MCL	N	BSL
	7440-70-2	CALCIUM	10700	29000	ug/L	MW-12	4 / 4	N/A	29000	N/A	N/A	N/A	N/A	N	NUT
	7440-48-4	COBALT	0.37 J	7	ug/L	MW-01	4 / 4	N/A	7	N/A	0.6 N	N/A	N/A	Y	ASL
	7440-50-8	COPPER	8.4	14.2	ug/L	MW-12	2 / 4	3 - 3.3	14.2	N/A	80 N	1300	MCL	N	BSL
	7439-89-6	IRON	387	8830	ug/L	MW-01	3 / 4	100	8830	N/A	1400 N	N/A	N/A	Y	ASL
	7439-95-4	MAGNESIUM	8480	12700	ug/L	MW-12	4 / 4	N/A	12700	N/A	N/A	N/A	N/A	N	NUT
	7439-96-5	MANGANESE	59.3	1150	ug/L	MW-12	4 / 4	N/A	1150	N/A	43 N	N/A	N/A	Y	ASL
	7440-02-0	NICKEL	15.5	15.5	ug/L	MW-01	1 / 4	2 - 2.9	15.5	N/A	39 N	N/A	N/A	N	BSL
	7440-09-7	POTASSIUM	1620	3110	ug/L	MW-13	4 / 4	N/A	3110	N/A	N/A	N/A	N/A	N	NUT
	7782-49-2	SELENIUM	0.91 J	1.1 J	ug/L	MW-11	2 / 4	3	1.1	N/A	10 N	50	MCL	N	BSL
	7440-23-5	SODIUM	14600	35500	ug/L	MW-13	4 / 4	N/A	35500	N/A	N/A	N/A	N/A	N	NUT
	14797-55-8	NITRATE	580	1200	ug/L	MW-13	2 / 3	25	1200	N/A	3200 N	10000	MCL	N	BSL

Notes:
Refer to Attachment A for samples included in data set.
N/A = Not Applicable or Not Available
MCL - Maximum Contaminant Levels (MCLs). National Primary Drinking Water Regulations accessible at http://www.epa.gov/safewater/contaminants/index.htm

[1] **Inorganic Data Qualifiers**
J = The compound was positively identified; however, the associated numerical value is an estimated concentration only

[2] The maximum detected concentration was used. Duplicate samples were averaged prior to the identification of maxima

[3] Background values were not used for COPC screening purposes, although they may be considered in the risk characterization portion of the risk assessment.

[4] Screening toxicity values are the USEPA (January 2015) Regional Screening Levels (RSLs) for Tapwater
C = Carcinogen
N = Noncarcinogen (adjusted to a hazard quotient of 0.1)

[5] Codes used for rationale are as follows:
Selection Reason: Above Screening Levels (ASL)
Deletion Reason: Essential Nutrient (NUT)
Below Screening Level (BSL)

TABLE 2.5
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (1)		Maximum Concentration (Qualifier) (1)		Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (N/C) (4)		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (5)
MRP Site 1																		
	7429-90-5	ALUMINUM	32.1	J	605		ug/L	MW-01	5 / 6	300	605	N/A	2000	N	N/A	N/A	N	BSL
	7440-36-0	ANTIMONY	0.84	J	0.84	J	ug/L	MW-01D	1 / 6	1	0.84	N/A	0.78	N	6	MCL	Y	ASL
	7440-39-3	BARIUM	14.8	J	42.6	J	ug/L	MW-13	6 / 6	N/A	42.6	N/A	380	N	2000	MCL	N	BSL
	7440-41-7	BERYLLIUM	0.06	J	0.06	J	ug/L	MW-01	1 / 6	0.2	0.06	N/A	2.5	N	4	MCL	N	BSL
	7440-43-9	CADMIUM	0.03	J	0.15	J	ug/L	MW-13	6 / 6	N/A	0.15	N/A	0.92	N	5	MCL	N	BSL
	7440-70-2	CALCIUM	10700		29000		ug/L	MW-12	6 / 6	N/A	29000	N/A	N/A		N/A	N/A	N	NUT
	7440-48-4	COBALT	0.37	J	9.5		ug/L	MW-01D	6 / 6	N/A	9.5	N/A	0.6	N	N/A	N/A	Y	ASL
	7440-50-8	COPPER	8.4		14.2		ug/L	MW-12	2 / 6	3 - 3.5	14.2	N/A	80	N	1300	MCL	N	BSL
	7439-89-6	IRON	387		9770		ug/L	MW-01D	5 / 6	100	9770	N/A	1400	N	N/A	N/A	Y	ASL
	7439-95-4	MAGNESIUM	8480		12700		ug/L	MW-12	6 / 6	N/A	12700	N/A	N/A		N/A	N/A	N	NUT
	7439-96-5	MANGANESE	59.3		1150		ug/L	MW-12	6 / 6	N/A	1150	N/A	43	N	N/A	N/A	Y	ASL
	7440-02-0	NICKEL	4.9		15.5		ug/L	MW-01	3 / 6	2 - 2.9	15.5	N/A	39	N	N/A	N/A	N	BSL
	7440-09-7	POTASSIUM	1620		3110		ug/L	MW-13	6 / 6	N/A	3110	N/A	N/A		N/A	N/A	N	NUT
	7782-49-2	SELENIUM	0.24	J	1.1	J	ug/L	MW-11	3 / 6	3 - 5	1.1	N/A	10	N	50	MCL	N	BSL
	7440-23-5	SODIUM	14600		35500		ug/L	MW-13	6 / 6	N/A	35500	N/A	N/A		N/A	N/A	N	NUT
	14797-55-8	NITRATE	580		1200		ug/L	MW-13	2 / 5	25	1200	N/A	3200	N	10000	MCL	N	BSL

Notes:
Refer to Attachment A for samples included in data set.
N/A = Not Applicable or Not Available
MCL - Maximum Contaminant Levels (MCLs). National Primary Drinking Water Regulations accessible at http://www.epa.gov/safewater/contaminants/index.htm
[1] **Inorganic Data Qualifiers**
J = The compound was positively identified; however, the associated numerical value is an estimated concentration only
[2] The maximum detected concentration was used. Duplicate samples were averaged prior to the identification of maxima
[3] Background values were not used for COPC screening purposes, although they may be considered in the risk characterization portion of the risk assessment.
[4] Screening toxicity values are the USEPA (January 2015) Regional Screening Levels (RSLs) for Tapwater
C = Carcinogen
N = Noncarcinogen (adjusted to a hazard quotient of 0.1)
[5] Codes used for rationale are as follows:
Selection Reason: Above Screening Levels (ASL)
Deletion Reason: Essential Nutrient (NUT)
Below Screening Level (BSL)

TABLE 2.6
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
CARR POINT - MRP SITE 1

Scenario Timeframe: Current/Future
Medium: Shellfish Tissue
Exposure Medium: Shellfish Tissue

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (1)		Maximum Concentration (Qualifier) (1)		Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (N/C) (4)		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (5)
MRP Site 1																		
	83-32-9	ACENAPHTHENE	0.000084	J	0.0026		mg/kg	CRP-SD124	9 / 13	0.0013 - 0.004	0.0026	N/A	9.3	N	N/A	N/A	N	BSL
	208-96-8	ACENAPHTHYLENE	0.000094	J	0.0013		mg/kg	CRP-SD124	13 / 13	N/A	0.0013	N/A	9.3	N	N/A	N/A	N	BSL
	120-12-7	ANTHRACENE	0.00013	J	0.008		mg/kg	CRP-SD124	13 / 13	N/A	0.008	N/A	46	N	N/A	N/A	N	BSL
	56-55-3	BENZO[A]ANTHRACENE	0.00037	J	0.032		mg/kg	CRP-SD122	8 / 13	0.0002 - 0.00048	0.032	N/A	0.0057	C	N/A	N/A	Y	ASL
	50-32-8	BENZO[A]PYRENE	0.00012	J	0.04		mg/kg	CRP-SD122	13 / 13	N/A	0.04	N/A	0.00057	C	N/A	N/A	Y	ASL
	205-99-2	BENZO[B]FLUORANTHENE	0.00023	J	0.044		mg/kg	CRP-SD122	13 / 13	N/A	0.044	N/A	0.0057	C	N/A	N/A	Y	ASL
	191-24-2	BENZO[G,H,I]PERYLENE	0.00015	J	0.031		mg/kg	CRP-SD122	13 / 13	N/A	0.031	N/A	4.6	N	N/A	N/A	N	BSL
	207-08-9	BENZO[K]FLUORANTHENE	0.00012	J	0.015		mg/kg	CRP-SD122	13 / 13	N/A	0.015	N/A	0.057	C	N/A	N/A	N	BSL
	218-01-9	CHRYSENE	0.0002	J	0.05		mg/kg	CRP-SD122/CRP-SD124	13 / 13	N/A	0.05	N/A	0.57	C	N/A	N/A	N	BSL
	53-70-3	DIBENZ[A,H]ANTHRACENE	0.0018	J	0.0081		mg/kg	CRP-SD122	5 / 13	0.0001	0.0081	N/A	0.00057	C	N/A	N/A	Y	ASL
	206-44-0	FLUORANTHENE	0.00047	J	0.04		mg/kg	CRP-SD122	13 / 13	N/A	0.04	N/A	6.2	N	N/A	N/A	N	BSL
	86-73-7	FLUORENE	0.00025	J	0.0032		mg/kg	CRP-SD123/CRP-SD124	13 / 13	N/A	0.0032	N/A	6.2	N	N/A	N/A	N	BSL
	193-39-5	INDENO[1,2,3-CD]PYRENE	0.00011	J	0.026		mg/kg	CRP-SD122	12 / 13	0.0001	0.026	N/A	0.0057	C	N/A	N/A	Y	ASL
	85-01-8	PHENANTHRENE	0.00054		0.023		mg/kg	CRP-SD122	11 / 13	0.00049 - 0.0005	0.023	N/A	4.6	N	N/A	N/A	N	BSL
	129-00-0	PYRENE	0.00052		0.04		mg/kg	CRP-SD122	13 / 13	N/A	0.04	N/A	4.6	N	N/A	N/A	N	BSL
	7429-90-5	ALUMINUM	2.21		31.5		mg/kg	CRP-SD123	13 / 13	N/A	31.5	N/A	150	N	N/A	N/A	N	BSL
	7440-36-0	ANTIMONY	0.0111	J+	0.0287	J+	mg/kg	CRP-SD102	5 / 13	0.0041 - 0.0057	0.0287	N/A	0.062	N	N/A	N/A	N	BSL
	7440-38-2	ARSENIC	2.18	J+	4.38	J+	mg/kg	CRP-SD110	13 / 13	N/A	4.38	N/A	0.0028	C	N/A	N/A	Y	ASL
	7440-39-3	BARIUM	0.119	J+	0.303	J+	mg/kg	CRP-SD110	13 / 13	N/A	0.303	N/A	31	N	N/A	N/A	N	BSL
	7440-41-7	BERYLLIUM	0.0017	J	0.0068		mg/kg	CRP-SD112	13 / 13	N/A	0.0068	N/A	0.31	N	N/A	N/A	N	BSL
	7440-43-9	CADMIUM	0.0588	J+	0.149	J+	mg/kg	CRP-SD101	13 / 13	N/A	0.149	N/A	0.15	N	N/A	N/A	N	BSL
	7440-70-2	CALCIUM	327	J+	3980	J	mg/kg	CRP-SD123	13 / 13	N/A	3980	N/A	N/A		N/A	N/A	N	NUT
	7440-47-3	CHROMIUM, TOTAL	0.074	J+	0.771	J+	mg/kg	CRP-SD123	13 / 13	N/A	0.771	N/A	0.0083	C	N/A	N/A	Y	ASL
	7440-48-4	COBALT	0.0632	J+	0.279	J+	mg/kg	CRP-SD109	13 / 13	N/A	0.279	N/A	0.046	N	N/A	N/A	Y	ASL
	7440-50-8	COPPER	0.58	J+	1.6	J+	mg/kg	CRP-SD102	13 / 13	N/A	1.6	N/A	6.2	N	N/A	N/A	N	BSL
	7439-89-6	IRON	7.84	J+	148		mg/kg	CRP-SD123	13 / 13	N/A	148	N/A	110	N	N/A	N/A	Y	ASL
	7439-92-1	LEAD	0.06	J	7.26	J	mg/kg	CRP-SD102	13 / 13	N/A	7.26	N/A	N/A		N/A	N/A	Y	NSL
	7439-95-4	MAGNESIUM	748		941		mg/kg	CRP-SD118	13 / 13	N/A	941	N/A	N/A		N/A	N/A	N	NUT
	7439-96-5	MANGANESE	1.37	J+	7.42	J+	mg/kg	CRP-SD110	13 / 13	N/A	7.42	N/A	22	N	N/A	N/A	N	BSL
	7439-97-6	MERCURY	0.00701		0.03		mg/kg	CRP-SD110	13 / 13	N/A	0.03	N/A	0.015	N	N/A	N/A	Y	ASL
	7440-02-0	NICKEL	0.294	J+	0.891	J+	mg/kg	CRP-SD112	13 / 13	N/A	0.891	N/A	3.1	N	N/A	N/A	N	BSL
	7440-09-7	POTASSIUM	940	J+	1700	J+	mg/kg	CRP-SD123	13 / 13	N/A	1700	N/A	N/A		N/A	N/A	N	NUT
	7782-49-2	SELENIUM	0.18		0.52		mg/kg	CRP-SD124	13 / 13	N/A	0.52	N/A	0.77	N	N/A	N/A	N	BSL
	7440-22-4	SILVER	0.0047		0.274	J-	mg/kg	CRP-SD110	13 / 13	N/A	0.274	N/A	0.77	N	N/A	N/A	N	BSL
	7440-23-5	SODIUM	6200		7540		mg/kg	CRP-SD104	13 / 13	N/A	7540	N/A	N/A		N/A	N/A	N	NUT
	7440-62-2	VANADIUM	0.057	J+	0.354	J+	mg/kg	CRP-SD112	13 / 13	N/A	0.354	N/A	0.78	N	N/A	N/A	N	BSL
	7440-66-6	ZINC	5.4	J+	15.2	J+	mg/kg	CRP-SD106	13 / 13	N/A	15.2	N/A	46	N	N/A	N/A	N	BSL

TABLE 2.6
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
CARR POINT - MRP SITE 1

Scenario Timeframe: Current/Future
Medium: Shellfish Tissue
Exposure Medium: Shellfish Tissue

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (1)	Maximum Concentration (Qualifier) (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (N/C) (4)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (5)

Notes:
Refer to Attachment A for samples included in data set.
N/A = Not Applicable or Not Available
[1] **Data Qualifiers**
J = The compound was positively identified; however, the associated numerical value is an estimated concentration only. (+ and - indicate bias)
[2] The maximum detected concentration was used. Duplicate samples were averaged prior to the identification of maxima.
[3] Background values were not used for COPC screening purposes, although they may be considered in the risk characterization portion of the risk assessment.
[4] Screening toxicity values are the USEPA (January 2015) Regional Screening Levels (RSLs) for Fish Tissue
C = Carcinogen
N = Noncarcinogen (adjusted to a hazard quotient of 0.1)
The RSL values for noted analytes are as follows:
RSL for chromium (VI) used for chromium, as there were chromium (VI) detections in sediment.
RSL for methyl mercury used for mercury.
RSL for acenaphthene used for acenaphthylene.
RSL for pyrene used for benzo(g,h,i)perylene and phenanthrene.
[5] Codes used for rationale are as follows:
Selection Reason: Above Screening Levels (ASL)
No Screening Level (NSL)
Deletion Reason: Essential Nutrient (NUT)
Below Screening Level (BSL)

TABLE 3.1.RME
EXPOSURE POINT CONCENTRATION SUMMARY
REASONABLE MAXIMUM EXPOSURE
CARR POINT - MRP SITE 1

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Surface Soil

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean (1)	UCL (Distribution) (2)	Maximum Concentration (Qualifier) (3)		Exposure Point Concentration			
							Value	Units	Statistic (4)	Rationale (5)
MRP Site 1 - Rec. User & Trespasser										
	BENZO[A]ANTHRACENE	mg/kg	2.5E+00	1.5E+01 (NP)	6.5E+01	J	1.5E+01	mg/kg	99% KM (Chebyshev) UCL	
	BENZO[A]PYRENE	mg/kg	2.9E+00	1.8E+01 (NP)	8.0E+01	J	1.8E+01	mg/kg	99% KM (Chebyshev) UCL	
	BENZO[B]FLUORANTHENE	mg/kg	2.6E+00	8.6E+00 (NP)	7.5E+01	J	8.6E+00	mg/kg	95% Chebyshev (Mean, Sd) UCL	
	BENZO[K]FLUORANTHENE	mg/kg	2.4E+00	1.6E+01 (NP)	7.4E+01	J	1.6E+01	mg/kg	99% KM (Chebyshev) UCL	
	CHRYSENE	mg/kg	3.3E+00	1.9E+01 (NP)	8.1E+01	J	1.9E+01	mg/kg	99% KM (Chebyshev) UCL	
	DIBENZ[A,H]ANTHRACENE	mg/kg	2.8E-01	1.3E+00 (LN)	5.5E+00		1.3E+00	mg/kg	99% KM (Chebyshev) UCL	
	INDENO[1,2,3-CD]PYRENE	mg/kg	1.7E+00	9.9E+00 (NP)	4.4E+01	J	9.9E+00	mg/kg	99% KM (Chebyshev) UCL	
	NITROGLYCERIN	mg/kg	9.0E-01	2.6E+00 (LN)	4.0E+00		2.6E+00	mg/kg	97.5% KM (Chebyshev) UCL	
	4,4-DDT	mg/kg	6.3E+00	NC	1.9E+01	J	1.9E+01	mg/kg	Maximum Concentration	(c)
	AROCLOR-1260	mg/kg	9.0E+01	NC	2.7E+02	J	2.7E+02	mg/kg	Maximum Concentration	(c)
	ALUMINUM	mg/kg	9.7E+03	1.1E+04 (N)	1.9E+04		1.1E+04	mg/kg	95% Student's-t UCL	
	ANTIMONY	mg/kg	2.3E+01	9.2E+01 (NP)	4.0E+02	J	9.2E+01	mg/kg	95% Chebyshev (Mean, Sd) UCL	
	ARSENIC	mg/kg	1.3E+01	2.5E+01 (NP)	1.3E+02	J	2.5E+01	mg/kg	95% Chebyshev(Mean, Sd) UCL	
	CHROMIUM, TOTAL	mg/kg	1.3E+01	1.4E+01 (G)	3.0E+01	J	1.4E+01	mg/kg	95% Adjusted Gamma UCL	
	COBALT	mg/kg	1.2E+01	1.4E+01 (G)	2.5E+01		1.4E+01	mg/kg	95% Adjusted Gamma UCL	
	IRON	mg/kg	3.3E+04	3.7E+04 (G)	8.9E+04		3.7E+04	mg/kg	95% Adjusted Gamma UCL	
	LEAD	mg/kg	8.3E+02	3.2E+03 (NP)	3.0E+04	J	See Attachment F			
	MANGANESE	mg/kg	4.8E+02	5.4E+02 (N)	9.3E+02		5.4E+02	mg/kg	95% Student's-t UCL	
	THALLIUM	mg/kg	5.8E-02	6.8E-02 (N)	1.5E-01		6.8E-02	mg/kg	95% Student's-t UCL	
MRP Site 1 - Onsite Worker										
	BENZO[A]ANTHRACENE	mg/kg	2.5E+00	1.5E+01 (NP)	6.5E+01	J	1.5E+01	mg/kg	99% KM (Chebyshev) UCL	
	BENZO[A]PYRENE	mg/kg	2.9E+00	1.8E+01 (NP)	8.0E+01	J	1.8E+01	mg/kg	99% KM (Chebyshev) UCL	
	BENZO[B]FLUORANTHENE	mg/kg	2.6E+00	8.6E+00 (NP)	7.5E+01	J	8.6E+00	mg/kg	95% Chebyshev (Mean, Sd) UCL	
	BENZO[K]FLUORANTHENE	mg/kg	2.4E+00	1.6E+01 (NP)	7.4E+01	J	1.6E+01	mg/kg	99% KM (Chebyshev) UCL	
	DIBENZ[A,H]ANTHRACENE	mg/kg	2.8E-01	1.3E+00 (LN)	5.5E+00		1.3E+00	mg/kg	99% KM (Chebyshev) UCL	
	INDENO[1,2,3-CD]PYRENE	mg/kg	1.7E+00	9.9E+00 (NP)	4.4E+01	J	9.9E+00	mg/kg	99% KM (Chebyshev) UCL	
	4,4-DDT	mg/kg	6.3E+00	NC	1.9E+01	J	1.9E+01	mg/kg	Maximum Concentration	(c)
	AROCLOR-1260	mg/kg	9.0E+01	NC	2.7E+02	J	2.7E+02	mg/kg	Maximum Concentration	(c)
	ANTIMONY	mg/kg	2.3E+01	9.2E+01 (NP)	4.0E+02	J	9.2E+01	mg/kg	95% Chebyshev (Mean, Sd) UCL	
	ARSENIC	mg/kg	1.3E+01	2.5E+01 (LN)	1.3E+02	J	2.5E+01	mg/kg	95% Chebyshev (Mean, Sd) UCL	
	CHROMIUM, TOTAL	mg/kg	1.3E+01	1.4E+01 (G)	3.0E+01	J	1.4E+01	mg/kg	95% Adjusted Gamma UCL	
	IRON	mg/kg	3.3E+04	3.7E+04 (G)	8.9E+04		3.7E+04	mg/kg	95% Adjusted Gamma UCL	
	LEAD	mg/kg	8.3E+02	3.2E+03 (NP)	3.0E+04	J	See Attachment F			

TABLE 3.1.RME

EXPOSURE POINT CONCENTRATION SUMMARY

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe: Current

Medium: Soil

Exposure Medium: Surface Soil

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean (1)	UCL (Distribution) (2)	Maximum Concentration (Qualifier) (3)	Exposure Point Concentration			
						Value	Units	Statistic (4)	Rationale (5)

Notes:

(1) Arithmetic means were calculated with ProUCL software version 5.0.00 and represent means of detected concentrations only. NA = Not applicable.

(2) UCL calculations were performed using ProUCL software version 5.0.00, developed by Lockheed-Martin for USEPA.
NP = Non-parametric; N = Normal; LN = Lognormal; G = Gamma; NA = Not applicable.

(3) J = The compound was positively identified; however, the associated numerical value is an estimated concentration only.

(4) 95% Student's-t UCL = Calculated using a normal Student's t approximation procedure.
95% Modified-t UCL = Calculated using a modified t approximation procedure.
95% Approx. Gamma UCL = Calculated using an Approximate Gamma distribution procedure.
95% Adjusted Gamma KM-UCL = Calculated using Kaplan Meier Adjusted Gamma distribution procedure.
95% H-UCL = Calculated using Land's H-stat for lognormal distributions.
95% Chebyshev (Mean, Sd) UCL = Calculated using Chebyshev inequality non-parametric procedure.
95% KM (t) UCL = Calculated using 95% Kaplan Meier (Student's t approximation) non-parametric procedure.
95% KM (BCA) UCL = Calculated using 95% Kaplan Meier (Bias-corrected accelerated bootstrap) non-parametric procedure.
95% KM (Chebyshev) UCL = Calculated using 95% Kaplan Meier (Chebyshev inequality) non-parametric procedure.
95% KM (% Bootstrap) UCL = Calculated using 95% Kaplan Meier (Percentile Bootstrap) non-parametric procedure.
97.5% KM (Chebyshev) UCL = Calculated using 97.5% Kaplan Meier (Chebyshev inequality) non-parametric procedure.
99% KM (Chebyshev) UCL = Calculated using 99% Kaplan Meier (Chebyshev inequality) non-parametric procedure.

(5) For data sets with multiple detection limits for non-detects, the use of the Kaplan Meier non-parametric test procedure is recommended and used to calculate an appropriate UCL. For the Kaplan Meier test procedure, the type of data distribution was determined using a series of tests (Shapiro-Wilk, Kolmogorov-Smirnov, Anderson-Darling) for normal, lognormal, or gamma data distributions. The results of these distribution tests determined which UCL calculation was performed.
(a) UCL may not be reliable due to the high frequency of non-detects present.
(b) Maximum detected concentration used for EPC due to the low number of detections.
(c) Due to small sample size, the maximum detected concentration is used.
(d) 95% UCL exceeds maximum detected concentration. Therefore, maximum concentration used for EPC
(e) When the maximum detected concentration is selected as the RME EPC, the arithmetic mean concentration is selected as the CT EPC.
(f) If the arithmetic mean concentration equals or exceeds the maximum detected concentration, the maximum detected concentration is used as the CT EPC.
(g) ProUCL computes and outputs the H-statistic based UCLs for historic reasons only as it often results in unstable (both low and high) values (USEPA, 2010).
As such, the 95% Chebyshev UCL was used to estimate the 95% UCL for this data set.

ND = Non-detect

NC = Not calculated

TABLE 3.1.CT

EXPOSURE POINT CONCENTRATION SUMMARY

CENTRAL TENDENCY EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Surface Soil

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean (1)	UCL (Distribution) (2)	Maximum Concentration (Qualifier) (3)		Exposure Point Concentration			
							Value	Units	Statistic (4)	Rationale (5)
MRP Site 1 - Rec. User & Trespasser										
	BENZO[A]ANTHRACENE	mg/kg	2.5E+00	1.5E+01 (NP)	6.5E+01	J	1.5E+01	mg/kg	99% KM (Chebyshev) UCL	
	BENZO[A]PYRENE	mg/kg	2.9E+00	1.8E+01 (NP)	8.0E+01	J	1.8E+01	mg/kg	99% KM (Chebyshev) UCL	
	BENZO[B]FLUORANTHENE	mg/kg	2.6E+00	8.6E+00 (NP)	7.5E+01	J	8.6E+00	mg/kg	95% Chebyshev (Mean, Sd) UCL	
	BENZO[K]FLUORANTHENE	mg/kg	2.4E+00	1.6E+01 (NP)	7.4E+01	J	1.6E+01	mg/kg	99% KM (Chebyshev) UCL	
	CHRYSENE	mg/kg	3.3E+00	1.9E+01 (NP)	8.1E+01	J	1.9E+01	mg/kg	99% KM (Chebyshev) UCL	
	DIBENZ[A,H]ANTHRACENE	mg/kg	2.8E-01	1.3E+00 (LN)	5.5E+00		1.3E+00	mg/kg	99% KM (Chebyshev) UCL	
	INDENO[1,2,3-CD]PYRENE	mg/kg	1.7E+00	9.9E+00 (NP)	4.4E+01	J	9.9E+00	mg/kg	99% KM (Chebyshev) UCL	
	NITROGLYCERIN	mg/kg	9.0E-01	2.6E+00 (LN)	4.0E+00		2.6E+00	mg/kg	97.5% KM (Chebyshev) UCL	
	4,4-DDT	mg/kg	6.3E+00	NC	1.9E+01	J	6.3E+00	mg/kg	Arithmetic Mean	(e)
	AROCLOR-1260	mg/kg	9.0E+01	NC	2.7E+02	J	9.0E+01	mg/kg	Arithmetic Mean	(e)
	ALUMINUM	mg/kg	9.7E+03	1.1E+04 (N)	1.9E+04		1.1E+04	mg/kg	95% Student's-t UCL	
	ANTIMONY	mg/kg	2.3E+01	9.2E+01 (NP)	4.0E+02	J	9.2E+01	mg/kg	95% Chebyshev (Mean, Sd) UCL	
	ARSENIC	mg/kg	1.3E+01	2.5E+01 (NP)	1.3E+02	J	2.5E+01	mg/kg	95% Chebyshev(Mean, Sd) UCL	
	CHROMIUM, TOTAL	mg/kg	1.3E+01	1.4E+01 (G)	3.0E+01	J	1.4E+01	mg/kg	95% Adjusted Gamma UCL	
	COBALT	mg/kg	1.2E+01	1.4E+01 (G)	2.5E+01		1.4E+01	mg/kg	95% Adjusted Gamma UCL	
	IRON	mg/kg	3.3E+04	3.7E+04 (G)	8.9E+04		3.7E+04	mg/kg	95% Adjusted Gamma UCL	
	LEAD	mg/kg	8.3E+02	3.2E+03 (NP)	3.0E+04	J	See Attachment F			
	MANGANESE	mg/kg	4.8E+02	5.4E+02 (N)	9.3E+02		5.4E+02	mg/kg	95% Student's-t UCL	
	THALLIUM	mg/kg	5.8E-02	6.8E-02 (N)	1.5E-01		6.8E-02	mg/kg	95% Student's-t UCL	
MRP Site 1 - Onsite Worker										
	BENZO[A]ANTHRACENE	mg/kg	2.5E+00	1.5E+01 (NP)	6.5E+01	J	1.5E+01	mg/kg	99% KM (Chebyshev) UCL	
	BENZO[A]PYRENE	mg/kg	2.9E+00	1.8E+01 (NP)	8.0E+01	J	1.8E+01	mg/kg	99% KM (Chebyshev) UCL	
	BENZO[B]FLUORANTHENE	mg/kg	2.6E+00	8.6E+00 (NP)	7.5E+01	J	8.6E+00	mg/kg	95% Chebyshev (Mean, Sd) UCL	
	BENZO[K]FLUORANTHENE	mg/kg	2.4E+00	1.6E+01 (NP)	7.4E+01	J	1.6E+01	mg/kg	99% KM (Chebyshev) UCL	
	DIBENZ[A,H]ANTHRACENE	mg/kg	2.8E-01	1.3E+00 (LN)	5.5E+00		1.3E+00	mg/kg	99% KM (Chebyshev) UCL	
	INDENO[1,2,3-CD]PYRENE	mg/kg	1.7E+00	9.9E+00 (NP)	4.4E+01	J	9.9E+00	mg/kg	99% KM (Chebyshev) UCL	
	4,4-DDT	mg/kg	6.3E+00	NC	1.9E+01	J	6.3E+00	mg/kg	Arithmetic Mean	(e)
	AROCLOR-1260	mg/kg	9.0E+01	NC	2.7E+02	J	9.0E+01	mg/kg	Arithmetic Mean	(e)
	ANTIMONY	mg/kg	2.3E+01	9.2E+01 (NP)	4.0E+02	J	9.2E+01	mg/kg	95% Chebyshev (Mean, Sd) UCL	
	ARSENIC	mg/kg	1.3E+01	2.5E+01 (LN)	1.3E+02	J	2.5E+01	mg/kg	95% Chebyshev (Mean, Sd) UCL	
	CHROMIUM, TOTAL	mg/kg	1.3E+01	1.4E+01 (G)	3.0E+01	J	1.4E+01	mg/kg	95% Adjusted Gamma UCL	
	IRON	mg/kg	3.3E+04	3.7E+04 (G)	8.9E+04		3.7E+04	mg/kg	95% Adjusted Gamma UCL	
	LEAD	mg/kg	8.3E+02	3.2E+03 (NP)	3.0E+04	J	See Attachment F			

TABLE 3.1.CT

EXPOSURE POINT CONCENTRATION SUMMARY

CENTRAL TENDENCY EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Surface Soil

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean (1)	UCL (Distribution) (2)	Maximum Concentration (Qualifier) (3)	Exposure Point Concentration			
						Value	Units	Statistic (4)	Rationale (5)

Notes:

(1) Arithmetic means were calculated with ProUCL software version 5.0.00 and represent means of detected concentrations only. NA = Not applicable.

(2) UCL calculations were performed using ProUCL software version 5.0.00, developed by Lockheed-Martin for USEPA.
NP = Non-parametric; N = Normal; LN = Lognormal; G = Gamma; NA = Not applicable.

(3) J = The compound was positively identified; however, the associated numerical value is an estimated concentration only.

(4) 95% Student's-t UCL = Calculated using a normal Student's t approximation procedure.
95% Modified-t UCL = Calculated using a modified t approximation procedure.
95% Approx. Gamma UCL = Calculated using an Approximate Gamma distribution procedure.
95% Adjusted Gamma KM-UCL = Calculated using Kaplan Meier Adjusted Gamma distribution procedure.
95% H-UCL = Calculated using Land's H-stat for lognormal distributions.
95% Chebyshev (Mean, Sd) UCL = Calculated using Chebyshev inequality non-parametric procedure.
95% KM (t) UCL = Calculated using 95% Kaplan Meier (Student's t approximation) non-parametric procedure.
95% KM (BCA) UCL = Calculated using 95% Kaplan Meier (Bias-corrected accelerated bootstrap) non-parametric procedure.
95% KM (Chebyshev) UCL = Calculated using 95% Kaplan Meier (Chebyshev inequality) non-parametric procedure.
95% KM (% Bootstrap) UCL = Calculated using 95% Kaplan Meier (Percentile Bootstrap) non-parametric procedure.
97.5% KM (Chebyshev) UCL = Calculated using 97.5% Kaplan Meier (Chebyshev inequality) non-parametric procedure.
99% KM (Chebyshev) UCL = Calculated using 99% Kaplan Meier (Chebyshev inequality) non-parametric procedure.

(5) For data sets with multiple detection limits for non-detects, the use of the Kaplan Meier non-parametric test procedure is recommended and used to calculate an appropriate UCL. For the Kaplan Meier test procedure, the type of data distribution was determined using a series of tests (Shapiro-Wilk, Kolmogorov-Smirnov, Anderson-Darling) for normal, lognormal, or gamma data distributions. The results of these distribution tests determined which UCL calculation was performed.
(a) UCL may not be reliable due to the high frequency of non-detects present.
(b) Maximum detected concentration used for EPC due to the low number of detections.
(c) Due to small sample size, the maximum detected concentration is used.
(d) 95% UCL exceeds maximum detected concentration. Therefore, maximum concentration used for EPC
(e) When the maximum detected concentration is selected as the RME EPC, the arithmetic mean concentration is selected as the CT EPC.
(f) If the arithmetic mean concentration equals or exceeds the maximum detected concentration, the maximum detected concentration is used as the CT EPC.
(g) ProUCL computes and outputs the H-statistic based UCLs for historic reasons only as it often results in unstable (both low and high) values (USEPA, 2010).
As such, the 95% Chebyshev UCL was used to estimate the 95% UCL for this data set.

ND = Non-detect
NC = Not calculated

TABLE 3.2.RME
EXPOSURE POINT CONCENTRATION SUMMARY
REASONABLE MAXIMUM EXPOSURE
CARR POINT - MRP SITE 1

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Surface/Subsurface Soil

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean (1)	UCL (Distribution) (2)	Maximum Concentration (Qualifier) (3)		Exposure Point Concentration Value	Units	Statistic (4)	Rationale (5)
MRP Site 1 - Resident & Trespasser										
	BENZO[A]ANTHRACENE	mg/kg	1.5E+00	4.6E+00 (LN)	6.5E+01	J	4.6E+00	mg/kg	97.5% KM (Chebyshev) UCL	
	BENZO[A]PYRENE	mg/kg	1.9E+00	5.5E+00 (LN)	8.0E+01	J	5.5E+00	mg/kg	97.5% KM (Chebyshev) UCL	
	BENZO[B]FLUORANTHENE	mg/kg	1.6E+00	5.1E+00 (LN)	7.5E+01	J	5.1E+00	mg/kg	97.5% KM (Chebyshev) UCL	
	BENZO[K]FLUORANTHENE	mg/kg	1.6E+00	4.8E+00 (LN)	7.4E+01	J	4.8E+00	mg/kg	97.5% KM (Chebyshev) UCL	
	CHRYSENE	mg/kg	2.2E+00	5.9E+00 (LN)	8.1E+01	J	5.9E+00	mg/kg	97.5% KM (Chebyshev) UCL	
	DIBENZ[A,H]ANTHRACENE	mg/kg	2.1E-01	4.2E-01 (LN)	5.5E+00		4.2E-01	mg/kg	95% KM (Chebyshev) UCL	
	INDENO[1,2,3-CD]PYRENE	mg/kg	1.1E+00	3.1E+00 (LN)	4.4E+01	J	3.1E+00	mg/kg	97.5% KM (Chebyshev) UCL	
	NITROGLYCERIN	mg/kg	9.0E-01	6.1E-01	4.0E+00		6.1E-01	mg/kg	95% KM (BCA) UCL	
	4,4-DDT	mg/kg	4.1E+00	NC	1.9E+01	J	1.9E+01	mg/kg	Maximum Concentration	(c)
	AROCLOR-1260	mg/kg	5.8E+01	NC	2.7E+02	J	2.7E+02	mg/kg	Maximum Concentration	(c)
	ALUMINUM	mg/kg	8.9E+03	9.4E+03 (N)	1.9E+04		9.4E+03	mg/kg	95% Student's-t UCL	
	ANTIMONY	mg/kg	8.8E+00	4.2E+01 (NP)	4.0E+02	J	4.2E+01	mg/kg	97.5% KM (Chebyshev) UCL	
	ARSENIC	mg/kg	1.0E+01	1.6E+01 (NP)	1.3E+02	J	1.6E+01	mg/kg	95% Chebyshev (Mean, Sd) UCL	
	CHROMIUM, TOTAL	mg/kg	1.2E+01	1.3E+01 (N)	3.4E+01	J	1.3E+01	mg/kg	95% Student's-t UCL	
	COBALT	mg/kg	1.3E+01	1.4E+01 (G)	3.3E+01	J	1.4E+01	mg/kg	95% Approximate Gamma UCL	
	IRON	mg/kg	3.1E+04	3.3E+04 (N)	8.9E+04		3.3E+04	mg/kg	95% Student's-t UCL	
	LEAD	mg/kg	3.8E+02	1.5E+03 (NP)	3.0E+04	J	See Attachment F			
	MANGANESE	mg/kg	6.2E+02	9.6E+02 (LN)	5.8E+03	J	9.6E+02	mg/kg	95% Chebyshev (Mean, Sd) UCL	
	THALLIUM	mg/kg	7.2E-02	7.9E-02 (NP)	2.6E-01		7.9E-02	mg/kg	95% KM (BCA) UCL	
MRP Site 1 - Onsite Worker & Const. Wrkr.										
	BENZO[A]ANTHRACENE	mg/kg	1.5E+00	4.6E+00 (LN)	6.5E+01	J	4.6E+00	mg/kg	97.5% KM (Chebyshev) UCL	
	BENZO[A]PYRENE	mg/kg	1.9E+00	5.5E+00 (LN)	8.0E+01	J	5.5E+00	mg/kg	97.5% KM (Chebyshev) UCL	
	BENZO[B]FLUORANTHENE	mg/kg	1.6E+00	5.1E+00 (LN)	7.5E+01	J	5.1E+00	mg/kg	97.5% KM (Chebyshev) UCL	
	BENZO[K]FLUORANTHENE	mg/kg	1.6E+00	4.8E+00 (LN)	7.4E+01	J	4.8E+00	mg/kg	97.5% KM (Chebyshev) UCL	
	DIBENZ[A,H]ANTHRACENE	mg/kg	2.1E-01	4.2E-01 (LN)	5.5E+00		4.2E-01	mg/kg	95% KM (Chebyshev) UCL	
	INDENO[1,2,3-CD]PYRENE	mg/kg	1.1E+00	3.1E+00 (LN)	4.4E+01	J	3.1E+00	mg/kg	97.5% KM (Chebyshev) UCL	
	4,4-DDT	mg/kg	4.1E+00	NC	1.9E+01	J	1.9E+01	mg/kg	Maximum Concentration	(c)
	AROCLOR-1260	mg/kg	5.8E+01	NC	2.7E+02	J	2.7E+02	mg/kg	Maximum Concentration	(c)
	ANTIMONY	mg/kg	8.8E+00	4.2E+01 (NP)	4.0E+02	J	4.2E+01	mg/kg	97.5% KM (Chebyshev) UCL	
	ARSENIC	mg/kg	1.0E+01	1.6E+01 (NP)	1.3E+02	J	1.6E+01	mg/kg	95% Chebyshev (Mean, Sd) UCL	
	CHROMIUM, TOTAL	mg/kg	1.2E+01	1.3E+01 (N)	3.4E+01	J	1.3E+01	mg/kg	95% Student's-t UCL	
	IRON	mg/kg	1.3E+01	1.4E+01 (N)	8.9E+04		1.4E+01	mg/kg	95% Student's-t UCL	
	LEAD	mg/kg	3.1E+04	3.3E+04 (NP)	3.0E+04	J	See Attachment F			
	MANGANESE	mg/kg	3.8E+02	1.5E+03 (LN)	5.8E+03	J	1.5E+03	mg/kg	95% Chebyshev (Mean, Sd) UCL	

TABLE 3.2.RME

EXPOSURE POINT CONCENTRATION SUMMARY

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe: Current/Future

Medium: Soil

Exposure Medium: Surface/Subsurface Soil

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean (1)	UCL (Distribution) (2)	Maximum Concentration (Qualifier) (3)	Exposure Point Concentration			
						Value	Units	Statistic (4)	Rationale (5)

Notes:

(1) Arithmetic means were calculated with ProUCL software version 5.0.00 and represent means of detected concentrations only. NA = Not applicable.

(2) UCL calculations were performed using ProUCL software version 5.0.00, developed by Lockheed-Martin for USEPA.
NP = Non-parametric; N = Normal; LN = Lognormal; G = Gamma; NA = Not applicable.

(3) J = The compound was positively identified; however, the associated numerical value is an estimated concentration only.

(4) 95% Student's-t UCL = Calculated using a normal Student's t approximation procedure.
95% Modified-t UCL = Calculated using a modified t approximation procedure.
95% Approx. Gamma UCL = Calculated using an Approximate Gamma distribution procedure.
95% Adjusted Gamma KM-UCL = Calculated using Kaplan Meier Adjusted Gamma distribution procedure.
95% H-UCL = Calculated using Land's H-stat for lognormal distributions.
95% Chebyshev (Mean, Sd) UCL = Calculated using Chebyshev inequality non-parametric procedure.
95% KM (t) UCL = Calculated using 95% Kaplan Meier (Student's t approximation) non-parametric procedure.
95% KM (BCA) UCL = Calculated using 95% Kaplan Meier (Bias-corrected accelerated bootstrap) non-parametric procedure.
95% KM (Chebyshev) UCL = Calculated using 95% Kaplan Meier (Chebyshev inequality) non-parametric procedure.
95% KM (% Bootstrap) UCL = Calculated using 95% Kaplan Meier (Percentile Bootstrap) non-parametric procedure.
97.5% KM (Chebyshev) UCL = Calculated using 97.5% Kaplan Meier (Chebyshev inequality) non-parametric procedure.
99% KM (Chebyshev) UCL = Calculated using 99% Kaplan Meier (Chebyshev inequality) non-parametric procedure.

(5) For data sets with multiple detection limits for non-detects, the use of the Kaplan Meier non-parametric test procedure is recommended and used to calculate an appropriate UCL. For the Kaplan Meier test procedure, the type of data distribution was determined using a series of tests (Shapiro-Wilk, Kolmogorov-Smirnov, Anderson-Darling) for normal, lognormal, or gamma data distributions. The results of these distribution tests determined which UCL calculation was performed.
(a) UCL may not be reliable due to the high frequency of non-detects present.
(b) Maximum detected concentration used for EPC due to the low number of detections.
(c) Due to small sample size, the maximum detected concentration is used.
(d) 95% UCL exceeds maximum detected concentration. Therefore, maximum concentration used for EPC
(e) When the maximum detected concentration is selected as the RME EPC, the arithmetic mean concentration is selected as the CT EPC.
(f) If the arithmetic mean concentration equals or exceeds the maximum detected concentration, the maximum detected concentration is used as the CT EPC.

ND = Non-detect

NC = Not calculated

TABLE 3.2.CT

EXPOSURE POINT CONCENTRATION SUMMARY

CENTRAL TENDENCY EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Surface/Subsurface Soil

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean (1)	UCL (Distribution) (2)	Maximum Concentration (Qualifier) (3)		Exposure Point Concentration Value	Units	Statistic (4)	Rationale (5)
MRP Site 1 - Resident & Trespasser										
	BENZO[A]ANTHRACENE	mg/kg	1.5E+00	4.6E+00 (LN)	6.5E+01	J	4.6E+00	mg/kg	97.5% KM (Chebyshev) UCL	
	BENZO[A]PYRENE	mg/kg	1.9E+00	5.5E+00 (LN)	8.0E+01	J	5.5E+00	mg/kg	97.5% KM (Chebyshev) UCL	
	BENZO[B]FLUORANTHENE	mg/kg	1.6E+00	5.1E+00 (LN)	7.5E+01	J	5.1E+00	mg/kg	97.5% KM (Chebyshev) UCL	
	BENZO[K]FLUORANTHENE	mg/kg	1.6E+00	4.8E+00 (LN)	7.4E+01	J	4.8E+00	mg/kg	97.5% KM (Chebyshev) UCL	
	CHRYSENE	mg/kg	2.2E+00	5.9E+00 (LN)	8.1E+01	J	5.9E+00	mg/kg	97.5% KM (Chebyshev) UCL	
	DIBENZ[A,H]ANTHRACENE	mg/kg	2.1E-01	4.2E-01 (LN)	5.5E+00		4.2E-01	mg/kg	95% KM (Chebyshev) UCL	
	INDENO[1,2,3-CD]PYRENE	mg/kg	1.1E+00	3.1E+00 (LN)	4.4E+01	J	3.1E+00	mg/kg	97.5% KM (Chebyshev) UCL	
	NITROGLYCERIN	mg/kg	9.0E-01	6.1E-01	4.0E+00		6.1E-01	mg/kg	95% KM (BCA) UCL	
	4,4-DDT	mg/kg	4.1E+00	NC	1.9E+01	J	4.1E+00	mg/kg	Arithmetic Mean	(e)
	AROCLOR-1260	mg/kg	5.8E+01	NC	2.7E+02	J	5.8E+01	mg/kg	Arithmetic Mean	(e)
	ALUMINUM	mg/kg	8.9E+03	9.4E+03 (N)	1.9E+04		9.4E+03	mg/kg	95% Student's-t UCL	
	ANTIMONY	mg/kg	8.8E+00	4.2E+01 (NP)	4.0E+02	J	4.2E+01	mg/kg	97.5% KM (Chebyshev) UCL	
	ARSENIC	mg/kg	1.0E+01	1.6E+01 (NP)	1.3E+02	J	1.6E+01	mg/kg	95% Chebyshev (Mean, Sd) UCL	
	CHROMIUM, TOTAL	mg/kg	1.2E+01	1.3E+01 (N)	3.4E+01	J	1.3E+01	mg/kg	95% Student's-t UCL	
	COBALT	mg/kg	1.3E+01	1.4E+01 (G)	3.3E+01	J	1.4E+01	mg/kg	95% Approximate Gamma UCL	
	IRON	mg/kg	3.1E+04	3.3E+04 (N)	8.9E+04		3.3E+04	mg/kg	95% Student's-t UCL	
	LEAD	mg/kg	3.8E+02	1.5E+03 (NP)	3.0E+04	J	See Attachment F			
	MANGANESE	mg/kg	6.2E+02	9.6E+02 (LN)	5.8E+03	J	9.6E+02	mg/kg	95% Chebyshev (Mean, Sd) UCL	
	THALLIUM	mg/kg	7.2E-02	7.9E-02 (NP)	2.6E-01		7.9E-02	mg/kg	95% KM (BCA) UCL	
MRP Site 1 - Onsite Worker & Const. Wrkr.										
	BENZO[A]ANTHRACENE	mg/kg	1.5E+00	4.6E+00 (LN)	6.5E+01	J	4.6E+00	mg/kg	97.5% KM (Chebyshev) UCL	
	BENZO[A]PYRENE	mg/kg	1.9E+00	5.5E+00 (LN)	8.0E+01	J	5.5E+00	mg/kg	97.5% KM (Chebyshev) UCL	
	BENZO[B]FLUORANTHENE	mg/kg	1.6E+00	5.1E+00 (LN)	7.5E+01	J	5.1E+00	mg/kg	97.5% KM (Chebyshev) UCL	
	BENZO[K]FLUORANTHENE	mg/kg	1.6E+00	4.8E+00 (LN)	7.4E+01	J	4.8E+00	mg/kg	97.5% KM (Chebyshev) UCL	
	DIBENZ[A,H]ANTHRACENE	mg/kg	2.1E-01	4.2E-01 (LN)	5.5E+00		4.2E-01	mg/kg	95% KM (Chebyshev) UCL	
	INDENO[1,2,3-CD]PYRENE	mg/kg	1.1E+00	3.1E+00 (LN)	4.4E+01	J	3.1E+00	mg/kg	97.5% KM (Chebyshev) UCL	
	4,4-DDT	mg/kg	4.1E+00	NC	1.9E+01	J	4.1E+00	mg/kg	Arithmetic Mean	(e)
	AROCLOR-1260	mg/kg	5.8E+01	NC	2.7E+02	J	5.8E+01	mg/kg	Arithmetic Mean	(e)
	ANTIMONY	mg/kg	8.8E+00	4.2E+01 (NP)	4.0E+02	J	4.2E+01	mg/kg	97.5% KM (Chebyshev) UCL	
	ARSENIC	mg/kg	1.0E+01	1.6E+01 (NP)	1.3E+02	J	1.6E+01	mg/kg	95% Chebyshev (Mean, Sd) UCL	
	CHROMIUM, TOTAL	mg/kg	1.2E+01	1.3E+01 (N)	3.4E+01	J	1.3E+01	mg/kg	95% Student's-t UCL	
	IRON	mg/kg	1.3E+01	1.4E+01 (N)	8.9E+04		1.4E+01	mg/kg	95% Student's-t UCL	
	LEAD	mg/kg	3.1E+04	3.3E+04 (NP)	3.0E+04	J	See Attachment F			
	MANGANESE	mg/kg	3.8E+02	1.5E+03 (LN)	5.8E+03	J	1.5E+03	mg/kg	95% Chebyshev (Mean, Sd) UCL	

TABLE 3.2.CT

EXPOSURE POINT CONCENTRATION SUMMARY

CENTRAL TENDENCY EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe: Current/Future

Medium: Soil

Exposure Medium: Surface/Subsurface Soil

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean (1)	UCL (Distribution) (2)	Maximum Concentration (Qualifier) (3)	Exposure Point Concentration			
						Value	Units	Statistic (4)	Rationale (5)

Notes:

(1) Arithmetic means were calculated with ProUCL software version 5.0.00 and represent means of detected concentrations only. NA = Not applicable.

(2) UCL calculations were performed using ProUCL software version 5.0.00, developed by Lockheed-Martin for USEPA.
NP = Non-parametric; N = Normal; LN = Lognormal; G = Gamma; NA = Not applicable.

(3) J = The compound was positively identified; however, the associated numerical value is an estimated concentration only.

(4) 95% Student's-t UCL = Calculated using a normal Student's t approximation procedure.
95% Modified-t UCL = Calculated using a modified t approximation procedure.
95% Approx. Gamma UCL = Calculated using an Approximate Gamma distribution procedure.
95% Adjusted Gamma KM-UCL = Calculated using Kaplan Meier Adjusted Gamma distribution procedure.
95% H-UCL = Calculated using Land's H-stat for lognormal distributions.
95% Chebyshev (Mean, Sd) UCL = Calculated using Chebyshev inequality non-parametric procedure.
95% KM (t) UCL = Calculated using 95% Kaplan Meier (Student's t approximation) non-parametric procedure.
95% KM (BCA) UCL = Calculated using 95% Kaplan Meier (Bias-corrected accelerated bootstrap) non-parametric procedure.
95% KM (Chebyshev) UCL = Calculated using 95% Kaplan Meier (Chebyshev inequality) non-parametric procedure.
95% KM (% Bootstrap) UCL = Calculated using 95% Kaplan Meier (Percentile Bootstrap) non-parametric procedure.
97.5% KM (Chebyshev) UCL = Calculated using 97.5% Kaplan Meier (Chebyshev inequality) non-parametric procedure.
99% KM (Chebyshev) UCL = Calculated using 99% Kaplan Meier (Chebyshev inequality) non-parametric procedure.

(5) For data sets with multiple detection limits for non-detects, the use of the Kaplan Meier non-parametric test procedure is recommended and used to calculate an appropriate UCL. For the Kaplan Meier test procedure, the type of data distribution was determined using a series of tests (Shapiro-Wilk, Kolmogorov-Smirnov, Anderson-Darling) for normal, lognormal, or gamma data distributions. The results of these distribution tests determined which UCL calculation was performed.
(a) UCL may not be reliable due to the high frequency of non-detects present.
(b) Maximum detected concentration used for EPC due to the low number of detections.
(c) Due to small sample size, the maximum detected concentration is used.
(d) 95% UCL exceeds maximum detected concentration. Therefore, maximum concentration used for EPC
(e) When the maximum detected concentration is selected as the RME EPC, the arithmetic mean concentration is selected as the CT EPC.
(f) If the arithmetic mean concentration equals or exceeds the maximum detected concentration, the maximum detected concentration is used as the CT EPC.

ND = Non-detect

NC = Not calculated

TABLE 3.3.RME

EXPOSURE POINT CONCENTRATION SUMMARY

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe: Current/Future

Medium: Sediment

Exposure Medium: Sediment

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean (1)	UCL (Distribution) (2)	Maximum Concentration (Qualifier) (3)	Exposure Point Concentration			
						Value	Units	Statistic (4)	Rationale (5)
MRP Site 1									
	BENZO[A]PYRENE	mg/kg	3.2E-01	4.7E-01 (N)	8.8E-01	4.7E-01	mg/kg	95% Student's-t UCL	
	BENZO[B]FLUORANTHENE	mg/kg	3.2E-01	4.7E-01 (N)	9.2E-01	4.7E-01	mg/kg	95% Student's-t UCL	
	DIBENZ[A,H]ANTHRACENE	mg/kg	8.0E-02	1.2E-01 (N)	2.8E-01	1.2E-01	mg/kg	95% KM (t) UCL	
	ANTIMONY	mg/kg	7.5E+00	2.5E+01 (G)	3.7E+01	2.5E+01	mg/kg	95% Adjusted Gamma UCL	
	ARSENIC	mg/kg	1.4E+01	2.0E+01 (N)	3.8E+01	2.0E+01	mg/kg	95% Student's-t UCL	
	CHROMIUM, TOTAL	mg/kg	1.3E+01	1.4E+01 (N)	1.6E+01 J	1.4E+01	mg/kg	95% Student's-t UCL	
	COBALT	mg/kg	1.2E+01	1.3E+01 (N)	1.6E+01	1.3E+01	mg/kg	95% Student's-t UCL	
	IRON	mg/kg	3.6E+04	3.9E+04 (N)	4.4E+04	3.9E+04	mg/kg	95% Student's-t UCL	
	LEAD	mg/kg	9.5E+02	2.8E+03 (G)	4.3E+03 J	See Attachment F			
	MANGANESE	mg/kg	6.5E+02	1.1E+03 (G)	1.5E+03 B	1.1E+03	mg/kg	95% Adjusted Gamma UCL	

Notes:

(1) Arithmetic means were calculated with ProUCL software version 5.0.00 and represent means of detected concentrations only. NA = Not applicable

(2) UCL calculations were performed using ProUCL software version 5.0.00, developed by Lockheed-Martin for USEPA.
NP = Non-parametric; N = Normal; LN = Lognormal; G = Gamma; NA = Not applicable

(3) J = The compound was positively identified; however, the associated numerical value is an estimated concentration only
B = The reported value was obtained from a reading less than the contract required detection limit (CRDL) but greater than or equal to the instrument detection limit (IDL)

(4) 95% Student's-t UCL = Calculated using a normal Student's t approximation procedure.
95% Modified-t UCL = Calculated using a modified t approximation procedure
95% Approx. Gamma UCL = Calculated using an Approximate Gamma distribution procedure
95% Adjusted Gamma KM-UCL = Calculated using Kaplan Meier Adjusted Gamma distribution procedure
95% H-UCL = Calculated using Land's H-stat for lognormal distributions.
95% Chebyshev (Mean, Sd) UCL = Calculated using Chebyshev inequality non-parametric procedure.
95% KM (t) UCL = Calculated using 95% Kaplan Meier (Student's t approximation) non-parametric procedure.
95% KM (BCA) UCL = Calculated using 95% Kaplan Meier (Bias-corrected accelerated bootstrap) non-parametric procedure.
95% KM (Chebyshev) UCL = Calculated using 95% Kaplan Meier (Chebyshev inequality) non-parametric procedure.
95% KM (% Bootstrap) UCL = Calculated using 95% Kaplan Meier (Percentile Bootstrap) non-parametric procedure.
97.5% KM (Chebyshev) UCL = Calculated using 97.5% Kaplan Meier (Chebyshev inequality) non-parametric procedure.
99% KM (Chebyshev) UCL = Calculated using 99% Kaplan Meier (Chebyshev inequality) non-parametric procedure.

(5) For data sets with multiple detection limits for non-detects, the use of the Kaplan Meier non-parametric test procedure is recommended and used to calculate an appropriate UCL. For the Kaplan Meier test procedure, the type of data distribution was determined using a series of tests (Shapiro-Wilk, Kolmogorov-Smirnov, Anderson-Darling) for normal, lognormal, or gamma data distributions. The results of these distribution tests determined which UCL calculation was performed.
(a) UCL may not be reliable due to the high frequency of non-detects present.
(b) Maximum detected concentration used for EPC due to the low number of detections.
(c) Due to small sample size, the maximum detected concentration is used.
(d) 95% UCL exceeds maximum detected concentration. Therefore, maximum concentration used for EPC
(e) When the maximum detected concentration is selected as the RME EPC, the arithmetic mean concentration is selected as the CT EPC
(f) If the arithmetic mean concentration equals or exceeds the maximum detected concentration, the maximum detected concentration is used as the CT EPC

ND = Non-detect

NC = Not calculated

TABLE 3.3.CT

EXPOSURE POINT CONCENTRATION SUMMARY

CENTRAL TENDENCY EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean (1)	UCL (Distribution) (2)	Maximum Concentration (Qualifier) (3)	Exposure Point Concentration			
						Value	Units	Statistic (4)	Rationale (5)
MRP Site 1									
	BENZO[A]PYRENE	mg/kg	3.2E-01	4.7E-01 (N)	8.8E-01	4.7E-01	mg/kg	95% Student's-t UCL	
	BENZO[B]FLUORANTHENE	mg/kg	3.2E-01	4.7E-01 (N)	9.2E-01	4.7E-01	mg/kg	95% Student's-t UCL	
	DIBENZ[A,H]ANTHRACENE	mg/kg	8.0E-02	1.2E-01 (N)	2.8E-01	1.2E-01	mg/kg	95% KM (t) UCL	
	ANTIMONY	mg/kg	7.5E+00	2.5E+01 (G)	3.7E+01	2.5E+01	mg/kg	95% Adjusted Gamma UCL	
	ARSENIC	mg/kg	1.4E+01	2.0E+01 (N)	3.8E+01	2.0E+01	mg/kg	95% Student's-t UCL	
	CHROMIUM, TOTAL	mg/kg	1.3E+01	1.4E+01 (N)	1.6E+01 J	1.4E+01	mg/kg	95% Student's-t UCL	
	COBALT	mg/kg	1.2E+01	1.3E+01 (N)	1.6E+01	1.3E+01	mg/kg	95% Student's-t UCL	
	IRON	mg/kg	3.6E+04	3.9E+04 (N)	4.4E+04	3.9E+04	mg/kg	95% Student's-t UCL	
	LEAD	mg/kg	9.5E+02	2.8E+03 (G)	4.3E+03 J	See Attachment F			
	MANGANESE	mg/kg	6.5E+02	1.1E+03 (G)	1.5E+03 B	1.1E+03	mg/kg	95% Adjusted Gamma UCL	

Notes:

(1) Arithmetic means were calculated with ProUCL software version 5.0.00 and represent means of detected concentrations only. NA = Not applicable

(2) UCL calculations were performed using ProUCL software version 5.0.00, developed by Lockheed-Martin for USEPA.
NP = Non-parametric; N = Normal; LN = Lognormal; G = Gamma; NA = Not applicable

(3) J = The compound was positively identified; however, the associated numerical value is an estimated concentration only
B = The reported value was obtained from a reading less than the contract required detection limit (CRDL) but greater than or equal to the instrument detection limit (IDL)

(4) 95% Student's-t UCL = Calculated using a normal Student's t approximation procedure.
95% Modified-t UCL = Calculated using a modified t approximation procedure
95% Approx. Gamma UCL = Calculated using an Approximate Gamma distribution procedure
95% Adjusted Gamma KM-UCL = Calculated using Kaplan Meier Adjusted Gamma distribution procedure
95% H-UCL = Calculated using Land's H-stat for lognormal distributions.
95% Chebyshev (Mean, Sd) UCL = Calculated using Chebyshev inequality non-parametric procedure.
95% KM (t) UCL = Calculated using 95% Kaplan Meier (Student's t approximation) non-parametric procedure.
95% KM (BCA) UCL = Calculated using 95% Kaplan Meier (Bias-corrected accelerated bootstrap) non-parametric procedure.
95% KM (Chebyshev) UCL = Calculated using 95% Kaplan Meier (Chebyshev inequality) non-parametric procedure.
95% KM (% Bootstrap) UCL = Calculated using 95% Kaplan Meier (Percentile Bootstrap) non-parametric procedure.
97.5% KM (Chebyshev) UCL = Calculated using 97.5% Kaplan Meier (Chebyshev inequality) non-parametric procedure.
99% KM (Chebyshev) UCL = Calculated using 99% Kaplan Meier (Chebyshev inequality) non-parametric procedure.

(5) For data sets with multiple detection limits for non-detects, the use of the Kaplan Meier non-parametric test procedure is recommended and used to calculate an appropriate UCL. For the Kaplan Meier test procedure, the type of data distribution was determined using a series of tests (Shapiro-Wilk, Kolmogorov-Smirnov, Anderson-Darling) for normal, lognormal, or gamma data distributions. The results of these distribution tests determined which UCL calculation was performed.
(a) UCL may not be reliable due to the high frequency of non-detects present.
(b) Maximum detected concentration used for EPC due to the low number of detections.
(c) Due to small sample size, the maximum detected concentration is used.
(d) 95% UCL exceeds maximum detected concentration. Therefore, maximum concentration used for EPC
(e) When the maximum detected concentration is selected as the RME EPC, the arithmetic mean concentration is selected as the CT EPC
(f) If the arithmetic mean concentration equals or exceeds the maximum detected concentration, the maximum detected concentration is used as the CT EPC

ND = Non-detect
NC = Not calculated

TABLE 3.4.RME

EXPOSURE POINT CONCENTRATION SUMMARY

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe: Future

Medium: Groundwater

Exposure Medium: Shallow Groundwater

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean (1)	UCL (Distribution) (2)	Maximum Concentration (Qualifier) (3)	Exposure Point Concentration			
						Value	Units	Statistic (4)	Rationale (5)
MRP Site 1									
	COBALT	ug/L	NC	NC	7.0E+00	7.0E+00	ug/L	Maximum concentration	(c)
	IRON	ug/L	NC	NC	8.8E+03	8.8E+03	ug/L	Maximum concentration	(c)
	MANGANESE	ug/L	NC	NC	1.2E+03	1.2E+03	ug/L	Maximum concentration	(c)

Notes:

(1) The maximum detected concentration is used rather than evaluating each well individually, therefore arithmetic means do not apply. NA = Not applicable

(2) UCL calculations were not performed for most analytes due to the small sample size
Any UCL calculations were performed using ProUCL software version 5.0.00, developed by Lockheed-Martin for USEPA.
NP = Non-parametric; N = Normal; LN = Lognormal; G = Gamma; NA = Not applicable

(3) J = The compound was positively identified; however, the associated numerical value is an estimated concentration only

(4) Due to the small sample size, maximum concentrations were used as EPCs for most analytes

(5) For data sets with multiple detection limits for non-detects, the use of the Kaplan Meier non-parametric test procedure is recommended and used to calculate an appropriate UCL. For the Kaplan Meier test procedure, the type of data distribution was determined using a series of tests (Shapiro-Wilk, Kolmogorov-Smirnov, Anderson-Darling) for normal, lognormal, or gamma data distributions. The results of these distribution tests determined which UCL calculation was performed.
(a) UCL may not be reliable due to the high frequency of non-detects present.
(b) Maximum detected concentration used for EPC due to the low number of detections.
(c) Due to small sample size, the maximum detected concentration is used.
(d) 95% UCL exceeds maximum detected concentration. Therefore, maximum concentration used for EPC
(e) When the maximum detected concentration is selected as the RME EPC, the arithmetic mean concentration is selected as the CT EPC
(f) If the arithmetic mean concentration equals or exceeds the maximum detected concentration, the maximum detected concentration is used as the CT EPC

ND = Non-detect

NC = Not calculated

TABLE 3.4.CT

EXPOSURE POINT CONCENTRATION SUMMARY

CENTRAL TENDENCY EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe: Future

Medium: Groundwater

Exposure Medium: Shallow Groundwater

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean (1)	UCL (Distribution) (2)	Maximum Concentration (Qualifier) (3)	Exposure Point Concentration			
						Value	Units	Statistic (4)	Rationale (5)
MRP Site 1									
	COBALT	ug/L	NC	NC	7.0E+00	7.0E+00	ug/L	Maximum concentration	(c)
	IRON	ug/L	NC	NC	8.8E+03	8.8E+03	ug/L	Maximum concentration	(c)
	MANGANESE	ug/L	NC	NC	1.2E+03	1.2E+03	ug/L	Maximum concentration	(c)

Notes:

(1) The maximum detected concentration is used rather than evaluating each well individually, therefore arithmetic means do not apply. NA = Not applicable

(2) UCL calculations were not performed for most analytes due to the small sample size
Any UCL calculations were performed using ProUCL software version 5.0.00, developed by Lockheed-Martin for USEPA.
NP = Non-parametric; N = Normal; LN = Lognormal; G = Gamma; NA = Not applicable

(3) J = The compound was positively identified; however, the associated numerical value is an estimated concentration only

(4) Due to the small sample size, arithmetic means were used as EPCs for most analytes

(5) For data sets with multiple detection limits for non-detects, the use of the Kaplan Meier non-parametric test procedure is recommended and used to calculate an appropriate UCL. For the Kaplan Meier test procedure, the type of data distribution was determined using a series of tests (Shapiro-Wilk, Kolmogorov-Smirnov, Anderson-Darling) for normal, lognormal, or gamma data distributions. The results of these distribution tests determined which UCL calculation was performed.
(a) UCL may not be reliable due to the high frequency of non-detects present.
(b) Maximum detected concentration used for EPC due to the low number of detections.
(c) Due to small sample size, the maximum detected concentration is used.
(d) 95% UCL exceeds maximum detected concentration. Therefore, maximum concentration used for EPC
(e) When the maximum detected concentration is selected as the RME EPC, the arithmetic mean concentration is selected as the CT EPC
(f) If the arithmetic mean concentration equals or exceeds the maximum detected concentration, the maximum detected concentration is used as the CT EPC

ND = Non-detect

NC = Not calculated

TABLE 3.5.RME

EXPOSURE POINT CONCENTRATION SUMMARY

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean (1)	UCL (Distribution) (2)	Maximum Concentration (Qualifier) (3)	Exposure Point Concentration			
						Value	Units	Statistic (4)	Rationale (5)
MW-01									
	ANTIMONY	ug/L	ND	ND	ND	ND	ug/L		
	COBALT	ug/L	NC	NC	7.0E+00	7.0E+00	ug/L	Maximum Concentration	(c)
	IRON	ug/L	NC	NC	8.8E+03	8.8E+03	ug/L	Maximum Concentration	(c)
	MANGANESE	ug/L	NC	NC	3.9E+02	3.9E+02	ug/L	Maximum Concentration	(c)
MW-01D									
	ANTIMONY	ug/L	NC	NC	8.4E-01 J	8.4E-01	ug/L	Maximum Concentration	(c)
	COBALT	ug/L	NC	NC	9.5E+00	9.5E+00	ug/L	Maximum Concentration	(c)
	IRON	ug/L	NC	NC	9.8E+03	9.8E+03	ug/L	Maximum Concentration	(c)
	MANGANESE	ug/L	NC	NC	9.4E+02	9.4E+02	ug/L	Maximum Concentration	(c)
MW-11									
	ANTIMONY	ug/L	ND	ND	ND	ND	ug/L		
	COBALT	ug/L	NC	NC	3.7E-01 J	3.7E-01	ug/L	Maximum Concentration	(c)
	IRON	ug/L	ND	ND	ND	ND	ug/L		
	MANGANESE	ug/L	NC	NC	5.9E+01	5.9E+01	ug/L	Maximum Concentration	(c)
MW-12									
	ANTIMONY	ug/L	ND	ND	ND	ND	ug/L		
	COBALT	ug/L	NC	NC	1.6E+00	1.6E+00	ug/L	Maximum Concentration	(c)
	IRON	ug/L	NC	NC	3.3E+03	3.3E+03	ug/L	Maximum Concentration	(c)
	MANGANESE	ug/L	NC	NC	1.2E+03	1.2E+03	ug/L	Maximum Concentration	(c)
MW-12D									
	ANTIMONY	ug/L	ND	ND	ND	ND	ug/L		
	COBALT	ug/L	NC	NC	3.5E+00	3.5E+00	ug/L	Maximum Concentration	(c)
	IRON	ug/L	NC	NC	6.6E+03	6.6E+03	ug/L	Maximum Concentration	(c)
	MANGANESE	ug/L	NC	NC	9.9E+02	9.9E+02	ug/L	Maximum Concentration	(c)
MW-13									
	ANTIMONY	ug/L	ND	ND	ND	ND	ug/L		
	COBALT	ug/L	NC	NC	3.2E+00	3.2E+00	ug/L	Maximum Concentration	(c)
	IRON	ug/L	NC	NC	3.9E+02	3.9E+02	ug/L	Maximum Concentration	(c)
	MANGANESE	ug/L	NC	NC	2.4E+02	2.4E+02	ug/L	Maximum Concentration	(c)

Notes:

(1) Arithmetic means were not calculated, as each well had a single measurement

(2) UCLs were not calculated, as each well had a single measurment.

(3) J = The compound was positively identified; however, the associated numerical value is an estimated concentration only

(4) Due to the small sample size, maximum concentrations were used as EPCs for most analytes

(5) For data sets with multiple detection limits for non-detects, the use of the Kaplan Meier non-parametric test procedure is recommended and used to calculate an appropriate UCL. For the Kaplan Meier test procedure, the type of data distribution was determined using a series of tests (Shapiro-Wilk, Kolmogorov-Smirnov, Anderson-Darling) for normal, lognormal, or gamma data distributions. The results of these distribution tests determined which UCL calculation was performed.

(a) UCL may not be reliable due to the high frequency of non-detects present.

(b) Maximum detected concentration used for EPC due to the low number of detections.

(c) Due to small sample size, the maximum detected concentration is used.

(d) 95% UCL exceeds maximum detected concentration. Therefore, maximum concentration used for EPC

(e) When the maximum detected concentration is selected as the RME EPC, the arithmetic mean concentration is selected as the CT EPC

(f) If the arithmetic mean concentration equals or exceeds the maximum detected concentration, the maximum detected concentration is used as the CT EPC.

ND = Non-detect

NC = Not calculated

TABLE 3.5.CT

EXPOSURE POINT CONCENTRATION SUMMARY

CENTRAL TENDENCY EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean (1)	UCL (Distribution) (2)	Maximum Concentration (Qualifier) (3)	Exposure Point Concentration			
						Value	Units	Statistic (4)	Rationale (5)
MW-01									
	ANTIMONY	ug/L	ND	ND	ND	ND	ug/L		
	COBALT	ug/L	NC	NC	7.0E+00	7.0E+00	ug/L	Maximum Concentration	(c)
	IRON	ug/L	NC	NC	8.8E+03	8.8E+03	ug/L	Maximum Concentration	(c)
	MANGANESE	ug/L	NC	NC	3.9E+02	3.9E+02	ug/L	Maximum Concentration	(c)
MW-01D									
	ANTIMONY	ug/L	NC	NC	8.4E-01 J	8.4E-01	ug/L	Maximum Concentration	(c)
	COBALT	ug/L	NC	NC	9.5E+00	9.5E+00	ug/L	Maximum Concentration	(c)
	IRON	ug/L	NC	NC	9.8E+03	9.8E+03	ug/L	Maximum Concentration	(c)
	MANGANESE	ug/L	NC	NC	9.4E+02	9.4E+02	ug/L	Maximum Concentration	(c)
MW-11									
	ANTIMONY	ug/L	ND	ND	ND	ND	ug/L		
	COBALT	ug/L	NC	NC	3.7E-01 J	3.7E-01	ug/L	Maximum Concentration	(c)
	IRON	ug/L	ND	ND	ND	ND	ug/L		
	MANGANESE	ug/L	NC	NC	5.9E+01	5.9E+01	ug/L	Maximum Concentration	(c)
MW-12									
	ANTIMONY	ug/L	ND	ND	ND	ND	ug/L		
	COBALT	ug/L	NC	NC	1.6E+00	1.6E+00	ug/L	Maximum Concentration	(c)
	IRON	ug/L	NC	NC	3.3E+03	3.3E+03	ug/L	Maximum Concentration	(c)
	MANGANESE	ug/L	NC	NC	1.2E+03	1.2E+03	ug/L	Maximum Concentration	(c)
MW-12D									
	ANTIMONY	ug/L	ND	ND	ND	ND	ug/L		
	COBALT	ug/L	NC	NC	3.5E+00	3.5E+00	ug/L	Maximum Concentration	(c)
	IRON	ug/L	NC	NC	6.6E+03	6.6E+03	ug/L	Maximum Concentration	(c)
	MANGANESE	ug/L	NC	NC	9.9E+02	9.9E+02	ug/L	Maximum Concentration	(c)
MW-13									
	ANTIMONY	ug/L	ND	ND	ND	ND	ug/L		
	COBALT	ug/L	NC	NC	3.2E+00	3.2E+00	ug/L	Maximum Concentration	(c)
	IRON	ug/L	NC	NC	3.9E+02	3.9E+02	ug/L	Maximum Concentration	(c)
	MANGANESE	ug/L	NC	NC	2.4E+02	2.4E+02	ug/L	Maximum Concentration	(c)

Notes:

(1) Arithmetic means were not calculated, as each well had a single measurement

(2) UCLs were not calculated, as each well had a single measurment.

(3) J = The compound was positively identified; however, the associated numerical value is an estimated concentration only

(4) Due to the small sample size, arithmetic means were used as EPCs for most analytes

(5) For data sets with multiple detection limits for non-detects, the use of the Kaplan Meier non-parametric test procedure is recommended and used to calculate an appropriate UCL. For the Kaplan Meier test procedure, the type of data distribution was determined using a series of tests (Shapiro-Wilk, Kolmogorov-Smirnov, Anderson-Darling) for normal, lognormal, or gamma data distributions. The results of these distribution tests determined which UCL calculation was performed.

(a) UCL may not be reliable due to the high frequency of non-detects present.

(b) Maximum detected concentration used for EPC due to the low number of detections.

(c) Due to small sample size, the maximum detected concentration is used.

(d) 95% UCL exceeds maximum detected concentration. Therefore, maximum concentration used for EPC

(e) When the maximum detected concentration is selected as the RME EPC, the arithmetic mean concentration is selected as the CT EPC

(f) If the arithmetic mean concentration equals or exceeds the maximum detected concentration, the maximum detected concentration is used as the CT EPC.

ND = Non-detect

NC = Not calculated

TABLE 3.6.RME

EXPOSURE POINT CONCENTRATION SUMMARY

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Medium: Shellfish Tissue
Exposure Medium: Shellfish Tissue

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean (1)	UCL (Distribution) (2)	Maximum Concentration (Qualifier) (3)	Exposure Point Concentration			
						Value	Units	Statistic (4)	Rationale (5)
MRP Site 1									
	BENZO[A]ANTHRACENE	mg/kg	1.1E-02	1.2E-02 (N)	3.2E-02	1.2E-02	mg/kg	95% KM (t) UCL	
	BENZO[A]PYRENE	mg/kg	9.4E-03	4.8E-02 (NP)	4.0E-02	4.0E-02	mg/kg	Maximum Concentration	(d)
	BENZO[B]FLUORANTHENE	mg/kg	1.1E-02	5.5E-02 (NP)	4.4E-02	4.4E-02	mg/kg	Maximum Concentration	(d)
	DIBENZ[A,H]ANTHRACENE	mg/kg	4.6E-03	3.3E-03 (N)	8.1E-03	8.1E-03	mg/kg	Maximum Concentration	(b)
	INDENO[1,2,3-CD]PYRENE	mg/kg	6.5E-03	3.0E-02 (NP)	2.6E-02	2.6E-02	mg/kg	Maximum Concentration	(d)
	ARSENIC	mg/kg	3.2E+00	3.5E+00 (N)	4.4E+00 J+	3.5E+00	mg/kg	95% Student's-t UCL	
	CHROMIUM, TOTAL	mg/kg	3.2E-01	4.3E-01 (N)	7.7E-01 J+	4.3E-01	mg/kg	95% Student's-t UCL	
	COBALT	mg/kg	1.4E-01	1.7E-01 (N)	2.8E-01 J+	1.7E-01	mg/kg	95% Student's-t UCL	
	IRON	mg/kg	4.4E+01	1.0E+02 (NP)	1.5E+02	1.0E+02	mg/kg	95% Chebyshev (Mean, Sd) UCL	
	LEAD	mg/kg	1.4E+00	3.7E+00 (G)	7.3E+00 J	See Attachment F			
	MERCURY	mg/kg	1.6E-02	2.0E-02 (N)	3.0E-02	2.0E-02	mg/kg	95% Student's-t UCL	

Notes:

(1) Arithmetic means were calculated with ProUCL software version 5.0.00 and represent means of detected concentrations only. NA = Not applicable

(2) UCL calculations were performed using ProUCL software version 5.0.00, developed by Lockheed-Martin for USEPA.
NP = Non-parametric; N = Normal; LN = Lognormal; G = Gamma; NA = Not applicable

(3) J = The compound was positively identified; however, the associated numerical value is an estimated concentration only

(4) 95% Student's-t UCL = Calculated using a normal Student's t approximation procedure.
95% Modified-t UCL = Calculated using a modified t approximation procedure
95% Approx. Gamma UCL = Calculated using an Approximate Gamma distribution procedure
95% Adjusted Gamma KM-UCL = Calculated using Kaplan Meier Adjusted Gamma distribution procedure
95% H-UCL = Calculated using Land's H-stat for lognormal distributions.
95% Chebyshev (Mean, Sd) UCL = Calculated using Chebyshev inequality non-parametric procedure.
95% KM (t) UCL = Calculated using 95% Kaplan Meier (Student's t approximation) non-parametric procedure.
95% KM (BCA) UCL = Calculated using 95% Kaplan Meier (Bias-corrected accelerated bootstrap) non-parametric procedure.
95% KM (Chebyshev) UCL = Calculated using 95% Kaplan Meier (Chebyshev inequality) non-parametric procedure.
95% KM (% Bootstrap) UCL = Calculated using 95% Kaplan Meier (Percentile Bootstrap) non-parametric procedure.
97.5% KM (Chebyshev) UCL = Calculated using 97.5% Kaplan Meier (Chebyshev inequality) non-parametric procedure.
99% KM (Chebyshev) UCL = Calculated using 99% Kaplan Meier (Chebyshev inequality) non-parametric procedure.

(5) For data sets with multiple detection limits for non-detects, the use of the Kaplan Meier non-parametric test procedure is recommended and used to calculate an appropriate UCL. For the Kaplan Meier test procedure, the type of data distribution was determined using a series of tests (Shapiro-Wilk, Kolmogorov-Smirnov, Anderson-Darling) for normal, lognormal, or gamma data distributions. The results of these distribution tests determined which UCL calculation was performed.
(a) UCL may not be reliable due to the high frequency of non-detects present.
(b) Maximum detected concentration used for EPC due to the low number of detections.
(c) Due to small sample size, the maximum detected concentration is used.
(d) 95% UCL exceeds maximum detected concentration. Therefore, maximum concentration used for EPC
(e) When the maximum detected concentration is selected as the RME EPC, the arithmetic mean concentration is selected as the CT EPC
(f) If the arithmetic mean concentration equals or exceeds the maximum detected concentration, the maximum detected concentration is used as the CT EPC

ND = Non-detect
NC = Not calculated

TABLE 3.6.CT

EXPOSURE POINT CONCENTRATION SUMMARY

CENTRAL TENDENCY EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Medium: Shellfish Tissue
Exposure Medium: Shellfish Tissue

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean (1)	UCL (Distribution) (2)	Maximum Concentration (Qualifier) (3)	Exposure Point Concentration			
						Value	Units	Statistic (4)	Rationale (5)
MRP Site 1									
	BENZO[A]ANTHRACENE	mg/kg	1.1E-02	1.2E-02 (N)	3.2E-02	1.2E-02	mg/kg	95% KM (t) UCL	
	BENZO[A]PYRENE	mg/kg	9.4E-03	4.8E-02 (NP)	4.0E-02	9.4E-03	mg/kg	Arithmetic Mean	(e)
	BENZO[B]FLUORANTHENE	mg/kg	1.1E-02	5.5E-02 (NP)	4.4E-02	1.1E-02	mg/kg	Arithmetic Mean	(e)
	DIBENZ[A,H]ANTHRACENE	mg/kg	4.6E-03	3.3E-03 (N)	8.1E-03	4.6E-03	mg/kg	Arithmetic Mean	(e)
	INDENO[1,2,3-CD]PYRENE	mg/kg	6.5E-03	3.0E-02 (NP)	2.6E-02	6.5E-03	mg/kg	Arithmetic Mean	(e)
	ARSENIC	mg/kg	3.2E+00	3.5E+00 (N)	4.4E+00 J+	3.5E+00	mg/kg	95% Student's-t UCL	
	CHROMIUM, TOTAL	mg/kg	3.2E-01	4.3E-01 (N)	7.7E-01 J+	4.3E-01	mg/kg	95% Student's-t UCL	
	COBALT	mg/kg	1.4E-01	1.7E-01 (N)	2.8E-01 J+	1.7E-01	mg/kg	95% Student's-t UCL	
	IRON	mg/kg	4.4E+01	1.0E+02 (NP)	1.5E+02	1.0E+02	mg/kg	95% Chebyshev (Mean, Sd) UCL	
	LEAD	mg/kg	1.4E+00	3.7E+00 (G)	7.3E+00 J	See Attachment F			
	MERCURY	mg/kg	1.6E-02	2.0E-02 (N)	3.0E-02	2.0E-02	mg/kg	95% Student's-t UCL	

Notes:

(1) Arithmetic means were calculated with ProUCL software version 5.0.00 and represent means of detected concentrations only. NA = Not applicable

(2) UCL calculations were performed using ProUCL software version 5.0.00, developed by Lockheed-Martin for USEPA.
NP = Non-parametric; N = Normal; LN = Lognormal; G = Gamma; NA = Not applicable

(3) J = The compound was positively identified; however, the associated numerical value is an estimated concentration only

(4) 95% Student's-t UCL = Calculated using a normal Student's t approximation procedure.
95% Modified-t UCL = Calculated using a modified t approximation procedure
95% Approx. Gamma UCL = Calculated using an Approximate Gamma distribution procedure
95% Adjusted Gamma KM-UCL = Calculated using Kaplan Meier Adjusted Gamma distribution procedure
95% H-UCL = Calculated using Land's H-stat for lognormal distributions.
95% Chebyshev (Mean, Sd) UCL = Calculated using Chebyshev inequality non-parametric procedure.
95% KM (t) UCL = Calculated using 95% Kaplan Meier (Student's t approximation) non-parametric procedure.
95% KM (BCA) UCL = Calculated using 95% Kaplan Meier (Bias-corrected accelerated bootstrap) non-parametric procedure.
95% KM (Chebyshev) UCL = Calculated using 95% Kaplan Meier (Chebyshev inequality) non-parametric procedure.
95% KM (% Bootstrap) UCL = Calculated using 95% Kaplan Meier (Percentile Bootstrap) non-parametric procedure.
97.5% KM (Chebyshev) UCL = Calculated using 97.5% Kaplan Meier (Chebyshev inequality) non-parametric procedure.
99% KM (Chebyshev) UCL = Calculated using 99% Kaplan Meier (Chebyshev inequality) non-parametric procedure.

(5) For data sets with multiple detection limits for non-detects, the use of the Kaplan Meier non-parametric test procedure is recommended and used to calculate an appropriate UCL. For the Kaplan Meier test procedure, the type of data distribution was determined using a series of tests (Shapiro-Wilk, Kolmogorov-Smirnov, Anderson-Darling) for normal, lognormal, or gamma data distributions. The results of these distribution tests determined which UCL calculation was performed.
(a) UCL may not be reliable due to the high frequency of non-detects present.
(b) Maximum detected concentration used for EPC due to the low number of detections.
(c) Due to small sample size, the maximum detected concentration is used.
(d) 95% UCL exceeds maximum detected concentration. Therefore, maximum concentration used for EPC
(e) When the maximum detected concentration is selected as the RME EPC, the arithmetic mean concentration is selected as the CT EPC
(f) If the arithmetic mean concentration equals or exceeds the maximum detected concentration, the maximum detected concentration is used as the CT EPC

ND = Non-detect
NC = Not calculated

TABLE 4.1.RME

VALUES USED FOR DAILY INTAKE CALCULATIONS

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Trespasser	Adolescent	MRP Site 1	CS	Chemical Concentration in Soil	See Table 3s	mg/kg	See Table 3s	CS x IR x EF x ED x CF x FI x RBA
				IR	Ingestion Rate	100	mg/day	USEPA, 1991	BW x AT
				EF	Exposure Frequency	52	days/yr	Professional Judgement	
				ED	Exposure Duration	9	years	Age range	
				FI	Fraction Ingested from Site	1	unitless	USEPA, 1989	
				CF	Conversion Factor	1.00E-06	kg/mg		
				RBA	Relative Bioavailability Factor	0.6 (Arsenic only) / 1	unitless	USEPA, 2012b	
				BW	Body Weight	44	kg	USEPA, 2011	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	3,285	days	USEPA, 1989	
Dermal	Trespasser	Adolescent	MRP Site 1	CS	Chemical Concentration in Soil	See Table 3s	mg/kg	See Table 3s	CS x SA x AF x ABS x EF x ED x CF
				SA	Surface Area	3,624	cm^2	USEPA, 2011	BW x AT
				AF	Adherence Factor	0.1	mg/cm^2-day	USEPA, 2011	
				ABS	Dermal absorption fraction	see Attachment E	unitless	USEPA, 2004	
				EF	Exposure Frequency	52	days/yr	Professional Judgement	
				ED	Exposure Duration	9	years	Age range	
				CF	Conversion Factor	1.00E-06	kg/mg		
				BW	Body Weight	44	kg	USEPA, 2011	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	3,285	days	USEPA, 1989	
Inhalation of fugitive dust	Trespasser	Adolescent	MRP Site 1	CS	Chemical Concentration in Soil	See Table 3s	mg/kg	See Table 3s	Chronic Daily Intake (CDI) (ug/m^3) =
				ET	Exposure Time	4	hrs/day	Professional judgement	CS x ET x EF x ED x CF2
				EF	Exposure Frequency	52	days/yr	Professional Judgement	PEF x AT x CF1
				ED	Exposure Duration	9	years	Age range	
				PEF	Particulate Emission Factor	1.36E+09	m^3/kg	USEPA, 2002	
				CF1	Conversion Factor 1	24	hrs/day	- -	
				CF2	Conversion Factor 2	1000	ug/mg	- -	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	3,285	days	USEPA, 1989	

TABLE 4.1.RME

VALUES USED FOR DAILY INTAKE CALCULATIONS

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Recreational User	Adult	MRP Site 1	CS	Chemical Concentration in Soil	See Table 3s	mg/kg	See Table 3s	CS x IR x EF x ED x CF x FI x RBA
				IR	Ingestion Rate	100	mg/day	USEPA, 1991; 1993	BW x AT
				EF	Exposure Frequency	14	days/yr	Professional Judgement	
				ED	Exposure Duration	20	years	USEPA, 2014	
				FI	Fraction Ingested from Site	1	unitless	USEPA, 1989	
				CF	Conversion Factor	1.00E-06	kg/mg		
				RBA	Relative Bioavailability Factor	0.6 (Arsenic only) / 1	unitless	USEPA, 2012b	
				BW	Body Weight	80	kg	USEPA, 2014	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	7,300	days	USEPA, 1989	
Dermal	Recreational User	Adult	MRP Site 1	CS	Chemical Concentration in Soil	See Table 3s	mg/kg	See Table 3s	CS x SA x AF x ABS x EF x ED x CF
				SA	Surface Area	6,032	cm^2	USEPA, 2014	BW x AT
				AF	Adherence Factor	0.07	mg/cm^2-day	USEPA, 2004	
				ABS	Dermal absorption fraction	see Attachment E	unitless	USEPA, 2004	
				EF	Exposure Frequency	14	days/yr	Professional Judgement	
				ED	Exposure Duration	20	years	USEPA, 2014	
				CF	Conversion Factor	1.00E-06	kg/mg		
				BW	Body Weight	80	kg	USEPA, 2014	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	7,300	days	USEPA, 1989	
Inhalation of fugitive dust	Recreational User	Adult	MRP Site 1	CS	Chemical Concentration in Soil	See Table 3s	mg/kg	See Table 3s	Chronic Daily Intake (CDI) (ug/m^3) =
				ET	Exposure Time	24	hrs/day	Professional judgement	CS x ET x EF x ED x CF2
				EF	Exposure Frequency	14	days/yr	Professional Judgement	PEF x AT x CF1
				ED	Exposure Duration	20	years	USEPA, 2014	
				PEF	Particulate Emission Factor	1.36E+09	m^3/kg	USEPA, 2002	
				CF1	Conversion Factor 1	24	hrs/day	- -	
				CF2	Conversion Factor 2	1000	ug/mg	- -	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	7,300	days	USEPA, 1989	

TABLE 4.1.RME

VALUES USED FOR DAILY INTAKE CALCULATIONS

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Recreational User	Young child	MRP Site 1	CS	Chemical Concentration in Soil	See Table 3s	mg/kg	See Table 3s	CS x IR x EF x ED x CF x FI x RBA
				IR	Ingestion Rate	200	mg/day	USEPA, 1991; 1993	BW x AT
				EF	Exposure Frequency	14	days/yr	Professional Judgement	
				ED	Exposure Duration	6	years	USEPA, 1991	
				FI	Fraction Ingested from Site	1	unitless	USEPA, 1989	
				CF	Conversion Factor	1.00E-06	kg/mg		
				RBA	Relative Bioavailability Factor	0.6 (Arsenic only) / 1	unitless	USEPA, 2012b	
				BW	Body Weight	15	kg	USEPA, 1997	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	2,190	days	USEPA, 1989	
Dermal	Recreational User	Young child	MRP Site 1	CS	Chemical Concentration in Soil	See Table 3s	mg/kg	See Table 3s	CS x SA x AF x ABS x EF x ED x CF
				SA	Surface Area	2,373	cm^2	USEPA, 2014	BW x AT
				AF	Adherence Factor	0.2	mg/cm^2-day	USEPA, 2004	
				ABS	Dermal absorption fraction	see Attachment E	unitless	USEPA, 2004	
				EF	Exposure Frequency	14	days/yr	Professional Judgement	
				ED	Exposure Duration	6	years	USEPA, 1991	
				CF	Conversion Factor	1.00E-06	kg/mg		
				BW	Body Weight	15	kg	USEPA, 1997	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	2,190	days	USEPA, 1989	
Inhalation of fugitive dust	Recreational User	Young child	MRP Site 1	CS	Chemical Concentration in Soil	See Table 3s	mg/kg	See Table 3s	Chronic Daily Intake (CDI) (ug/m^3) =
				ET	Exposure Time	24	hrs/day	Professional judgement	CS x ET x EF x ED x CF2
				EF	Exposure Frequency	14	days/yr	Professional Judgement	PEF x AT x CF1
				ED	Exposure Duration	6	years	USEPA, 1991	
				PEF	Particulate Emission Factor	1.36E+09	m^3/kg	USEPA, 2002	
				CF1	Conversion Factor 1	24	hrs/day	- -	
				CF2	Conversion Factor 2	1000	ug/mg	- -	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	2,190	days	USEPA, 1989	

TABLE 4.1.RME

VALUES USED FOR DAILY INTAKE CALCULATIONS

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Onsite Worker	Adult	MRP Site 1	CS	Chemical Concentration in Soil	See Table 3s	mg/kg	See Table 3s	CS x IR x EF x ED x CF x FI x RBA
				IR	Ingestion Rate	100	mg/day	USEPA, 1991	BW x AT
				EF	Exposure Frequency	24	days/yr	Professional Judgement	
				ED	Exposure Duration	25	years	USEPA, 1991; 2002	
				FI	Fraction Ingested from Site	0.25	unitless	Professional Judgement	
				CF	Conversion Factor	1.00E-06	kg/mg		
				RBA	Relative Bioavailability Factor	0.6 (Arsenic only) / 1	unitless	USEPA, 2012b	
				BW	Body Weight	80	kg	USEPA, 2014	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	9,125	days	USEPA, 1989	
Dermal	Onsite Worker	Adult	MRP Site 1	CS	Chemical Concentration in Soil	See Table 3s	mg/kg	See Table 3s	CS x SA x AF x ABS x EF x ED x CF
				SA	Surface Area	3,470	cm^2	USEPA, 2014	BW x AT
				AF	Adherence Factor	0.12	mg/cm^2-day	USEPA, 2014	
				ABS	Dermal absorption fraction	see Attachment E	unitless	USEPA, 2004	
				EF	Exposure Frequency	24	days/yr	Professional Judgement	
				ED	Exposure Duration	25	years	USEPA, 2002	
				CF	Conversion Factor	1.00E-06	kg/mg		
				BW	Body Weight	80	kg	USEPA, 2014	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	9,125	days	USEPA, 1989	
Inhalation of fugitive dust	Onsite Worker	Adult	MRP Site 1	CS	Chemical Concentration in Soil	See Table 3s	mg/kg	See Table 3s	Chronic Daily Intake (CDI) (ug/m^3) =
				ET	Exposure Time	2	hrs/day	Professional judgement	CS x ET x EF x ED x CF2
				EF	Exposure Frequency	24	days/yr	Professional Judgement	PEF x AT x CF1
				ED	Exposure Duration	25	years	USEPA, 2002	
				PEF	Particulate Emission Factor	1.36E+09	m^3/kg	USEPA, 2002	
				CF1	Conversion Factor 1	24	hrs/day	- -	
				CF2	Conversion Factor 2	1000	ug/mg	- -	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	9,125	days	USEPA, 1989	

TABLE 4.1.CT

VALUES USED FOR DAILY INTAKE CALCULATIONS

CENTRAL TENDENCY

CARR POINT - MRP SITE 1

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Trespasser	Adolescent	MRP Site 1	CS	Chemical Concentration in Soil	See Table 3s	mg/kg	See Table 3s	CS x IR x EF x ED x CF x FI x RBA
				IR	Ingestion Rate	50	mg/day	USEPA, 1997; 2002	BW x AT
				EF	Exposure Frequency	26	days/yr	Professional Judgement	
				ED	Exposure Duration	9	years	Age range	
				FI	Fraction Ingested from Site	1	unitless	USEPA, 1989	
				CF	Conversion Factor	1.00E-06	kg/mg		
				RBA	Relative Bioavailability Factor	0.6 (Arsenic only) / 1	unitless	USEPA, 2012b	
				BW	Body Weight	44	kg	USEPA, 2011	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	3,285	days	USEPA, 1989	
Dermal	Trespasser	Adolescent	MRP Site 1	CS	Chemical Concentration in Soil	See Table 3s	mg/kg	See Table 3s	CS x SA x AF x ABS x EF x ED x CF
				SA	Surface Area	3,624	cm^2	USEPA, 2011	BW x AT
				AF	Adherence Factor	0.1	mg/cm^2-day	USEPA, 2011	
				ABS	Dermal absorption fraction	see Attachment E	unitless	USEPA, 2004	
				EF	Exposure Frequency	26	days/yr	Professional Judgement	
				ED	Exposure Duration	9	years	Age range	
				CF	Conversion Factor	1.00E-06	kg/mg		
				BW	Body Weight	44	kg	USEPA, 2011	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	3,285	days	USEPA, 1989	
Inhalation of fugitive dust	Trespasser	Adolescent	MRP Site 1	CS	Chemical Concentration in Soil	See Table 3s	mg/kg	See Table 3s	Chronic Daily Intake (CDI) (ug/m^3) =
				ET	Exposure Time	2	hrs/day	Professional judgement	CS x ET x EF x ED x CF2
				EF	Exposure Frequency	26	days/yr	Professional Judgement	PEF x AT x CF1
				ED	Exposure Duration	9	years	Age range	
				PEF	Particulate Emission Factor	1.36E+09	m^3/kg	USEPA, 2002	
				CF1	Conversion Factor 1	24	hrs/day	- -	
				CF2	Conversion Factor 2	1000	ug/mg	- -	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	3,285	days	USEPA, 1989	

TABLE 4.1.CT

VALUES USED FOR DAILY INTAKE CALCULATIONS

CENTRAL TENDENCY

CARR POINT - MRP SITE 1

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Recreational User	Adult	MRP Site 1	CS	Chemical Concentration in Soil	See Table 3s	mg/kg	See Table 3s	CS x IR x EF x ED x CF x FI x RBA
				IR	Ingestion Rate	50	mg/day	USEPA, 1991; 1993	BW x AT
				EF	Exposure Frequency	7	days/yr	Professional Judgement	
				ED	Exposure Duration	19	years	USEPA, 1997	
				FI	Fraction Ingested from Site	1	unitless	USEPA, 1989	
				CF	Conversion Factor	1.00E-06	kg/mg		
				RBA	Relative Bioavailability Factor	0.6 (Arsenic only) / 1	unitless	USEPA, 2012b	
				BW	Body Weight	80	kg	USEPA, 2014	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	6,935	days	USEPA, 1989	
Dermal	Recreational User	Adult	MRP Site 1	CS	Chemical Concentration in Soil	See Table 3s	mg/kg	See Table 3s	CS x SA x AF x ABS x EF x ED x CF
				SA	Surface Area	6,032	cm^2	USEPA, 2014	BW x AT
				AF	Adherence Factor	0.01	mg/cm^2-day	USEPA, 2004	
				ABS	Dermal absorption fraction	see Attachment E	unitless	USEPA, 2004	
				EF	Exposure Frequency	7	days/yr	Professional Judgement	
				ED	Exposure Duration	19	years	USEPA, 1997	
				CF	Conversion Factor	1.00E-06	kg/mg		
				BW	Body Weight	80	kg	USEPA, 2014	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	6,935	days	USEPA, 1989	
Inhalation of fugitive dust	Recreational User	Adult	MRP Site 1	CS	Chemical Concentration in Soil	See Table 3s	mg/kg	See Table 3s	Chronic Daily Intake (CDI) (ug/m^3) =
				ET	Exposure Time	24	hrs/day	Professional judgement	CS x ET x EF x ED x CF2
				EF	Exposure Frequency	7	days/yr	Professional Judgement	PEF x AT x CF1
				ED	Exposure Duration	19	years	USEPA, 1997	
				PEF	Particulate Emission Factor	1.36E+09	m^3/kg	USEPA, 2002	
				CF1	Conversion Factor 1	24	hrs/day	- -	
				CF2	Conversion Factor 2	1000	ug/mg	- -	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	6,935	days	USEPA, 1989	

TABLE 4.1.CT

VALUES USED FOR DAILY INTAKE CALCULATIONS

CENTRAL TENDENCY

CARR POINT - MRP SITE 1

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Recreational User	Young child	MRP Site 1	CS	Chemical Concentration in Soil	See Table 3s	mg/kg	See Table 3s	CS x IR x EF x ED x CF x FI x RBA
				IR	Ingestion Rate	100	mg/day	USEPA, 1991; 1993	BW x AT
				EF	Exposure Frequency	7	days/yr	Professional Judgement	
				ED	Exposure Duration	6	years	USEPA, 1991	
				FI	Fraction Ingested from Site	1	unitless	USEPA, 1989	
				CF	Conversion Factor	1.00E-06	kg/mg		
				RBA	Relative Bioavailability Factor	0.6 (Arsenic only) / 1	unitless	USEPA, 2012b	
				BW	Body Weight	15	kg	USEPA, 1997	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	2,190	days	USEPA, 1989	
Dermal	Recreational User	Young child	MRP Site 1	CS	Chemical Concentration in Soil	See Table 3s	mg/kg	See Table 3s	CS x SA x AF x ABS x EF x ED x CF
				SA	Surface Area	2,373	cm^2	USEPA, 2014	BW x AT
				AF	Adherence Factor	0.04	mg/cm^2-day	USEPA, 2004	
				ABS	Dermal absorption fraction	see Attachment E	unitless	USEPA, 2004	
				EF	Exposure Frequency	7	days/yr	Professional Judgement	
				ED	Exposure Duration	6	years	USEPA, 1991	
				CF	Conversion Factor	1.00E-06	kg/mg		
				BW	Body Weight	15	kg	USEPA, 1997	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	2,190	days	USEPA, 1989	
Inhalation of fugitive dust	Recreational User	Young child	MRP Site 1	CS	Chemical Concentration in Soil	See Table 3s	mg/kg	See Table 3s	Chronic Daily Intake (CDI) (ug/m^3) =
				ET	Exposure Time	24	hrs/day	Professional judgement	CS x ET x EF x ED x CF2
				EF	Exposure Frequency	7	days/yr	Professional Judgement	PEF x AT x CF1
				ED	Exposure Duration	6	years	USEPA, 1991	
				PEF	Particulate Emission Factor	1.36E+09	m^3/kg	USEPA, 2002	
				CF1	Conversion Factor 1	24	hrs/day	- -	
				CF2	Conversion Factor 2	1000	ug/mg	- -	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	2,190	days	USEPA, 1989	

TABLE 4.1.CT

VALUES USED FOR DAILY INTAKE CALCULATIONS

CENTRAL TENDENCY

CARR POINT - MRP SITE 1

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Onsite Worker	Adult	MRP Site 1	CS	Chemical Concentration in Soil	See Table 3s	mg/kg	See Table 3s	CS x IR x EF x ED x CF x FI x RBA
				IR	Ingestion Rate	50	mg/day	USEPA, 1997	BW x AT
				EF	Exposure Frequency	2	days/yr	Professional Judgement	
				ED	Exposure Duration	7	years	USEPA, 1997	
				FI	Fraction Ingested from Site	0.5	unitless	Professional Judgement	
				CF	Conversion Factor	1.00E-06	kg/mg		
				RBA	Relative Bioavailability Factor	0.6 (Arsenic only) / 1	unitless	USEPA, 2012b	
				BW	Body Weight	80	kg	USEPA, 2014	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	2,555	days	USEPA, 1989	
Dermal	Onsite Worker	Adult	MRP Site 1	CS	Chemical Concentration in Soil	See Table 3s	mg/kg	See Table 3s	CS x SA x AF x ABS x EF x ED x CF
				SA	Surface Area	3,470	cm^2	USEPA, 2014	BW x AT
				AF	Adherence Factor	0.02	mg/cm^2-day	USEPA, 2004	
				ABS	Dermal absorption fraction	see Attachment E	unitless	USEPA, 2004	
				EF	Exposure Frequency	2	days/yr	USEPA, 2002	
				ED	Exposure Duration	7	years	USEPA, 2002	
				CF	Conversion Factor	1.00E-06	kg/mg		
				BW	Body Weight	80	kg	USEPA, 2014	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	2,555	days	USEPA, 1989	
Inhalation of fugitive dust	Onsite Worker	Adult	MRP Site 1	CS	Chemical Concentration in Soil	See Table 3s	mg/kg	See Table 3s	Chronic Daily Intake (CDI) (ug/m^3) =
				ET	Exposure Time	4	hrs/day	Professional judgement	CS x ET x EF x ED x CF2
				EF	Exposure Frequency	2	days/yr	Professional Judgement	PEF x AT x CF1
				ED	Exposure Duration	7	years	USEPA, 1997	
				PEF	Particulate Emission Factor	1.36E+09	m^3/kg	USEPA, 2002	
				CF1	Conversion Factor 1	24	hrs/day	- -	
				CF2	Conversion Factor 2	1000	ug/mg	- -	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	2,555	days	USEPA, 1989	

TABLE 4.2.RME

VALUES USED FOR DAILY INTAKE CALCULATIONS

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe:	Current
Medium:	Sediment
Exposure Medium:	Sediment

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Trespasser	Adolescent	MRP Site 1	CS	Chemical Concentration in Sediment	See Table 3s	mg/kg	See Table 3s	CS x IR x EF x ED x CF x FI x RBA
				IR	Ingestion Rate	100	mg/day	USEPA, 1991	BW x AT
				EF	Exposure Frequency	52	days/yr	Professional Judgement	
				ED	Exposure Duration	9	years	Age Range	
				FI	Fraction Ingested from Site	1	unitless	USEPA, 1989	
				CF	Conversion Factor	1.00E-06	kg/mg		
				RBA	Relative Bioavailability Factor	0.6 (Arsenic only) / 1	unitless	USEPA, 2012b	
				BW	Body Weight	44	kg	USEPA, 2011	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	3,285	days	USEPA, 1989	
Dermal	Trespasser	Adolescent	MRP Site 1	CS	Chemical Concentration in Sediment	See Table 3s	mg/kg	See Table 3s	CS x SA x AF x ABS x EF x ED x CF
				SA	Surface Area	3,093	cm^2	USEPA, 2011	BW x AT
				AF	Adherence Factor	0.3	mg/cm^2-day	USEPA, 2011	
				ABS	Dermal absorption fraction	see Attachment E	unitless	USEPA, 2004	
				EF	Exposure Frequency	52	days/yr	Professional Judgement	
				ED	Exposure Duration	9	years	Professional Judgement	
				CF	Conversion Factor	1.00E-06	kg/mg		
				BW	Body Weight	44	kg	USEPA, 2011	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	3,285	days	USEPA, 1989	
Ingestion	Recreational User	Adult	MRP Site 1	CS	Chemical Concentration in Sediment	See Table 3s	mg/kg	See Table 3s	CS x IR x EF x ED x CF x FI x RBA
				IR	Ingestion Rate	100	mg/day	USEPA, 1991; 1993	BW x AT
				EF	Exposure Frequency	14	days/yr	Professional Judgement	
				ED	Exposure Duration	20	years	USEPA, 2014	
				FI	Fraction Ingested from Site	1	unitless	USEPA, 1989	
				CF	Conversion Factor	1.00E-06	kg/mg		
				RBA	Relative Bioavailability Factor	0.6 (Arsenic only) / 1	unitless	USEPA, 2012b	
				BW	Body Weight	80	kg	USEPA, 2014	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	7,300	days	USEPA, 1989	

TABLE 4.2.RME

VALUES USED FOR DAILY INTAKE CALCULATIONS

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe:	Current
Medium:	Sediment
Exposure Medium:	Sediment

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Dermal	Recreational User	Adult	MRP Site 1	CS	Chemical Concentration in Sediment	See Table 3s	mg/kg	See Table 3s	CS x SA x AF x ABS x EF x ED x CF
				SA	Surface Area	4,780	cm^2	USEPA, 2011	BW x AT
				AF	Adherence Factor	0.4	mg/cm^2-day	USEPA, 2011	
				ABS	Dermal absorption fraction	see Attachment E	unitless	USEPA, 2004	
				EF	Exposure Frequency	14	days/yr	Professional Judgement	
				ED	Exposure Duration	20	years	USEPA, 2014	
				CF	Conversion Factor	1.00E-06	kg/mg		
				BW	Body Weight	80	kg	USEPA, 2014	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	7,300	days	USEPA, 1989	
Ingestion	Recreational User	Young Child	MRP Site 1	CS	Chemical Concentration in Sediment	See Table 3s	mg/kg	See Table 3s	CS x IR x EF x ED x CF x FI x RBA
				IR	Ingestion Rate	200	mg/day	USEPA, 1991; 1993	BW x AT
				EF	Exposure Frequency	14	days/yr	Professional Judgement	
				ED	Exposure Duration	6	years	USEPA, 1991	
				FI	Fraction Ingested from Site	1	unitless	USEPA, 1989	
				CF	Conversion Factor	1.00E-06	kg/mg		
				RBA	Relative Bioavailability Factor	0.6 (Arsenic only) / 1	unitless	USEPA, 2012b	
				BW	Body Weight	15	kg	USEPA, 1997	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	2,190	days	USEPA, 1989	
Dermal	Recreational User	Young Child	MRP Site 1	CS	Chemical Concentration in Sediment	See Table 3s	mg/kg	See Table 3s	CS x SA x AF x ABS x EF x ED x CF
				SA	Surface Area	1,364	cm^2	USEPA, 2011	BW x AT
				AF	Adherence Factor	0.4	mg/cm^2-day	USEPA, 2011	
				ABS	Dermal absorption fraction	see Attachment E	unitless	USEPA, 2004	
				EF	Exposure Frequency	14	days/yr	Professional Judgement	
				ED	Exposure Duration	6	years	USEPA, 1991	
				CF	Conversion Factor	1.00E-06	kg/mg		
				BW	Body Weight	15	kg	USEPA, 1997	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	2,190	days	USEPA, 1989	

TABLE 4.2.CT

VALUES USED FOR DAILY INTAKE CALCULATIONS

CENTRAL TENDENCY

CARR POINT - MRP SITE 1

Scenario Timeframe:	Current
Medium:	Sediment
Exposure Medium:	Sediment

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Trespasser	Adolescent	MRP Site 1	CS	Chemical Concentration in Sediment	See Table 3s	mg/kg	See Table 3s	CS x IR x EF x ED x CF x FI x RBA
				IR	Ingestion Rate	50	mg/day	USEPA, 1997	BW x AT
				EF	Exposure Frequency	26	days/yr	Professional Judgement	
				ED	Exposure Duration	9	years	Age Range	
				FI	Fraction Ingested from Site	1	unitless	USEPA, 1989	
				CF	Conversion Factor	1.00E-06	kg/mg		
				RBA	Relative Bioavailability Factor	0.6 (Arsenic only) / 1	unitless	USEPA, 2012b	
				BW	Body Weight	44	kg	USEPA, 2011	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	3,285	days	USEPA, 1989	
Dermal	Trespasser	Adolescent	MRP Site 1	CS	Chemical Concentration in Sediment	See Table 3s	mg/kg	See Table 3s	CS x SA x AF x ABS x EF x ED x CF
				SA	Surface Area	3,093	cm^2	USEPA, 2011	BW x AT
				AF	Adherence Factor	0.3	mg/cm^2-day	USEPA, 2011	
				ABS	Dermal absorption fraction	see Attachment E	unitless	USEPA, 2004	
				EF	Exposure Frequency	26	days/yr	Professional Judgement	
				ED	Exposure Duration	9	years	Professional Judgement	
				CF	Conversion Factor	1.00E-06	kg/mg		
				BW	Body Weight	44	kg	USEPA, 2011	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	3,285	days	USEPA, 1989	
Ingestion	Recreational User	Adult	MRP Site 1	CS	Chemical Concentration in Sediment	See Table 3s	mg/kg	See Table 3s	CS x IR x EF x ED x CF x FI x RBA
				IR	Ingestion Rate	50	mg/day	USEPA, 1991; 1993	BW x AT
				EF	Exposure Frequency	7	days/yr	Professional Judgement	
				ED	Exposure Duration	19	years	USEPA, 1997	
				FI	Fraction Ingested from Site	1	unitless	USEPA, 1989	
				CF	Conversion Factor	1.00E-06	kg/mg		
				RBA	Relative Bioavailability Factor	0.6 (Arsenic only) / 1	unitless	USEPA, 2012b	
				BW	Body Weight	80	kg	USEPA, 2014	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	6,935	days	USEPA, 1989	

TABLE 4.2.CT

VALUES USED FOR DAILY INTAKE CALCULATIONS

CENTRAL TENDENCY

CARR POINT - MRP SITE 1

Scenario Timeframe:	Current
Medium:	Sediment
Exposure Medium:	Sediment

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Dermal	Recreational User	Adult	MRP Site 1	CS	Chemical Concentration in Sediment	See Table 3s	mg/kg	See Table 3s	CS x SA x AF x ABS x EF x ED x CF
				SA	Surface Area	4,780	cm^2	USEPA, 2011	BW x AT
				AF	Adherence Factor	0.4	mg/cm^2-day	USEPA, 2011	
				ABS	Dermal absorption fraction	see Attachment E	unitless	USEPA, 2004	
				EF	Exposure Frequency	7	days/yr	Professional Judgement	
				ED	Exposure Duration	19	years	USEPA, 1997	
				CF	Conversion Factor	1.00E-06	kg/mg		
				BW	Body Weight	80	kg	USEPA, 2014	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	6,935	days	USEPA, 1989	
Ingestion	Recreational User	Young Child	MRP Site 1	CS	Chemical Concentration in Sediment	See Table 3s	mg/kg	See Table 3s	CS x IR x EF x ED x CF x FI x RBA
				IR	Ingestion Rate	100	mg/day	USEPA, 1991; 1993	BW x AT
				EF	Exposure Frequency	7	days/yr	Professional Judgement	
				ED	Exposure Duration	6	years	USEPA, 1991	
				FI	Fraction Ingested from Site	1	unitless	USEPA, 1989	
				CF	Conversion Factor	1.00E-06	kg/mg		
				RBA	Relative Bioavailability Factor	0.6 (Arsenic only) / 1	unitless	USEPA, 2012b	
				BW	Body Weight	15	kg	USEPA, 1997	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	2,190	days	USEPA, 1989	
Dermal	Recreational User	Young Child	MRP Site 1	CS	Chemical Concentration in Sediment	See Table 3s	mg/kg	See Table 3s	CS x SA x AF x ABS x EF x ED x CF
				SA	Surface Area	1,364	cm^2	USEPA, 2011	BW x AT
				AF	Adherence Factor	0.4	mg/cm^2-day	USEPA, 2011	
				Abs	Dermal absorption fraction	see Attachment E	unitless	USEPA, 2004	
				EF	Exposure Frequency	7	days/yr	Professional Judgement	
				ED	Exposure Duration	6	years	USEPA, 1991	
				CF	Conversion Factor	1.00E-06	kg/mg		
				BW	Body Weight	15	kg	USEPA, 1997	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	2,190	days	USEPA, 1989	

TABLE 4.3.RME

VALUES USED FOR DAILY INTAKE CALCULATIONS

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe:	Current/Future
Medium:	Soil
Exposure Medium:	Surface/Subsurface Soil

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Construction Worker	Adult	MRP Site 1	CS	Chemical Concentration in Soil	See Table 3s	mg/kg	See Table 3s	CS x IR x EF x ED x CF x FI x RBA
				IR	Ingestion Rate	330	mg/day	USEPA, 2002	BW x AT
				EF	Exposure Frequency	250	days/yr	Professional Judgement	
				ED	Exposure Duration	1	years	Professional Judgement	
				FI	Fraction Ingested from Site	1	unitless	USEPA, 1989	
				CF	Conversion Factor	1.00E-06	kg/mg		
				RBA	Relative Bioavailability Factor	0.6 (Arsenic only) / 1	unitless	USEPA, 2012b	
				BW	Body Weight	80	kg	USEPA, 2014	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	365	days	USEPA, 1989	
Dermal	Construction Worker	Adult	MRP Site 1	CS	Chemical Concentration in Soil	See Table 3s	mg/kg	See Table 3s	CS x SA x AF x ABS x EF x ED x CF
				SA	Surface Area	3,470	cm^2	USEPA, 2014	BW x AT
				AF	Adherence Factor	0.3	mg/cm^2-day	USEPA, 2004	
				ABS	Dermal absorption fraction	see Attachment E	unitless	USEPA, 2004	
				EF	Exposure Frequency	250	days/yr	Professional Judgement	
				ED	Exposure Duration	1	years	Professional Judgement	
				CF	Conversion Factor	1.00E-06	kg/mg		
				BW	Body Weight	80	kg	USEPA, 2014	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	365	days	USEPA, 1989	
Inhalation of fugitive dust	Construction Worker	Adult	MRP Site 1	CS	Chemical Concentration in Soil	See Table 3s	mg/kg	See Table 3s	Chronic Daily Intake (CDI) (ug/m^3) =
				ET	Exposure Time	8	hrs/day	Professional judgement	CS x ET x EF x ED x CF2
				EF	Exposure Frequency	250	days/yr	Professional Judgement	PEF x AT x CF1
				ED	Exposure Duration	1	years	Professional Judgement	
				PEF	Particulate Emission Factor	1.36E+09	m^3/kg	USEPA, 2002	
				CF1	Conversion Factor 1	24	hrs/day	- -	
				CF2	Conversion Factor 2	1000	ug/mg	- -	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	365	days	USEPA, 1989	

TABLE 4.3.CT

VALUES USED FOR DAILY INTAKE CALCULATIONS

CENTRAL TENDENCY

CARR POINT - MRP SITE 1

Scenario Timeframe:	Current/Future
Medium:	Soil
Exposure Medium:	Surface/Subsurface Soil

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Construction Worker	Adult	MRP Site 1	CS	Chemical Concentration in Soil	See Table 3s	mg/kg	See Table 3s	CS x IR x EF x ED x CF x FI x RBA
				IR	Ingestion Rate	330	mg/day	USEPA, 2002	BW x AT
				EF	Exposure Frequency	130	days/yr	Professional Judgement	
				ED	Exposure Duration	0.5	years	Professional Judgement	
				FI	Fraction Ingested from Site	1	unitless	USEPA, 1989	
				CF	Conversion Factor	1.00E-06	kg/mg		
				RBA	Relative Bioavailability Factor	0.6 (Arsenic only) / 1	unitless	USEPA, 2012b	
				BW	Body Weight	80	kg	USEPA, 2014	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	183	days	USEPA, 1989	
Dermal	Construction Worker	Adult	MRP Site 1	CS	Chemical Concentration in Soil	See Table 3s	mg/kg	See Table 3s	CS x SA x AF x Abs x EF x ED x CF
				SA	Surface Area	3,470	cm^2	USEPA, 2014	BW x AT
				AF	Adherence Factor	0.1	mg/cm^2-day	USEPA, 2004	
				Abs	Dermal absorption fraction	see Attachment E	unitless	USEPA, 2004	
				EF	Exposure Frequency	130	days/yr	Professional Judgement	
				ED	Exposure Duration	0.5	years	Professional Judgement	
				CF	Conversion Factor	1.00E-06	kg/mg		
				BW	Body Weight	80	kg	USEPA, 2014	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	183	days	USEPA, 1989	
Inhalation of fugitive dust	Construction Worker	Adult	MRP Site 1	CS	Chemical Concentration in Soil	See Table 3s	mg/kg	See Table 3s	Chronic Daily Intake (CDI) (ug/m^3) =
				ET	Exposure Time	8	hrs/day	Professional judgement	CS x ET x EF x ED x CF2
				EF	Exposure Frequency	130	days/yr	Professional Judgement	PEF x AT x CF1
				ED	Exposure Duration	0.5	years	Professional Judgement	
				PEF	Particulate Emission Factor	1.36E+09	m^3/kg	USEPA, 2002	
				CF1	Conversion Factor 1	24	hrs/day	- -	
				CF2	Conversion Factor 2	1000	ug/mg	- -	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	183	days	USEPA, 1989	

TABLE 4.4.RME

VALUES USED FOR DAILY INTAKE CALCULATIONS

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe:	Current/Future
Medium:	Groundwater
Exposure Medium:	Shallow Groundwater

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Construction Worker	Adult	MRP Site 1	CW	Chemical Concentration in Water	See Table 3s	ug/L	See Table 3s	CW x CR x EF x ED x CF
				CR	Contact Rate	0.005	liters/day	USEPA, 1989; Prof. Judg.	BW x AT
				EF	Exposure Frequency	250	days/yr	Professional Judgement	
				ED	Exposure Duration	1	years	Professional Judgement	
				CF	Conversion Factor	0.001	mg/ug		
				BW	Body Weight	80	kg	USEPA, 2014	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	365	days	USEPA, 1989	
Dermal	Construction Worker	Adult	MRP Site 1	CW	Chemical Concentration in Water	See Table 3s	ug/L	See Table 3s	Organics:
				DA	Dose Absorbed per Unit Area per Event	see Attachment E	mg/cm^2-event	USEPA, 2004	Chronic Daily Intake (CDI) (mg/kg-day) =
				SA	Surface Area	3,470	cm^2	USEPA, 2014	
				PC	Permeability Constant	see Attachment E	cm/hr	USEPA, 2004	DA x SA x EV x EF x ED / BW x AT
				ET	Event Time	1	hour/event	Professional Judgement	
				EV	Event Frequency	1	event/day	USEPA, 2004	
				EF	Exposure Frequency	250	days/yr	Professional Judgement	Inorganics:
				ED	Exposure Duration	1	years	USEPA, 1989	CDI (mg/kg-day) =
				BW	Body Weight	80	kg	USEPA, 2014	
				ATc	Averaging Time - cancer	25550	days	USEPA, 1989	CW x SA x PC x ET x EV x EF x ED x CF1 x CF2 / BW x AT
				ATnc	Averaging Time - noncancer	365	days	USEPA, 1989	
				CF1	Conversion Factor 1	0.001	L/cm^3	- -	
				CF2	Conversion Factor 2	0.001	mg/ug	- -	

TABLE 4.4.CT

VALUES USED FOR DAILY INTAKE CALCULATIONS

CENTRAL TENDENCY

CARR POINT - MRP SITE 1

Scenario Timeframe:	Current/Future
Medium:	Groundwater
Exposure Medium:	Shallow Groundwater

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Construction Worker	Adult	MRP Site 1	CW	Chemical Concentration in Water	See Table 3s	ug/L	See Table 3s	CW x CR x EF x ED x CF
				CR	Contact Rate	0	liters/day	Professional Judgement	BW x AT
				EF	Exposure Frequency	130	days/yr	Professional Judgement	
				ED	Exposure Duration	0.5	years	Professional Judgement	
				CF	Conversion Factor	0.001	mg/ug		
				BW	Body Weight	80	kg	USEPA, 2014	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	183	days	USEPA, 1989	
Dermal	Construction Worker	Adult	MRP Site 1	CW	Chemical Concentration in Water	See Table 3s	ug/L	See Table 3s	Organics:
				DA	Dose Absorbed per Unit Area per Event	see Attachment E	mg/cm^2-event	USEPA, 2004	Chronic Daily Intake (CDI) (mg/kg-day) =
				SA	Surface Area	3,470	cm^2	USEPA, 2014	
				PC	Permeability Constant	see Attachment E	cm/hr	USEPA, 2004	DA x SA x EV x EF x ED / BW x AT
				ET	Event Time	1	hour/event	Professional Judgement	
				EV	Event Frequency	1	event/day	USEPA, 2004	
				EF	Exposure Frequency	130	days/yr	Professional Judgement	Inorganics:
				ED	Exposure Duration	0.5	years	USEPA, 1989	CDI (mg/kg-day) =
				BW	Body Weight	80	kg	USEPA, 2014	
				ATc	Averaging Time - cancer	25550	days	USEPA, 1989	CW x SA x PC x ET x EV x EF x ED x CF1 x CF2 / BW x AT
				ATnc	Averaging Time - noncancer	182.5	days	USEPA, 1989	
				CF1	Conversion Factor 1	0.001	L/cm^3	- -	
				CF2	Conversion Factor 2	0.001	mg/ug	- -	

TABLE 4.5.RME

VALUES USED FOR DAILY INTAKE CALCULATIONS

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Surface/Subsurface Soil

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Trespasser	Adolescent	MRP Site 1	CS	Chemical Concentration in Soil	See Table 3s	mg/kg	See Table 3s	CS x IR x EF x ED x CF x FI x RBA
				IR	Ingestion Rate	100	mg/day	USEPA, 1991	BW x AT
				EF	Exposure Frequency	52	days/yr	Professional Judgement	
				ED	Exposure Duration	9	years	Age range	
				FI	Fraction Ingested from Site	1	unitless	USEPA, 1989	
				CF	Conversion Factor	1.00E-06	kg/mg		
				RBA	Relative Bioavailability Factor	0.6 (Arsenic only) / 1	unitless	USEPA, 2012b	
				BW	Body Weight	44	kg	USEPA, 2011	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	3,285	days	USEPA, 1989	
Dermal	Trespasser	Adolescent	MRP Site 1	CS	Chemical Concentration in Soil	See Table 3s	mg/kg	See Table 3s	CS x SA x AF x ABS x EF x ED x CF
				SA	Surface Area	3,624	cm^2	USEPA, 2011	BW x AT
				AF	Adherence Factor	0.1	mg/cm^2-day	USEPA, 2011	
				ABS	Dermal absorption fraction	see Attachment E	unitless	USEPA, 2004	
				EF	Exposure Frequency	52	days/yr	Professional Judgement	
				ED	Exposure Duration	9	years	Age range	
				CF	Conversion Factor	1.00E-06	kg/mg		
				BW	Body Weight	44	kg	USEPA, 2011	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	3,285	days	USEPA, 1989	
Inhalation of fugitive dust	Trespasser	Adolescent	MRP Site 1	CS	Chemical Concentration in Soil	See Table 3s	mg/kg	See Table 3s	Chronic Daily Intake (CDI) (ug/m^3) =
				ET	Exposure Time	4	hrs/day	Professional judgement	CS x ET x EF x ED x CF2
				EF	Exposure Frequency	52	days/yr	Professional Judgement	PEF x AT x CF1
				ED	Exposure Duration	9	years	Age range	
				PEF	Particulate Emission Factor	1.36E+09	m^3/kg	USEPA, 2002	
				CF1	Conversion Factor 1	24	hrs/day	- -	
				CF2	Conversion Factor 2	1000	ug/mg	- -	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	3,285	days	USEPA, 1989	

TABLE 4.5.RME

VALUES USED FOR DAILY INTAKE CALCULATIONS

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Surface/Subsurface Soil

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Onsite Worker	Adult	MRP Site 1	CS	Chemical Concentration in Soil	See Table 3s	mg/kg	See Table 3s	CS x IR x EF x ED x CF x FI x RBA
				IR	Ingestion Rate	100	mg/day	USEPA, 1991	BW x AT
				EF	Exposure Frequency	250	days/yr	USEPA, 1991	
				ED	Exposure Duration	25	years	USEPA, 1991; 2002	
				FI	Fraction Ingested from Site	1	unitless	USEPA, 1989	
				CF	Conversion Factor	1.00E-06	kg/mg		
				RBA	Relative Bioavailability Factor	0.6 (Arsenic only) / 1	unitless	USEPA, 2012b	
				BW	Body Weight	80	kg	USEPA, 2014	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	9,125	days	USEPA, 1989	
Dermal	Onsite Worker	Adult	MRP Site 1	CS	Chemical Concentration in Soil	See Table 3s	mg/kg	See Table 3s	CS x SA x AF x ABS x EF x ED x CF
				SA	Surface Area	3,470	cm^2	USEPA, 2014	BW x AT
				AF	Adherence Factor	0.12	mg/cm^2-day	USEPA, 2014	
				Abs	Dermal absorption fraction	see Attachment E	unitless	USEPA, 2004	
				EF	Exposure Frequency	250	days/yr	USEPA, 1991	
				ED	Exposure Duration	25	years	USEPA, 1991; 2002	
				CF	Conversion Factor	1.00E-06	kg/mg		
				BW	Body Weight	80	kg	USEPA, 2014	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	9,125	days	USEPA, 1989	
Inhalation of fugitive dust	Onsite Worker	Adult	MRP Site 1	CS	Chemical Concentration in Soil	See Table 3s	mg/kg	See Table 3s	Chronic Daily Intake (CDI) (ug/m^3) =
				ET	Exposure Time	4	hrs/day	Professional judgement	CS x ET x EF x ED x CF2
				EF	Exposure Frequency	250	days/yr	USEPA, 1991	PEF x AT x CF1
				ED	Exposure Duration	25	years	USEPA, 2002	
				PEF	Particulate Emission Factor	1.36E+09	m^3/kg	USEPA, 2002	
				CF1	Conversion Factor 1	24	hrs/day	- -	
				CF2	Conversion Factor 2	1000	ug/mg	- -	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	9,125	days	USEPA, 1989	

TABLE 4.5.RME

VALUES USED FOR DAILY INTAKE CALCULATIONS

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Surface/Subsurface Soil

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Resident	Adult	MRP Site 1	CS	Chemical Concentration in Soil	See Table 3s	mg/kg	See Table 3s	CS x IR x EF x ED x CF x FI x RBA
				IR	Ingestion Rate	100	mg/day	USEPA, 1991; 1993	BW x AT
				EF	Exposure Frequency	350	days/yr	USEPA, 1991	
				ED	Exposure Duration	20	years	USEPA, 2014	
				FI	Fraction Ingested from Site	1	unitless	USEPA, 1989	
				CF	Conversion Factor	1.00E-06	kg/mg		
				RBA	Relative Bioavailability Factor	0.6 (Arsenic only) / 1	unitless	USEPA, 2012b	
				BW	Body Weight	80	kg	USEPA, 2014	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	7,300	days	USEPA, 1989	
Dermal	Resident	Adult	MRP Site 1	CS	Chemical Concentration in Soil	See Table 3s	mg/kg	See Table 3s	CS x SA x AF x ABS x EF x ED x CF
				SA	Surface Area	6,032	cm^2	USEPA, 2014	BW x AT
				AF	Adherence Factor	0.07	mg/cm^2-day	USEPA, 2004	
				Abs	Dermal absorption fraction	see Attachment E	unitless	USEPA, 2004	
				EF	Exposure Frequency	350	days/yr	USEPA, 1991	
				ED	Exposure Duration	20	years	USEPA, 2014	
				CF	Conversion Factor	1.00E-06	kg/mg		
				BW	Body Weight	80	kg	USEPA, 2014	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	7,300	days	USEPA, 1989	
Inhalation of fugitive dust	Resident	Adult	MRP Site 1	CS	Chemical Concentration in Soil	See Table 3s	mg/kg	See Table 3s	Chronic Daily Intake (CDI) (ug/m^3) =
				ET	Exposure Time	5	hrs/day	USEPA, 1991	CS x ET x EF x ED x CF2
				EF	Exposure Frequency	350	days/yr	USEPA, 1991	PEF x AT x CF1
				ED	Exposure Duration	20	years	USEPA, 2014	
				PEF	Particulate Emission Factor	1.36E+09	m^3/kg	USEPA, 2002	
				CF1	Conversion Factor 1	24	hrs/day	- -	
				CF2	Conversion Factor 2	1000	ug/mg	- -	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	7,300	days	USEPA, 1989	

TABLE 4.5.RME

VALUES USED FOR DAILY INTAKE CALCULATIONS

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Surface/Subsurface Soil

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Resident	Young Child	MRP Site 1	CS	Chemical Concentration in Soil	See Table 3s	mg/kg	See Table 3s	CS x IR x EF x ED x CF x FI x RBA
				IR	Ingestion Rate	200	mg/day	USEPA, 1991; 1993	BW x AT
				EF	Exposure Frequency	350	days/yr	USEPA, 1991	
				ED	Exposure Duration	6	years	USEPA, 1991	
				FI	Fraction Ingested from Site	1	unitless	USEPA, 1989	
				CF	Conversion Factor	1.00E-06	kg/mg		
				RBA	Relative Bioavailability Factor	0.6 (Arsenic only) / 1	unitless	USEPA, 2012b	
				BW	Body Weight	15	kg	USEPA, 1997	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	2,190	days	USEPA, 1989	
Dermal	Resident	Young Child	MRP Site 1	CS	Chemical Concentration in Soil	See Table 3s	mg/kg	See Table 3s	CS x SA x AF x ABS x EF x ED x CF
				SA	Surface Area	2,373	cm^2	USEPA, 2014	BW x AT
				AF	Adherence Factor	0.2	mg/cm^2-day	USEPA, 2004	
				Abs	Dermal absorption fraction	see Attachment E	unitless	USEPA, 2004	
				EF	Exposure Frequency	350	days/yr	USEPA, 1991	
				ED	Exposure Duration	6	years	USEPA, 1991	
				CF	Conversion Factor	1.00E-06	kg/mg		
				BW	Body Weight	15	kg	USEPA, 1997	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	2,190	days	USEPA, 1989	
Inhalation of fugitive dust	Resident	Young Child	MRP Site 1	CS	Chemical Concentration in Soil	See Table 3s	mg/kg	See Table 3s	Chronic Daily Intake (CDI) (ug/m^3) =
				ET	Exposure Time	5	hrs/day	USEPA, 1991	CS x ET x EF x ED x CF2
				EF	Exposure Frequency	350	days/yr	USEPA, 1991	PEF x AT x CF1
				ED	Exposure Duration	6	years	USEPA, 1991	
				PEF	Particulate Emission Factor	1.36E+09	m^3/kg	USEPA, 2002	
				CF1	Conversion Factor 1	24	hrs/day	- -	
				CF2	Conversion Factor 2	1000	ug/mg	- -	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	2,190	days	USEPA, 1989	

TABLE 4.5.CT

VALUES USED FOR DAILY INTAKE CALCULATIONS

CENTRAL TENDENCY

CARR POINT - MRP SITE 1

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Surface/Subsurface Soil

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Trespasser	Adolescent	MRP Site 1	CS	Chemical Concentration in Soil	See Table 3s	mg/kg	See Table 3s	CS x IR x EF x ED x CF x FI x RBA
				IR	Ingestion Rate	50	mg/day	USEPA, 1997; 2002	BW x AT
				EF	Exposure Frequency	26	days/yr	Professional Judgement	
				ED	Exposure Duration	9	years	Age range	
				FI	Fraction Ingested from Site	1	unitless	USEPA, 1989	
				CF	Conversion Factor	1.00E-06	kg/mg		
				RBA	Relative Bioavailability Factor	0.6 (Arsenic only) / 1	unitless	USEPA, 2012b	
				BW	Body Weight	44	kg	USEPA, 2011	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	3,285	days	USEPA, 1989	
Dermal	Trespasser	Adolescent	MRP Site 1	CS	Chemical Concentration in Soil	See Table 3s	mg/kg	See Table 3s	CS x SA x AF x ABS x EF x ED x CF
				SA	Surface Area	3,624	cm^2	USEPA, 2011	BW x AT
				AF	Adherence Factor	0.1	mg/cm^2-day	USEPA, 2011	
				Abs	Dermal absorption fraction	see Attachment E	unitless	USEPA, 2004	
				EF	Exposure Frequency	26	days/yr	Professional Judgement	
				ED	Exposure Duration	9	years	Age range	
				CF	Conversion Factor	1.00E-06	kg/mg		
				BW	Body Weight	44	kg	USEPA, 2011	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	3,285	days	USEPA, 1989	
Inhalation of fugitive dust	Trespasser	Adolescent	MRP Site 1	CS	Chemical Concentration in Soil	See Table 3s	mg/kg	See Table 3s	Chronic Daily Intake (CDI) (ug/m^3) =
				ET	Exposure Time	2	hrs/day	Professional judgement	CS x ET x EF x ED x CF2
				EF	Exposure Frequency	26	days/yr	Professional Judgement	PEF x AT x CF1
				ED	Exposure Duration	9	years	Age range	
				PEF	Particulate Emission Factor	1.36E+09	m^3/kg	USEPA, 2002	
				CF1	Conversion Factor 1	24	hrs/day	- -	
				CF2	Conversion Factor 2	1000	ug/mg	- -	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	3,285	days	USEPA, 1989	

TABLE 4.5.CT

VALUES USED FOR DAILY INTAKE CALCULATIONS

CENTRAL TENDENCY

CARR POINT - MRP SITE 1

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Surface/Subsurface Soil

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Onsite Worker	Adult	MRP Site 1	CS	Chemical Concentration in Soil	See Table 3s	mg/kg	See Table 3s	CS x IR x EF x ED x CF x FI x RBA
				IR	Ingestion Rate	50	mg/day	USEPA, 1997	BW x AT
				EF	Exposure Frequency	219	days/yr	USEPA, 2004	
				ED	Exposure Duration	7	years	USEPA, 1997	
				FI	Fraction Ingested from Site	1	unitless	USEPA, 1989	
				CF	Conversion Factor	1.00E-06	kg/mg		
				RBA	Relative Bioavailability Factor	0.6 (Arsenic only) / 1	unitless	USEPA, 2012b	
				BW	Body Weight	80	kg	USEPA, 2014	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	2,555	days	USEPA, 1989	
Dermal	Onsite Worker	Adult	MRP Site 1	CS	Chemical Concentration in Soil	See Table 3s	mg/kg	See Table 3s	CS x SA x AF x ABS x EF x ED x CF
				SA	Surface Area	3,470	cm^2	USEPA, 2014	BW x AT
				AF	Adherence Factor	0.02	mg/cm^2-day	USEPA, 2004	
				ABS	Dermal absorption fraction	see Attachment E	unitless	USEPA, 2004	
				EF	Exposure Frequency	219	days/yr	USEPA, 2004	
				ED	Exposure Duration	7	years	USEPA, 1997	
				CF	Conversion Factor	1.00E-06	kg/mg		
				BW	Body Weight	80	kg	USEPA, 2014	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	2,555	days	USEPA, 1989	
Inhalation of fugitive dust	Onsite Worker	Adult	MRP Site 1	CS	Chemical Concentration in Soil	See Table 3s	mg/kg	See Table 3s	Chronic Daily Intake (CDI) (ug/m^3) =
				ET	Exposure Time	4	hrs/day	Professional judgement	CS x ET x EF x ED x CF2
				EF	Exposure Frequency	219	days/yr	USEPA, 2004	PEF x AT x CF1
				ED	Exposure Duration	7	years	USEPA, 1997	
				PEF	Particulate Emission Factor	1.36E+09	m^3/kg	USEPA, 2002	
				CF1	Conversion Factor 1	24	hrs/day	- -	
				CF2	Conversion Factor 2	1000	ug/mg	- -	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	2,555	days	USEPA, 1989	

TABLE 4.5.CT

VALUES USED FOR DAILY INTAKE CALCULATIONS

CENTRAL TENDENCY

CARR POINT - MRP SITE 1

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Surface/Subsurface Soil

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Resident	Adult	MRP Site 1	CS	Chemical Concentration in Soil	See Table 3s	mg/kg	See Table 3s	CS x IR x EF x ED x CF x FI x RBA
				IR	Ingestion Rate	50	mg/day	USEPA, 1991; 1993	BW x AT
				EF	Exposure Frequency	234	days/yr	USEPA, 1993	
				ED	Exposure Duration	19	years	USEPA, 1997	
				FI	Fraction Ingested from Site	1	unitless	USEPA, 1989	
				CF	Conversion Factor	1.00E-06	kg/mg		
				RBA	Relative Bioavailability Factor	0.6 (Arsenic only) / 1	unitless	USEPA, 2012b	
				BW	Body Weight	80	kg	USEPA, 2014	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	6,935	days	USEPA, 1989	
Dermal	Resident	Adult	MRP Site 1	CS	Chemical Concentration in Soil	See Table 3s	mg/kg	See Table 3s	CS x SA x AF x ABS x EF x ED x CF
				SA	Surface Area	6,032	cm^2	USEPA, 2014	BW x AT
				AF	Adherence Factor	0.01	mg/cm^2-day	USEPA, 2004	
				ABS	Dermal absorption fraction	see Attachment E	unitless	USEPA, 2004	
				EF	Exposure Frequency	234	days/yr	USEPA, 1993	
				ED	Exposure Duration	19	years	USEPA, 1997	
				CF	Conversion Factor	1.00E-06	kg/mg		
				BW	Body Weight	80	kg	USEPA, 2014	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	6,935	days	USEPA, 1989	
Inhalation of fugitive dust	Resident	Adult	MRP Site 1	CS	Chemical Concentration in Soil	See Table 3s	mg/kg	See Table 3s	Chronic Daily Intake (CDI) (ug/m^3) =
				ET	Exposure Time	5	hrs/day	USEPA, 1991	CS x ET x EF x ED x CF2
				EF	Exposure Frequency	234	days/yr	USEPA, 1993	PEF x AT x CF1
				ED	Exposure Duration	19	years	USEPA, 1997	
				PEF	Particulate Emission Factor	1.36E+09	m^3/kg	USEPA, 2002	
				CF1	Conversion Factor 1	24	hrs/day	- -	
				CF2	Conversion Factor 2	1000	ug/mg	- -	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	6,935	days	USEPA, 1989	

TABLE 4.5.CT

VALUES USED FOR DAILY INTAKE CALCULATIONS

CENTRAL TENDENCY

CARR POINT - MRP SITE 1

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Surface/Subsurface Soil

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Resident	Young Child	MRP Site 1	CS	Chemical Concentration in Soil	See Table 3s	mg/kg	See Table 3s	CS x IR x EF x ED x CF x FI x RBA
				IR	Ingestion Rate	100	mg/day	USEPA, 1991; 1993	BW x AT
				EF	Exposure Frequency	234	days/yr	USEPA, 1993	
				ED	Exposure Duration	6	years	USEPA, 1991	
				FI	Fraction Ingested from Site	1	unitless	USEPA, 1989	
				CF	Conversion Factor	1.00E-06	kg/mg		
				RBA	Relative Bioavailability Factor	0.6 (Arsenic only) / 1	unitless	USEPA, 2012b	
				BW	Body Weight	15	kg	USEPA, 1997	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	2,190	days	USEPA, 1989	
Dermal	Resident	Young Child	MRP Site 1	CS	Chemical Concentration in Soil	See Table 3s	mg/kg	See Table 3s	CS x SA x AF x ABS x EF x ED x CF
				SA	Surface Area	2,373	cm^2	USEPA, 2014	BW x AT
				AF	Adherence Factor	0.04	mg/cm^2-day	USEPA, 2004	
				ABS	Dermal absorption fraction	see Attachment E	unitless	USEPA, 2004	
				EF	Exposure Frequency	234	days/yr	USEPA, 1993	
				ED	Exposure Duration	6	years	USEPA, 1991	
				CF	Conversion Factor	1.00E-06	kg/mg		
				BW	Body Weight	15	kg	USEPA, 1997	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	2,190	days	USEPA, 1989	
Inhalation of fugitive dust	Resident	Young Child	MRP Site 1	CS	Chemical Concentration in Soil	See Table 3s	mg/kg	See Table 3s	Chronic Daily Intake (CDI) (ug/m^3) =
				ET	Exposure Time	5	hrs/day	USEPA, 1991	CS x ET x EF x ED x CF2
				EF	Exposure Frequency	234	days/yr	USEPA, 1993	PEF x AT x CF1
				ED	Exposure Duration	6	years	USEPA, 1991	
				PEF	Particulate Emission Factor	1.36E+09	m^3/kg	USEPA, 2002	
				CF1	Conversion Factor 1	24	hrs/day	- -	
				CF2	Conversion Factor 2	1000	ug/mg	- -	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	2,190	days	USEPA, 1989	

TABLE 4.6.RME

VALUES USED FOR DAILY INTAKE CALCULATIONS

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe:	Future
Medium:	Sediment
Exposure Medium:	Sediment

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Trespasser	Adolescent	MRP Site 1	CS	Chemical Concentration in Sediment	See Table 3s	mg/kg	See Table 3s	CS x IR x EF x ED x CF x FI x RBA
				IR	Ingestion Rate	100	mg/day	USEPA, 1991	BW x AT
				EF	Exposure Frequency	52	days/yr	Professional Judgement	
				ED	Exposure Duration	9	years	Age Range	
				FI	Fraction Ingested from Site	1	unitless	USEPA, 1989	
				CF	Conversion Factor	1.00E-06	kg/mg		
				RBA	Relative Bioavailability Factor	0.6 (Arsenic only) / 1	unitless	USEPA, 2012b	
				BW	Body Weight	44	kg	USEPA, 2011	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	3,285	days	USEPA, 1989	
Dermal	Trespasser	Adolescent	MRP Site 1	CS	Chemical Concentration in Sediment	See Table 3s	mg/kg	See Table 3s	CS x SA x AF x ABS x EF x ED x CF
				SA	Surface Area	3,093	cm^2	USEPA, 2011	BW x AT
				AF	Adherence Factor	0.3	mg/cm^2-day	USEPA, 2011	
				ABS	Dermal absorption fraction	see Attachment E	unitless	USEPA, 2004	
				EF	Exposure Frequency	52	days/yr	Professional Judgement	
				ED	Exposure Duration	9	years	Professional Judgement	
				CF	Conversion Factor	1.00E-06	kg/mg		
				BW	Body Weight	44	kg	USEPA, 2011	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	3,285	days	USEPA, 1989	
Ingestion	Resident	Adult	MRP Site 1	CS	Chemical Concentration in Sediment	See Table 3s	mg/kg	See Table 3s	CS x IR x EF x ED x CF x FI x RBA
				IR	Ingestion Rate	100	mg/day	USEPA, 1991; 1993	BW x AT
				EF	Exposure Frequency	52	days/yr	Professional Judgement	
				ED	Exposure Duration	20	years	USEPA, 2014	
				FI	Fraction Ingested from Site	1	unitless	USEPA, 1989	
				CF	Conversion Factor	1.00E-06	kg/mg		
				RBA	Relative Bioavailability Factor	0.6 (Arsenic only) / 1	unitless	USEPA, 2012b	
				BW	Body Weight	80	kg	USEPA, 2014	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	7,300	days	USEPA, 1989	

TABLE 4.6.RME

VALUES USED FOR DAILY INTAKE CALCULATIONS

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe:	Future
Medium:	Sediment
Exposure Medium:	Sediment

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Dermal	Resident	Adult	MRP Site 1	CS	Chemical Concentration in Sediment	See Table 3s	mg/kg	See Table 3s	CS x SA x AF x ABS x EF x ED x CF
				SA	Surface Area	4,780	cm^2	USEPA, 2011	BW x AT
				AF	Adherence Factor	0.4	mg/cm^2-day	USEPA, 2011	
				ABS	Dermal absorption fraction	see Attachment E	unitless	USEPA, 2004	
				EF	Exposure Frequency	52	days/yr	Professional Judgement	
				ED	Exposure Duration	20	years	USEPA, 2014	
				CF	Conversion Factor	1.00E-06	kg/mg		
				BW	Body Weight	80	kg	USEPA, 2014	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	7,300	days	USEPA, 1989	
Ingestion	Resident	Young Child	MRP Site 1	CS	Chemical Concentration in Sediment	See Table 3s	mg/kg	See Table 3s	CS x IR x EF x ED x CF x FI x RBA
				IR	Ingestion Rate	200	mg/day	USEPA, 1991; 1993	BW x AT
				EF	Exposure Frequency	52	days/yr	Professional Judgement	
				ED	Exposure Duration	6	years	USEPA, 1991	
				FI	Fraction Ingested from Site	1	unitless	USEPA, 1989	
				CF	Conversion Factor	1.00E-06	kg/mg		
				RBA	Relative Bioavailability Factor	0.6 (Arsenic only) / 1	unitless	USEPA, 2012b	
				BW	Body Weight	15	kg	USEPA, 1997	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	2,190	days	USEPA, 1989	
Dermal	Resident	Young Child	MRP Site 1	CS	Chemical Concentration in Sediment	See Table 3s	mg/kg	See Table 3s	CS x SA x AF x ABS x EF x ED x CF
				SA	Surface Area	1,364	cm^2	USEPA, 2011	BW x AT
				AF	Adherence Factor	0.4	mg/cm^2-day	USEPA, 2011	
				ABS	Dermal absorption fraction	see Attachment E	unitless	USEPA, 2004	
				EF	Exposure Frequency	52	days/yr	Professional Judgement	
				ED	Exposure Duration	6	years	USEPA, 1991	
				CF	Conversion Factor	1.00E-06	kg/mg		
				BW	Body Weight	15	kg	USEPA, 1997	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	2,190	days	USEPA, 1989	

TABLE 4.6.CT

VALUES USED FOR DAILY INTAKE CALCULATIONS

CENTRAL TENDENCY

CARR POINT - MRP SITE 1

Scenario Timeframe:	Future
Medium:	Sediment
Exposure Medium:	Sediment

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion - wading	Trespasser	Adolescent	MRP Site 1	CS	Chemical Concentration in Sediment	See Table 3s	mg/kg	See Table 3s	CS x IR x EF x ED x CF x FI x RBA
				IR	Ingestion Rate	50	mg/day	USEPA, 1997	BW x AT
				EF	Exposure Frequency	26	days/yr	Professional Judgement	
				ED	Exposure Duration	9	years	Age Range	
				FI	Fraction Ingested from Site	1	unitless	USEPA, 1989	
				CF	Conversion Factor	1.00E-06	kg/mg		
				RBA	Relative Bioavailability Factor	0.6 (Arsenic only) / 1	unitless	USEPA, 2012b	
				BW	Body Weight	44	kg	USEPA, 2011	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	3,285	days	USEPA, 1989	
Dermal - wading	Trespasser	Adolescent	MRP Site 1	CS	Chemical Concentration in Sediment	See Table 3s	mg/kg	See Table 3s	CS x SA x AF x ABS x EF x ED x CF
				SA	Surface Area	3,093	cm^2	USEPA, 2011	BW x AT
				AF	Adherence Factor	0.3	mg/cm^2-day	USEPA, 2011	
				ABS	Dermal absorption fraction	see Attachment E	unitless	USEPA, 2004	
				EF	Exposure Frequency	26	days/yr	Professional Judgement	
				ED	Exposure Duration	9	years	Professional Judgement	
				CF	Conversion Factor	1.00E-06	kg/mg		
				BW	Body Weight	44	kg	USEPA, 2011	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	3,285	days	USEPA, 1989	
Ingestion	Resident	Adult	MRP Site 1	CS	Chemical Concentration in Sediment	See Table 3s	mg/kg	See Table 3s	CS x IR x EF x ED x CF x FI x RBA
				IR	Ingestion Rate	50	mg/day	USEPA, 1991; 1993	BW x AT
				EF	Exposure Frequency	26	days/yr	Professional Judgement	
				ED	Exposure Duration	19	years	USEPA, 1997	
				FI	Fraction Ingested from Site	1	unitless	USEPA, 1989	
				CF	Conversion Factor	1.00E-06	kg/mg		
				RBA	Relative Bioavailability Factor	0.6 (Arsenic only) / 1	unitless	USEPA, 2012b	
				BW	Body Weight	80	kg	USEPA, 2014	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	6,935	days	USEPA, 1989	

TABLE 4.6.CT

VALUES USED FOR DAILY INTAKE CALCULATIONS

CENTRAL TENDENCY

CARR POINT - MRP SITE 1

Scenario Timeframe:	Future
Medium:	Sediment
Exposure Medium:	Sediment

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Dermal	Resident	Adult	MRP Site 1	CS	Chemical Concentration in Sediment	See Table 3s	mg/kg	See Table 3s	CS x SA x AF x ABS x EF x ED x CF
				SA	Surface Area	4,780	cm^2	USEPA, 2011	BW x AT
				AF	Adherence Factor	0.4	mg/cm^2-day	USEPA, 2011	
				ABS	Dermal absorption fraction	see Attachment E	unitless	USEPA, 2004	
				EF	Exposure Frequency	26	days/yr	Professional Judgement	
				ED	Exposure Duration	19	years	USEPA, 1997	
				CF	Conversion Factor	1.00E-06	kg/mg		
				BW	Body Weight	80	kg	USEPA, 2014	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	6,935	days	USEPA, 1989	
Ingestion	Resident	Young Child	MRP Site 1	CS	Chemical Concentration in Sediment	See Table 3s	mg/kg	See Table 3s	CS x IR x EF x ED x CF x FI x RBA
				IR	Ingestion Rate	100	mg/day	USEPA, 1991; 1993	BW x AT
				EF	Exposure Frequency	26	days/yr	Professional Judgement	
				ED	Exposure Duration	6	years	USEPA, 1991	
				FI	Fraction Ingested from Site	1	unitless	USEPA, 1989	
				CF	Conversion Factor	1.00E-06	kg/mg		
				RBA	Relative Bioavailability Factor	0.6 (Arsenic only) / 1	unitless	USEPA, 2012b	
				BW	Body Weight	15	kg	USEPA, 1997	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	2,190	days	USEPA, 1989	
Dermal	Resident	Young Child	MRP Site 1	CS	Chemical Concentration in Sediment	See Table 3s	mg/kg	See Table 3s	CS x SA x AF x ABS x EF x ED x CF
				SA	Surface Area	1,364	cm^2	USEPA, 2011	BW x AT
				AF	Adherence Factor	0.4	mg/cm^2-day	USEPA, 2011	
				Abs	Dermal absorption fraction	see Attachment E	unitless	USEPA, 2004	
				EF	Exposure Frequency	26	days/yr	Professional Judgement	
				ED	Exposure Duration	6	years	USEPA, 1991	
				CF	Conversion Factor	1.00E-06	kg/mg		
				BW	Body Weight	15	kg	USEPA, 1997	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	2,190	days	USEPA, 1989	

TABLE 4.7.RME

VALUES USED FOR DAILY INTAKE CALCULATIONS

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe:	Future
Medium:	Groundwater
Exposure Medium:	Groundwater

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Resident	Adult	MRP Site 1	CW	Chemical Concentration in Water	See Table 3s	ug/L	See Table 3s	CW x IR x EF x ED x CF
				IR	Ingestion Rate	2.5	liters/day	USEPA, 2014	BW x AT
				EF	Exposure Frequency	350	days/yr	USEPA, 1991	
				ED	Exposure Duration	20	years	USEPA, 2014	
				CF	Conversion Factor	0.001	mg/ug		
				BW	Body Weight	80	kg	USEPA, 2014	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	7,300	days	USEPA, 1989	
Dermal	Resident	Adult	MRP Site 1	CW	Chemical Concentration in Water	See Table 3s	ug/L	See Table 3s	Organics:
				DA	Dose Absorbed per Unit Area per Event	see Attachment E	mg/cm^2-event	USEPA, 2004	Chronic Daily Intake (CDI) (mg/kg-day) =
				SA	Surface Area	20,900	cm^2	USEPA, 2014	
				PC	Permeability Constant	see Attachment E	cm/hr	USEPA, 2004	DA x SA x EV x EF x ED / BW x AT
				ET	Event Time	0.71	hour/event	USEPA, 2014	
				EV	Event Frequency	1	event/day	USEPA, 2004	
				EF	Exposure Frequency	350	days/yr	USEPA, 1991	Inorganics:
				ED	Exposure Duration	20	years	USEPA, 2014	CDI (mg/kg-day) =
				BW	Body Weight	80	kg	USEPA, 2014	
				ATc	Averaging Time - cancer	25550	days	USEPA, 1989	CW x SA x PC x ET x EV x EF x ED x CF1 x CF2 / BW x AT
				ATnc	Averaging Time - noncancer	7300	days	USEPA, 1989	
				CF1	Conversion Factor 1	0.001	L/cm^3	- -	
				CF2	Conversion Factor 2	0.001	mg/ug	- -	

TABLE 4.7.RME

VALUES USED FOR DAILY INTAKE CALCULATIONS

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe:	Future
Medium:	Groundwater
Exposure Medium:	Groundwater

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Resident	Young child	MRP Site 1	CW	Chemical Concentration in Water	See Table 3s	ug/L	See Table 3s	CW x IR x EF x ED x CF
				IR	Ingestion Rate	0.78	liters/day	USEPA, 2014	BW x AT
				EF	Exposure Frequency	350	days/yr	USEPA, 1991	
				ED	Exposure Duration	6	years	USEPA, 1991	
				CF	Conversion Factor	0.001	mg/ug		
				BW	Body Weight	15	kg	USEPA, 1997	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	2,190	days	USEPA, 1989	
Dermal	Resident	Young child	MRP Site 1	CW	Chemical Concentration in Water	See Table 3s	ug/L	See Table 3s	Organics:
				DA	Dose Absorbed per Unit Area per Event	see Attachment E	mg/cm^2-event	USEPA, 2004	Chronic Daily Intake (CDI) (mg/kg-day) =
				SA	Surface Area	6,378	cm^2	USEPA, 2014	
				PC	Permeability Constant	see Attachment E	cm/hr	USEPA, 2004	DA x SA x EV x EF x ED
				ET	Event Time	0.54	hour/event	USEPA, 2014	BW x AT
				EV	Event Frequency	1	event/day	USEPA, 2004	
				EF	Exposure Frequency	350	days/yr	USEPA, 1991	Inorganics:
				ED	Exposure Duration	6	years	USEPA, 1991	CDI (mg/kg-day) =
				BW	Body Weight	15	kg	USEPA, 1997	
				ATc	Averaging Time - cancer	25550	days	USEPA, 1989	CW x SA x PC x ET x EV x EF x ED x CF1 x CF2
				ATnc	Averaging Time - noncancer	2190	days	USEPA, 1989	BW x AT
				CF1	Conversion Factor 1	0.001	L/cm^3	- -	
				CF2	Conversion Factor 2	0.001	mg/ug	- -	

TABLE 4.7.RME

VALUES USED FOR DAILY INTAKE CALCULATIONS

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe:	Future
Medium:	Groundwater
Exposure Medium:	Groundwater

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Onsite Worker	Adult	MRP Site 1	CW	Chemical Concentration in Water	See Table 3s	ug/L	See Table 3s	CW x CR x EF x ED x CF
				CR	Contact Rate	1	liters/day	USEPA, 1991	BW x AT
				EF	Exposure Frequency	250	days/yr	USEPA, 1991	
				ED	Exposure Duration	25	years	USEPA, 1991; 2002	
				CF	Conversion Factor	0.001	mg/ug		
				BW	Body Weight	80	kg	USEPA, 2014	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	9,125	days	USEPA, 1989	
Dermal	Onsite Worker	Adult	MRP Site 1	CW	Chemical Concentration in Water	See Table 3s	ug/L	See Table 3s	Organics:
				DA	Dose Absorbed per Unit Area per Event	see Attachment E	mg/cm^2-event	USEPA, 2004	Chronic Daily Intake (CDI) (mg/kg-day) =
				SA	Surface Area	3,470	cm^2	USEPA, 2014	
				PC	Permeability Constant	see Attachment E	cm/hr	USEPA, 2004	DA x SA x EV x EF x ED
				ET	Event Time	0.58	hour/event	USEPA, 2004	BW x AT
				EV	Event Frequency	1	event/day	USEPA, 2004	
				EF	Exposure Frequency	250	days/yr	USEPA, 1991	Inorganics:
				ED	Exposure Duration	25	years	USEPA, 1991; 2002	CDI (mg/kg-day) =
				BW	Body Weight	80	kg	USEPA, 2014	
				ATc	Averaging Time - cancer	25550	days	USEPA, 1989	CW x SA x PC x ET x EV x EF x ED x CF1 x CF2
				ATnc	Averaging Time - noncancer	9125	days	USEPA, 1989	BW x AT
				CF1	Conversion Factor 1	0.001	L/cm^3	- -	
				CF2	Conversion Factor 2	0.001	mg/ug	- -	

TABLE 4.7.CT

VALUES USED FOR DAILY INTAKE CALCULATIONS

CENTRAL TENDENCY

CARR POINT - MRP SITE 1

Scenario Timeframe:	Future
Medium:	Groundwater
Exposure Medium:	Groundwater

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Resident	Adult	MRP Site 1	CW	Chemical Concentration in Water	See Table 3s	ug/L	See Table 3s	CW x IR x EF x ED x CF
				IR	Ingestion Rate	1.4	liters/day	USEPA, 1997	BW x AT
				EF	Exposure Frequency	234	days/yr	USEPA, 1993	
				ED	Exposure Duration	19	years	USEPA, 1997	
				CF	Conversion Factor	0.001	mg/ug		
				BW	Body Weight	80	kg	USEPA, 2014	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	6,935	days	USEPA, 1989	
Dermal	Resident	Adult	MRP Site 1	CW	Chemical Concentration in Water	See Table 3s	ug/L	See Table 3s	Organics:
				DA	Dose Absorbed per Unit Area per Event	see Attachment E	mg/cm^2-event	USEPA, 2004	Chronic Daily Intake (CDI) (mg/kg-day) =
				SA	Surface Area	20,900	cm^2	USEPA, 2014	
				PC	Permeability Constant	see Attachment E	cm/hr	USEPA, 2004	DA x SA x EV x EF x ED
				ET	Event Time	0.25	hour/event	USEPA, 2004	BW x AT
				EV	Event Frequency	1	event/day	USEPA, 2004	
				EF	Exposure Frequency	234	days/yr	USEPA, 1993	Inorganics:
				ED	Exposure Duration	19	years	USEPA, 1997	CDI (mg/kg-day) =
				BW	Body Weight	80	kg	USEPA, 2014	
				ATc	Averaging Time - cancer	25550	days	USEPA, 1989	CW x SA x PC x ET x EV x EF x ED x CF1 x CF2
				ATnc	Averaging Time - noncancer	6935	days	USEPA, 1989	BW x AT
				CF1	Conversion Factor 1	0.001	L/cm^3	- -	
				CF2	Conversion Factor 2	0.001	mg/ug	- -	

TABLE 4.7.CT

VALUES USED FOR DAILY INTAKE CALCULATIONS

CENTRAL TENDENCY

CARR POINT - MRP SITE 1

Scenario Timeframe:	Future
Medium:	Groundwater
Exposure Medium:	Groundwater

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Resident	Young child	MRP Site 1	CW	Chemical Concentration in Water	See Table 3s	ug/L	See Table 3s	CW x IR x EF x ED x CF
				IR	Ingestion Rate	0.6	liters/day	USEPA, 1997	BW x AT
				EF	Exposure Frequency	234	days/yr	USEPA, 1993	
				ED	Exposure Duration	6	years	USEPA, 1991	
				CF	Conversion Factor	0.001	mg/ug		
				BW	Body Weight	15	kg	USEPA, 1997	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	2,190	days	USEPA, 1989	
Dermal	Resident	Young child	MRP Site 1	CW	Chemical Concentration in Water	See Table 3s	ug/L	See Table 3s	Organics:
				DA	Dose Absorbed per Unit Area per Event	see Attachment E	mg/cm^2-event	USEPA, 2004	Chronic Daily Intake (CDI) (mg/kg-day) =
				SA	Surface Area	6,378	cm^2	USEPA, 2014	
				PC	Permeability Constant	see Attachment E	cm/hr	USEPA, 2004	DA x SA x EV x EF x ED
				ET	Event Time	0.33	hour/event	USEPA, 2004	BW x AT
				EV	Event Frequency	1	event/day	USEPA, 2004	
				EF	Exposure Frequency	234	days/yr	USEPA, 1993	Inorganics:
				ED	Exposure Duration	6	years	USEPA, 1991	CDI (mg/kg-day) =
				BW	Body Weight	15	kg	USEPA, 1997	
				ATc	Averaging Time - cancer	25550	days	USEPA, 1989	CW x SA x PC x ET x EV x EF x ED x CF1 x CF2
				ATnc	Averaging Time - noncancer	2190	days	USEPA, 1989	BW x AT
				CF1	Conversion Factor 1	0.001	L/cm^3	- -	
				CF2	Conversion Factor 2	0.001	mg/ug	- -	

TABLE 4.7.CT

VALUES USED FOR DAILY INTAKE CALCULATIONS

CENTRAL TENDENCY

CARR POINT - MRP SITE 1

Scenario Timeframe:	Future
Medium:	Groundwater
Exposure Medium:	Groundwater

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Onsite Worker	Adult	MRP Site 1	CW	Chemical Concentration in Water	See Table 3s	ug/L	See Table 3s	CW x CR x EF x ED x CF
				CR	Contact Rate	0.7	liters/day	USEPA, 1997	BW x AT
				EF	Exposure Frequency	219	days/yr	USEPA, 2004	
				ED	Exposure Duration	7	years	USEPA, 1997	
				CF	Conversion Factor	0.001	mg/ug		
				BW	Body Weight	80	kg	USEPA, 2014	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	2,555	days	USEPA, 1989	
Dermal	Onsite Worker	Adult	MRP Site 1	CW	Chemical Concentration in Water	See Table 3s	ug/L	See Table 3s	Organics:
				DA	Dose Absorbed per Unit Area per Event	see Attachment E	mg/cm^2-event	USEPA, 2004	Chronic Daily Intake (CDI) (mg/kg-day) =
				SA	Surface Area	3,470	cm^2	USEPA, 2014	
				PC	Permeability Constant	see Attachment E	cm/hr	USEPA, 2004	DA x SA x EV x EF x ED
				ET	Event Time	0.25	hour/event	USEPA, 2004	BW x AT
				EV	Event Frequency	1	event/day	USEPA, 2004	
				EF	Exposure Frequency	219	days/yr	USEPA, 2004	Inorganics:
				ED	Exposure Duration	7	years	USEPA, 1997	CDI (mg/kg-day) =
				BW	Body Weight	80	kg	USEPA, 2014	
				ATc	Averaging Time - cancer	25550	days	USEPA, 1989	CW x SA x PC x ET x EV x EF x ED x CF1 x CF2
				ATnc	Averaging Time - noncancer	2555	days	USEPA, 1989	BW x AT
				CF1	Conversion Factor 1	0.001	L/cm^3	- -	
				CF2	Conversion Factor 2	0.001	mg/ug	- -	

TABLE 4.8.RME

VALUES USED FOR DAILY INTAKE CALCULATIONS

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe:	Future
Medium:	Shellfish Tissue
Exposure Medium:	Shellfish Tissue

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Resident	Adult	MRP Site 1	CF	Chemical Concentration in Shellfish	See Table 3s	mg/kg	See Table 3s	CF x IR x EF x ED x FI
				IR	Ingestion Rate	0.0048	kg/day	See Attachment D	BW x AT
				EF	Exposure Frequency	365	days/yr	USEPA, 1997	
				ED	Exposure Duration	20	years	USEPA, 2014	
				FI	Fraction Ingested from Site	1	unitless	Professional Judgement	
				BW	Body Weight	80	kg	USEPA, 2014	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	7,300	days	USEPA, 1989	
Ingestion	Resident	Young Child	MRP Site 1	CF	Chemical Concentration in Shellfish	See Table 3s	mg/kg	See Table 3s	CF x IR x EF x ED x FI
				IR	Ingestion Rate	0.0009	kg/day	See Attachment D	BW x AT
				EF	Exposure Frequency	365	days/yr	USEPA, 1997	
				ED	Exposure Duration	6	years	USEPA, 1991	
				FI	Fraction Ingested from Site	1	unitless	Professional Judgement	
				BW	Body Weight	15	kg	USEPA, 1997	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	2,190	days	USEPA, 1989	

TABLE 4.8.CT

VALUES USED FOR DAILY INTAKE CALCULATIONS

CENTRAL TENDENCY

CARR POINT - MRP SITE 1

Scenario Timeframe:	Future
Medium:	Shellfish Tissue
Exposure Medium:	Shellfish Tissue

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Resident	Adult	MRP Site 1	CF	Chemical Concentration in Shellfish	See Table 3s	mg/kg	See Table 3s	CF x IR x EF x ED x FI
				IR	Ingestion Rate	0.0048	kg/day	See Attachment D	BW x AT
				EF	Exposure Frequency	365	days/yr	USEPA, 1997	
				ED	Exposure Duration	19	years	USEPA, 1997	
				FI	Fraction Ingested from Site	0.5	unitless	Professional Judgement	
				BW	Body Weight	80	kg	USEPA, 2014	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	6,935	days	USEPA, 1989	
Ingestion	Resident	Young Child	MRP Site 1	CF	Chemical Concentration in Shellfish	See Table 3s	mg/kg	See Table 3s	CF x IR x EF x ED x FI
				IR	Ingestion Rate	0.0009	kg/day	See Attachment D	BW x AT
				EF	Exposure Frequency	365	days/yr	USEPA, 1997	
				ED	Exposure Duration	6	years	USEPA, 1991	
				FI	Fraction Ingested from Site	0.5	unitless	Professional Judgement	
				BW	Body Weight	15	kg	USEPA, 1997	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	2,190	days	USEPA, 1989	

TABLE 5.1

NON-CANCER TOXICITY DATA -- ORAL/DERMAL

CARR POINT - MRP SITE 1

Chemical of Potential Concern (3)	Chronic/ Subchronic	Oral RfD		Oral Absorption Efficiency for Dermal (1)	Absorbed RfD for Dermal (2)		Primary Target Organ(s)	Combined Uncertainty/Modifying Factors	RfD:Target Organ(s)	
		Value	Units		Value	Units			Source(s)	Date(s) (MM/DD/YYYY)
BENZO[A]ANTHRACENE	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
BENZO[A]PYRENE	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
BENZO[B]FLUORANTHENE	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
BENZO[K]FLUORANTHENE	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
CHRYSENE	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
DIBENZ[A,H]ANTHRACENE	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
INDENO[1,2,3-CD]PYRENE	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
NITROGLYCERIN	Chronic	1E-04	mg/kg-day	(4)	1E-04	mg/kg-day	Vascular	300	PPRTV	8/2014
4,4-DDT	Chronic	5E-04	mg/kg-day	(4)	5E-04	mg/kg-day	Liver	100	IRIS	8/2014
AROCLOR-1260	Chronic	2E-05	mg/kg-day	(4)	2E-05	mg/kg-day	Eye, Nails, Immune	300	IRIS	8/2014
ALUMINUM	Chronic	1E+00	mg/kg-day	0.01	1.0E-02	mg/kg-day	Nervous System	100	PPRTV	8/2014
ANTIMONY	Chronic	4E-04	mg/kg-day	0.15	6.0E-05	mg/kg-day	Mortality, Blood	1000	IRIS	8/2014
ARSENIC	Chronic	3E-04	mg/kg-day	(4)	3E-04	mg/kg-day	Skin, Vascular	3	IRIS	8/2014
CHROMIUM, TOTAL	Chronic	3E-03	mg/kg-day	0.025	7.5E-05	mg/kg-day	None reported	900	IRIS	8/2014
COBALT	Chronic	3E-04	mg/kg-day	(4)	3E-04	mg/kg-day	Thyroid	3000	PPRTV	8/2014
IRON	Chronic	7E-01	mg/kg-day	(4)	7E-01	mg/kg-day	Gastrointestinal	1.5	PPRTV	8/2014
LEAD	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	IRIS	8/2014
MANGANESE	Chronic	2.4E-02	mg/kg-day	0.04	9.6E-04	mg/kg-day	Nervous System	3	IRIS	8/2014
MERCURY	Chronic	1E-04	mg/kg-day	(4)	1E-04	mg/kg-day	Nervous System	10	IRIS	8/2014
THALLIUM	Subchronic	1E-05	mg/kg-day	(4)	1E-05	mg/kg-day	Hair	3000	IRIS	8/2014

TABLE 5.1

NON-CANCER TOXICITY DATA -- ORAL/DERMAL

CARR POINT - MRP SITE 1

Chemical of Potential Concern (3)	Chronic/ Subchronic	Oral RfD		Oral Absorption Efficiency for Dermal (1)	Absorbed RfD for Dermal (2)		Primary Target Organ(s)	Combined Uncertainty/Modifying Factors	RfD:Target Organ(s)	
		Value	Units		Value	Units			Source(s)	Date(s) (MM/DD/YYYY)
BENZO[A]ANTHRACENE	Subchronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
BENZO[A]PYRENE	Subchronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
BENZO[B]FLUORANTHENE	Subchronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
BENZO[K]FLUORANTHENE	Subchronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
CHRYSENE	Subchronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
DIBENZ[A,H]ANTHRACENE	Subchronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
INDENO[1,2,3-CD]PYRENE	Subchronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
NITROGLYCERIN	Subchronic	1E-04	mg/kg-day	(4)	1E-04	mg/kg-day	Vascular	300	PPRTV	8/2014
4,4-DDT	Subchronic	5E-04	mg/kg-day	(4)	5E-04	mg/kg-day	Liver	100	IRIS	8/2014
AROCLOR-1260	Subchronic	6E-05	mg/kg-day	(4)	6E-05	mg/kg-day	Eye, Nails, Immune	100	IRIS	8/2014
ALUMINUM	Subchronic	1E+00	mg/kg-day	0.01	1.0E-02	mg/kg-day	Nervous System	100	PPRTV	8/2014
ANTIMONY	Subchronic	4E-04	mg/kg-day	0.15	6.0E-05	mg/kg-day	Mortality, Blood	1000	IRIS	8/2014
ARSENIC	Subchronic	3E-04	mg/kg-day	(4)	3E-04	mg/kg-day	Skin, Vascular	3	IRIS	8/2014
CHROMIUM, TOTAL	Subchronic	9E-03	mg/kg-day	0.025	2.3E-04	mg/kg-day	None reported	100	IRIS	8/2014
COBALT	Subchronic	3E-03	mg/kg-day	(4)	3E-03	mg/kg-day	Thyroid	300	PPRTV	8/2014
IRON	Subchronic	7E-01	mg/kg-day	(4)	7E-01	mg/kg-day	Gastrointestinal	1.5	PPRTV	8/2014
LEAD	Subchronic	N/A (6)	N/A	N/A	N/A (6)	N/A	N/A	N/A	IRIS	8/2014
MANGANESE	Subchronic	2.4E-02	mg/kg-day	0.04	9.6E-04	mg/kg-day	Nervous System	9	IRIS	8/2014
MERCURY	Subchronic	1E-04	mg/kg-day	(4)	1E-04	mg/kg-day	Nervous System	10	IRIS	8/2014
THALLIUM	Subchronic	1E-05	mg/kg-day	(4)	1E-05	mg/kg-day	Hair	3000	IRIS	8/2014

TABLE 5.1

NON-CANCER TOXICITY DATA -- ORAL/DERMAL

CARR POINT - MRP SITE 1

Chemical of Potential Concern (3)	Chronic/ Subchronic	Oral RfD		Oral Absorption Efficiency for Dermal (1)	Absorbed RfD for Dermal (2)		Primary Target Organ(s)	Combined Uncertainty/Modifying Factors	RfD:Target Organ(s)	
		Value	Units		Value	Units			Source(s)	Date(s) (MM/DD/YYYY)

(1) Oral Absorption Efficiencies from Exhibit 4-1, RAGS Part E, USEPA 2004b.

Oral absorption efficiencies for aluminum, cobalt and iron obtained from ATSDR Toxicological Profiles.

(2) Calculated as: (oral RfD) x (oral to dermal adjustment factor).

(3) RfD for Aroclor 1254 used as a surrogate for Aroclor 1260 (High risk and persistence; upper-bound slope factor).

RfD for hexavalent chromium used.

RfD for mercury based on methylmercury (only a COPC for shellfish ingestion).

RfD for thallium is based on thallium soluble salts. No PPRTVs were developed for thallium in the PPRTV document (USEPA, 2012) due to database deficiencies.

Appendix A of the PPRTV document indicates that it is inappropriate to derive provisional chronic or subchronic RfDs for thallium, but that information is available which, although insufficient to support derivation of a provisional toxicity value, under current guidelines, may be of limited use to risk assessors as a screening value. The use of this screening provisional value is highly uncertain but is the value used in the USEPA Regional Screening Tables (USEPA

When the chronic RfD is based on a subchronic study, a subchronic RfD has been developed by the elimination of the 10-fold uncertainty factor for subchronic to chronic adjustment. If no subchronic data are available, the chronic RfD has been adopted as the subchronic RfD.

(4) Oral absorption efficiency exceeds 50%. Therefore, no adjustment of the oral reference dose is necessary (USEPA, 2001).

(5) Permeability constants (Kp) used for water absorption calculations: 2E-03 cm/hr for chromium (VI), 4E-04 cm/hr for cobalt, 1E-04 cm/hr for lead, and 1E-03 cm/hr for the remaining inorganics (USEPA, 2004).

(6) See Attachment F for lead model calculations.

IRIS = Integrated Risk Information System

N/A = Not Applicable/Not Available

NOAEL = No Observed Adverse Effects Level

ATSDR = Agency for Toxic Substances and Disease Registry

PPRTV = Provisional Peer Reviewed Toxicity Values

TABLE 5.2

NON-CANCER TOXICITY DATA -- INHALATION

CARR POINT - MRP SITE 1

Chemical of Potential Concern	Chronic/ Subchronic	Inhalation RfC		Extrapolated RfD		Primary Target Organ(s)	Combined Uncertainty/Modifying Factors	RfC : Target Organ(s)	
		Value	Units	Value	Units			Source(s)	Date(s) (MM/DD/YYYY)
BENZO[A]ANTHRACENE	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
BENZO[A]PYRENE	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
BENZO[B]FLUORANTHENE	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
BENZO[K]FLUORANTHENE	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
CHRYSENE	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
DIBENZ[A,H]ANTHRACENE	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
INDENO[1,2,3-CD]PYRENE	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
NITROGLYCERIN	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
4,4-DDT	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
AROCLOR-1260	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
ALUMINUM	Chronic	5E+00	ug/m^3	N/A	N/A	Nervous System	300	PPRTV	8/2014
ANTIMONY	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
ARSENIC	Chronic	1.5E-02	ug/m^3	N/A	N/A	Developmental	30	CalEPA	8/2014
CHROMIUM, TOTAL	Chronic	1.0E-01	ug/m^3	N/A	N/A	Respiratory	300	IRIS	8/2014
COBALT	Chronic	6.0E-03	ug/m^3	N/A	N/A	Respiratory	300	PPRTV	8/2014
IRON	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
LEAD	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	IRIS	8/2014
MANGANESE	Chronic	5.0E-02	ug/m^3	N/A	N/A	Nervous System	1000	IRIS	8/2014
MERCURY	Chronic	3.0E-01	ug/m^3	N/A	N/A	Nervous System	300	CalEPA	8/2014
THALLIUM	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

TABLE 5.2

NON-CANCER TOXICITY DATA -- INHALATION

CARR POINT - MRP SITE 1

Chemical of Potential Concern	Chronic/ Subchronic	Inhalation RfC		Extrapolated RfD		Primary Target Organ(s)	Combined Uncertainty/Modifying Factors	RfC : Target Organ(s)	
		Value	Units	Value	Units			Source(s)	Date(s) (MM/DD/YYYY)
BENZO[A]ANTHRACENE	Subchronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
BENZO[A]PYRENE	Subchronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
BENZO[B]FLUORANTHENE	Subchronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
BENZO[K]FLUORANTHENE	Subchronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
CHRYSENE	Subchronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
DIBENZ[A,H]ANTHRACENE	Subchronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
INDENO[1,2,3-CD]PYRENE	Subchronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
NITROGLYCERIN	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
4,4-DDT	Subchronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
AROCLOR-1260	Subchronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
ALUMINUM	Subchronic	5E+00	ug/m^3	N/A	N/A	Nervous System	300	PPRTV	8/2014
ANTIMONY	Subchronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
ARSENIC	Subchronic	1.5E-02	ug/m^3	N/A	N/A	Developmental	30	CalEPA	8/2014
CHROMIUM, TOTAL	Subchronic	3.0E-01	ug/m^3	N/A	N/A	Respiratory	100	IRIS	8/2014
COBALT	Subchronic	2.0E-02	ug/m^3	N/A	N/A	Respiratory	100	PPRTV	8/2014
IRON	Subchronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
LEAD	Subchronic	N/A	N/A	N/A	N/A	N/A	N/A	IRIS	8/2014
MANGANESE	Subchronic	5.0E-02	ug/m^3	N/A	N/A	Nervous System	1000	IRIS	8/2014
MERCURY	Subchronic	3.0E-01	ug/m^3	N/A	N/A	Nervous System	300	CalEPA	8/2014
THALLIUM	Subchronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

TABLE 5.2

NON-CANCER TOXICITY DATA -- INHALATION

CARR POINT - MRP SITE 1

Chemical of Potential Concern	Chronic/ Subchronic	Inhalation RfC		Extrapolated RfD		Primary Target Organ(s)	Combined Uncertainty/Modifying Factors	RfC : Target Organ(s)	
		Value	Units	Value	Units			Source(s)	Date(s) (MM/DD/YYYY)

IRIS = Integrated Risk Information System

PPRTV = Provisional Peer Reviewed Toxicity Value

CalEPA = California Environmental Protection Agency, Office of Environmental Health Hazard Assessment

N/A = Not Applicable or Not Available

TABLE 6.1

CANCER TOXICITY DATA -- ORAL/DERMAL

CARR POINT - MRP SITE 1

Chemical of Potential Concern (3)	Oral Cancer Slope Factor		Oral Absorption Efficiency for Dermal (1)	Absorbed Cancer Slope Factor for Dermal (2)		Weight of Evidence/ Cancer Guideline Description	Oral CSF	
	Value	Units		Value	Units		Source(s)	Date(s) (MM/DD/YYYY)
BENZO[A]ANTHRACENE	7.3E-01	$(mg/kg\text{-}day)^{-1}$	N/A	7.3E-01	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	8/2014
BENZO[A]PYRENE	7.3E+00	$(mg/kg\text{-}day)^{-1}$	N/A	7.3E+00	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	8/2014
BENZO[B]FLUORANTHENE	7.3E-01	$(mg/kg\text{-}day)^{-1}$	N/A	7.3E-01	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	8/2014
BENZO[K]FLUORANTHENE	7.3E-02	$(mg/kg\text{-}day)^{-1}$	N/A	7.3E-02	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	8/2014
CHRYSENE	7.3E-03	$(mg/kg\text{-}day)^{-1}$	N/A	7.3E-03	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	8/2014
DIBENZ[A,H]ANTHRACENE	7.3E+00	$(mg/kg\text{-}day)^{-1}$	N/A	7.3E+00	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	8/2014
INDENO[1,2,3-CD]PYRENE	7.3E-01	$(mg/kg\text{-}day)^{-1}$	N/A	7.3E-01	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	8/2014
NITROGLYCERIN	1.7E-02	$(mg/kg\text{-}day)^{-1}$	(1)	1.7E-02	(mg/kg-day)	N/A	PPRTV	8/2014
4,4-DDT	3.4E-01	$(mg/kg\text{-}day)^{-1}$	(1)	3.4E-01	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	8/2014
AROCLOR-1260	2E+00	$(mg/kg\text{-}day)^{-1}$	(1)	2.0E+00	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	8/2014
ALUMINUM	N/A	N/A	0.01	N/A	N/A	N/A	N/A	N/A
ANTIMONY	N/A	N/A	0.15	N/A	N/A	N/A	N/A	N/A
ARSENIC	1.5E+00	$(mg/kg\text{-}day)^{-1}$	(1)	1.5E+00	$(mg/kg\text{-}day)^{-1}$	A	IRIS	8/2014
CHROMIUM, TOTAL	5.00E-01	(mg/kg-day)	0.025	1.3E-02	(mg/kg-day)	D [oral]; A [inhalation]	IRIS	8/2014
COBALT	N/A	N/A	(1)	N/A	N/A	N/A	N/A	N/A
IRON	N/A	N/A	(1)	N/A	N/A	N/A	N/A	N/A
LEAD	N/A	N/A	N/A	N/A	N/A	B2	IRIS	8/2014
MANGANESE	N/A	N/A	0.04	N/A	N/A	D	IRIS	8/2014
MERCURY	N/A	N/A	(1)	N/A	N/A	C	IRIS	8/2014
THALLIUM	N/A	N/A	(1)	N/A	N/A	N/A	N/A	N/A

TABLE 6.1

CANCER TOXICITY DATA -- ORAL/DERMAL

CARR POINT - MRP SITE 1

Chemical of Potential Concern (3)	Oral Cancer Slope Factor		Oral Absorption Efficiency for Dermal (1)	Absorbed Cancer Slope Factor for Dermal (2)		Weight of Evidence/ Cancer Guideline Description	Oral CSF	
	Value	Units		Value	Units		Source(s)	Date(s) (MM/DD/YYYY)

IRIS = Integrated Risk Information System

PPRTV = Provisional Peer Reviewed Toxicity Value

N/A = Not Applicable/Not Available

Slope factor for benzo(a)pyrene, along with the appropriate relative potency factor (USEPA, 1993), used for the other carcinogenic PAHs.

Slope factor for hexavalent chromium used for chromium, total.

For PCBs, the RME slope factor presented represents the upper-bound slope factor for high risk and persistence situations. The CTE slope factor is 1 per mg/kg-day and represents the central-estimate slope factor.

(1) Oral absorption efficiency exceeds 50%. Therefore, no adjustment of the oral slope factor is necessary.

(2) Calculated as: (oral slope factor) / (oral to dermal adjustment factor)

(3) See Attachment F for lead model calculations.

EPA Group:

A - Human carcinogen

B1 - Probable human carcinogen - indicates that limited human data are available

B2 - Probable human carcinogen - indicates sufficient evidence in animals and inadequate or no evidence in humans

C - Possible human carcinogen

D - Not classifiable as a human carcinogen (by the oral route)

TABLE 6.2

CANCER TOXICITY DATA -- INHALATION

CARR POINT - MRP SITE 1

Chemical of Potential Concern	Unit Risk		Inhalation Cancer Slope Factor		Weight of Evidence/ Cancer Guideline Description	Unit Risk : Inhalation CSF	
	Value	Units	Value	Units		Source(s)	Date(s) (MM/DD/YYYY)
BENZO[A]ANTHRACENE	1.1E-04	$(ug/m^3)^{-1}$	N/A	N/A	B2	CalEPA	8/2014
BENZO[A]PYRENE	1.1E-03	$(ug/m^3)^{-1}$	N/A	N/A	B2	CalEPA	8/2014
BENZO[B]FLUORANTHENE	1.1E-04	$(ug/m^3)^{-1}$	N/A	N/A	B2	CalEPA	8/2014
BENZO[K]FLUORANTHENE	1.1E-04	$(ug/m^3)^{-1}$	N/A	N/A	B2	CalEPA	8/2014
CHRYSENE	1.1E-05	$(ug/m^3)^{-1}$	N/A	N/A	B2	CalEPA	8/2014
DIBENZ[A,H]ANTHRACENE	1.2E-03	$(ug/m^3)^{-1}$	N/A	N/A	B2	CalEPA	8/2014
INDENO[1,2,3-CD]PYRENE	1.1E-04	$(ug/m^3)^{-1}$	N/A	N/A	B2	CalEPA	8/2014
NITROGLYCERIN	N/A	N/A	N/A	N/A	N/A	N/A	N/A
4,4-DDT	9.7E-05	$(ug/m^3)^{-1}$	N/A	N/A	B2	IRIS	8/2014
AROCLOR-1260	5.7E-04	$(ug/m^3)^{-1}$	N/A	N/A	B2	IRIS	8/2014
ALUMINUM	N/A	N/A	N/A	N/A	N/A	N/A	N/A
ANTIMONY	N/A	N/A	N/A	N/A	N/A	N/A	N/A
ARSENIC	4.30E-03	$(ug/m^3)^{-1}$	N/A	N/A	A	IRIS	8/2014
CHROMIUM, TOTAL	8.40E-02	$(ug/m^3)^{-1}$	N/A	N/A	A	IRIS	8/2014
COBALT	9.00E-03	$(ug/m^3)^{-1}$	N/A	N/A	B2	PPRTV	8/2014
IRON	N/A	N/A	N/A	N/A	N/A	N/A	N/A
LEAD	N/A	N/A	N/A	N/A	B2	IRIS	8/2014
MANGANESE	N/A	N/A	N/A	N/A	D	IRIS	8/2014
MERCURY	N/A	N/A	N/A	N/A	C	IRIS	8/2014
THALLIUM	N/A	N/A	N/A	N/A	N/A	N/A	8/2014

TABLE 6.2

CANCER TOXICITY DATA -- INHALATION

CARR POINT - MRP SITE 1

Chemical of Potential Concern	Unit Risk		Inhalation Cancer Slope Factor		Weight of Evidence/ Cancer Guideline Description	Unit Risk : Inhalation CSF	
	Value	Units	Value	Units		Source(s)	Date(s) (MM/DD/YYYY)

IRIS = Integrated Risk Information System

PPRTV = Provisional Peer Reviewed Toxicity Values

CalEPA = California Environmental Protection Agency, Office of Environmental Health Hazard Assessment

HEAST = Health Effects Assessment Summary Tables

N/A = Not Applicable

(1) See Attachment F for lead model calculations.

EPA Group:

A - Human carcinogen

B1 - Probable human carcinogen - indicates that limited human data are available

B2 - Probable human carcinogen - indicates sufficient evidence in animals and inadequate or no evidence in humans

C - Possible human carcinogen

D - Not classifiable as a human carcinogen (by the oral route)

TABLE 7
SUMMARY OF RECEPTOR RISKS
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

Exposure Point	Scenario/ Receptor	Exposure Media	RME or CT	Total Cancer Risks	Total Noncancer Risks	Media > 1E-04 or HI > 1	Major contributors to risk (> 1E-06, HI > 1)
MRP Site 1	Current Young Child/Adult Rec. User	surface soil, sediment	RME	1E-04	**1E+01**	surface soil	(NC) - PCBs
			CT	2E-05	7E-01		
MRP Site 1	Current Adult Onsite Worker	surface soil	RME	2E-05	9E-01		N/A
			CT	7E-08	1E-02		
MRP Site 1	Current Adolescent Trespasser	surface soil, sediment	RME	7E-05	**7E+00**	surface soil	(NC) - PCBs
			CT	1E-05	8E-01		
MRP Site 1	Current/Future Adult Construction Worker	surface/subsurface soil, shallow groundwater	RME	4E-05	**2E+01**	surface/ subsurface soil	(NC) - PCBs
			CT	2E-06	**2E+00**		
MRP Site 1	Future Adolescent Trespasser	surface/subsurface soil, sediment	RME	5E-05	**7E+00**		(NC) - PCBs
			CT	6E-06	5E-01		
MRP Site 1	Future Adult Onsite Worker	surface/subsurface soil	RME	**3E-04**	**2E+01**	surface/ subsurface soil	(C) - PCBs, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, 4,4-DDT, As, Cr
			CT	6E-06	1E+00		(NC) - PCBs
MRP Site 1	Future Young Child/Adult Resident	surface/subsurface soil, sediment, shellfish tissue	RME	**2E-03**	**2E+02**	surface/ subsurface soil	(C) - PCBs, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene, 4,4-DDT, As, Cr
			CT	**2E-04**	**2E+01**		(NC) - PCBs
MRP Site 1 - MW-01	Future Adult Onsite Worker	groundwater	RME	N/A	4E-01		N/A
			CT	N/A	3E-01		
MRP Site 1 - MW-01D	Future Adult Onsite Worker	groundwater	RME	N/A	7E-01		N/A
			CT	N/A	5E-01		
MRP Site 1 - MW-11	Future Adult Onsite Worker	groundwater	RME	N/A	3E-02		N/A
			CT	N/A	2E-02		
MRP Site 1 - MW-12	Future Adult Onsite Worker	groundwater	RME	N/A	5E-01		N/A
			CT	N/A	3E-01		

TABLE 7
SUMMARY OF RECEPTOR RISKS
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

Exposure Point	Scenario/ Receptor	Exposure Media	RME or CT	Total Cancer Risks	Total Noncancer Risks	Media > 1E-04 or HI > 1	Major contributors to risk (> 1E-06, HI > 1)
MRP Site 1 - MW-12D	Future Adult Onsite Worker	groundwater	RME	N/A	5E-01		N/A
			CT	N/A	3E-01		
MRP Site 1 - MW-13	Future Adult Onsite Worker	groundwater	RME	N/A	2E-01		N/A
			CT	N/A	1E-01		
MRP Site 1 - MW-01	Future Young Child/Adult Resident	groundwater	RME	N/A	3E+00		N/A (no target organs >1)
			CT	N/A	1E+00		
MRP Site 1 - MW-01D	Future Young Child/Adult Resident	groundwater	RME	N/A	**4E+00**	groundwater	(NC) - Co, Mn
			CT	N/A	2E+00		
MRP Site 1 - MW-11	Future Young Child/Adult Resident	groundwater	RME	N/A	2E-01		N/A
			CT	N/A	9E-02		
MRP Site 1 - MW-12	Future Young Child/Adult Resident	groundwater	RME	N/A	**3E+00**	groundwater	Mn
			CT	N/A	1E+00		
MRP Site 1 - MW-12D	Future Young Child/Adult Resident	groundwater	RME	N/A	**3E+00**	groundwater	Mn
			CT	N/A	2E+00		
MRP Site 1 - MW-13	Future Young Child/Adult Resident	groundwater	RME	N/A	1E+00		N/A
			CT	N/A	5E-01		

Notes
Bolded values exceed a cancer risk of 1E-04 or a target organ HI of 1.

HI - Hazard Index
RME - Reasonable Maximum Exposure
CT - Central Tendency Exposure

(C) - Carcinogenic Risk
(NC) - Noncarcinogenic Risk
NE - Not Evaluated
N/A - Not Applicable

ATTACHMENT A

SAMPLE GROUPINGS AND DATA

ATTACHMENT A TABLE 1
MRP SITE 1 SOIL SAMPLES
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

Location	Sample ID	Sample Date	Depth Interval	Comments
CRP-SB01	CRP-SB01-0001	5/12/2009	0 - 1 ft	Excluded from HHRA - Excavated
CRP-SB01	CRP-SB01-0608	5/19/2009	6 - 8 ft	Subsurface data set
CRP-SB01	CRP-SB01-2022	5/19/2009	20 - 22 ft	Excluded from HHRA - Too deep for use
CRP-SB01	CRP-SB01-2628	5/19/2009	26 - 28 ft	Excluded from HHRA - Too deep for use
CRP-SB09	CRP-SB09-0001	5/12/2009	0 - 1 ft	Excluded from HHRA - Excavated
CRP-SB09	CRP-SB09-0608	5/18/2009	6 - 8 ft	Subsurface data set
CRP-SB09	CRP-SB09-1214	5/18/2009	12 - 14 ft	Excluded from HHRA - Too deep for use
CRP-SB09 (plus duplicate)	CRP-SB09-3840	5/18/2009	38 - 40 ft	Excluded from HHRA - Too deep for use
CRP-SO-ARC1	CRP-SO-ARC1A	5/14/2009	0 - 2 in	Excluded from HHRA - composite sample
CRP-SO-ARC1	CRP-SO-ARC1B	5/14/2009	0 - 2 in	Excluded from HHRA - composite sample
CRP-SO-ARC1	CRP-SO-ARC1C	5/14/2009	0 - 2 in	Excluded from HHRA - composite sample
CRP-SO-ARC2	CRP-SO-ARC2A	5/14/2009	0 - 2 in	Excluded from HHRA - composite sample
CRP-SO-ARC2	CRP-SO-ARC2B	5/14/2009	0 - 2 in	Excluded from HHRA - composite sample
CRP-SO-ARC2	CRP-SO-ARC2C	5/14/2009	0 - 2 in	Excluded from HHRA - composite sample
CRP-SO-ARC3	CRP-SO-ARC3A	5/14/2009	0 - 2 in	Excluded from HHRA - Excavated
CRP-SO-ARC3	CRP-SO-ARC3B	5/14/2009	0 - 2 in	Excluded from HHRA - Excavated
CRP-SO-ARC3	CRP-SO-ARC3C	5/14/2009	0 - 2 in	Excluded from HHRA - Excavated
CRP-SS100	CRP-SS100-0006	1/19/2010	0 - 0.5 ft	Excluded from HHRA - Excavated
CRP-SS100	CRP-SS100-0612	1/19/2010	0.5 - 1 ft	Excluded from HHRA - Excavated
CRP-SS101 (plus duplicate)	CRP-SS101-0006	1/19/2010	0 - 0.5 ft	Excluded from HHRA - Excavated
CRP-SS102	CRP-SS102-0006	1/19/2010	0 - 0.5 ft	Excluded from HHRA - Excavated
CRP-SS102	CRP-SS102-0612	1/19/2010	0.5 - 1 ft	Excluded from HHRA - Excavated
CRP-SS103	CRP-SS103-0006	1/19/2010	0 - 0.5 ft	Excluded from HHRA - Excavated
CRP-SS104	CRP-SS104-0006	1/19/2010	0 - 0.5 ft	Excluded from HHRA - Excavated
CRP-SS104	CRP-SS104-0612	1/19/2010	0.5 - 1 ft	Excluded from HHRA - Excavated
CRP-SS105	CRP-SS105-0006	1/19/2010	0 - 0.5 ft	Excluded from HHRA - Excavated
CRP-SS106	CRP-SS106-0006	1/19/2010	0 - 0.5 ft	Excluded from HHRA - Excavated
CRP-SS106	CRP-SS106-0612	1/19/2010	0.5 - 1 ft	Excluded from HHRA - Excavated
CRP-SS107	CRP-SS107-0006	1/19/2010	0 - 0.5 ft	
CRP-SS108 (plus duplicate)	CRP-SS108-0006	1/19/2010	0 - 0.5 ft	Excluded from HHRA - Excavated
CRP-SS108	CRP-SS108-0612	1/19/2010	0.5 - 1 ft	Excluded from HHRA - Excavated
CRP-SS109	CRP-SS109-0006	1/19/2010	0 - 0.5 ft	Excluded from HHRA - Excavated
CRP-SS110	CRP-SS110-0006	1/19/2010	0 - 0.5 ft	Excluded from HHRA - Excavated
CRP-SS110	CRP-SS110-0612	1/19/2010	0.5 - 1 ft	Excluded from HHRA - Excavated
CRP-SS111	CRP-SS111-0006	1/19/2010	0 - 0.5 ft	
CRP-SS112	CRP-SS112-0006	1/19/2010	0 - 0.5 ft	Excluded from HHRA - Excavated
CRP-SS112	CRP-SS112-0612	1/19/2010	0.5 - 1 ft	Excluded from HHRA - Excavated
CRP-SS113	CRP-SS113-0006	1/19/2010	0 - 0.5 ft	Excluded from HHRA - Excavated
CRP-SS114	CRP-SS114-0006	1/19/2010	0 - 0.5 ft	Combine with 0.5-1'
CRP-SS114	CRP-SS114-0612	1/19/2010	0.5 - 1 ft	Combine with 0-0.5'
CRP-SS115 (plus duplicate)	CRP-SS115-0006	1/19/2010	0 - 0.5 ft	
CRP-SS116	CRP-SS116-0006	1/19/2010	0 - 0.5 ft	Combine with 0.5-1'
CRP-SS116	CRP-SS116-0612	1/19/2010	0.5 - 1 ft	Combine with 0-0.5'
CRP-SS117	CRP-SS117-0006	1/19/2010	0 - 0.5 ft	
CRP-SS118	CRP-SS118-0006	1/19/2010	0 - 0.5 ft	Combine with 0.5-1'
CRP-SS118	CRP-SS118-0612	1/19/2010	0.5 - 1 ft	Combine with 0-0.5'
CRP-SS119	CRP-SS119-0006	1/19/2010	0 - 0.5 ft	
CRP-SS120	CRP-SS120-0006	1/19/2010	0 - 0.5 ft	Combine with 0.5-1'
CRP-SS120	CRP-SS120-0612	1/19/2010	0.5 - 1 ft	Combine with 0-0.5'
CRP-SS121	CRP-SS121-0006	1/19/2010	0 - 0.5 ft	
CRP-SS122 (plus duplicate)	CRP-SS122-0006	1/19/2010	0 - 0.5 ft	Combine with 0.5-1'
CRP-SS122	CRP-SS122-0612	1/19/2010	0.5 - 1 ft	Combine with 0-0.5'
CRP-SS123	CRP-SS123-0006	1/19/2010	0 - 0.5 ft	
CRP-SB201	OU09 SS201 0001	12/9/2013	0 - 1 ft	
CRP-SB201	OU09 SB201 0305	12/9/2013	3 - 5 ft	Subsurface data set
CRP-SB201	OU09 SB201 1012	12/9/2013	10 - 12 ft	Subsurface data set
CRP-SB202	OU09 SS202 0001	12/10/2013	0 - 1 ft	
CRP-SB202	OU09 SB202 0305	12/10/2013	3 - 5 ft	Subsurface data set
CRP-SB202	OU09 SB202 0608	12/10/2013	6 - 8 ft	Subsurface data set
CRP-SB203	OU09 SS203 0001	12/10/2013	0 - 1 ft	
CRP-SB203	OU09 SB203 0305	12/10/2013	3 - 5 ft	Subsurface data set
CRP-SB203	OU09 SB203 0608	12/10/2013	6 - 8 ft	Subsurface data set
CRP-SB204	OU09 SB204 0001	12/11/2013	0 - 1 ft	
CRP-SB204	OU09 SB204 0305	12/11/2013	3 - 5 ft	Subsurface data set
CRP-SB204	OU09 SB204 1012	12/11/2013	10 - 12 ft	Subsurface data set
CRP-SB205	OU09 SS205 0001	12/11/2013	0 - 1 ft	
CRP-SB205 (plus duplicate)	OU09 SB205 0305	12/11/2013	3 - 5 ft	Subsurface data set
CRP-SB205 (plus duplicate)	OU09 SB205 0608	12/11/2013	6 - 8 ft	Subsurface data set
CRP-SB206	OU09 SS206 0001	12/10/2013	0 - 1 ft	
CRP-SB206	OU09 SB206 0305	12/10/2013	3 - 5 ft	Subsurface data set

ATTACHMENT A TABLE 1
MRP SITE 1 SOIL SAMPLES
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

Location	Sample ID	Sample Date	Depth Interval	Comments
CRP-SB206	OU09 SB206 0608	12/10/2013	6 - 8 ft	Subsurface data set
CRP-SB208	OU09 SS208 0001	12/9/2013	0 - 1 ft	
CRP-SB208	OU09 SB208 0305	12/9/2013	3 - 5 ft	Subsurface data set
CRP-SB208	OU09 SB208 0608	12/9/2013	6 - 8 ft	Subsurface data set
CRP-SB209	OU09 SS209 0001	12/9/2013	0 - 1 ft	
CRP-SB209	OU09 SB209 0102	12/9/2013	1 - 2 ft	Subsurface data set
CRP-SB209	OU09 SB209 0305	12/9/2013	3 - 5 ft	Subsurface data set
CRP-SB209	OU09 SB209 1012	12/9/2013	10 - 12 ft	Subsurface data set
CRP-SB210	OU09 SS210 0012	12/6/2013	0 - 1 ft	
CRP-SB211 (plus duplicate)	OU09 SS211 0001	12/11/2013	0 - 1 ft	
CRP-SB211	OU09 SB211 0305	12/9/2013	3 - 5 ft	Subsurface data set
CRP-SB211	OU09 SB211 1012	12/9/2013	10 - 12 ft	Subsurface data set
CRP-SB212	OU09 SS212 0001	12/9/2013	0 - 1 ft	
CRP-SB212	OU09 SB212 0102	12/9/2013	1 - 2 ft	Subsurface data set
CRP-SB212	OU09 SB212 0305	12/9/2013	3 - 5 ft	Subsurface data set
CRP-SB212	OU09 SB212 0608	12/9/2013	6 - 8 ft	Subsurface data set
CRP-SB213	OU09 SS213 0001	12/9/2013	0 - 1 ft	
CRP-SB213	OU09 SB213 0102	12/9/2013	1 - 2 ft	Subsurface data set
CRP-SB213	OU09 SB213 0305	12/9/2013	3 - 5 ft	Subsurface data set
CRP-SB213	OU09 SB213 0608	12/9/2013	6 - 8 ft	Subsurface data set
CRP-SB214	OU09 SB214 0102	12/11/2013	1 - 2 ft	Subsurface data set
CRP-SB214	OU09 SB214 0305	12/11/2013	3 - 5 ft	Subsurface data set
CRP-SB214	OU09 SB214 0508	12/11/2013	5 - 8 ft	Subsurface data set
CRP-SB214	OU09 SB214 0608	12/11/2013	6 - 8 ft	Subsurface data set
CRP-SB215	OU09 SB215 0102	12/11/2013	1 - 2 ft	Subsurface data set
CRP-SB215	OU09 SB215 0305	12/11/2013	3 - 5 ft	Subsurface data set
CRP-SB215	OU09 SB215 1012	12/11/2013	10 - 12 ft	Subsurface data set
CRP-SB216	OU09 SB216 0305	12/11/2013	3 - 5 ft	Subsurface data set
CRP-SB216	OU09 SB216 0608	12/11/2013	6 - 8 ft	Subsurface data set
CRP-SB217	OU09 SS217 0001	12/10/2013	0 - 1 ft	
CRP-SB217	OU09 SB217 0102	12/10/2013	1 - 2 ft	Subsurface data set
CRP-SB217	OU09 SB217 0108	12/10/2013	1 - 8 ft	Subsurface data set
CRP-SB217	OU09 SB217 0305	12/10/2013	3 - 5 ft	Subsurface data set
CRP-SB217	OU09 SB217 0608	12/10/2013	6 - 8 ft	Subsurface data set
CRP-SB218 (plus duplicate)	OU09 SS218 0001	12/11/2013	0 - 1 ft	
CRP-SB218 (plus duplicate)	OU09 SB218 0102	12/11/2013	1 - 2 ft	Subsurface data set
CRP-SB218	OU09 SB218 0305	12/11/2013	3 - 5 ft	Subsurface data set
CRP-SB219	OU09 SS219 0001	12/11/2013	0 - 1 ft	
CRP-SB219	OU09 SB219 0305	12/11/2013	3 - 5 ft	Subsurface data set
CRP-SB220 (plus duplicate)	OU09 SB220 0001	12/11/2013	0 - 1 ft	
CRP-SB220	OU09 SB220 0305	12/11/2013	3 - 5 ft	Subsurface data set
CRP-SB222	OU09 SB222 0001	12/12/2013	0 - 1 ft	
CRP-SB223	OU09 SB223 0001	12/12/2013	0 - 1 ft	
CRP-SB223	OU09 SB223 0304	12/12/2013	3 - 4 ft	Subsurface data set
CRP-SB224 (plus duplicate)	OU09 SS224 0001	12/6/2013	0 - 1 ft	
CRP-SB225	OU09 SS225 0001	12/6/2013	0 - 1 ft	
CRP-SB226	OU09 SS226 0001	12/5/2013	0 - 1 ft	
CRP-SB227	OU09 SS227 0001	12/5/2013	0 - 1 ft	
CRP-SB228	OU09 SS228 0001	12/9/2013	0 - 1 ft	
CRP-SB228	OU09 SB228 0305	12/9/2013	3 - 5 ft	Subsurface data set
CRP-SB228	OU09 SB228 0608	12/9/2013	6 - 8 ft	Subsurface data set
CRP-SB229 (plus duplicate)	OU09 SS229 0001-01	12/10/2013	0 - 1 ft	
CRP-SB229	OU09 SB229 0102	12/10/2013	1 - 2 ft	Subsurface data set
CRP-SB229	OU09 SB229 0305	12/10/2013	3 - 5 ft	Subsurface data set
CRP-SB301	OU09 SS301 0001	12/6/2013	0 - 1 ft	
CRP-SB302 (plus duplicate)	OU09 SS302 0001	12/10/2013	0 - 1 ft	
CRP-SB302	OU09 SB302 0305	12/10/2013	3 - 5 ft	Subsurface data set
CRP-SB302	OU09 SB302 0608	12/10/2013	6 - 8 ft	Subsurface data set
CRP-SB302	OU09 SB302 0810	12/10/2013	8 - 10 ft	Subsurface data set
CRP-SB325	OU09 SB325 0001	6/3/2014	0 - 1 ft	
CRP-SB325	OU09 SB325 0102	6/3/2014	1 - 2 ft	Subsurface data set
MW-01D	OU09 SBMW01D 0810	12/4/2013	8 - 10 ft	Subsurface data set
MW-01D	OU09 SBMW01D 0816	12/4/2013	8 - 16 ft	Excluded from HHRA - grain size only
MW-01D	OU09 SBMW01D 2230	12/4/2013	22 - 30 ft	Excluded from HHRA - Too deep for use
MW-01D	OU09 SBMW01D 2628	12/4/2013	26 - 28 ft	Excluded from HHRA - Too deep for use
MW-11	OU09 SBMW11 0406	12/3/2013	4 - 6 ft	Subsurface data set
MW-11	OU09 SBMW11 0810	12/3/2013	8 - 10 ft	Subsurface data set
MW-11	OU09 SBMW11 0814	12/3/2013	8 - 14 ft	Excluded from HHRA - grain size only
MW-12	OU09 SBMW12 1014	12/2/2013	10 - 14 ft	Subsurface data set (grain size and Cr(VI) only)
MW-12D	OU09 SBMW12D 2832, 3436	12/2/2013	28 - 36 ft	Excluded from HHRA - Too deep for use
MW-12D	OU09 SBMW12D 3638	12/2/2013	36 - 38 ft	Excluded from HHRA - Too deep for use

ATTACHMENT A TABLE 1
MRP SITE 1 SOIL SAMPLES
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

Location	Sample ID	Sample Date	Depth Interval	Comments
MW-13	OU09 SB207 0001	12/4/2013	0 - 1 ft	
MW-13	OU09 SB207 0102	12/4/2013	1 - 2 ft	Subsurface data set
MW-13	OU09 SB207 0305	12/4/2013	3 - 5 ft	Subsurface data set
MW-13	OU09 SB207 0709	12/4/2013	7 - 9 ft	Subsurface data set
MW-13	OU09 SB207 0715	12/4/2013	7 - 15 ft	Excluded from HHRA - grain size only
MW-13	OU09 SB207 1113	12/4/2013	11 - 13 ft	Subsurface data set (grain size and Cr(VI) only)
MRP1-PES-1A-01		4/17/2013	1 ft	
MRP1-PES-1B-01 (plus duplicate)		4/17/2013	1 ft	
MRP1-PES-1C-01		4/17/2013	1 ft	Excluded from HHRA - Excavated
MRP1-PES-1C-02		4/24/2013	2 ft	Subsurface data set
MRP1-PES-1D-01		4/18/2013	1 ft	Excluded from HHRA - Excavated
MRP1-PES-1D-02 (plus duplicate)		4/24/2013	2 ft	Subsurface data set
MRP1-PES-1E-01		4/18/2013	1 ft	Excluded from HHRA - Excavated
MRP1-PES-1E-02		4/24/2013	2 ft	Subsurface data set
MRP1-PES-2A-01		4/18/2013	1 ft	Excluded from HHRA - Excavated
MRP1-PES-2A-02		4/24/2013	2 ft	Subsurface data set
MRP1-PES-2B-01		4/18/2013	1 ft	Excluded from HHRA - Excavated
MRP1-PES-2B-02 (plus duplicate)		4/25/2013	2 ft	Subsurface data set
MRP1-PES-2C-01		4/20/2013	1 ft	Excluded from HHRA - Excavated
MRP1-PES-2D-01		4/23/2013	1 ft	Excluded from HHRA - Excavated
MRP1-PES-2D-02		4/26/2013	2 ft	Subsurface data set
MRP1-PES-2E-01		4/22/2014	1 ft	Excluded from HHRA - Excavated
MRP1-PES-2E-02		4/25/2013	2 ft	Subsurface data set
MRP1-PES-3A-01		4/22/2013	1 ft	Excluded from HHRA - Excavated
MRP1-PES-3A-02		4/25/2013	2 ft	Subsurface data set
MRP1-PES-3B-01		4/20/2013	1 ft	
MRP1-PES-3C-01		4/20/2013	1 ft	
MRP1-PES-3D-01		4/20/2013	1 ft	
MRP1-PES-3E-01		4/19/2013	1 ft	Excluded from HHRA - Excavated
MRP1-PES-3E-02		4/25/2013	2 ft	Subsurface data set
MRP1-PES-4A-01		4/19/2013	1 ft	
MRP1-PES-4B-01		4/19/2013	1 ft	
MRP1-PES-4C-01		4/20/2013	1 ft	
MRP1-PES-4D-01		4/20/2013	1 ft	
MRP1-PES-4E-01 (plus duplicate)		4/19/2013	1 ft	
MRP1-PES-5A-01		4/26/2013	1 ft	
MRP1-PES-5B-01		4/26/2013	1 ft	
MRP1-PES-5C-01		4/26/2013	1 ft	Excluded from HHRA - Excavated
MRP1-PES-5C-02		4/30/2013	2 ft	Subsurface data set
MRP1-PES-SW1-01		4/24/2013	1 ft	
MRP1-PES-SW2-02		4/24/2013	2 ft	Subsurface data set
MRP1-PES-SW3-02		4/24/2013	2 ft	Subsurface data set
MRP1-PES-SW4-01		4/25/2013	1 ft	
MRP1-PES-SW5-01		4/25/2013	1 ft	
MRP1-PES-SW6-01		4/25/2013	1 ft	
MRP1-PES-SW7-02		4/25/2013	2 ft	Subsurface data set
MRP1-PES-SW8-02		4/25/2013	2 ft	Subsurface data set
MRP1-PES-SW9-02		4/26/2013	2 ft	Subsurface data set
MRP1-PES-SW10-02		4/26/2013	2 ft	Subsurface data set
MRP1-PES-SW11-02		4/30/2013	2 ft	Subsurface data set
MRP1-PES-S12-01		5/1/2013	1 ft	
MRP1-PES-SW13-01 (plus duplicate)		5/1/2013	1 ft	

ATTACHMENT A TABLE 2
MRP SITE 1 SEDIMENT SAMPLES
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

Location	Sample Date	Depth Interval	Comments
CRP-SD01	6/19/2009	0 - 0.5 ft	Combine with 0.5-1'
CRP-SD01	6/19/2009	0.5 - 1 ft	Combine with 0-0.5'
CRP-SD02	6/19/2009	0 - 0.5 ft	Combine with 0.5-1'
CRP-SD02	6/19/2009	0.5 - 1 ft	Combine with 0-0.5'
CRP-SD03 (plus duplicate)	6/18/2009	0 - 0.5 ft	Not used in HHRA, based on accessibility/water depth
CRP-SD04	6/18/2009	0 - 0.5 ft	Not used in HHRA, based on accessibility/water depth
CRP-SD05	6/15/2009	0 - 0.5 ft	Not used in HHRA, based on accessibility/water depth
CRP-SD06 (plus duplicate)	6/15/2009	0 - 0.5 ft	Not used in HHRA, based on accessibility/water depth
CRP-SD06	6/15/2009	0.5 - 1 ft	Not used in HHRA, based on accessibility/water depth
CRP-SD07	6/15/2009	0 - 0.5 ft	Not used in HHRA, based on accessibility/water depth
CRP-SD07	6/15/2009	0.5 - 1 ft	Not used in HHRA, based on accessibility/water depth
CRP-SD08	6/19/2009	0 - 0.5 ft	Not used in HHRA, based on accessibility/water depth
CRP-SD08	6/19/2009	0.5 - 1 ft	Not used in HHRA, based on accessibility/water depth
CRP-SD09	6/19/2009	0 - 0.5 ft	Not used in HHRA, based on accessibility/water depth
CRP-SD09	6/19/2009	0.5 - 1 ft	Not used in HHRA, based on accessibility/water depth
CRP-SD10 (plus duplicate)	6/17/2009	0 - 0.5 ft	Not used in HHRA, based on accessibility/water depth
CRP-SD10	6/17/2009	0.5 - 1 ft	Not used in HHRA, based on accessibility/water depth
CRP-SD11	6/16/2009	0 - 0.5 ft	Not used in HHRA, based on accessibility/water depth
CRP-SD11	6/16/2009	0.5 - 1 ft	Not used in HHRA, based on accessibility/water depth
CRP-SD12	6/18/2009	0 - 0.5 ft	Not used in HHRA, based on accessibility/water depth
CRP-SD13	6/17/2009	0 - 0.5 ft	Not used in HHRA, based on accessibility/water depth
CRP-SD13	6/17/2009	0.5 - 1 ft	Not used in HHRA, based on accessibility/water depth
CRP-SD14	6/18/2009	0 - 0.5 ft	Not used in HHRA, based on accessibility/water depth
CRP-SD14	6/18/2009	0.5 - 1 ft	Not used in HHRA, based on accessibility/water depth
CRP-SD15 (plus duplicate)	6/16/2009	0 - 0.5 ft	Not used in HHRA, based on accessibility/water depth
CRP-SD15	6/16/2009	0.5 - 1 ft	Not used in HHRA, based on accessibility/water depth
CRP-SD16	6/17/2009	0 - 0.5 ft	Not used in HHRA, based on accessibility/water depth
CRP-SD16	6/17/2009	0.5 - 1 ft	Not used in HHRA, based on accessibility/water depth
CRP-SD17	6/16/2009	0 - 0.5 ft	Not used in HHRA, based on accessibility/water depth
CRP-SD18	6/16/2009	0 - 0.5 ft	Not used in HHRA, based on accessibility/water depth
CRP-SD18	6/16/2009	0.5 - 1 ft	Not used in HHRA, based on accessibility/water depth
CRP-SD19	6/16/2009	0 - 0.5 ft	Not used in HHRA, based on accessibility/water depth
CRP-SD19	6/16/2009	0.5 - 1 ft	Not used in HHRA, based on accessibility/water depth
CRP-SD20	6/17/2009	0 - 0.5 ft	Not used in HHRA, based on accessibility/water depth
CRP-SD20	6/17/2009	0.5 - 1 ft	Not used in HHRA, based on accessibility/water depth
CRP-SD101 (plus duplicate)	12/13/2013	0 - 12 in	
CRP-SD102	12/13/2013	0 - 12 in	
CRP-SD103	12/13/2013	0 - 12 in	
CRP-SD104	4/2/2014	0 - 12 in	Not used in HHRA, based on accessibility/water depth
CRP-SD104	4/2/2014	12 - 24 in	Not used - nature & extent (N&E) sample
CRP-SD105	12/6/2013	0 - 12 in	Not used in HHRA, based on accessibility/water depth
CRP-SD105	12/6/2013	12 - 24 in	Not used - nature & extent (N&E) sample
CRP-SD105	12/6/2013	24 - 36 in	Not used - nature & extent (N&E) sample
CRP-SD106	12/10/2013	0 - 12 in	Not used in HHRA, based on accessibility/water depth

ATTACHMENT A TABLE 2
MRP SITE 1 SEDIMENT SAMPLES
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

Location	Sample Date	Depth Interval	Comments
CRP-SD106	12/10/2013	12 - 24 in	Not used - nature & extent (N&E) sample
CRP-SD106	12/10/2013	24 - 36 in	Not used - nature & extent (N&E) sample
CRP-SD107	12/10/2013	0 - 12 in	Not used in HHRA, based on accessibility/water depth
CRP-SD107	12/2/2013	6 - 12 in	Not used - covered by 0-1 ft sample
CRP-SD107	12/2/2013	12 - 24 in	Not used - nature & extent (N&E) sample
CRP-SD107	12/2/2013	24 - 36 in	Not used - nature & extent (N&E) sample
CRP-SD108	12/10/2013	0 - 12 in	Not used in HHRA, based on accessibility/water depth
CRP-SD108 (plus duplicate)	12/3/2013	6 - 12 in	Not used - covered by 0-1 ft sample
CRP-SD108	12/3/2013	12 - 24 in	Not used - nature & extent (N&E) sample
CRP-SD108	12/3/2013	24 - 36 in	Not used - nature & extent (N&E) sample
CRP-SD109	12/3/2013	0 - 12 in	Not used in HHRA, based on accessibility/water depth
CRP-SD109	12/3/2013	12 - 24 in	Not used - nature & extent (N&E) sample
CRP-SD109	12/3/2013	24 - 36 in	Not used - nature & extent (N&E) sample
CRP-SD110	12/3/2013	0 - 12 in	Not used in HHRA, based on accessibility/water depth
CRP-SD110 (plus duplicate)	12/3/2013	12 - 24 in	Not used - nature & extent (N&E) sample
CRP-SD110	12/3/2013	24 - 36 in	Not used - nature & extent (N&E) sample
CRP-SD111	12/4/2013	0 - 12 in	Not used in HHRA, based on accessibility/water depth
CRP-SD111	12/4/2013	12 - 24 in	Not used - nature & extent (N&E) sample
CRP-SD111	12/4/2013	24 - 36 in	Not used - nature & extent (N&E) sample
CRP-SD112	12/5/2013	0 - 12 in	Not used in HHRA, based on accessibility/water depth
CRP-SD112	12/5/2013	12 - 24 in	Not used - nature & extent (N&E) sample
CRP-SD112	12/5/2013	24 - 36 in	Not used - nature & extent (N&E) sample
CRP-SD113	12/5/2013	0 - 12 in	Not used in HHRA, based on accessibility/water depth
CRP-SD113	12/5/2013	12 - 24 in	Not used - nature & extent (N&E) sample
CRP-SD113	12/5/2013	24 - 36 in	Not used - nature & extent (N&E) sample
CRP-SD114	12/17/2013	0 - 12 in	Not used in HHRA, based on accessibility/water depth
CRP-SD114 (plus duplicate)	12/17/2013	12 - 24 in	Not used - nature & extent (N&E) sample
CRP-SD114	12/17/2013	24 - 36 in	Not used - nature & extent (N&E) sample
CRP-SD115	12/17/2013	0 - 12 in	Not used in HHRA, based on accessibility/water depth
CRP-SD115 (plus duplicate)	12/17/2013	12 - 24 in	Not used - nature & extent (N&E) sample
CRP-SD115	12/17/2013	24 - 36 in	Not used - nature & extent (N&E) sample
CRP-SD116	4/2/2014	0 - 12 in	Not used in HHRA, based on accessibility/water depth
CRP-SD116	4/2/2014	12 - 24 in	Not used - nature & extent (N&E) sample
CRP-SD117	12/10/2013	0 - 12 in	Not used in HHRA, based on accessibility/water depth
CRP-SD117	12/3/2013	6 - 12 in	Not used - covered by 0-1 ft sample
CRP-SD117	12/3/2013	12 - 24 in	Not used - nature & extent (N&E) sample
CRP-SD117	12/3/2013	24 - 36 in	Not used - nature & extent (N&E) sample
CRP-SD118	12/10/2013	0 - 12 in	Not used in HHRA, based on accessibility/water depth
CRP-SD118	12/10/2013	12 - 24 in	Not used - nature & extent (N&E) sample
CRP-SD118	12/10/2013	24 - 36 in	Not used - nature & extent (N&E) sample
CRP-SD119	12/6/2013	0 - 12 in	Not used in HHRA, based on accessibility/water depth
CRP-SD119	12/6/2013	12 - 24 in	Not used - nature & extent (N&E) sample
CRP-SD120	12/5/2013	0 - 12 in	Not used in HHRA, based on accessibility/water depth
CRP-SD120	12/5/2013	12 - 24 in	Not used - nature & extent (N&E) sample

ATTACHMENT A TABLE 2
MRP SITE 1 SEDIMENT SAMPLES
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

Location	Sample Date	Depth Interval	Comments
CRP-SD120	12/5/2013	24 - 36 in	Not used - nature & extent (N&E) sample
CRP-SD121	12/4/2013	0 - 12 in	Not used in HHRA, based on accessibility/water depth
CRP-SD121	12/4/2013	12 - 24 in	Not used - nature & extent (N&E) sample
CRP-SD121	12/4/2013	24 - 36 in	Not used - nature & extent (N&E) sample
CRP-SD122	12/12/2013	0 - 12 in	
CRP-SD123	12/12/2013	0 - 12 in	
CRP-SD124	12/12/2013	0 - 12 in	
CRP-SD125	12/11/2013	0 - 12 in	Not used in HHRA, based on accessibility/water depth
CRP-SD125	12/11/2013	12 - 24 in	Not used - nature & extent (N&E) sample
CRP-SD125	12/11/2013	24 - 36 in	Not used - nature & extent (N&E) sample
CRP-SD126	12/12/2013	0 - 12 in	Not used in HHRA, based on accessibility/water depth
CRP-SD126	12/12/2013	12 - 24 in	Not used - nature & extent (N&E) sample
CRP-SD126	12/12/2013	24 - 36 in	Not used - nature & extent (N&E) sample
CRP-SD128	4/1/2014	0 - 12 in	Not used in HHRA, based on accessibility/water depth
CRP-SD128	4/1/2014	12 - 24 in	Not used - nature & extent (N&E) sample
CRP-SD128	4/1/2014	24 - 36 in	Not used - nature & extent (N&E) sample
CRP-SD129	4/1/2014	0 - 12 in	
CRP-SD130 (plus duplicate)	4/1/2014	0 - 12 in	
CRP-SD131	4/1/2014	0 - 12 in	Not used in HHRA, based on accessibility/water depth
CRP-SD131	4/1/2014	12 - 24 in	Not used - nature & extent (N&E) sample
CRP-SD131	4/1/2014	24 - 36 in	Not used - nature & extent (N&E) sample
CRP-SD132	4/2/2014	0 - 12 in	Not used in HHRA, based on accessibility/water depth
CRP-SD132	4/2/2014	12 - 24 in	Not used - nature & extent (N&E) sample
CRP-SD132	4/2/2014	24 - 36 in	Not used - nature & extent (N&E) sample
CRP-SD133	4/2/2014	0 - 12 in	Not used in HHRA, based on accessibility/water depth
CRP-SD133	4/2/2014	12 - 24 in	Not used - nature & extent (N&E) sample
CRP-SD301	4/2/2014	0 - 12 in	Reference
CRP-SD302	12/11/2013	0 - 12 in	Reference
CRP-SD302	12/11/2013	12 - 24 in	Not used - nature & extent (N&E) sample
CRP-SD302	12/11/2013	24 - 36 in	Not used - nature & extent (N&E) sample
CRP-SD303 (plus duplicate)	12/13/2013	0 - 12 in	Reference
CRP-SD304 (plus duplicate)	12/13/2013	0 - 12 in	Reference
CRP-SD305 (plus duplicate)	12/12/2013	0 - 12 in	Reference
CRP-SD305	12/12/2013	12 - 24 in	Not used - nature & extent (N&E) sample
CRP-SD305	12/12/2013	24 - 36 in	Not used - nature & extent (N&E) sample
CRP-SD306	12/12/2013	0 - 12 in	Reference
CRP-SD306	12/12/2013	12 - 24 in	Not used - nature & extent (N&E) sample
CRP-SD306	12/12/2013	24 - 36 in	Not used - nature & extent (N&E) sample
CRP-SD307	12/17/2013	0 - 12 in	Reference
CRP-SD307	12/17/2013	12 - 24 in	Not used - nature & extent (N&E) sample
CRP-SD307	12/17/2013	24 - 36 in	Not used - nature & extent (N&E) sample
CRP-SD308	12/17/2013	0 - 12 in	Reference
CRP-SD308	12/17/2013	12 - 24 in	Not used - nature & extent (N&E) sample
CRP-SD308	12/17/2013	24 - 36 in	Not used - nature & extent (N&E) sample

ATTACHMENT A TABLE 2
MRP SITE 1 SEDIMENT SAMPLES
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

Location	Sample Date	Depth Interval	Comments
CRP-SD309	4/2/2014	0 - 12 in	Reference
CRP-SD309 (plus duplicate)	4/2/2014	12 - 24 in	Not used - nature & extent (N&E) sample
CRP-SD309	4/2/2014	24 - 36 in	Not used - nature & extent (N&E) sample
CRP-SD310	4/2/2014	0 - 12 in	Reference
CRP-SD310	4/2/2014	12 - 24 in	Not used - nature & extent (N&E) sample
CRP-SD310	4/2/2014	24 - 36 in	Not used - nature & extent (N&E) sample
CRP-SD312	4/3/2014	0 - 12 in	Reference
CRP-SD312	4/3/2014	12 - 24 in	Not used - nature & extent (N&E) sample
CRP-SD312	4/3/2014	24 - 36 in	Not used - nature & extent (N&E) sample
CRP-SD313	4/3/2014	0 - 12 in	Reference
CRP-SD313	4/3/2014	12 - 24 in	Not used - nature & extent (N&E) sample
CRP-SD313	4/3/2014	24 - 36 in	Not used - nature & extent (N&E) sample
Locations/Samples where wet sieve methods were used. Wet sieving was used to separate pellets and for a sub-set of samples, chemical analyses were conducted on the sieved material for a qualitative comparison to dry sieve methods			
CRP-SD101	12/13/2013	0 - 12 in	Pellets Only
CRP-SD102	12/13/2013	0 - 12 in	Pellets and Wet vs Dry Qualitative Only
CRP-SD103	12/13/2013	0 - 12 in	Pellets Only
CRP-SD105	12/6/2013	0 - 12 in	Pellets and Wet vs Dry Qualitative Only
CRP-SD105	12/6/2013	12 - 24 in	Pellets Only
CRP-SD105	12/6/2013	24 - 36 in	Pellets Only
CRP-SD106 (plus duplicate)	12/10/2013	0 - 12 in	Pellets and Wet vs Dry Qualitative Only
CRP-SD106	12/10/2013	12 - 24 in	Pellets Only
CRP-SD106	12/10/2013	24 - 36 in	Pellets Only
CRP-SD107	12/10/2013	0 - 12 in	Pellets Only
CRP-SD108	12/10/2013	0 - 12 in	Pellets Only
CRP-SD108	12/3/2013	12 - 24 in	Pellets Only
CRP-SD108	12/3/2013	24 - 36 in	Pellets Only
CRP-SD109	12/3/2013	0 - 12 in	Pellets and Wet vs Dry Qualitative Only
CRP-SD109	12/3/2013	12 - 24 in	Pellets Only
CRP-SD109	12/3/2013	24 - 36 in	Pellets Only
CRP-SD110	12/3/2013	0 - 12 in	Pellets and Wet vs Dry Qualitative Only
CRP-SD110	12/3/2013	12 - 24 in	Pellets Only
CRP-SD110	12/3/2013	24 - 36 in	Pellets Only
CRP-SD111	12/4/2013	0 - 12 in	Pellets and Wet vs Dry Qualitative Only
CRP-SD111	12/4/2013	12 - 24 in	Pellets Only
CRP-SD111	12/4/2013	24 - 36 in	Pellets Only
CRP-SD112	12/5/2013	0 - 12 in	Pellets and Wet vs Dry Qualitative Only
CRP-SD112	12/5/2013	12 - 24 in	Pellets Only
CRP-SD112	12/5/2013	24 - 36 in	Pellets Only
CRP-SD113	12/5/2013	0 - 12 in	Pellets and Wet vs Dry Qualitative Only
CRP-SD113	12/5/2013	12 - 24 in	Pellets Only
CRP-SD113	12/5/2013	24 - 36 in	Pellets Only

ATTACHMENT A TABLE 2
MRP SITE 1 SEDIMENT SAMPLES
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

Location	Sample Date	Depth Interval	Comments
CRP-SD114	12/17/2013	0 - 12 in	Pellets Only
CRP-SD114	12/17/2013	12 - 24 in	Pellets Only
CRP-SD114	12/17/2013	24 - 36 in	Pellets Only
CRP-SD115	12/17/2013	0 - 12 in	Pellets Only
CRP-SD115	12/17/2013	12 - 24 in	Pellets Only
CRP-SD115	12/17/2013	24 - 36 in	Pellets Only
CRP-SD117	12/10/2013	0 - 12 in	Pellets Only
CRP-SD117	12/3/2013	12 - 24 in	Pellets Only
CRP-SD118	12/10/2013	0 - 12 in	Pellets and Wet vs Dry Qualitative Only
CRP-SD118	12/10/2013	12 - 24 in	Pellets Only
CRP-SD118	12/10/2013	24 - 36 in	Pellets Only
CRP-SD119	12/6/2013	0 - 12 in	Pellets and Wet vs Dry Qualitative Only
CRP-SD119	12/6/2013	12 - 24 in	Pellets Only
CRP-SD120	12/5/2013	0 - 12 in	Pellets and Wet vs Dry Qualitative Only
CRP-SD120	12/5/2013	12 - 24 in	Pellets Only
CRP-SD120	12/5/2013	24 - 36 in	Pellets Only
CRP-SD121	12/4/2013	0 - 12 in	Pellets and Wet vs Dry Qualitative Only
CRP-SD121	12/4/2013	12 - 24 in	Pellets Only
CRP-SD121	12/4/2013	24 - 36 in	Pellets Only
CRP-SD122	12/12/2013	0 - 12 in	Pellets and Wet vs Dry Qualitative Only
CRP-SD123	12/12/2013	0 - 12 in	Pellets Only
CRP-SD124	12/12/2013	0 - 12 in	Pellets Only
CRP-SD125	12/11/2013	0 - 12 in	Pellets Only
CRP-SD125	12/11/2013	12 - 24 in	Pellets Only
CRP-SD125	12/11/2013	24 - 36 in	Pellets Only
CRP-SD126	12/12/2013	0 - 12 in	Pellets Only
CRP-SD126	12/12/2013	12 - 24 in	Pellets Only
CRP-SD126	12/12/2013	24 - 36 in	Pellets Only

ATTACHMENT A TABLE 3
MRP SITE 1 GROUNDWATER SAMPLES
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

Location	Sample Date	Comments
MW-01	6/1/2009	Results not used in HHRA based on more recent sampling
MW-01	12/18/2013	Shallow
MW-01D	12/18/2013	
MW-11	12/18/2013	Shallow
MW-12 (plus duplicate)	12/18/2013	Shallow
MW-12D	12/18/2013	
MW-13	12/18/2013	Shallow

ATTACHMENT A TABLE 4
MRP SITE 1 TISSUE SAMPLES
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

Location	Sample Date	Tissue type	Consideration in HHRA	Additional Information
CRP-SD101	11/19/2013	blue mussel composite	Initial screening uses all tissue together	Nearshore
CRP-SD102	11/19/2013	blue mussel composite	Initial screening uses all tissue together	Nearshore
CRP-SD104	11/6/2013	quahog composite	Initial screening uses all tissue together	
CRP-SD106	11/6/2013	quahog composite	Initial screening uses all tissue together	
CRP-SD109	11/5/2013	quahog composite	Initial screening uses all tissue together	
CRP-SD110	11/5/2013	quahog composite	Initial screening uses all tissue together	
CRP-SD112 (plus duplicate)	11/5/2013	quahog composite	Initial screening uses all tissue together	
CRP-SD115	11/6/2013	quahog composite	Initial screening uses all tissue together	
CRP-SD118	11/6/2013	quahog composite	Initial screening uses all tissue together	
CRP-SD121	11/6/2013	quahog composite	Initial screening uses all tissue together	
CRP-SD122	11/19/2013	blue mussel composite	Initial screening uses all tissue together	Nearshore
CRP-SD123	11/19/2013	blue mussel composite	Initial screening uses all tissue together	Nearshore
CRP-SD124	11/19/2013	blue mussel composite	Initial screening uses all tissue together	Nearshore
CRP-SD301	11/6/2013	Background_quahog composite	Reference	
CRP-SD302	11/6/2013	Background_blue mussel composite	Reference	
CRP-SD303	11/19/2013	Background_blue mussel composite	Reference	
CRP-SD304	11/19/2013	Background_blue mussel composite	Reference	

ATTACHMENT A TABLE 5
SUMMARY OF ANALYTICAL RESULTS - SURFACE
SOIL (0 - 1 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

	Location ID	CRP-SB201		CRP-SB202		CRP-SB203		CRP-SB204		CRP-SB205		CRP-SB206		CRP-SB208		CRP-SB209		CRP-SB210		CRP-SB211	
	Sample Date	12/9/2013		12/10/2013		12/10/2013		12/11/2013		12/11/2013		12/10/2013		12/9/2013		12/9/2013		12/6/2013		12/11/2013	
	Sample ID	OU09 SS201 0001		OU09 SS202 0001		OU09 SS203 0001		OU09 SB204 0001		OU09 SS205 0001		OU09 SS206 0001		OU09 SS208 0001		OU09 SS209 0001		OU09 SS210 0012		FDSS12111307	
	Sample Type	N		N		N		N		N		N		N		N		N		FD	
	Depth Interval	0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft	
Chemical	Unit	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
ENERGETICS																					
2,4-DINITROTOLUENE	mg/kg									< 0.049	U	< 0.047	U			< 0.043	U				
NITROGLYCERIN	mg/kg									< 0.39	U	< 0.38	U			< 0.34	U				
INORGANICS																					
ALUMINUM	mg/kg	11700		11900		7640		13800		9950		9800		12200		11900		6300			
ANTIMONY	mg/kg	0.18	J	0.99	J	0.05	J	0.22	J-	0.62	J-	0.54	J	0.79	J	10.8	J	0.70	J		
ARSENIC	mg/kg	7.5	J	8.5	J	7.2	J	22.5	J	13.3	J	8.9	J	13.1	J	10.8	J	10	J		
BARIUM	mg/kg	34.5		36.2		10.2		9.8		22.1		26.6		13.9		15.2		15.0	J-		
BERYLLIUM	mg/kg	0.45		0.39		0.24		0.22		0.56	J-	0.33		0.28		0.25		0.38	J-		
CADMIUM	mg/kg	0.07	J	0.35		0.03	J	0.11	J	0.20	J	0.16		0.12		0.14		0.11			
CALCIUM	mg/kg	344		1970	J+	851	J+	2540	J	1420	J	1420	J+	2120		2360		4500			
CHROMIUM VI	mg/kg									< 0.86	UJ									< 1.8	UJ
CHROMIUM, TOTAL	mg/kg	11.9	J	14.5	J	10.0	J	17.6	J-	13.2	J	11.2	J	18.3	J	18.1	J	12.8	J-		
COBALT	mg/kg	9.4	J	8.7	J	8.5	J	23.6		17.0	J-	9.1	J	19.4	J	13.3	J	15.0	J-		
COPPER	mg/kg	11.1		30.3		9.2		24.4	J+	256	J	22.0		18.6		32.8		25.3	J		
IRON	mg/kg	20800	J	23600	J	16700	J	44800		51200		25000	J	33500	J	31100	J	34400			
IRON, FERROUS	mg/kg									3.7											
LEAD	mg/kg	19.8	J	132	J	7.5	J	21.3	J+	39.3	J	170	J	259	J	153	J	99.2	J		
MAGNESIUM	mg/kg	1500	J	2720	J	2980	J	5160		2800		3100	J	4420	J	4430	J	1910			
MANGANESE	mg/kg	606	J	340	J	242	J	555		705		394	J	594	J	410	J	574			
MERCURY	mg/kg	0.06	J-	0.11		< 0.016	U	0.006	J	< 0.032	UJ	0.03	J	< 0.029	UJ	0.05	J-	0.08			
NICKEL	mg/kg	15.1	J	19.6	J	14.5	J	39.4	J-	30.3	J-	18.7	J	36.0	J	28.9	J	26.9	J-		
POTASSIUM	mg/kg	355	J	442	J	454	J	279	J+	311	J+	393	J	294	J	288	J	650	J-		
SELENIUM	mg/kg	0.66		0.46		0.18	J	< 0.39	U	0.62	J-	< 0.37	U	< 0.48	U	< 0.48	U	< 0.50	UJ		
SILVER	mg/kg	0.10	J	0.42	J	0.02	J	0.04	J	0.38		0.08	J	0.06	J	0.14	J	0.04	J		
SODIUM	mg/kg	< 92	U	< 80	U	< 54	U	< 78	U	< 48	U	< 74	U	< 96	U	< 95	U	< 143	UJ		
THALLIUM	mg/kg	0.11		0.08		0.03	J	0.02	J	0.07		0.06	J	0.03	J	0.05	J	0.06	J		
VANADIUM	mg/kg	22.5		26.6		12.6		16.4		21.8	J	18.3		18.1		20.5		17.3	J-		
ZINC	mg/kg	39.5		123	J+	33.6	J+	80.9	J-	75.2	J	64.8	J+	72.8		134		91.3			
POLYCHLORINATED BIPHENYLS (PCBs)																					
AROCLOR-1016	mg/kg																				
AROCLOR-1221	mg/kg																				
AROCLOR-1232	mg/kg																				
AROCLOR-1242	mg/kg																				
AROCLOR-1248	mg/kg																				
AROCLOR-1254	mg/kg																				
AROCLOR-1260	mg/kg																				
AROCLOR-1262	mg/kg																				
AROCLOR-1268	mg/kg																				
PCB, TOTAL	mg/kg																				
PESTICIDES																					
4,4-DDD	mg/kg																				
4,4-DDE	mg/kg																				
4,4-DDT	mg/kg																				
ALDRIN	mg/kg																				
ALPHA-BHC	mg/kg																				
ALPHA-CHLORDANE	mg/kg																				
BETA-BHC	mg/kg																				
DELTA-BHC	mg/kg																				
DIELDRIN	mg/kg																				
ENDOSULFAN I	mg/kg																				
ENDOSULFAN II	mg/kg																				
ENDOSULFAN SULFATE	mg/kg																				
ENDRIN	mg/kg																				
ENDRIN ALDEHYDE	mg/kg																				
ENDRIN KETONE	mg/kg																				
GAMMA-CHLORDANE	mg/kg																				
HEPTACHLOR	mg/kg																				
HEPTACHLOR EPOXIDE	mg/kg																				
LINDANE	mg/kg																				
METHOXYCHLOR	mg/kg																				
TOXAPHENE	mg/kg																				

ATTACHMENT A TABLE 5
SUMMARY OF ANALYTICAL RESULTS - SURFACE
SOIL (0 - 1 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

	Location ID	CRP-SB201		CRP-SB202		CRP-SB203		CRP-SB204		CRP-SB205		CRP-SB206		CRP-SB208		CRP-SB209		CRP-SB210		CRP-SB211	
	Sample Date	12/9/2013		12/10/2013		12/10/2013		12/11/2013		12/11/2013		12/10/2013		12/9/2013		12/9/2013		12/6/2013		12/11/2013	
	Sample ID	OU09 SS201 0001		OU09 SS202 0001		OU09 SS203 0001		OU09 SB204 0001		OU09 SS205 0001		OU09 SS206 0001		OU09 SS208 0001		OU09 SS209 0001		OU09 SS210 0012		FDSS12111307	
	Sample Type	N		N		N		N		N		N		N		N		N		FD	
	Depth Interval	0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft	
Chemical	Unit	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs)																					
1,1-BIPHENYL	mg/kg																				
1,2,4-TRICHLOROBENZENE	mg/kg																				
1,2-DICHLOROBENZENE	mg/kg																				
1,2-DIPHENYLHYDRAZINE	mg/kg																				
1,3-DICHLOROBENZENE	mg/kg																				
1,4-DICHLOROBENZENE	mg/kg																				
2,2'-OXYBIS(1-CHLOROPROPANE)	mg/kg																				
2,4,5-TRICHLOROPHENOL	mg/kg																				
2,4,6-TRICHLOROPHENOL	mg/kg																				
2,4-DICHLOROPHENOL	mg/kg																				
2,4-DIMETHYLPHENOL	mg/kg																				
2,4-DINITROPHENOL	mg/kg																				
2,4-DINITROTOLUENE	mg/kg																				
2,6-DICHLOROPHENOL	mg/kg																				
2,6-DINITROTOLUENE	mg/kg																				
2-CHLORONAPHTHALENE	mg/kg																				
2-CHLOROPHENOL	mg/kg																				
2-METHYLNAPHTHALENE	mg/kg																				
2-METHYLPHENOL	mg/kg																				
2-NITROANILINE	mg/kg																				
2-NITROPHENOL	mg/kg																				
3- AND 4-METHYLPHENOL	mg/kg																				
3,3-DICHLOROBENZIDINE	mg/kg																				
3-NITROANILINE	mg/kg																				
4,6-DINITRO-2-METHYLPHENOL	mg/kg																				
4-BROMOPHENYL-PHENYLETHER	mg/kg																				
4-CHLORO-3-METHYLPHENOL	mg/kg																				
4-CHLOROANILINE	mg/kg																				
4-CHLOROPHENYL-PHENYLETHER	mg/kg																				
4-NITROANILINE	mg/kg																				
4-NITROPHENOL	mg/kg																				
ACENAPHTHENE	mg/kg	0.0022	J	0.036		0.0087	J	0.0042	J	0.0049	J	0.021	J	0.015	J	3.9		0.059			
ACENAPHTHYLENE	mg/kg	< 0.012	U	0.01	J	0.0012	J	< 0.011	U	0.015	J	0.18		0.0035	J	< 0.011	U	< 0.012	U		
ANTHRACENE	mg/kg	0.0041	J	0.073		0.0091	J	0.0056	J	0.014	J	0.083		0.022	J	4.7		0.063			
BENZIDINE	mg/kg																				
BENZO[A]ANTHRACENE	mg/kg	< 0.025	U	0.58		0.055	J	0.042	J	0.18		0.77		0.21	J	20		0.53			
BENZO[A]PYRENE	mg/kg	0.025	J	0.71	J	0.04		0.05	J	0.18	J	0.94	J	0.21	J	22	J	0.67			
BENZO[B]FLUORANTHENE	mg/kg	0.031		0.75	J	0.036		0.072	J	0.29	J	0.96	J	0.27	J	17	J	0.6			
BENZO[G,H,I]PERYLENE	mg/kg	< 0.025	UJ	0.24	J	0.025	J	0.025	J	0.063	J	0.35	J	0.07	J	11	J	0.21	J		
BENZO[K]FLUORANTHENE	mg/kg	0.024	J	0.29	J	0.014	J	0.025	J	0.11		1.1	J	0.091		18	J	0.57			
BENZOIC ACID	mg/kg																				
BENZYL ALCOHOL	mg/kg																				
BIS(2-CHLOROETHOXY)METHANE	mg/kg																				
BIS(2-CHLOROETHYL)ETHER	mg/kg																				
BIS(2-ETHYLHEXYL)PHTHALATE	mg/kg																				
BUTYLBENZYLPHTHALATE	mg/kg																				
CAPROLACTAM	mg/kg																				
CARBAZOLE	mg/kg																				
CHRYSENE	mg/kg	0.024	J	0.75		0.14		0.059	J	0.26	J	1.4		0.3		27		0.8			
DIBENZ[A,H]ANTHRACENE	mg/kg	< 0.025	U	0.084	J	0.028		0.012	J	0.042		0.23	J	0.043		2.8	J	0.12			
DIBENZOFURAN	mg/kg																				
DIETHYLPHTHALATE	mg/kg																				
DIMETHYL PHTHALATE	mg/kg																				
DI-N-BUTYLPHTHALATE	mg/kg																				
DI-N-OCTYLPHTHALATE	mg/kg																				
FLUORANTHENE	mg/kg	0.029		0.82		0.027	J	0.068	J	0.34		1.4		0.27		20		0.52			
FLUORENE	mg/kg	< 0.012	U	0.025	J	0.0059	J	< 0.011	U	0.0080	J	0.05		0.011	J	2.2	J	0.029			
HEXACHLOROBENZENE	mg/kg																				
HEXACHLOROBUTADIENE	mg/kg																				
HEXACHLOROETHANE	mg/kg																				
HPAH, TOTAL	mg/kg	0.17		6.1		0.52		0.45		2.1		11		1.9		190		5			
INDENO[1,2,3-CD]PYRENE	mg/kg	< 0.025	U	0.36	J	0.02	J	0.032	J	0.12		0.61	J	0.12		12	J	0.22			
ISOPHORONE	mg/kg																				

ATTACHMENT A TABLE 5
SUMMARY OF ANALYTICAL RESULTS - SURFACE
SOIL (0 - 1 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

	Location ID	CRP-SB201		CRP-SB202		CRP-SB203		CRP-SB204		CRP-SB205		CRP-SB206		CRP-SB208		CRP-SB209		CRP-SB210		CRP-SB211	
	Sample Date	12/9/2013		12/10/2013		12/10/2013		12/11/2013		12/11/2013		12/10/2013		12/9/2013		12/9/2013		12/6/2013		12/11/2013	
	Sample ID	OU09 SS201 0001		OU09 SS202 0001		OU09 SS203 0001		OU09 SB204 0001		OU09 SS205 0001		OU09 SS206 0001		OU09 SS208 0001		OU09 SS209 0001		OU09 SS210 0012		FDSS12111307	
	Sample Type	N		N		N		N		N		N		N		N		N		FD	
	Depth Interval	0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft	
Chemical	Unit	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
LPAH, TOTAL	mg/kg	0.025		0.48		0.2		0.048		0.22		1.3		0.28		29		0.45			
NAPHTHALENE	mg/kg	< 0.012	U	0.0088	J	< 0.0096	U	< 0.011	U	0.0026	J	0.0086	J	0.0042	J	< 2.7	U	0.021	J		
NITROBENZENE	mg/kg																				
N-NITROSODIMETHYLAMINE	mg/kg																				
N-NITROSODINPROPYLAMINE	mg/kg																				
N-NITROSODIPHENYLAMINE	mg/kg																				
N-NITROSOPYRROLIDINE	mg/kg																				
PAH, TOTAL	mg/kg	0.19		6.6		0.72		0.5		2.3		12		2.2		210		5.5			
PENTACHLOROPHENOL	mg/kg																				
PHENANTHRENE	mg/kg	0.019	J	0.33		0.18		0.038	J	0.18		1		0.22		18		0.28			
PHENOL	mg/kg																				
PYRENE	mg/kg	0.035		1.5		0.13		0.067	J	0.53		2.8		0.32		36		0.77			
VOLATILE ORGANIC COMPOUNDS (VOCs)																					
1,1,1,2-TETRACHLOROETHANE	mg/kg																				
1,1,1-TRICHLOROETHANE	mg/kg																				
1,1,2,2-TETRACHLOROETHANE	mg/kg																				
1,1,2-TRICHLOROETHANE	mg/kg																				
1,1-DICHLOROETHANE	mg/kg																				
1,1-DICHLOROETHENE	mg/kg																				
1,1-DICHLOROPROPENE	mg/kg																				
1,2,3-TRICHLOROBENZENE	mg/kg																				
1,2,3-TRICHLOROPROPANE	mg/kg																				
1,2,4-TRICHLOROBENZENE	mg/kg																				
1,2,4-TRIMETHYLBENZENE	mg/kg																				
1,2-DIBROMO-3-CHLOROPROPANE	mg/kg																				
1,2-DIBROMOETHANE	mg/kg																				
1,2-DICHLOROBENZENE	mg/kg																				
1,2-DICHLOROETHANE	mg/kg																				
1,2-DICHLOROETHENE, TOTAL	mg/kg																				
1,2-DICHLOROPROPANE	mg/kg																				
1,3,5-TRIMETHYLBENZENE	mg/kg																				
1,3-DICHLOROBENZENE	mg/kg																				
1,3-DICHLOROPROPANE	mg/kg																				
1,4-DICHLOROBENZENE	mg/kg																				
2,2-DICHLOROPROPANE	mg/kg																				
2-BUTANONE	mg/kg																				
2-CHLOROTOLUENE	mg/kg																				
2-HEXANONE	mg/kg																				
4-CHLOROTOLUENE	mg/kg																				
4-ISOPROPYLTOLUENE	mg/kg																				
4-METHYL-2-PENTANONE	mg/kg																				
ACETONE	mg/kg																				
BENZENE	mg/kg																				
BROMOBENZENE	mg/kg																				
BROMOCHLOROMETHANE	mg/kg																				
BROMODICHLOROMETHANE	mg/kg																				
BROMOFORM	mg/kg																				
BROMOMETHANE	mg/kg																				
CARBON DISULFIDE	mg/kg																				
CARBON TETRACHLORIDE	mg/kg																				
CHLOROBENZENE	mg/kg																				
CHLOROETHANE	mg/kg																				
CHLOROFORM	mg/kg																				
CHLOROMETHANE	mg/kg																				
CIS-1,2-DICHLOROETHENE	mg/kg																				
CIS-1,3-DICHLOROPROPENE	mg/kg																				
DIBROMOCHLOROMETHANE	mg/kg																				
DIBROMOMETHANE	mg/kg																				
DICHLORODIFLUOROMETHANE	mg/kg																				
ETHYLBENZENE	mg/kg																				
HEXACHLOROBUTADIENE	mg/kg																				
ISOPROPYLBENZENE	mg/kg																				
M- AND P-XYLENE	mg/kg																				
METHYL CYCLOHEXANE	mg/kg																				

ATTACHMENT A TABLE 5
SUMMARY OF ANALYTICAL RESULTS - SURFACE
SOIL (0 - 1 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

	Location ID	CRP-SB201		CRP-SB202		CRP-SB203		CRP-SB204		CRP-SB205		CRP-SB206		CRP-SB208		CRP-SB209		CRP-SB210		CRP-SB211	
	Sample Date	12/9/2013		12/10/2013		12/10/2013		12/11/2013		12/11/2013		12/10/2013		12/9/2013		12/9/2013		12/6/2013		12/11/2013	
	Sample ID	OU09 SS201 0001		OU09 SS202 0001		OU09 SS203 0001		OU09 SB204 0001		OU09 SS205 0001		OU09 SS206 0001		OU09 SS208 0001		OU09 SS209 0001		OU09 SS210 0012		FDSS12111307	
	Sample Type	N		N		N		N		N		N		N		N		N		FD	
	Depth Interval	0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft	
Chemical	Unit	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
METHYL TERT-BUTYL ETHER	mg/kg																				
METHYLENE CHLORIDE	mg/kg																				
N-BUTYLBENZENE	mg/kg																				
O-XYLENE	mg/kg																				
PROPYLBENZENE	mg/kg																				
SEC-BUTYLBENZENE	mg/kg																				
STYRENE	mg/kg																				
TERT-BUTANOL	mg/kg																				
TERT-BUTYLBENZENE	mg/kg																				
TETRACHLOROETHENE	mg/kg																				
TOLUENE	mg/kg																				
TRANS-1,2-DICHLOROETHENE	mg/kg																				
TRANS-1,3-DICHLOROPROPENE	mg/kg																				
TRICHLOROETHENE	mg/kg																				
TRICHLOROFLUOROMETHANE	mg/kg																				
VINYL CHLORIDE	mg/kg																				
XYLENES, TOTAL	mg/kg																				
OTHER																					
PH	pH																				
TOTAL ORGANIC CARBON	mg/kg									28000											
GRAIN SIZE																					
PERCENT FINES	%									28.2											
PERCENT GRAVEL	%									17.4											
PERCENT SAND	%									54.4											
PERCENT SAND, COARSE	%									12.3											
PERCENT SAND, FINE	%									22.5											
PERCENT SAND, MEDIUM	%									19.6											
SIEVE 1 INCH (25.4-MM)	%									0											
SIEVE 1-1/2 INCH (37.5-MM)	%									0											
SIEVE 2 INCH (50-MM)	%									0											
SIEVE 3 INCH (75-MM)	%									0											
SIEVE 3/4 INCH (19-MM)	%									0											
SIEVE 3/8 INCH (9.5-MM)	%									9.1											
SIEVE NO. 004 (4.75-MM)	%									8.3											
SIEVE NO. 010 (2-MM)	%									12.3											
SIEVE NO. 020 (850-UM)	%									10.3											
SIEVE NO. 040 (425-UM)	%									9.3											
SIEVE NO. 060 (250-UM)	%									8.9											
SIEVE NO. 080 (180-UM)	%									4.6											
SIEVE NO. 100 (150-UM)	%									2.4											
SIEVE NO. 200 (75-UM)	%									6.6											

Notes:
U or < - Non-detect at laboratory detection limit.
J - The compound was positively identified; however, the associated numerical value is an estimated concentration only (+ and - indicate bias).
Sample Type - N = normal sample, FD = duplicate sample.
mg/kg - milligram per kilogram

ATTACHMENT A TABLE 5
SUMMARY OF ANALYTICAL RESULTS - SURFACE
SOIL (0 - 1 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

	Location ID	CRP-SB211		CRP-SB211		CRP-SB211		CRP-SB211		CRP-SB212		CRP-SB213		CRP-SB217		CRP-SB218		CRP-SB218		CRP-SB219	
	Sample Date	12/11/2013		12/11/2013		12/11/2013		12/11/2013		12/9/2013		12/9/2013		12/10/2013		12/11/2013		12/11/2013		12/11/2013	
	Sample ID	OU09 SS211 0001		FDSS12111311		FDSS12111310		FDSS12111308		OU09 SS212 0001		OU09 SS213 0001		OU09 SS217 0001		FDSB12111305		OU09 SS218 0001		OU09 SS219 0001	
	Sample Type	N		FD		FD		FD		N		N		N		FD		N		N	
	Depth Interval	0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft	
Chemical	Unit	Result	Qualifier			Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
ENERGETICS																					
2,4-DINITROTOLUENE	mg/kg	< 0.05	U							< 0.05	U	< 0.049	U	< 0.05	U	< 0.049	U	< 0.048	U	< 0.049	U
NITROGLYCERIN	mg/kg	0.44	J							0.27	J	0.15	J	4		< 0.39	U	< 0.38	U	< 0.39	U
INORGANICS																					
ALUMINUM	mg/kg	11800								10600		9450		10400				9610		11900	
ANTIMONY	mg/kg	0.62	J							1.5	J	0.81	J	0.36	J			0.34	J-	0.43	J-
ARSENIC	mg/kg	12.7	J							13.5	J	8.5	J	9.2	J			9.7	J	13.3	J
BARIUM	mg/kg	23.6								21.4		46.9		28.0				19.7		18.9	
BERYLLIUM	mg/kg	0.35								0.26		0.40		0.35				0.27	J-	0.27	J-
CADMIUM	mg/kg	0.22								0.32		0.21		0.16				0.16	J	0.18	J
CALCIUM	mg/kg	3320								29600		1790		1370	J+			2910	J	4520	J
CHROMIUM VI	mg/kg	< 1.5	UJ																		
CHROMIUM, TOTAL	mg/kg	17.1	J							15.6	J	12.8	J	13.0	J			12.8	J	15.6	J
COBALT	mg/kg	13.7	J							9.7	J	10.1	J	10.4	J			10.7	J-	13.9	J-
COPPER	mg/kg	31.0								26.4		21.4		18.1				16.9	J	42.6	J
IRON	mg/kg	31400	J							30400	J	50000	J	26500	J			24200		88500	
IRON, FERROUS	mg/kg	0.88																			
LEAD	mg/kg	88.6	J							99.5	J	114	J	133	J			114	J	63.3	J
MAGNESIUM	mg/kg	4350	J							5810	J	2040	J	2870	J			3340		10100	
MANGANESE	mg/kg	438	J							305	J	627	J	473	J			378		462	
MERCURY	mg/kg	0.04	J-							0.21	J-	0.07	J-	0.05				< 0.032	UJ	0.02	J
NICKEL	mg/kg	28.3	J							21.5	J	17.3	J	20.2	J			20.0	J-	27.5	J-
POTASSIUM	mg/kg	406	J							390	J	502	J	484	J			379	J+	296	J+
SELENIUM	mg/kg	< 0.54	U							0.43		< 0.56	U	0.41				< 0.42	UJ	< 0.40	UJ
SILVER	mg/kg	0.23	J							0.90	J	0.23	J	0.06	J			0.06	J	0.09	
SODIUM	mg/kg	< 110	U							< 84	U	< 110	U	< 76	U			< 84	U	< 81	U
THALLIUM	mg/kg	0.05	J							0.15		0.08	J	0.08				0.04	J	0.04	J
VANADIUM	mg/kg	21.2								19.4		23.6		19.7				19.4	J	21.2	J
ZINC	mg/kg	159								186		84.7		72.4	J+			67.2	J	82.6	J
POLYCHLORINATED BIPHENYLS (PCBs)																					
AROCLOR-1016	mg/kg																				
AROCLOR-1221	mg/kg																				
AROCLOR-1232	mg/kg																				
AROCLOR-1242	mg/kg																				
AROCLOR-1248	mg/kg																				
AROCLOR-1254	mg/kg																				
AROCLOR-1260	mg/kg																				
AROCLOR-1262	mg/kg																				
AROCLOR-1268	mg/kg																				
PCB, TOTAL	mg/kg																				
PESTICIDES																					
4,4-DDD	mg/kg																				
4,4-DDE	mg/kg																				
4,4-DDT	mg/kg																				
ALDRIN	mg/kg																				
ALPHA-BHC	mg/kg																				
ALPHA-CHLORDANE	mg/kg																				
BETA-BHC	mg/kg																				
DELTA-BHC	mg/kg																				
DIELDRIN	mg/kg																				
ENDOSULFAN I	mg/kg																				
ENDOSULFAN II	mg/kg																				
ENDOSULFAN SULFATE	mg/kg																				
ENDRIN	mg/kg																				
ENDRIN ALDEHYDE	mg/kg																				
ENDRIN KETONE	mg/kg																				
GAMMA-CHLORDANE	mg/kg																				
HEPTACHLOR	mg/kg																				
HEPTACHLOR EPOXIDE	mg/kg																				
LINDANE	mg/kg																				
METHOXYCHLOR	mg/kg																				
TOXAPHENE	mg/kg																				

ATTACHMENT A TABLE 5
SUMMARY OF ANALYTICAL RESULTS - SURFACE
SOIL (0 - 1 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

	Location ID	CRP-SB211		CRP-SB211		CRP-SB211		CRP-SB211		CRP-SB212		CRP-SB213		CRP-SB217		CRP-SB218		CRP-SB218		CRP-SB219	
	Sample Date	12/11/2013		12/11/2013		12/11/2013		12/11/2013		12/9/2013		12/9/2013		12/10/2013		12/11/2013		12/11/2013		12/11/2013	
	Sample ID	OU09 SS211 0001		FDSS12111311		FDSS12111310		FDSS12111308		OU09 SS212 0001		OU09 SS213 0001		OU09 SS217 0001		FDSB12111305		OU09 SS218 0001		OU09 SS219 0001	
	Sample Type	N		FD		FD		FD		N		N		N		FD		N		N	
	Depth Interval	0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft	
Chemical	Unit	Result	Qualifier			Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs)																					
1,1-BIPHENYL	mg/kg																				
1,2,4-TRICHLOROBENZENE	mg/kg																				
1,2-DICHLOROBENZENE	mg/kg																				
1,2-DIPHENYLHYDRAZINE	mg/kg																				
1,3-DICHLOROBENZENE	mg/kg																				
1,4-DICHLOROBENZENE	mg/kg																				
2,2'-OXYBIS(1-CHLOROPROPANE)	mg/kg																				
2,4,5-TRICHLOROPHENOL	mg/kg																				
2,4,6-TRICHLOROPHENOL	mg/kg																				
2,4-DICHLOROPHENOL	mg/kg																				
2,4-DIMETHYLPHENOL	mg/kg																				
2,4-DINITROPHENOL	mg/kg																				
2,4-DINITROTOLUENE	mg/kg																				
2,6-DICHLOROPHENOL	mg/kg																				
2,6-DINITROTOLUENE	mg/kg																				
2-CHLORONAPHTHALENE	mg/kg																				
2-CHLOROPHENOL	mg/kg																				
2-METHYLNAPHTHALENE	mg/kg																				
2-METHYLPHENOL	mg/kg																				
2-NITROANILINE	mg/kg																				
2-NITROPHENOL	mg/kg																				
3- AND 4-METHYLPHENOL	mg/kg																				
3,3-DICHLOROBENZIDINE	mg/kg																				
3-NITROANILINE	mg/kg																				
4,6-DINITRO-2-METHYLPHENOL	mg/kg																				
4-BROMOPHENYL-PHENYLETHER	mg/kg																				
4-CHLORO-3-METHYLPHENOL	mg/kg																				
4-CHLOROANILINE	mg/kg																				
4-CHLOROPHENYL-PHENYLETHER	mg/kg																				
4-NITROANILINE	mg/kg																				
4-NITROPHENOL	mg/kg																				
ACENAPHTHENE	mg/kg	2.8								2.6		0.067		0.024				0.011	J	0.0096	J
ACENAPHTHYLENE	mg/kg	< 0.011	U							< 0.056	U	< 0.014	U	0.086				0.03		0.0018	J
ANTHRACENE	mg/kg	3.8								3.4		0.09		0.092				0.026		0.017	J
BENZIDINE	mg/kg																				
BENZO[A]ANTHRACENE	mg/kg	16								14		0.62	J	1.2				0.29		0.12	
BENZO[A]PYRENE	mg/kg	19	J							17		0.8	J	1.1	J			0.26	J	0.14	
BENZO[B]FLUORANTHENE	mg/kg	18	J							15		0.86	J	1	J			0.47	J	0.2	
BENZO[G,H,I]PERYLENE	mg/kg	7.9	J							12		0.29	J	0.25	J			0.12	J	0.067	J
BENZO[K]FLUORANTHENE	mg/kg	16	J							11		0.83	J	0.31	J			0.14		0.08	J
BENZOIC ACID	mg/kg																				
BENZYL ALCOHOL	mg/kg																				
BIS(2-CHLOROETHOXY)METHANE	mg/kg																				
BIS(2-CHLOROETHYL)ETHER	mg/kg																				
BIS(2-ETHYLHEXYL)PHTHALATE	mg/kg																				
BUTYLBENZYLPHTHALATE	mg/kg																				
CAPROLACTAM	mg/kg																				
CARBAZOLE	mg/kg																				
CHRYSENE	mg/kg	22								19		1	J	1.6				0.57		0.17	
DIBENZ[A,H]ANTHRACENE	mg/kg	0.35								5.5		0.13	J	0.21	J			0.08		0.034	
DIBENZOFURAN	mg/kg																				
DIETHYLPHTHALATE	mg/kg																				
DIMETHYL PHTHALATE	mg/kg																				
DI-N-BUTYLPHTHALATE	mg/kg																				
DI-N-OCTYLPHTHALATE	mg/kg																				
FLUORANTHENE	mg/kg	18								17		0.62	J	1.4				0.58		0.19	
FLUORENE	mg/kg	1.7								1		0.039		0.035				0.017	J	0.0059	J
HEXACHLOROBENZENE	mg/kg																				
HEXACHLOROBUTADIENE	mg/kg																				
HEXACHLOROETHANE	mg/kg																				
HPAH, TOTAL	mg/kg	150								150		7		11				3.7		1.3	
INDENO[1,2,3-CD]PYRENE	mg/kg	10	J							13		0.27	J	0.34	J			0.19		0.09	J
ISOPHORONE	mg/kg																				

ATTACHMENT A TABLE 5
SUMMARY OF ANALYTICAL RESULTS - SURFACE
SOIL (0 - 1 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

	Location ID	CRP-SB211		CRP-SB211		CRP-SB211		CRP-SB211		CRP-SB212		CRP-SB213		CRP-SB217		CRP-SB218		CRP-SB218		CRP-SB219	
	Sample Date	12/11/2013		12/11/2013		12/11/2013		12/11/2013		12/9/2013		12/9/2013		12/10/2013		12/11/2013		12/11/2013		12/11/2013	
	Sample ID	OU09 SS211 0001		FDSS12111311		FDSS12111310		FDSS12111308		OU09 SS212 0001		OU09 SS213 0001		OU09 SS217 0001		FDSB12111305		OU09 SS218 0001		OU09 SS219 0001	
	Sample Type	N		FD		FD		FD		N		N		N		FD		N		N	
	Depth Interval	0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft	
Chemical	Unit	Result	Qualifier			Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
LPAH, TOTAL	mg/kg	24								22		0.75		1.2				0.44		0.13	
NAPHTHALENE	mg/kg	< 2.8	U							0.53		0.019		0.0097	J			0.0049	J	< 0.01	U
NITROBENZENE	mg/kg																				
N-NITROSODIMETHYLAMINE	mg/kg																				
N-NITROSODINPROPYLAMINE	mg/kg																				
N-NITROSODIPHENYLAMINE	mg/kg																				
N-NITROSOPYRROLIDINE	mg/kg																				
PAH, TOTAL	mg/kg	180								170		7.8		12				4.1		1.4	
PENTACHLOROPHENOL	mg/kg																				
PHENANTHRENE	mg/kg	16								14		0.53	J	0.99				0.35		0.093	
PHENOL	mg/kg																				
PYRENE	mg/kg	26								26		1.6	J	3.3				0.96		0.16	
VOLATILE ORGANIC COMPOUNDS (VOCs)																					
1,1,1,2-TETRACHLOROETHANE	mg/kg																				
1,1,1-TRICHLOROETHANE	mg/kg																				
1,1,2,2-TETRACHLOROETHANE	mg/kg																				
1,1,2-TRICHLOROETHANE	mg/kg																				
1,1-DICHLOROETHANE	mg/kg																				
1,1-DICHLOROETHENE	mg/kg																				
1,1-DICHLOROPROPENE	mg/kg																				
1,2,3-TRICHLOROBENZENE	mg/kg																				
1,2,3-TRICHLOROPROPANE	mg/kg																				
1,2,4-TRICHLOROBENZENE	mg/kg																				
1,2,4-TRIMETHYLBENZENE	mg/kg																				
1,2-DIBROMO-3-CHLOROPROPANE	mg/kg																				
1,2-DIBROMOETHANE	mg/kg																				
1,2-DICHLOROBENZENE	mg/kg																				
1,2-DICHLOROETHANE	mg/kg																				
1,2-DICHLOROETHENE, TOTAL	mg/kg																				
1,2-DICHLOROPROPANE	mg/kg																				
1,3,5-TRIMETHYLBENZENE	mg/kg																				
1,3-DICHLOROBENZENE	mg/kg																				
1,3-DICHLOROPROPANE	mg/kg																				
1,4-DICHLOROBENZENE	mg/kg																				
2,2-DICHLOROPROPANE	mg/kg																				
2-BUTANONE	mg/kg																				
2-CHLOROTOLUENE	mg/kg																				
2-HEXANONE	mg/kg																				
4-CHLOROTOLUENE	mg/kg																				
4-ISOPROPYLTOLUENE	mg/kg																				
4-METHYL-2-PENTANONE	mg/kg																				
ACETONE	mg/kg																				
BENZENE	mg/kg																				
BROMOBENZENE	mg/kg																				
BROMOCHLOROMETHANE	mg/kg																				
BROMODICHLOROMETHANE	mg/kg																				
BROMOFORM	mg/kg																				
BROMOMETHANE	mg/kg																				
CARBON DISULFIDE	mg/kg																				
CARBON TETRACHLORIDE	mg/kg																				
CHLOROBENZENE	mg/kg																				
CHLOROETHANE	mg/kg																				
CHLOROFORM	mg/kg																				
CHLOROMETHANE	mg/kg																				
CIS-1,2-DICHLOROETHENE	mg/kg																				
CIS-1,3-DICHLOROPROPENE	mg/kg																				
DIBROMOCHLOROMETHANE	mg/kg																				
DIBROMOMETHANE	mg/kg																				
DICHLORODIFLUOROMETHANE	mg/kg																				
ETHYLBENZENE	mg/kg																				
HEXACHLOROBUTADIENE	mg/kg																				
ISOPROPYLBENZENE	mg/kg																				
M- AND P-XYLENE	mg/kg																				
METHYL CYCLOHEXANE	mg/kg																				

ATTACHMENT A TABLE 5
SUMMARY OF ANALYTICAL RESULTS - SURFACE
SOIL (0 - 1 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

	Location ID	CRP-SB211		CRP-SB211		CRP-SB211		CRP-SB211		CRP-SB212		CRP-SB213		CRP-SB217		CRP-SB218		CRP-SB218		CRP-SB219	
	Sample Date	12/11/2013		12/11/2013		12/11/2013		12/11/2013		12/9/2013		12/9/2013		12/10/2013		12/11/2013		12/11/2013		12/11/2013	
	Sample ID	OU09 SS211 0001		FDSS12111311		FDSS12111310		FDSS12111308		OU09 SS212 0001		OU09 SS213 0001		OU09 SS217 0001		FDSB12111305		OU09 SS218 0001		OU09 SS219 0001	
	Sample Type	N		FD		FD		FD		N		N		N		FD		N		N	
	Depth Interval	0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft	
Chemical	Unit	Result	Qualifier			Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
METHYL TERT-BUTYL ETHER	mg/kg																				
METHYLENE CHLORIDE	mg/kg																				
N-BUTYLBENZENE	mg/kg																				
O-XYLENE	mg/kg																				
PROPYLBENZENE	mg/kg																				
SEC-BUTYLBENZENE	mg/kg																				
STYRENE	mg/kg																				
TERT-BUTANOL	mg/kg																				
TERT-BUTYLBENZENE	mg/kg																				
TETRACHLOROETHENE	mg/kg																				
TOLUENE	mg/kg																				
TRANS-1,2-DICHLOROETHENE	mg/kg																				
TRANS-1,3-DICHLOROPROPENE	mg/kg																				
TRICHLOROETHENE	mg/kg																				
TRICHLOROFLUOROMETHANE	mg/kg																				
VINYL CHLORIDE	mg/kg																				
XYLENES, TOTAL	mg/kg																				
OTHER																					
PH	pH																				
TOTAL ORGANIC CARBON	mg/kg	21000 26000		33000																	
GRAIN SIZE																					
PERCENT FINES	%	30.1				29.4															
PERCENT GRAVEL	%	19.5				29.7															
PERCENT SAND	%	50.4				40.9															
PERCENT SAND, COARSE	%	15.2				11.2															
PERCENT SAND, FINE	%	17.0				15.4															
PERCENT SAND, MEDIUM	%	18.2				14.3															
SIEVE 1 INCH (25.4-MM)	%	0				0															
SIEVE 1-1/2 INCH (37.5-MM)	%	0				0															
SIEVE 2 INCH (50-MM)	%	0				0															
SIEVE 3 INCH (75-MM)	%	0				0															
SIEVE 3/4 INCH (19-MM)	%	0				0															
SIEVE 3/8 INCH (9.5-MM)	%	7.0				17.5															
SIEVE NO. 004 (4.75-MM)	%	12.5				12.2															
SIEVE NO. 010 (2-MM)	%	15.2				11.2															
SIEVE NO. 020 (850-UM)	%	11.1				7.7															
SIEVE NO. 040 (425-UM)	%	7.1				6.6															
SIEVE NO. 060 (250-UM)	%	6.0				5.7															
SIEVE NO. 080 (180-UM)	%	3.1				3.0															
SIEVE NO. 100 (150-UM)	%	2.1				1.7															
SIEVE NO. 200 (75-UM)	%	5.8				5.0															

Notes:
U or < - Non-detect at laboratory detection limit.
J - The compound was positively identified; however, the associated numerical value is an estimated concentration only (+ and - indicate bias).
Sample Type - N = normal sample, FD = duplicate sample.
mg/kg - milligram per kilogram

ATTACHMENT A TABLE 5
SUMMARY OF ANALYTICAL RESULTS - SURFACE
SOIL (0 - 1 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

	Location ID	CRP-SB220		CRP-SB220		CRP-SB222		CRP-SB223		CRP-SB224		CRP-SB224		CRP-SB225		CRP-SB226		CRP-SB227		CRP-SB228	
	Sample Date	12/11/2013		12/11/2013		12/12/2013		12/12/2013		12/6/2013		12/6/2013		12/6/2013		12/5/2013		12/5/2013		12/9/2013	
	Sample ID	OU09 SB220 0001		FDSS12111312		OU09 SB222 0001		OU09 SB223 0001		FDSS12061301		OU09 SS224 0001		OU09 SS225 0001		OU09 SS226 0001		OU09 SS227 0001		OU09 SS228 0001	
	Sample Type	N		FD		N		N		FD		N		N		N		N		N	
	Depth Interval	0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft	
Chemical	Unit	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
ENERGETICS																					
2,4-DINITROTOLUENE	mg/kg	< 0.049	U																	< 0.05	U
NITROGLYCERIN	mg/kg	0.55	J																	0.31	J
INORGANICS																					
ALUMINUM	mg/kg	8700		9780		8640		7450		5230		6080		5010		3380		4190			
ANTIMONY	mg/kg	0.32	J-	0.33	J-	4.1	J-	6.5	J-	189	J	2.4	J	0.63	J	0.33	J	0.26	J		
ARSENIC	mg/kg	19.3	J	23.6	J	15.9	J	5.9	J	48.9	J	8.3	J	7.6	J	3.9	J	5.2	J		
BARIUM	mg/kg	22.8		23.5		12.5		49.6		9.5	J-	13.6	J-	8.5	J-	6.7	J-	7.4	J-		
BERYLLIUM	mg/kg	0.39	J-	0.40	J-	0.32	J-	0.35	J-	0.24	J-	0.27	J-	0.24	J-	0.23	J-	0.36	J-		
CADMIUM	mg/kg	0.15	J	0.17	J	0.19	J	0.84	JJ	< 0.14	U	< 0.12	U	< 0.13	U	< 0.084	U	< 0.076	U		
CALCIUM	mg/kg	2330	J	1980	J	1350	J	2280	J	7700		4880		10000		342		8130			
CHROMIUM VI	mg/kg																				
CHROMIUM, TOTAL	mg/kg	11.6	J	12.0	J	12.4	J	30.1	J	18.0	J-	12.4	J-	12.7	J-	9.0	J-	8.7	J-		
COBALT	mg/kg	10.3	J-	11.5	J-	21.2	J-	10.8	J-	12.3	J-	11.2	J-	9.3	J-	6.6	J-	7.5	J-		
COPPER	mg/kg	17.4	J	20.4	J	30.8	J	22.8	J	159	J	58.5	J	51.1	J	9.9	J	21.6	J		
IRON	mg/kg	22200		25700		35500		23500		39600		34200		31700		21500		28800			
IRON, FERROUS	mg/kg																				
LEAD	mg/kg	43.4	J	51.0	J	496	J	1830	J	10900	J	417	J	177	J	8.2	J	32.3	J		
MAGNESIUM	mg/kg	2230	J	2540	J	3660	J	7180	J	2960		2840		2610		1250		1790			
MANGANESE	mg/kg	387		448		929		518		570		592		373		249		273			
MERCURY	mg/kg	0.03	J	0.04	J	< 0.012	UJ	0.19	J	0.07		0.07		0.04		0.05		0.03		0.04	J-
NICKEL	mg/kg	20.5	J-	21.4	J-	33.7	J-	56.6	J-	27.2	J-	26.1	J-	24.9	J-	14.0	J-	16.9	J-		
POTASSIUM	mg/kg	343	J+	372	J+	494	J+	459	J+	340	J-	376	J-	379	J-	258	J-	302	J-		
SELENIUM	mg/kg	0.37	J-	0.39	J-	0.30	J-	< 0.43	UJ	< 0.40	UJ	< 0.42	UJ	< 0.41	UJ	< 0.42	UJ	< 0.38	UJ		
SILVER	mg/kg	0.09		0.1		0.04	J	0.10		0.62	J	0.04	J	0.03	J	0.02	J	0.03	J		
SODIUM	mg/kg	< 64	U	< 71	U	625		< 86.2	U	612	J-	585	J-	1860	J-	316	J-	598	J-		
THALLIUM	mg/kg	0.06	J	0.06	J	0.09		0.05	J	0.05	J	0.03	J	0.02	J	0.02	J	0.02	J		
VANADIUM	mg/kg	16.4	J	17.7	J	13.4	J	19.7	J	15.3	J-	15.1	J-	15.2	J-	12.0	J-	15.6	J-		
ZINC	mg/kg	86.5	J	90.4	J	71.3	J	433	J	153		101		116		54.7		81.0			
POLYCHLORINATED BIPHENYLS (PCBs)																					
AROCLOR-1016	mg/kg							< 1.9	U												
AROCLOR-1221	mg/kg							< 1.9	U												
AROCLOR-1232	mg/kg							< 2.2	U												
AROCLOR-1242	mg/kg							< 1.9	U												
AROCLOR-1248	mg/kg							< 1.9	U												
AROCLOR-1254	mg/kg							< 1.9	U												
AROCLOR-1260	mg/kg							270	J												
AROCLOR-1262	mg/kg							< 1.9	U												
AROCLOR-1268	mg/kg							< 1.9	U												
PCB, TOTAL	mg/kg							270													
PESTICIDES																					
4,4-DDD	mg/kg							< 0.037	U												
4,4-DDE	mg/kg							< 0.037	U												
4,4-DDT	mg/kg							19	J												
ALDRIN	mg/kg							< 0.019	U												
ALPHA-BHC	mg/kg							< 0.019	U												
ALPHA-CHLORDANE	mg/kg							< 0.019	U												
BETA-BHC	mg/kg							< 0.019	U												
DELTA-BHC	mg/kg							< 0.019	U												
DIELDRIN	mg/kg							< 0.037	U												
ENDOSULFAN I	mg/kg							< 0.019	U												
ENDOSULFAN II	mg/kg							< 0.037	U												
ENDOSULFAN SULFATE	mg/kg							12	J												
ENDRIN	mg/kg							< 0.037	U												
ENDRIN ALDEHYDE	mg/kg							< 0.037	U												
ENDRIN KETONE	mg/kg							< 0.037	U												
GAMMA-CHLORDANE	mg/kg							< 0.019	U												
HEPTACHLOR	mg/kg							< 0.019	U												
HEPTACHLOR EPOXIDE	mg/kg							< 0.019	U												
LINDANE	mg/kg							< 0.019	U												
METHOXYCHLOR	mg/kg							< 0.19	U												
TOXAPHENE	mg/kg							< 0.37	UJ												

ATTACHMENT A TABLE 5
SUMMARY OF ANALYTICAL RESULTS - SURFACE
SOIL (0 - 1 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

	Location ID	CRP-SB220		CRP-SB220		CRP-SB222		CRP-SB223		CRP-SB224		CRP-SB224		CRP-SB225		CRP-SB226		CRP-SB227		CRP-SB228	
	Sample Date	12/11/2013		12/11/2013		12/12/2013		12/12/2013		12/6/2013		12/6/2013		12/6/2013		12/5/2013		12/5/2013		12/9/2013	
	Sample ID	OU09 SB220 0001		FDSS12111312		OU09 SB222 0001		OU09 SB223 0001		FDSS12061301		OU09 SS224 0001		OU09 SS225 0001		OU09 SS226 0001		OU09 SS227 0001		OU09 SS228 0001	
	Sample Type	N		FD		N		N		FD		N		N		N		N		N	
	Depth Interval	0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft	
Chemical	Unit	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs)																					
1,1-BIPHENYL	mg/kg							< 0.28	U												
1,2,4-TRICHLOROBENZENE	mg/kg							< 0.28	U												
1,2-DICHLOROBENZENE	mg/kg							< 0.28	U												
1,2-DIPHENYLHYDRAZINE	mg/kg							< 0.56	U												
1,3-DICHLOROBENZENE	mg/kg							< 0.28	U												
1,4-DICHLOROBENZENE	mg/kg							< 0.28	U												
2,2'-OXYBIS(1-CHLOROPROPANE)	mg/kg							< 0.28	U												
2,4,5-TRICHLOROPHENOL	mg/kg							< 0.7	U												
2,4,6-TRICHLOROPHENOL	mg/kg							< 0.28	U												
2,4-DICHLOROPHENOL	mg/kg							< 0.28	U												
2,4-DIMETHYLPHENOL	mg/kg							< 0.28	U												
2,4-DINITROPHENOL	mg/kg							< 0.7	U												
2,4-DINITROTOLUENE	mg/kg							< 0.28	U												
2,6-DICHLOROPHENOL	mg/kg							< 0.28	U												
2,6-DINITROTOLUENE	mg/kg							< 0.28	U												
2-CHLORONAPHTHALENE	mg/kg							< 0.28	UJ												
2-CHLOROPHENOL	mg/kg							< 0.28	U												
2-METHYLNAPHTHALENE	mg/kg							< 0.28	U												
2-METHYLPHENOL	mg/kg							< 0.28	U												
2-NITROANILINE	mg/kg							< 0.7	U												
2-NITROPHENOL	mg/kg							< 0.28	U												
3- AND 4-METHYLPHENOL	mg/kg							< 0.28	U												
3,3-DICHLOROBENZIDINE	mg/kg							< 0.28	U												
3-NITROANILINE	mg/kg							< 0.7	U												
4,6-DINITRO-2-METHYLPHENOL	mg/kg							< 0.7	U												
4-BROMOPHENYL-PHENYLETHER	mg/kg							< 0.28	U												
4-CHLORO-3-METHYLPHENOL	mg/kg							< 0.28	U												
4-CHLOROANILINE	mg/kg							< 0.28	U												
4-CHLOROPHENYL-PHENYLETHER	mg/kg							< 0.28	U												
4-NITROANILINE	mg/kg							< 0.7	U												
4-NITROPHENOL	mg/kg							< 0.7	U												
ACENAPHTHENE	mg/kg	0.031	J	0.07	J	0.0056	J	0.0037	J	0.072	J	0.022	J	0.14		0.0028	J	0.019	J		
ACENAPHTHYLENE	mg/kg	< 0.012	U	< 0.01	U	< 0.0096	U	0.0030	J	< 0.0098	U	< 0.011	U	< 0.012	U	< 0.01	U	< 0.01	U		
ANTHRACENE	mg/kg	0.058	J	0.1	J	0.0081	J	0.011	J	0.084	J	0.033	J	0.2		0.0041	J	0.03			
BENZIDINE	mg/kg								R												
BENZO[A]ANTHRACENE	mg/kg	0.36	J	1.1	J	0.068		0.094		0.41	J	0.18	J	1.3		0.029		0.15			
BENZO[A]PYRENE	mg/kg	0.35	J	1.1	J	0.073	J	0.092	J	0.48	J	0.23	J	1.5	J	0.039		0.18			
BENZO[B]FLUORANTHENE	mg/kg	0.52	J	0.81	J	0.094	J	0.15	J	0.51	J	0.2	J	1.3	J	0.046		0.16			
BENZO[G,H,I]PERYLENE	mg/kg	0.13	J	0.29	J	0.031	J	0.055	J	0.12	J	0.087	J	0.68	J	< 0.02	UJ	0.076	J		
BENZO[K]FLUORANTHENE	mg/kg	0.16	J	0.31	J	0.028	J	0.11	J	0.45	J	0.18	J	1.3	J	0.024		0.11			
BENZOIC ACID	mg/kg							< 0.7	UJ												
BENZYL ALCOHOL	mg/kg							< 0.56	U												
BIS(2-CHLOROETHOXY)METHANE	mg/kg							< 0.28	UJ												
BIS(2-CHLOROETHYL)ETHER	mg/kg							< 0.28	U												
BIS(2-ETHYLHEXYL)PHTHALATE	mg/kg							< 0.28	U												
BUTYLBENZYLPHTHALATE	mg/kg							< 0.28	U												
CAPROLACTAM	mg/kg							< 0.28	U												
CARBAZOLE	mg/kg							< 0.28	U												
CHRYSENE	mg/kg	0.5	J	1.6	J	0.097	J	0.068		0.56	J	0.24	J	1.8		0.036		0.2			
DIBENZ[A,H]ANTHRACENE	mg/kg	0.085	J	0.21	J	0.01	J	0.032	J	0.081		0.049		0.23		< 0.02	U	0.041			
DIBENZOFURAN	mg/kg							< 0.28	U												
DIETHYLPHTHALATE	mg/kg							< 0.28	UJ												
DIMETHYL PHTHALATE	mg/kg							< 0.28	U												
DI-N-BUTYLPHTHALATE	mg/kg							< 0.28	U												
DI-N-OCTYLPHTHALATE	mg/kg							< 0.28	U												
FLUORANTHENE	mg/kg	0.49		0.7		0.074		0.16		0.58	J	0.21	J	1.3		0.038		0.16			
FLUORENE	mg/kg	0.019	J	0.035	J	0.0035	J	0.0038	J	0.039	J	0.013	J	0.09		< 0.01	U	0.012	J		
HEXACHLOROBENZENE	mg/kg							< 0.28	U												
HEXACHLOROBUTADIENE	mg/kg							< 0.28	U												
HEXACHLOROETHANE	mg/kg							< 0.28	U												
HPAH, TOTAL	mg/kg	3.5		9		0.59		1.1		4.1		1.7		12		0.27		1.4			
INDENO[1,2,3-CD]PYRENE	mg/kg	0.24	J	0.56	J	0.04		0.06	J	0.16		0.1		0.82	J	0.021		0.074			
ISOPHORONE	mg/kg							< 0.28	U												

ATTACHMENT A TABLE 5
SUMMARY OF ANALYTICAL RESULTS - SURFACE
SOIL (0 - 1 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

	Location ID	CRP-SB220		CRP-SB220		CRP-SB222		CRP-SB223		CRP-SB224		CRP-SB224		CRP-SB225		CRP-SB226		CRP-SB227		CRP-SB228	
	Sample Date	12/11/2013		12/11/2013		12/12/2013		12/12/2013		12/6/2013		12/6/2013		12/6/2013		12/5/2013		12/5/2013		12/9/2013	
	Sample ID	OU09 SB220 0001		FDSS12111312		OU09 SB222 0001		OU09 SB223 0001		FDSS12061301		OU09 SS224 0001		OU09 SS225 0001		OU09 SS226 0001		OU09 SS227 0001		OU09 SS228 0001	
	Sample Type	N		FD		N		N		FD		N		N		N		N		N	
	Depth Interval	0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft	
Chemical	Unit	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
LPAH, TOTAL	mg/kg	0.35		0.79		0.063		0.095		0.64		0.23		1.5		0.027		0.19			
NAPHTHALENE	mg/kg	0.0066	J	0.031	J	< 0.0096	U	0.0037	J	0.026	J	0.0081	J	0.039		< 0.01	U	0.0032	J		
NITROBENZENE	mg/kg							< 0.28	U												
N-NITROSODIMETHYLAMINE	mg/kg							< 0.28	U												
N-NITROSODINPROPYLAMINE	mg/kg							< 0.28	U												
N-NITROSODIPHENYLAMINE	mg/kg							< 0.28	U												
N-NITROSOPYRROLIDINE	mg/kg								R												
PAH, TOTAL	mg/kg	3.8		9.8		0.65		1.2		4.7		1.9		14		0.3		1.5			
PENTACHLOROPHENOL	mg/kg							< 0.7	U												
PHENANTHRENE	mg/kg	0.24	J	0.55	J	0.046		0.07		0.42	J	0.15	J	1		0.02	J	0.13			
PHENOL	mg/kg							< 0.28	U												
PYRENE	mg/kg	0.62	J	2.3	J	0.073		0.24		0.72	J	0.23	J	2.2		0.036		0.2			
VOLATILE ORGANIC COMPOUNDS (VOCs)																					
1,1,1,2-TETRACHLOROETHANE	mg/kg							< 0.0042	UJ												
1,1,1-TRICHLOROETHANE	mg/kg							< 0.0042	UJ												
1,1,2,2-TETRACHLOROETHANE	mg/kg							< 0.0042	UJ												
1,1,2-TRICHLOROETHANE	mg/kg							< 0.0042	UJ												
1,1-DICHLOROETHANE	mg/kg							< 0.0042	UJ												
1,1-DICHLOROETHENE	mg/kg							< 0.0042	UJ												
1,1-DICHLOROPROPENE	mg/kg							< 0.0042	UJ												
1,2,3-TRICHLOROBENZENE	mg/kg							< 0.0042	UJ												
1,2,3-TRICHLOROPROPANE	mg/kg							< 0.0042	UJ												
1,2,4-TRICHLOROBENZENE	mg/kg							< 0.0042	UJ												
1,2,4-TRIMETHYLBENZENE	mg/kg							< 0.0042	UJ												
1,2-DIBROMO-3-CHLOROPROPANE	mg/kg							< 0.0042	UJ												
1,2-DIBROMOETHANE	mg/kg							< 0.0042	UJ												
1,2-DICHLOROBENZENE	mg/kg							< 0.0042	UJ												
1,2-DICHLOROETHANE	mg/kg							< 0.0042	UJ												
1,2-DICHLOROETHENE, TOTAL	mg/kg							< 0.0085	UJ												
1,2-DICHLOROPROPANE	mg/kg							< 0.0042	UJ												
1,3,5-TRIMETHYLBENZENE	mg/kg							< 0.0042	UJ												
1,3-DICHLOROBENZENE	mg/kg							< 0.0042	UJ												
1,3-DICHLOROPROPANE	mg/kg							< 0.0042	UJ												
1,4-DICHLOROBENZENE	mg/kg							< 0.0042	UJ												
2,2-DICHLOROPROPANE	mg/kg							< 0.0042	UJ												
2-BUTANONE	mg/kg							< 0.021	UJ												
2-CHLOROTOLUENE	mg/kg							< 0.0042	UJ												
2-HEXANONE	mg/kg							< 0.021	UJ												
4-CHLOROTOLUENE	mg/kg							< 0.0042	UJ												
4-ISOPROPYLTOLUENE	mg/kg							< 0.0042	UJ												
4-METHYL-2-PENTANONE	mg/kg							< 0.021	UJ												
ACETONE	mg/kg							< 0.021	UJ												
BENZENE	mg/kg							< 0.0042	UJ												
BROMOBENZENE	mg/kg							< 0.0042	UJ												
BROMOCHLOROMETHANE	mg/kg							< 0.0042	UJ												
BROMODICHLOROMETHANE	mg/kg							< 0.0042	UJ												
BROMOFORM	mg/kg							< 0.0042	UJ												
BROMOMETHANE	mg/kg							< 0.0085	UJ												
CARBON DISULFIDE	mg/kg							< 0.0042	UJ												
CARBON TETRACHLORIDE	mg/kg							< 0.0042	UJ												
CHLOROBENZENE	mg/kg							< 0.0042	UJ												
CHLOROETHANE	mg/kg							< 0.0085	UJ												
CHLOROFORM	mg/kg							< 0.0042	UJ												
CHLOROMETHANE	mg/kg							< 0.0085	UJ												
CIS-1,2-DICHLOROETHENE	mg/kg							< 0.0042	UJ												
CIS-1,3-DICHLOROPROPENE	mg/kg							< 0.0042	UJ												
DIBROMOCHLOROMETHANE	mg/kg							< 0.0042	UJ												
DIBROMOMETHANE	mg/kg							< 0.0042	UJ												
DICHLORODIFLUOROMETHANE	mg/kg							< 0.0085	UJ												
ETHYLBENZENE	mg/kg							< 0.0042	UJ												
HEXACHLOROBUTADIENE	mg/kg							< 0.0042	UJ												
ISOPROPYLBENZENE	mg/kg							< 0.0042	UJ												
M- AND P-XYLENE	mg/kg							< 0.0085	UJ												
METHYL CYCLOHEXANE	mg/kg							< 0.0042	UJ												

ATTACHMENT A TABLE 5
SUMMARY OF ANALYTICAL RESULTS - SURFACE
SOIL (0 - 1 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

	Location ID	CRP-SB220		CRP-SB220		CRP-SB222		CRP-SB223		CRP-SB224		CRP-SB224		CRP-SB225		CRP-SB226		CRP-SB227		CRP-SB228	
	Sample Date	12/11/2013		12/11/2013		12/12/2013		12/12/2013		12/6/2013		12/6/2013		12/6/2013		12/5/2013		12/5/2013		12/9/2013	
	Sample ID	OU09 SB220 0001		FDSS12111312		OU09 SB222 0001		OU09 SB223 0001		FDSS12061301		OU09 SS224 0001		OU09 SS225 0001		OU09 SS226 0001		OU09 SS227 0001		OU09 SS228 0001	
	Sample Type	N		FD		N		N		FD		N		N		N		N		N	
	Depth Interval	0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft	
Chemical	Unit	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
METHYL TERT-BUTYL ETHER	mg/kg							< 0.0042	UJ												
METHYLENE CHLORIDE	mg/kg							< 0.021	UJ												
N-BUTYLBENZENE	mg/kg							< 0.0042	UJ												
O-XYLENE	mg/kg							< 0.0042	UJ												
PROPYLBENZENE	mg/kg							< 0.0042	UJ												
SEC-BUTYLBENZENE	mg/kg							< 0.0042	UJ												
STYRENE	mg/kg							< 0.0042	UJ												
TERT-BUTANOL	mg/kg							< 0.021	UJ												
TERT-BUTYLBENZENE	mg/kg							< 0.0042	UJ												
TETRACHLOROETHENE	mg/kg							< 0.0042	UJ												
TOLUENE	mg/kg							< 0.0042	UJ												
TRANS-1,2-DICHLOROETHENE	mg/kg							< 0.0042	UJ												
TRANS-1,3-DICHLOROPROPENE	mg/kg							< 0.0042	UJ												
TRICHLOROETHENE	mg/kg							< 0.0042	UJ												
TRICHLOROFLUOROMETHANE	mg/kg							< 0.0085	UJ												
VINYL CHLORIDE	mg/kg							< 0.0085	UJ												
XYLENES, TOTAL	mg/kg							< 0.013	UJ												
OTHER																					
PH	pH																				
TOTAL ORGANIC CARBON	mg/kg																				
GRAIN SIZE																					
PERCENT FINES	%																				
PERCENT GRAVEL	%																				
PERCENT SAND	%																				
PERCENT SAND, COARSE	%																				
PERCENT SAND, FINE	%																				
PERCENT SAND, MEDIUM	%																				
SIEVE 1 INCH (25.4-MM)	%																				
SIEVE 1-1/2 INCH (37.5-MM)	%																				
SIEVE 2 INCH (50-MM)	%																				
SIEVE 3 INCH (75-MM)	%																				
SIEVE 3/4 INCH (19-MM)	%																				
SIEVE 3/8 INCH (9.5-MM)	%																				
SIEVE NO. 004 (4.75-MM)	%																				
SIEVE NO. 010 (2-MM)	%																				
SIEVE NO. 020 (850-UM)	%																				
SIEVE NO. 040 (425-UM)	%																				
SIEVE NO. 060 (250-UM)	%																				
SIEVE NO. 080 (180-UM)	%																				
SIEVE NO. 100 (150-UM)	%																				
SIEVE NO. 200 (75-UM)	%																				

Notes:
U or < - Non-detect at laboratory detection limit.
J - The compound was positively identified; however, the associated numerical value is an estimated concentration only (+ and - indicate bias).
Sample Type - N = normal sample, FD = duplicate sample.
mg/kg - milligram per kilogram

ATTACHMENT A TABLE 5
SUMMARY OF ANALYTICAL RESULTS - SURFACE
SOIL (0 - 1 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

	Location ID	CRP-SB228		CRP-SB229		CRP-SB229		CRP-SB301		CRP-SB302		CRP-SB302		CRP - SB325		MW-13	
	Sample Date	12/9/2013		12/10/2013		12/10/2013		12/6/2013		12/10/2013		12/10/2013		6/3/2014		12/4/2013	
	Sample ID	OU09 SS228 0001SL		OU09 SS229 0001-01		OU09 SS229 0001-02		OU09 SS301 0001		FDSB12101302		OU09 SS302 0001		OU09 SB325 0001		OU09 SB207 0001	
	Sample Type	N		N		FD		N		FD		N		N		N	
	Depth Interval	0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft	
Chemical	Unit	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
ENERGETICS																	
2,4-DINITROTOLUENE	mg/kg			< 0.049	U	< 0.042	U										
NITROGLYCERIN	mg/kg			< 0.4	U	0.58	J										
INORGANICS																	
ALUMINUM	mg/kg	8400		10900		9360		8070		9330		11600				18600	
ANTIMONY	mg/kg	2.3	J	1.1	J-	0.98	J-	0.79	J	396	J	0.34	J			0.36	J
ARSENIC	mg/kg	10.3	J	7.3		7.5		8.3	J	130	J	5.1	J			19.8	J
BARIUM	mg/kg	25.5		33.4		30.8		11.5	J-	28.6		34.9				9.3	
BERYLLIUM	mg/kg	0.20		0.35		0.31		0.33	J-	0.36		0.38				0.26	
CADMIUM	mg/kg	0.18		0.30		0.28		0.44		0.15		0.10				0.14	
CALCIUM	mg/kg	39500		1510	J+	1400	J+	494		578	J+	590	J+			1700	
CHROMIUM VI	mg/kg					< 0.31	U										
CHROMIUM, TOTAL	mg/kg	14.1	J	13.9		11.3		11.5	J-	7.8	J	9.2	J			27.6	
COBALT	mg/kg	10.8	J	8.3		7.4		13.2	J-	5.4	J	6.4	J			24.5	
COPPER	mg/kg	18.3		28.6		26.3		32.1	J	14.0		12.6				34.7	J
IRON	mg/kg	24900	J	21300		19500		29900		14600	J	16100	J			48300	J-
IRON, FERROUS	mg/kg																
LEAD	mg/kg	216	J	125		113		48.2	J	29900	J	295	J			25.9	J
MAGNESIUM	mg/kg	25200	J	2580		2250		3220		1500	J	1750	J			7650	
MANGANESE	mg/kg	438	J	326		293		756		391	J	502	J			510	
MERCURY	mg/kg			0.10		0.1		0.04		0.06		0.06				< 0.017	U
NICKEL	mg/kg	20.6	J	18.5		17.0		29.0	J-	11.8	J	13.2	J			50.5	
POTASSIUM	mg/kg	328	J	415		319		484	J-	256	J	363	J			196	
SELENIUM	mg/kg	< 0.39	U	0.37		< 0.39	U	< 0.44	UJ	0.45		0.40	J			0.35	J
SILVER	mg/kg	0.07	J	0.38		0.35		0.04	J	0.86	J	0.09	J			0.06	J
SODIUM	mg/kg	< 79	U	< 73	U	< 79	U	< 87	UJ	< 73	U	< 96	U			< 110	U
THALLIUM	mg/kg	0.04	J	0.07	J	0.06	J	0.07	J	0.09		0.08	J			0.03	J
VANADIUM	mg/kg	14.8		25.1		22.1		14.4	J-	14.4		15.9				22.1	
ZINC	mg/kg	66.0		113	J+	106	J+	78.2		54.4	J+	55.5	J+			106	
POLYCHLORINATED BIPHENYLS (PCBs)																	
AROCLOR-1016	mg/kg					< 0.0016	UJ	< 0.0089	UJ	< 0.0018	U	< 0.0019	U	< 0.0017	U		
AROCLOR-1221	mg/kg					< 0.0016	U	< 0.0089	UJ	< 0.0018	U	< 0.0019	U	< 0.0017	U		
AROCLOR-1232	mg/kg					< 0.0019	U	< 0.01	UJ	< 0.0022	U	< 0.0023	U	< 0.0020	U		
AROCLOR-1242	mg/kg					< 0.0016	U	< 0.0089	UJ	< 0.0018	U	< 0.0019	U	< 0.0017	U		
AROCLOR-1248	mg/kg					< 0.0016	U	< 0.0089	UJ	< 0.0018	U	< 0.0019	U	< 0.0017	U		
AROCLOR-1254	mg/kg					< 0.0016	U	0.043	J	< 0.0018	U	< 0.0019	U	< 0.0017	U		
AROCLOR-1260	mg/kg					< 0.0016	UJ	< 0.0089	UJ	0.05		0.031		0.016	J		
AROCLOR-1262	mg/kg					< 0.0016	U	< 0.0089	UJ	< 0.0018	U	< 0.0019	U	< 0.0017	U		
AROCLOR-1268	mg/kg					< 0.0016	U	< 0.0089	UJ	< 0.0018	U	< 0.0019	U	< 0.0017	U		
PCB, TOTAL	mg/kg					< 0.0019	U	0.043		0.05		0.031		0.016			
PESTICIDES																	
4,4-DDD	mg/kg					< 0.00032	U	< 0.0017	UJ	< 0.00036	U	< 0.00038	U				
4,4-DDE	mg/kg					0.062		< 0.0017	UJ	0.00064	J	0.00059	J				
4,4-DDT	mg/kg					0.0094	J	< 0.0017	UJ	0.0061	J	0.0042	J				
ALDRIN	mg/kg					< 0.00016	UJ	< 0.00089	UJ	< 0.00018	U	< 0.00019	U				
ALPHA-BHC	mg/kg					< 0.00016	UJ	< 0.00089	UJ	< 0.00018	U	< 0.00019	U				
ALPHA-CHLORDANE	mg/kg					< 0.00016	UJ	< 0.00089	UJ	< 0.00018	U	< 0.00019	U				
BETA-BHC	mg/kg					< 0.00016	UJ	< 0.00089	UJ	< 0.00018	U	< 0.00019	U				
DELTA-BHC	mg/kg					< 0.00016	UJ	< 0.00089	UJ	< 0.00018	U	< 0.00019	U				
DIELDRIN	mg/kg					< 0.00032	UJ	< 0.0017	UJ	< 0.00036	U	< 0.00038	U				
ENDOSULFAN I	mg/kg					0.0015	J	< 0.00089	UJ	< 0.00018	U	< 0.00019	U				
ENDOSULFAN II	mg/kg					< 0.00032	U	< 0.0017	UJ	0.00032	J	0.00028	J				
ENDOSULFAN SULFATE	mg/kg					< 0.00032	UJ	< 0.0017	UJ	0.0021	J	< 0.00038	UJ				
ENDRIN	mg/kg					0.0018		< 0.0017	UJ	< 0.00036	U	< 0.00038	U				
ENDRIN ALDEHYDE	mg/kg					< 0.00032	U	< 0.0017	UJ	< 0.00036	U	< 0.00038	U				
ENDRIN KETONE	mg/kg					< 0.00032	U	< 0.0017	UJ	0.0016	J	< 0.00038	UJ				
GAMMA-CHLORDANE	mg/kg					< 0.00016	UJ	< 0.00089	UJ	< 0.00018	U	< 0.00019	U				
HEPTACHLOR	mg/kg					0.0015	J	< 0.00089	UJ	< 0.00018	U	< 0.00019	U				
HEPTACHLOR EPOXIDE	mg/kg					< 0.00016	U	< 0.00089	UJ	< 0.00018	U	< 0.00019	U				
LINDANE	mg/kg					< 0.00016	U	< 0.00089	UJ	< 0.00018	U	< 0.00019	U				
METHOXYCHLOR	mg/kg					0.0088	J	< 0.0089	UJ	< 0.0018	U	< 0.0019	U				
TOXAPHENE	mg/kg					< 0.0032	U	< 0.017	UJ	< 0.0036	U	< 0.0038	U				

ATTACHMENT A TABLE 5
SUMMARY OF ANALYTICAL RESULTS - SURFACE
SOIL (0 - 1 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

	Location ID	CRP-SB228		CRP-SB229		CRP-SB229		CRP-SB301		CRP-SB302		CRP-SB302		CRP - SB325		MW-13	
	Sample Date	12/9/2013		12/10/2013		12/10/2013		12/6/2013		12/10/2013		12/10/2013		6/3/2014		12/4/2013	
	Sample ID	OU09 SS228 0001SL		OU09 SS229 0001-01		OU09 SS229 0001-02		OU09 SS301 0001		FDSB12101302		OU09 SS302 0001		OU09 SB325 0001		OU09 SB207 0001	
	Sample Type	N		N		FD		N		FD		N		N		N	
	Depth Interval	0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft	
Chemical	Unit	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs)																	
1,1-BIPHENYL	mg/kg							< 0.26	U	< 0.27	U	< 0.28	U				
1,2,4-TRICHLOROBENZENE	mg/kg							< 0.26	U	< 0.27	U	< 0.28	U				
1,2-DICHLOROBENZENE	mg/kg							< 0.26	U	< 0.27	U	< 0.28	U				
1,2-DIPHENYLHYDRAZINE	mg/kg							< 0.51	U	< 0.54	U	< 0.56	U				
1,3-DICHLOROBENZENE	mg/kg							< 0.26	U	< 0.27	U	< 0.28	U				
1,4-DICHLOROBENZENE	mg/kg							< 0.26	U	< 0.27	U	< 0.28	U				
2,2'-OXYBIS(1-CHLOROPROPANE)	mg/kg							< 0.26	U	< 0.27	U	< 0.28	U				
2,4,5-TRICHLOROPHENOL	mg/kg							< 0.64	U	< 0.67	U	< 0.69	U				
2,4,6-TRICHLOROPHENOL	mg/kg							< 0.26	U	< 0.27	U	< 0.28	U				
2,4-DICHLOROPHENOL	mg/kg							< 0.26	U	< 0.27	U	< 0.28	U				
2,4-DIMETHYLPHENOL	mg/kg							< 0.26	U	< 0.27	U	< 0.28	U				
2,4-DINITROPHENOL	mg/kg							< 0.64	U	< 0.67	U	< 0.69	U				
2,4-DINITROTOLUENE	mg/kg							< 0.26	U	< 0.27	U	< 0.28	U				
2,6-DICHLOROPHENOL	mg/kg							< 0.26	U	< 0.27	U	< 0.28	U				
2,6-DINITROTOLUENE	mg/kg							< 0.26	U	< 0.27	U	< 0.28	U				
2-CHLORONAPHTHALENE	mg/kg							< 0.26	UJ	< 0.27	UJ	< 0.28	UJ				
2-CHLOROPHENOL	mg/kg							< 0.26	U	< 0.27	U	< 0.28	U				
2-METHYLNAPHTHALENE	mg/kg							< 0.26	U	< 0.27	U	< 0.28	U				
2-METHYLPHENOL	mg/kg							< 0.26	U	< 0.27	U	< 0.28	U				
2-NITROANILINE	mg/kg							< 0.64	U	< 0.67	U	< 0.69	U				
2-NITROPHENOL	mg/kg							< 0.26	U	< 0.27	U	< 0.28	U				
3- AND 4-METHYLPHENOL	mg/kg							< 0.26	U	< 0.27	U	< 0.28	U				
3,3-DICHLOROBENZIDINE	mg/kg							< 0.26	U	< 0.27	U	< 0.28	U				
3-NITROANILINE	mg/kg							< 0.64	U	< 0.67	U	< 0.69	U				
4,6-DINITRO-2-METHYLPHENOL	mg/kg							< 0.64	U	< 0.67	U	< 0.69	U				
4-BROMOPHENYL-PHENYLETHER	mg/kg							< 0.26	U	< 0.27	U	< 0.28	U				
4-CHLORO-3-METHYLPHENOL	mg/kg							< 0.26	U	< 0.27	U	< 0.28	U				
4-CHLOROANILINE	mg/kg							< 0.26	U	< 0.27	U	< 0.28	U				
4-CHLOROPHENYL-PHENYLETHER	mg/kg							< 0.26	U	< 0.27	U	< 0.28	U				
4-NITROANILINE	mg/kg							< 0.64	U	< 0.67	U	< 0.69	U				
4-NITROPHENOL	mg/kg							< 0.64	U	< 0.67	U	< 0.69	U				
ACENAPHTHENE	mg/kg	18	J	0.095	J	0.0050	J	0.0026	J	0.0099	J	0.0054	J			0.0022	J
ACENAPHTHYLENE	mg/kg	< 0.12	U	0.017	J	< 0.01	U	< 0.01	U	0.0037	J	0.0027	J			< 0.011	U
ANTHRACENE	mg/kg	21	J	0.15	J	< 0.01	UJ	0.0040	J	0.017	J	0.0088	J			0.0034	J
BENZIDINE	mg/kg								R		R		R				
BENZO[A]ANTHRACENE	mg/kg	65	J	0.86	J	0.043	J	< 0.021	U	0.16	J	0.092	J			0.028	
BENZO[A]PYRENE	mg/kg	80	J	1.1	J	0.043	J	< 0.021	U	0.13	J	0.081	J			0.029	
BENZO[B]FLUORANTHENE	mg/kg	75	J	1.1	J	0.056	J	0.016	J	0.18	J	0.1	J			0.063	
BENZO[G,H,I]PERYLENE	mg/kg	32	J	0.75	J	0.041	J	< 0.021	UJ	0.045	J	0.026	J			0.019	J
BENZO[K]FLUORANTHENE	mg/kg	74	J	0.96	J	< 0.021	UJ	0.014	J	0.08	J	0.078				0.015	J
BENZOIC ACID	mg/kg							< 0.64	UJ	< 0.67	UJ	< 0.69	UJ				
BENZYL ALCOHOL	mg/kg							< 0.51	U	< 0.54	U	< 0.56	U				
BIS(2-CHLOROETHOXY)METHANE	mg/kg							< 0.26	UJ	< 0.27	U	< 0.28	U				
BIS(2-CHLOROETHYL)ETHER	mg/kg							< 0.26	U	< 0.27	U	< 0.28	U				
BIS(2-ETHYLHEXYL)PHTHALATE	mg/kg							< 0.26	U	< 0.27	U	< 0.28	U				
BUTYLBENZYLPHTHALATE	mg/kg							< 0.26	U	< 0.27	U	< 0.28	U				
CAPROLACTAM	mg/kg							< 0.26	U	< 0.27	U	< 0.28	U				
CARBAZOLE	mg/kg							< 0.26	U	< 0.27	U	< 0.28	U				
CHRYSENE	mg/kg	81	J	1.1	J	0.08	J	0.015	J	0.21	J	0.1	J			0.035	
DIBENZ[A,H]ANTHRACENE	mg/kg	< 15	UJ	0.34	J	0.024	J	< 0.021	U	0.028	J	< 0.022	UJ			0.0052	J
DIBENZOFURAN	mg/kg							< 0.26	U	< 0.27	U	< 0.28	U				
DIETHYLPHTHALATE	mg/kg							< 0.26	UJ	< 0.27	UJ	< 0.28	UJ				
DIMETHYL PHTHALATE	mg/kg							< 0.26	U	< 0.27	U	< 0.28	U				
DI-N-BUTYLPHTHALATE	mg/kg							< 0.26	U	< 0.27	U	< 0.28	U				
DI-N-OCTYLPHTHALATE	mg/kg							< 0.26	U	< 0.27	U	< 0.28	U				
FLUORANTHENE	mg/kg	100	J	1.1	J	< 0.021	UJ	0.024		0.2		0.15				0.046	
FLUORENE	mg/kg	9.2	J	0.058	J	0.0039	J	< 0.01	U	0.012	J	0.01	J			< 0.011	U
HEXACHLOROBENZENE	mg/kg							< 0.26	U	< 0.27	U	< 0.28	U				
HEXACHLOROBUTADIENE	mg/kg							< 0.26	U	< 0.27	U	< 0.28	U				
HEXACHLOROETHANE	mg/kg							< 0.26	U	< 0.27	U	< 0.28	U				
HPAH, TOTAL	mg/kg	650		10		0.56		0.094		1.1		0.84				0.31	
INDENO[1,2,3-CD]PYRENE	mg/kg	44	J	0.82	J	0.027	J	< 0.021	U	0.052	J	0.036				0.022	J
ISOPHORONE	mg/kg							< 0.26	U	< 0.27	U	< 0.28	U				

ATTACHMENT A TABLE 5
SUMMARY OF ANALYTICAL RESULTS - SURFACE
SOIL (0 - 1 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

	Location ID	CRP-SB228		CRP-SB229		CRP-SB229		CRP-SB301		CRP-SB302		CRP-SB302		CRP - SB325		MW-13	
	Sample Date	12/9/2013		12/10/2013		12/10/2013		12/6/2013		12/10/2013		12/10/2013		6/3/2014		12/4/2013	
	Sample ID	OU09 SS228 0001SL		OU09 SS229 0001-01		OU09 SS229 0001-02		OU09 SS301 0001		FDSB12101302		OU09 SS302 0001		OU09 SB325 0001		OU09 SB207 0001	
	Sample Type	N		N		FD		N		FD		N		N		N	
	Depth Interval	0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft	
Chemical	Unit	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
LPAH, TOTAL	mg/kg	140		1.1		0.16		0.028		0.2		0.14				0.033	
NAPHTHALENE	mg/kg	3	J	0.02	J	< 0.01	U	< 0.01	U	0.0037	J	0.0037	J			< 0.011	U
NITROBENZENE	mg/kg							< 0.26	U	< 0.27	U	< 0.28	U				
N-NITROSODIMETHYLAMINE	mg/kg							< 0.26	U	< 0.27	U	< 0.28	U				
N-NITROSODINPROPYLAMINE	mg/kg							< 0.26	U	< 0.27	U	< 0.28	U				
N-NITROSODIPHENYLAMINE	mg/kg							< 0.26	U	< 0.27	U	< 0.28	U				
N-NITROSOPYRROLIDINE	mg/kg								R	< 0.27	U	< 0.28	U				
PAH, TOTAL	mg/kg	790		11		0.72		0.12		1.3		0.98				0.35	
PENTACHLOROPHENOL	mg/kg							< 0.64	UJ	< 0.67	U	< 0.69	U				
PHENANTHRENE	mg/kg	86	J	0.76	J	0.15	J	0.021	J	0.15		0.11				0.027	
PHENOL	mg/kg							< 0.26	U	< 0.27	U	< 0.28	U				
PYRENE	mg/kg	100	J	2.2	J	0.25	J	0.025				0.18				0.052	
VOLATILE ORGANIC COMPOUNDS (VOCs)																	
1,1,1,2-TETRACHLOROETHANE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
1,1,1-TRICHLOROETHANE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
1,1,2,2-TETRACHLOROETHANE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
1,1,2-TRICHLOROETHANE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
1,1-DICHLOROETHANE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
1,1-DICHLOROETHENE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
1,1-DICHLOROPROPENE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
1,2,3-TRICHLOROBENZENE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
1,2,3-TRICHLOROPROPANE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
1,2,4-TRICHLOROBENZENE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
1,2,4-TRIMETHYLBENZENE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
1,2-DIBROMO-3-CHLOROPROPANE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
1,2-DIBROMOETHANE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
1,2-DICHLOROBENZENE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
1,2-DICHLOROETHANE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
1,2-DICHLOROETHENE, TOTAL	mg/kg							< 0.0055	UJ	< 0.0060	UJ	< 0.0050	UJ				
1,2-DICHLOROPROPANE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
1,3,5-TRIMETHYLBENZENE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
1,3-DICHLOROBENZENE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
1,3-DICHLOROPROPANE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
1,4-DICHLOROBENZENE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
2,2-DICHLOROPROPANE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
2-BUTANONE	mg/kg							< 0.014	UJ	< 0.015	UJ	< 0.012	UJ				
2-CHLOROTOLUENE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
2-HEXANONE	mg/kg							< 0.014	UJ	< 0.015	UJ	< 0.012	UJ				
4-CHLOROTOLUENE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
4-ISOPROPYLTOLUENE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
4-METHYL-2-PENTANONE	mg/kg							< 0.014	UJ	< 0.015	UJ	< 0.012	UJ				
ACETONE	mg/kg							< 0.014	UJ	< 0.015	UJ	< 0.012	UJ				
BENZENE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
BROMOBENZENE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
BROMOCHLOROMETHANE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
BROMODICHLOROMETHANE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
BROMOFORM	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
BROMOMETHANE	mg/kg							< 0.0055	UJ	< 0.0060	UJ	< 0.0050	UJ				
CARBON DISULFIDE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
CARBON TETRACHLORIDE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
CHLOROBENZENE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
CHLOROETHANE	mg/kg							< 0.0055	UJ	< 0.0060	UJ	< 0.0050	UJ				
CHLOROFORM	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
CHLOROMETHANE	mg/kg							< 0.0055	UJ	< 0.0060	UJ	< 0.0050	UJ				
CIS-1,2-DICHLOROETHENE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
CIS-1,3-DICHLOROPROPENE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
DIBROMOCHLOROMETHANE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
DIBROMOMETHANE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
DICHLORODIFLUOROMETHANE	mg/kg							< 0.0055	UJ	< 0.0060	UJ	< 0.0050	UJ				
ETHYLBENZENE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
HEXACHLOROBUTADIENE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
ISOPROPYLBENZENE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
M- AND P-XYLENE	mg/kg							< 0.0055	UJ	< 0.0060	UJ	< 0.0050	UJ				
METHYL CYCLOHEXANE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				

ATTACHMENT A TABLE 5
SUMMARY OF ANALYTICAL RESULTS - SURFACE
SOIL (0 - 1 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

	Location ID	CRP-SB228		CRP-SB229		CRP-SB229		CRP-SB301		CRP-SB302		CRP-SB302		CRP - SB325		MW-13	
	Sample Date	12/9/2013		12/10/2013		12/10/2013		12/6/2013		12/10/2013		12/10/2013		6/3/2014		12/4/2013	
	Sample ID	OU09 SS228 0001SL		OU09 SS229 0001-01		OU09 SS229 0001-02		OU09 SS301 0001		FDSB12101302		OU09 SS302 0001		OU09 SB325 0001		OU09 SB207 0001	
	Sample Type	N		N		FD		N		FD		N		N		N	
	Depth Interval	0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft	
Chemical	Unit	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
METHYL TERT-BUTYL ETHER	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
METHYLENE CHLORIDE	mg/kg							< 0.014	UJ	< 0.015	UJ	< 0.012	UJ				
N-BUTYLBENZENE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
O-XYLENE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
PROPYLBENZENE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
SEC-BUTYLBENZENE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
STYRENE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
TERT-BUTANOL	mg/kg							< 0.014	UJ	< 0.015	UJ	< 0.012	UJ				
TERT-BUTYLBENZENE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
TETRACHLOROETHENE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
TOLUENE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
TRANS-1,2-DICHLOROETHENE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
TRANS-1,3-DICHLOROPROPENE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
TRICHLOROETHENE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
TRICHLOROFLUOROMETHANE	mg/kg							< 0.0055	UJ	< 0.0060	UJ	< 0.0050	UJ				
VINYL CHLORIDE	mg/kg							< 0.0055	UJ	< 0.0060	UJ	< 0.0050	UJ				
XYLENES, TOTAL	mg/kg							< 0.0082	UJ	< 0.0090	UJ	< 0.0075	UJ				
OTHER																	
PH	pH					5.9											
TOTAL ORGANIC CARBON	mg/kg					19000											
GRAIN SIZE																	
PERCENT FINES	%					44.3											
PERCENT GRAVEL	%					5.4											
PERCENT SAND	%					50.3											
PERCENT SAND, COARSE	%					4.5											
PERCENT SAND, FINE	%					29.8											
PERCENT SAND, MEDIUM	%					16.0											
SIEVE 1 INCH (25.4-MM)	%					0											
SIEVE 1-1/2 INCH (37.5-MM)	%					0											
SIEVE 2 INCH (50-MM)	%					0											
SIEVE 3 INCH (75-MM)	%					0											
SIEVE 3/4 INCH (19-MM)	%					0											
SIEVE 3/8 INCH (9.5-MM)	%					0.6											
SIEVE NO. 004 (4.75-MM)	%					4.8											
SIEVE NO. 010 (2-MM)	%					4.5											
SIEVE NO. 020 (850-UM)	%					6.7											
SIEVE NO. 040 (425-UM)	%					9.3											
SIEVE NO. 060 (250-UM)	%					10.6											
SIEVE NO. 080 (180-UM)	%					6.0											
SIEVE NO. 100 (150-UM)	%					3.4											
SIEVE NO. 200 (75-UM)	%					9.8											

Notes:
U or < - Non-detect at laboratory detection limit.
J - The compound was positively identified; however, the associated numerical value is an estimated concentration only (+ and - indicate bias).
Sample Type - N = normal sample, FD = duplicate sample.
mg/kg - milligram per kilogram

ATTACHMENT A TABLE 5
SUMMARY OF ANALYTICAL RESULTS - SURFACE
SOIL (0 - 1 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

	Location ID	CRP-SS107		CRP-SS111		CRP-SS114		CRP-SS114		CRP-SS115		CRP-SS115		CRP-SS116		CRP-SS116		CRP-SS117		CRP-SS118	
	Sample Date	1/19/2010		1/19/2010		1/19/2010		1/19/2010		1/19/2010		1/19/2010		1/19/2010		1/19/2010		1/19/2010		1/19/2010	
	Sample ID	CRP-SS107-0006		CRP-SS111-0006		CRP-SS114-0006		CRP-SS114-0612		CRP-SS115-0006-D		CRP-SS115-0006		CRP-SS116-0006		CRP-SS116-0612		CRP-SS117-0006		CRP-SS118-0006	
	Sample Type	N		N		N		N		FD		N		N		N		N		N	
	Depth Interval	0 - 0.5 ft		0 - 0.5 ft		0 - 0.5 ft		0.5 - 1 ft		0 - 0.5 ft		0 - 0.5 ft		0 - 0.5 ft		0.5 - 1 ft		0 - 0.5 ft		0 - 0.5 ft	
Chemical	Unit	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
INORGANICS																					
ARSENIC	mg/kg																				
CHROMIUM, TOTAL	mg/kg																				
LEAD	mg/kg	63.4		60.4		75.7		25.7		72.7		64.2		48.5		28.5		96.6		118	
SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs)																					
1-METHYLNAPHTHALENE	mg/kg																				
2-CHLORONAPHTHALENE	mg/kg																				
2-METHYLNAPHTHALENE	mg/kg	< 0.348	U	< 0.369	U	< 0.33	U	< 0.296	U	< 0.389	U	< 0.328	U	< 0.383	U	< 0.344	U	< 0.442	U	< 0.347	U
ACENAPHTHENE	mg/kg	< 0.348	U	< 0.369	U	< 0.33	U	< 0.296	U	< 0.389	U	< 0.328	U	< 0.383	U	< 0.344	U	< 0.442	U	< 0.347	U
ACENAPHTHYLENE	mg/kg	0.071	J	< 0.369	U	0.059	J	< 0.296	U	0.118	J	0.369	D	< 0.383	U	< 0.344	U	< 0.442	U	< 0.347	U
ANTHRACENE	mg/kg	0.15	J	< 0.369	U	< 0.33	U	< 0.296	U	0.0676	J	0.194	J	< 0.383	U	< 0.344	U	< 0.442	U	0.09	J
BENZO[A]ANTHRACENE	mg/kg	0.441		0.202	J	0.264	J	0.0592	J	0.251	J	0.823	J	0.14	J	0.137	J	0.318	J	0.45	J
BENZO[A]PYRENE	mg/kg	0.342	J	0.25	J	0.287	J	0.0592	J	0.277	J	0.785	J	0.141	J	0.121	J	0.324	J	0.504	
BENZO[B]FLUORANTHENE	mg/kg	0.364		0.245	J	0.282	J	0.0697	J	0.341	J	0.92	J	0.159	J	0.14	J	0.353	J	0.582	
BENZO[G,H,I]PERYLENE	mg/kg	0.224	J	0.254	J	0.203	J	0.0632	J	0.216	J	0.553		0.105	J	0.0887	J	0.219	J	0.361	
BENZO[K]FLUORANTHENE	mg/kg	0.154	J	0.0818	J	0.114	J	< 0.296	U	0.112	J	0.36		0.0654	J	0.0603	J	0.15	J	0.225	J
CHRYSENE	mg/kg	0.632		0.345	J	0.396	J	0.106	J	0.51	J	1.53	J	0.2	J	0.206	J	0.439	J	0.622	J
DIBENZ[A,H]ANTHRACENE	mg/kg	0.0672	J	0.0557	J	0.0518	J	< 0.296	U	< 0.389	U	0.154	J	< 0.383	U	< 0.344	U	< 0.442	U	0.0788	J
FLUORANTHENE	mg/kg	0.761		0.291	J	0.365		0.0904	J	0.534	J	1.85	J	0.241		0.284	J	0.481		0.678	
FLUORENE	mg/kg	0.0526	J	< 0.369	U	< 0.33	U	< 0.296	U	< 0.389	U	0.078	J	< 0.383	U	< 0.344	U	< 0.442	U	< 0.347	U
HPAH, TOTAL	mg/kg	4.02		2.25		2.61		0.595		3.08		9.80		1.38		1.39		3.01		4.51	
INDENO[1,2,3-CD]PYRENE	mg/kg	0.222	J	0.215	J	0.201	J	0.0476	J	0.191	J	0.569		0.106	J	0.0917	J	0.223	J	0.373	
LPAH, TOTAL	mg/kg	0.886		0.153		0.229		< 0.296	U	0.476		2.06		0.113		0.150		0.202		0.428	
NAPHTHALENE	mg/kg	< 0.348	U	< 0.369	U	< 0.33	U	< 0.296	U	< 0.389	U	< 0.328	U	< 0.383	U	< 0.344	U	< 0.442	U	< 0.347	U
PAH, TOTAL	mg/kg	4.90		2.40		2.83		0.595		3.56		11.9		1.49		1.54		3.21		4.93	
PHENANTHRENE	mg/kg	0.612		0.153	J	0.17	J	< 0.296	U	0.29	J	1.42	J	0.113	J	0.15	J	0.202	J	0.338	J
PYRENE	mg/kg	0.81		0.306	J	0.442		0.0996	J	0.651	J	2.26	J	0.218	J	0.259	J	0.502		0.633	

Notes:
U or < - Non-detect at laboratory detection limit.
J - The compound was positively identified; however, the associated numerical value is an estimated concentration only (+ and - indicate bias).
Sample Type - N = normal sample, FD = duplicate sample.
mg/kg - milligram per kilogram

ATTACHMENT A TABLE 5
SUMMARY OF ANALYTICAL RESULTS - SURFACE
SOIL (0 - 1 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

	Location ID	CRP-SS118		CRP-SS119		CRP-SS120		CRP-SS120		CRP-SS121		CRP-SS122		CRP-SS122		CRP-SS122		CRP-SS123		MRP1-PES-1A-01	
	Sample Date	1/19/2010		1/19/2010		1/19/2010		1/19/2010		1/19/2010		1/19/2010		1/19/2010		1/19/2010		1/19/2010		4/17/2013	
	Sample ID	CRP-SS118-0612		CRP-SS119-0006		CRP-SS120-0006		CRP-SS120-0612		CRP-SS121-0006		CRP-SS122-0006-D		CRP-SS122-0006		CRP-SS122-0612		CRP-SS123-0006		MRP1-PES-1A-01	
	Sample Type	N		N		N		N		N		FD		N		N		N		N	
	Depth Interval	0.5 - 1 ft		0 - 0.5 ft		0 - 0.5 ft		0.5 - 1 ft		0 - 0.5 ft		0 - 0.5 ft		0 - 0.5 ft		0.5 - 1 ft		0 - 0.5 ft		1 - 1 ft	
Chemical	Unit	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
INORGANICS																					
ARSENIC	mg/kg																			5.2	
CHROMIUM, TOTAL	mg/kg																			9.6	
LEAD	mg/kg	82.5		61.9		59.5		45.2		23.2		157		100		22.7		36		22	
SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs)																					
1-METHYLNAPHTHALENE	mg/kg																			<0.023	U
2-CHLORONAPHTHALENE	mg/kg																			<0.023	U
2-METHYLNAPHTHALENE	mg/kg	< 0.376	U	< 0.337	U	< 0.353	U	< 0.305	U	< 0.298	U	< 0.345	U	< 0.331	U	< 0.323	U	< 0.298	U	< 0.023	U
ACENAPHTHENE	mg/kg	< 0.376	U	< 0.337	U	< 0.353	U	< 0.305	U	< 0.298	U	< 0.345	U	< 0.331	U	< 0.323	U	< 0.298	U	0.0012	J
ACENAPHTHYLENE	mg/kg	< 0.376	U	< 0.337	U	< 0.353	U	< 0.305	U	0.0499	J	0.201	J	0.314	J	< 0.323	U	0.0733	J	0.0021	J
ANTHRACENE	mg/kg	0.0676	J	< 0.337	U	0.0762	J	< 0.305	U	0.0522	J	0.128	J	0.218	J	< 0.323	U	0.0958	J	0.003	J
BENZO[A]ANTHRACENE	mg/kg	0.349	J	0.25	J	0.361	J	0.118	J	0.559	J	0.423	J	0.878	J	0.0828	J	0.507	J	0.024	
BENZO[A]PYRENE	mg/kg	0.333	J	0.249	J	0.412		0.109	J	0.528		0.439		0.713		0.0923	J	0.521		0.031	
BENZO[B]FLUORANTHENE	mg/kg	0.377		0.301	J	0.476		0.129	J	0.58		0.596		0.885		0.11	J	0.568		0.02	
BENZO[G,H,I]PERYLENE	mg/kg	0.235	J	0.184	J	0.305	J	0.0909	J	0.382		0.341	J	0.52		0.0715	J	0.353		0.021	
BENZO[K]FLUORANTHENE	mg/kg	0.148	J	0.12	J	0.176	J	0.0608	J	0.255	J	0.208	J	0.326	J	0.0499	J	0.233	J	0.0061	J
CHRYSENE	mg/kg	0.507	J	0.362	J	0.575	J	0.168	J	0.731	J	0.725	J	1.3	J	0.151	J	0.686	J	0.036	
DIBENZ[A,H]ANTHRACENE	mg/kg	0.0596	J	< 0.337	U	0.0714	J	< 0.305	U	0.0737	J	0.0913	J	0.115	J	< 0.323	U	0.0758	J	0.0048	J
FLUORANTHENE	mg/kg	0.52		0.384		0.582		0.221	J	0.857		0.889		1.47		0.156	J	0.81		0.017	
FLUORENE	mg/kg	< 0.376	U	< 0.337	U	< 0.353	U	< 0.305	U	< 0.298	U	< 0.345	U	0.0602	J	< 0.323	U	< 0.298	U	0.00095	J
HPAH, TOTAL	mg/kg	3.28		2.42		3.81		1.18		5.24		5.10		8.55		0.972		5.05		0.20	
INDENO[1,2,3-CD]PYRENE	mg/kg	0.223	J	0.191	J	0.308	J	0.084	J	0.381		0.33	J	0.528		0.0681	J	0.338		0.01	
LPAH, TOTAL	mg/kg	0.308		0.183		0.367		0.0778		0.401		0.796		1.43		0.0758		0.464		0.020	
NAPHTHALENE	mg/kg	< 0.376	U	< 0.337	U	< 0.353	U	< 0.305	U	< 0.298	U	< 0.345	U	< 0.331	U	< 0.323	U	< 0.298	U	< 0.023	U
PAH, TOTAL	mg/kg	3.58		2.60		4.18		1.26		5.64		5.90		9.98		1.05		5.51		0.23	
PHENANTHRENE	mg/kg	0.24	J	0.183	J	0.291	J	0.0778	J	0.299		0.467	J	0.84	J	0.0758	J	0.295	J	0.013	
PYRENE	mg/kg	0.524		0.375		0.548		0.197	J	0.891		1.06	J	1.81	J	0.19	J	0.955		0.035	

Notes:
U or < - Non-detect at laboratory detection limit.
J - The compound was positively identified; however, the associated numerical value is an estimated concentration only (+ and - indicate bias).
Sample Type - N = normal sample, FD = duplicate sample.
mg/kg - milligram per kilogram

ATTACHMENT A TABLE 5
SUMMARY OF ANALYTICAL RESULTS - SURFACE
SOIL (0 - 1 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

	Location ID	MRP1-PES-1B-01		MRP1-PES-1B-01		MRP1-PES-3B-01		MRP1-PES-3C-01		MRP1-PES-3D-01		MRP1-PES-4A-01		MRP1-PES-4B-01		MRP1-PES-4C-01		MRP1-PES-4D-01	
	Sample Date	4/17/2013		4/17/2013		4/20/2013		4/20/2013		4/20/2013		4/19/2013		4/19/2013		4/20/2013		4/20/2013	
	Sample ID	MRP1-PES-1B-01		MRP1-PES-1B-01 DUP		MRP1-PES-3B-01		MRP1-PES-3C-01		MRP1-PES-3D-01		MRP1-PES-4A-01		MRP1-PES-4B-01		MRP1-PES-4C-01		MRP1-PES-4D-01	
	Sample Type	N		FD		N		N		N		N		N		N		N	
	Depth Interval	1 - 1 ft		1 - 1 ft		1 - 1 ft		1 - 1 ft		1 - 1 ft		1 - 1 ft		1 - 1 ft		1 - 1 ft		1 - 1 ft	
Chemical	Unit	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
INORGANICS																			
ARSENIC	mg/kg	13		14		5.7		2.2		3.2		4.9		3.6		2.9		1.2	J
CHROMIUM, TOTAL	mg/kg	12		12		10		9.2		8.4		9.3		8.7		8.3		12	J
LEAD	mg/kg	42		34		34		29		20		14		11		16		29	
SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs)																			
1-METHYLNAPHTHALENE	mg/kg	0.0024	J	0.0031	J	<0.024	U	<0.026	U	0.0029	J	<0.12	U	<0.47	U	<0.024	U	<0.024	U
2-CHLORONAPHTHALENE	mg/kg	<0.022	U	<0.023	U	<0.024	U	<0.026	U	<0.026	U	<0.12	U	<0.47	U	<0.024	U	<0.024	U
2-METHYLNAPHTHALENE	mg/kg	0.006	J	0.0065	J	< 0.024	U	< 0.026	U	0.0026	J	0.013	J	< 0.47	U	< 0.024	U	< 0.024	U
ACENAPHTHENE	mg/kg	0.0031	J	0.0027	J	< 0.0073	U	0.0018	J	0.0013	J	0.056		< 0.14	U	< 0.0073	U	< 0.0072	U
ACENAPHTHYLENE	mg/kg	0.036		0.038		< 0.0073	U	< 0.0078	U	< 0.0079	U	< 0.036	U	< 0.14	U	< 0.0073	U	< 0.0072	U
ANTHRACENE	mg/kg	0.022		0.024		0.0013	J	0.0033	J	0.0026	J	0.12		< 0.14	U	0.00092	J	< 0.0072	U
BENZO[A]ANTHRACENE	mg/kg	0.067		0.068		0.005	J	0.011		0.013		0.5		0.034	J	0.0049	J	0.00089	J
BENZO[A]PYRENE	mg/kg	0.082		0.079		0.0052	J	0.014		0.014		0.69		0.025	J	0.0049	J	0.00077	J
BENZO[B]FLUORANTHENE	mg/kg	0.093		0.092		0.0062	J	0.014		0.017		0.77		0.029	J	0.0059	J	0.00077	J
BENZO[G,H,I]PERYLENE	mg/kg	0.069		0.067		0.0036	J	0.012		0.01		0.55		0.022	J	0.0033	J	< 0.0072	U
BENZO[K]FLUORANTHENE	mg/kg	0.036		0.037		0.0035	J	0.0068	J	0.0072	J	0.26		< 0.14	U	0.0022	J	< 0.0072	U
CHRYSENE	mg/kg	0.09		0.09		0.0051	J	0.011		0.013		0.92		0.13	J	0.0054	J	< 0.0072	U
DIBENZ[A,H]ANTHRACENE	mg/kg	0.018		0.017		0.00076	J	0.0018	J	0.0021	J	0.14		< 0.14	U	0.00073	J	< 0.0072	U
FLUORANTHENE	mg/kg	0.13		0.14		0.0095		0.021		0.021		0.93		0.042	J	0.0096		0.001	J
FLUORENE	mg/kg	0.0051	J	0.0058	J	< 0.0073	U	0.00085	J	< 0.0079	U	0.033	J	< 0.14	U	< 0.0073	U	< 0.0072	U
HPAH, TOTAL	mg/kg	0.77		0.79		0.049		0.12		0.12		6.0		0.35		0.047		0.0043	
INDENO[1,2,3-CD]PYRENE	mg/kg	0.05		0.05		0.0029	J	0.0088		0.0083		0.37		< 0.14	U	0.0026	J	< 0.0072	U
LPAH, TOTAL	mg/kg	0.13		0.15		0.0056		0.018		0.019		0.60		0.033		0.0060		< 0.024	U
NAPHTHALENE	mg/kg	< 0.022	U	< 0.023	U	< 0.024	U	< 0.026	U	0.0033	J	< 0.12	U	< 0.47	U	< 0.024	U	< 0.024	U
PAH, TOTAL	mg/kg	0.90		0.93		0.055		0.14		0.14		6.6		0.38		0.053		0.0043	
PHENANTHRENE	mg/kg	0.06		0.066		0.0043	J	0.012		0.0099		0.38		0.033	J	0.0051	J	< 0.0072	U
PYRENE	mg/kg	0.13		0.15		0.0072	J	0.017		0.017		0.82		0.066	J	0.0076		0.00086	J

Notes:
U or < - Non-detect at laboratory detection limit.
J - The compound was positively identified; however, the associated numerical value is an estimated concentration only (+ and - indicate bias).
Sample Type - N = normal sample, FD = duplicate sample.
mg/kg - milligram per kilogram

ATTACHMENT A TABLE 5
SUMMARY OF ANALYTICAL RESULTS - SURFACE
SOIL (0 - 1 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

	Location ID	MRP1-PES-4E-01		MRP1-PES-4E-01		MRP1-PES-5A-01		MRP1-PES-5B-01		MRP1-PES-S12-01		MRP1-PES-SW1-01		MRP1-PES-SW13-01		MRP1-PES-SW13-01		MRP1-PES-SW4-01		MRP1-PES-SW5-01		MRP1-PES-SW6-01	
	Sample Date	4/19/2013		4/19/2013		4/26/2013		4/26/2013		5/1/2013		4/24/2013		5/1/2013		5/1/2013		4/25/2013		4/25/2013		4/25/2013	
	Sample ID	MRP1-PES-4E-01		MRP1-PES-4E-01DUP		MRP1-PES-5A-01		MRP1-PES-5B-01		MRP1-PES-S12-01 1 FT		MRP1-PES-SW1-01		RP1-PES-SW13-01 1 ft		P1-PES-SW13-01 DUP 1		MRP1-PES-SW4-01		MRP1-PES-SW5-01		MRP1-PES-SW6-01	
	Sample Type	N		FD		N		N		N		N		N		FD		N		N		N	
	Depth Interval	1 - 1 ft		1 - 1 ft		1 - 1 ft		1 - 1 ft		1 - 1 ft		1 - 1 ft		1 - 1 ft		1 - 1 ft		1 - 1 ft		1 - 1 ft		1 - 1 ft	
Chemical	Unit	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
INORGANICS																							
ARSENIC	mg/kg	6		5.5		7.2		6.2		8.7		4		14		15		7.6		6.8		2.4	
CHROMIUM, TOTAL	mg/kg	8.9		10		9.9		12		11		5.1		14		14		9.8		9.5		5	
LEAD	mg/kg	6.4		6.5		12		26		14		350		55		69		120		300		30	
SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs)																							
1-METHYLNAPHTHALENE	mg/kg	0.0026	J	<0.023	U	<0.022	U	0.0094	J	0.0036	J	<0.22	U	<0.47	U	0.0032	J	0.01	J, J6	0.0072	J	0.0028	J
2-CHLORONAPHTHALENE	mg/kg	<0.023	U	<0.023	U	<0.022	U	<0.029	U	<0.023	U	<0.22	U	<0.47	U	<0.023	U	<0.024	U J6	<0.023	U	<0.023	U
2-METHYLNAPHTHALENE	mg/kg	0.0026	J	0.0025	J	< 0.022	U	0.016	J	0.0044	J	< 0.22	U	< 0.47	U	0.0055	J	0.013	J, J6	0.011	J	0.0031	J
ACENAPHTHENE	mg/kg	< 0.0069	U	0.00082	J	< 0.0067	U	< 0.0088	U	< 0.0069	U	0.012	J	0.063	J	0.027	J	0.1	J-	0.027		0.025	
ACENAPHTHYLENE	mg/kg	< 0.0069	U	< 0.0069	U	< 0.0067	U	< 0.0088	U	< 0.0069	U	< 0.068	U	0.02	J	0.0094	J	0.012	J-	0.0089		0.01	
ANTHRACENE	mg/kg	0.00088	J	0.0037	J	0.0013	J	0.0012	J	< 0.0069	U	0.088		0.27	J	0.05	J	0.14	J-	0.054		0.053	
BENZO[A]ANTHRACENE	mg/kg	0.0034	J	0.002	J	0.0046	J	0.0041	J	0.0018	J	0.27		7.2	J	0.28	J	0.79		0.27		0.24	
BENZO[A]PYRENE	mg/kg	0.0047	J	0.0022	J	0.0054	J	0.0041	J	0.0022	J	0.29		7.3	J	0.36	J	1		0.35		0.28	
BENZO[B]FLUORANTHENE	mg/kg	0.0053	J	0.0047	J	0.0083		0.006	J	0.0024	J	0.29		3.5	J	0.34	J	1.1		0.36		0.38	
BENZO[G,H,I]PERYLENE	mg/kg	0.004	J	0.0073	J	0.0044	J	0.0032	J	0.0018	J	0.22		2.7	J	0.23	J	0.7		0.23		0.21	
BENZO[K]FLUORANTHENE	mg/kg	0.0019	J	0.0026	J	0.0034	J	0.0028	J	0.0011	J	0.12		0.59	J	0.12	J	0.3	J-	0.12		0.12	
CHRYSENE	mg/kg	0.0049	J	0.0054	J	0.0073		0.0052	J	0.0023	J	0.26		14	J	0.32	J	0.72		0.3		0.25	
DIBENZ[A,H]ANTHRACENE	mg/kg	0.00086	J	< 0.0069	U	0.0011	J	0.0009	J	< 0.0069	U	0.061	J	1.4	J	0.062	J	0.17	J-	0.054		0.045	
FLUORANTHENE	mg/kg	0.0049	J	0.0068	J	0.0083		0.0088		0.0032	J	0.51		1.2	J	0.4	J	1.2		0.48		0.44	
FLUORENE	mg/kg	< 0.0069	U	0.002	J	< 0.0067	U	0.0011	J	< 0.0069	U	0.014	J	0.049	J	0.014	J	0.068	J-	0.02		0.016	
HPAH, TOTAL	mg/kg	0.038		0.051		0.054		0.045		0.019		2.7		43		2.7		7.5		2.7		2.6	
INDENO[1,2,3-CD]PYRENE	mg/kg	0.0029	J	0.0017	J	0.0035	J	0.0028	J	0.0013	J	0.16		0.94	J	0.18	J	0.56		0.18		0.17	
LPAH, TOTAL	mg/kg	0.011		0.014		0.0051		0.036		0.011		0.37		1.5		0.30		1.0		0.38		0.29	
NAPHTHALENE	mg/kg	< 0.023	U	< 0.023	U	< 0.022	U	0.0069	J	0.006	J	< 0.22	U	< 0.47	U	0.011	J	0.018	J	0.012	J	0.0064	J
PAH, TOTAL	mg/kg	0.046		0.065		0.060		0.071		0.027		3.1		45		3.0		8.6		3.1		2.9	
PHENANTHRENE	mg/kg	0.0045	J	0.0053	J	0.0038	J	0.0082	J	0.0032	J	0.26		1.1	J	0.19	J	0.7		0.25		0.18	
PYRENE	mg/kg	0.005	J	0.018	J	0.0081		0.0071	J	0.003	J	0.54		4.5	J	0.41	J	1		0.4		0.43	

Notes:
U or < - Non-detect at laboratory detection limit.
J - The compound was positively identified; however, the associated numerical value is an estimated concentration only (+ and - indicate bias).
Sample Type - N = normal sample, FD = duplicate sample.
mg/kg - milligram per kilogram

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	CRP-SB01		CRP-SB09		CRP-SB201		CRP-SB201		CRP-SB201		CRP-SB202		CRP-SB202		CRP-SB202	
			Sample Date	5/19/2009		5/18/2009		12/9/2013		12/9/2013		12/9/2013		12/10/2013		12/10/2013		12/10/2013	
			Sample ID	CRP-SB01-0608		CRP-SB09-0608		OU09 SS201 0001		OU09 SB201 0305		OU09 SB201 1012		OU09 SS202 0001		OU09 SB202 0608		OU09 SB202 0305	
			Sample Type	N		N		N		N		N		N		N		N	
			start_depth	6		6		0		3		10		0		6		3	
			end_depth	8		8		1		5		12		1		8		5	
			depth_unit	FT		FT		FT		FT		FT		FT		FT		FT	
			depth_interval	6 - 8 ft		6 - 8 ft		0 - 1 ft		3 - 5 ft		10 - 12 ft		0 - 1 ft		6 - 8 ft		3 - 5 ft	
			task_code	MRP01 SI 2009		MRP01 SI 2009		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO	
			validated_yn	N		N		Y		Y		Y		Y		Y		Y	
method_analyte_group	Chemical	Unit	Fraction	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers
Newport_RA_SO_Energetics	2,4-DINITROTOLUENE	MG_KG	N																
Newport_RA_SO_Energetics	2,6-DINITROTOLUENE	MG_KG	N																
Newport_RA_SO_Energetics	NITROGLYCERIN	MG_KG	N																
Newport_RA_SO_Metals	ALUMINUM	MG_KG	N	9610		7370		11700		6000		7730		11900		5990		8330	
Newport_RA_SO_Metals	ANTIMONY	MG_KG	N	< 0.92	UJ	< 0.85	UJ	0.18	J	0.22	J	0.18	J	0.99	J	0.08	J	0.1	J
Newport_RA_SO_Metals	ARSENIC	MG_KG	N	8.7		7.5		7.5	J	12.4	J	13.5	J	8.5	J	4.4	J	9.2	J
Newport_RA_SO_Metals	BARIUM	MG_KG	N	26	J	25.9	J	34.5		18.1		22.2		36.2		16.7		18.8	
Newport_RA_SO_Metals	BERYLLIUM	MG_KG	N	0.39		0.36		0.45		0.39		0.34		0.39		0.41		0.43	
Newport_RA_SO_Metals	CADMIUM	MG_KG	N	0.19	J	0.13	J	0.07	J	< 0.085	U	< 0.091	U	0.35		0.06		0.04	J
Newport_RA_SO_Metals	CALCIUM	MG_KG	N	418	J	382	J	344		360		720		1970	J+	482	J+	422	J+
Newport_RA_SO_Metals	CHROMIUM VI	MG_KG	N																
Newport_RA_SO_Metals	CHROMIUM, TOTAL	MG_KG	N	12	J	10.7	J	11.9	J	12.4	J	14.1	J	14.5	J	11.1	J	11.0	J
Newport_RA_SO_Metals	COBALT	MG_KG	N	10		11.2		9.4	J	15.9	J	12.5	J	8.7	J	18.6	J	12.8	J
Newport_RA_SO_Metals	COPPER	MG_KG	N	20.4	J	15	J	11.1		23.4		23.5		30.3		14.7		17.0	
Newport_RA_SO_Metals	IRON	MG_KG	N	26800		22800		20800	J	42400	J	35800	J	23600	J	41900	J	34600	J
Newport_RA_SO_Metals	IRON, FERROUS	MG_KG	N																
Newport_RA_SO_Metals	LEAD	MG_KG	N	18.3	J	9.1	J	19.8	J	10	J	10	J	132	J	6.7	J	8.8	J
Newport_RA_SO_Metals	MAGNESIUM	MG_KG	N	2180		1850		1500	J	1200	J	2950	J	2720	J	1970	J	2170	J
Newport_RA_SO_Metals	MANGANESE	MG_KG	N	442	J	394	J	606	J	516	J	938	J	340	J	548	J	441	J
Newport_RA_SO_Metals	MERCURY	MG_KG	N	0.028	J	< 0.035	U	0.06	J-	< 0.017	UJ	< 0.016	UJ	0.11		< 0.014	U	< 0.014	U
Newport_RA_SO_Metals	NICKEL	MG_KG	N	21.2		18.7		15.1	J	26.0	J	24.8	J	19.6	J	25.0	J	20.6	J
Newport_RA_SO_Metals	POTASSIUM	MG_KG	N	266	J	541	J	355	J	433	J	571	J	442	J	454	J	659	J
Newport_RA_SO_Metals	SELENIUM	MG_KG	N	0.43		< 0.37	U	0.66		< 0.43	U	< 0.46	U	0.46		< 0.19	U	0.38	
Newport_RA_SO_Metals	SILVER	MG_KG	N	< 0.18	U	< 0.17	U	0.10	J	0.02	J	0.03	J	0.42	J	0.03	J	0.02	J
Newport_RA_SO_Metals	SODIUM	MG_KG	N	< 308	U	< 285	U	< 92	U	< 85	U	< 91	U	< 80	U	< 65	U	< 67	U
Newport_RA_SO_Metals	THALLIUM	MG_KG	N	< 0.49	U	< 0.46	U	0.11		0.04	J	0.05	J	0.08		0.05	J	0.07	J
Newport_RA_SO_Metals	VANADIUM	MG_KG	N	15.9		13.8		22.5		18.3		16.9		26.6		25.4		18.2	
Newport_RA_SO_Metals	ZINC	MG_KG	N	66.8		51		39.5		60.3		57.6		123	J+	56.0	J+	47.3	J+
Newport_RA_SO_Other	DENSITY	G_CC	N																
Newport_RA_SO_Other	Pellet count	COUNT	N																
Newport_RA_SO_Other	Pellet weight	PCT	N																
Newport_RA_SO_Other	PERCENT FINES	PCT	N																
Newport_RA_SO_Other	PERCENT GRAVEL	PCT	N																
Newport_RA_SO_Other	PERCENT SAND	PCT	N																
Newport_RA_SO_Other	PERCENT SAND, COARSE	PCT	N																
Newport_RA_SO_Other	PERCENT SAND, FINE	PCT	N																
Newport_RA_SO_Other	PERCENT SAND, MEDIUM	PCT	N																
Newport_RA_SO_Other	PH	PH	N																
Newport_RA_SO_Other	POROSITY	PCT	N																
Newport_RA_SO_Other	SIEVE 1 INCH (25.4-MM)	PCT	N																
Newport_RA_SO_Other	SIEVE 1-1/2 INCH (37.5-MM)	PCT	N																
Newport_RA_SO_Other	SIEVE 2 INCH (50-MM)	PCT	N																
Newport_RA_SO_Other	SIEVE 3 INCH (75-MM)	PCT	N																
Newport_RA_SO_Other	SIEVE 3/4 INCH (19-MM)	PCT	N																
Newport_RA_SO_Other	SIEVE 3/8 INCH (9.5-MM)	PCT	N																
Newport_RA_SO_Other	SIEVE NO. 004 (4.75-MM)	PCT	N																
Newport_RA_SO_Other	SIEVE NO. 010 (2-MM)	PCT	N																
Newport_RA_SO_Other	SIEVE NO. 020 (850-UM)	PCT	N																
Newport_RA_SO_Other	SIEVE NO. 040 (425-UM)	PCT	N																
Newport_RA_SO_Other	SIEVE NO. 060 (250-UM)	PCT	N																
Newport_RA_SO_Other	SIEVE NO. 080 (180-UM)	PCT	N																
Newport_RA_SO_Other	SIEVE NO. 100 (150-UM)	PCT	N																
Newport_RA_SO_Other	SIEVE NO. 200 (75-UM)	PCT	N																
Newport_RA_SO_Other	SPECIFIC CONDUCTANCE	UMHO_CM	N																
Newport_RA_SO_Other	SPECIFIC GRAVITY	NONE	N																
Newport_RA_SO_Other	SULFIDE	MG_KG	N																
Newport_RA_SO_Other	TPH-DIESEL RANGE	MG_KG	N	17	J	9													
Newport_RA_SO_Other	TPH-TOTAL UNKNOWN GASOLINE RANGE ORGANICS	MG_KG	N	< 3.2	U	51													
Newport_RA_SO_Other	Void Ratio	NONE	N																
Newport_RA_SO_PCBs	AROCLOR-1016	MG_KG	N	< 0.02	U	< 0.019	U												
Newport_RA_SO_PCBs	AROCLOR-1221	MG_KG	N	< 0.02	U	< 0.019	U												
Newport_RA_SO_PCBs	AROCLOR-1232	MG_KG	N	< 0.02	U	< 0.019	U												
Newport_RA_SO_PCBs	AROCLOR-1242	MG_KG	N	< 0.02	U	< 0.019	U												
Newport_RA_SO_PCBs	AROCLOR-1248	MG_KG	N	< 0.02	U	< 0.019	U												
Newport_RA_SO_PCBs	AROCLOR-1254	MG_KG	N	< 0.02	U	< 0.019	U												
Newport_RA_SO_PCBs	AROCLOR-1260	MG_KG	N	0.0098	J	< 0.019	U												

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	CRP-SB01		CRP-SB09		CRP-SB201		CRP-SB201		CRP-SB201		CRP-SB202		CRP-SB202		CRP-SB202	
			Sample Date	5/19/2009		5/18/2009		12/9/2013		12/9/2013		12/9/2013		12/10/2013		12/10/2013		12/10/2013	
			Sample ID	CRP-SB01-0608		CRP-SB09-0608		OU09 SS201 0001		OU09 SB201 0305		OU09 SB201 1012		OU09 SS202 0001		OU09 SB202 0608		OU09 SB202 0305	
			Sample Type	N		N		N		N		N		N		N		N	
			start_depth	6		6		0		3		10		0		6		3	
			end_depth	8		8		1		5		12		1		8		5	
			depth_unit	FT		FT		FT		FT		FT		FT		FT		FT	
			depth_interval	6 - 8 ft		6 - 8 ft		0 - 1 ft		3 - 5 ft		10 - 12 ft		0 - 1 ft		6 - 8 ft		3 - 5 ft	
			task_code	MRP01 SI 2009		MRP01 SI 2009		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO	
			validated_yn	N		N		Y		Y		Y		Y		Y		Y	
method_analyte_group	Chemical	Unit	Fraction	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers
Newport_RA_SO_PCBs	AROCLOR-1262	MG_KG	N																
Newport_RA_SO_PCBs	AROCLOR-1268	MG_KG	N																
Newport_RA_SO_PCBs	PCB, TOTAL	MG_KG	N	0.0098		< 0.019	U												
Newport_RA_SO_PCBs	POLYCHLORINATED BIPHENYLS (PCBS)	MG_KG	N	0.0098	J		U												
Newport_RA_SO_Pesticides	4,4-DDD	MG_KG	N	< 0.00082	U	< 0.00078	U												
Newport_RA_SO_Pesticides	4,4-DDE	MG_KG	N	< 0.00082	U	< 0.00078	U												
Newport_RA_SO_Pesticides	4,4-DDT	MG_KG	N	0.00074	J	< 0.00078	U												
Newport_RA_SO_Pesticides	ALDRIN	MG_KG	N	< 0.00041	U	< 0.00039	U												
Newport_RA_SO_Pesticides	ALPHA-BHC	MG_KG	N	< 0.00041	U	< 0.00039	U												
Newport_RA_SO_Pesticides	ALPHA-CHLORDANE	MG_KG	N	< 0.00041	U	< 0.00039	U												
Newport_RA_SO_Pesticides	BETA-BHC	MG_KG	N	< 0.00041	U	< 0.00039	U												
Newport_RA_SO_Pesticides	DDT, TOTAL	MG_KG	N	0.00074	J		U												
Newport_RA_SO_Pesticides	DELTA-BHC	MG_KG	N	< 0.00041	U	< 0.00039	U												
Newport_RA_SO_Pesticides	DIELDRIN	MG_KG	N	< 0.00082	U	< 0.00078	U												
Newport_RA_SO_Pesticides	ENDOSULFAN I	MG_KG	N	< 0.00041	U	< 0.00039	U												
Newport_RA_SO_Pesticides	ENDOSULFAN II	MG_KG	N	0.0008	J	0.0013													
Newport_RA_SO_Pesticides	ENDOSULFAN SULFATE	MG_KG	N	< 0.00082	UJ	< 0.00078	U												
Newport_RA_SO_Pesticides	ENDRIN	MG_KG	N	< 0.00082	U	< 0.00078	U												
Newport_RA_SO_Pesticides	ENDRIN ALDEHYDE	MG_KG	N	< 0.00082	U	< 0.00078	U												
Newport_RA_SO_Pesticides	ENDRIN KETONE	MG_KG	N	< 0.00082	U	< 0.00078	U												
Newport_RA_SO_Pesticides	GAMMA-CHLORDANE	MG_KG	N																
Newport_RA_SO_Pesticides	HEPTACHLOR	MG_KG	N	< 0.00041	U	< 0.00039	U												
Newport_RA_SO_Pesticides	HEPTACHLOR EPOXIDE	MG_KG	N	< 0.00041	U	< 0.00039	U												
Newport_RA_SO_Pesticides	LINDANE	MG_KG	N	< 0.00041	U	< 0.00039	U												
Newport_RA_SO_Pesticides	METHOXYCHLOR	MG_KG	N	< 0.00041	U	< 0.00039	U												
Newport_RA_SO_Pesticides	TOXAPHENE	MG_KG	N	< 0.041	U	< 0.039	U												
Newport_RA_SO_Pesticides	TRANS-CHLORDANE	MG_KG	N	0.00024	J	< 0.00039	U												
Newport_RA_SO_SVOCs	1,1-BIPHENYL	MG_KG	N	< 0.41	U	< 0.39	U												
Newport_RA_SO_SVOCs	1-METHYLNAPHTHALENE	MG_KG	N																
Newport_RA_SO_SVOCs	1,2,4-TRICHLOROBENZENE	MG_KG	N																
Newport_RA_SO_SVOCs	1,2-DICHLOROBENZENE	MG_KG	N																
Newport_RA_SO_SVOCs	1,2-DIPHENYLHYDRAZINE	MG_KG	N																
Newport_RA_SO_SVOCs	1,3-DICHLOROBENZENE	MG_KG	N																
Newport_RA_SO_SVOCs	1,4-DICHLOROBENZENE	MG_KG	N																
Newport_RA_SO_SVOCs	2,2'-OXYBIS(1-CHLOROPROPANE)	MG_KG	N	< 0.82	U	< 0.78	U												
Newport_RA_SO_SVOCs	2,4,5-TRICHLOROPHENOL	MG_KG	N	< 0.41	U	< 0.39	U												
Newport_RA_SO_SVOCs	2,4,6-TRICHLOROPHENOL	MG_KG	N	< 0.41	U	< 0.39	U												
Newport_RA_SO_SVOCs	2,4-DICHLOROPHENOL	MG_KG	N	< 0.41	U	< 0.39	U												
Newport_RA_SO_SVOCs	2,4-DIMETHYLPHENOL	MG_KG	N	< 1.6	U	< 1.6	U												
Newport_RA_SO_SVOCs	2,4-DINITROPHENOL	MG_KG	N	< 4.1	U	< 3.9	U												
Newport_RA_SO_SVOCs	2,4-DINITROTOLUENE	MG_KG	N	< 0.41	U	< 0.39	U												
Newport_RA_SO_SVOCs	2,6-DICHLOROPHENOL	MG_KG	N																
Newport_RA_SO_SVOCs	2,6-DINITROTOLUENE	MG_KG	N	< 0.41	U	< 0.39	U												
Newport_RA_SO_SVOCs	2-CHLORONAPHTHALENE	MG_KG	N	< 0.41	U	< 0.39	U												
Newport_RA_SO_SVOCs	2-CHLOROPHENOL	MG_KG	N	< 0.41	U	< 0.39	U												
Newport_RA_SO_SVOCs	2-METHYLNAPHTHALENE	MG_KG	N	< 0.41	U	< 0.39	U												
Newport_RA_SO_SVOCs	2-METHYLPHENOL	MG_KG	N	< 0.41	U	< 0.39	U												
Newport_RA_SO_SVOCs	2-NITROANILINE	MG_KG	N	< 1.6	U	< 1.6	U												
Newport_RA_SO_SVOCs	2-NITROPHENOL	MG_KG	N	< 0.41	U	< 0.39	U												
Newport_RA_SO_SVOCs	3- AND 4-METHYLPHENOL	MG_KG	N																
Newport_RA_SO_SVOCs	3,3-DICHLOROBENZIDINE	MG_KG	N	< 0.41	U	< 0.39	U												
Newport_RA_SO_SVOCs	3-NITROANILINE	MG_KG	N	< 1.6	U	< 1.6	U												
Newport_RA_SO_SVOCs	4,6-DINITRO-2-METHYLPHENOL	MG_KG	N	< 1.6	U	< 1.6	U												
Newport_RA_SO_SVOCs	4-BROMOPHENYL-PHENYLETHER	MG_KG	N	< 0.41	U	< 0.39	U												
Newport_RA_SO_SVOCs	4-CHLORO-3-METHYLPHENOL	MG_KG	N	< 0.41	U	< 0.39	U												
Newport_RA_SO_SVOCs	4-CHLOROANILINE	MG_KG	N	< 0.41	U	< 0.39	U												
Newport_RA_SO_SVOCs	4-CHLOROPHENYL-PHENYLETHER	MG_KG	N	< 0.41	U	< 0.39	U												
Newport_RA_SO_SVOCs	4-METHYLPHENOL	MG_KG	N	< 0.41	U	< 0.39	U												
Newport_RA_SO_SVOCs	4-NITROANILINE	MG_KG	N	< 1.6	U	< 1.6	U												
Newport_RA_SO_SVOCs	4-NITROPHENOL	MG_KG	N	< 1.6	U	< 1.6	UJ												
Newport_RA_SO_SVOCs	ACENAPHTHENE	MG_KG	N	< 0.41	U	< 0.39	U	0.0022	J	< 0.011	U	< 0.011	U	0.036		< 0.01	U	< 0.011	U
Newport_RA_SO_SVOCs	ACENAPHTHYLENE	MG_KG	N	< 0.41	U	< 0.39	U	< 0.012	U	< 0.011	U	< 0.011	U	0.01	J	< 0.01	U	< 0.011	U
Newport_RA_SO_SVOCs	ACETOPHENONE	MG_KG	N	< 0.41	U	< 0.39	U												
Newport_RA_SO_SVOCs	ANTHRACENE	MG_KG	N	< 0.41	U	< 0.39	U	0.0041	J	0.0016	J	< 0.011	U	0.073		< 0.01	UJ	< 0.011	U
Newport_RA_SO_SVOCs	ATRAZINE	MG_KG	N	< 0.41	U	< 0.39	U												
Newport_RA_SO_SVOCs	BENZALDEHYDE	MG_KG	N	< 0.41	U	< 0.39	U												

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	CRP-SB01		CRP-SB09		CRP-SB201		CRP-SB201		CRP-SB201		CRP-SB202		CRP-SB202		CRP-SB202	
			Sample Date	5/19/2009		5/18/2009		12/9/2013		12/9/2013		12/9/2013		12/10/2013		12/10/2013		12/10/2013	
			Sample ID	CRP-SB01-0608		CRP-SB09-0608		OU09 SS201 0001		OU09 SB201 0305		OU09 SB201 1012		OU09 SS202 0001		OU09 SB202 0608		OU09 SB202 0305	
			Sample Type	N		N		N		N		N		N		N		N	
			start_depth	6		6		0		3		10		0		6		3	
			end_depth	8		8		1		5		12		1		8		5	
			depth_unit	FT		FT		FT		FT		FT		FT		FT		FT	
			depth_interval	6 - 8 ft		6 - 8 ft		0 - 1 ft		3 - 5 ft		10 - 12 ft		0 - 1 ft		6 - 8 ft		3 - 5 ft	
			task_code	MRP01 SI 2009		MRP01 SI 2009		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO	
			validated_yn	N		N		Y		Y		Y		Y		Y		Y	
method_analyte_group	Chemical	Unit	Fraction	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers
Newport_RA_SO_SVOCs	BENZIDINE	MG_KG	N																
Newport_RA_SO_SVOCs	BENZO[A]ANTHRACENE	MG_KG	N	0.056	J	< 0.39	U	< 0.025	U	< 0.023	U	< 0.022	U	0.58		< 0.01	U	< 0.022	U
Newport_RA_SO_SVOCs	BENZO[A]PYRENE	MG_KG	N	< 0.082	U	0.027	J	0.025	J	< 0.011	U	< 0.011	U	0.71	J	< 0.01	U	< 0.011	UJ
Newport_RA_SO_SVOCs	BENZO[B]FLUORANTHENE	MG_KG	N	0.053	J	< 0.39	U	0.031		< 0.011	U	0.0031	J	0.75	J	< 0.01	U	< 0.011	U
Newport_RA_SO_SVOCs	BENZO[G,H,I]PERYLENE	MG_KG	N	< 0.41	U	< 0.39	U	< 0.025	UJ	< 0.011	UJ	< 0.011	UJ	0.24	J	< 0.01	UJ	< 0.011	UJ
Newport_RA_SO_SVOCs	BENZO[K]FLUORANTHENE	MG_KG	N	< 0.41	U	< 0.39	U	0.024	J	< 0.011	U	< 0.011	U	0.29	J	< 0.01	UJ	< 0.011	U
Newport_RA_SO_SVOCs	BENZOIC ACID	MG_KG	N																
Newport_RA_SO_SVOCs	BENZYL ALCOHOL	MG_KG	N																
Newport_RA_SO_SVOCs	BIS(2-CHLOROETHOXY)METHANE	MG_KG	N	< 0.41	U	< 0.39	U												
Newport_RA_SO_SVOCs	BIS(2-CHLOROETHYL)ETHER	MG_KG	N	< 0.41	U	< 0.39	U												
Newport_RA_SO_SVOCs	BIS(2-ETHYLHEXYL)PHTHALATE	MG_KG	N	0.044	J	0.048	J												
Newport_RA_SO_SVOCs	BUTYLBENZYLPHTHALATE	MG_KG	N	< 0.41	U	< 0.39	U												
Newport_RA_SO_SVOCs	CAPROLACTAM	MG_KG	N	< 0.41	U	< 0.39	U												
Newport_RA_SO_SVOCs	CARBAZOLE	MG_KG	N	< 0.82	U	< 0.78	U												
Newport_RA_SO_SVOCs	CHRYSENE	MG_KG	N	0.054	J	< 0.078	U	0.024	J	< 0.011	U	< 0.011	U	0.75		< 0.01	U	< 0.011	U
Newport_RA_SO_SVOCs	DIBENZ[A,H]ANTHRACENE	MG_KG	N	< 0.082	U	< 0.078	U	< 0.025	U	< 0.023	U	< 0.022	U	0.084	J	< 0.01	UJ	< 0.011	U
Newport_RA_SO_SVOCs	DIBENZOFURAN	MG_KG	N	< 0.41	U	< 0.39	U												
Newport_RA_SO_SVOCs	DIETHYLPHTHALATE	MG_KG	N	< 0.41	U	< 0.39	U												
Newport_RA_SO_SVOCs	DIMETHYL PHTHALATE	MG_KG	N	< 0.41	U	< 0.39	U												
Newport_RA_SO_SVOCs	DI-N-BUTYLPHTHALATE	MG_KG	N	< 0.41	U	< 0.39	U												
Newport_RA_SO_SVOCs	DI-N-OCTYLPHTHALATE	MG_KG	N	< 0.41	U	< 0.39	U												
Newport_RA_SO_SVOCs	FLUORANTHENE	MG_KG	N	0.11	J	< 0.39	U	0.029		0.0028	J	0.0022	J	0.82		< 0.01	U	< 0.022	U
Newport_RA_SO_SVOCs	FLUORENE	MG_KG	N	< 0.41	U	< 0.39	U	< 0.012	U	< 0.011	U	< 0.011	U	0.025	J	< 0.01	U	< 0.011	U
Newport_RA_SO_SVOCs	HEXACHLOROBENZENE	MG_KG	N	< 0.082	U	< 0.078	U												
Newport_RA_SO_SVOCs	HEXACHLOROBUTADIENE	MG_KG	N	< 0.41	U	< 0.39	U												
Newport_RA_SO_SVOCs	HEXACHLOROCYCLOPENTADIENE	MG_KG	N	< 0.41	UJ	< 0.39	UJ												
Newport_RA_SO_SVOCs	HEXACHLOROETHANE	MG_KG	N	< 0.82	U	< 0.78	U												
Newport_RA_SO_SVOCs	HPAH, TOTAL	MG_KG	N	0.37		0.027		0.17		0.0028		0.0053		6.1		< 0.01	U	< 0.022	U
Newport_RA_SO_SVOCs	INDENO[1,2,3-CD]PYRENE	MG_KG	N	< 0.41	U	< 0.39	U	< 0.025	U	< 0.023	U	< 0.022	U	0.36	J	< 0.01	UJ	< 0.011	UJ
Newport_RA_SO_SVOCs	ISOPHORONE	MG_KG	N	< 0.41	U	< 0.39	U												
Newport_RA_SO_SVOCs	LPAH, TOTAL	MG_KG	N	0.072		< 0.39	U	0.025		0.0054		< 0.011	U	0.48		< 0.01	U	< 0.011	U
Newport_RA_SO_SVOCs	NAPHTHALENE	MG_KG	N	< 0.41	U	< 0.39	U	< 0.012	U	< 0.011	U	< 0.011	U	0.0088	J	< 0.01	U	< 0.011	U
Newport_RA_SO_SVOCs	NITROBENZENE	MG_KG	N	< 0.41	U	< 0.39	U												
Newport_RA_SO_SVOCs	N-NITROSODIMETHYLAMINE	MG_KG	N																
Newport_RA_SO_SVOCs	N-NITROSODINPROPYLAMINE	MG_KG	N	< 0.41	U	< 0.39	U												
Newport_RA_SO_SVOCs	N-NITROSODIPHENYLAMINE	MG_KG	N	< 0.41	U	< 0.39	U												
Newport_RA_SO_SVOCs	N-NITROSOPYRROLIDINE	MG_KG	N																
Newport_RA_SO_SVOCs	PAH, TOTAL	MG_KG	N	0.44		0.027		0.19		0.0082		0.0053		6.6		< 0.01	U	< 0.022	U
Newport_RA_SO_SVOCs	PENTACHLOROPHENOL	MG_KG	N	< 1.6	U	< 1.6	U												
Newport_RA_SO_SVOCs	PHENANTHRENE	MG_KG	N	0.072	J	< 0.39	U	0.019	J	0.0038	J	< 0.011	U	0.33		< 0.01	U	< 0.011	U
Newport_RA_SO_SVOCs	PHENOL	MG_KG	N	< 0.41	U	< 0.39	U												
Newport_RA_SO_SVOCs	PYRENE	MG_KG	N	0.093	J	< 0.39	U	0.035		< 0.023	U	< 0.022	U	1.5		< 0.01	UJ	< 0.011	UJ
Newport_RA_SO_VOCs	1,1,1,2-TETRACHLOROETHANE	MG_KG	N																
Newport_RA_SO_VOCs	1,1,1-TRICHLOROETHANE	MG_KG	N	< 0.0073	UJ	< 0.0045	U												
Newport_RA_SO_VOCs	1,1,2,2-TETRACHLOROETHANE	MG_KG	N	< 0.0073	UJ	< 0.0045	U												
Newport_RA_SO_VOCs	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	MG_KG	N																
Newport_RA_SO_VOCs	1,1,2-TRICHLOROETHANE	MG_KG	N	< 0.0073	UJ	< 0.0045	U												
Newport_RA_SO_VOCs	1,1-DICHLOROETHANE	MG_KG	N	< 0.0073	UJ	< 0.0045	U												
Newport_RA_SO_VOCs	1,1-DICHLOROETHENE	MG_KG	N	< 0.0073	UJ	< 0.0045	U												
Newport_RA_SO_VOCs	1,1-DICHLOROPROPENE	MG_KG	N																
Newport_RA_SO_VOCs	1,2,3-TRICHLOROBENZENE	MG_KG	N																
Newport_RA_SO_VOCs	1,2,3-TRICHLOROPROPANE	MG_KG	N																
Newport_RA_SO_VOCs	1,2,4-TRICHLOROBENZENE	MG_KG	N	< 0.0073	UJ	< 0.0045	U												
Newport_RA_SO_VOCs	1,2,4-TRIMETHYLBENZENE	MG_KG	N																
Newport_RA_SO_VOCs	1,2-DIBROMO-3-CHLOROPROPANE	MG_KG	N	< 0.0073	UJ	< 0.0045	U												
Newport_RA_SO_VOCs	1,2-DIBROMOETHANE	MG_KG	N	< 0.0073	UJ	< 0.0045	U												
Newport_RA_SO_VOCs	1,2-DICHLOROBENZENE	MG_KG	N	< 0.0073	UJ	< 0.0045	U												
Newport_RA_SO_VOCs	1,2-DICHLOROETHANE	MG_KG	N	< 0.0073	UJ	< 0.0045	U												
Newport_RA_SO_VOCs	1,2-DICHLOROETHENE, TOTAL	MG_KG	N		UJ		U												
Newport_RA_SO_VOCs	1,2-DICHLOROPROPANE	MG_KG	N	< 0.0073	UJ	< 0.0045	U												
Newport_RA_SO_VOCs	1,3,5-TRIMETHYLBENZENE	MG_KG	N																
Newport_RA_SO_VOCs	1,3-DICHLOROBENZENE	MG_KG	N	< 0.0073	UJ	< 0.0045	U												
Newport_RA_SO_VOCs	1,3-DICHLOROPROPANE	MG_KG	N																
Newport_RA_SO_VOCs	1,4-DICHLOROBENZENE	MG_KG	N	< 0.0073	UJ	< 0.0045	U												
Newport_RA_SO_VOCs	2,2-DICHLOROPROPANE	MG_KG	N																
Newport_RA_SO_VOCs	2-BUTANONE	MG_KG	N	< 0.073	UJ	< 0.045	U												

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	CRP-SB01		CRP-SB09		CRP-SB201		CRP-SB201		CRP-SB201		CRP-SB202		CRP-SB202		CRP-SB202	
			Sample Date	5/19/2009		5/18/2009		12/9/2013		12/9/2013		12/9/2013		12/10/2013		12/10/2013		12/10/2013	
			Sample ID	CRP-SB01-0608		CRP-SB09-0608		OU09 SS201 0001		OU09 SB201 0305		OU09 SB201 1012		OU09 SS202 0001		OU09 SB202 0608		OU09 SB202 0305	
			Sample Type	N		N		N		N		N		N		N		N	
			start_depth	6		6		0		3		10		0		6		3	
			end_depth	8		8		1		5		12		1		8		5	
			depth_unit	FT		FT		FT		FT		FT		FT		FT		FT	
			depth_interval	6 - 8 ft		6 - 8 ft		0 - 1 ft		3 - 5 ft		10 - 12 ft		0 - 1 ft		6 - 8 ft		3 - 5 ft	
			task_code	MRP01 SI 2009		MRP01 SI 2009		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO	
			validated_yn	N		N		Y		Y		Y		Y		Y		Y	
method_analyte_group	Chemical	Unit	Fraction	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers
Newport_RA_SO_VOCs	2-CHLOROTOLUENE	MG_KG	N																
Newport_RA_SO_VOCs	2-HEXANONE	MG_KG	N	< 0.015	UJ	< 0.009	UJ												
Newport_RA_SO_VOCs	4-CHLOROTOLUENE	MG_KG	N																
Newport_RA_SO_VOCs	4-ISOPROPYLTOLUENE	MG_KG	N																
Newport_RA_SO_VOCs	4-METHYL-2-PENTANONE	MG_KG	N	< 0.015	UJ	< 0.009	U												
Newport_RA_SO_VOCs	ACETONE	MG_KG	N	< 0.073	UJ	< 0.045	UJ												
Newport_RA_SO_VOCs	BENZENE	MG_KG	N	< 0.0073	UJ	< 0.0045	U												
Newport_RA_SO_VOCs	BROMOBENZENE	MG_KG	N																
Newport_RA_SO_VOCs	BROMOCHLOROMETHANE	MG_KG	N																
Newport_RA_SO_VOCs	BROMODICHLOROMETHANE	MG_KG	N	< 0.0073	UJ	< 0.0045	U												
Newport_RA_SO_VOCs	BROMOFORM	MG_KG	N	< 0.0073	UJ	< 0.0045	U												
Newport_RA_SO_VOCs	BROMOMETHANE	MG_KG	N	< 0.015	UJ	< 0.009	U												
Newport_RA_SO_VOCs	CARBON DISULFIDE	MG_KG	N	< 0.0073	UJ	< 0.0045	U												
Newport_RA_SO_VOCs	CARBON TETRACHLORIDE	MG_KG	N	< 0.0073	UJ	< 0.0045	U												
Newport_RA_SO_VOCs	CHLOROBENZENE	MG_KG	N	< 0.0073	UJ	< 0.0045	U												
Newport_RA_SO_VOCs	CHLOROETHANE	MG_KG	N	< 0.015	UJ	< 0.009	U												
Newport_RA_SO_VOCs	CHLOROFORM	MG_KG	N	< 0.0073	UJ	< 0.0045	U												
Newport_RA_SO_VOCs	CHLOROMETHANE	MG_KG	N	< 0.015	UJ	< 0.009	U												
Newport_RA_SO_VOCs	CIS-1,2-DICHLOROETHENE	MG_KG	N	< 0.0073	UJ	< 0.0045	U												
Newport_RA_SO_VOCs	CIS-1,3-DICHLOROPROPENE	MG_KG	N	< 0.0073	UJ	< 0.0045	U												
Newport_RA_SO_VOCs	CYCLOHEXANE	MG_KG	N	< 0.0073	UJ	< 0.0045	U												
Newport_RA_SO_VOCs	DIBROMOCHLOROMETHANE	MG_KG	N	< 0.0073	UJ	< 0.0045	U												
Newport_RA_SO_VOCs	DIBROMOMETHANE	MG_KG	N																
Newport_RA_SO_VOCs	DICHLORODIFLUOROMETHANE	MG_KG	N	< 0.015	UJ	< 0.009	U												
Newport_RA_SO_VOCs	ETHYLBENZENE	MG_KG	N	< 0.0073	UJ	< 0.0045	U												
Newport_RA_SO_VOCs	HEXACHLOROBUTADIENE	MG_KG	N																
Newport_RA_SO_VOCs	ISOPROPYLBENZENE	MG_KG	N	< 0.0073	UJ	< 0.0045	U												
Newport_RA_SO_VOCs	M- AND P-XYLENE	MG_KG	N																
Newport_RA_SO_VOCs	METHYL ACETATE	MG_KG	N	< 0.015	UJ	< 0.009	U												
Newport_RA_SO_VOCs	METHYL CYCLOHEXANE	MG_KG	N	< 0.0073	UJ	< 0.0045	U												
Newport_RA_SO_VOCs	METHYL TERT-BUTYL ETHER	MG_KG	N	< 0.0073	UJ	< 0.0045	U												
Newport_RA_SO_VOCs	METHYLENE CHLORIDE	MG_KG	N	< 0.015	UJ	< 0.009	U												
Newport_RA_SO_VOCs	NAPHTHALENE	MG_KG	N																
Newport_RA_SO_VOCs	N-BUTYLBENZENE	MG_KG	N																
Newport_RA_SO_VOCs	O-XYLENE	MG_KG	N																
Newport_RA_SO_VOCs	PROPYLBENZENE	MG_KG	N																
Newport_RA_SO_VOCs	SEC-BUTYLBENZENE	MG_KG	N																
Newport_RA_SO_VOCs	STYRENE	MG_KG	N	< 0.0073	UJ	< 0.0045	U												
Newport_RA_SO_VOCs	TERT-BUTANOL	MG_KG	N																
Newport_RA_SO_VOCs	TERT-BUTYLBENZENE	MG_KG	N																
Newport_RA_SO_VOCs	TETRACHLOROETHENE	MG_KG	N	< 0.0073	UJ	< 0.0045	U												
Newport_RA_SO_VOCs	TOLUENE	MG_KG	N	< 0.0073	UJ	< 0.0045	U												
Newport_RA_SO_VOCs	TRANS-1,2-DICHLOROETHENE	MG_KG	N	< 0.0073	UJ	< 0.0045	U												
Newport_RA_SO_VOCs	TRANS-1,3-DICHLOROPROPENE	MG_KG	N	< 0.0073	UJ	< 0.0045	U												
Newport_RA_SO_VOCs	TRICHLOROETHENE	MG_KG	N	< 0.0073	UJ	< 0.0045	U												
Newport_RA_SO_VOCs	TRICHLOROFLUOROMETHANE	MG_KG	N	< 0.015	UJ	< 0.009	U												
Newport_RA_SO_VOCs	VINYL CHLORIDE	MG_KG	N	< 0.015	UJ	< 0.009	U												
Newport_RA_SO_VOCs	XYLENES, TOTAL	MG_KG	N	< 0.0073	UJ	< 0.0045	U												

Notes:
U or < - Non-detect at laboratory detection limit.
J - The compound was positively identified; however, the associated numerical value
is an estimated concentration only (+ and - indicate bias).
Sample Type - N = normal sample, FD = duplicate sample.
mg/kg - milligram per kilogram

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	CRP-SB203		CRP-SB203		CRP-SB203		CRP-SB204		CRP-SB204		CRP-SB204		CRP-SB205	
			Sample Date	12/10/2013		12/10/2013		12/10/2013		12/11/2013		12/11/2013		12/11/2013		12/11/2013	
			Sample ID	OU09 SS203 0001		OU09 SB203 0305		OU09 SB203 0608		OU09 SB204 0001		OU09 SB204 0305		OU09 SB204 1012		OU09 SS205 0001	
			Sample Type	N		N		N		N		N		N		N	
			start_depth	0		3		6		0		3		10		0	
			end_depth	1		5		8		1		5		12		1	
			depth_unit	FT		FT		FT		FT		FT		FT		FT	
			depth_interval	0 - 1 ft		3 - 5 ft		6 - 8 ft		0 - 1 ft		3 - 5 ft		10 - 12 ft		0 - 1 ft	
			task_code	MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO	
			validated_yn	Y		Y		Y		Y		Y		Y		N	
method_analyte_group	Chemical	Unit	Fraction	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers
Newport_RA_SO_Energetics	2,4-DINITROTOLUENE	MG_KG	N														
Newport_RA_SO_Energetics	2,6-DINITROTOLUENE	MG_KG	N														
Newport_RA_SO_Energetics	NITROGLYCERIN	MG_KG	N														
Newport_RA_SO_Metals	ALUMINUM	MG_KG	N	7640		7740		5730		13800		8220		6820			
Newport_RA_SO_Metals	ANTIMONY	MG_KG	N	0.05	J	0.16	J	0.08	J	0.22	J-	0.13	J-	< 0.088	UJ		
Newport_RA_SO_Metals	ARSENIC	MG_KG	N	7.2	J	17.6	J	3.0	J	22.5	J	9.6		1.8			
Newport_RA_SO_Metals	BARIUM	MG_KG	N	10.2		28.7		18.1		9.8		23.5		18.2			
Newport_RA_SO_Metals	BERYLLIUM	MG_KG	N	0.24		0.51		0.31		0.22		0.40		0.23			
Newport_RA_SO_Metals	CADMIUM	MG_KG	N	0.03	J	0.11		0.04	J	0.11	J	< 0.088	UJ	< 0.088	UJ		
Newport_RA_SO_Metals	CALCIUM	MG_KG	N	851	J+	206	J+	107	J+	2540	J	401	J	836	J		
Newport_RA_SO_Metals	CHROMIUM VI	MG_KG	N														
Newport_RA_SO_Metals	CHROMIUM, TOTAL	MG_KG	N	10.0	J	13.8	J	9.6	J	17.6	J-	12.4		11.2			
Newport_RA_SO_Metals	COBALT	MG_KG	N	8.5	J	24.7	J	10.0	J	23.6		16.6		6.7			
Newport_RA_SO_Metals	COPPER	MG_KG	N	9.2		31.9		17.4		24.4	J+	20.6	J	8.5			
Newport_RA_SO_Metals	IRON	MG_KG	N	16700	J	21600	J	8480	J	44800		38500		15400			
Newport_RA_SO_Metals	IRON, FERROUS	MG_KG	N													3.7	
Newport_RA_SO_Metals	LEAD	MG_KG	N	7.5	J	14.6	J	6.2	J	21.3	J+	8.7		4.3			
Newport_RA_SO_Metals	MAGNESIUM	MG_KG	N	2980	J	788	J	807	J	5160		2180		3020			
Newport_RA_SO_Metals	MANGANESE	MG_KG	N	242	J	796	J	319	J	555		520		288			
Newport_RA_SO_Metals	MERCURY	MG_KG	N	< 0.016	U	< 0.019	U	< 0.015	U	0.006	J	< 0.014	UJ	< 0.012	U		
Newport_RA_SO_Metals	NICKEL	MG_KG	N	14.5	J	42.6	J	17.4	J	39.4	J-	24.9		14.1			
Newport_RA_SO_Metals	POTASSIUM	MG_KG	N	454	J	725	J	610	J	279	J+	524		785	J+		
Newport_RA_SO_Metals	SELENIUM	MG_KG	N	0.18	J	< 0.50	U	< 0.34	U	< 0.39	U	< 0.44	U	< 0.44	U		
Newport_RA_SO_Metals	SILVER	MG_KG	N	0.02	J	0.03	J	0.02	J	0.04	J	0.03	J	0.01	J		
Newport_RA_SO_Metals	SODIUM	MG_KG	N	< 54	U	< 100	U	< 68	U	< 78	U	< 88	U	< 88	U		
Newport_RA_SO_Metals	THALLIUM	MG_KG	N	0.03	J	0.06	J	0.08		0.02	J	0.06	J	0.10			
Newport_RA_SO_Metals	VANADIUM	MG_KG	N	12.6		22.0		13.2		16.4		18.1		15.3			
Newport_RA_SO_Metals	ZINC	MG_KG	N	33.6	J+	87.5	J+	36.6	J+	80.9	J-	52.0	J	34.3	J-		
Newport_RA_SO_Other	DENSITY	G_CC	N													1.55	
Newport_RA_SO_Other	Pellet count	COUNT	N														
Newport_RA_SO_Other	Pellet weight	PCT	N														
Newport_RA_SO_Other	PERCENT FINES	PCT	N													28.2	
Newport_RA_SO_Other	PERCENT GRAVEL	PCT	N													17.4	
Newport_RA_SO_Other	PERCENT SAND	PCT	N													54.4	
Newport_RA_SO_Other	PERCENT SAND, COARSE	PCT	N													12.3	
Newport_RA_SO_Other	PERCENT SAND, FINE	PCT	N													22.5	
Newport_RA_SO_Other	PERCENT SAND, MEDIUM	PCT	N													19.6	
Newport_RA_SO_Other	PH	PH	N														
Newport_RA_SO_Other	POROSITY	PCT	N													41.2	
Newport_RA_SO_Other	SIEVE 1 INCH (25.4-MM)	PCT	N													0	
Newport_RA_SO_Other	SIEVE 1-1/2 INCH (37.5-MM)	PCT	N													0	
Newport_RA_SO_Other	SIEVE 2 INCH (50-MM)	PCT	N													0	
Newport_RA_SO_Other	SIEVE 3 INCH (75-MM)	PCT	N													0	
Newport_RA_SO_Other	SIEVE 3/4 INCH (19-MM)	PCT	N													0	
Newport_RA_SO_Other	SIEVE 3/8 INCH (9.5-MM)	PCT	N													9.1	
Newport_RA_SO_Other	SIEVE NO. 004 (4.75-MM)	PCT	N													8.3	
Newport_RA_SO_Other	SIEVE NO. 010 (2-MM)	PCT	N													12.3	
Newport_RA_SO_Other	SIEVE NO. 020 (850-UM)	PCT	N													10.3	
Newport_RA_SO_Other	SIEVE NO. 040 (425-UM)	PCT	N													9.3	
Newport_RA_SO_Other	SIEVE NO. 060 (250-UM)	PCT	N													8.9	
Newport_RA_SO_Other	SIEVE NO. 080 (180-UM)	PCT	N													4.6	
Newport_RA_SO_Other	SIEVE NO. 100 (150-UM)	PCT	N													2.4	
Newport_RA_SO_Other	SIEVE NO. 200 (75-UM)	PCT	N													6.6	
Newport_RA_SO_Other	SPECIFIC CONDUCTANCE	UMHO_CM	N													11	
Newport_RA_SO_Other	SPECIFIC GRAVITY	NONE	N													2.64	
Newport_RA_SO_Other	SULFIDE	MG_KG	N													18	
Newport_RA_SO_Other	TPH-DIESEL RANGE	MG_KG	N														
Newport_RA_SO_Other	TPH-TOTAL UNKNOWN GASOLINE RANGE ORGANICS	MG_KG	N														
Newport_RA_SO_Other	Void Ratio	NONE	N														
Newport_RA_SO_PCBs	AROCLOR-1016	MG_KG	N														
Newport_RA_SO_PCBs	AROCLOR-1221	MG_KG	N														
Newport_RA_SO_PCBs	AROCLOR-1232	MG_KG	N														
Newport_RA_SO_PCBs	AROCLOR-1242	MG_KG	N														
Newport_RA_SO_PCBs	AROCLOR-1248	MG_KG	N														
Newport_RA_SO_PCBs	AROCLOR-1254	MG_KG	N														
Newport_RA_SO_PCBs	AROCLOR-1260	MG_KG	N														

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	CRP-SB203		CRP-SB203		CRP-SB203		CRP-SB204		CRP-SB204		CRP-SB204		CRP-SB205	
			Sample Date	12/10/2013		12/10/2013		12/10/2013		12/11/2013		12/11/2013		12/11/2013		12/11/2013	
			Sample ID	OU09 SS203 0001		OU09 SB203 0305		OU09 SB203 0608		OU09 SB204 0001		OU09 SB204 0305		OU09 SB204 1012		OU09 SS205 0001	
			Sample Type	N		N		N		N		N		N		N	
			start_depth	0		3		6		0		3		10		0	
			end_depth	1		5		8		1		5		12		1	
			depth_unit	FT		FT		FT		FT		FT		FT		FT	
			depth_interval	0 - 1 ft		3 - 5 ft		6 - 8 ft		0 - 1 ft		3 - 5 ft		10 - 12 ft		0 - 1 ft	
			task_code	MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO	
			validated_yn	Y		Y		Y		Y		Y		Y		N	
method_analyte_group	Chemical	Unit	Fraction	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers
Newport_RA_SO_PCBs	AROCLOR-1262	MG_KG	N														
Newport_RA_SO_PCBs	AROCLOR-1268	MG_KG	N														
Newport_RA_SO_PCBs	PCB, TOTAL	MG_KG	N														
Newport_RA_SO_PCBs	POLYCHLORINATED BIPHENYLS (PCBS)	MG_KG	N														
Newport_RA_SO_Pesticides	4,4-DDD	MG_KG	N														
Newport_RA_SO_Pesticides	4,4-DDE	MG_KG	N														
Newport_RA_SO_Pesticides	4,4-DDT	MG_KG	N														
Newport_RA_SO_Pesticides	ALDRIN	MG_KG	N														
Newport_RA_SO_Pesticides	ALPHA-BHC	MG_KG	N														
Newport_RA_SO_Pesticides	ALPHA-CHLORDANE	MG_KG	N														
Newport_RA_SO_Pesticides	BETA-BHC	MG_KG	N														
Newport_RA_SO_Pesticides	DDT, TOTAL	MG_KG	N														
Newport_RA_SO_Pesticides	DELTA-BHC	MG_KG	N														
Newport_RA_SO_Pesticides	DIELDRIN	MG_KG	N														
Newport_RA_SO_Pesticides	ENDOSULFAN I	MG_KG	N														
Newport_RA_SO_Pesticides	ENDOSULFAN II	MG_KG	N														
Newport_RA_SO_Pesticides	ENDOSULFAN SULFATE	MG_KG	N														
Newport_RA_SO_Pesticides	ENDRIN	MG_KG	N														
Newport_RA_SO_Pesticides	ENDRIN ALDEHYDE	MG_KG	N														
Newport_RA_SO_Pesticides	ENDRIN KETONE	MG_KG	N														
Newport_RA_SO_Pesticides	GAMMA-CHLORDANE	MG_KG	N														
Newport_RA_SO_Pesticides	HEPTACHLOR	MG_KG	N														
Newport_RA_SO_Pesticides	HEPTACHLOR EPOXIDE	MG_KG	N														
Newport_RA_SO_Pesticides	LINDANE	MG_KG	N														
Newport_RA_SO_Pesticides	METHOXYCHLOR	MG_KG	N														
Newport_RA_SO_Pesticides	TOXAPHENE	MG_KG	N														
Newport_RA_SO_Pesticides	TRANS-CHLORDANE	MG_KG	N														
Newport_RA_SO_SVOCs	1,1-BIPHENYL	MG_KG	N														
Newport_RA_SO_SVOCs	1-METHYLNAPHTHALENE	MG_KG	N														
Newport_RA_SO_SVOCs	1,2,4-TRICHLOROBENZENE	MG_KG	N														
Newport_RA_SO_SVOCs	1,2-DICHLOROBENZENE	MG_KG	N														
Newport_RA_SO_SVOCs	1,2-DIPHENYLHYDRAZINE	MG_KG	N														
Newport_RA_SO_SVOCs	1,3-DICHLOROBENZENE	MG_KG	N														
Newport_RA_SO_SVOCs	1,4-DICHLOROBENZENE	MG_KG	N														
Newport_RA_SO_SVOCs	2,2'-OXYBIS(1-CHLOROPROPANE)	MG_KG	N														
Newport_RA_SO_SVOCs	2,4,5-TRICHLOROPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	2,4,6-TRICHLOROPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	2,4-DICHLOROPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	2,4-DIMETHYLPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	2,4-DINITROPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	2,4-DINITROTOLUENE	MG_KG	N														
Newport_RA_SO_SVOCs	2,6-DICHLOROPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	2,6-DINITROTOLUENE	MG_KG	N														
Newport_RA_SO_SVOCs	2-CHLORONAPHTHALENE	MG_KG	N														
Newport_RA_SO_SVOCs	2-CHLOROPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	2-METHYLNAPHTHALENE	MG_KG	N														
Newport_RA_SO_SVOCs	2-METHYLPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	2-NITROANILINE	MG_KG	N														
Newport_RA_SO_SVOCs	2-NITROPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	3- AND 4-METHYLPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	3,3-DICHLOROBENZIDINE	MG_KG	N														
Newport_RA_SO_SVOCs	3-NITROANILINE	MG_KG	N														
Newport_RA_SO_SVOCs	4,6-DINITRO-2-METHYLPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	4-BROMOPHENYL-PHENYLETHER	MG_KG	N														
Newport_RA_SO_SVOCs	4-CHLORO-3-METHYLPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	4-CHLOROANILINE	MG_KG	N														
Newport_RA_SO_SVOCs	4-CHLOROPHENYL-PHENYLETHER	MG_KG	N														
Newport_RA_SO_SVOCs	4-METHYLPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	4-NITROANILINE	MG_KG	N														
Newport_RA_SO_SVOCs	4-NITROPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	ACENAPHTHENE	MG_KG	N	0.0087	J	< 0.013	U	< 0.011	U	0.0042	J	< 0.011	U	< 0.01	U		
Newport_RA_SO_SVOCs	ACENAPHTHYLENE	MG_KG	N	0.0012	J	< 0.013	U	< 0.011	U	< 0.011	U	< 0.011	U	< 0.01	U		
Newport_RA_SO_SVOCs	ACETOPHENONE	MG_KG	N														
Newport_RA_SO_SVOCs	ANTHRACENE	MG_KG	N	0.0091	J	< 0.013	UJ	< 0.011	U	0.0056	J	0.0036	J	< 0.01	U		
Newport_RA_SO_SVOCs	ATRAZINE	MG_KG	N														
Newport_RA_SO_SVOCs	BENZALDEHYDE	MG_KG	N														

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	CRP-SB203		CRP-SB203		CRP-SB203		CRP-SB204		CRP-SB204		CRP-SB204		CRP-SB205	
			Sample Date	12/10/2013		12/10/2013		12/10/2013		12/11/2013		12/11/2013		12/11/2013		12/11/2013	
			Sample ID	OU09 SS203 0001		OU09 SB203 0305		OU09 SB203 0608		OU09 SB204 0001		OU09 SB204 0305		OU09 SB204 1012		OU09 SS205 0001	
			Sample Type	N		N		N		N		N		N		N	
			start_depth	0		3		6		0		3		10		0	
			end_depth	1		5		8		1		5		12		1	
			depth_unit	FT		FT		FT		FT		FT		FT		FT	
			depth_interval	0 - 1 ft		3 - 5 ft		6 - 8 ft		0 - 1 ft		3 - 5 ft		10 - 12 ft		0 - 1 ft	
			task_code	MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO	
			validated_yn	Y		Y		Y		Y		Y		Y		N	
method_analyte_group	Chemical	Unit	Fraction	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers
Newport_RA_SO_SVOCs	BENZIDINE	MG_KG	N														
Newport_RA_SO_SVOCs	BENZO[A]ANTHRACENE	MG_KG	N	0.055	J	< 0.013	U	< 0.011	UJ	0.042	J	< 0.021	U	< 0.01	U		
Newport_RA_SO_SVOCs	BENZO[A]PYRENE	MG_KG	N	0.04		< 0.013	UJ	< 0.011	UJ	0.05	J	< 0.021	UJ	< 0.01	UJ		
Newport_RA_SO_SVOCs	BENZO[B]FLUORANTHENE	MG_KG	N	0.036		< 0.013	U	< 0.011	U	0.072	J	< 0.021	UJ	0.0034	J		
Newport_RA_SO_SVOCs	BENZO[G,H,I]PERYLENE	MG_KG	N	0.025	J	< 0.013	UJ	< 0.011	UJ	0.025	J	0.0034	J	< 0.01	UJ		
Newport_RA_SO_SVOCs	BENZO[K]FLUORANTHENE	MG_KG	N	0.014	J	< 0.013	UJ	< 0.011	U	0.025	J	< 0.011	UJ	< 0.01	UJ		
Newport_RA_SO_SVOCs	BENZOIC ACID	MG_KG	N														
Newport_RA_SO_SVOCs	BENZYL ALCOHOL	MG_KG	N														
Newport_RA_SO_SVOCs	BIS(2-CHLOROETHOXY)METHANE	MG_KG	N														
Newport_RA_SO_SVOCs	BIS(2-CHLOROETHYL)ETHER	MG_KG	N														
Newport_RA_SO_SVOCs	BIS(2-ETHYLHEXYL)PHTHALATE	MG_KG	N														
Newport_RA_SO_SVOCs	BUTYLBENZYLPHTHALATE	MG_KG	N														
Newport_RA_SO_SVOCs	CAPROLACTAM	MG_KG	N														
Newport_RA_SO_SVOCs	CARBAZOLE	MG_KG	N														
Newport_RA_SO_SVOCs	CHRYSENE	MG_KG	N	0.14		< 0.013	U	< 0.011	U	0.059	J	< 0.011	U	< 0.01	U		
Newport_RA_SO_SVOCs	DIBENZ[A,H]ANTHRACENE	MG_KG	N	0.028		< 0.013	UJ	< 0.011	U	0.012	J	0.0049	J	< 0.01	UJ		
Newport_RA_SO_SVOCs	DIBENZOFURAN	MG_KG	N														
Newport_RA_SO_SVOCs	DIETHYLPHTHALATE	MG_KG	N														
Newport_RA_SO_SVOCs	DIMETHYL PHTHALATE	MG_KG	N														
Newport_RA_SO_SVOCs	DI-N-BUTYLPHTHALATE	MG_KG	N														
Newport_RA_SO_SVOCs	DI-N-OCTYLPHTHALATE	MG_KG	N														
Newport_RA_SO_SVOCs	FLUORANTHENE	MG_KG	N	0.027	J	< 0.013	U	< 0.011	UJ	0.068	J	< 0.021	U	< 0.02	U		
Newport_RA_SO_SVOCs	FLUORENE	MG_KG	N	0.0059	J	< 0.013	U	< 0.011	U	< 0.011	U	< 0.011	U	< 0.01	U		
Newport_RA_SO_SVOCs	HEXACHLOROBENZENE	MG_KG	N														
Newport_RA_SO_SVOCs	HEXACHLOROBUTADIENE	MG_KG	N														
Newport_RA_SO_SVOCs	HEXACHLOROCYCLOPENTADIENE	MG_KG	N														
Newport_RA_SO_SVOCs	HEXACHLOROETHANE	MG_KG	N														
Newport_RA_SO_SVOCs	HPAH, TOTAL	MG_KG	N	0.52		< 0.013	U	< 0.011	U	0.45		0.02		0.0057			
Newport_RA_SO_SVOCs	INDENO[1,2,3-CD]PYRENE	MG_KG	N	0.02	J	< 0.013	UJ	< 0.011	U	0.032	J	0.0056	J	< 0.01	UJ		
Newport_RA_SO_SVOCs	ISOPHORONE	MG_KG	N														
Newport_RA_SO_SVOCs	LPAH, TOTAL	MG_KG	N	0.2		< 0.013	U	< 0.011	U	0.048		0.0079		< 0.01	U		
Newport_RA_SO_SVOCs	NAPHTHALENE	MG_KG	N	< 0.0096	U	< 0.013	U	< 0.011	U	< 0.011	U	< 0.011	U	< 0.01	U		
Newport_RA_SO_SVOCs	NITROBENZENE	MG_KG	N														
Newport_RA_SO_SVOCs	N-NITROSODIMETHYLAMINE	MG_KG	N														
Newport_RA_SO_SVOCs	N-NITROSODINPROPYLAMINE	MG_KG	N														
Newport_RA_SO_SVOCs	N-NITROSODIPHENYLAMINE	MG_KG	N														
Newport_RA_SO_SVOCs	N-NITROSOPYRROLIDINE	MG_KG	N														
Newport_RA_SO_SVOCs	PAH, TOTAL	MG_KG	N	0.72		< 0.013	U	< 0.011	U	0.5		0.028		0.0057			
Newport_RA_SO_SVOCs	PENTACHLOROPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	PHENANTHRENE	MG_KG	N	0.18		< 0.013	U	< 0.011	U	0.038	J	0.0043	J	< 0.01	U		
Newport_RA_SO_SVOCs	PHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	PYRENE	MG_KG	N	0.13		< 0.013	UJ	< 0.011	U	0.067	J	0.0062	J	0.0023	J		
Newport_RA_SO_VOCs	1,1,1,2-TETRACHLOROETHANE	MG_KG	N														
Newport_RA_SO_VOCs	1,1,1-TRICHLOROETHANE	MG_KG	N														
Newport_RA_SO_VOCs	1,1,2,2-TETRACHLOROETHANE	MG_KG	N														
Newport_RA_SO_VOCs	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	MG_KG	N														
Newport_RA_SO_VOCs	1,1,2-TRICHLOROETHANE	MG_KG	N														
Newport_RA_SO_VOCs	1,1-DICHLOROETHANE	MG_KG	N														
Newport_RA_SO_VOCs	1,1-DICHLOROETHENE	MG_KG	N														
Newport_RA_SO_VOCs	1,1-DICHLOROPROPENE	MG_KG	N														
Newport_RA_SO_VOCs	1,2,3-TRICHLOROBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	1,2,3-TRICHLOROPROPANE	MG_KG	N														
Newport_RA_SO_VOCs	1,2,4-TRICHLOROBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	1,2,4-TRIMETHYLBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	1,2-DIBROMO-3-CHLOROPROPANE	MG_KG	N														
Newport_RA_SO_VOCs	1,2-DIBROMOETHANE	MG_KG	N														
Newport_RA_SO_VOCs	1,2-DICHLOROBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	1,2-DICHLOROETHANE	MG_KG	N														
Newport_RA_SO_VOCs	1,2-DICHLOROETHENE, TOTAL	MG_KG	N														
Newport_RA_SO_VOCs	1,2-DICHLOROPROPANE	MG_KG	N														
Newport_RA_SO_VOCs	1,3,5-TRIMETHYLBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	1,3-DICHLOROBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	1,3-DICHLOROPROPANE	MG_KG	N														
Newport_RA_SO_VOCs	1,4-DICHLOROBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	2,2-DICHLOROPROPANE	MG_KG	N														
Newport_RA_SO_VOCs	2-BUTANONE	MG_KG	N														

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	CRP-SB203		CRP-SB203		CRP-SB203		CRP-SB204		CRP-SB204		CRP-SB204		CRP-SB205	
			Sample Date	12/10/2013		12/10/2013		12/10/2013		12/11/2013		12/11/2013		12/11/2013		12/11/2013	
			Sample ID	OU09 SS203 0001		OU09 SB203 0305		OU09 SB203 0608		OU09 SB204 0001		OU09 SB204 0305		OU09 SB204 1012		OU09 SS205 0001	
			Sample Type	N		N		N		N		N		N		N	
			start_depth	0		3		6		0		3		10		0	
			end_depth	1		5		8		1		5		12		1	
			depth_unit	FT		FT		FT		FT		FT		FT		FT	
			depth_interval	0 - 1 ft		3 - 5 ft		6 - 8 ft		0 - 1 ft		3 - 5 ft		10 - 12 ft		0 - 1 ft	
			task_code	MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO	
			validated_yn	Y		Y		Y		Y		Y		Y		N	
method_analyte_group	Chemical	Unit	Fraction	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers
Newport_RA_SO_VOCs	2-CHLOROTOLUENE	MG_KG	N														
Newport_RA_SO_VOCs	2-HEXANONE	MG_KG	N														
Newport_RA_SO_VOCs	4-CHLOROTOLUENE	MG_KG	N														
Newport_RA_SO_VOCs	4-ISOPROPYLTOLUENE	MG_KG	N														
Newport_RA_SO_VOCs	4-METHYL-2-PENTANONE	MG_KG	N														
Newport_RA_SO_VOCs	ACETONE	MG_KG	N														
Newport_RA_SO_VOCs	BENZENE	MG_KG	N														
Newport_RA_SO_VOCs	BROMOBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	BROMOCHLOROMETHANE	MG_KG	N														
Newport_RA_SO_VOCs	BROMODICHLOROMETHANE	MG_KG	N														
Newport_RA_SO_VOCs	BROMOFORM	MG_KG	N														
Newport_RA_SO_VOCs	BROMOMETHANE	MG_KG	N														
Newport_RA_SO_VOCs	CARBON DISULFIDE	MG_KG	N														
Newport_RA_SO_VOCs	CARBON TETRACHLORIDE	MG_KG	N														
Newport_RA_SO_VOCs	CHLOROBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	CHLOROETHANE	MG_KG	N														
Newport_RA_SO_VOCs	CHLOROFORM	MG_KG	N														
Newport_RA_SO_VOCs	CHLOROMETHANE	MG_KG	N														
Newport_RA_SO_VOCs	CIS-1,2-DICHLOROETHENE	MG_KG	N														
Newport_RA_SO_VOCs	CIS-1,3-DICHLOROPROPENE	MG_KG	N														
Newport_RA_SO_VOCs	CYCLOHEXANE	MG_KG	N														
Newport_RA_SO_VOCs	DIBROMOCHLOROMETHANE	MG_KG	N														
Newport_RA_SO_VOCs	DIBROMOMETHANE	MG_KG	N														
Newport_RA_SO_VOCs	DICHLORODIFLUOROMETHANE	MG_KG	N														
Newport_RA_SO_VOCs	ETHYLBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	HEXACHLOROBUTADIENE	MG_KG	N														
Newport_RA_SO_VOCs	ISOPROPYLBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	M- AND P-XYLENE	MG_KG	N														
Newport_RA_SO_VOCs	METHYL ACETATE	MG_KG	N														
Newport_RA_SO_VOCs	METHYL CYCLOHEXANE	MG_KG	N														
Newport_RA_SO_VOCs	METHYL TERT-BUTYL ETHER	MG_KG	N														
Newport_RA_SO_VOCs	METHYLENE CHLORIDE	MG_KG	N														
Newport_RA_SO_VOCs	NAPHTHALENE	MG_KG	N														
Newport_RA_SO_VOCs	N-BUTYLBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	O-XYLENE	MG_KG	N														
Newport_RA_SO_VOCs	PROPYLBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	SEC-BUTYLBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	STYRENE	MG_KG	N														
Newport_RA_SO_VOCs	TERT-BUTANOL	MG_KG	N														
Newport_RA_SO_VOCs	TERT-BUTYLBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	TETRACHLOROETHENE	MG_KG	N														
Newport_RA_SO_VOCs	TOLUENE	MG_KG	N														
Newport_RA_SO_VOCs	TRANS-1,2-DICHLOROETHENE	MG_KG	N														
Newport_RA_SO_VOCs	TRANS-1,3-DICHLOROPROPENE	MG_KG	N														
Newport_RA_SO_VOCs	TRICHLOROETHENE	MG_KG	N														
Newport_RA_SO_VOCs	TRICHLOROFLUOROMETHANE	MG_KG	N														
Newport_RA_SO_VOCs	VINYL CHLORIDE	MG_KG	N														
Newport_RA_SO_VOCs	XYLENES, TOTAL	MG_KG	N														

Notes:
U or < - Non-detect at laboratory detection limit.
J - The compound was positively identified; however, the associated numerical value is an estimated concentration only (+ and - indicate bias).
Sample Type - N = normal sample, FD = duplicate sample.
mg/kg - milligram per kilogram

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	CRP-SB205		CRP-SB205		CRP-SB205		CRP-SB205		CRP-SB205		CRP-SB206		CRP-SB206		CRP-SB206	
			Sample Date	12/11/2013		12/11/2013		12/11/2013		12/11/2013		12/11/2013		12/10/2013		12/10/2013		12/10/2013	
			Sample ID	OU09 SS205 0001		FDSB12111303		OU09 SB205 0305		FDSB12111304		OU09 SB205 0608		OU09 SS206 0001		OU09 SB206 0305		OU09 SB206 0608	
			Sample Type	N		FD		N		FD		N		N		N		N	
			start_depth	0		3		3		6		6		0		3		6	
			end_depth	1		5		5		8		8		1		5		8	
			depth_unit	FT		FT		FT		FT		FT		FT		FT		FT	
			depth_interval	0 - 1 ft		3 - 5 ft		3 - 5 ft		6 - 8 ft		6 - 8 ft		0 - 1 ft		3 - 5 ft		6 - 8 ft	
			task_code	MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO	
			validated_yn	Y		Y		Y		Y		Y		Y		Y		Y	
method_analyte_group	Chemical	Unit	Fraction	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers
Newport_RA_SO_Energetics	2,4-DINITROTOLUENE	MG_KG	N	< 0.049	U									< 0.047	U	< 0.05	U		
Newport_RA_SO_Energetics	2,6-DINITROTOLUENE	MG_KG	N																
Newport_RA_SO_Energetics	NITROGLYCERIN	MG_KG	N	< 0.39	U									< 0.38	U	< 0.4	U		
Newport_RA_SO_Metals	ALUMINUM	MG_KG	N	9950		6840		6380		5490		4410		9800		9990		7820	
Newport_RA_SO_Metals	ANTIMONY	MG_KG	N	0.62	J-	0.1	J-	0.12	J-	0.11	J-	0.11	J-	0.54	J	0.1	J	0.14	J
Newport_RA_SO_Metals	ARSENIC	MG_KG	N	13.3	J	8.6	J	10.0	J	13.1	J	13.1	J	8.9	J	8.2	J	11.2	J
Newport_RA_SO_Metals	BARIUM	MG_KG	N	22.1		28.7		23.6		18.8		17.9		26.6		37.1		27.1	
Newport_RA_SO_Metals	BERYLLIUM	MG_KG	N	0.56	J-	0.39	J-	0.35	J-	0.44	J-	0.33	J-	0.33		0.49		0.38	
Newport_RA_SO_Metals	CADMIUM	MG_KG	N	0.20	J	0.08	J	< 0.085	UJ	0.08	J	0.08	J	0.16		0.09		0.08	
Newport_RA_SO_Metals	CALCIUM	MG_KG	N	1420	J	570	J	336	J	535	J	334	J	1420	J+	1340	J+	457	J+
Newport_RA_SO_Metals	CHROMIUM VI	MG_KG	N	< 0.86	UJ														
Newport_RA_SO_Metals	CHROMIUM, TOTAL	MG_KG	N	13.2	J	9.9	J	10.2	J	10.9	J	8.6	J	11.2	J	12.3	J	12.2	J
Newport_RA_SO_Metals	COBALT	MG_KG	N	17.0	J-	13.0	J-	10.9	J-	23.0	J-	24.8	J-	9.1	J	9.4	J	18.5	J
Newport_RA_SO_Metals	COPPER	MG_KG	N	256	J	20.7	J	19.6	J	23.4	J	23.1	J	22.0		10		25.6	
Newport_RA_SO_Metals	IRON	MG_KG	N	51200		26900		31300		43400		38800		25000	J	27200	J	45000	J
Newport_RA_SO_Metals	IRON, FERROUS	MG_KG	N																
Newport_RA_SO_Metals	LEAD	MG_KG	N	39.3	J	14.7	J	9.4	J	14.2	J	9.7	J	170	J	14.9	J	9.7	J
Newport_RA_SO_Metals	MAGNESIUM	MG_KG	N	2800		1440		1640		1330		1080		3100	J	1670	J	2480	J
Newport_RA_SO_Metals	MANGANESE	MG_KG	N	705		461		325		757		916		394	J	618	J	612	J
Newport_RA_SO_Metals	MERCURY	MG_KG	N	< 0.032	UJ	< 0.015	UJ	< 0.016	UJ	< 0.015	UJ	< 0.015	UJ	0.03	J	0.04		< 0.016	U
Newport_RA_SO_Metals	NICKEL	MG_KG	N	30.3	J-	21.6	J-	22.6	J-	34.9	J-	33.9	J-	18.7	J	23.8	J	34.1	J
Newport_RA_SO_Metals	POTASSIUM	MG_KG	N	311	J+	531	J+	519	J+	458	J+	446	J+	393	J	354	J	665	J
Newport_RA_SO_Metals	SELENIUM	MG_KG	N	0.62	J-	< 0.37	UJ	< 0.42	UJ	0.26	J-	< 0.38	UJ	< 0.37	U	0.52		< 0.37	U
Newport_RA_SO_Metals	SILVER	MG_KG	N	0.38		0.02	J	0.02	J	0.04	J	0.04	J	0.08	J	0.05	J	0.02	J
Newport_RA_SO_Metals	SODIUM	MG_KG	N	< 48	U	< 74	U	< 85	U	< 52	U	< 75	U	< 74	U	< 79	U	< 74	U
Newport_RA_SO_Metals	THALLIUM	MG_KG	N	0.07		0.05	J	0.05	J	0.05	J	0.04	J	0.06	J	0.09		0.06	J
Newport_RA_SO_Metals	VANADIUM	MG_KG	N	21.8	J	14.2	J	15.8	J	15.7	J	14.5	J	18.3		20.6		17.6	
Newport_RA_SO_Metals	ZINC	MG_KG	N	75.2	J	48.9	J	55.3	J	65.0	J	57.5	J	64.8	J+	41.5	J+	74.0	J+
Newport_RA_SO_Other	DENSITY	G_CC	N																
Newport_RA_SO_Other	Pellet count	COUNT	N																
Newport_RA_SO_Other	Pellet weight	PCT	N																
Newport_RA_SO_Other	PERCENT FINES	PCT	N																
Newport_RA_SO_Other	PERCENT GRAVEL	PCT	N																
Newport_RA_SO_Other	PERCENT SAND	PCT	N																
Newport_RA_SO_Other	PERCENT SAND, COARSE	PCT	N																
Newport_RA_SO_Other	PERCENT SAND, FINE	PCT	N																
Newport_RA_SO_Other	PERCENT SAND, MEDIUM	PCT	N																
Newport_RA_SO_Other	PH	PH	N																
Newport_RA_SO_Other	POROSITY	PCT	N																
Newport_RA_SO_Other	SIEVE 1 INCH (25.4-MM)	PCT	N																
Newport_RA_SO_Other	SIEVE 1-1/2 INCH (37.5-MM)	PCT	N																
Newport_RA_SO_Other	SIEVE 2 INCH (50-MM)	PCT	N																
Newport_RA_SO_Other	SIEVE 3 INCH (75-MM)	PCT	N																
Newport_RA_SO_Other	SIEVE 3/4 INCH (19-MM)	PCT	N																
Newport_RA_SO_Other	SIEVE 3/8 INCH (9.5-MM)	PCT	N																
Newport_RA_SO_Other	SIEVE NO. 004 (4.75-MM)	PCT	N																
Newport_RA_SO_Other	SIEVE NO. 010 (2-MM)	PCT	N																
Newport_RA_SO_Other	SIEVE NO. 020 (850-UM)	PCT	N																
Newport_RA_SO_Other	SIEVE NO. 040 (425-UM)	PCT	N																
Newport_RA_SO_Other	SIEVE NO. 060 (250-UM)	PCT	N																
Newport_RA_SO_Other	SIEVE NO. 080 (180-UM)	PCT	N																
Newport_RA_SO_Other	SIEVE NO. 100 (150-UM)	PCT	N																
Newport_RA_SO_Other	SIEVE NO. 200 (75-UM)	PCT	N																
Newport_RA_SO_Other	SPECIFIC CONDUCTANCE	UMHO_CM	N																
Newport_RA_SO_Other	SPECIFIC GRAVITY	NONE	N																
Newport_RA_SO_Other	SULFIDE	MG_KG	N																
Newport_RA_SO_Other	TPH-DIESEL RANGE	MG_KG	N																
Newport_RA_SO_Other	TPH-TOTAL UNKNOWN GASOLINE RANGE ORGANICS	MG_KG	N																
Newport_RA_SO_Other	Void Ratio	NONE	N																
Newport_RA_SO_PCBs	AROCLOR-1016	MG_KG	N																
Newport_RA_SO_PCBs	AROCLOR-1221	MG_KG	N																
Newport_RA_SO_PCBs	AROCLOR-1232	MG_KG	N																
Newport_RA_SO_PCBs	AROCLOR-1242	MG_KG	N																
Newport_RA_SO_PCBs	AROCLOR-1248	MG_KG	N																
Newport_RA_SO_PCBs	AROCLOR-1254	MG_KG	N																
Newport_RA_SO_PCBs	AROCLOR-1260	MG_KG	N																

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	CRP-SB205		CRP-SB205		CRP-SB205		CRP-SB205		CRP-SB205		CRP-SB206		CRP-SB206		CRP-SB206	
			Sample Date	12/11/2013		12/11/2013		12/11/2013		12/11/2013		12/11/2013		12/10/2013		12/10/2013		12/10/2013	
			Sample ID	OU09 SS205 0001		FDSB12111303		OU09 SB205 0305		FDSB12111304		OU09 SB205 0608		OU09 SS206 0001		OU09 SB206 0305		OU09 SB206 0608	
			Sample Type	N		FD		N		FD		N		N		N		N	
			start_depth	0		3		3		6		6		0		3		6	
			end_depth	1		5		5		8		8		1		5		8	
			depth_unit	FT		FT		FT		FT		FT		FT		FT		FT	
			depth_interval	0 - 1 ft		3 - 5 ft		3 - 5 ft		6 - 8 ft		6 - 8 ft		0 - 1 ft		3 - 5 ft		6 - 8 ft	
			task_code	MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO	
			validated_yn	Y		Y		Y		Y		Y		Y		Y		Y	
method_analyte_group	Chemical	Unit	Fraction	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers
Newport_RA_SO_PCBs	AROCLOR-1262	MG_KG	N																
Newport_RA_SO_PCBs	AROCLOR-1268	MG_KG	N																
Newport_RA_SO_PCBs	PCB, TOTAL	MG_KG	N																
Newport_RA_SO_PCBs	POLYCHLORINATED BIPHENYLS (PCBS)	MG_KG	N																
Newport_RA_SO_Pesticides	4,4-DDD	MG_KG	N																
Newport_RA_SO_Pesticides	4,4-DDE	MG_KG	N																
Newport_RA_SO_Pesticides	4,4-DDT	MG_KG	N																
Newport_RA_SO_Pesticides	ALDRIN	MG_KG	N																
Newport_RA_SO_Pesticides	ALPHA-BHC	MG_KG	N																
Newport_RA_SO_Pesticides	ALPHA-CHLORDANE	MG_KG	N																
Newport_RA_SO_Pesticides	BETA-BHC	MG_KG	N																
Newport_RA_SO_Pesticides	DDT, TOTAL	MG_KG	N																
Newport_RA_SO_Pesticides	DELTA-BHC	MG_KG	N																
Newport_RA_SO_Pesticides	DIELDRIN	MG_KG	N																
Newport_RA_SO_Pesticides	ENDOSULFAN I	MG_KG	N																
Newport_RA_SO_Pesticides	ENDOSULFAN II	MG_KG	N																
Newport_RA_SO_Pesticides	ENDOSULFAN SULFATE	MG_KG	N																
Newport_RA_SO_Pesticides	ENDRIN	MG_KG	N																
Newport_RA_SO_Pesticides	ENDRIN ALDEHYDE	MG_KG	N																
Newport_RA_SO_Pesticides	ENDRIN KETONE	MG_KG	N																
Newport_RA_SO_Pesticides	GAMMA-CHLORDANE	MG_KG	N																
Newport_RA_SO_Pesticides	HEPTACHLOR	MG_KG	N																
Newport_RA_SO_Pesticides	HEPTACHLOR EPOXIDE	MG_KG	N																
Newport_RA_SO_Pesticides	LINDANE	MG_KG	N																
Newport_RA_SO_Pesticides	METHOXYCHLOR	MG_KG	N																
Newport_RA_SO_Pesticides	TOXAPHENE	MG_KG	N																
Newport_RA_SO_Pesticides	TRANS-CHLORDANE	MG_KG	N																
Newport_RA_SO_SVOCs	1,1-BIPHENYL	MG_KG	N																
Newport_RA_SO_SVOCs	1-METHYLNAPHTHALENE	MG_KG	N																
Newport_RA_SO_SVOCs	1,2,4-TRICHLOROBENZENE	MG_KG	N																
Newport_RA_SO_SVOCs	1,2-DICHLOROBENZENE	MG_KG	N																
Newport_RA_SO_SVOCs	1,2-DIPHENYLHYDRAZINE	MG_KG	N																
Newport_RA_SO_SVOCs	1,3-DICHLOROBENZENE	MG_KG	N																
Newport_RA_SO_SVOCs	1,4-DICHLOROBENZENE	MG_KG	N																
Newport_RA_SO_SVOCs	2,2'-OXYBIS(1-CHLOROPROPANE)	MG_KG	N																
Newport_RA_SO_SVOCs	2,4,5-TRICHLOROPHENOL	MG_KG	N																
Newport_RA_SO_SVOCs	2,4,6-TRICHLOROPHENOL	MG_KG	N																
Newport_RA_SO_SVOCs	2,4-DICHLOROPHENOL	MG_KG	N																
Newport_RA_SO_SVOCs	2,4-DIMETHYLPHENOL	MG_KG	N																
Newport_RA_SO_SVOCs	2,4-DINITROPHENOL	MG_KG	N																
Newport_RA_SO_SVOCs	2,4-DINITROTOLUENE	MG_KG	N																
Newport_RA_SO_SVOCs	2,6-DICHLOROPHENOL	MG_KG	N																
Newport_RA_SO_SVOCs	2,6-DINITROTOLUENE	MG_KG	N																
Newport_RA_SO_SVOCs	2-CHLORONAPHTHALENE	MG_KG	N																
Newport_RA_SO_SVOCs	2-CHLOROPHENOL	MG_KG	N																
Newport_RA_SO_SVOCs	2-METHYLNAPHTHALENE	MG_KG	N																
Newport_RA_SO_SVOCs	2-METHYLPHENOL	MG_KG	N																
Newport_RA_SO_SVOCs	2-NITROANILINE	MG_KG	N																
Newport_RA_SO_SVOCs	2-NITROPHENOL	MG_KG	N																
Newport_RA_SO_SVOCs	3- AND 4-METHYLPHENOL	MG_KG	N																
Newport_RA_SO_SVOCs	3,3-DICHLOROBENZIDINE	MG_KG	N																
Newport_RA_SO_SVOCs	3-NITROANILINE	MG_KG	N																
Newport_RA_SO_SVOCs	4,6-DINITRO-2-METHYLPHENOL	MG_KG	N																
Newport_RA_SO_SVOCs	4-BROMOPHENYL-PHENYLETHER	MG_KG	N																
Newport_RA_SO_SVOCs	4-CHLORO-3-METHYLPHENOL	MG_KG	N																
Newport_RA_SO_SVOCs	4-CHLOROANILINE	MG_KG	N																
Newport_RA_SO_SVOCs	4-CHLOROPHENYL-PHENYLETHER	MG_KG	N																
Newport_RA_SO_SVOCs	4-METHYLPHENOL	MG_KG	N																
Newport_RA_SO_SVOCs	4-NITROANILINE	MG_KG	N																
Newport_RA_SO_SVOCs	4-NITROPHENOL	MG_KG	N																
Newport_RA_SO_SVOCs	ACENAPHTHENE	MG_KG	N	0.0049	J	< 0.01	U	< 0.011	U	< 0.01	U	< 0.0099	U	0.021	J	< 0.011	U	< 0.011	U
Newport_RA_SO_SVOCs	ACENAPHTHYLENE	MG_KG	N	0.015	J	< 0.01	U	< 0.011	U	< 0.01	U	< 0.0099	U	0.18		< 0.011	U	< 0.011	U
Newport_RA_SO_SVOCs	ACETOPHENONE	MG_KG	N																
Newport_RA_SO_SVOCs	ANTHRACENE	MG_KG	N	0.014	J	< 0.01	U	< 0.011	U	< 0.01	U	< 0.0099	U	0.083		< 0.011	UJ	< 0.011	UJ
Newport_RA_SO_SVOCs	ATRAZINE	MG_KG	N																
Newport_RA_SO_SVOCs	BENZALDEHYDE	MG_KG	N																

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	CRP-SB205		CRP-SB205		CRP-SB205		CRP-SB205		CRP-SB205		CRP-SB206		CRP-SB206		CRP-SB206	
			Sample Date	12/11/2013		12/11/2013		12/11/2013		12/11/2013		12/11/2013		12/10/2013		12/10/2013		12/10/2013	
			Sample ID	OU09 SS205 0001		FDSB12111303		OU09 SB205 0305		FDSB12111304		OU09 SB205 0608		OU09 SS206 0001		OU09 SB206 0305		OU09 SB206 0608	
			Sample Type	N		FD		N		FD		N		N		N		N	
			start_depth	0		3		3		6		6		0		3		6	
			end_depth	1		5		5		8		8		1		5		8	
			depth_unit	FT		FT		FT		FT		FT		FT		FT		FT	
			depth_interval	0 - 1 ft		3 - 5 ft		3 - 5 ft		6 - 8 ft		6 - 8 ft		0 - 1 ft		3 - 5 ft		6 - 8 ft	
			task_code	MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO	
			validated_yn	Y		Y		Y		Y		Y		Y		Y		Y	
method_analyte_group	Chemical	Unit	Fraction	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers
Newport_RA_SO_SVOCs	BENZIDINE	MG_KG	N																
Newport_RA_SO_SVOCs	BENZO[A]ANTHRACENE	MG_KG	N	0.18		0.0023	J	< 0.011	U	< 0.01	U	< 0.02	U	0.77		< 0.011	U	< 0.011	U
Newport_RA_SO_SVOCs	BENZO[A]PYRENE	MG_KG	N	0.18	J	< 0.01	UJ	< 0.011	U	< 0.01	UJ	< 0.0099	U	0.94	J	< 0.011	UJ	< 0.011	UJ
Newport_RA_SO_SVOCs	BENZO[B]FLUORANTHENE	MG_KG	N	0.29	J	< 0.021	U	< 0.022	U	< 0.021	U	< 0.02	U	0.96	J	0.013	J	< 0.011	U
Newport_RA_SO_SVOCs	BENZO[G,H,I]PERYLENE	MG_KG	N	0.063	J	< 0.01	UJ	< 0.011	UJ	< 0.01	UJ	< 0.0099	UJ	0.35	J	< 0.011	UJ	< 0.011	UJ
Newport_RA_SO_SVOCs	BENZO[K]FLUORANTHENE	MG_KG	N	0.11		< 0.01	U	< 0.011	UJ	< 0.01	U	< 0.0099	UJ	1.1	J	0.0044	J	< 0.011	UJ
Newport_RA_SO_SVOCs	BENZOIC ACID	MG_KG	N																
Newport_RA_SO_SVOCs	BENZYL ALCOHOL	MG_KG	N																
Newport_RA_SO_SVOCs	BIS(2-CHLOROETHOXY)METHANE	MG_KG	N																
Newport_RA_SO_SVOCs	BIS(2-CHLOROETHYL)ETHER	MG_KG	N																
Newport_RA_SO_SVOCs	BIS(2-ETHYLHEXYL)PHTHALATE	MG_KG	N																
Newport_RA_SO_SVOCs	BUTYLBENZYLPHTHALATE	MG_KG	N																
Newport_RA_SO_SVOCs	CAPROLACTAM	MG_KG	N																
Newport_RA_SO_SVOCs	CARBAZOLE	MG_KG	N																
Newport_RA_SO_SVOCs	CHRYSENE	MG_KG	N	0.26	J	< 0.01	U	< 0.011	U	< 0.01	U	< 0.0099	U	1.4		< 0.011	U	< 0.011	U
Newport_RA_SO_SVOCs	DIBENZ[A,H]ANTHRACENE	MG_KG	N	0.042		< 0.01	U	< 0.011	U	< 0.01	U	< 0.0099	U	0.23	J	< 0.011	UJ	< 0.011	UJ
Newport_RA_SO_SVOCs	DIBENZOFURAN	MG_KG	N																
Newport_RA_SO_SVOCs	DIETHYLPHTHALATE	MG_KG	N																
Newport_RA_SO_SVOCs	DIMETHYL PHTHALATE	MG_KG	N																
Newport_RA_SO_SVOCs	DI-N-BUTYLPHTHALATE	MG_KG	N																
Newport_RA_SO_SVOCs	DI-N-OCTYLPHTHALATE	MG_KG	N																
Newport_RA_SO_SVOCs	FLUORANTHENE	MG_KG	N	0.34		< 0.01	U	< 0.011	U	< 0.01	U	< 0.02	U	1.4		0.0026	J	< 0.011	U
Newport_RA_SO_SVOCs	FLUORENE	MG_KG	N	0.0080	J	< 0.01	U	< 0.011	U	< 0.01	U	< 0.0099	U	0.05		< 0.011	U	< 0.011	U
Newport_RA_SO_SVOCs	HEXACHLOROBENZENE	MG_KG	N																
Newport_RA_SO_SVOCs	HEXACHLOROBUTADIENE	MG_KG	N																
Newport_RA_SO_SVOCs	HEXACHLOROCYCLOPENTADIENE	MG_KG	N																
Newport_RA_SO_SVOCs	HEXACHLOROETHANE	MG_KG	N																
Newport_RA_SO_SVOCs	HPAH, TOTAL	MG_KG	N	2.1		0.0023		< 0.022	U	< 0.021	U	< 0.02	U	11		0.02		< 0.011	U
Newport_RA_SO_SVOCs	INDENO[1,2,3-CD]PYRENE	MG_KG	N	0.12		< 0.01	U	< 0.011	UJ	< 0.01	U	< 0.0099	UJ	0.61	J	< 0.011	UJ	< 0.011	UJ
Newport_RA_SO_SVOCs	ISOPHORONE	MG_KG	N																
Newport_RA_SO_SVOCs	LPAH, TOTAL	MG_KG	N	0.22		< 0.01	U	< 0.011	U	< 0.01	U	< 0.0099	U	1.3		< 0.011	U	< 0.011	U
Newport_RA_SO_SVOCs	NAPHTHALENE	MG_KG	N	0.0026	J	< 0.01	U	< 0.011	U	< 0.01	U	< 0.0099	U	0.0086	J	< 0.011	U	< 0.011	U
Newport_RA_SO_SVOCs	NITROBENZENE	MG_KG	N																
Newport_RA_SO_SVOCs	N-NITROSODIMETHYLAMINE	MG_KG	N																
Newport_RA_SO_SVOCs	N-NITROSODINPROPYLAMINE	MG_KG	N																
Newport_RA_SO_SVOCs	N-NITROSODIPHENYLAMINE	MG_KG	N																
Newport_RA_SO_SVOCs	N-NITROSOPYRROLIDINE	MG_KG	N																
Newport_RA_SO_SVOCs	PAH, TOTAL	MG_KG	N	2.3		0.0023		< 0.022	U	< 0.021	U	< 0.02	U	12		0.02		< 0.011	U
Newport_RA_SO_SVOCs	PENTACHLOROPHENOL	MG_KG	N																
Newport_RA_SO_SVOCs	PHENANTHRENE	MG_KG	N	0.18		< 0.01	U	< 0.011	U	< 0.01	U	< 0.0099	U	1		< 0.011	U	< 0.011	U
Newport_RA_SO_SVOCs	PHENOL	MG_KG	N																
Newport_RA_SO_SVOCs	PYRENE	MG_KG	N	0.53		< 0.01	U	< 0.011	U	< 0.01	U	< 0.0099	U	2.8		< 0.011	UJ	< 0.011	UJ
Newport_RA_SO_VOCs	1,1,1,2-TETRACHLOROETHANE	MG_KG	N																
Newport_RA_SO_VOCs	1,1,1-TRICHLOROETHANE	MG_KG	N																
Newport_RA_SO_VOCs	1,1,2,2-TETRACHLOROETHANE	MG_KG	N																
Newport_RA_SO_VOCs	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	MG_KG	N																
Newport_RA_SO_VOCs	1,1,2-TRICHLOROETHANE	MG_KG	N																
Newport_RA_SO_VOCs	1,1-DICHLOROETHANE	MG_KG	N																
Newport_RA_SO_VOCs	1,1-DICHLOROETHENE	MG_KG	N																
Newport_RA_SO_VOCs	1,1-DICHLOROPROPENE	MG_KG	N																
Newport_RA_SO_VOCs	1,2,3-TRICHLOROBENZENE	MG_KG	N																
Newport_RA_SO_VOCs	1,2,3-TRICHLOROPROPANE	MG_KG	N																
Newport_RA_SO_VOCs	1,2,4-TRICHLOROBENZENE	MG_KG	N																
Newport_RA_SO_VOCs	1,2,4-TRIMETHYLBENZENE	MG_KG	N																
Newport_RA_SO_VOCs	1,2-DIBROMO-3-CHLOROPROPANE	MG_KG	N																
Newport_RA_SO_VOCs	1,2-DIBROMOETHANE	MG_KG	N																
Newport_RA_SO_VOCs	1,2-DICHLOROBENZENE	MG_KG	N																
Newport_RA_SO_VOCs	1,2-DICHLOROETHANE	MG_KG	N																
Newport_RA_SO_VOCs	1,2-DICHLOROETHENE, TOTAL	MG_KG	N																
Newport_RA_SO_VOCs	1,2-DICHLOROPROPANE	MG_KG	N																
Newport_RA_SO_VOCs	1,3,5-TRIMETHYLBENZENE	MG_KG	N																
Newport_RA_SO_VOCs	1,3-DICHLOROBENZENE	MG_KG	N																
Newport_RA_SO_VOCs	1,3-DICHLOROPROPANE	MG_KG	N																
Newport_RA_SO_VOCs	1,4-DICHLOROBENZENE	MG_KG	N																
Newport_RA_SO_VOCs	2,2-DICHLOROPROPANE	MG_KG	N																
Newport_RA_SO_VOCs	2-BUTANONE	MG_KG	N																

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	CRP-SB205		CRP-SB205		CRP-SB205		CRP-SB205		CRP-SB205		CRP-SB206		CRP-SB206		CRP-SB206	
			Sample Date	12/11/2013		12/11/2013		12/11/2013		12/11/2013		12/11/2013		12/10/2013		12/10/2013		12/10/2013	
			Sample ID	OU09 SS205 0001		FDSB12111303		OU09 SB205 0305		FDSB12111304		OU09 SB205 0608		OU09 SS206 0001		OU09 SB206 0305		OU09 SB206 0608	
			Sample Type	N		FD		N		FD		N		N		N		N	
			start_depth	0		3		3		6		6		0		3		6	
			end_depth	1		5		5		8		8		1		5		8	
			depth_unit	FT		FT		FT		FT		FT		FT		FT		FT	
			depth_interval	0 - 1 ft		3 - 5 ft		3 - 5 ft		6 - 8 ft		6 - 8 ft		0 - 1 ft		3 - 5 ft		6 - 8 ft	
			task_code	MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO	
			validated_yn	Y		Y		Y		Y		Y		Y		Y		Y	
method_analyte_group	Chemical	Unit	Fraction	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers
Newport_RA_SO_VOCs	2-CHLOROTOLUENE	MG_KG	N																
Newport_RA_SO_VOCs	2-HEXANONE	MG_KG	N																
Newport_RA_SO_VOCs	4-CHLOROTOLUENE	MG_KG	N																
Newport_RA_SO_VOCs	4-ISOPROPYLTOLUENE	MG_KG	N																
Newport_RA_SO_VOCs	4-METHYL-2-PENTANONE	MG_KG	N																
Newport_RA_SO_VOCs	ACETONE	MG_KG	N																
Newport_RA_SO_VOCs	BENZENE	MG_KG	N																
Newport_RA_SO_VOCs	BROMOBENZENE	MG_KG	N																
Newport_RA_SO_VOCs	BROMOCHLOROMETHANE	MG_KG	N																
Newport_RA_SO_VOCs	BROMODICHLOROMETHANE	MG_KG	N																
Newport_RA_SO_VOCs	BROMOFORM	MG_KG	N																
Newport_RA_SO_VOCs	BROMOMETHANE	MG_KG	N																
Newport_RA_SO_VOCs	CARBON DISULFIDE	MG_KG	N																
Newport_RA_SO_VOCs	CARBON TETRACHLORIDE	MG_KG	N																
Newport_RA_SO_VOCs	CHLOROBENZENE	MG_KG	N																
Newport_RA_SO_VOCs	CHLOROETHANE	MG_KG	N																
Newport_RA_SO_VOCs	CHLOROFORM	MG_KG	N																
Newport_RA_SO_VOCs	CHLOROMETHANE	MG_KG	N																
Newport_RA_SO_VOCs	CIS-1,2-DICHLOROETHENE	MG_KG	N																
Newport_RA_SO_VOCs	CIS-1,3-DICHLOROPROPENE	MG_KG	N																
Newport_RA_SO_VOCs	CYCLOHEXANE	MG_KG	N																
Newport_RA_SO_VOCs	DIBROMOCHLOROMETHANE	MG_KG	N																
Newport_RA_SO_VOCs	DIBROMOMETHANE	MG_KG	N																
Newport_RA_SO_VOCs	DICHLORODIFLUOROMETHANE	MG_KG	N																
Newport_RA_SO_VOCs	ETHYLBENZENE	MG_KG	N																
Newport_RA_SO_VOCs	HEXACHLOROBUTADIENE	MG_KG	N																
Newport_RA_SO_VOCs	ISOPROPYLBENZENE	MG_KG	N																
Newport_RA_SO_VOCs	M- AND P-XYLENE	MG_KG	N																
Newport_RA_SO_VOCs	METHYL ACETATE	MG_KG	N																
Newport_RA_SO_VOCs	METHYL CYCLOHEXANE	MG_KG	N																
Newport_RA_SO_VOCs	METHYL TERT-BUTYL ETHER	MG_KG	N																
Newport_RA_SO_VOCs	METHYLENE CHLORIDE	MG_KG	N																
Newport_RA_SO_VOCs	NAPHTHALENE	MG_KG	N																
Newport_RA_SO_VOCs	N-BUTYLBENZENE	MG_KG	N																
Newport_RA_SO_VOCs	O-XYLENE	MG_KG	N																
Newport_RA_SO_VOCs	PROPYLBENZENE	MG_KG	N																
Newport_RA_SO_VOCs	SEC-BUTYLBENZENE	MG_KG	N																
Newport_RA_SO_VOCs	STYRENE	MG_KG	N																
Newport_RA_SO_VOCs	TERT-BUTANOL	MG_KG	N																
Newport_RA_SO_VOCs	TERT-BUTYLBENZENE	MG_KG	N																
Newport_RA_SO_VOCs	TETRACHLOROETHENE	MG_KG	N																
Newport_RA_SO_VOCs	TOLUENE	MG_KG	N																
Newport_RA_SO_VOCs	TRANS-1,2-DICHLOROETHENE	MG_KG	N																
Newport_RA_SO_VOCs	TRANS-1,3-DICHLOROPROPENE	MG_KG	N																
Newport_RA_SO_VOCs	TRICHLOROETHENE	MG_KG	N																
Newport_RA_SO_VOCs	TRICHLOROFLUOROMETHANE	MG_KG	N																
Newport_RA_SO_VOCs	VINYL CHLORIDE	MG_KG	N																
Newport_RA_SO_VOCs	XYLENES, TOTAL	MG_KG	N																

Notes:
U or < - Non-detect at laboratory detection limit.
J - The compound was positively identified; however, the associated numerical value is an estimated concentration only (+ and - indicate bias).
Sample Type - N = normal sample, FD = duplicate sample.
mg/kg - milligram per kilogram

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	CRP-SB208		CRP-SB208		CRP-SB208		CRP-SB209		CRP-SB209		CRP-SB209		CRP-SB209	
			Sample Date	12/9/2013		12/9/2013		12/9/2013		12/9/2013		12/9/2013		12/9/2013		12/9/2013	
			Sample ID	OU09 SS208 0001		OU09 SB208 0305		OU09 SB208 0608		OU09 SS209 0001		OU09 SB209 0102		OU09 SB209 0305		OU09 SB209 1012	
			Sample Type	N		N		N		N		N		N		N	
			start_depth	0		3		6		0		1		3		10	
			end_depth	1		5		8		1		2		5		12	
			depth_unit	FT		FT		FT		FT		FT		FT		FT	
			depth_interval	0 - 1 ft		3 - 5 ft		6 - 8 ft		0 - 1 ft		1 - 2 ft		3 - 5 ft		10 - 12 ft	
			task_code	MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO	
			validated_yn	Y		Y		Y		Y		Y		Y		Y	
method_analyte_group	Chemical	Unit	Fraction	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers
Newport_RA_SO_Energetics	2,4-DINITROTOLUENE	MG_KG	N							< 0.043	U	< 0.047	U	< 0.044	U		
Newport_RA_SO_Energetics	2,6-DINITROTOLUENE	MG_KG	N														
Newport_RA_SO_Energetics	NITROGLYCERIN	MG_KG	N							< 0.34	U	< 0.38	U	< 0.36	U		
Newport_RA_SO_Metals	ALUMINUM	MG_KG	N	12200		13900		9820		11900		10200		8650		6120	
Newport_RA_SO_Metals	ANTIMONY	MG_KG	N	0.79	J	0.23	J	0.24	J	10.8	J	0.18	J	0.12	J	0.30	J
Newport_RA_SO_Metals	ARSENIC	MG_KG	N	13.1	J	13.0	J	6.8	J	10.8	J	6.4	J	6.4	J	9.4	J
Newport_RA_SO_Metals	BARIUM	MG_KG	N	13.9		12.1		34.5		15.2		24.8		26.2		62.0	
Newport_RA_SO_Metals	BERYLLIUM	MG_KG	N	0.28		0.27		0.47		0.25		0.40		0.40		0.70	
Newport_RA_SO_Metals	CADMIUM	MG_KG	N	0.12		0.12		< 0.091	U	0.14		< 0.097	U	< 0.11	U	0.24	
Newport_RA_SO_Metals	CALCIUM	MG_KG	N	2120		1600		979		2360		1020		424		293	
Newport_RA_SO_Metals	CHROMIUM VI	MG_KG	N														
Newport_RA_SO_Metals	CHROMIUM, TOTAL	MG_KG	N	18.3	J	21.5	J	13.5	J	18.1	J	12.6	J	10.6	J	9.3	J
Newport_RA_SO_Metals	COBALT	MG_KG	N	19.4	J	17.4	J	13.7	J	13.3	J	9.5	J	11.0	J	33.4	J
Newport_RA_SO_Metals	COPPER	MG_KG	N	18.6		20.0		16.8		32.8		14.2		12.4		23.4	
Newport_RA_SO_Metals	IRON	MG_KG	N	33500	J	43100	J	28800	J	31100	J	21700	J	20600	J	46000	J
Newport_RA_SO_Metals	IRON, FERROUS	MG_KG	N														
Newport_RA_SO_Metals	LEAD	MG_KG	N	259	J	42.2	J	31.9	J	153	J	19.6	J	23.2	J	9.1	J
Newport_RA_SO_Metals	MAGNESIUM	MG_KG	N	4420	J	5480	J	1720	J	4430	J	2020	J	1390	J	2290	J
Newport_RA_SO_Metals	MANGANESE	MG_KG	N	594	J	564	J	898	J	410	J	373	J	423	J	3810	J
Newport_RA_SO_Metals	MERCURY	MG_KG	N	< 0.029	UJ	< 0.028	UJ	0.14	J-	0.05	J-	0.05	J-	< 0.030	UJ	< 0.015	UJ
Newport_RA_SO_Metals	NICKEL	MG_KG	N	36.0	J	38.2	J	14.7	J	28.9	J	17.8	J	16.0	J	51.0	J
Newport_RA_SO_Metals	POTASSIUM	MG_KG	N	294	J	258	J	284	J	288	J	353	J	394	J	416	J
Newport_RA_SO_Metals	SELENIUM	MG_KG	N	< 0.48	U	< 0.42	U	< 0.46	U	< 0.48	U	< 0.48	U	< 0.53	U	< 0.43	U
Newport_RA_SO_Metals	SILVER	MG_KG	N	0.06	J	0.04	J	0.07	J	0.14	J	0.06	J	0.04	J	0.03	J
Newport_RA_SO_Metals	SODIUM	MG_KG	N	< 96	U	< 84	U	< 91	U	< 95	U	< 97	U	< 110	U	< 87	U
Newport_RA_SO_Metals	THALLIUM	MG_KG	N	0.03	J	0.02	J	0.09		0.05	J	0.09	J	0.09	J	0.06	J
Newport_RA_SO_Metals	VANADIUM	MG_KG	N	18.1		19.2		19.1		20.5		18.4		16.3		11.9	
Newport_RA_SO_Metals	ZINC	MG_KG	N	72.8		85.6		49.4		134		47.7		37.6		90.5	
Newport_RA_SO_Other	DENSITY	G_CC	N														
Newport_RA_SO_Other	Pellet count	COUNT	N														
Newport_RA_SO_Other	Pellet weight	PCT	N														
Newport_RA_SO_Other	PERCENT FINES	PCT	N														
Newport_RA_SO_Other	PERCENT GRAVEL	PCT	N														
Newport_RA_SO_Other	PERCENT SAND	PCT	N														
Newport_RA_SO_Other	PERCENT SAND, COARSE	PCT	N														
Newport_RA_SO_Other	PERCENT SAND, FINE	PCT	N														
Newport_RA_SO_Other	PERCENT SAND, MEDIUM	PCT	N														
Newport_RA_SO_Other	PH	PH	N														
Newport_RA_SO_Other	POROSITY	PCT	N														
Newport_RA_SO_Other	SIEVE 1 INCH (25.4-MM)	PCT	N														
Newport_RA_SO_Other	SIEVE 1-1/2 INCH (37.5-MM)	PCT	N														
Newport_RA_SO_Other	SIEVE 2 INCH (50-MM)	PCT	N														
Newport_RA_SO_Other	SIEVE 3 INCH (75-MM)	PCT	N														
Newport_RA_SO_Other	SIEVE 3/4 INCH (19-MM)	PCT	N														
Newport_RA_SO_Other	SIEVE 3/8 INCH (9.5-MM)	PCT	N														
Newport_RA_SO_Other	SIEVE NO. 004 (4.75-MM)	PCT	N														
Newport_RA_SO_Other	SIEVE NO. 010 (2-MM)	PCT	N														
Newport_RA_SO_Other	SIEVE NO. 020 (850-UM)	PCT	N														
Newport_RA_SO_Other	SIEVE NO. 040 (425-UM)	PCT	N														
Newport_RA_SO_Other	SIEVE NO. 060 (250-UM)	PCT	N														
Newport_RA_SO_Other	SIEVE NO. 080 (180-UM)	PCT	N														
Newport_RA_SO_Other	SIEVE NO. 100 (150-UM)	PCT	N														
Newport_RA_SO_Other	SIEVE NO. 200 (75-UM)	PCT	N														
Newport_RA_SO_Other	SPECIFIC CONDUCTANCE	UMHO_CM	N														
Newport_RA_SO_Other	SPECIFIC GRAVITY	NONE	N														
Newport_RA_SO_Other	SULFIDE	MG_KG	N														
Newport_RA_SO_Other	TPH-DIESEL RANGE	MG_KG	N														
Newport_RA_SO_Other	TPH-TOTAL UNKNOWN GASOLINE RANGE ORGANICS	MG_KG	N														
Newport_RA_SO_Other	Void Ratio	NONE	N														
Newport_RA_SO_PCBs	AROCLOR-1016	MG_KG	N														
Newport_RA_SO_PCBs	AROCLOR-1221	MG_KG	N														
Newport_RA_SO_PCBs	AROCLOR-1232	MG_KG	N														
Newport_RA_SO_PCBs	AROCLOR-1242	MG_KG	N														
Newport_RA_SO_PCBs	AROCLOR-1248	MG_KG	N														
Newport_RA_SO_PCBs	AROCLOR-1254	MG_KG	N														
Newport_RA_SO_PCBs	AROCLOR-1260	MG_KG	N														

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	CRP-SB208		CRP-SB208		CRP-SB208		CRP-SB209		CRP-SB209		CRP-SB209		CRP-SB209	
			Sample Date	12/9/2013		12/9/2013		12/9/2013		12/9/2013		12/9/2013		12/9/2013		12/9/2013	
			Sample ID	OU09 SS208 0001		OU09 SB208 0305		OU09 SB208 0608		OU09 SS209 0001		OU09 SB209 0102		OU09 SB209 0305		OU09 SB209 1012	
			Sample Type	N		N		N		N		N		N		N	
			start_depth	0		3		6		0		1		3		10	
			end_depth	1		5		8		1		2		5		12	
			depth_unit	FT		FT		FT		FT		FT		FT		FT	
			depth_interval	0 - 1 ft		3 - 5 ft		6 - 8 ft		0 - 1 ft		1 - 2 ft		3 - 5 ft		10 - 12 ft	
			task_code	MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO	
			validated_yn	Y		Y		Y		Y		Y		Y		Y	
method_analyte_group	Chemical	Unit	Fraction	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers
Newport_RA_SO_PCBs	AROCLOR-1262	MG_KG	N														
Newport_RA_SO_PCBs	AROCLOR-1268	MG_KG	N														
Newport_RA_SO_PCBs	PCB, TOTAL	MG_KG	N														
Newport_RA_SO_PCBs	POLYCHLORINATED BIPHENYLS (PCBS)	MG_KG	N														
Newport_RA_SO_Pesticides	4,4-DDD	MG_KG	N														
Newport_RA_SO_Pesticides	4,4-DDE	MG_KG	N														
Newport_RA_SO_Pesticides	4,4-DDT	MG_KG	N														
Newport_RA_SO_Pesticides	ALDRIN	MG_KG	N														
Newport_RA_SO_Pesticides	ALPHA-BHC	MG_KG	N														
Newport_RA_SO_Pesticides	ALPHA-CHLORDANE	MG_KG	N														
Newport_RA_SO_Pesticides	BETA-BHC	MG_KG	N														
Newport_RA_SO_Pesticides	DDT, TOTAL	MG_KG	N														
Newport_RA_SO_Pesticides	DELTA-BHC	MG_KG	N														
Newport_RA_SO_Pesticides	DIELDRIN	MG_KG	N														
Newport_RA_SO_Pesticides	ENDOSULFAN I	MG_KG	N														
Newport_RA_SO_Pesticides	ENDOSULFAN II	MG_KG	N														
Newport_RA_SO_Pesticides	ENDOSULFAN SULFATE	MG_KG	N														
Newport_RA_SO_Pesticides	ENDRIN	MG_KG	N														
Newport_RA_SO_Pesticides	ENDRIN ALDEHYDE	MG_KG	N														
Newport_RA_SO_Pesticides	ENDRIN KETONE	MG_KG	N														
Newport_RA_SO_Pesticides	GAMMA-CHLORDANE	MG_KG	N														
Newport_RA_SO_Pesticides	HEPTACHLOR	MG_KG	N														
Newport_RA_SO_Pesticides	HEPTACHLOR EPOXIDE	MG_KG	N														
Newport_RA_SO_Pesticides	LINDANE	MG_KG	N														
Newport_RA_SO_Pesticides	METHOXYCHLOR	MG_KG	N														
Newport_RA_SO_Pesticides	TOXAPHENE	MG_KG	N														
Newport_RA_SO_Pesticides	TRANS-CHLORDANE	MG_KG	N														
Newport_RA_SO_SVOCs	1,1-BIPHENYL	MG_KG	N														
Newport_RA_SO_SVOCs	1-METHYLNAPHTHALENE	MG_KG	N														
Newport_RA_SO_SVOCs	1,2,4-TRICHLOROBENZENE	MG_KG	N														
Newport_RA_SO_SVOCs	1,2-DICHLOROBENZENE	MG_KG	N														
Newport_RA_SO_SVOCs	1,2-DIPHENYLHYDRAZINE	MG_KG	N														
Newport_RA_SO_SVOCs	1,3-DICHLOROBENZENE	MG_KG	N														
Newport_RA_SO_SVOCs	1,4-DICHLOROBENZENE	MG_KG	N														
Newport_RA_SO_SVOCs	2,2'-OXYBIS(1-CHLOROPROPANE)	MG_KG	N														
Newport_RA_SO_SVOCs	2,4,5-TRICHLOROPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	2,4,6-TRICHLOROPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	2,4-DICHLOROPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	2,4-DIMETHYLPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	2,4-DINITROPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	2,4-DINITROTOLUENE	MG_KG	N														
Newport_RA_SO_SVOCs	2,6-DICHLOROPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	2,6-DINITROTOLUENE	MG_KG	N														
Newport_RA_SO_SVOCs	2-CHLORONAPHTHALENE	MG_KG	N														
Newport_RA_SO_SVOCs	2-CHLOROPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	2-METHYLNAPHTHALENE	MG_KG	N														
Newport_RA_SO_SVOCs	2-METHYLPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	2-NITROANILINE	MG_KG	N														
Newport_RA_SO_SVOCs	2-NITROPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	3- AND 4-METHYLPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	3,3-DICHLOROBENZIDINE	MG_KG	N														
Newport_RA_SO_SVOCs	3-NITROANILINE	MG_KG	N														
Newport_RA_SO_SVOCs	4,6-DINITRO-2-METHYLPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	4-BROMOPHENYL-PHENYLETHER	MG_KG	N														
Newport_RA_SO_SVOCs	4-CHLORO-3-METHYLPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	4-CHLOROANILINE	MG_KG	N														
Newport_RA_SO_SVOCs	4-CHLOROPHENYL-PHENYLETHER	MG_KG	N														
Newport_RA_SO_SVOCs	4-METHYLPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	4-NITROANILINE	MG_KG	N														
Newport_RA_SO_SVOCs	4-NITROPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	ACENAPHTHENE	MG_KG	N	0.015	J	0.0037	J	< 0.012	U	3.9		0.0049	J	< 0.011	U	< 0.01	U
Newport_RA_SO_SVOCs	ACENAPHTHYLENE	MG_KG	N	0.0035	J	0.0058	J	< 0.012	U	< 0.011	U	< 0.011	U	< 0.011	U	< 0.01	U
Newport_RA_SO_SVOCs	ACETOPHENONE	MG_KG	N														
Newport_RA_SO_SVOCs	ANTHRACENE	MG_KG	N	0.022	J	0.013	J	0.0017	J	4.7		0.0093	J	< 0.011	U	< 0.01	U
Newport_RA_SO_SVOCs	ATRAZINE	MG_KG	N														
Newport_RA_SO_SVOCs	BENZALDEHYDE	MG_KG	N														

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	CRP-SB208		CRP-SB208		CRP-SB208		CRP-SB209		CRP-SB209		CRP-SB209		CRP-SB209	
			Sample Date	12/9/2013		12/9/2013		12/9/2013		12/9/2013		12/9/2013		12/9/2013		12/9/2013	
			Sample ID	OU09 SS208 0001		OU09 SB208 0305		OU09 SB208 0608		OU09 SS209 0001		OU09 SB209 0102		OU09 SB209 0305		OU09 SB209 1012	
			Sample Type	N		N		N		N		N		N		N	
			start_depth	0		3		6		0		1		3		10	
			end_depth	1		5		8		1		2		5		12	
			depth_unit	FT		FT		FT		FT		FT		FT		FT	
			depth_interval	0 - 1 ft		3 - 5 ft		6 - 8 ft		0 - 1 ft		1 - 2 ft		3 - 5 ft		10 - 12 ft	
			task_code	MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO	
			validated_yn	Y		Y		Y		Y		Y		Y		Y	
method_analyte_group	Chemical	Unit	Fraction	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers
Newport_RA_SO_SVOCs	BENZIDINE	MG_KG	N														
Newport_RA_SO_SVOCs	BENZO[A]ANTHRACENE	MG_KG	N	0.21	J	0.073	J	0.015	J	20		0.057	J	0.0048	J	0.0026	J
Newport_RA_SO_SVOCs	BENZO[A]PYRENE	MG_KG	N	0.21	J	0.061	J	0.013	J	22	J	0.071	J	0.0054	J	< 0.01	UJ
Newport_RA_SO_SVOCs	BENZO[B]FLUORANTHENE	MG_KG	N	0.27	J	0.11	J	0.024	J	17	J	0.098	J	< 0.022	UJ	< 0.01	UJ
Newport_RA_SO_SVOCs	BENZO[G,H,I]PERYLENE	MG_KG	N	0.07	J	0.022	J	0.0060	J	11	J	0.034	J	0.0024	J	< 0.01	UJ
Newport_RA_SO_SVOCs	BENZO[K]FLUORANTHENE	MG_KG	N	0.091		0.039		< 0.012	U	18	J	0.034		< 0.011	U	< 0.01	U
Newport_RA_SO_SVOCs	BENZOIC ACID	MG_KG	N														
Newport_RA_SO_SVOCs	BENZYL ALCOHOL	MG_KG	N														
Newport_RA_SO_SVOCs	BIS(2-CHLOROETHOXY)METHANE	MG_KG	N														
Newport_RA_SO_SVOCs	BIS(2-CHLOROETHYL)ETHER	MG_KG	N														
Newport_RA_SO_SVOCs	BIS(2-ETHYLHEXYL)PHTHALATE	MG_KG	N														
Newport_RA_SO_SVOCs	BUTYLBENZYLPHTHALATE	MG_KG	N														
Newport_RA_SO_SVOCs	CAPROLACTAM	MG_KG	N														
Newport_RA_SO_SVOCs	CARBAZOLE	MG_KG	N														
Newport_RA_SO_SVOCs	CHRYSENE	MG_KG	N	0.3		0.099		0.013	J	27		0.078		< 0.011	U	< 0.01	U
Newport_RA_SO_SVOCs	DIBENZ[A,H]ANTHRACENE	MG_KG	N	0.043		0.016	J	0.0025	J	2.8	J	0.018	J	< 0.011	U	< 0.01	U
Newport_RA_SO_SVOCs	DIBENZOFURAN	MG_KG	N														
Newport_RA_SO_SVOCs	DIETHYLPHTHALATE	MG_KG	N														
Newport_RA_SO_SVOCs	DIMETHYL PHTHALATE	MG_KG	N														
Newport_RA_SO_SVOCs	DI-N-BUTYLPHTHALATE	MG_KG	N														
Newport_RA_SO_SVOCs	DI-N-OCTYLPHTHALATE	MG_KG	N														
Newport_RA_SO_SVOCs	FLUORANTHENE	MG_KG	N	0.27		0.15		0.031		20		0.084		< 0.022	U	< 0.01	U
Newport_RA_SO_SVOCs	FLUORENE	MG_KG	N	0.011	J	0.0072	J	< 0.012	U	2.2	J	0.0036	J	< 0.011	U	< 0.01	U
Newport_RA_SO_SVOCs	HEXACHLOROBENZENE	MG_KG	N														
Newport_RA_SO_SVOCs	HEXACHLOROBUTADIENE	MG_KG	N														
Newport_RA_SO_SVOCs	HEXACHLOROCYCLOPENTADIENE	MG_KG	N														
Newport_RA_SO_SVOCs	HEXACHLOROETHANE	MG_KG	N														
Newport_RA_SO_SVOCs	HPAH, TOTAL	MG_KG	N	1.9		0.76		0.14		190		0.6		0.016		0.0026	
Newport_RA_SO_SVOCs	INDENO[1,2,3-CD]PYRENE	MG_KG	N	0.12		0.041		0.0094	J	12	J	0.05		0.0034	J	< 0.01	U
Newport_RA_SO_SVOCs	ISOPHORONE	MG_KG	N														
Newport_RA_SO_SVOCs	LPAH, TOTAL	MG_KG	N	0.28		0.11		0.014		29		0.068		0.0050		< 0.01	U
Newport_RA_SO_SVOCs	NAPHTHALENE	MG_KG	N	0.0042	J	< 0.011	U	< 0.012	U	< 2.7	U	< 0.011	U	< 0.011	U	< 0.01	U
Newport_RA_SO_SVOCs	NITROBENZENE	MG_KG	N														
Newport_RA_SO_SVOCs	N-NITROSODIMETHYLAMINE	MG_KG	N														
Newport_RA_SO_SVOCs	N-NITROSODINPROPYLAMINE	MG_KG	N														
Newport_RA_SO_SVOCs	N-NITROSODIPHENYLAMINE	MG_KG	N														
Newport_RA_SO_SVOCs	N-NITROSOPYRROLIDINE	MG_KG	N														
Newport_RA_SO_SVOCs	PAH, TOTAL	MG_KG	N	2.2		0.88		0.15		210		0.67		0.021		0.0026	
Newport_RA_SO_SVOCs	PENTACHLOROPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	PHENANTHRENE	MG_KG	N	0.22		0.085		0.012	J	18		0.05		0.0050	J	< 0.01	U
Newport_RA_SO_SVOCs	PHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	PYRENE	MG_KG	N	0.32		0.15		0.026		36		0.076		< 0.022	U	< 0.02	U
Newport_RA_SO_VOCs	1,1,1,2-TETRACHLOROETHANE	MG_KG	N														
Newport_RA_SO_VOCs	1,1,1-TRICHLOROETHANE	MG_KG	N														
Newport_RA_SO_VOCs	1,1,2,2-TETRACHLOROETHANE	MG_KG	N														
Newport_RA_SO_VOCs	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	MG_KG	N														
Newport_RA_SO_VOCs	1,1,2-TRICHLOROETHANE	MG_KG	N														
Newport_RA_SO_VOCs	1,1-DICHLOROETHANE	MG_KG	N														
Newport_RA_SO_VOCs	1,1-DICHLOROETHENE	MG_KG	N														
Newport_RA_SO_VOCs	1,1-DICHLOROPROPENE	MG_KG	N														
Newport_RA_SO_VOCs	1,2,3-TRICHLOROBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	1,2,3-TRICHLOROPROPANE	MG_KG	N														
Newport_RA_SO_VOCs	1,2,4-TRICHLOROBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	1,2,4-TRIMETHYLBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	1,2-DIBROMO-3-CHLOROPROPANE	MG_KG	N														
Newport_RA_SO_VOCs	1,2-DIBROMOETHANE	MG_KG	N														
Newport_RA_SO_VOCs	1,2-DICHLOROBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	1,2-DICHLOROETHANE	MG_KG	N														
Newport_RA_SO_VOCs	1,2-DICHLOROETHENE, TOTAL	MG_KG	N														
Newport_RA_SO_VOCs	1,2-DICHLOROPROPANE	MG_KG	N														
Newport_RA_SO_VOCs	1,3,5-TRIMETHYLBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	1,3-DICHLOROBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	1,3-DICHLOROPROPANE	MG_KG	N														
Newport_RA_SO_VOCs	1,4-DICHLOROBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	2,2-DICHLOROPROPANE	MG_KG	N														
Newport_RA_SO_VOCs	2-BUTANONE	MG_KG	N														

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	CRP-SB208		CRP-SB208		CRP-SB208		CRP-SB209		CRP-SB209		CRP-SB209		CRP-SB209	
			Sample Date	12/9/2013		12/9/2013		12/9/2013		12/9/2013		12/9/2013		12/9/2013		12/9/2013	
			Sample ID	OU09 SS208 0001		OU09 SB208 0305		OU09 SB208 0608		OU09 SS209 0001		OU09 SB209 0102		OU09 SB209 0305		OU09 SB209 1012	
			Sample Type	N		N		N		N		N		N		N	
			start_depth	0		3		6		0		1		3		10	
			end_depth	1		5		8		1		2		5		12	
			depth_unit	FT		FT		FT		FT		FT		FT		FT	
			depth_interval	0 - 1 ft		3 - 5 ft		6 - 8 ft		0 - 1 ft		1 - 2 ft		3 - 5 ft		10 - 12 ft	
			task_code	MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO	
			validated_yn	Y		Y		Y		Y		Y		Y		Y	
method_analyte_group	Chemical	Unit	Fraction	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers
Newport_RA_SO_VOCs	2-CHLOROTOLUENE	MG_KG	N														
Newport_RA_SO_VOCs	2-HEXANONE	MG_KG	N														
Newport_RA_SO_VOCs	4-CHLOROTOLUENE	MG_KG	N														
Newport_RA_SO_VOCs	4-ISOPROPYLTOLUENE	MG_KG	N														
Newport_RA_SO_VOCs	4-METHYL-2-PENTANONE	MG_KG	N														
Newport_RA_SO_VOCs	ACETONE	MG_KG	N														
Newport_RA_SO_VOCs	BENZENE	MG_KG	N														
Newport_RA_SO_VOCs	BROMOBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	BROMOCHLOROMETHANE	MG_KG	N														
Newport_RA_SO_VOCs	BROMODICHLOROMETHANE	MG_KG	N														
Newport_RA_SO_VOCs	BROMOFORM	MG_KG	N														
Newport_RA_SO_VOCs	BROMOMETHANE	MG_KG	N														
Newport_RA_SO_VOCs	CARBON DISULFIDE	MG_KG	N														
Newport_RA_SO_VOCs	CARBON TETRACHLORIDE	MG_KG	N														
Newport_RA_SO_VOCs	CHLOROBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	CHLOROETHANE	MG_KG	N														
Newport_RA_SO_VOCs	CHLOROFORM	MG_KG	N														
Newport_RA_SO_VOCs	CHLOROMETHANE	MG_KG	N														
Newport_RA_SO_VOCs	CIS-1,2-DICHLOROETHENE	MG_KG	N														
Newport_RA_SO_VOCs	CIS-1,3-DICHLOROPROPENE	MG_KG	N														
Newport_RA_SO_VOCs	CYCLOHEXANE	MG_KG	N														
Newport_RA_SO_VOCs	DIBROMOCHLOROMETHANE	MG_KG	N														
Newport_RA_SO_VOCs	DIBROMOMETHANE	MG_KG	N														
Newport_RA_SO_VOCs	DICHLORODIFLUOROMETHANE	MG_KG	N														
Newport_RA_SO_VOCs	ETHYLBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	HEXACHLOROBUTADIENE	MG_KG	N														
Newport_RA_SO_VOCs	ISOPROPYLBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	M- AND P-XYLENE	MG_KG	N														
Newport_RA_SO_VOCs	METHYL ACETATE	MG_KG	N														
Newport_RA_SO_VOCs	METHYL CYCLOHEXANE	MG_KG	N														
Newport_RA_SO_VOCs	METHYL TERT-BUTYL ETHER	MG_KG	N														
Newport_RA_SO_VOCs	METHYLENE CHLORIDE	MG_KG	N														
Newport_RA_SO_VOCs	NAPHTHALENE	MG_KG	N														
Newport_RA_SO_VOCs	N-BUTYLBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	O-XYLENE	MG_KG	N														
Newport_RA_SO_VOCs	PROPYLBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	SEC-BUTYLBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	STYRENE	MG_KG	N														
Newport_RA_SO_VOCs	TERT-BUTANOL	MG_KG	N														
Newport_RA_SO_VOCs	TERT-BUTYLBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	TETRACHLOROETHENE	MG_KG	N														
Newport_RA_SO_VOCs	TOLUENE	MG_KG	N														
Newport_RA_SO_VOCs	TRANS-1,2-DICHLOROETHENE	MG_KG	N														
Newport_RA_SO_VOCs	TRANS-1,3-DICHLOROPROPENE	MG_KG	N														
Newport_RA_SO_VOCs	TRICHLOROETHENE	MG_KG	N														
Newport_RA_SO_VOCs	TRICHLOROFLUOROMETHANE	MG_KG	N														
Newport_RA_SO_VOCs	VINYL CHLORIDE	MG_KG	N														
Newport_RA_SO_VOCs	XYLENES, TOTAL	MG_KG	N														

Notes:
U or < - Non-detect at laboratory detection limit.
J - The compound was positively identified; however, the associated numerical value is an estimated concentration only (+ and - indicate bias).
Sample Type - N = normal sample, FD = duplicate sample.
mg/kg - milligram per kilogram

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	CRP-SB210		CRP-SB211		CRP-SB211		CRP-SB211		CRP-SB211		CRP-SB211		CRP-SB212	
			Sample Date	12/6/2013		12/9/2013		12/11/2013		12/11/2013		12/11/2013		12/9/2013		12/9/2013	
			Sample ID	OU09 SS210 0012		OU09 SB211 0305		FDSS12111307		OU09 SS211 0001		OU09 SS211 0001		OU09 SB211 1012		OU09 SS212 0001	
			Sample Type	N		N		FD		N		N		N		N	
			start_depth	0		3		0		0		0		10		0	
			end_depth	1		5		1		1		1		12		1	
			depth_unit	FT		FT		FT		FT		FT		FT		FT	
			depth_interval	0 - 1 ft		3 - 5 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		10 - 12 ft		0 - 1 ft	
			task_code	MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO	
			validated_yn	Y		Y		Y		N		Y		Y		Y	
method_analyte_group	Chemical	Unit	Fraction	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers
Newport_RA_SO_Energetics	2,4-DINITROTOLUENE	MG_KG	N			< 0.047	U					< 0.05	U			< 0.05	U
Newport_RA_SO_Energetics	2,6-DINITROTOLUENE	MG_KG	N														
Newport_RA_SO_Energetics	NITROGLYCERIN	MG_KG	N			< 0.38	U					0.44	J			0.27	J
Newport_RA_SO_Metals	ALUMINUM	MG_KG	N	6300		12000						11800		6540		10600	
Newport_RA_SO_Metals	ANTIMONY	MG_KG	N	0.70	J	0.58	J					0.62	J	0.12	J	1.5	J
Newport_RA_SO_Metals	ARSENIC	MG_KG	N	10	J	14.5	J					12.7	J	7.1	J	13.5	J
Newport_RA_SO_Metals	BARIUM	MG_KG	N	15.0	J-	23.0						23.6		21.1		21.4	
Newport_RA_SO_Metals	BERYLLIUM	MG_KG	N	0.38	J-	0.35						0.35		0.36		0.26	
Newport_RA_SO_Metals	CADMIUM	MG_KG	N	0.11		0.29						0.22		< 0.084	U	0.32	
Newport_RA_SO_Metals	CALCIUM	MG_KG	N	4500		1180						3320		375		29600	
Newport_RA_SO_Metals	CHROMIUM VI	MG_KG	N					< 1.8	UJ			< 1.5	UJ				
Newport_RA_SO_Metals	CHROMIUM, TOTAL	MG_KG	N	12.8	J-	34.2	J					17.1	J	11.5	J	15.6	J
Newport_RA_SO_Metals	COBALT	MG_KG	N	15.0	J-	12.0	J					13.7	J	14.4	J	9.7	J
Newport_RA_SO_Metals	COPPER	MG_KG	N	25.3	J	57.0						31.0		20.4		26.4	
Newport_RA_SO_Metals	IRON	MG_KG	N	34400		36700	J					31400	J	29600	J	30400	J
Newport_RA_SO_Metals	IRON, FERROUS	MG_KG	N							0.88							
Newport_RA_SO_Metals	LEAD	MG_KG	N	99.2	J	50.3	J					88.6	J	8.3	J	99.5	J
Newport_RA_SO_Metals	MAGNESIUM	MG_KG	N	1910		3360	J					4350	J	2090	J	5810	J
Newport_RA_SO_Metals	MANGANESE	MG_KG	N	574		418	J					438	J	693	J	305	J
Newport_RA_SO_Metals	MERCURY	MG_KG	N	0.08		< 0.033	UJ					0.04	J-	< 0.016	UJ	0.21	J-
Newport_RA_SO_Metals	NICKEL	MG_KG	N	26.9	J-	27.8	J					28.3	J	24.2	J	21.5	J
Newport_RA_SO_Metals	POTASSIUM	MG_KG	N	650	J-	351	J					406	J	577	J	390	J
Newport_RA_SO_Metals	SELENIUM	MG_KG	N	< 0.50	UJ	< 0.46	U					< 0.54	U	< 0.42	U	0.43	
Newport_RA_SO_Metals	SILVER	MG_KG	N	0.04	J	0.08	J					0.23	J	0.03	J	0.90	J
Newport_RA_SO_Metals	SODIUM	MG_KG	N	< 143	UJ	< 92	U					< 110	U	< 84	U	< 84	U
Newport_RA_SO_Metals	THALLIUM	MG_KG	N	0.06	J	0.06	J					0.05	J	0.06	J	0.15	
Newport_RA_SO_Metals	VANADIUM	MG_KG	N	17.3	J-	20.8						21.2		15.2		19.4	
Newport_RA_SO_Metals	ZINC	MG_KG	N	91.3		167						159		51.9		186	
Newport_RA_SO_Other	DENSITY	G_CC	N							1.65							
Newport_RA_SO_Other	Pellet count	COUNT	N														
Newport_RA_SO_Other	Pellet weight	PCT	N														
Newport_RA_SO_Other	PERCENT FINES	PCT	N							30.1							
Newport_RA_SO_Other	PERCENT GRAVEL	PCT	N							19.5							
Newport_RA_SO_Other	PERCENT SAND	PCT	N							50.4							
Newport_RA_SO_Other	PERCENT SAND, COARSE	PCT	N							15.2							
Newport_RA_SO_Other	PERCENT SAND, FINE	PCT	N							17.0							
Newport_RA_SO_Other	PERCENT SAND, MEDIUM	PCT	N							18.2							
Newport_RA_SO_Other	PH	PH	N														
Newport_RA_SO_Other	POROSITY	PCT	N							38.3							
Newport_RA_SO_Other	SIEVE 1 INCH (25.4-MM)	PCT	N							0							
Newport_RA_SO_Other	SIEVE 1-1/2 INCH (37.5-MM)	PCT	N							0							
Newport_RA_SO_Other	SIEVE 2 INCH (50-MM)	PCT	N							0							
Newport_RA_SO_Other	SIEVE 3 INCH (75-MM)	PCT	N							0							
Newport_RA_SO_Other	SIEVE 3/4 INCH (19-MM)	PCT	N							0							
Newport_RA_SO_Other	SIEVE 3/8 INCH (9.5-MM)	PCT	N							7.0							
Newport_RA_SO_Other	SIEVE NO. 004 (4.75-MM)	PCT	N							12.5							
Newport_RA_SO_Other	SIEVE NO. 010 (2-MM)	PCT	N							15.2							
Newport_RA_SO_Other	SIEVE NO. 020 (850-UM)	PCT	N							11.1							
Newport_RA_SO_Other	SIEVE NO. 040 (425-UM)	PCT	N							7.1							
Newport_RA_SO_Other	SIEVE NO. 060 (250-UM)	PCT	N							6.0							
Newport_RA_SO_Other	SIEVE NO. 080 (180-UM)	PCT	N							3.1							
Newport_RA_SO_Other	SIEVE NO. 100 (150-UM)	PCT	N							2.1							
Newport_RA_SO_Other	SIEVE NO. 200 (75-UM)	PCT	N							5.8							
Newport_RA_SO_Other	SPECIFIC CONDUCTANCE	UMHO_CM	N							19							
Newport_RA_SO_Other	SPECIFIC GRAVITY	NONE	N							2.67							
Newport_RA_SO_Other	SULFIDE	MG_KG	N							18							
Newport_RA_SO_Other	TPH-DIESEL RANGE	MG_KG	N														
Newport_RA_SO_Other	TPH-TOTAL UNKNOWN GASOLINE RANGE ORGANICS	MG_KG	N														
Newport_RA_SO_Other	Void Ratio	NONE	N							0.6							
Newport_RA_SO_PCBs	AROCLOR-1016	MG_KG	N														
Newport_RA_SO_PCBs	AROCLOR-1221	MG_KG	N														
Newport_RA_SO_PCBs	AROCLOR-1232	MG_KG	N														
Newport_RA_SO_PCBs	AROCLOR-1242	MG_KG	N														
Newport_RA_SO_PCBs	AROCLOR-1248	MG_KG	N														
Newport_RA_SO_PCBs	AROCLOR-1254	MG_KG	N														
Newport_RA_SO_PCBs	AROCLOR-1260	MG_KG	N														

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	CRP-SB210		CRP-SB211		CRP-SB211		CRP-SB211		CRP-SB211		CRP-SB211		CRP-SB212	
			Sample Date	12/6/2013		12/9/2013		12/11/2013		12/11/2013		12/11/2013		12/9/2013		12/9/2013	
			Sample ID	OU09 SS210 0012		OU09 SB211 0305		FDSS12111307		OU09 SS211 0001		OU09 SS211 0001		OU09 SB211 1012		OU09 SS212 0001	
			Sample Type	N		N		FD		N		N		N		N	
			start_depth	0		3		0		0		0		10		0	
			end_depth	1		5		1		1		1		12		1	
			depth_unit	FT		FT		FT		FT		FT		FT		FT	
			depth_interval	0 - 1 ft		3 - 5 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		10 - 12 ft		0 - 1 ft	
			task_code	MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO	
			validated_yn	Y		Y		Y		N		Y		Y		Y	
method_analyte_group	Chemical	Unit	Fraction	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers
Newport_RA_SO_PCBs	AROCLOR-1262	MG_KG	N														
Newport_RA_SO_PCBs	AROCLOR-1268	MG_KG	N														
Newport_RA_SO_PCBs	PCB, TOTAL	MG_KG	N														
Newport_RA_SO_PCBs	POLYCHLORINATED BIPHENYLS (PCBS)	MG_KG	N														
Newport_RA_SO_Pesticides	4,4-DDD	MG_KG	N														
Newport_RA_SO_Pesticides	4,4-DDE	MG_KG	N														
Newport_RA_SO_Pesticides	4,4-DDT	MG_KG	N														
Newport_RA_SO_Pesticides	ALDRIN	MG_KG	N														
Newport_RA_SO_Pesticides	ALPHA-BHC	MG_KG	N														
Newport_RA_SO_Pesticides	ALPHA-CHLORDANE	MG_KG	N														
Newport_RA_SO_Pesticides	BETA-BHC	MG_KG	N														
Newport_RA_SO_Pesticides	DDT, TOTAL	MG_KG	N														
Newport_RA_SO_Pesticides	DELTA-BHC	MG_KG	N														
Newport_RA_SO_Pesticides	DIELDRIN	MG_KG	N														
Newport_RA_SO_Pesticides	ENDOSULFAN I	MG_KG	N														
Newport_RA_SO_Pesticides	ENDOSULFAN II	MG_KG	N														
Newport_RA_SO_Pesticides	ENDOSULFAN SULFATE	MG_KG	N														
Newport_RA_SO_Pesticides	ENDRIN	MG_KG	N														
Newport_RA_SO_Pesticides	ENDRIN ALDEHYDE	MG_KG	N														
Newport_RA_SO_Pesticides	ENDRIN KETONE	MG_KG	N														
Newport_RA_SO_Pesticides	GAMMA-CHLORDANE	MG_KG	N														
Newport_RA_SO_Pesticides	HEPTACHLOR	MG_KG	N														
Newport_RA_SO_Pesticides	HEPTACHLOR EPOXIDE	MG_KG	N														
Newport_RA_SO_Pesticides	LINDANE	MG_KG	N														
Newport_RA_SO_Pesticides	METHOXYCHLOR	MG_KG	N														
Newport_RA_SO_Pesticides	TOXAPHENE	MG_KG	N														
Newport_RA_SO_Pesticides	TRANS-CHLORDANE	MG_KG	N														
Newport_RA_SO_SVOCs	1,1-BIPHENYL	MG_KG	N														
Newport_RA_SO_SVOCs	1-METHYLNAPHTHALENE	MG_KG	N														
Newport_RA_SO_SVOCs	1,2,4-TRICHLOROBENZENE	MG_KG	N														
Newport_RA_SO_SVOCs	1,2-DICHLOROBENZENE	MG_KG	N														
Newport_RA_SO_SVOCs	1,2-DIPHENYLHYDRAZINE	MG_KG	N														
Newport_RA_SO_SVOCs	1,3-DICHLOROBENZENE	MG_KG	N														
Newport_RA_SO_SVOCs	1,4-DICHLOROBENZENE	MG_KG	N														
Newport_RA_SO_SVOCs	2,2'-OXYBIS(1-CHLOROPROPANE)	MG_KG	N														
Newport_RA_SO_SVOCs	2,4,5-TRICHLOROPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	2,4,6-TRICHLOROPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	2,4-DICHLOROPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	2,4-DIMETHYLPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	2,4-DINITROPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	2,4-DINITROTOLUENE	MG_KG	N														
Newport_RA_SO_SVOCs	2,6-DICHLOROPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	2,6-DINITROTOLUENE	MG_KG	N														
Newport_RA_SO_SVOCs	2-CHLORONAPHTHALENE	MG_KG	N														
Newport_RA_SO_SVOCs	2-CHLOROPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	2-METHYLNAPHTHALENE	MG_KG	N														
Newport_RA_SO_SVOCs	2-METHYLPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	2-NITROANILINE	MG_KG	N														
Newport_RA_SO_SVOCs	2-NITROPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	3- AND 4-METHYLPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	3,3-DICHLOROBENZIDINE	MG_KG	N														
Newport_RA_SO_SVOCs	3-NITROANILINE	MG_KG	N														
Newport_RA_SO_SVOCs	4,6-DINITRO-2-METHYLPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	4-BROMOPHENYL-PHENYLETHER	MG_KG	N														
Newport_RA_SO_SVOCs	4-CHLORO-3-METHYLPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	4-CHLOROANILINE	MG_KG	N														
Newport_RA_SO_SVOCs	4-CHLOROPHENYL-PHENYLETHER	MG_KG	N														
Newport_RA_SO_SVOCs	4-METHYLPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	4-NITROANILINE	MG_KG	N														
Newport_RA_SO_SVOCs	4-NITROPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	ACENAPHTHENE	MG_KG	N	0.059		0.0022	J					2.8		0.0060	J	2.6	
Newport_RA_SO_SVOCs	ACENAPHTHYLENE	MG_KG	N	< 0.012	U	0.0020	J					< 0.011	U	< 0.011	U	< 0.056	U
Newport_RA_SO_SVOCs	ACETOPHENONE	MG_KG	N														
Newport_RA_SO_SVOCs	ANTHRACENE	MG_KG	N	0.063		0.0054	J					3.8		0.0098	J	3.4	
Newport_RA_SO_SVOCs	ATRAZINE	MG_KG	N														
Newport_RA_SO_SVOCs	BENZALDEHYDE	MG_KG	N														

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	CRP-SB210		CRP-SB211		CRP-SB211		CRP-SB211		CRP-SB211		CRP-SB211		CRP-SB212	
			Sample Date	12/6/2013		12/9/2013		12/11/2013		12/11/2013		12/11/2013		12/9/2013		12/9/2013	
			Sample ID	OU09 SS210 0012		OU09 SB211 0305		FDSS12111307		OU09 SS211 0001		OU09 SS211 0001		OU09 SB211 1012		OU09 SS212 0001	
			Sample Type	N		N		FD		N		N		N		N	
			start_depth	0		3		0		0		0		10		0	
			end_depth	1		5		1		1		1		12		1	
			depth_unit	FT		FT		FT		FT		FT		FT		FT	
			depth_interval	0 - 1 ft		3 - 5 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		10 - 12 ft		0 - 1 ft	
			task_code	MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO	
			validated_yn	Y		Y		Y		N		Y		Y		Y	
method_analyte_group	Chemical	Unit	Fraction	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers
Newport_RA_SO_SVOCs	BENZIDINE	MG_KG	N														
Newport_RA_SO_SVOCs	BENZO[A]ANTHRACENE	MG_KG	N	0.53		0.21	J					16		0.052		14	
Newport_RA_SO_SVOCs	BENZO[A]PYRENE	MG_KG	N	0.67		0.16	J					19	J	0.056		17	
Newport_RA_SO_SVOCs	BENZO[B]FLUORANTHENE	MG_KG	N	0.6		0.14	J					18	J	0.082		15	
Newport_RA_SO_SVOCs	BENZO[G,H,I]PERYLENE	MG_KG	N	0.21	J	0.054	J					7.9	J	0.025	J	12	
Newport_RA_SO_SVOCs	BENZO[K]FLUORANTHENE	MG_KG	N	0.57		0.024						16	J	0.028		11	
Newport_RA_SO_SVOCs	BENZOIC ACID	MG_KG	N														
Newport_RA_SO_SVOCs	BENZYL ALCOHOL	MG_KG	N														
Newport_RA_SO_SVOCs	BIS(2-CHLOROETHOXY)METHANE	MG_KG	N														
Newport_RA_SO_SVOCs	BIS(2-CHLOROETHYL)ETHER	MG_KG	N														
Newport_RA_SO_SVOCs	BIS(2-ETHYLHEXYL)PHTHALATE	MG_KG	N														
Newport_RA_SO_SVOCs	BUTYLBENZYLPHTHALATE	MG_KG	N														
Newport_RA_SO_SVOCs	CAPROLACTAM	MG_KG	N														
Newport_RA_SO_SVOCs	CARBAZOLE	MG_KG	N														
Newport_RA_SO_SVOCs	CHRYSENE	MG_KG	N	0.8		0.6						22		0.058		19	
Newport_RA_SO_SVOCs	DIBENZ[A,H]ANTHRACENE	MG_KG	N	0.12		0.029						0.35		0.011	J	5.5	
Newport_RA_SO_SVOCs	DIBENZOFURAN	MG_KG	N														
Newport_RA_SO_SVOCs	DIETHYLPHTHALATE	MG_KG	N														
Newport_RA_SO_SVOCs	DIMETHYL PHTHALATE	MG_KG	N														
Newport_RA_SO_SVOCs	DI-N-BUTYLPHTHALATE	MG_KG	N														
Newport_RA_SO_SVOCs	DI-N-OCTYLPHTHALATE	MG_KG	N														
Newport_RA_SO_SVOCs	FLUORANTHENE	MG_KG	N	0.52		0.069						18		0.09		17	
Newport_RA_SO_SVOCs	FLUORENE	MG_KG	N	0.029		< 0.011	U					1.7		< 0.011	U	1	
Newport_RA_SO_SVOCs	HEXACHLOROBENZENE	MG_KG	N														
Newport_RA_SO_SVOCs	HEXACHLOROBUTADIENE	MG_KG	N														
Newport_RA_SO_SVOCs	HEXACHLOROCYCLOPENTADIENE	MG_KG	N														
Newport_RA_SO_SVOCs	HEXACHLOROETHANE	MG_KG	N														
Newport_RA_SO_SVOCs	HPAH, TOTAL	MG_KG	N	5		1.4						150		0.51		150	
Newport_RA_SO_SVOCs	INDENO[1,2,3-CD]PYRENE	MG_KG	N	0.22		0.026						10	J	0.038		13	
Newport_RA_SO_SVOCs	ISOPHORONE	MG_KG	N														
Newport_RA_SO_SVOCs	LPAH, TOTAL	MG_KG	N	0.45		0.054						24		0.066		22	
Newport_RA_SO_SVOCs	NAPHTHALENE	MG_KG	N	0.021	J	< 0.011	U					< 2.8	U	< 0.011	U	0.53	
Newport_RA_SO_SVOCs	NITROBENZENE	MG_KG	N														
Newport_RA_SO_SVOCs	N-NITROSODIMETHYLAMINE	MG_KG	N														
Newport_RA_SO_SVOCs	N-NITROSODINPROPYLAMINE	MG_KG	N														
Newport_RA_SO_SVOCs	N-NITROSODIPHENYLAMINE	MG_KG	N														
Newport_RA_SO_SVOCs	N-NITROSOPYRROLIDINE	MG_KG	N														
Newport_RA_SO_SVOCs	PAH, TOTAL	MG_KG	N	5.5		1.5						180		0.57		170	
Newport_RA_SO_SVOCs	PENTACHLOROPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	PHENANTHRENE	MG_KG	N	0.28		0.044						16		0.05		14	
Newport_RA_SO_SVOCs	PHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	PYRENE	MG_KG	N	0.77		0.1						26		0.065		26	
Newport_RA_SO_VOCs	1,1,1,2-TETRACHLOROETHANE	MG_KG	N														
Newport_RA_SO_VOCs	1,1,1-TRICHLOROETHANE	MG_KG	N														
Newport_RA_SO_VOCs	1,1,2,2-TETRACHLOROETHANE	MG_KG	N														
Newport_RA_SO_VOCs	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	MG_KG	N														
Newport_RA_SO_VOCs	1,1,2-TRICHLOROETHANE	MG_KG	N														
Newport_RA_SO_VOCs	1,1-DICHLOROETHANE	MG_KG	N														
Newport_RA_SO_VOCs	1,1-DICHLOROETHENE	MG_KG	N														
Newport_RA_SO_VOCs	1,1-DICHLOROPROPENE	MG_KG	N														
Newport_RA_SO_VOCs	1,2,3-TRICHLOROBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	1,2,3-TRICHLOROPROPANE	MG_KG	N														
Newport_RA_SO_VOCs	1,2,4-TRICHLOROBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	1,2,4-TRIMETHYLBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	1,2-DIBROMO-3-CHLOROPROPANE	MG_KG	N														
Newport_RA_SO_VOCs	1,2-DIBROMOETHANE	MG_KG	N														
Newport_RA_SO_VOCs	1,2-DICHLOROBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	1,2-DICHLOROETHANE	MG_KG	N														
Newport_RA_SO_VOCs	1,2-DICHLOROETHENE, TOTAL	MG_KG	N														
Newport_RA_SO_VOCs	1,2-DICHLOROPROPANE	MG_KG	N														
Newport_RA_SO_VOCs	1,3,5-TRIMETHYLBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	1,3-DICHLOROBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	1,3-DICHLOROPROPANE	MG_KG	N														
Newport_RA_SO_VOCs	1,4-DICHLOROBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	2,2-DICHLOROPROPANE	MG_KG	N														
Newport_RA_SO_VOCs	2-BUTANONE	MG_KG	N														

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	CRP-SB210		CRP-SB211		CRP-SB211		CRP-SB211		CRP-SB211		CRP-SB211		CRP-SB212	
			Sample Date	12/6/2013		12/9/2013		12/11/2013		12/11/2013		12/11/2013		12/9/2013		12/9/2013	
			Sample ID	OU09 SS210 0012		OU09 SB211 0305		FDSS12111307		OU09 SS211 0001		OU09 SS211 0001		OU09 SB211 1012		OU09 SS212 0001	
			Sample Type	N		N		FD		N		N		N		N	
			start_depth	0		3		0		0		0		10		0	
			end_depth	1		5		1		1		1		12		1	
			depth_unit	FT		FT		FT		FT		FT		FT		FT	
			depth_interval	0 - 1 ft		3 - 5 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		10 - 12 ft		0 - 1 ft	
			task_code	MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO	
			validated_yn	Y		Y		Y		N		Y		Y		Y	
method_analyte_group	Chemical	Unit	Fraction	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers
Newport_RA_SO_VOCs	2-CHLOROTOLUENE	MG_KG	N														
Newport_RA_SO_VOCs	2-HEXANONE	MG_KG	N														
Newport_RA_SO_VOCs	4-CHLOROTOLUENE	MG_KG	N														
Newport_RA_SO_VOCs	4-ISOPROPYLTOLUENE	MG_KG	N														
Newport_RA_SO_VOCs	4-METHYL-2-PENTANONE	MG_KG	N														
Newport_RA_SO_VOCs	ACETONE	MG_KG	N														
Newport_RA_SO_VOCs	BENZENE	MG_KG	N														
Newport_RA_SO_VOCs	BROMOBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	BROMOCHLOROMETHANE	MG_KG	N														
Newport_RA_SO_VOCs	BROMODICHLOROMETHANE	MG_KG	N														
Newport_RA_SO_VOCs	BROMOFORM	MG_KG	N														
Newport_RA_SO_VOCs	BROMOMETHANE	MG_KG	N														
Newport_RA_SO_VOCs	CARBON DISULFIDE	MG_KG	N														
Newport_RA_SO_VOCs	CARBON TETRACHLORIDE	MG_KG	N														
Newport_RA_SO_VOCs	CHLOROBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	CHLOROETHANE	MG_KG	N														
Newport_RA_SO_VOCs	CHLOROFORM	MG_KG	N														
Newport_RA_SO_VOCs	CHLOROMETHANE	MG_KG	N														
Newport_RA_SO_VOCs	CIS-1,2-DICHLOROETHENE	MG_KG	N														
Newport_RA_SO_VOCs	CIS-1,3-DICHLOROPROPENE	MG_KG	N														
Newport_RA_SO_VOCs	CYCLOHEXANE	MG_KG	N														
Newport_RA_SO_VOCs	DIBROMOCHLOROMETHANE	MG_KG	N														
Newport_RA_SO_VOCs	DIBROMOMETHANE	MG_KG	N														
Newport_RA_SO_VOCs	DICHLORODIFLUOROMETHANE	MG_KG	N														
Newport_RA_SO_VOCs	ETHYLBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	HEXACHLOROBUTADIENE	MG_KG	N														
Newport_RA_SO_VOCs	ISOPROPYLBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	M- AND P-XYLENE	MG_KG	N														
Newport_RA_SO_VOCs	METHYL ACETATE	MG_KG	N														
Newport_RA_SO_VOCs	METHYL CYCLOHEXANE	MG_KG	N														
Newport_RA_SO_VOCs	METHYL TERT-BUTYL ETHER	MG_KG	N														
Newport_RA_SO_VOCs	METHYLENE CHLORIDE	MG_KG	N														
Newport_RA_SO_VOCs	NAPHTHALENE	MG_KG	N														
Newport_RA_SO_VOCs	N-BUTYLBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	O-XYLENE	MG_KG	N														
Newport_RA_SO_VOCs	PROPYLBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	SEC-BUTYLBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	STYRENE	MG_KG	N														
Newport_RA_SO_VOCs	TERT-BUTANOL	MG_KG	N														
Newport_RA_SO_VOCs	TERT-BUTYLBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	TETRACHLOROETHENE	MG_KG	N														
Newport_RA_SO_VOCs	TOLUENE	MG_KG	N														
Newport_RA_SO_VOCs	TRANS-1,2-DICHLOROETHENE	MG_KG	N														
Newport_RA_SO_VOCs	TRANS-1,3-DICHLOROPROPENE	MG_KG	N														
Newport_RA_SO_VOCs	TRICHLOROETHENE	MG_KG	N														
Newport_RA_SO_VOCs	TRICHLOROFLUOROMETHANE	MG_KG	N														
Newport_RA_SO_VOCs	VINYL CHLORIDE	MG_KG	N														
Newport_RA_SO_VOCs	XYLENES, TOTAL	MG_KG	N														

Notes:
U or < - Non-detect at laboratory detection limit.
J - The compound was positively identified; however, the associated numerical value is an estimated concentration only (+ and - indicate bias).
Sample Type - N = normal sample, FD = duplicate sample.
mg/kg - milligram per kilogram

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	CRP-SB212		CRP-SB212		CRP-SB212		CRP-SB213	
			Sample Date	12/9/2013		12/9/2013		12/9/2013		12/9/2013	
			Sample ID	OU09 SB212 0102		OU09 SB212 0305		OU09 SB212 0608		OU09 SS213 0001	
			Sample Type	N		N		N		N	
			start_depth	1		3		6		0	
			end_depth	2		5		8		1	
			depth_unit	FT		FT		FT		FT	
			depth_interval	1 - 2 ft		3 - 5 ft		6 - 8 ft		0 - 1 ft	
			task_code	MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO	
			validated_yn	Y		Y		Y		Y	
method_analyte_group	Chemical	Unit	Fraction	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers
Newport_RA_SO_Energetics	2,4-DINITROTOLUENE	MG_KG	N	< 0.043	U	< 0.044	U			< 0.049	U
Newport_RA_SO_Energetics	2,6-DINITROTOLUENE	MG_KG	N								
Newport_RA_SO_Energetics	NITROGLYCERIN	MG_KG	N	< 0.34	U	< 0.35	U			0.15	J
Newport_RA_SO_Metals	ALUMINUM	MG_KG	N	10200		9400		7150		9450	
Newport_RA_SO_Metals	ANTIMONY	MG_KG	N	0.26	J	0.19	J	0.21	J	0.81	J
Newport_RA_SO_Metals	ARSENIC	MG_KG	N	6.9	J	6.8	J	6.2	J	8.5	J
Newport_RA_SO_Metals	BARIUM	MG_KG	N	28.4		30.8		22.0		46.9	
Newport_RA_SO_Metals	BERYLLIUM	MG_KG	N	0.43		0.41		0.40		0.40	
Newport_RA_SO_Metals	CADMIUM	MG_KG	N	< 0.092	U	< 0.093	U	< 0.071	U	0.21	
Newport_RA_SO_Metals	CALCIUM	MG_KG	N	967		949		295		1790	
Newport_RA_SO_Metals	CHROMIUM VI	MG_KG	N								
Newport_RA_SO_Metals	CHROMIUM, TOTAL	MG_KG	N	12.8	J	11.3	J	13.4	J	12.8	J
Newport_RA_SO_Metals	COBALT	MG_KG	N	10.7	J	9.7	J	18.8	J	10.1	J
Newport_RA_SO_Metals	COPPER	MG_KG	N	18.0		13.5		28.0		21.4	
Newport_RA_SO_Metals	IRON	MG_KG	N	25700	J	23000	J	40200	J	50000	J
Newport_RA_SO_Metals	IRON, FERROUS	MG_KG	N								
Newport_RA_SO_Metals	LEAD	MG_KG	N	16.9	J	15.8	J	10	J	114	J
Newport_RA_SO_Metals	MAGNESIUM	MG_KG	N	1780	J	1680	J	1240	J	2040	J
Newport_RA_SO_Metals	MANGANESE	MG_KG	N	413	J	363	J	701	J	627	J
Newport_RA_SO_Metals	MERCURY	MG_KG	N	< 0.036	UJ	< 0.030	UJ	< 0.033	UJ	0.07	J-
Newport_RA_SO_Metals	NICKEL	MG_KG	N	18.0	J	15.8	J	23.6	J	17.3	J
Newport_RA_SO_Metals	POTASSIUM	MG_KG	N	384	J	342	J	483	J	502	J
Newport_RA_SO_Metals	SELENIUM	MG_KG	N	0.54		1.2		< 0.35	U	< 0.56	U
Newport_RA_SO_Metals	SILVER	MG_KG	N	0.15	J	0.05	J	0.02	J	0.23	J
Newport_RA_SO_Metals	SODIUM	MG_KG	N	< 92	U	< 93	U	< 71	U	< 110	U
Newport_RA_SO_Metals	THALLIUM	MG_KG	N	0.09	J	0.1		0.26		0.08	J
Newport_RA_SO_Metals	VANADIUM	MG_KG	N	20.5		17.6		19.2		23.6	
Newport_RA_SO_Metals	ZINC	MG_KG	N	46.3		39.0		50.7		84.7	
Newport_RA_SO_Other	DENSITY	G_CC	N								
Newport_RA_SO_Other	Pellet count	COUNT	N								
Newport_RA_SO_Other	Pellet weight	PCT	N								
Newport_RA_SO_Other	PERCENT FINES	PCT	N								
Newport_RA_SO_Other	PERCENT GRAVEL	PCT	N								
Newport_RA_SO_Other	PERCENT SAND	PCT	N								
Newport_RA_SO_Other	PERCENT SAND, COARSE	PCT	N								
Newport_RA_SO_Other	PERCENT SAND, FINE	PCT	N								
Newport_RA_SO_Other	PERCENT SAND, MEDIUM	PCT	N								
Newport_RA_SO_Other	PH	PH	N								
Newport_RA_SO_Other	POROSITY	PCT	N								
Newport_RA_SO_Other	SIEVE 1 INCH (25.4-MM)	PCT	N								
Newport_RA_SO_Other	SIEVE 1-1/2 INCH (37.5-MM)	PCT	N								
Newport_RA_SO_Other	SIEVE 2 INCH (50-MM)	PCT	N								
Newport_RA_SO_Other	SIEVE 3 INCH (75-MM)	PCT	N								
Newport_RA_SO_Other	SIEVE 3/4 INCH (19-MM)	PCT	N								
Newport_RA_SO_Other	SIEVE 3/8 INCH (9.5-MM)	PCT	N								
Newport_RA_SO_Other	SIEVE NO. 004 (4.75-MM)	PCT	N								
Newport_RA_SO_Other	SIEVE NO. 010 (2-MM)	PCT	N								
Newport_RA_SO_Other	SIEVE NO. 020 (850-UM)	PCT	N								
Newport_RA_SO_Other	SIEVE NO. 040 (425-UM)	PCT	N								
Newport_RA_SO_Other	SIEVE NO. 060 (250-UM)	PCT	N								
Newport_RA_SO_Other	SIEVE NO. 080 (180-UM)	PCT	N								
Newport_RA_SO_Other	SIEVE NO. 100 (150-UM)	PCT	N								
Newport_RA_SO_Other	SIEVE NO. 200 (75-UM)	PCT	N								
Newport_RA_SO_Other	SPECIFIC CONDUCTANCE	UMHO_CM	N								
Newport_RA_SO_Other	SPECIFIC GRAVITY	NONE	N								
Newport_RA_SO_Other	SULFIDE	MG_KG	N								
Newport_RA_SO_Other	TPH-DIESEL RANGE	MG_KG	N								
Newport_RA_SO_Other	TPH-TOTAL UNKNOWN GASOLINE RANGE ORGANICS	MG_KG	N								
Newport_RA_SO_Other	Void Ratio	NONE	N								
Newport_RA_SO_PCBs	AROCLOR-1016	MG_KG	N								
Newport_RA_SO_PCBs	AROCLOR-1221	MG_KG	N								
Newport_RA_SO_PCBs	AROCLOR-1232	MG_KG	N								
Newport_RA_SO_PCBs	AROCLOR-1242	MG_KG	N								
Newport_RA_SO_PCBs	AROCLOR-1248	MG_KG	N								
Newport_RA_SO_PCBs	AROCLOR-1254	MG_KG	N								
Newport_RA_SO_PCBs	AROCLOR-1260	MG_KG	N								

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	CRP-SB212		CRP-SB212		CRP-SB212		CRP-SB213	
			Sample Date	12/9/2013		12/9/2013		12/9/2013		12/9/2013	
			Sample ID	OU09 SB212 0102		OU09 SB212 0305		OU09 SB212 0608		OU09 SS213 0001	
			Sample Type	N		N		N		N	
			start_depth	1		3		6		0	
			end_depth	2		5		8		1	
			depth_unit	FT		FT		FT		FT	
			depth_interval	1 - 2 ft		3 - 5 ft		6 - 8 ft		0 - 1 ft	
			task_code	MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO	
			validated_yn	Y		Y		Y		Y	
method_analyte_group	Chemical	Unit	Fraction	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers
Newport_RA_SO_PCBs	AROCLOR-1262	MG_KG	N								
Newport_RA_SO_PCBs	AROCLOR-1268	MG_KG	N								
Newport_RA_SO_PCBs	PCB, TOTAL	MG_KG	N								
Newport_RA_SO_PCBs	POLYCHLORINATED BIPHENYLS (PCBS)	MG_KG	N								
Newport_RA_SO_Pesticides	4,4-DDD	MG_KG	N								
Newport_RA_SO_Pesticides	4,4-DDE	MG_KG	N								
Newport_RA_SO_Pesticides	4,4-DDT	MG_KG	N								
Newport_RA_SO_Pesticides	ALDRIN	MG_KG	N								
Newport_RA_SO_Pesticides	ALPHA-BHC	MG_KG	N								
Newport_RA_SO_Pesticides	ALPHA-CHLORDANE	MG_KG	N								
Newport_RA_SO_Pesticides	BETA-BHC	MG_KG	N								
Newport_RA_SO_Pesticides	DDT, TOTAL	MG_KG	N								
Newport_RA_SO_Pesticides	DELTA-BHC	MG_KG	N								
Newport_RA_SO_Pesticides	DIELDRIN	MG_KG	N								
Newport_RA_SO_Pesticides	ENDOSULFAN I	MG_KG	N								
Newport_RA_SO_Pesticides	ENDOSULFAN II	MG_KG	N								
Newport_RA_SO_Pesticides	ENDOSULFAN SULFATE	MG_KG	N								
Newport_RA_SO_Pesticides	ENDRIN	MG_KG	N								
Newport_RA_SO_Pesticides	ENDRIN ALDEHYDE	MG_KG	N								
Newport_RA_SO_Pesticides	ENDRIN KETONE	MG_KG	N								
Newport_RA_SO_Pesticides	GAMMA-CHLORDANE	MG_KG	N								
Newport_RA_SO_Pesticides	HEPTACHLOR	MG_KG	N								
Newport_RA_SO_Pesticides	HEPTACHLOR EPOXIDE	MG_KG	N								
Newport_RA_SO_Pesticides	LINDANE	MG_KG	N								
Newport_RA_SO_Pesticides	METHOXYCHLOR	MG_KG	N								
Newport_RA_SO_Pesticides	TOXAPHENE	MG_KG	N								
Newport_RA_SO_Pesticides	TRANS-CHLORDANE	MG_KG	N								
Newport_RA_SO_SVOCs	1,1-BIPHENYL	MG_KG	N								
Newport_RA_SO_SVOCs	1-METHYLNAPHTHALENE	MG_KG	N								
Newport_RA_SO_SVOCs	1,2,4-TRICHLOROBENZENE	MG_KG	N								
Newport_RA_SO_SVOCs	1,2-DICHLOROBENZENE	MG_KG	N								
Newport_RA_SO_SVOCs	1,2-DIPHENYLHYDRAZINE	MG_KG	N								
Newport_RA_SO_SVOCs	1,3-DICHLOROBENZENE	MG_KG	N								
Newport_RA_SO_SVOCs	1,4-DICHLOROBENZENE	MG_KG	N								
Newport_RA_SO_SVOCs	2,2'-OXYBIS(1-CHLOROPROPANE)	MG_KG	N								
Newport_RA_SO_SVOCs	2,4,5-TRICHLOROPHENOL	MG_KG	N								
Newport_RA_SO_SVOCs	2,4,6-TRICHLOROPHENOL	MG_KG	N								
Newport_RA_SO_SVOCs	2,4-DICHLOROPHENOL	MG_KG	N								
Newport_RA_SO_SVOCs	2,4-DIMETHYLPHENOL	MG_KG	N								
Newport_RA_SO_SVOCs	2,4-DINITROPHENOL	MG_KG	N								
Newport_RA_SO_SVOCs	2,4-DINITROTOLUENE	MG_KG	N								
Newport_RA_SO_SVOCs	2,6-DICHLOROPHENOL	MG_KG	N								
Newport_RA_SO_SVOCs	2,6-DINITROTOLUENE	MG_KG	N								
Newport_RA_SO_SVOCs	2-CHLORONAPHTHALENE	MG_KG	N								
Newport_RA_SO_SVOCs	2-CHLOROPHENOL	MG_KG	N								
Newport_RA_SO_SVOCs	2-METHYLNAPHTHALENE	MG_KG	N								
Newport_RA_SO_SVOCs	2-METHYLPHENOL	MG_KG	N								
Newport_RA_SO_SVOCs	2-NITROANILINE	MG_KG	N								
Newport_RA_SO_SVOCs	2-NITROPHENOL	MG_KG	N								
Newport_RA_SO_SVOCs	3- AND 4-METHYLPHENOL	MG_KG	N								
Newport_RA_SO_SVOCs	3,3-DICHLOROBENZIDINE	MG_KG	N								
Newport_RA_SO_SVOCs	3-NITROANILINE	MG_KG	N								
Newport_RA_SO_SVOCs	4,6-DINITRO-2-METHYLPHENOL	MG_KG	N								
Newport_RA_SO_SVOCs	4-BROMOPHENYL-PHENYLETHER	MG_KG	N								
Newport_RA_SO_SVOCs	4-CHLORO-3-METHYLPHENOL	MG_KG	N								
Newport_RA_SO_SVOCs	4-CHLOROANILINE	MG_KG	N								
Newport_RA_SO_SVOCs	4-CHLOROPHENYL-PHENYLETHER	MG_KG	N								
Newport_RA_SO_SVOCs	4-METHYLPHENOL	MG_KG	N								
Newport_RA_SO_SVOCs	4-NITROANILINE	MG_KG	N								
Newport_RA_SO_SVOCs	4-NITROPHENOL	MG_KG	N								
Newport_RA_SO_SVOCs	ACENAPHTHENE	MG_KG	N	0.078		0.0024	J	< 0.011	U	0.067	
Newport_RA_SO_SVOCs	ACENAPHTHYLENE	MG_KG	N	< 0.012	U	< 0.011	U	< 0.011	U	< 0.014	U
Newport_RA_SO_SVOCs	ACETOPHENONE	MG_KG	N								
Newport_RA_SO_SVOCs	ANTHRACENE	MG_KG	N	0.11		0.0039	J	0.0025	J	0.09	
Newport_RA_SO_SVOCs	ATRAZINE	MG_KG	N								
Newport_RA_SO_SVOCs	BENZALDEHYDE	MG_KG	N								

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	CRP-SB212		CRP-SB212		CRP-SB212		CRP-SB213	
			Sample Date	12/9/2013		12/9/2013		12/9/2013		12/9/2013	
			Sample ID	OU09 SB212 0102		OU09 SB212 0305		OU09 SB212 0608		OU09 SS213 0001	
			Sample Type	N		N		N		N	
			start_depth	1		3		6		0	
			end_depth	2		5		8		1	
			depth_unit	FT		FT		FT		FT	
			depth_interval	1 - 2 ft		3 - 5 ft		6 - 8 ft		0 - 1 ft	
			task_code	MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO	
			validated_yn	Y		Y		Y		Y	
method_analyte_group	Chemical	Unit	Fraction	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers
Newport_RA_SO_SVOCs	BENZIDINE	MG_KG	N								
Newport_RA_SO_SVOCs	BENZO[A]ANTHRACENE	MG_KG	N	0.55	J	< 0.022	U	< 0.022	U	0.62	J
Newport_RA_SO_SVOCs	BENZO[A]PYRENE	MG_KG	N	0.62	J	0.022	J	< 0.011	U	0.8	J
Newport_RA_SO_SVOCs	BENZO[B]FLUORANTHENE	MG_KG	N	0.66	J	0.027		0.0039	J	0.86	J
Newport_RA_SO_SVOCs	BENZO[G,H,I]PERYLENE	MG_KG	N	0.23	J	< 0.022	UJ	< 0.022	UJ	0.29	J
Newport_RA_SO_SVOCs	BENZO[K]FLUORANTHENE	MG_KG	N	0.68	J	0.022	J	< 0.011	U	0.83	J
Newport_RA_SO_SVOCs	BENZOIC ACID	MG_KG	N								
Newport_RA_SO_SVOCs	BENZYL ALCOHOL	MG_KG	N								
Newport_RA_SO_SVOCs	BIS(2-CHLOROETHOXY)METHANE	MG_KG	N								
Newport_RA_SO_SVOCs	BIS(2-CHLOROETHYL)ETHER	MG_KG	N								
Newport_RA_SO_SVOCs	BIS(2-ETHYLHEXYL)PHTHALATE	MG_KG	N								
Newport_RA_SO_SVOCs	BUTYLBENZYLPHTHALATE	MG_KG	N								
Newport_RA_SO_SVOCs	CAPROLACTAM	MG_KG	N								
Newport_RA_SO_SVOCs	CARBAZOLE	MG_KG	N								
Newport_RA_SO_SVOCs	CHRYSENE	MG_KG	N	0.84	J	0.026		< 0.011	U	1	J
Newport_RA_SO_SVOCs	DIBENZ[A,H]ANTHRACENE	MG_KG	N	0.13		< 0.022	U	< 0.022	U	0.13	J
Newport_RA_SO_SVOCs	DIBENZOFURAN	MG_KG	N								
Newport_RA_SO_SVOCs	DIETHYLPHTHALATE	MG_KG	N								
Newport_RA_SO_SVOCs	DIMETHYL PHTHALATE	MG_KG	N								
Newport_RA_SO_SVOCs	DI-N-BUTYLPHTHALATE	MG_KG	N								
Newport_RA_SO_SVOCs	DI-N-OCTYLPHTHALATE	MG_KG	N								
Newport_RA_SO_SVOCs	FLUORANTHENE	MG_KG	N	0.74	J	0.026		0.0042	J	0.62	J
Newport_RA_SO_SVOCs	FLUORENE	MG_KG	N	0.049		< 0.011	U	< 0.011	U	0.039	
Newport_RA_SO_SVOCs	HEXACHLOROBENZENE	MG_KG	N								
Newport_RA_SO_SVOCs	HEXACHLOROBUTADIENE	MG_KG	N								
Newport_RA_SO_SVOCs	HEXACHLOROCYCLOPENTADIENE	MG_KG	N								
Newport_RA_SO_SVOCs	HEXACHLOROETHANE	MG_KG	N								
Newport_RA_SO_SVOCs	HPAH, TOTAL	MG_KG	N	5.7		0.15		0.0081		7	
Newport_RA_SO_SVOCs	INDENO[1,2,3-CD]PYRENE	MG_KG	N	0.29		< 0.022	U	< 0.022	U	0.27	J
Newport_RA_SO_SVOCs	ISOPHORONE	MG_KG	N								
Newport_RA_SO_SVOCs	LPAH, TOTAL	MG_KG	N	0.82		0.05		0.0074		0.75	
Newport_RA_SO_SVOCs	NAPHTHALENE	MG_KG	N	0.016	J	0.0096	J	< 0.011	U	0.019	
Newport_RA_SO_SVOCs	NITROBENZENE	MG_KG	N								
Newport_RA_SO_SVOCs	N-NITROSODIMETHYLAMINE	MG_KG	N								
Newport_RA_SO_SVOCs	N-NITROSODINPROPYLAMINE	MG_KG	N								
Newport_RA_SO_SVOCs	N-NITROSODIPHENYLAMINE	MG_KG	N								
Newport_RA_SO_SVOCs	N-NITROSOPYRROLIDINE	MG_KG	N								
Newport_RA_SO_SVOCs	PAH, TOTAL	MG_KG	N	6.5		0.2		0.016		7.8	
Newport_RA_SO_SVOCs	PENTACHLOROPHENOL	MG_KG	N								
Newport_RA_SO_SVOCs	PHENANTHRENE	MG_KG	N	0.57	J	0.034		0.0049	J	0.53	J
Newport_RA_SO_SVOCs	PHENOL	MG_KG	N								
Newport_RA_SO_SVOCs	PYRENE	MG_KG	N	0.91	J	0.029		< 0.022	U	1.6	J
Newport_RA_SO_VOCs	1,1,1,2-TETRACHLOROETHANE	MG_KG	N								
Newport_RA_SO_VOCs	1,1,1-TRICHLOROETHANE	MG_KG	N								
Newport_RA_SO_VOCs	1,1,2,2-TETRACHLOROETHANE	MG_KG	N								
Newport_RA_SO_VOCs	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	MG_KG	N								
Newport_RA_SO_VOCs	1,1,2-TRICHLOROETHANE	MG_KG	N								
Newport_RA_SO_VOCs	1,1-DICHLOROETHANE	MG_KG	N								
Newport_RA_SO_VOCs	1,1-DICHLOROETHENE	MG_KG	N								
Newport_RA_SO_VOCs	1,1-DICHLOROPROPENE	MG_KG	N								
Newport_RA_SO_VOCs	1,2,3-TRICHLOROBENZENE	MG_KG	N								
Newport_RA_SO_VOCs	1,2,3-TRICHLOROPROPANE	MG_KG	N								
Newport_RA_SO_VOCs	1,2,4-TRICHLOROBENZENE	MG_KG	N								
Newport_RA_SO_VOCs	1,2,4-TRIMETHYLBENZENE	MG_KG	N								
Newport_RA_SO_VOCs	1,2-DIBROMO-3-CHLOROPROPANE	MG_KG	N								
Newport_RA_SO_VOCs	1,2-DIBROMOETHANE	MG_KG	N								
Newport_RA_SO_VOCs	1,2-DICHLOROBENZENE	MG_KG	N								
Newport_RA_SO_VOCs	1,2-DICHLOROETHANE	MG_KG	N								
Newport_RA_SO_VOCs	1,2-DICHLOROETHENE, TOTAL	MG_KG	N								
Newport_RA_SO_VOCs	1,2-DICHLOROPROPANE	MG_KG	N								
Newport_RA_SO_VOCs	1,3,5-TRIMETHYLBENZENE	MG_KG	N								
Newport_RA_SO_VOCs	1,3-DICHLOROBENZENE	MG_KG	N								
Newport_RA_SO_VOCs	1,3-DICHLOROPROPANE	MG_KG	N								
Newport_RA_SO_VOCs	1,4-DICHLOROBENZENE	MG_KG	N								
Newport_RA_SO_VOCs	2,2-DICHLOROPROPANE	MG_KG	N								
Newport_RA_SO_VOCs	2-BUTANONE	MG_KG	N								

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	CRP-SB212		CRP-SB212		CRP-SB212		CRP-SB213	
			Sample Date	12/9/2013		12/9/2013		12/9/2013		12/9/2013	
			Sample ID	OU09 SB212 0102		OU09 SB212 0305		OU09 SB212 0608		OU09 SS213 0001	
			Sample Type	N		N		N		N	
			start_depth	1		3		6		0	
			end_depth	2		5		8		1	
			depth_unit	FT		FT		FT		FT	
			depth_interval	1 - 2 ft		3 - 5 ft		6 - 8 ft		0 - 1 ft	
			task_code	MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO	
			validated_yn	Y		Y		Y		Y	
method_analyte_group	Chemical	Unit	Fraction	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers
Newport_RA_SO_VOCs	2-CHLOROTOLUENE	MG_KG	N								
Newport_RA_SO_VOCs	2-HEXANONE	MG_KG	N								
Newport_RA_SO_VOCs	4-CHLOROTOLUENE	MG_KG	N								
Newport_RA_SO_VOCs	4-ISOPROPYLTOLUENE	MG_KG	N								
Newport_RA_SO_VOCs	4-METHYL-2-PENTANONE	MG_KG	N								
Newport_RA_SO_VOCs	ACETONE	MG_KG	N								
Newport_RA_SO_VOCs	BENZENE	MG_KG	N								
Newport_RA_SO_VOCs	BROMOBENZENE	MG_KG	N								
Newport_RA_SO_VOCs	BROMOCHLOROMETHANE	MG_KG	N								
Newport_RA_SO_VOCs	BROMODICHLOROMETHANE	MG_KG	N								
Newport_RA_SO_VOCs	BROMOFORM	MG_KG	N								
Newport_RA_SO_VOCs	BROMOMETHANE	MG_KG	N								
Newport_RA_SO_VOCs	CARBON DISULFIDE	MG_KG	N								
Newport_RA_SO_VOCs	CARBON TETRACHLORIDE	MG_KG	N								
Newport_RA_SO_VOCs	CHLOROBENZENE	MG_KG	N								
Newport_RA_SO_VOCs	CHLOROETHANE	MG_KG	N								
Newport_RA_SO_VOCs	CHLOROFORM	MG_KG	N								
Newport_RA_SO_VOCs	CHLOROMETHANE	MG_KG	N								
Newport_RA_SO_VOCs	CIS-1,2-DICHLOROETHENE	MG_KG	N								
Newport_RA_SO_VOCs	CIS-1,3-DICHLOROPROPENE	MG_KG	N								
Newport_RA_SO_VOCs	CYCLOHEXANE	MG_KG	N								
Newport_RA_SO_VOCs	DIBROMOCHLOROMETHANE	MG_KG	N								
Newport_RA_SO_VOCs	DIBROMOMETHANE	MG_KG	N								
Newport_RA_SO_VOCs	DICHLORODIFLUOROMETHANE	MG_KG	N								
Newport_RA_SO_VOCs	ETHYLBENZENE	MG_KG	N								
Newport_RA_SO_VOCs	HEXACHLOROBUTADIENE	MG_KG	N								
Newport_RA_SO_VOCs	ISOPROPYLBENZENE	MG_KG	N								
Newport_RA_SO_VOCs	M- AND P-XYLENE	MG_KG	N								
Newport_RA_SO_VOCs	METHYL ACETATE	MG_KG	N								
Newport_RA_SO_VOCs	METHYL CYCLOHEXANE	MG_KG	N								
Newport_RA_SO_VOCs	METHYL TERT-BUTYL ETHER	MG_KG	N								
Newport_RA_SO_VOCs	METHYLENE CHLORIDE	MG_KG	N								
Newport_RA_SO_VOCs	NAPHTHALENE	MG_KG	N								
Newport_RA_SO_VOCs	N-BUTYLBENZENE	MG_KG	N								
Newport_RA_SO_VOCs	O-XYLENE	MG_KG	N								
Newport_RA_SO_VOCs	PROPYLBENZENE	MG_KG	N								
Newport_RA_SO_VOCs	SEC-BUTYLBENZENE	MG_KG	N								
Newport_RA_SO_VOCs	STYRENE	MG_KG	N								
Newport_RA_SO_VOCs	TERT-BUTANOL	MG_KG	N								
Newport_RA_SO_VOCs	TERT-BUTYLBENZENE	MG_KG	N								
Newport_RA_SO_VOCs	TETRACHLOROETHENE	MG_KG	N								
Newport_RA_SO_VOCs	TOLUENE	MG_KG	N								
Newport_RA_SO_VOCs	TRANS-1,2-DICHLOROETHENE	MG_KG	N								
Newport_RA_SO_VOCs	TRANS-1,3-DICHLOROPROPENE	MG_KG	N								
Newport_RA_SO_VOCs	TRICHLOROETHENE	MG_KG	N								
Newport_RA_SO_VOCs	TRICHLOROFLUOROMETHANE	MG_KG	N								
Newport_RA_SO_VOCs	VINYL CHLORIDE	MG_KG	N								
Newport_RA_SO_VOCs	XYLENES, TOTAL	MG_KG	N								

Notes:
U or < - Non-detect at laboratory detection limit.
J - The compound was positively identified; however, the associated numerical value is an estimated concentration only (+ and - indicate bias).
Sample Type - N = normal sample, FD = duplicate sample.
mg/kg - milligram per kilogram

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	CRP-SB213		CRP-SB213		CRP-SB213		CRP-SB214		CRP-SB214	
			Sample Date	12/9/2013		12/9/2013		12/9/2013		12/11/2013		12/11/2013	
			Sample ID	OU09 SB213 0102		OU09 SB213 0305		OU09 SB213 0608		OU09 SB214 0102		OU09 SB214 0305	
			Sample Type	N		N		N		N		N	
			start_depth	1		3		6		1		3	
			end_depth	2		5		8		2		5	
			depth_unit	FT		FT		FT		FT		FT	
			depth_interval	1 - 2 ft		3 - 5 ft		6 - 8 ft		1 - 2 ft		3 - 5 ft	
			task_code	MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO	
			validated_yn	Y		Y		Y		Y		Y	
method_analyte_group	Chemical	Unit	Fraction	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers
Newport_RA_SO_Energetics	2,4-DINITROTOLUENE	MG_KG	N	< 0.048	U	< 0.044	U			< 0.047	U	< 0.043	U
Newport_RA_SO_Energetics	2,6-DINITROTOLUENE	MG_KG	N										
Newport_RA_SO_Energetics	NITROGLYCERIN	MG_KG	N	< 0.38	U	< 0.35	U			< 0.37	U	< 0.34	U
Newport_RA_SO_Metals	ALUMINUM	MG_KG	N	9170		8060		12100				10500	
Newport_RA_SO_Metals	ANTIMONY	MG_KG	N	0.23	J	0.11	J	0.16	J			< 0.090	UJ
Newport_RA_SO_Metals	ARSENIC	MG_KG	N	9.6	J	6.8	J	11.8	J			4.5	J
Newport_RA_SO_Metals	BARIUM	MG_KG	N	29.3		20.2		20.0				31.9	
Newport_RA_SO_Metals	BERYLLIUM	MG_KG	N	0.47		0.32		0.39				0.46	J-
Newport_RA_SO_Metals	CADMIUM	MG_KG	N	0.11		< 0.090	U	0.22				< 0.090	UJ
Newport_RA_SO_Metals	CALCIUM	MG_KG	N	439		428		786				726	J
Newport_RA_SO_Metals	CHROMIUM VI	MG_KG	N										
Newport_RA_SO_Metals	CHROMIUM, TOTAL	MG_KG	N	15.1	J	11.1	J	16.3	J			10.1	J
Newport_RA_SO_Metals	COBALT	MG_KG	N	12.7	J	9.3	J	14.3	J			7.0	J-
Newport_RA_SO_Metals	COPPER	MG_KG	N	16.7		18.9		18.6				10.2	J
Newport_RA_SO_Metals	IRON	MG_KG	N	38200	J	24600	J	40200	J			16600	
Newport_RA_SO_Metals	IRON, FERROUS	MG_KG	N										
Newport_RA_SO_Metals	LEAD	MG_KG	N	12.8	J	7.3	J	8.4	J			10.2	J
Newport_RA_SO_Metals	MAGNESIUM	MG_KG	N	1830	J	2000	J	5280	J			1480	J
Newport_RA_SO_Metals	MANGANESE	MG_KG	N	710	J	307	J	5750	J			294	
Newport_RA_SO_Metals	MERCURY	MG_KG	N	< 0.038	UJ	0.03	J-	< 0.017	UJ			< 0.034	UJ
Newport_RA_SO_Metals	NICKEL	MG_KG	N	23.9	J	17.8	J	45.0	J			13.5	J-
Newport_RA_SO_Metals	POTASSIUM	MG_KG	N	364	J	398	J	426	J			390	J+
Newport_RA_SO_Metals	SELENIUM	MG_KG	N	0.55		< 0.45	U	< 0.41	U			0.50	J-
Newport_RA_SO_Metals	SILVER	MG_KG	N	0.06	J	0.03	J	0.03	J			0.06	J
Newport_RA_SO_Metals	SODIUM	MG_KG	N	< 91	U	< 90	U	< 82	U			< 90	U
Newport_RA_SO_Metals	THALLIUM	MG_KG	N	0.08	J	0.05	J	0.04	J			0.10	
Newport_RA_SO_Metals	VANADIUM	MG_KG	N	23.2		16.3		16.6				17.0	J
Newport_RA_SO_Metals	ZINC	MG_KG	N	77.4		37.4		75.3				30.5	J
Newport_RA_SO_Other	DENSITY	G_CC	N										
Newport_RA_SO_Other	Pellet count	COUNT	N										
Newport_RA_SO_Other	Pellet weight	PCT	N										
Newport_RA_SO_Other	PERCENT FINES	PCT	N										
Newport_RA_SO_Other	PERCENT GRAVEL	PCT	N										
Newport_RA_SO_Other	PERCENT SAND	PCT	N										
Newport_RA_SO_Other	PERCENT SAND, COARSE	PCT	N										
Newport_RA_SO_Other	PERCENT SAND, FINE	PCT	N										
Newport_RA_SO_Other	PERCENT SAND, MEDIUM	PCT	N										
Newport_RA_SO_Other	PH	PH	N										
Newport_RA_SO_Other	POROSITY	PCT	N										
Newport_RA_SO_Other	SIEVE 1 INCH (25.4-MM)	PCT	N										
Newport_RA_SO_Other	SIEVE 1-1/2 INCH (37.5-MM)	PCT	N										
Newport_RA_SO_Other	SIEVE 2 INCH (50-MM)	PCT	N										
Newport_RA_SO_Other	SIEVE 3 INCH (75-MM)	PCT	N										
Newport_RA_SO_Other	SIEVE 3/4 INCH (19-MM)	PCT	N										
Newport_RA_SO_Other	SIEVE 3/8 INCH (9.5-MM)	PCT	N										
Newport_RA_SO_Other	SIEVE NO. 004 (4.75-MM)	PCT	N										
Newport_RA_SO_Other	SIEVE NO. 010 (2-MM)	PCT	N										
Newport_RA_SO_Other	SIEVE NO. 020 (850-UM)	PCT	N										
Newport_RA_SO_Other	SIEVE NO. 040 (425-UM)	PCT	N										
Newport_RA_SO_Other	SIEVE NO. 060 (250-UM)	PCT	N										
Newport_RA_SO_Other	SIEVE NO. 080 (180-UM)	PCT	N										
Newport_RA_SO_Other	SIEVE NO. 100 (150-UM)	PCT	N										
Newport_RA_SO_Other	SIEVE NO. 200 (75-UM)	PCT	N										
Newport_RA_SO_Other	SPECIFIC CONDUCTANCE	UMHO_CM	N										
Newport_RA_SO_Other	SPECIFIC GRAVITY	NONE	N										
Newport_RA_SO_Other	SULFIDE	MG_KG	N										
Newport_RA_SO_Other	TPH-DIESEL RANGE	MG_KG	N										
Newport_RA_SO_Other	TPH-TOTAL UNKNOWN GASOLINE RANGE ORGANICS	MG_KG	N										
Newport_RA_SO_Other	Void Ratio	NONE	N										
Newport_RA_SO_PCBs	AROCLOR-1016	MG_KG	N										
Newport_RA_SO_PCBs	AROCLOR-1221	MG_KG	N										
Newport_RA_SO_PCBs	AROCLOR-1232	MG_KG	N										
Newport_RA_SO_PCBs	AROCLOR-1242	MG_KG	N										
Newport_RA_SO_PCBs	AROCLOR-1248	MG_KG	N										
Newport_RA_SO_PCBs	AROCLOR-1254	MG_KG	N										
Newport_RA_SO_PCBs	AROCLOR-1260	MG_KG	N										

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	CRP-SB213		CRP-SB213		CRP-SB213		CRP-SB214		CRP-SB214	
			Sample Date	12/9/2013		12/9/2013		12/9/2013		12/11/2013		12/11/2013	
			Sample ID	OU09 SB213 0102		OU09 SB213 0305		OU09 SB213 0608		OU09 SB214 0102		OU09 SB214 0305	
			Sample Type	N		N		N		N		N	
			start_depth	1		3		6		1		3	
			end_depth	2		5		8		2		5	
			depth_unit	FT		FT		FT		FT		FT	
			depth_interval	1 - 2 ft		3 - 5 ft		6 - 8 ft		1 - 2 ft		3 - 5 ft	
			task_code	MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO	
			validated_yn	Y		Y		Y		Y		Y	
method_analyte_group	Chemical	Unit	Fraction	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers
Newport_RA_SO_PCBs	AROCLOR-1262	MG_KG	N										
Newport_RA_SO_PCBs	AROCLOR-1268	MG_KG	N										
Newport_RA_SO_PCBs	PCB, TOTAL	MG_KG	N										
Newport_RA_SO_PCBs	POLYCHLORINATED BIPHENYLS (PCBS)	MG_KG	N										
Newport_RA_SO_Pesticides	4,4-DDD	MG_KG	N										
Newport_RA_SO_Pesticides	4,4-DDE	MG_KG	N										
Newport_RA_SO_Pesticides	4,4-DDT	MG_KG	N										
Newport_RA_SO_Pesticides	ALDRIN	MG_KG	N										
Newport_RA_SO_Pesticides	ALPHA-BHC	MG_KG	N										
Newport_RA_SO_Pesticides	ALPHA-CHLORDANE	MG_KG	N										
Newport_RA_SO_Pesticides	BETA-BHC	MG_KG	N										
Newport_RA_SO_Pesticides	DDT, TOTAL	MG_KG	N										
Newport_RA_SO_Pesticides	DELTA-BHC	MG_KG	N										
Newport_RA_SO_Pesticides	DIELDRIN	MG_KG	N										
Newport_RA_SO_Pesticides	ENDOSULFAN I	MG_KG	N										
Newport_RA_SO_Pesticides	ENDOSULFAN II	MG_KG	N										
Newport_RA_SO_Pesticides	ENDOSULFAN SULFATE	MG_KG	N										
Newport_RA_SO_Pesticides	ENDRIN	MG_KG	N										
Newport_RA_SO_Pesticides	ENDRIN ALDEHYDE	MG_KG	N										
Newport_RA_SO_Pesticides	ENDRIN KETONE	MG_KG	N										
Newport_RA_SO_Pesticides	GAMMA-CHLORDANE	MG_KG	N										
Newport_RA_SO_Pesticides	HEPTACHLOR	MG_KG	N										
Newport_RA_SO_Pesticides	HEPTACHLOR EPOXIDE	MG_KG	N										
Newport_RA_SO_Pesticides	LINDANE	MG_KG	N										
Newport_RA_SO_Pesticides	METHOXYCHLOR	MG_KG	N										
Newport_RA_SO_Pesticides	TOXAPHENE	MG_KG	N										
Newport_RA_SO_Pesticides	TRANS-CHLORDANE	MG_KG	N										
Newport_RA_SO_SVOCs	1,1-BIPHENYL	MG_KG	N										
Newport_RA_SO_SVOCs	1-METHYLNAPHTHALENE	MG_KG	N										
Newport_RA_SO_SVOCs	1,2,4-TRICHLOROBENZENE	MG_KG	N										
Newport_RA_SO_SVOCs	1,2-DICHLOROBENZENE	MG_KG	N										
Newport_RA_SO_SVOCs	1,2-DIPHENYLHYDRAZINE	MG_KG	N										
Newport_RA_SO_SVOCs	1,3-DICHLOROBENZENE	MG_KG	N										
Newport_RA_SO_SVOCs	1,4-DICHLOROBENZENE	MG_KG	N										
Newport_RA_SO_SVOCs	2,2'-OXYBIS(1-CHLOROPROPANE)	MG_KG	N										
Newport_RA_SO_SVOCs	2,4,5-TRICHLOROPHENOL	MG_KG	N										
Newport_RA_SO_SVOCs	2,4,6-TRICHLOROPHENOL	MG_KG	N										
Newport_RA_SO_SVOCs	2,4-DICHLOROPHENOL	MG_KG	N										
Newport_RA_SO_SVOCs	2,4-DIMETHYLPHENOL	MG_KG	N										
Newport_RA_SO_SVOCs	2,4-DINITROPHENOL	MG_KG	N										
Newport_RA_SO_SVOCs	2,4-DINITROTOLUENE	MG_KG	N										
Newport_RA_SO_SVOCs	2,6-DICHLOROPHENOL	MG_KG	N										
Newport_RA_SO_SVOCs	2,6-DINITROTOLUENE	MG_KG	N										
Newport_RA_SO_SVOCs	2-CHLORONAPHTHALENE	MG_KG	N										
Newport_RA_SO_SVOCs	2-CHLOROPHENOL	MG_KG	N										
Newport_RA_SO_SVOCs	2-METHYLNAPHTHALENE	MG_KG	N										
Newport_RA_SO_SVOCs	2-METHYLPHENOL	MG_KG	N										
Newport_RA_SO_SVOCs	2-NITROANILINE	MG_KG	N										
Newport_RA_SO_SVOCs	2-NITROPHENOL	MG_KG	N										
Newport_RA_SO_SVOCs	3- AND 4-METHYLPHENOL	MG_KG	N										
Newport_RA_SO_SVOCs	3,3-DICHLOROBENZIDINE	MG_KG	N										
Newport_RA_SO_SVOCs	3-NITROANILINE	MG_KG	N										
Newport_RA_SO_SVOCs	4,6-DINITRO-2-METHYLPHENOL	MG_KG	N										
Newport_RA_SO_SVOCs	4-BROMOPHENYL-PHENYLETHER	MG_KG	N										
Newport_RA_SO_SVOCs	4-CHLORO-3-METHYLPHENOL	MG_KG	N										
Newport_RA_SO_SVOCs	4-CHLOROANILINE	MG_KG	N										
Newport_RA_SO_SVOCs	4-CHLOROPHENYL-PHENYLETHER	MG_KG	N										
Newport_RA_SO_SVOCs	4-METHYLPHENOL	MG_KG	N										
Newport_RA_SO_SVOCs	4-NITROANILINE	MG_KG	N										
Newport_RA_SO_SVOCs	4-NITROPHENOL	MG_KG	N										
Newport_RA_SO_SVOCs	ACENAPHTHENE	MG_KG	N	< 0.011	U	< 0.01	U	< 0.0099	U	< 0.011	U	< 0.011	U
Newport_RA_SO_SVOCs	ACENAPHTHYLENE	MG_KG	N	< 0.011	U	< 0.01	U	< 0.0099	U	< 0.011	U	< 0.011	U
Newport_RA_SO_SVOCs	ACETOPHENONE	MG_KG	N										
Newport_RA_SO_SVOCs	ANTHRACENE	MG_KG	N	0.0024	J	< 0.01	U	0.0019	J	< 0.011	U	< 0.011	U
Newport_RA_SO_SVOCs	ATRAZINE	MG_KG	N										
Newport_RA_SO_SVOCs	BENZALDEHYDE	MG_KG	N										

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	CRP-SB213		CRP-SB213		CRP-SB213		CRP-SB214		CRP-SB214	
			Sample Date	12/9/2013		12/9/2013		12/9/2013		12/11/2013		12/11/2013	
			Sample ID	OU09 SB213 0102		OU09 SB213 0305		OU09 SB213 0608		OU09 SB214 0102		OU09 SB214 0305	
			Sample Type	N		N		N		N		N	
			start_depth	1		3		6		1		3	
			end_depth	2		5		8		2		5	
			depth_unit	FT		FT		FT		FT		FT	
			depth_interval	1 - 2 ft		3 - 5 ft		6 - 8 ft		1 - 2 ft		3 - 5 ft	
			task_code	MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO	
			validated_yn	Y		Y		Y		Y		Y	
method_analyte_group	Chemical	Unit	Fraction	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers
Newport_RA_SO_SVOCs	BENZIDINE	MG_KG	N										
Newport_RA_SO_SVOCs	BENZO[A]ANTHRACENE	MG_KG	N	< 0.023	U	< 0.021	U	< 0.02	U	0.0042	J	< 0.011	U
Newport_RA_SO_SVOCs	BENZO[A]PYRENE	MG_KG	N	< 0.023	U	< 0.01	U	< 0.0099	U	0.0056	J	< 0.011	UJ
Newport_RA_SO_SVOCs	BENZO[B]FLUORANTHENE	MG_KG	N	0.024		0.0047	J	< 0.0099	U	< 0.011	U	< 0.011	U
Newport_RA_SO_SVOCs	BENZO[G,H,I]PERYLENE	MG_KG	N	< 0.023	UJ	< 0.01	UJ	< 0.0099	UJ	0.0024	J	< 0.011	UJ
Newport_RA_SO_SVOCs	BENZO[K]FLUORANTHENE	MG_KG	N	0.01	J	< 0.01	U	< 0.0099	U	< 0.011	U	< 0.011	U
Newport_RA_SO_SVOCs	BENZOIC ACID	MG_KG	N										
Newport_RA_SO_SVOCs	BENZYL ALCOHOL	MG_KG	N										
Newport_RA_SO_SVOCs	BIS(2-CHLOROETHOXY)METHANE	MG_KG	N										
Newport_RA_SO_SVOCs	BIS(2-CHLOROETHYL)ETHER	MG_KG	N										
Newport_RA_SO_SVOCs	BIS(2-ETHYLHEXYL)PHTHALATE	MG_KG	N										
Newport_RA_SO_SVOCs	BUTYLBENZYLPHTHALATE	MG_KG	N										
Newport_RA_SO_SVOCs	CAPROLACTAM	MG_KG	N										
Newport_RA_SO_SVOCs	CARBAZOLE	MG_KG	N										
Newport_RA_SO_SVOCs	CHRYSENE	MG_KG	N	0.022	J	< 0.01	U	< 0.0099	U	< 0.011	UJ	< 0.011	UJ
Newport_RA_SO_SVOCs	DIBENZ[A,H]ANTHRACENE	MG_KG	N	< 0.023	U	< 0.021	U	< 0.02	U	< 0.011	U	< 0.011	U
Newport_RA_SO_SVOCs	DIBENZOFURAN	MG_KG	N										
Newport_RA_SO_SVOCs	DIETHYLPHTHALATE	MG_KG	N										
Newport_RA_SO_SVOCs	DIMETHYL PHTHALATE	MG_KG	N										
Newport_RA_SO_SVOCs	DI-N-BUTYLPHTHALATE	MG_KG	N										
Newport_RA_SO_SVOCs	DI-N-OCTYLPHTHALATE	MG_KG	N										
Newport_RA_SO_SVOCs	FLUORANTHENE	MG_KG	N	0.013	J	0.0027	J	0.0019	J	0.0048	J	< 0.011	U
Newport_RA_SO_SVOCs	FLUORENE	MG_KG	N	< 0.011	U	< 0.01	U	< 0.0099	U	< 0.011	U	< 0.011	U
Newport_RA_SO_SVOCs	HEXACHLOROBENZENE	MG_KG	N										
Newport_RA_SO_SVOCs	HEXACHLOROBUTADIENE	MG_KG	N										
Newport_RA_SO_SVOCs	HEXACHLOROCYCLOPENTADIENE	MG_KG	N										
Newport_RA_SO_SVOCs	HEXACHLOROETHANE	MG_KG	N										
Newport_RA_SO_SVOCs	HPAH, TOTAL	MG_KG	N	0.069		0.0074		0.0019		0.021		< 0.011	U
Newport_RA_SO_SVOCs	INDENO[1,2,3-CD]PYRENE	MG_KG	N	< 0.023	U	< 0.021	U	< 0.02	U	< 0.011	U	< 0.011	U
Newport_RA_SO_SVOCs	ISOPHORONE	MG_KG	N										
Newport_RA_SO_SVOCs	LPAH, TOTAL	MG_KG	N	0.012		0.0021		0.0019		0.0032		< 0.011	U
Newport_RA_SO_SVOCs	NAPHTHALENE	MG_KG	N	< 0.011	U	< 0.01	U	< 0.0099	U	< 0.011	U	< 0.011	U
Newport_RA_SO_SVOCs	NITROBENZENE	MG_KG	N										
Newport_RA_SO_SVOCs	N-NITROSODIMETHYLAMINE	MG_KG	N										
Newport_RA_SO_SVOCs	N-NITROSODINPROPYLAMINE	MG_KG	N										
Newport_RA_SO_SVOCs	N-NITROSODIPHENYLAMINE	MG_KG	N										
Newport_RA_SO_SVOCs	N-NITROSOPYRROLIDINE	MG_KG	N										
Newport_RA_SO_SVOCs	PAH, TOTAL	MG_KG	N	0.081		0.0095		0.0038		0.025		< 0.011	U
Newport_RA_SO_SVOCs	PENTACHLOROPHENOL	MG_KG	N										
Newport_RA_SO_SVOCs	PHENANTHRENE	MG_KG	N	0.0097	J	0.0021	J	< 0.0099	U	0.0032	J	< 0.011	U
Newport_RA_SO_SVOCs	PHENOL	MG_KG	N										
Newport_RA_SO_SVOCs	PYRENE	MG_KG	N	< 0.023	U	< 0.021	U	< 0.0099	U	0.0044	J	< 0.011	U
Newport_RA_SO_VOCs	1,1,1,2-TETRACHLOROETHANE	MG_KG	N										
Newport_RA_SO_VOCs	1,1,1-TRICHLOROETHANE	MG_KG	N										
Newport_RA_SO_VOCs	1,1,2,2-TETRACHLOROETHANE	MG_KG	N										
Newport_RA_SO_VOCs	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	MG_KG	N										
Newport_RA_SO_VOCs	1,1,2-TRICHLOROETHANE	MG_KG	N										
Newport_RA_SO_VOCs	1,1-DICHLOROETHANE	MG_KG	N										
Newport_RA_SO_VOCs	1,1-DICHLOROETHENE	MG_KG	N										
Newport_RA_SO_VOCs	1,1-DICHLOROPROPENE	MG_KG	N										
Newport_RA_SO_VOCs	1,2,3-TRICHLOROBENZENE	MG_KG	N										
Newport_RA_SO_VOCs	1,2,3-TRICHLOROPROPANE	MG_KG	N										
Newport_RA_SO_VOCs	1,2,4-TRICHLOROBENZENE	MG_KG	N										
Newport_RA_SO_VOCs	1,2,4-TRIMETHYLBENZENE	MG_KG	N										
Newport_RA_SO_VOCs	1,2-DIBROMO-3-CHLOROPROPANE	MG_KG	N										
Newport_RA_SO_VOCs	1,2-DIBROMOETHANE	MG_KG	N										
Newport_RA_SO_VOCs	1,2-DICHLOROBENZENE	MG_KG	N										
Newport_RA_SO_VOCs	1,2-DICHLOROETHANE	MG_KG	N										
Newport_RA_SO_VOCs	1,2-DICHLOROETHENE, TOTAL	MG_KG	N										
Newport_RA_SO_VOCs	1,2-DICHLOROPROPANE	MG_KG	N										
Newport_RA_SO_VOCs	1,3,5-TRIMETHYLBENZENE	MG_KG	N										
Newport_RA_SO_VOCs	1,3-DICHLOROBENZENE	MG_KG	N										
Newport_RA_SO_VOCs	1,3-DICHLOROPROPANE	MG_KG	N										
Newport_RA_SO_VOCs	1,4-DICHLOROBENZENE	MG_KG	N										
Newport_RA_SO_VOCs	2,2-DICHLOROPROPANE	MG_KG	N										
Newport_RA_SO_VOCs	2-BUTANONE	MG_KG	N										

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	CRP-SB213		CRP-SB213		CRP-SB213		CRP-SB214		CRP-SB214	
			Sample Date	12/9/2013		12/9/2013		12/9/2013		12/11/2013		12/11/2013	
			Sample ID	OU09 SB213 0102		OU09 SB213 0305		OU09 SB213 0608		OU09 SB214 0102		OU09 SB214 0305	
			Sample Type	N		N		N		N		N	
			start_depth	1		3		6		1		3	
			end_depth	2		5		8		2		5	
			depth_unit	FT		FT		FT		FT		FT	
			depth_interval	1 - 2 ft		3 - 5 ft		6 - 8 ft		1 - 2 ft		3 - 5 ft	
			task_code	MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO	
			validated_yn	Y		Y		Y		Y		Y	
method_analyte_group	Chemical	Unit	Fraction	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers
Newport_RA_SO_VOCs	2-CHLOROTOLUENE	MG_KG	N										
Newport_RA_SO_VOCs	2-HEXANONE	MG_KG	N										
Newport_RA_SO_VOCs	4-CHLOROTOLUENE	MG_KG	N										
Newport_RA_SO_VOCs	4-ISOPROPYLTOLUENE	MG_KG	N										
Newport_RA_SO_VOCs	4-METHYL-2-PENTANONE	MG_KG	N										
Newport_RA_SO_VOCs	ACETONE	MG_KG	N										
Newport_RA_SO_VOCs	BENZENE	MG_KG	N										
Newport_RA_SO_VOCs	BROMOBENZENE	MG_KG	N										
Newport_RA_SO_VOCs	BROMOCHLOROMETHANE	MG_KG	N										
Newport_RA_SO_VOCs	BROMODICHLOROMETHANE	MG_KG	N										
Newport_RA_SO_VOCs	BROMOFORM	MG_KG	N										
Newport_RA_SO_VOCs	BROMOMETHANE	MG_KG	N										
Newport_RA_SO_VOCs	CARBON DISULFIDE	MG_KG	N										
Newport_RA_SO_VOCs	CARBON TETRACHLORIDE	MG_KG	N										
Newport_RA_SO_VOCs	CHLOROBENZENE	MG_KG	N										
Newport_RA_SO_VOCs	CHLOROETHANE	MG_KG	N										
Newport_RA_SO_VOCs	CHLOROFORM	MG_KG	N										
Newport_RA_SO_VOCs	CHLOROMETHANE	MG_KG	N										
Newport_RA_SO_VOCs	CIS-1,2-DICHLOROETHENE	MG_KG	N										
Newport_RA_SO_VOCs	CIS-1,3-DICHLOROPROPENE	MG_KG	N										
Newport_RA_SO_VOCs	CYCLOHEXANE	MG_KG	N										
Newport_RA_SO_VOCs	DIBROMOCHLOROMETHANE	MG_KG	N										
Newport_RA_SO_VOCs	DIBROMOMETHANE	MG_KG	N										
Newport_RA_SO_VOCs	DICHLORODIFLUOROMETHANE	MG_KG	N										
Newport_RA_SO_VOCs	ETHYLBENZENE	MG_KG	N										
Newport_RA_SO_VOCs	HEXACHLOROBUTADIENE	MG_KG	N										
Newport_RA_SO_VOCs	ISOPROPYLBENZENE	MG_KG	N										
Newport_RA_SO_VOCs	M- AND P-XYLENE	MG_KG	N										
Newport_RA_SO_VOCs	METHYL ACETATE	MG_KG	N										
Newport_RA_SO_VOCs	METHYL CYCLOHEXANE	MG_KG	N										
Newport_RA_SO_VOCs	METHYL TERT-BUTYL ETHER	MG_KG	N										
Newport_RA_SO_VOCs	METHYLENE CHLORIDE	MG_KG	N										
Newport_RA_SO_VOCs	NAPHTHALENE	MG_KG	N										
Newport_RA_SO_VOCs	N-BUTYLBENZENE	MG_KG	N										
Newport_RA_SO_VOCs	O-XYLENE	MG_KG	N										
Newport_RA_SO_VOCs	PROPYLBENZENE	MG_KG	N										
Newport_RA_SO_VOCs	SEC-BUTYLBENZENE	MG_KG	N										
Newport_RA_SO_VOCs	STYRENE	MG_KG	N										
Newport_RA_SO_VOCs	TERT-BUTANOL	MG_KG	N										
Newport_RA_SO_VOCs	TERT-BUTYLBENZENE	MG_KG	N										
Newport_RA_SO_VOCs	TETRACHLOROETHENE	MG_KG	N										
Newport_RA_SO_VOCs	TOLUENE	MG_KG	N										
Newport_RA_SO_VOCs	TRANS-1,2-DICHLOROETHENE	MG_KG	N										
Newport_RA_SO_VOCs	TRANS-1,3-DICHLOROPROPENE	MG_KG	N										
Newport_RA_SO_VOCs	TRICHLOROETHENE	MG_KG	N										
Newport_RA_SO_VOCs	TRICHLOROFLUOROMETHANE	MG_KG	N										
Newport_RA_SO_VOCs	VINYL CHLORIDE	MG_KG	N										
Newport_RA_SO_VOCs	XYLENES, TOTAL	MG_KG	N										

Notes:
U or < - Non-detect at laboratory detection limit.
J - The compound was positively identified; however, the associated numerical value is an estimated concentration only (+ and - indicate bias).
Sample Type - N = normal sample, FD = duplicate sample.
mg/kg - milligram per kilogram

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

		Location ID		CRP-SB214		CRP-SB214		CRP-SB215		CRP-SB215		CRP-SB215		CRP-SB216		CRP-SB216	
		Sample Date		12/11/2013		12/11/2013		12/11/2013		12/11/2013		12/11/2013		12/11/2013		12/11/2013	
		Sample ID		OU09 SB214 0508		OU09 SB214 0608		OU09 SB215 0102		OU09 SB215 0305		OU09 SB215 1012		OU09 SB216 0608		OU09 SB216 0305	
		Sample Type		N		N		N		N		N		N		N	
		start_depth		5		6		1		3		10		6		3	
		end_depth		8		8		2		5		12		8		5	
		depth_unit		FT		FT		FT		FT		FT		FT		FT	
		depth_interval		5 - 8 ft		6 - 8 ft		1 - 2 ft		3 - 5 ft		10 - 12 ft		6 - 8 ft		3 - 5 ft	
		task_code		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO	
		validated_yn		N		Y		Y		Y		Y		Y		Y	
method_analyte_group	Chemical	Unit	Fraction	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers
Newport_RA_SO_Energetics	2,4-DINITROTOLUENE	MG_KG	N					< 0.047	U	< 0.042	U					< 0.048	U
Newport_RA_SO_Energetics	2,6-DINITROTOLUENE	MG_KG	N														
Newport_RA_SO_Energetics	NITROGLYCERIN	MG_KG	N					< 0.38	U	< 0.33	U					< 0.38	U
Newport_RA_SO_Metals	ALUMINUM	MG_KG	N			6410		7640		9730		6780		6730		7530	
Newport_RA_SO_Metals	ANTIMONY	MG_KG	N			0.08	J-	0.57	J-	< 0.082	UJ	0.08	J-	0.15	J-	< 0.073	UJ
Newport_RA_SO_Metals	ARSENIC	MG_KG	N			8.1	J	6.6	J	5.1	J	3.8	J	12.5	J-	5.4	J
Newport_RA_SO_Metals	BARIUM	MG_KG	N			16.4		9.9		25.1		23.7		24.7		15.9	
Newport_RA_SO_Metals	BERYLLIUM	MG_KG	N			0.38	J-	0.25	J-	0.42	J-	0.30	J-	0.42	J-	0.31	J-
Newport_RA_SO_Metals	CADMIUM	MG_KG	N			0.09	J	0.14	J	< 0.082	UJ	< 0.062	UJ	< 0.059	UJ	< 0.073	UJ
Newport_RA_SO_Metals	CALCIUM	MG_KG	N			330	J	1080	J	583	J	496	J	372	J	480	J
Newport_RA_SO_Metals	CHROMIUM VI	MG_KG	N			< 0.38	UJ										
Newport_RA_SO_Metals	CHROMIUM, TOTAL	MG_KG	N			12.1	J	12.7	J	11.0	J	11.3	J	10.2	J-	8.8	J
Newport_RA_SO_Metals	COBALT	MG_KG	N			12.6	J-	21.9	J-	8.5	J-	12.3	J-	14.4	J-	8.0	J-
Newport_RA_SO_Metals	COPPER	MG_KG	N			16.9	J	20.6	J	12.1	J	18.0	J	21.7	J-	9.8	J
Newport_RA_SO_Metals	IRON	MG_KG	N			24400		55900		19800		22900		35900		17100	
Newport_RA_SO_Metals	IRON, FERROUS	MG_KG	N														
Newport_RA_SO_Metals	LEAD	MG_KG	N			7.6	J	18.6	J	8.7	J	6.1	J	9.3	J-	5.3	J
Newport_RA_SO_Metals	MAGNESIUM	MG_KG	N			1830	J	2580		1960	J	2580	J	1390	J	1310	
Newport_RA_SO_Metals	MANGANESE	MG_KG	N			413		826		168		452		424		492	
Newport_RA_SO_Metals	MERCURY	MG_KG	N			< 0.012	UJ	< 0.014	UJ	< 0.030	UJ	< 0.017	UJ	< 0.014	U	< 0.031	UJ
Newport_RA_SO_Metals	NICKEL	MG_KG	N			19.6	J-	42.2	J-	14.0	J-	18.0	J-	21.2	J-	11.9	J-
Newport_RA_SO_Metals	POTASSIUM	MG_KG	N			618	J+	216	J+	489	J+	845	J+	562	J+	389	J+
Newport_RA_SO_Metals	SELENIUM	MG_KG	N			< 0.32	UJ	< 0.35	UJ	0.48	J-	< 0.31	UJ	0.41	J-	< 0.36	UJ
Newport_RA_SO_Metals	SILVER	MG_KG	N			0.01	J	0.04	J	0.03	J	0.05	J	0.03	J	0.03	J
Newport_RA_SO_Metals	SODIUM	MG_KG	N			< 64	U	< 71	U	< 82	U	< 62	U	< 59	U	< 73	U
Newport_RA_SO_Metals	THALLIUM	MG_KG	N			0.13		0.02	J	0.08		0.19		0.06		0.06	J
Newport_RA_SO_Metals	VANADIUM	MG_KG	N			15.3	J	13.9	J	16.4	J	15.8	J	16.5	J-	12.9	J
Newport_RA_SO_Metals	ZINC	MG_KG	N			69.3	J	113	J	33.9	J	40.3	J	50.3	J-	28.5	J
Newport_RA_SO_Other	DENSITY	G_CC	N	1.60													
Newport_RA_SO_Other	Pellet count	COUNT	N														
Newport_RA_SO_Other	Pellet weight	PCT	N														
Newport_RA_SO_Other	PERCENT FINES	PCT	N	35.4													
Newport_RA_SO_Other	PERCENT GRAVEL	PCT	N	15.6													
Newport_RA_SO_Other	PERCENT SAND	PCT	N	49.0													
Newport_RA_SO_Other	PERCENT SAND, COARSE	PCT	N	6.6													
Newport_RA_SO_Other	PERCENT SAND, FINE	PCT	N	27.2													
Newport_RA_SO_Other	PERCENT SAND, MEDIUM	PCT	N	15.2													
Newport_RA_SO_Other	PH	PH	N														
Newport_RA_SO_Other	POROSITY	PCT	N	41.6													
Newport_RA_SO_Other	SIEVE 1 INCH (25.4-MM)	PCT	N	0													
Newport_RA_SO_Other	SIEVE 1-1/2 INCH (37.5-MM)	PCT	N	0													
Newport_RA_SO_Other	SIEVE 2 INCH (50-MM)	PCT	N	0													
Newport_RA_SO_Other	SIEVE 3 INCH (75-MM)	PCT	N	0													
Newport_RA_SO_Other	SIEVE 3/4 INCH (19-MM)	PCT	N	0													
Newport_RA_SO_Other	SIEVE 3/8 INCH (9.5-MM)	PCT	N	11.0													
Newport_RA_SO_Other	SIEVE NO. 004 (4.75-MM)	PCT	N	4.6													
Newport_RA_SO_Other	SIEVE NO. 010 (2-MM)	PCT	N	6.6													
Newport_RA_SO_Other	SIEVE NO. 020 (850-UM)	PCT	N	6.5													
Newport_RA_SO_Other	SIEVE NO. 040 (425-UM)	PCT	N	8.7													
Newport_RA_SO_Other	SIEVE NO. 060 (250-UM)	PCT	N	9.0													
Newport_RA_SO_Other	SIEVE NO. 080 (180-UM)	PCT	N	5.3													
Newport_RA_SO_Other	SIEVE NO. 100 (150-UM)	PCT	N	3.5													
Newport_RA_SO_Other	SIEVE NO. 200 (75-UM)	PCT	N	9.4													
Newport_RA_SO_Other	SPECIFIC CONDUCTANCE	UMHO_CM	N	8.6													
Newport_RA_SO_Other	SPECIFIC GRAVITY	NONE	N	2.74													
Newport_RA_SO_Other	SULFIDE	MG_KG	N														
Newport_RA_SO_Other	TPH-DIESEL RANGE	MG_KG	N														
Newport_RA_SO_Other	TPH-TOTAL UNKNOWN GASOLINE RANGE ORGANICS	MG_KG	N														
Newport_RA_SO_Other	Void Ratio	NONE	N														
Newport_RA_SO_PCBs	AROCLOR-1016	MG_KG	N														
Newport_RA_SO_PCBs	AROCLOR-1221	MG_KG	N														
Newport_RA_SO_PCBs	AROCLOR-1232	MG_KG	N														
Newport_RA_SO_PCBs	AROCLOR-1242	MG_KG	N														
Newport_RA_SO_PCBs	AROCLOR-1248	MG_KG	N														
Newport_RA_SO_PCBs	AROCLOR-1254	MG_KG	N														
Newport_RA_SO_PCBs	AROCLOR-1260	MG_KG	N														

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	CRP-SB214		CRP-SB214		CRP-SB215		CRP-SB215		CRP-SB215		CRP-SB216		CRP-SB216	
			Sample Date	12/11/2013		12/11/2013		12/11/2013		12/11/2013		12/11/2013		12/11/2013		12/11/2013	
			Sample ID	OU09 SB214 0508		OU09 SB214 0608		OU09 SB215 0102		OU09 SB215 0305		OU09 SB215 1012		OU09 SB216 0608		OU09 SB216 0305	
			Sample Type	N		N		N		N		N		N		N	
			start_depth	5		6		1		3		10		6		3	
			end_depth	8		8		2		5		12		8		5	
			depth_unit	FT		FT		FT		FT		FT		FT		FT	
			depth_interval	5 - 8 ft		6 - 8 ft		1 - 2 ft		3 - 5 ft		10 - 12 ft		6 - 8 ft		3 - 5 ft	
			task_code	MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO	
			validated_yn	N		Y		Y		Y		Y		Y		Y	
method_analyte_group	Chemical	Unit	Fraction	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers
Newport_RA_SO_PCBs	AROCLOR-1262	MG_KG	N														
Newport_RA_SO_PCBs	AROCLOR-1268	MG_KG	N														
Newport_RA_SO_PCBs	PCB, TOTAL	MG_KG	N														
Newport_RA_SO_PCBs	POLYCHLORINATED BIPHENYLS (PCBS)	MG_KG	N														
Newport_RA_SO_Pesticides	4,4-DDD	MG_KG	N														
Newport_RA_SO_Pesticides	4,4-DDE	MG_KG	N														
Newport_RA_SO_Pesticides	4,4-DDT	MG_KG	N														
Newport_RA_SO_Pesticides	ALDRIN	MG_KG	N														
Newport_RA_SO_Pesticides	ALPHA-BHC	MG_KG	N														
Newport_RA_SO_Pesticides	ALPHA-CHLORDANE	MG_KG	N														
Newport_RA_SO_Pesticides	BETA-BHC	MG_KG	N														
Newport_RA_SO_Pesticides	DDT, TOTAL	MG_KG	N														
Newport_RA_SO_Pesticides	DELTA-BHC	MG_KG	N														
Newport_RA_SO_Pesticides	DIELDRIN	MG_KG	N														
Newport_RA_SO_Pesticides	ENDOSULFAN I	MG_KG	N														
Newport_RA_SO_Pesticides	ENDOSULFAN II	MG_KG	N														
Newport_RA_SO_Pesticides	ENDOSULFAN SULFATE	MG_KG	N														
Newport_RA_SO_Pesticides	ENDRIN	MG_KG	N														
Newport_RA_SO_Pesticides	ENDRIN ALDEHYDE	MG_KG	N														
Newport_RA_SO_Pesticides	ENDRIN KETONE	MG_KG	N														
Newport_RA_SO_Pesticides	GAMMA-CHLORDANE	MG_KG	N														
Newport_RA_SO_Pesticides	HEPTACHLOR	MG_KG	N														
Newport_RA_SO_Pesticides	HEPTACHLOR EPOXIDE	MG_KG	N														
Newport_RA_SO_Pesticides	LINDANE	MG_KG	N														
Newport_RA_SO_Pesticides	METHOXYCHLOR	MG_KG	N														
Newport_RA_SO_Pesticides	TOXAPHENE	MG_KG	N														
Newport_RA_SO_Pesticides	TRANS-CHLORDANE	MG_KG	N														
Newport_RA_SO_SVOCs	1,1-BIPHENYL	MG_KG	N														
Newport_RA_SO_SVOCs	1-METHYLNAPHTHALENE	MG_KG	N														
Newport_RA_SO_SVOCs	1,2,4-TRICHLOROBENZENE	MG_KG	N														
Newport_RA_SO_SVOCs	1,2-DICHLOROBENZENE	MG_KG	N														
Newport_RA_SO_SVOCs	1,2-DIPHENYLHYDRAZINE	MG_KG	N														
Newport_RA_SO_SVOCs	1,3-DICHLOROBENZENE	MG_KG	N														
Newport_RA_SO_SVOCs	1,4-DICHLOROBENZENE	MG_KG	N														
Newport_RA_SO_SVOCs	2,2'-OXYBIS(1-CHLOROPROPANE)	MG_KG	N														
Newport_RA_SO_SVOCs	2,4,5-TRICHLOROPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	2,4,6-TRICHLOROPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	2,4-DICHLOROPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	2,4-DIMETHYLPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	2,4-DINITROPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	2,4-DINITROTOLUENE	MG_KG	N														
Newport_RA_SO_SVOCs	2,6-DICHLOROPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	2,6-DINITROTOLUENE	MG_KG	N														
Newport_RA_SO_SVOCs	2-CHLORONAPHTHALENE	MG_KG	N														
Newport_RA_SO_SVOCs	2-CHLOROPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	2-METHYLNAPHTHALENE	MG_KG	N														
Newport_RA_SO_SVOCs	2-METHYLPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	2-NITROANILINE	MG_KG	N														
Newport_RA_SO_SVOCs	2-NITROPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	3- AND 4-METHYLPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	3,3-DICHLOROBENZIDINE	MG_KG	N														
Newport_RA_SO_SVOCs	3-NITROANILINE	MG_KG	N														
Newport_RA_SO_SVOCs	4,6-DINITRO-2-METHYLPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	4-BROMOPHENYL-PHENYLETHER	MG_KG	N														
Newport_RA_SO_SVOCs	4-CHLORO-3-METHYLPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	4-CHLOROANILINE	MG_KG	N														
Newport_RA_SO_SVOCs	4-CHLOROPHENYL-PHENYLETHER	MG_KG	N														
Newport_RA_SO_SVOCs	4-METHYLPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	4-NITROANILINE	MG_KG	N														
Newport_RA_SO_SVOCs	4-NITROPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	ACENAPHTHENE	MG_KG	N			< 0.01	U	< 0.0090	U	< 0.011	U	< 0.01	U	< 0.011	U	< 0.01	U
Newport_RA_SO_SVOCs	ACENAPHTHYLENE	MG_KG	N			< 0.01	U	< 0.0090	U	< 0.011	U	< 0.01	U	< 0.011	U	< 0.01	U
Newport_RA_SO_SVOCs	ACETOPHENONE	MG_KG	N														
Newport_RA_SO_SVOCs	ANTHRACENE	MG_KG	N			< 0.01	U	< 0.0090	U	< 0.011	U	< 0.01	U	< 0.011	U	< 0.01	U
Newport_RA_SO_SVOCs	ATRAZINE	MG_KG	N														
Newport_RA_SO_SVOCs	BENZALDEHYDE	MG_KG	N														

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	CRP-SB214		CRP-SB214		CRP-SB215		CRP-SB215		CRP-SB215		CRP-SB216		CRP-SB216	
			Sample Date	12/11/2013		12/11/2013		12/11/2013		12/11/2013		12/11/2013		12/11/2013		12/11/2013	
			Sample ID	OU09 SB214 0508		OU09 SB214 0608		OU09 SB215 0102		OU09 SB215 0305		OU09 SB215 1012		OU09 SB216 0608		OU09 SB216 0305	
			Sample Type	N		N		N		N		N		N		N	
			start_depth	5		6		1		3		10		6		3	
			end_depth	8		8		2		5		12		8		5	
			depth_unit	FT		FT		FT		FT		FT		FT		FT	
			depth_interval	5 - 8 ft		6 - 8 ft		1 - 2 ft		3 - 5 ft		10 - 12 ft		6 - 8 ft		3 - 5 ft	
			task_code	MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO	
			validated_yn	N		Y		Y		Y		Y		Y		Y	
method_analyte_group	Chemical	Unit	Fraction	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers
Newport_RA_SO_SVOCs	BENZIDINE	MG_KG	N														
Newport_RA_SO_SVOCs	BENZO[A]ANTHRACENE	MG_KG	N			0.0028	J	0.0068	J	< 0.011	U	< 0.01	U	0.0023	J	< 0.01	U
Newport_RA_SO_SVOCs	BENZO[A]PYRENE	MG_KG	N			0.0038	J	0.0073	J	< 0.011	UJ	< 0.01	UJ	< 0.011	UJ	< 0.01	UJ
Newport_RA_SO_SVOCs	BENZO[B]FLUORANTHENE	MG_KG	N			< 0.02	U	< 0.018	U	< 0.022	U	< 0.01	U	< 0.011	UJ	< 0.01	U
Newport_RA_SO_SVOCs	BENZO[G,H,I]PERYLENE	MG_KG	N			< 0.01	UJ	0.0027	J	< 0.011	UJ	< 0.01	UJ	< 0.011	UJ	< 0.01	UJ
Newport_RA_SO_SVOCs	BENZO[K]FLUORANTHENE	MG_KG	N			< 0.01	U	< 0.0090	U	< 0.011	U	< 0.01	U	< 0.011	UJ	< 0.01	U
Newport_RA_SO_SVOCs	BENZOIC ACID	MG_KG	N														
Newport_RA_SO_SVOCs	BENZYL ALCOHOL	MG_KG	N														
Newport_RA_SO_SVOCs	BIS(2-CHLOROETHOXY)METHANE	MG_KG	N														
Newport_RA_SO_SVOCs	BIS(2-CHLOROETHYL)ETHER	MG_KG	N														
Newport_RA_SO_SVOCs	BIS(2-ETHYLHEXYL)PHTHALATE	MG_KG	N														
Newport_RA_SO_SVOCs	BUTYLBENZYLPHTHALATE	MG_KG	N														
Newport_RA_SO_SVOCs	CAPROLACTAM	MG_KG	N														
Newport_RA_SO_SVOCs	CARBAZOLE	MG_KG	N														
Newport_RA_SO_SVOCs	CHRYSENE	MG_KG	N			< 0.01	UJ	0.0054	J	< 0.011	U	< 0.01	UJ	< 0.011	UJ	< 0.01	U
Newport_RA_SO_SVOCs	DIBENZ[A,H]ANTHRACENE	MG_KG	N			< 0.01	U	< 0.0090	U	< 0.011	U	< 0.01	U	< 0.011	UJ	< 0.01	U
Newport_RA_SO_SVOCs	DIBENZOFURAN	MG_KG	N														
Newport_RA_SO_SVOCs	DIETHYLPHTHALATE	MG_KG	N														
Newport_RA_SO_SVOCs	DIMETHYL PHTHALATE	MG_KG	N														
Newport_RA_SO_SVOCs	DI-N-BUTYLPHTHALATE	MG_KG	N														
Newport_RA_SO_SVOCs	DI-N-OCTYLPHTHALATE	MG_KG	N														
Newport_RA_SO_SVOCs	FLUORANTHENE	MG_KG	N			0.0044	J	0.0090	J	< 0.011	U	< 0.01	U	< 0.011	U	< 0.01	U
Newport_RA_SO_SVOCs	FLUORENE	MG_KG	N			< 0.01	U	< 0.0090	U	< 0.011	U	< 0.01	U	< 0.011	U	< 0.01	U
Newport_RA_SO_SVOCs	HEXACHLOROBENZENE	MG_KG	N														
Newport_RA_SO_SVOCs	HEXACHLOROBUTADIENE	MG_KG	N														
Newport_RA_SO_SVOCs	HEXACHLOROCYCLOPENTADIENE	MG_KG	N														
Newport_RA_SO_SVOCs	HEXACHLOROETHANE	MG_KG	N														
Newport_RA_SO_SVOCs	HPAH, TOTAL	MG_KG	N			0.015		0.043		< 0.022	U	< 0.01	U	0.0023		< 0.01	U
Newport_RA_SO_SVOCs	INDENO[1,2,3-CD]PYRENE	MG_KG	N			< 0.01	U	0.0036	J	< 0.011	U	< 0.01	U	< 0.011	UJ	< 0.01	U
Newport_RA_SO_SVOCs	ISOPHORONE	MG_KG	N														
Newport_RA_SO_SVOCs	LPAH, TOTAL	MG_KG	N			0.0026		0.0053		< 0.011	U	< 0.01	U	< 0.011	U	< 0.01	U
Newport_RA_SO_SVOCs	NAPHTHALENE	MG_KG	N			< 0.01	U	< 0.0090	U	< 0.011	U	< 0.01	U	< 0.011	U	< 0.01	U
Newport_RA_SO_SVOCs	NITROBENZENE	MG_KG	N														
Newport_RA_SO_SVOCs	N-NITROSODIMETHYLAMINE	MG_KG	N														
Newport_RA_SO_SVOCs	N-NITROSODINPROPYLAMINE	MG_KG	N														
Newport_RA_SO_SVOCs	N-NITROSODIPHENYLAMINE	MG_KG	N														
Newport_RA_SO_SVOCs	N-NITROSOPYRROLIDINE	MG_KG	N														
Newport_RA_SO_SVOCs	PAH, TOTAL	MG_KG	N			0.017		0.049		< 0.022	U	< 0.01	U	0.0023		< 0.01	U
Newport_RA_SO_SVOCs	PENTACHLOROPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	PHENANTHRENE	MG_KG	N			0.0026	J	0.0053	J	< 0.011	U	< 0.01	U	< 0.011	U	< 0.01	U
Newport_RA_SO_SVOCs	PHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	PYRENE	MG_KG	N			0.0036	J	0.0084	J	< 0.011	U	< 0.01	U	< 0.011	U	< 0.01	U
Newport_RA_SO_VOCs	1,1,1,2-TETRACHLOROETHANE	MG_KG	N														
Newport_RA_SO_VOCs	1,1,1-TRICHLOROETHANE	MG_KG	N														
Newport_RA_SO_VOCs	1,1,2,2-TETRACHLOROETHANE	MG_KG	N														
Newport_RA_SO_VOCs	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	MG_KG	N														
Newport_RA_SO_VOCs	1,1,2-TRICHLOROETHANE	MG_KG	N														
Newport_RA_SO_VOCs	1,1-DICHLOROETHANE	MG_KG	N														
Newport_RA_SO_VOCs	1,1-DICHLOROETHENE	MG_KG	N														
Newport_RA_SO_VOCs	1,1-DICHLOROPROPENE	MG_KG	N														
Newport_RA_SO_VOCs	1,2,3-TRICHLOROBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	1,2,3-TRICHLOROPROPANE	MG_KG	N														
Newport_RA_SO_VOCs	1,2,4-TRICHLOROBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	1,2,4-TRIMETHYLBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	1,2-DIBROMO-3-CHLOROPROPANE	MG_KG	N														
Newport_RA_SO_VOCs	1,2-DIBROMOETHANE	MG_KG	N														
Newport_RA_SO_VOCs	1,2-DICHLOROBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	1,2-DICHLOROETHANE	MG_KG	N														
Newport_RA_SO_VOCs	1,2-DICHLOROETHENE, TOTAL	MG_KG	N														
Newport_RA_SO_VOCs	1,2-DICHLOROPROPANE	MG_KG	N														
Newport_RA_SO_VOCs	1,3,5-TRIMETHYLBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	1,3-DICHLOROBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	1,3-DICHLOROPROPANE	MG_KG	N														
Newport_RA_SO_VOCs	1,4-DICHLOROBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	2,2-DICHLOROPROPANE	MG_KG	N														
Newport_RA_SO_VOCs	2-BUTANONE	MG_KG	N														

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	CRP-SB214		CRP-SB214		CRP-SB215		CRP-SB215		CRP-SB215		CRP-SB216		CRP-SB216	
			Sample Date	12/11/2013		12/11/2013		12/11/2013		12/11/2013		12/11/2013		12/11/2013		12/11/2013	
			Sample ID	OU09 SB214 0508		OU09 SB214 0608		OU09 SB215 0102		OU09 SB215 0305		OU09 SB215 1012		OU09 SB216 0608		OU09 SB216 0305	
			Sample Type	N		N		N		N		N		N		N	
			start_depth	5		6		1		3		10		6		3	
			end_depth	8		8		2		5		12		8		5	
			depth_unit	FT		FT		FT		FT		FT		FT		FT	
			depth_interval	5 - 8 ft		6 - 8 ft		1 - 2 ft		3 - 5 ft		10 - 12 ft		6 - 8 ft		3 - 5 ft	
			task_code	MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO	
			validated_yn	N		Y		Y		Y		Y		Y		Y	
method_analyte_group	Chemical	Unit	Fraction	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers
Newport_RA_SO_VOCs	2-CHLOROTOLUENE	MG_KG	N														
Newport_RA_SO_VOCs	2-HEXANONE	MG_KG	N														
Newport_RA_SO_VOCs	4-CHLOROTOLUENE	MG_KG	N														
Newport_RA_SO_VOCs	4-ISOPROPYLTOLUENE	MG_KG	N														
Newport_RA_SO_VOCs	4-METHYL-2-PENTANONE	MG_KG	N														
Newport_RA_SO_VOCs	ACETONE	MG_KG	N														
Newport_RA_SO_VOCs	BENZENE	MG_KG	N														
Newport_RA_SO_VOCs	BROMOBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	BROMOCHLOROMETHANE	MG_KG	N														
Newport_RA_SO_VOCs	BROMODICHLOROMETHANE	MG_KG	N														
Newport_RA_SO_VOCs	BROMOFORM	MG_KG	N														
Newport_RA_SO_VOCs	BROMOMETHANE	MG_KG	N														
Newport_RA_SO_VOCs	CARBON DISULFIDE	MG_KG	N														
Newport_RA_SO_VOCs	CARBON TETRACHLORIDE	MG_KG	N														
Newport_RA_SO_VOCs	CHLOROBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	CHLOROETHANE	MG_KG	N														
Newport_RA_SO_VOCs	CHLOROFORM	MG_KG	N														
Newport_RA_SO_VOCs	CHLOROMETHANE	MG_KG	N														
Newport_RA_SO_VOCs	CIS-1,2-DICHLOROETHENE	MG_KG	N														
Newport_RA_SO_VOCs	CIS-1,3-DICHLOROPROPENE	MG_KG	N														
Newport_RA_SO_VOCs	CYCLOHEXANE	MG_KG	N														
Newport_RA_SO_VOCs	DIBROMOCHLOROMETHANE	MG_KG	N														
Newport_RA_SO_VOCs	DIBROMOMETHANE	MG_KG	N														
Newport_RA_SO_VOCs	DICHLORODIFLUOROMETHANE	MG_KG	N														
Newport_RA_SO_VOCs	ETHYLBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	HEXACHLOROBUTADIENE	MG_KG	N														
Newport_RA_SO_VOCs	ISOPROPYLBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	M- AND P-XYLENE	MG_KG	N														
Newport_RA_SO_VOCs	METHYL ACETATE	MG_KG	N														
Newport_RA_SO_VOCs	METHYL CYCLOHEXANE	MG_KG	N														
Newport_RA_SO_VOCs	METHYL TERT-BUTYL ETHER	MG_KG	N														
Newport_RA_SO_VOCs	METHYLENE CHLORIDE	MG_KG	N														
Newport_RA_SO_VOCs	NAPHTHALENE	MG_KG	N														
Newport_RA_SO_VOCs	N-BUTYLBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	O-XYLENE	MG_KG	N														
Newport_RA_SO_VOCs	PROPYLBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	SEC-BUTYLBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	STYRENE	MG_KG	N														
Newport_RA_SO_VOCs	TERT-BUTANOL	MG_KG	N														
Newport_RA_SO_VOCs	TERT-BUTYLBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	TETRACHLOROETHENE	MG_KG	N														
Newport_RA_SO_VOCs	TOLUENE	MG_KG	N														
Newport_RA_SO_VOCs	TRANS-1,2-DICHLOROETHENE	MG_KG	N														
Newport_RA_SO_VOCs	TRANS-1,3-DICHLOROPROPENE	MG_KG	N														
Newport_RA_SO_VOCs	TRICHLOROETHENE	MG_KG	N														
Newport_RA_SO_VOCs	TRICHLOROFLUOROMETHANE	MG_KG	N														
Newport_RA_SO_VOCs	VINYL CHLORIDE	MG_KG	N														
Newport_RA_SO_VOCs	XYLENES, TOTAL	MG_KG	N														

Notes:
U or < - Non-detect at laboratory detection limit.
J - The compound was positively identified; however, the associated numerical value is an estimated concentration only (+ and - indicate bias).
Sample Type - N = normal sample, FD = duplicate sample.
mg/kg - milligram per kilogram

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	CRP-SB217		CRP-SB217		CRP-SB217		CRP-SB217		CRP-SB217		CRP-SB218		CRP-SB218		CRP-SB218	
			Sample Date	12/10/2013		12/10/2013		12/10/2013		12/10/2013		12/10/2013		12/11/2013		12/11/2013		12/11/2013	
			Sample ID	OU09 SS217 0001		OU09 SB217 0102		OU09 SB217 0305		OU09 SB217 0608		OU09 SB217 0108		FDSB12111305		OU09 SS218 0001		FDSB12111306	
			Sample Type	N		N		N		N		N		FD		N		FD	
			start_depth	0		1		3		6		1		0		0		1	
			end_depth	1		2		5		8		8		1		1		2	
			depth_unit	FT		FT		FT		FT		FT		FT		FT		FT	
			depth_interval	0 - 1 ft		1 - 2 ft		3 - 5 ft		6 - 8 ft		1 - 8 ft		0 - 1 ft		0 - 1 ft		1 - 2 ft	
			task_code	MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO	
			validated_yn	Y		Y		Y		Y		N		Y		Y		Y	
method_analyte_group	Chemical	Unit	Fraction	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers
Newport_RA_SO_Energetics	2,4-DINITROTOLUENE	MG_KG	N	< 0.05	U	< 0.047	U	< 0.047	U					< 0.049	U	< 0.048	U	< 0.05	U
Newport_RA_SO_Energetics	2,6-DINITROTOLUENE	MG_KG	N																
Newport_RA_SO_Energetics	NITROGLYCERIN	MG_KG	N	4		< 0.38	U	< 0.38	U					< 0.39	U	< 0.38	U	< 0.4	U
Newport_RA_SO_Metals	ALUMINUM	MG_KG	N	10400		10700		10100		6400						9610			
Newport_RA_SO_Metals	ANTIMONY	MG_KG	N	0.36	J	0.44	J	0.26	J	0.10	J					0.34	J-		
Newport_RA_SO_Metals	ARSENIC	MG_KG	N	9.2	J	6.6	J	13.8	J	10.6	J					9.7	J		
Newport_RA_SO_Metals	BARIUM	MG_KG	N	28.0		31.4		29.7		23.1						19.7			
Newport_RA_SO_Metals	BERYLLIUM	MG_KG	N	0.35		0.39		0.39		0.50						0.27	J-		
Newport_RA_SO_Metals	CADMIUM	MG_KG	N	0.16		0.12		0.19		0.08	J					0.16	J		
Newport_RA_SO_Metals	CALCIUM	MG_KG	N	1370	J+	828	J+	756	J+	401	J+					2910	J		
Newport_RA_SO_Metals	CHROMIUM VI	MG_KG	N					< 0.38	U										
Newport_RA_SO_Metals	CHROMIUM, TOTAL	MG_KG	N	13.0	J	10.8	J	12.0	J	12.2	J					12.8	J		
Newport_RA_SO_Metals	COBALT	MG_KG	N	10.4	J	7.5	J	9.8	J	20.7	J					10.7	J-		
Newport_RA_SO_Metals	COPPER	MG_KG	N	18.1		12.2		16.3		27.5						16.9	J		
Newport_RA_SO_Metals	IRON	MG_KG	N	26500	J	21300	J	27700	J	47600	J					24200			
Newport_RA_SO_Metals	IRON, FERROUS	MG_KG	N																
Newport_RA_SO_Metals	LEAD	MG_KG	N	133	J	83.7	J	50.9	J	9.8	J					114	J		
Newport_RA_SO_Metals	MAGNESIUM	MG_KG	N	2870	J	1790	J	1910	J	1590	J					3340			
Newport_RA_SO_Metals	MANGANESE	MG_KG	N	473	J	337	J	551	J	847	J					378			
Newport_RA_SO_Metals	MERCURY	MG_KG	N	0.05		0.07		0.05		< 0.018	U					< 0.032	UJ		
Newport_RA_SO_Metals	NICKEL	MG_KG	N	20.2	J	15.4	J	18.8	J	33.4	J					20.0	J-		
Newport_RA_SO_Metals	POTASSIUM	MG_KG	N	484	J	448	J	402	J	539	J					379	J+		
Newport_RA_SO_Metals	SELENIUM	MG_KG	N	0.41		0.47		0.58		0.31	J					< 0.42	UJ		
Newport_RA_SO_Metals	SILVER	MG_KG	N	0.06	J	0.07	J	0.07	J	0.04	J					0.06	J		
Newport_RA_SO_Metals	SODIUM	MG_KG	N	< 76	U	< 85	U	< 82	U	< 88	U					< 84	U		
Newport_RA_SO_Metals	THALLIUM	MG_KG	N	0.08		0.11		0.11		0.06	J					0.04	J		
Newport_RA_SO_Metals	VANADIUM	MG_KG	N	19.7		18.4		22.0		19.8						19.4	J		
Newport_RA_SO_Metals	ZINC	MG_KG	N	72.4	J+	48.2	J+	79.4	J+	102	J+					67.2	J		
Newport_RA_SO_Other	DENSITY	G_CC	N									1.54							
Newport_RA_SO_Other	Pellet count	COUNT	N																
Newport_RA_SO_Other	Pellet weight	PCT	N																
Newport_RA_SO_Other	PERCENT FINES	PCT	N									43.2							
Newport_RA_SO_Other	PERCENT GRAVEL	PCT	N									13.7							
Newport_RA_SO_Other	PERCENT SAND	PCT	N									43.1							
Newport_RA_SO_Other	PERCENT SAND, COARSE	PCT	N									7.9							
Newport_RA_SO_Other	PERCENT SAND, FINE	PCT	N									20.5							
Newport_RA_SO_Other	PERCENT SAND, MEDIUM	PCT	N									14.7							
Newport_RA_SO_Other	PH	PH	N									5.1							
Newport_RA_SO_Other	POROSITY	PCT	N									43.0							
Newport_RA_SO_Other	SIEVE 1 INCH (25.4-MM)	PCT	N									0							
Newport_RA_SO_Other	SIEVE 1-1/2 INCH (37.5-MM)	PCT	N									0							
Newport_RA_SO_Other	SIEVE 2 INCH (50-MM)	PCT	N									0							
Newport_RA_SO_Other	SIEVE 3 INCH (75-MM)	PCT	N									0							
Newport_RA_SO_Other	SIEVE 3/4 INCH (19-MM)	PCT	N									0							
Newport_RA_SO_Other	SIEVE 3/8 INCH (9.5-MM)	PCT	N									9.4							
Newport_RA_SO_Other	SIEVE NO. 004 (4.75-MM)	PCT	N									4.3							
Newport_RA_SO_Other	SIEVE NO. 010 (2-MM)	PCT	N									7.9							
Newport_RA_SO_Other	SIEVE NO. 020 (850-UM)	PCT	N									7.2							
Newport_RA_SO_Other	SIEVE NO. 040 (425-UM)	PCT	N									7.5							
Newport_RA_SO_Other	SIEVE NO. 060 (250-UM)	PCT	N									7.2							
Newport_RA_SO_Other	SIEVE NO. 080 (180-UM)	PCT	N									4.0							
Newport_RA_SO_Other	SIEVE NO. 100 (150-UM)	PCT	N									2.4							
Newport_RA_SO_Other	SIEVE NO. 200 (75-UM)	PCT	N									6.9							
Newport_RA_SO_Other	SPECIFIC CONDUCTANCE	UMHO_CM	N									10							
Newport_RA_SO_Other	SPECIFIC GRAVITY	NONE	N									2.70							
Newport_RA_SO_Other	SULFIDE	MG_KG	N																
Newport_RA_SO_Other	TPH-DIESEL RANGE	MG_KG	N																
Newport_RA_SO_Other	TPH-TOTAL UNKNOWN GASOLINE RANGE ORGANICS	MG_KG	N																
Newport_RA_SO_Other	Void Ratio	NONE	N																
Newport_RA_SO_PCBs	AROCLOR-1016	MG_KG	N																
Newport_RA_SO_PCBs	AROCLOR-1221	MG_KG	N																
Newport_RA_SO_PCBs	AROCLOR-1232	MG_KG	N																
Newport_RA_SO_PCBs	AROCLOR-1242	MG_KG	N																
Newport_RA_SO_PCBs	AROCLOR-1248	MG_KG	N																
Newport_RA_SO_PCBs	AROCLOR-1254	MG_KG	N																
Newport_RA_SO_PCBs	AROCLOR-1260	MG_KG	N																

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	CRP-SB217		CRP-SB217		CRP-SB217		CRP-SB217		CRP-SB217		CRP-SB218		CRP-SB218		CRP-SB218	
			Sample Date	12/10/2013		12/10/2013		12/10/2013		12/10/2013		12/10/2013		12/11/2013		12/11/2013		12/11/2013	
			Sample ID	OU09 SS217 0001		OU09 SB217 0102		OU09 SB217 0305		OU09 SB217 0608		OU09 SB217 0108		FDSB12111305		OU09 SS218 0001		FDSB12111306	
			Sample Type	N		N		N		N		N		FD		N		FD	
			start_depth	0		1		3		6		1		0		0		1	
			end_depth	1		2		5		8		8		1		1		2	
			depth_unit	FT		FT		FT		FT		FT		FT		FT		FT	
			depth_interval	0 - 1 ft		1 - 2 ft		3 - 5 ft		6 - 8 ft		1 - 8 ft		0 - 1 ft		0 - 1 ft		1 - 2 ft	
			task_code	MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO	
			validated_yn	Y		Y		Y		Y		N		Y		Y		Y	
method_analyte_group	Chemical	Unit	Fraction	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers
Newport_RA_SO_PCBs	AROCLOR-1262	MG_KG	N																
Newport_RA_SO_PCBs	AROCLOR-1268	MG_KG	N																
Newport_RA_SO_PCBs	PCB, TOTAL	MG_KG	N																
Newport_RA_SO_PCBs	POLYCHLORINATED BIPHENYLS (PCBS)	MG_KG	N																
Newport_RA_SO_Pesticides	4,4-DDD	MG_KG	N																
Newport_RA_SO_Pesticides	4,4-DDE	MG_KG	N																
Newport_RA_SO_Pesticides	4,4-DDT	MG_KG	N																
Newport_RA_SO_Pesticides	ALDRIN	MG_KG	N																
Newport_RA_SO_Pesticides	ALPHA-BHC	MG_KG	N																
Newport_RA_SO_Pesticides	ALPHA-CHLORDANE	MG_KG	N																
Newport_RA_SO_Pesticides	BETA-BHC	MG_KG	N																
Newport_RA_SO_Pesticides	DDT, TOTAL	MG_KG	N																
Newport_RA_SO_Pesticides	DELTA-BHC	MG_KG	N																
Newport_RA_SO_Pesticides	DIELDRIN	MG_KG	N																
Newport_RA_SO_Pesticides	ENDOSULFAN I	MG_KG	N																
Newport_RA_SO_Pesticides	ENDOSULFAN II	MG_KG	N																
Newport_RA_SO_Pesticides	ENDOSULFAN SULFATE	MG_KG	N																
Newport_RA_SO_Pesticides	ENDRIN	MG_KG	N																
Newport_RA_SO_Pesticides	ENDRIN ALDEHYDE	MG_KG	N																
Newport_RA_SO_Pesticides	ENDRIN KETONE	MG_KG	N																
Newport_RA_SO_Pesticides	GAMMA-CHLORDANE	MG_KG	N																
Newport_RA_SO_Pesticides	HEPTACHLOR	MG_KG	N																
Newport_RA_SO_Pesticides	HEPTACHLOR EPOXIDE	MG_KG	N																
Newport_RA_SO_Pesticides	LINDANE	MG_KG	N																
Newport_RA_SO_Pesticides	METHOXYCHLOR	MG_KG	N																
Newport_RA_SO_Pesticides	TOXAPHENE	MG_KG	N																
Newport_RA_SO_Pesticides	TRANS-CHLORDANE	MG_KG	N																
Newport_RA_SO_SVOCs	1,1-BIPHENYL	MG_KG	N																
Newport_RA_SO_SVOCs	1-METHYLNAPHTHALENE	MG_KG	N																
Newport_RA_SO_SVOCs	1,2,4-TRICHLOROBENZENE	MG_KG	N																
Newport_RA_SO_SVOCs	1,2-DICHLOROBENZENE	MG_KG	N																
Newport_RA_SO_SVOCs	1,2-DIPHENYLHYDRAZINE	MG_KG	N																
Newport_RA_SO_SVOCs	1,3-DICHLOROBENZENE	MG_KG	N																
Newport_RA_SO_SVOCs	1,4-DICHLOROBENZENE	MG_KG	N																
Newport_RA_SO_SVOCs	2,2'-OXYBIS(1-CHLOROPROPANE)	MG_KG	N																
Newport_RA_SO_SVOCs	2,4,5-TRICHLOROPHENOL	MG_KG	N																
Newport_RA_SO_SVOCs	2,4,6-TRICHLOROPHENOL	MG_KG	N																
Newport_RA_SO_SVOCs	2,4-DICHLOROPHENOL	MG_KG	N																
Newport_RA_SO_SVOCs	2,4-DIMETHYLPHENOL	MG_KG	N																
Newport_RA_SO_SVOCs	2,4-DINITROPHENOL	MG_KG	N																
Newport_RA_SO_SVOCs	2,4-DINITROTOLUENE	MG_KG	N																
Newport_RA_SO_SVOCs	2,6-DICHLOROPHENOL	MG_KG	N																
Newport_RA_SO_SVOCs	2,6-DINITROTOLUENE	MG_KG	N																
Newport_RA_SO_SVOCs	2-CHLORONAPHTHALENE	MG_KG	N																
Newport_RA_SO_SVOCs	2-CHLOROPHENOL	MG_KG	N																
Newport_RA_SO_SVOCs	2-METHYLNAPHTHALENE	MG_KG	N																
Newport_RA_SO_SVOCs	2-METHYLPHENOL	MG_KG	N																
Newport_RA_SO_SVOCs	2-NITROANILINE	MG_KG	N																
Newport_RA_SO_SVOCs	2-NITROPHENOL	MG_KG	N																
Newport_RA_SO_SVOCs	3- AND 4-METHYLPHENOL	MG_KG	N																
Newport_RA_SO_SVOCs	3,3-DICHLOROBENZIDINE	MG_KG	N																
Newport_RA_SO_SVOCs	3-NITROANILINE	MG_KG	N																
Newport_RA_SO_SVOCs	4,6-DINITRO-2-METHYLPHENOL	MG_KG	N																
Newport_RA_SO_SVOCs	4-BROMOPHENYL-PHENYLETHER	MG_KG	N																
Newport_RA_SO_SVOCs	4-CHLORO-3-METHYLPHENOL	MG_KG	N																
Newport_RA_SO_SVOCs	4-CHLOROANILINE	MG_KG	N																
Newport_RA_SO_SVOCs	4-CHLOROPHENYL-PHENYLETHER	MG_KG	N																
Newport_RA_SO_SVOCs	4-METHYLPHENOL	MG_KG	N																
Newport_RA_SO_SVOCs	4-NITROANILINE	MG_KG	N																
Newport_RA_SO_SVOCs	4-NITROPHENOL	MG_KG	N																
Newport_RA_SO_SVOCs	ACENAPHTHENE	MG_KG	N	0.024		< 0.011	U	0.023	J	< 0.011	U					0.011	J		
Newport_RA_SO_SVOCs	ACENAPHTHYLENE	MG_KG	N	0.086		0.0072	J	0.0078	J	< 0.011	U					0.03			
Newport_RA_SO_SVOCs	ACETOPHENONE	MG_KG	N																
Newport_RA_SO_SVOCs	ANTHRACENE	MG_KG	N	0.092		< 0.011	UJ	0.038		< 0.011	UJ					0.026			
Newport_RA_SO_SVOCs	ATRAZINE	MG_KG	N																
Newport_RA_SO_SVOCs	BENZALDEHYDE	MG_KG	N																

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	CRP-SB217		CRP-SB217		CRP-SB217		CRP-SB217		CRP-SB217		CRP-SB218		CRP-SB218		CRP-SB218	
			Sample Date	12/10/2013		12/10/2013		12/10/2013		12/10/2013		12/10/2013		12/11/2013		12/11/2013		12/11/2013	
			Sample ID	OU09 SS217 0001		OU09 SB217 0102		OU09 SB217 0305		OU09 SB217 0608		OU09 SB217 0108		FDSB12111305		OU09 SS218 0001		FDSB12111306	
			Sample Type	N		N		N		N		N		FD		N		FD	
			start_depth	0		1		3		6		1		0		0		1	
			end_depth	1		2		5		8		8		1		1		2	
			depth_unit	FT		FT		FT		FT		FT		FT		FT		FT	
			depth_interval	0 - 1 ft		1 - 2 ft		3 - 5 ft		6 - 8 ft		1 - 8 ft		0 - 1 ft		0 - 1 ft		1 - 2 ft	
			task_code	MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO	
			validated_yn	Y		Y		Y		Y		N		Y		Y		Y	
method_analyte_group	Chemical	Unit	Fraction	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers
Newport_RA_SO_SVOCs	BENZIDINE	MG_KG	N																
Newport_RA_SO_SVOCs	BENZO[A]ANTHRACENE	MG_KG	N	1.2		0.068		0.59		< 0.011	U					0.29			
Newport_RA_SO_SVOCs	BENZO[A]PYRENE	MG_KG	N	1.1	J	0.064		0.4	J	< 0.011	U					0.26	J		
Newport_RA_SO_SVOCs	BENZO[B]FLUORANTHENE	MG_KG	N	1	J	0.085		0.24	J	< 0.011	U					0.47	J		
Newport_RA_SO_SVOCs	BENZO[G,H,I]PERYLENE	MG_KG	N	0.25	J	0.034	J	0.16	J	< 0.011	UJ					0.12	J		
Newport_RA_SO_SVOCs	BENZO[K]FLUORANTHENE	MG_KG	N	0.31	J	0.031	J	0.096	J	< 0.011	UJ					0.14			
Newport_RA_SO_SVOCs	BENZOIC ACID	MG_KG	N																
Newport_RA_SO_SVOCs	BENZYL ALCOHOL	MG_KG	N																
Newport_RA_SO_SVOCs	BIS(2-CHLOROETHOXY)METHANE	MG_KG	N																
Newport_RA_SO_SVOCs	BIS(2-CHLOROETHYL)ETHER	MG_KG	N																
Newport_RA_SO_SVOCs	BIS(2-ETHYLHEXYL)PHTHALATE	MG_KG	N																
Newport_RA_SO_SVOCs	BUTYLBENZYLPHTHALATE	MG_KG	N																
Newport_RA_SO_SVOCs	CAPROLACTAM	MG_KG	N																
Newport_RA_SO_SVOCs	CARBAZOLE	MG_KG	N																
Newport_RA_SO_SVOCs	CHRYSENE	MG_KG	N	1.6		0.098		0.92		< 0.011	U					0.57			
Newport_RA_SO_SVOCs	DIBENZ[A,H]ANTHRACENE	MG_KG	N	0.21	J	0.029	J	0.11	J	< 0.011	UJ					0.08			
Newport_RA_SO_SVOCs	DIBENZOFURAN	MG_KG	N																
Newport_RA_SO_SVOCs	DIETHYLPHTHALATE	MG_KG	N																
Newport_RA_SO_SVOCs	DIMETHYL PHTHALATE	MG_KG	N																
Newport_RA_SO_SVOCs	DI-N-BUTYLPHTHALATE	MG_KG	N																
Newport_RA_SO_SVOCs	DI-N-OCTYLPHTHALATE	MG_KG	N																
Newport_RA_SO_SVOCs	FLUORANTHENE	MG_KG	N	1.4		0.086		0.27		< 0.011	U					0.58			
Newport_RA_SO_SVOCs	FLUORENE	MG_KG	N	0.035		< 0.011	U	0.014	J	< 0.011	U					0.017	J		
Newport_RA_SO_SVOCs	HEXACHLOROBENZENE	MG_KG	N																
Newport_RA_SO_SVOCs	HEXACHLOROBUTADIENE	MG_KG	N																
Newport_RA_SO_SVOCs	HEXACHLOROCYCLOPENTADIENE	MG_KG	N																
Newport_RA_SO_SVOCs	HEXACHLOROETHANE	MG_KG	N																
Newport_RA_SO_SVOCs	HPAH, TOTAL	MG_KG	N	11		0.65		4.2		< 0.011	U					3.7			
Newport_RA_SO_SVOCs	INDENO[1,2,3-CD]PYRENE	MG_KG	N	0.34	J	0.045	J	0.35	J	< 0.011	UJ					0.19			
Newport_RA_SO_SVOCs	ISOPHORONE	MG_KG	N																
Newport_RA_SO_SVOCs	LPAH, TOTAL	MG_KG	N	1.2		0.061		0.31		< 0.011	U					0.44			
Newport_RA_SO_SVOCs	NAPHTHALENE	MG_KG	N	0.0097	J	< 0.011	U	0.016	J	< 0.011	U					0.0049	J		
Newport_RA_SO_SVOCs	NITROBENZENE	MG_KG	N																
Newport_RA_SO_SVOCs	N-NITROSODIMETHYLAMINE	MG_KG	N																
Newport_RA_SO_SVOCs	N-NITROSODINPROPYLAMINE	MG_KG	N																
Newport_RA_SO_SVOCs	N-NITROSODIPHENYLAMINE	MG_KG	N																
Newport_RA_SO_SVOCs	N-NITROSOPYRROLIDINE	MG_KG	N																
Newport_RA_SO_SVOCs	PAH, TOTAL	MG_KG	N	12		0.71		4.5		< 0.011	U					4.1			
Newport_RA_SO_SVOCs	PENTACHLOROPHENOL	MG_KG	N																
Newport_RA_SO_SVOCs	PHENANTHRENE	MG_KG	N	0.99		0.054		0.21		< 0.011	U					0.35			
Newport_RA_SO_SVOCs	PHENOL	MG_KG	N																
Newport_RA_SO_SVOCs	PYRENE	MG_KG	N	3.3		0.11	J	1.1		< 0.011	UJ					0.96			
Newport_RA_SO_VOCs	1,1,1,2-TETRACHLOROETHANE	MG_KG	N																
Newport_RA_SO_VOCs	1,1,1-TRICHLOROETHANE	MG_KG	N																
Newport_RA_SO_VOCs	1,1,2,2-TETRACHLOROETHANE	MG_KG	N																
Newport_RA_SO_VOCs	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	MG_KG	N																
Newport_RA_SO_VOCs	1,1,2-TRICHLOROETHANE	MG_KG	N																
Newport_RA_SO_VOCs	1,1-DICHLOROETHANE	MG_KG	N																
Newport_RA_SO_VOCs	1,1-DICHLOROETHENE	MG_KG	N																
Newport_RA_SO_VOCs	1,1-DICHLOROPROPENE	MG_KG	N																
Newport_RA_SO_VOCs	1,2,3-TRICHLOROBENZENE	MG_KG	N																
Newport_RA_SO_VOCs	1,2,3-TRICHLOROPROPANE	MG_KG	N																
Newport_RA_SO_VOCs	1,2,4-TRICHLOROBENZENE	MG_KG	N																
Newport_RA_SO_VOCs	1,2,4-TRIMETHYLBENZENE	MG_KG	N																
Newport_RA_SO_VOCs	1,2-DIBROMO-3-CHLOROPROPANE	MG_KG	N																
Newport_RA_SO_VOCs	1,2-DIBROMOETHANE	MG_KG	N																
Newport_RA_SO_VOCs	1,2-DICHLOROBENZENE	MG_KG	N																
Newport_RA_SO_VOCs	1,2-DICHLOROETHANE	MG_KG	N																
Newport_RA_SO_VOCs	1,2-DICHLOROETHENE, TOTAL	MG_KG	N																
Newport_RA_SO_VOCs	1,2-DICHLOROPROPANE	MG_KG	N																
Newport_RA_SO_VOCs	1,3,5-TRIMETHYLBENZENE	MG_KG	N																
Newport_RA_SO_VOCs	1,3-DICHLOROBENZENE	MG_KG	N																
Newport_RA_SO_VOCs	1,3-DICHLOROPROPANE	MG_KG	N																
Newport_RA_SO_VOCs	1,4-DICHLOROBENZENE	MG_KG	N																
Newport_RA_SO_VOCs	2,2-DICHLOROPROPANE	MG_KG	N																
Newport_RA_SO_VOCs	2-BUTANONE	MG_KG	N																

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	CRP-SB217		CRP-SB217		CRP-SB217		CRP-SB217		CRP-SB217		CRP-SB218		CRP-SB218		CRP-SB218	
			Sample Date	12/10/2013		12/10/2013		12/10/2013		12/10/2013		12/10/2013		12/11/2013		12/11/2013		12/11/2013	
			Sample ID	OU09 SS217 0001		OU09 SB217 0102		OU09 SB217 0305		OU09 SB217 0608		OU09 SB217 0108		FDSB12111305		OU09 SS218 0001		FDSB12111306	
			Sample Type	N		N		N		N		N		FD		N		FD	
			start_depth	0		1		3		6		1		0		0		1	
			end_depth	1		2		5		8		8		1		1		2	
			depth_unit	FT		FT		FT		FT		FT		FT		FT		FT	
			depth_interval	0 - 1 ft		1 - 2 ft		3 - 5 ft		6 - 8 ft		1 - 8 ft		0 - 1 ft		0 - 1 ft		1 - 2 ft	
			task_code	MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO	
			validated_yn	Y		Y		Y		Y		N		Y		Y		Y	
method_analyte_group	Chemical	Unit	Fraction	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers
Newport_RA_SO_VOCs	2-CHLOROTOLUENE	MG_KG	N																
Newport_RA_SO_VOCs	2-HEXANONE	MG_KG	N																
Newport_RA_SO_VOCs	4-CHLOROTOLUENE	MG_KG	N																
Newport_RA_SO_VOCs	4-ISOPROPYLTOLUENE	MG_KG	N																
Newport_RA_SO_VOCs	4-METHYL-2-PENTANONE	MG_KG	N																
Newport_RA_SO_VOCs	ACETONE	MG_KG	N																
Newport_RA_SO_VOCs	BENZENE	MG_KG	N																
Newport_RA_SO_VOCs	BROMOBENZENE	MG_KG	N																
Newport_RA_SO_VOCs	BROMOCHLOROMETHANE	MG_KG	N																
Newport_RA_SO_VOCs	BROMODICHLOROMETHANE	MG_KG	N																
Newport_RA_SO_VOCs	BROMOFORM	MG_KG	N																
Newport_RA_SO_VOCs	BROMOMETHANE	MG_KG	N																
Newport_RA_SO_VOCs	CARBON DISULFIDE	MG_KG	N																
Newport_RA_SO_VOCs	CARBON TETRACHLORIDE	MG_KG	N																
Newport_RA_SO_VOCs	CHLOROBENZENE	MG_KG	N																
Newport_RA_SO_VOCs	CHLOROETHANE	MG_KG	N																
Newport_RA_SO_VOCs	CHLOROFORM	MG_KG	N																
Newport_RA_SO_VOCs	CHLOROMETHANE	MG_KG	N																
Newport_RA_SO_VOCs	CIS-1,2-DICHLOROETHENE	MG_KG	N																
Newport_RA_SO_VOCs	CIS-1,3-DICHLOROPROPENE	MG_KG	N																
Newport_RA_SO_VOCs	CYCLOHEXANE	MG_KG	N																
Newport_RA_SO_VOCs	DIBROMOCHLOROMETHANE	MG_KG	N																
Newport_RA_SO_VOCs	DIBROMOMETHANE	MG_KG	N																
Newport_RA_SO_VOCs	DICHLORODIFLUOROMETHANE	MG_KG	N																
Newport_RA_SO_VOCs	ETHYLBENZENE	MG_KG	N																
Newport_RA_SO_VOCs	HEXACHLOROBUTADIENE	MG_KG	N																
Newport_RA_SO_VOCs	ISOPROPYLBENZENE	MG_KG	N																
Newport_RA_SO_VOCs	M- AND P-XYLENE	MG_KG	N																
Newport_RA_SO_VOCs	METHYL ACETATE	MG_KG	N																
Newport_RA_SO_VOCs	METHYL CYCLOHEXANE	MG_KG	N																
Newport_RA_SO_VOCs	METHYL TERT-BUTYL ETHER	MG_KG	N																
Newport_RA_SO_VOCs	METHYLENE CHLORIDE	MG_KG	N																
Newport_RA_SO_VOCs	NAPHTHALENE	MG_KG	N																
Newport_RA_SO_VOCs	N-BUTYLBENZENE	MG_KG	N																
Newport_RA_SO_VOCs	O-XYLENE	MG_KG	N																
Newport_RA_SO_VOCs	PROPYLBENZENE	MG_KG	N																
Newport_RA_SO_VOCs	SEC-BUTYLBENZENE	MG_KG	N																
Newport_RA_SO_VOCs	STYRENE	MG_KG	N																
Newport_RA_SO_VOCs	TERT-BUTANOL	MG_KG	N																
Newport_RA_SO_VOCs	TERT-BUTYLBENZENE	MG_KG	N																
Newport_RA_SO_VOCs	TETRACHLOROETHENE	MG_KG	N																
Newport_RA_SO_VOCs	TOLUENE	MG_KG	N																
Newport_RA_SO_VOCs	TRANS-1,2-DICHLOROETHENE	MG_KG	N																
Newport_RA_SO_VOCs	TRANS-1,3-DICHLOROPROPENE	MG_KG	N																
Newport_RA_SO_VOCs	TRICHLOROETHENE	MG_KG	N																
Newport_RA_SO_VOCs	TRICHLOROFLUOROMETHANE	MG_KG	N																
Newport_RA_SO_VOCs	VINYL CHLORIDE	MG_KG	N																
Newport_RA_SO_VOCs	XYLENES, TOTAL	MG_KG	N																

Notes:
U or < - Non-detect at laboratory detection limit.
J - The compound was positively identified; however, the associated numerical value is an estimated concentration only (+ and - indicate bias).
Sample Type - N = normal sample, FD = duplicate sample.
mg/kg - milligram per kilogram

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	CRP-SB218		CRP-SB218		CRP-SB219		CRP-SB219		CRP-SB220		CRP-SB220		CRP-SB220		CRP-SB222	
			Sample Date	12/11/2013		12/11/2013		12/11/2013		12/11/2013		12/11/2013		12/11/2013		12/11/2013		12/12/2013	
			Sample ID	OU09 SB218 0102		OU09 SB218 0305		OU09 SS219 0001		OU09 SB219 0305		OU09 SB220 0001		OU09 SB220 0305		FDSS12111312		OU09 SB222 0001	
			Sample Type	N		N		N		N		N		N		FD		N	
			start_depth	1		3		0		3		0		3		0		0	
			end_depth	2		5		1		5		1		5		1		1	
			depth_unit	FT		FT		FT		FT		FT		FT		FT		FT	
			depth_interval	1 - 2 ft		3 - 5 ft		0 - 1 ft		3 - 5 ft		0 - 1 ft		3 - 5 ft		0 - 1 ft		0 - 1 ft	
			task_code	MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO	
			validated_yn	Y		Y		Y		Y		Y		Y		Y		Y	
method_analyte_group	Chemical	Unit	Fraction	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers
Newport_RA_SO_Energetics	2,4-DINITROTOLUENE	MG_KG	N	< 0.043	U	< 0.046	U	< 0.049	U	< 0.042	U	< 0.049	U	< 0.049	U				
Newport_RA_SO_Energetics	2,6-DINITROTOLUENE	MG_KG	N																
Newport_RA_SO_Energetics	NITROGLYCERIN	MG_KG	N	< 0.34	U	< 0.37	U	< 0.39	U	< 0.34	U	0.55	J	< 0.39	U				
Newport_RA_SO_Metals	ALUMINUM	MG_KG	N	9160		7170		11900		9080		8700		5670		9780		8640	
Newport_RA_SO_Metals	ANTIMONY	MG_KG	N	< 0.094	UJ	0.09	J-	0.43	J-	0.11	J-	0.32	J-	0.10	J-	0.33	J-	4.1	J-
Newport_RA_SO_Metals	ARSENIC	MG_KG	N	6.4	J	7.9	J	13.3	J	10	J	19.3	J	6.4		23.6	J	15.9	J
Newport_RA_SO_Metals	BARIUM	MG_KG	N	18.4		23.9		18.9		20.4		22.8		15.5		23.5		12.5	
Newport_RA_SO_Metals	BERYLLIUM	MG_KG	N	0.34	J-	0.39	J-	0.27	J-	0.44	J-	0.39	J-	0.35		0.40	J-	0.32	J-
Newport_RA_SO_Metals	CADMIUM	MG_KG	N	< 0.094	UJ	< 0.068	UJ	0.18	J	< 0.071	UJ	0.15	J	< 0.070	UJ	0.17	J	0.19	J
Newport_RA_SO_Metals	CALCIUM	MG_KG	N	793	J	374	J	4520	J	447	J	2330	J	1080	J	1980	J	1350	J
Newport_RA_SO_Metals	CHROMIUM VI	MG_KG	N							0.63	J								
Newport_RA_SO_Metals	CHROMIUM, TOTAL	MG_KG	N	11.2	J	10.3	J	15.6	J	13.4	J	11.6	J	7.5		12.0	J	12.4	J
Newport_RA_SO_Metals	COBALT	MG_KG	N	8.2	J-	14.2	J-	13.9	J-	12.5	J-	10.3	J-	10.5		11.5	J-	21.2	J-
Newport_RA_SO_Metals	COPPER	MG_KG	N	12.3	J	19.8	J	42.6	J	17.5	J	17.4	J	14.6	J-	20.4	J	30.8	J
Newport_RA_SO_Metals	IRON	MG_KG	N	22200		30400		88500		34100		22200		22100		25700		35500	
Newport_RA_SO_Metals	IRON, FERROUS	MG_KG	N																
Newport_RA_SO_Metals	LEAD	MG_KG	N	10.6	J	8.7	J	63.3	J	9.2	J	43.4	J	12.6	J+	51.0	J	496	J
Newport_RA_SO_Metals	MAGNESIUM	MG_KG	N	1890		1880		10100		1950		2230	J	1450	J	2540	J	3660	J
Newport_RA_SO_Metals	MANGANESE	MG_KG	N	332		478		462		378		387		383		448		929	
Newport_RA_SO_Metals	MERCURY	MG_KG	N	< 0.029	UJ	< 0.015	UJ	0.02	J	< 0.033	UJ	0.03	J	0.03		0.04	J	< 0.012	UJ
Newport_RA_SO_Metals	NICKEL	MG_KG	N	18.7	J-	22.3	J-	27.5	J-	19.1	J-	20.5	J-	13.0		21.4	J-	33.7	J-
Newport_RA_SO_Metals	POTASSIUM	MG_KG	N	295	J+	523	J+	296	J+	454	J+	343	J+	684		372	J+	494	J+
Newport_RA_SO_Metals	SELENIUM	MG_KG	N	< 0.47	UJ	< 0.34	UJ	< 0.40	UJ	0.38	J-	0.37	J-	< 0.35	U	0.39	J-	0.30	J-
Newport_RA_SO_Metals	SILVER	MG_KG	N	0.03	J	0.02	J	0.09		0.03	J	0.09		0.02	J	0.1		0.04	J
Newport_RA_SO_Metals	SODIUM	MG_KG	N	< 94	U	< 68	U	< 81	U	< 71	U	< 64	U	< 70	U	< 71	U	625	
Newport_RA_SO_Metals	THALLIUM	MG_KG	N	0.06	J	0.06	J	0.04	J	0.06	J	0.06	J	0.06	J	0.06	J	0.09	
Newport_RA_SO_Metals	VANADIUM	MG_KG	N	16.1	J	15.0	J	21.2	J	19.3	J	16.4	J	12.0		17.7	J	13.4	J
Newport_RA_SO_Metals	ZINC	MG_KG	N	44.8	J	52.7	J	82.6	J	45.8	J	86.5	J	39.6		90.4	J	71.3	J
Newport_RA_SO_Other	DENSITY	G_CC	N																
Newport_RA_SO_Other	Pellet count	COUNT	N																
Newport_RA_SO_Other	Pellet weight	PCT	N																
Newport_RA_SO_Other	PERCENT FINES	PCT	N																
Newport_RA_SO_Other	PERCENT GRAVEL	PCT	N																
Newport_RA_SO_Other	PERCENT SAND	PCT	N																
Newport_RA_SO_Other	PERCENT SAND, COARSE	PCT	N																
Newport_RA_SO_Other	PERCENT SAND, FINE	PCT	N																
Newport_RA_SO_Other	PERCENT SAND, MEDIUM	PCT	N																
Newport_RA_SO_Other	PH	PH	N																
Newport_RA_SO_Other	POROSITY	PCT	N																
Newport_RA_SO_Other	SIEVE 1 INCH (25.4-MM)	PCT	N																
Newport_RA_SO_Other	SIEVE 1-1/2 INCH (37.5-MM)	PCT	N																
Newport_RA_SO_Other	SIEVE 2 INCH (50-MM)	PCT	N																
Newport_RA_SO_Other	SIEVE 3 INCH (75-MM)	PCT	N																
Newport_RA_SO_Other	SIEVE 3/4 INCH (19-MM)	PCT	N																
Newport_RA_SO_Other	SIEVE 3/8 INCH (9.5-MM)	PCT	N																
Newport_RA_SO_Other	SIEVE NO. 004 (4.75-MM)	PCT	N																
Newport_RA_SO_Other	SIEVE NO. 010 (2-MM)	PCT	N																
Newport_RA_SO_Other	SIEVE NO. 020 (850-UM)	PCT	N																
Newport_RA_SO_Other	SIEVE NO. 040 (425-UM)	PCT	N																
Newport_RA_SO_Other	SIEVE NO. 060 (250-UM)	PCT	N																
Newport_RA_SO_Other	SIEVE NO. 080 (180-UM)	PCT	N																
Newport_RA_SO_Other	SIEVE NO. 100 (150-UM)	PCT	N																
Newport_RA_SO_Other	SIEVE NO. 200 (75-UM)	PCT	N																
Newport_RA_SO_Other	SPECIFIC CONDUCTANCE	UMHO_CM	N																
Newport_RA_SO_Other	SPECIFIC GRAVITY	NONE	N																
Newport_RA_SO_Other	SULFIDE	MG_KG	N																
Newport_RA_SO_Other	TPH-DIESEL RANGE	MG_KG	N																
Newport_RA_SO_Other	TPH-TOTAL UNKNOWN GASOLINE RANGE ORGANICS	MG_KG	N																
Newport_RA_SO_Other	Void Ratio	NONE	N																
Newport_RA_SO_PCBs	AROCLOR-1016	MG_KG	N																
Newport_RA_SO_PCBs	AROCLOR-1221	MG_KG	N																
Newport_RA_SO_PCBs	AROCLOR-1232	MG_KG	N																
Newport_RA_SO_PCBs	AROCLOR-1242	MG_KG	N																
Newport_RA_SO_PCBs	AROCLOR-1248	MG_KG	N																
Newport_RA_SO_PCBs	AROCLOR-1254	MG_KG	N																
Newport_RA_SO_PCBs	AROCLOR-1260	MG_KG	N																

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	CRP-SB218		CRP-SB218		CRP-SB219		CRP-SB219		CRP-SB220		CRP-SB220		CRP-SB220		CRP-SB222	
			Sample Date	12/11/2013		12/11/2013		12/11/2013		12/11/2013		12/11/2013		12/11/2013		12/11/2013		12/12/2013	
			Sample ID	OU09 SB218 0102		OU09 SB218 0305		OU09 SS219 0001		OU09 SB219 0305		OU09 SB220 0001		OU09 SB220 0305		FDSS12111312		OU09 SB222 0001	
			Sample Type	N		N		N		N		N		N		FD		N	
			start_depth	1		3		0		3		0		3		0		0	
			end_depth	2		5		1		5		1		5		1		1	
			depth_unit	FT		FT		FT		FT		FT		FT		FT		FT	
			depth_interval	1 - 2 ft		3 - 5 ft		0 - 1 ft		3 - 5 ft		0 - 1 ft		3 - 5 ft		0 - 1 ft		0 - 1 ft	
			task_code	MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO	
			validated_yn	Y		Y		Y		Y		Y		Y		Y		Y	
method_analyte_group	Chemical	Unit	Fraction	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers
Newport_RA_SO_PCBs	AROCLOR-1262	MG_KG	N																
Newport_RA_SO_PCBs	AROCLOR-1268	MG_KG	N																
Newport_RA_SO_PCBs	PCB, TOTAL	MG_KG	N																
Newport_RA_SO_PCBs	POLYCHLORINATED BIPHENYLS (PCBS)	MG_KG	N																
Newport_RA_SO_Pesticides	4,4-DDD	MG_KG	N																
Newport_RA_SO_Pesticides	4,4-DDE	MG_KG	N																
Newport_RA_SO_Pesticides	4,4-DDT	MG_KG	N																
Newport_RA_SO_Pesticides	ALDRIN	MG_KG	N																
Newport_RA_SO_Pesticides	ALPHA-BHC	MG_KG	N																
Newport_RA_SO_Pesticides	ALPHA-CHLORDANE	MG_KG	N																
Newport_RA_SO_Pesticides	BETA-BHC	MG_KG	N																
Newport_RA_SO_Pesticides	DDT, TOTAL	MG_KG	N																
Newport_RA_SO_Pesticides	DELTA-BHC	MG_KG	N																
Newport_RA_SO_Pesticides	DIELDRIN	MG_KG	N																
Newport_RA_SO_Pesticides	ENDOSULFAN I	MG_KG	N																
Newport_RA_SO_Pesticides	ENDOSULFAN II	MG_KG	N																
Newport_RA_SO_Pesticides	ENDOSULFAN SULFATE	MG_KG	N																
Newport_RA_SO_Pesticides	ENDRIN	MG_KG	N																
Newport_RA_SO_Pesticides	ENDRIN ALDEHYDE	MG_KG	N																
Newport_RA_SO_Pesticides	ENDRIN KETONE	MG_KG	N																
Newport_RA_SO_Pesticides	GAMMA-CHLORDANE	MG_KG	N																
Newport_RA_SO_Pesticides	HEPTACHLOR	MG_KG	N																
Newport_RA_SO_Pesticides	HEPTACHLOR EPOXIDE	MG_KG	N																
Newport_RA_SO_Pesticides	LINDANE	MG_KG	N																
Newport_RA_SO_Pesticides	METHOXYCHLOR	MG_KG	N																
Newport_RA_SO_Pesticides	TOXAPHENE	MG_KG	N																
Newport_RA_SO_Pesticides	TRANS-CHLORDANE	MG_KG	N																
Newport_RA_SO_SVOCs	1,1-BIPHENYL	MG_KG	N																
Newport_RA_SO_SVOCs	1-METHYLNAPHTHALENE	MG_KG	N																
Newport_RA_SO_SVOCs	1,2,4-TRICHLOROBENZENE	MG_KG	N																
Newport_RA_SO_SVOCs	1,2-DICHLOROBENZENE	MG_KG	N																
Newport_RA_SO_SVOCs	1,2-DIPHENYLHYDRAZINE	MG_KG	N																
Newport_RA_SO_SVOCs	1,3-DICHLOROBENZENE	MG_KG	N																
Newport_RA_SO_SVOCs	1,4-DICHLOROBENZENE	MG_KG	N																
Newport_RA_SO_SVOCs	2,2'-OXYBIS(1-CHLOROPROPANE)	MG_KG	N																
Newport_RA_SO_SVOCs	2,4,5-TRICHLOROPHENOL	MG_KG	N																
Newport_RA_SO_SVOCs	2,4,6-TRICHLOROPHENOL	MG_KG	N																
Newport_RA_SO_SVOCs	2,4-DICHLOROPHENOL	MG_KG	N																
Newport_RA_SO_SVOCs	2,4-DIMETHYLPHENOL	MG_KG	N																
Newport_RA_SO_SVOCs	2,4-DINITROPHENOL	MG_KG	N																
Newport_RA_SO_SVOCs	2,4-DINITROTOLUENE	MG_KG	N																
Newport_RA_SO_SVOCs	2,6-DICHLOROPHENOL	MG_KG	N																
Newport_RA_SO_SVOCs	2,6-DINITROTOLUENE	MG_KG	N																
Newport_RA_SO_SVOCs	2-CHLORONAPHTHALENE	MG_KG	N																
Newport_RA_SO_SVOCs	2-CHLOROPHENOL	MG_KG	N																
Newport_RA_SO_SVOCs	2-METHYLNAPHTHALENE	MG_KG	N																
Newport_RA_SO_SVOCs	2-METHYLPHENOL	MG_KG	N																
Newport_RA_SO_SVOCs	2-NITROANILINE	MG_KG	N																
Newport_RA_SO_SVOCs	2-NITROPHENOL	MG_KG	N																
Newport_RA_SO_SVOCs	3- AND 4-METHYLPHENOL	MG_KG	N																
Newport_RA_SO_SVOCs	3,3-DICHLOROBENZIDINE	MG_KG	N																
Newport_RA_SO_SVOCs	3-NITROANILINE	MG_KG	N																
Newport_RA_SO_SVOCs	4,6-DINITRO-2-METHYLPHENOL	MG_KG	N																
Newport_RA_SO_SVOCs	4-BROMOPHENYL-PHENYLETHER	MG_KG	N																
Newport_RA_SO_SVOCs	4-CHLORO-3-METHYLPHENOL	MG_KG	N																
Newport_RA_SO_SVOCs	4-CHLOROANILINE	MG_KG	N																
Newport_RA_SO_SVOCs	4-CHLOROPHENYL-PHENYLETHER	MG_KG	N																
Newport_RA_SO_SVOCs	4-METHYLPHENOL	MG_KG	N																
Newport_RA_SO_SVOCs	4-NITROANILINE	MG_KG	N																
Newport_RA_SO_SVOCs	4-NITROPHENOL	MG_KG	N																
Newport_RA_SO_SVOCs	ACENAPHTHENE	MG_KG	N	< 0.01	U	< 0.011	U	0.0096	J	< 0.01	U	0.031	J	0.0023	J	0.07	J	0.0056	J
Newport_RA_SO_SVOCs	ACENAPHTHYLENE	MG_KG	N	< 0.01	U	< 0.011	U	0.0018	J	< 0.01	U	< 0.012	U	< 0.011	U	< 0.01	U	< 0.0096	U
Newport_RA_SO_SVOCs	ACETOPHENONE	MG_KG	N																
Newport_RA_SO_SVOCs	ANTHRACENE	MG_KG	N	< 0.01	U	< 0.011	U	0.017	J	< 0.01	U	0.058	J	0.0036	J	0.1	J	0.0081	J
Newport_RA_SO_SVOCs	ATRAZINE	MG_KG	N																
Newport_RA_SO_SVOCs	BENZALDEHYDE	MG_KG	N																

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	CRP-SB218		CRP-SB218		CRP-SB219		CRP-SB219		CRP-SB220		CRP-SB220		CRP-SB220		CRP-SB222	
			Sample Date	12/11/2013		12/11/2013		12/11/2013		12/11/2013		12/11/2013		12/11/2013		12/11/2013		12/12/2013	
			Sample ID	OU09 SB218 0102		OU09 SB218 0305		OU09 SS219 0001		OU09 SB219 0305		OU09 SB220 0001		OU09 SB220 0305		FDSS12111312		OU09 SB222 0001	
			Sample Type	N		N		N		N		N		N		FD		N	
			start_depth	1		3		0		3		0		3		0		0	
			end_depth	2		5		1		5		1		5		1		1	
			depth_unit	FT		FT		FT		FT		FT		FT		FT		FT	
			depth_interval	1 - 2 ft		3 - 5 ft		0 - 1 ft		3 - 5 ft		0 - 1 ft		3 - 5 ft		0 - 1 ft		0 - 1 ft	
			task_code	MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO	
			validated_yn	Y		Y		Y		Y		Y		Y		Y		Y	
method_analyte_group	Chemical	Unit	Fraction	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers
Newport_RA_SO_SVOCs	BENZIDINE	MG_KG	N																
Newport_RA_SO_SVOCs	BENZO[A]ANTHRACENE	MG_KG	N	0.0046	J	< 0.021	U	0.12		< 0.01	U	0.36	J	0.028	J	1.1	J	0.068	
Newport_RA_SO_SVOCs	BENZO[A]PYRENE	MG_KG	N	0.0046	J	< 0.011	U	0.14		< 0.01	U	0.35	J	0.03	J	1.1	J	0.073	J
Newport_RA_SO_SVOCs	BENZO[B]FLUORANTHENE	MG_KG	N	< 0.02	U	< 0.011	U	0.2		< 0.021	U	0.52	J	0.046	J	0.81	J	0.094	J
Newport_RA_SO_SVOCs	BENZO[G,H,I]PERYLENE	MG_KG	N	< 0.01	UJ	< 0.011	UJ	0.067	J	< 0.01	UJ	0.13	J	0.012	J	0.29	J	0.031	J
Newport_RA_SO_SVOCs	BENZO[K]FLUORANTHENE	MG_KG	N	< 0.01	U	< 0.011	U	0.08	J	< 0.01	UJ	0.16	J	0.011	J	0.31	J	0.028	J
Newport_RA_SO_SVOCs	BENZOIC ACID	MG_KG	N																
Newport_RA_SO_SVOCs	BENZYL ALCOHOL	MG_KG	N																
Newport_RA_SO_SVOCs	BIS(2-CHLOROETHOXY)METHANE	MG_KG	N																
Newport_RA_SO_SVOCs	BIS(2-CHLOROETHYL)ETHER	MG_KG	N																
Newport_RA_SO_SVOCs	BIS(2-ETHYLHEXYL)PHTHALATE	MG_KG	N																
Newport_RA_SO_SVOCs	BUTYLBENZYLPHTHALATE	MG_KG	N																
Newport_RA_SO_SVOCs	CAPROLACTAM	MG_KG	N																
Newport_RA_SO_SVOCs	CARBAZOLE	MG_KG	N																
Newport_RA_SO_SVOCs	CHRYSENE	MG_KG	N	< 0.01	U	< 0.011	U	0.17		< 0.01	U	0.5	J	0.034	J	1.6	J	0.097	J
Newport_RA_SO_SVOCs	DIBENZ[A,H]ANTHRACENE	MG_KG	N	< 0.01	U	< 0.011	U	0.034		< 0.01	U	0.085	J	0.0045	J	0.21	J	0.01	J
Newport_RA_SO_SVOCs	DIBENZOFURAN	MG_KG	N																
Newport_RA_SO_SVOCs	DIETHYLPHTHALATE	MG_KG	N																
Newport_RA_SO_SVOCs	DIMETHYL PHTHALATE	MG_KG	N																
Newport_RA_SO_SVOCs	DI-N-BUTYLPHTHALATE	MG_KG	N																
Newport_RA_SO_SVOCs	DI-N-OCTYLPHTHALATE	MG_KG	N																
Newport_RA_SO_SVOCs	FLUORANTHENE	MG_KG	N	0.0039	J	< 0.021	U	0.19		< 0.021	U	0.49		0.041	J	0.7		0.074	
Newport_RA_SO_SVOCs	FLUORENE	MG_KG	N	< 0.01	U	< 0.011	U	0.0059	J	< 0.01	U	0.019	J	< 0.011	U	0.035	J	0.0035	J
Newport_RA_SO_SVOCs	HEXACHLOROBENZENE	MG_KG	N																
Newport_RA_SO_SVOCs	HEXACHLOROBUTADIENE	MG_KG	N																
Newport_RA_SO_SVOCs	HEXACHLOROCYCLOPENTADIENE	MG_KG	N																
Newport_RA_SO_SVOCs	HEXACHLOROETHANE	MG_KG	N																
Newport_RA_SO_SVOCs	HPAH, TOTAL	MG_KG	N	0.02		< 0.021	U	1.3		0.0026		3.5		0.26		9		0.59	
Newport_RA_SO_SVOCs	INDENO[1,2,3-CD]PYRENE	MG_KG	N	0.0025	J	< 0.011	U	0.09	J	< 0.01	UJ	0.24	J	0.016	J	0.56	J	0.04	
Newport_RA_SO_SVOCs	ISOPHORONE	MG_KG	N																
Newport_RA_SO_SVOCs	LPAH, TOTAL	MG_KG	N	0.0024		< 0.011	U	0.13		< 0.01	U	0.35		0.03		0.79		0.063	
Newport_RA_SO_SVOCs	NAPHTHALENE	MG_KG	N	< 0.01	U	< 0.011	U	< 0.01	U	< 0.01	U	0.0066	J	< 0.011	U	0.031	J	< 0.0096	U
Newport_RA_SO_SVOCs	NITROBENZENE	MG_KG	N																
Newport_RA_SO_SVOCs	N-NITROSODIMETHYLAMINE	MG_KG	N																
Newport_RA_SO_SVOCs	N-NITROSODINPROPYLAMINE	MG_KG	N																
Newport_RA_SO_SVOCs	N-NITROSODIPHENYLAMINE	MG_KG	N																
Newport_RA_SO_SVOCs	N-NITROSOPYRROLIDINE	MG_KG	N																
Newport_RA_SO_SVOCs	PAH, TOTAL	MG_KG	N	0.022		< 0.021	U	1.4		0.0026		3.8		0.29		9.8		0.65	
Newport_RA_SO_SVOCs	PENTACHLOROPHENOL	MG_KG	N																
Newport_RA_SO_SVOCs	PHENANTHRENE	MG_KG	N	0.0024	J	< 0.011	U	0.093		< 0.01	U	0.24	J	0.024	J	0.55	J	0.046	
Newport_RA_SO_SVOCs	PHENOL	MG_KG	N																
Newport_RA_SO_SVOCs	PYRENE	MG_KG	N	0.0042	J	< 0.011	UJ	0.16		0.0026	J	0.62	J	0.038	J	2.3	J	0.073	
Newport_RA_SO_VOCs	1,1,1,2-TETRACHLOROETHANE	MG_KG	N																
Newport_RA_SO_VOCs	1,1,1-TRICHLOROETHANE	MG_KG	N																
Newport_RA_SO_VOCs	1,1,2,2-TETRACHLOROETHANE	MG_KG	N																
Newport_RA_SO_VOCs	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	MG_KG	N																
Newport_RA_SO_VOCs	1,1,2-TRICHLOROETHANE	MG_KG	N																
Newport_RA_SO_VOCs	1,1-DICHLOROETHANE	MG_KG	N																
Newport_RA_SO_VOCs	1,1-DICHLOROETHENE	MG_KG	N																
Newport_RA_SO_VOCs	1,1-DICHLOROPROPENE	MG_KG	N																
Newport_RA_SO_VOCs	1,2,3-TRICHLOROBENZENE	MG_KG	N																
Newport_RA_SO_VOCs	1,2,3-TRICHLOROPROPANE	MG_KG	N																
Newport_RA_SO_VOCs	1,2,4-TRICHLOROBENZENE	MG_KG	N																
Newport_RA_SO_VOCs	1,2,4-TRIMETHYLBENZENE	MG_KG	N																
Newport_RA_SO_VOCs	1,2-DIBROMO-3-CHLOROPROPANE	MG_KG	N																
Newport_RA_SO_VOCs	1,2-DIBROMOETHANE	MG_KG	N																
Newport_RA_SO_VOCs	1,2-DICHLOROBENZENE	MG_KG	N																
Newport_RA_SO_VOCs	1,2-DICHLOROETHANE	MG_KG	N																
Newport_RA_SO_VOCs	1,2-DICHLOROETHENE, TOTAL	MG_KG	N																
Newport_RA_SO_VOCs	1,2-DICHLOROPROPANE	MG_KG	N																
Newport_RA_SO_VOCs	1,3,5-TRIMETHYLBENZENE	MG_KG	N																
Newport_RA_SO_VOCs	1,3-DICHLOROBENZENE	MG_KG	N																
Newport_RA_SO_VOCs	1,3-DICHLOROPROPANE	MG_KG	N																
Newport_RA_SO_VOCs	1,4-DICHLOROBENZENE	MG_KG	N																
Newport_RA_SO_VOCs	2,2-DICHLOROPROPANE	MG_KG	N																
Newport_RA_SO_VOCs	2-BUTANONE	MG_KG	N																

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	CRP-SB218		CRP-SB218		CRP-SB219		CRP-SB219		CRP-SB220		CRP-SB220		CRP-SB220		CRP-SB222	
			Sample Date	12/11/2013		12/11/2013		12/11/2013		12/11/2013		12/11/2013		12/11/2013		12/11/2013		12/12/2013	
			Sample ID	OU09 SB218 0102		OU09 SB218 0305		OU09 SS219 0001		OU09 SB219 0305		OU09 SB220 0001		OU09 SB220 0305		FDSS12111312		OU09 SB222 0001	
			Sample Type	N		N		N		N		N		N		FD		N	
			start_depth	1		3		0		3		0		3		0		0	
			end_depth	2		5		1		5		1		5		1		1	
			depth_unit	FT		FT		FT		FT		FT		FT		FT		FT	
			depth_interval	1 - 2 ft		3 - 5 ft		0 - 1 ft		3 - 5 ft		0 - 1 ft		3 - 5 ft		0 - 1 ft		0 - 1 ft	
			task_code	MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO	
			validated_yn	Y		Y		Y		Y		Y		Y		Y		Y	
method_analyte_group	Chemical	Unit	Fraction	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers
Newport_RA_SO_VOCs	2-CHLOROTOLUENE	MG_KG	N																
Newport_RA_SO_VOCs	2-HEXANONE	MG_KG	N																
Newport_RA_SO_VOCs	4-CHLOROTOLUENE	MG_KG	N																
Newport_RA_SO_VOCs	4-ISOPROPYLTOLUENE	MG_KG	N																
Newport_RA_SO_VOCs	4-METHYL-2-PENTANONE	MG_KG	N																
Newport_RA_SO_VOCs	ACETONE	MG_KG	N																
Newport_RA_SO_VOCs	BENZENE	MG_KG	N																
Newport_RA_SO_VOCs	BROMOBENZENE	MG_KG	N																
Newport_RA_SO_VOCs	BROMOCHLOROMETHANE	MG_KG	N																
Newport_RA_SO_VOCs	BROMODICHLOROMETHANE	MG_KG	N																
Newport_RA_SO_VOCs	BROMOFORM	MG_KG	N																
Newport_RA_SO_VOCs	BROMOMETHANE	MG_KG	N																
Newport_RA_SO_VOCs	CARBON DISULFIDE	MG_KG	N																
Newport_RA_SO_VOCs	CARBON TETRACHLORIDE	MG_KG	N																
Newport_RA_SO_VOCs	CHLOROBENZENE	MG_KG	N																
Newport_RA_SO_VOCs	CHLOROETHANE	MG_KG	N																
Newport_RA_SO_VOCs	CHLOROFORM	MG_KG	N																
Newport_RA_SO_VOCs	CHLOROMETHANE	MG_KG	N																
Newport_RA_SO_VOCs	CIS-1,2-DICHLOROETHENE	MG_KG	N																
Newport_RA_SO_VOCs	CIS-1,3-DICHLOROPROPENE	MG_KG	N																
Newport_RA_SO_VOCs	CYCLOHEXANE	MG_KG	N																
Newport_RA_SO_VOCs	DIBROMOCHLOROMETHANE	MG_KG	N																
Newport_RA_SO_VOCs	DIBROMOMETHANE	MG_KG	N																
Newport_RA_SO_VOCs	DICHLORODIFLUOROMETHANE	MG_KG	N																
Newport_RA_SO_VOCs	ETHYLBENZENE	MG_KG	N																
Newport_RA_SO_VOCs	HEXACHLOROBUTADIENE	MG_KG	N																
Newport_RA_SO_VOCs	ISOPROPYLBENZENE	MG_KG	N																
Newport_RA_SO_VOCs	M- AND P-XYLENE	MG_KG	N																
Newport_RA_SO_VOCs	METHYL ACETATE	MG_KG	N																
Newport_RA_SO_VOCs	METHYL CYCLOHEXANE	MG_KG	N																
Newport_RA_SO_VOCs	METHYL TERT-BUTYL ETHER	MG_KG	N																
Newport_RA_SO_VOCs	METHYLENE CHLORIDE	MG_KG	N																
Newport_RA_SO_VOCs	NAPHTHALENE	MG_KG	N																
Newport_RA_SO_VOCs	N-BUTYLBENZENE	MG_KG	N																
Newport_RA_SO_VOCs	O-XYLENE	MG_KG	N																
Newport_RA_SO_VOCs	PROPYLBENZENE	MG_KG	N																
Newport_RA_SO_VOCs	SEC-BUTYLBENZENE	MG_KG	N																
Newport_RA_SO_VOCs	STYRENE	MG_KG	N																
Newport_RA_SO_VOCs	TERT-BUTANOL	MG_KG	N																
Newport_RA_SO_VOCs	TERT-BUTYLBENZENE	MG_KG	N																
Newport_RA_SO_VOCs	TETRACHLOROETHENE	MG_KG	N																
Newport_RA_SO_VOCs	TOLUENE	MG_KG	N																
Newport_RA_SO_VOCs	TRANS-1,2-DICHLOROETHENE	MG_KG	N																
Newport_RA_SO_VOCs	TRANS-1,3-DICHLOROPROPENE	MG_KG	N																
Newport_RA_SO_VOCs	TRICHLOROETHENE	MG_KG	N																
Newport_RA_SO_VOCs	TRICHLOROFLUOROMETHANE	MG_KG	N																
Newport_RA_SO_VOCs	VINYL CHLORIDE	MG_KG	N																
Newport_RA_SO_VOCs	XYLENES, TOTAL	MG_KG	N																

Notes:
U or < - Non-detect at laboratory detection limit.
J - The compound was positively identified; however, the associated numerical value is an estimated concentration only (+ and - indicate bias).
Sample Type - N = normal sample, FD = duplicate sample.
mg/kg - milligram per kilogram

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	CRP-SB223		CRP-SB223		CRP-SB224		CRP-SB224		CRP-SB225		CRP-SB226		CRP-SB227		CRP-SB228	
			Sample Date	12/12/2013		12/12/2013		12/6/2013		12/6/2013		12/6/2013		12/5/2013		12/5/2013		12/9/2013	
			Sample ID	OU09 SB223 0001		OU09 SB223 0304		FDSS12061301		OU09 SS224 0001		OU09 SS225 0001		OU09 SS226 0001		OU09 SS227 0001		OU09 SS228 0001	
			Sample Type	N		N		FD		N		N		N		N		N	
			start_depth	0		3		0		0		0		0		0		0	
			end_depth	1		4		1		1		1		1		1		1	
			depth_unit	FT		FT		FT		FT		FT		FT		FT		FT	
			depth_interval	0 - 1 ft		3 - 4 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft	
			task_code	MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO	
			validated_yn	Y		Y		Y		Y		Y		Y		Y		Y	
method_analyte_group	Chemical	Unit	Fraction	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers
Newport_RA_SO_Energetics	2,4-DINITROTOLUENE	MG_KG	N															< 0.05	U
Newport_RA_SO_Energetics	2,6-DINITROTOLUENE	MG_KG	N																
Newport_RA_SO_Energetics	NITROGLYCERIN	MG_KG	N															0.31	J
Newport_RA_SO_Metals	ALUMINUM	MG_KG	N	7450		8520		5230		6080		5010		3380		4190			
Newport_RA_SO_Metals	ANTIMONY	MG_KG	N	6.5	J-	2.5	J-	189	J	2.4	J	0.63	J	0.33	J	0.26	J		
Newport_RA_SO_Metals	ARSENIC	MG_KG	N	5.9	J	4.9	J	48.9	J	8.3	J	7.6	J	3.9	J	5.2	J		
Newport_RA_SO_Metals	BARIUM	MG_KG	N	49.6		35.1		9.5	J-	13.6	J-	8.5	J-	6.7	J-	7.4	J-		
Newport_RA_SO_Metals	BERYLLIUM	MG_KG	N	0.35	J-	0.36	J-	0.24	J-	0.27	J-	0.24	J-	0.23	J-	0.36	J-		
Newport_RA_SO_Metals	CADMIUM	MG_KG	N	0.84	JJ	0.14	J	< 0.14	U	< 0.12	U	< 0.13	U	< 0.084	U	< 0.076	U		
Newport_RA_SO_Metals	CALCIUM	MG_KG	N	2280	J	1390	J	7700		4880		10000		342		8130			
Newport_RA_SO_Metals	CHROMIUM VI	MG_KG	N																
Newport_RA_SO_Metals	CHROMIUM, TOTAL	MG_KG	N	30.1	J	11.0	J	18.0	J-	12.4	J-	12.7	J-	9.0	J-	8.7	J-		
Newport_RA_SO_Metals	COBALT	MG_KG	N	10.8	J-	6.9	J-	12.3	J-	11.2	J-	9.3	J-	6.6	J-	7.5	J-		
Newport_RA_SO_Metals	COPPER	MG_KG	N	22.8	J	10.9	J	159	J	58.5	J	51.1	J	9.9	J	21.6	J		
Newport_RA_SO_Metals	IRON	MG_KG	N	23500		15900		39600		34200		31700		21500		28800			
Newport_RA_SO_Metals	IRON, FERROUS	MG_KG	N																
Newport_RA_SO_Metals	LEAD	MG_KG	N	1830	J	144	J	10900	J	417	J	177	J	8.2	J	32.3	J		
Newport_RA_SO_Metals	MAGNESIUM	MG_KG	N	7180	J	2430	J	2960		2840		2610		1250		1790			
Newport_RA_SO_Metals	MANGANESE	MG_KG	N	518		548		570		592		373		249		273			
Newport_RA_SO_Metals	MERCURY	MG_KG	N	0.19	J	0.05	J	0.07		0.07		0.04		0.05		0.03		0.04	J-
Newport_RA_SO_Metals	NICKEL	MG_KG	N	56.6	J-	13.0	J-	27.2	J-	26.1	J-	24.9	J-	14.0	J-	16.9	J-		
Newport_RA_SO_Metals	POTASSIUM	MG_KG	N	459	J+	353	J+	340	J-	376	J-	379	J-	258	J-	302	J-		
Newport_RA_SO_Metals	SELENIUM	MG_KG	N	< 0.43	UJ	< 0.35	UJ	< 0.40	UJ	< 0.42	UJ	< 0.41	UJ	< 0.42	UJ	< 0.38	UJ		
Newport_RA_SO_Metals	SILVER	MG_KG	N	0.10		0.07		0.62	J	0.04	J	0.03	J	0.02	J	0.03	J		
Newport_RA_SO_Metals	SODIUM	MG_KG	N	< 86.2	U	90.6		612	J-	585	J-	1860	J-	316	J-	598	J-		
Newport_RA_SO_Metals	THALLIUM	MG_KG	N	0.05	J	0.09		0.05	J	0.03	J	0.02	J	0.02	J	0.02	J		
Newport_RA_SO_Metals	VANADIUM	MG_KG	N	19.7	J	15.4	J	15.3	J-	15.1	J-	15.2	J-	12.0	J-	15.6	J-		
Newport_RA_SO_Metals	ZINC	MG_KG	N	433	J	58.5	J	153		101		116		54.7		81.0			
Newport_RA_SO_Other	DENSITY	G_CC	N																
Newport_RA_SO_Other	Pellet count	COUNT	N																
Newport_RA_SO_Other	Pellet weight	PCT	N																
Newport_RA_SO_Other	PERCENT FINES	PCT	N																
Newport_RA_SO_Other	PERCENT GRAVEL	PCT	N																
Newport_RA_SO_Other	PERCENT SAND	PCT	N																
Newport_RA_SO_Other	PERCENT SAND, COARSE	PCT	N																
Newport_RA_SO_Other	PERCENT SAND, FINE	PCT	N																
Newport_RA_SO_Other	PERCENT SAND, MEDIUM	PCT	N																
Newport_RA_SO_Other	PH	PH	N																
Newport_RA_SO_Other	POROSITY	PCT	N																
Newport_RA_SO_Other	SIEVE 1 INCH (25.4-MM)	PCT	N																
Newport_RA_SO_Other	SIEVE 1-1/2 INCH (37.5-MM)	PCT	N																
Newport_RA_SO_Other	SIEVE 2 INCH (50-MM)	PCT	N																
Newport_RA_SO_Other	SIEVE 3 INCH (75-MM)	PCT	N																
Newport_RA_SO_Other	SIEVE 3/4 INCH (19-MM)	PCT	N																
Newport_RA_SO_Other	SIEVE 3/8 INCH (9.5-MM)	PCT	N																
Newport_RA_SO_Other	SIEVE NO. 004 (4.75-MM)	PCT	N																
Newport_RA_SO_Other	SIEVE NO. 010 (2-MM)	PCT	N																
Newport_RA_SO_Other	SIEVE NO. 020 (850-UM)	PCT	N																
Newport_RA_SO_Other	SIEVE NO. 040 (425-UM)	PCT	N																
Newport_RA_SO_Other	SIEVE NO. 060 (250-UM)	PCT	N																
Newport_RA_SO_Other	SIEVE NO. 080 (180-UM)	PCT	N																
Newport_RA_SO_Other	SIEVE NO. 100 (150-UM)	PCT	N																
Newport_RA_SO_Other	SIEVE NO. 200 (75-UM)	PCT	N																
Newport_RA_SO_Other	SPECIFIC CONDUCTANCE	UMHO_CM	N																
Newport_RA_SO_Other	SPECIFIC GRAVITY	NONE	N																
Newport_RA_SO_Other	SULFIDE	MG_KG	N																
Newport_RA_SO_Other	TPH-DIESEL RANGE	MG_KG	N																
Newport_RA_SO_Other	TPH-TOTAL UNKNOWN GASOLINE RANGE ORGANICS	MG_KG	N																
Newport_RA_SO_Other	Void Ratio	NONE	N																
Newport_RA_SO_PCBs	AROCLOR-1016	MG_KG	N	< 1.9	U	< 0.18	U												
Newport_RA_SO_PCBs	AROCLOR-1221	MG_KG	N	< 1.9	U	< 0.18	U												
Newport_RA_SO_PCBs	AROCLOR-1232	MG_KG	N	< 2.2	U	< 0.21	U												
Newport_RA_SO_PCBs	AROCLOR-1242	MG_KG	N	< 1.9	U	< 0.18	U												
Newport_RA_SO_PCBs	AROCLOR-1248	MG_KG	N	< 1.9	U	< 0.18	U												
Newport_RA_SO_PCBs	AROCLOR-1254	MG_KG	N	< 1.9	U	< 0.18	U												
Newport_RA_SO_PCBs	AROCLOR-1260	MG_KG	N	270	J	18	J												

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	CRP-SB223		CRP-SB223		CRP-SB224		CRP-SB224		CRP-SB225		CRP-SB226		CRP-SB227		CRP-SB228	
			Sample Date	12/12/2013		12/12/2013		12/6/2013		12/6/2013		12/6/2013		12/5/2013		12/5/2013		12/9/2013	
			Sample ID	OU09 SB223 0001		OU09 SB223 0304		FDSS12061301		OU09 SS224 0001		OU09 SS225 0001		OU09 SS226 0001		OU09 SS227 0001		OU09 SS228 0001	
			Sample Type	N		N		FD		N		N		N		N		N	
			start_depth	0		3		0		0		0		0		0		0	
			end_depth	1		4		1		1		1		1		1		1	
			depth_unit	FT		FT		FT		FT		FT		FT		FT		FT	
			depth_interval	0 - 1 ft		3 - 4 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft	
			task_code	MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO	
			validated_yn	Y		Y		Y		Y		Y		Y		Y		Y	
method_analyte_group	Chemical	Unit	Fraction	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers
Newport_RA_SO_PCBs	AROCLOR-1262	MG_KG	N	< 1.9	U	< 0.18	U												
Newport_RA_SO_PCBs	AROCLOR-1268	MG_KG	N	< 1.9	U	< 0.18	U												
Newport_RA_SO_PCBs	PCB, TOTAL	MG_KG	N	270		18													
Newport_RA_SO_PCBs	POLYCHLORINATED BIPHENYLS (PCBS)	MG_KG	N																
Newport_RA_SO_Pesticides	4,4-DDD	MG_KG	N	< 0.037	U	< 0.0035	U												
Newport_RA_SO_Pesticides	4,4-DDE	MG_KG	N	< 0.037	U	0.081	J												
Newport_RA_SO_Pesticides	4,4-DDT	MG_KG	N	19	J	1.4	J												
Newport_RA_SO_Pesticides	ALDRIN	MG_KG	N	< 0.019	U	< 0.0018	U												
Newport_RA_SO_Pesticides	ALPHA-BHC	MG_KG	N	< 0.019	U	< 0.0018	U												
Newport_RA_SO_Pesticides	ALPHA-CHLORDANE	MG_KG	N	< 0.019	U	< 0.0018	U												
Newport_RA_SO_Pesticides	BETA-BHC	MG_KG	N	< 0.019	U	< 0.0018	U												
Newport_RA_SO_Pesticides	DDT, TOTAL	MG_KG	N																
Newport_RA_SO_Pesticides	DELTA-BHC	MG_KG	N	< 0.019	U	< 0.0018	U												
Newport_RA_SO_Pesticides	DIELDRIN	MG_KG	N	< 0.037	U	< 0.0035	U												
Newport_RA_SO_Pesticides	ENDOSULFAN I	MG_KG	N	< 0.019	U	< 0.0018	U												
Newport_RA_SO_Pesticides	ENDOSULFAN II	MG_KG	N	< 0.037	U	< 0.0035	U												
Newport_RA_SO_Pesticides	ENDOSULFAN SULFATE	MG_KG	N	12	J	0.85	J												
Newport_RA_SO_Pesticides	ENDRIN	MG_KG	N	< 0.037	U	< 0.0035	U												
Newport_RA_SO_Pesticides	ENDRIN ALDEHYDE	MG_KG	N	< 0.037	U	< 0.0035	U												
Newport_RA_SO_Pesticides	ENDRIN KETONE	MG_KG	N	< 0.037	U	< 0.0035	U												
Newport_RA_SO_Pesticides	GAMMA-CHLORDANE	MG_KG	N	< 0.019	U	< 0.0018	U												
Newport_RA_SO_Pesticides	HEPTACHLOR	MG_KG	N	< 0.019	U	< 0.0018	U												
Newport_RA_SO_Pesticides	HEPTACHLOR EPOXIDE	MG_KG	N	< 0.019	U	< 0.0018	U												
Newport_RA_SO_Pesticides	LINDANE	MG_KG	N	< 0.019	U	< 0.0018	U												
Newport_RA_SO_Pesticides	METHOXYCHLOR	MG_KG	N	< 0.19	U	< 0.018	U												
Newport_RA_SO_Pesticides	TOXAPHENE	MG_KG	N	< 0.37	UJ	< 0.035	UJ												
Newport_RA_SO_Pesticides	TRANS-CHLORDANE	MG_KG	N																
Newport_RA_SO_SVOCs	1,1-BIPHENYL	MG_KG	N	< 0.28	U	< 0.26	U												
Newport_RA_SO_SVOCs	1-METHYLNAPHTHALENE	MG_KG	N																
Newport_RA_SO_SVOCs	1,2,4-TRICHLOROBENZENE	MG_KG	N	< 0.28	U	< 0.26	UJ												
Newport_RA_SO_SVOCs	1,2-DICHLOROBENZENE	MG_KG	N	< 0.28	U	< 0.26	UJ												
Newport_RA_SO_SVOCs	1,2-DIPHENYLHYDRAZINE	MG_KG	N	< 0.56	U	< 0.51	U												
Newport_RA_SO_SVOCs	1,3-DICHLOROBENZENE	MG_KG	N	< 0.28	U	< 0.26	U												
Newport_RA_SO_SVOCs	1,4-DICHLOROBENZENE	MG_KG	N	< 0.28	U	< 0.26	U												
Newport_RA_SO_SVOCs	2,2'-OXYBIS(1-CHLOROPROPANE)	MG_KG	N	< 0.28	U	< 0.26	U												
Newport_RA_SO_SVOCs	2,4,5-TRICHLOROPHENOL	MG_KG	N	< 0.7	U	< 0.64	U												
Newport_RA_SO_SVOCs	2,4,6-TRICHLOROPHENOL	MG_KG	N	< 0.28	U	< 0.26	U												
Newport_RA_SO_SVOCs	2,4-DICHLOROPHENOL	MG_KG	N	< 0.28	U	< 0.26	U												
Newport_RA_SO_SVOCs	2,4-DIMETHYLPHENOL	MG_KG	N	< 0.28	U	< 0.26	U												
Newport_RA_SO_SVOCs	2,4-DINITROPHENOL	MG_KG	N	< 0.7	U	< 0.64	U												
Newport_RA_SO_SVOCs	2,4-DINITROTOLUENE	MG_KG	N	< 0.28	U	< 0.26	U												
Newport_RA_SO_SVOCs	2,6-DICHLOROPHENOL	MG_KG	N	< 0.28	U	< 0.26	U												
Newport_RA_SO_SVOCs	2,6-DINITROTOLUENE	MG_KG	N	< 0.28	U	< 0.26	U												
Newport_RA_SO_SVOCs	2-CHLORONAPHTHALENE	MG_KG	N	< 0.28	UJ	< 0.26	UJ												
Newport_RA_SO_SVOCs	2-CHLOROPHENOL	MG_KG	N	< 0.28	U	< 0.26	UJ												
Newport_RA_SO_SVOCs	2-METHYLNAPHTHALENE	MG_KG	N	< 0.28	U	< 0.26	U												
Newport_RA_SO_SVOCs	2-METHYLPHENOL	MG_KG	N	< 0.28	U	< 0.26	UJ												
Newport_RA_SO_SVOCs	2-NITROANILINE	MG_KG	N	< 0.7	U	< 0.64	U												
Newport_RA_SO_SVOCs	2-NITROPHENOL	MG_KG	N	< 0.28	U	< 0.26	UJ												
Newport_RA_SO_SVOCs	3- AND 4-METHYLPHENOL	MG_KG	N	< 0.28	U	< 0.26	U												
Newport_RA_SO_SVOCs	3,3-DICHLOROBENZIDINE	MG_KG	N	< 0.28	U	< 0.26	U												
Newport_RA_SO_SVOCs	3-NITROANILINE	MG_KG	N	< 0.7	U	< 0.64	U												
Newport_RA_SO_SVOCs	4,6-DINITRO-2-METHYLPHENOL	MG_KG	N	< 0.7	U	< 0.64	UJ												
Newport_RA_SO_SVOCs	4-BROMOPHENYL-PHENYLETHER	MG_KG	N	< 0.28	U	< 0.26	U												
Newport_RA_SO_SVOCs	4-CHLORO-3-METHYLPHENOL	MG_KG	N	< 0.28	U	< 0.26	U												
Newport_RA_SO_SVOCs	4-CHLOROANILINE	MG_KG	N	< 0.28	U	< 0.26	U												
Newport_RA_SO_SVOCs	4-CHLOROPHENYL-PHENYLETHER	MG_KG	N	< 0.28	U	< 0.26	U												
Newport_RA_SO_SVOCs	4-METHYLPHENOL	MG_KG	N																
Newport_RA_SO_SVOCs	4-NITROANILINE	MG_KG	N	< 0.7	U	< 0.64	UJ												
Newport_RA_SO_SVOCs	4-NITROPHENOL	MG_KG	N	< 0.7	U	< 0.64	UJ												
Newport_RA_SO_SVOCs	ACENAPHTHENE	MG_KG	N	0.0037	J	0.0016	J	0.072	J	0.022	J	0.14		0.0028	J	0.019	J		
Newport_RA_SO_SVOCs	ACENAPHTHYLENE	MG_KG	N	0.0030	J	< 0.0099	U	< 0.0098	U	< 0.011	U	< 0.012	U	< 0.01	U	< 0.01	U		
Newport_RA_SO_SVOCs	ACETOPHENONE	MG_KG	N																
Newport_RA_SO_SVOCs	ANTHRACENE	MG_KG	N	0.011	J	0.0024	J	0.084	J	0.033	J	0.2		0.0041	J	0.03			
Newport_RA_SO_SVOCs	ATRAZINE	MG_KG	N																
Newport_RA_SO_SVOCs	BENZALDEHYDE	MG_KG	N																

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	CRP-SB223		CRP-SB223		CRP-SB224		CRP-SB224		CRP-SB225		CRP-SB226		CRP-SB227		CRP-SB228	
			Sample Date	12/12/2013		12/12/2013		12/6/2013		12/6/2013		12/6/2013		12/5/2013		12/5/2013		12/9/2013	
			Sample ID	OU09 SB223 0001		OU09 SB223 0304		FDSS12061301		OU09 SS224 0001		OU09 SS225 0001		OU09 SS226 0001		OU09 SS227 0001		OU09 SS228 0001	
			Sample Type	N		N		FD		N		N		N		N		N	
			start_depth	0		3		0		0		0		0		0		0	
			end_depth	1		4		1		1		1		1		1		1	
			depth_unit	FT		FT		FT		FT		FT		FT		FT		FT	
			depth_interval	0 - 1 ft		3 - 4 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft	
			task_code	MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO	
			validated_yn	Y		Y		Y		Y		Y		Y		Y		Y	
method_analyte_group	Chemical	Unit	Fraction	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers
Newport_RA_SO_SVOCs	BENZIDINE	MG_KG	N		R		R												
Newport_RA_SO_SVOCs	BENZO[A]ANTHRACENE	MG_KG	N	0.094		< 0.02	U	0.41	J	0.18	J	1.3		0.029		0.15			
Newport_RA_SO_SVOCs	BENZO[A]PYRENE	MG_KG	N	0.092	J	< 0.02	UJ	0.48	J	0.23	J	1.5	J	0.039		0.18			
Newport_RA_SO_SVOCs	BENZO[B]FLUORANTHENE	MG_KG	N	0.15	J	0.021	J	0.51	J	0.2	J	1.3	J	0.046		0.16			
Newport_RA_SO_SVOCs	BENZO[G,H,I]PERYLENE	MG_KG	N	0.055	J	0.0078	J	0.12	J	0.087	J	0.68	J	< 0.02	UJ	0.076	J		
Newport_RA_SO_SVOCs	BENZO[K]FLUORANTHENE	MG_KG	N	0.11	J	< 0.02	UJ	0.45	J	0.18	J	1.3	J	0.024		0.11			
Newport_RA_SO_SVOCs	BENZOIC ACID	MG_KG	N	< 0.7	UJ	< 0.64	UJ												
Newport_RA_SO_SVOCs	BENZYL ALCOHOL	MG_KG	N	< 0.56	U	< 0.51	U												
Newport_RA_SO_SVOCs	BIS(2-CHLOROETHOXY)METHANE	MG_KG	N	< 0.28	UJ	< 0.26	UJ												
Newport_RA_SO_SVOCs	BIS(2-CHLOROETHYL)ETHER	MG_KG	N	< 0.28	U	< 0.26	U												
Newport_RA_SO_SVOCs	BIS(2-ETHYLHEXYL)PHTHALATE	MG_KG	N	< 0.28	U	< 0.26	U												
Newport_RA_SO_SVOCs	BUTYLBENZYLPHTHALATE	MG_KG	N	< 0.28	U	< 0.26	U												
Newport_RA_SO_SVOCs	CAPROLACTAM	MG_KG	N	< 0.28	U	< 0.26	UJ												
Newport_RA_SO_SVOCs	CARBAZOLE	MG_KG	N	< 0.28	U	< 0.26	U												
Newport_RA_SO_SVOCs	CHRYSENE	MG_KG	N	0.068		< 0.02	U	0.56	J	0.24	J	1.8		0.036		0.2			
Newport_RA_SO_SVOCs	DIBENZ[A,H]ANTHRACENE	MG_KG	N	0.032	J	< 0.02	UJ	0.081		0.049		0.23		< 0.02	U	0.041			
Newport_RA_SO_SVOCs	DIBENZOFURAN	MG_KG	N	< 0.28	U	< 0.26	U												
Newport_RA_SO_SVOCs	DIETHYLPHTHALATE	MG_KG	N	< 0.28	UJ	< 0.26	UJ												
Newport_RA_SO_SVOCs	DIMETHYL PHTHALATE	MG_KG	N	< 0.28	U	< 0.26	U												
Newport_RA_SO_SVOCs	DI-N-BUTYLPHTHALATE	MG_KG	N	< 0.28	U	< 0.26	U												
Newport_RA_SO_SVOCs	DI-N-OCTYLPHTHALATE	MG_KG	N	< 0.28	U	< 0.26	UJ												
Newport_RA_SO_SVOCs	FLUORANTHENE	MG_KG	N	0.16		0.023		0.58	J	0.21	J	1.3		0.038		0.16			
Newport_RA_SO_SVOCs	FLUORENE	MG_KG	N	0.0038	J	< 0.0099	U	0.039	J	0.013	J	0.09		< 0.01	U	0.012	J		
Newport_RA_SO_SVOCs	HEXACHLOROBENZENE	MG_KG	N	< 0.28	U	< 0.26	U												
Newport_RA_SO_SVOCs	HEXACHLOROBUTADIENE	MG_KG	N	< 0.28	U	< 0.26	UJ												
Newport_RA_SO_SVOCs	HEXACHLOROCYCLOPENTADIENE	MG_KG	N																
Newport_RA_SO_SVOCs	HEXACHLOROETHANE	MG_KG	N	< 0.28	U	< 0.26	U												
Newport_RA_SO_SVOCs	HPAH, TOTAL	MG_KG	N	1.1		0.083		4.1		1.7		12		0.27		1.4			
Newport_RA_SO_SVOCs	INDENO[1,2,3-CD]PYRENE	MG_KG	N	0.06	J	< 0.02	UJ	0.16		0.1		0.82	J	0.021		0.074			
Newport_RA_SO_SVOCs	ISOPHORONE	MG_KG	N	< 0.28	U	< 0.26	U												
Newport_RA_SO_SVOCs	LPAH, TOTAL	MG_KG	N	0.095		0.0071		0.64		0.23		1.5		0.027		0.19			
Newport_RA_SO_SVOCs	NAPHTHALENE	MG_KG	N	0.0037	J	0.0031	J	0.026	J	0.0081	J	0.039		< 0.01	U	0.0032	J		
Newport_RA_SO_SVOCs	NITROBENZENE	MG_KG	N	< 0.28	U	< 0.26	U												
Newport_RA_SO_SVOCs	N-NITROSODIMETHYLAMINE	MG_KG	N	< 0.28	U	< 0.26	U												
Newport_RA_SO_SVOCs	N-NITROSODINPROPYLAMINE	MG_KG	N	< 0.28	U	< 0.26	U												
Newport_RA_SO_SVOCs	N-NITROSODIPHENYLAMINE	MG_KG	N	< 0.28	U	< 0.26	U												
Newport_RA_SO_SVOCs	N-NITROSOPYRROLIDINE	MG_KG	N		R		R												
Newport_RA_SO_SVOCs	PAH, TOTAL	MG_KG	N	1.2		0.09		4.7		1.9		14		0.3		1.5			
Newport_RA_SO_SVOCs	PENTACHLOROPHENOL	MG_KG	N	< 0.7	U	< 0.64	UJ												
Newport_RA_SO_SVOCs	PHENANTHRENE	MG_KG	N	0.07		< 0.02	U	0.42	J	0.15	J	1		0.02	J	0.13			
Newport_RA_SO_SVOCs	PHENOL	MG_KG	N	< 0.28	U	< 0.26	U												
Newport_RA_SO_SVOCs	PYRENE	MG_KG	N	0.24		0.031		0.72	J	0.23	J	2.2		0.036		0.2			
Newport_RA_SO_VOCs	1,1,1,2-TETRACHLOROETHANE	MG_KG	N	< 0.0042	UJ	< 0.0032	UJ												
Newport_RA_SO_VOCs	1,1,1-TRICHLOROETHANE	MG_KG	N	< 0.0042	UJ	< 0.0032	UJ												
Newport_RA_SO_VOCs	1,1,2,2-TETRACHLOROETHANE	MG_KG	N	< 0.0042	UJ	< 0.0032	UJ												
Newport_RA_SO_VOCs	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	MG_KG	N																
Newport_RA_SO_VOCs	1,1,2-TRICHLOROETHANE	MG_KG	N	< 0.0042	UJ	< 0.0032	UJ												
Newport_RA_SO_VOCs	1,1-DICHLOROETHANE	MG_KG	N	< 0.0042	UJ	< 0.0032	UJ												
Newport_RA_SO_VOCs	1,1-DICHLOROETHENE	MG_KG	N	< 0.0042	UJ	< 0.0032	UJ												
Newport_RA_SO_VOCs	1,1-DICHLOROPROPENE	MG_KG	N	< 0.0042	UJ	< 0.0032	UJ												
Newport_RA_SO_VOCs	1,2,3-TRICHLOROBENZENE	MG_KG	N	< 0.0042	UJ	< 0.0032	UJ												
Newport_RA_SO_VOCs	1,2,3-TRICHLOROPROPANE	MG_KG	N	< 0.0042	UJ	< 0.0032	UJ												
Newport_RA_SO_VOCs	1,2,4-TRICHLOROBENZENE	MG_KG	N	< 0.0042	UJ	< 0.0032	UJ												
Newport_RA_SO_VOCs	1,2,4-TRIMETHYLBENZENE	MG_KG	N	< 0.0042	UJ	< 0.0032	UJ												
Newport_RA_SO_VOCs	1,2-DIBROMO-3-CHLOROPROPANE	MG_KG	N	< 0.0042	UJ	< 0.0032	UJ												
Newport_RA_SO_VOCs	1,2-DIBROMOETHANE	MG_KG	N	< 0.0042	UJ	< 0.0032	UJ												
Newport_RA_SO_VOCs	1,2-DICHLOROBENZENE	MG_KG	N	< 0.0042	UJ	< 0.0032	UJ												
Newport_RA_SO_VOCs	1,2-DICHLOROETHANE	MG_KG	N	< 0.0042	UJ	< 0.0032	UJ												
Newport_RA_SO_VOCs	1,2-DICHLOROETHENE, TOTAL	MG_KG	N	< 0.0085	UJ	< 0.0065	UJ												
Newport_RA_SO_VOCs	1,2-DICHLOROPROPANE	MG_KG	N	< 0.0042	UJ	< 0.0032	UJ												
Newport_RA_SO_VOCs	1,3,5-TRIMETHYLBENZENE	MG_KG	N	< 0.0042	UJ	< 0.0032	UJ												
Newport_RA_SO_VOCs	1,3-DICHLOROBENZENE	MG_KG	N	< 0.0042	UJ	< 0.0032	UJ												
Newport_RA_SO_VOCs	1,3-DICHLOROPROPANE	MG_KG	N	< 0.0042	UJ	< 0.0032	UJ												
Newport_RA_SO_VOCs	1,4-DICHLOROBENZENE	MG_KG	N	< 0.0042	UJ	< 0.0032	UJ												
Newport_RA_SO_VOCs	2,2-DICHLOROPROPANE	MG_KG	N	< 0.0042	UJ	< 0.0032	UJ												
Newport_RA_SO_VOCs	2-BUTANONE	MG_KG	N	< 0.021	UJ	< 0.016	UJ												

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	CRP-SB223		CRP-SB223		CRP-SB224		CRP-SB224		CRP-SB225		CRP-SB226		CRP-SB227		CRP-SB228	
			Sample Date	12/12/2013		12/12/2013		12/6/2013		12/6/2013		12/6/2013		12/5/2013		12/5/2013		12/9/2013	
			Sample ID	OU09 SB223 0001		OU09 SB223 0304		FDSS12061301		OU09 SS224 0001		OU09 SS225 0001		OU09 SS226 0001		OU09 SS227 0001		OU09 SS228 0001	
			Sample Type	N		N		FD		N		N		N		N		N	
			start_depth	0		3		0		0		0		0		0		0	
			end_depth	1		4		1		1		1		1		1		1	
			depth_unit	FT		FT		FT		FT		FT		FT		FT		FT	
			depth_interval	0 - 1 ft		3 - 4 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft	
			task_code	MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO	
			validated_yn	Y		Y		Y		Y		Y		Y		Y		Y	
method_analyte_group	Chemical	Unit	Fraction	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers
Newport_RA_SO_VOCs	2-CHLOROTOLUENE	MG_KG	N	< 0.0042	UJ	< 0.0032	UJ												
Newport_RA_SO_VOCs	2-HEXANONE	MG_KG	N	< 0.021	UJ	< 0.016	UJ												
Newport_RA_SO_VOCs	4-CHLOROTOLUENE	MG_KG	N	< 0.0042	UJ	< 0.0032	UJ												
Newport_RA_SO_VOCs	4-ISOPROPYLTOLUENE	MG_KG	N	< 0.0042	UJ	< 0.0032	UJ												
Newport_RA_SO_VOCs	4-METHYL-2-PENTANONE	MG_KG	N	< 0.021	UJ	< 0.016	UJ												
Newport_RA_SO_VOCs	ACETONE	MG_KG	N	< 0.021	UJ	< 0.016	UJ												
Newport_RA_SO_VOCs	BENZENE	MG_KG	N	< 0.0042	UJ	< 0.0032	UJ												
Newport_RA_SO_VOCs	BROMOBENZENE	MG_KG	N	< 0.0042	UJ	< 0.0032	UJ												
Newport_RA_SO_VOCs	BROMOCHLOROMETHANE	MG_KG	N	< 0.0042	UJ	< 0.0032	UJ												
Newport_RA_SO_VOCs	BROMODICHLOROMETHANE	MG_KG	N	< 0.0042	UJ	< 0.0032	UJ												
Newport_RA_SO_VOCs	BROMOFORM	MG_KG	N	< 0.0042	UJ	< 0.0032	UJ												
Newport_RA_SO_VOCs	BROMOMETHANE	MG_KG	N	< 0.0085	UJ	< 0.0065	UJ												
Newport_RA_SO_VOCs	CARBON DISULFIDE	MG_KG	N	< 0.0042	UJ	< 0.0032	UJ												
Newport_RA_SO_VOCs	CARBON TETRACHLORIDE	MG_KG	N	< 0.0042	UJ	< 0.0032	UJ												
Newport_RA_SO_VOCs	CHLOROBENZENE	MG_KG	N	< 0.0042	UJ	< 0.0032	UJ												
Newport_RA_SO_VOCs	CHLOROETHANE	MG_KG	N	< 0.0085	UJ	< 0.0065	UJ												
Newport_RA_SO_VOCs	CHLOROFORM	MG_KG	N	< 0.0042	UJ	< 0.0032	UJ												
Newport_RA_SO_VOCs	CHLOROMETHANE	MG_KG	N	< 0.0085	UJ	< 0.0065	UJ												
Newport_RA_SO_VOCs	CIS-1,2-DICHLOROETHENE	MG_KG	N	< 0.0042	UJ	< 0.0032	UJ												
Newport_RA_SO_VOCs	CIS-1,3-DICHLOROPROPENE	MG_KG	N	< 0.0042	UJ	< 0.0032	UJ												
Newport_RA_SO_VOCs	CYCLOHEXANE	MG_KG	N																
Newport_RA_SO_VOCs	DIBROMOCHLOROMETHANE	MG_KG	N	< 0.0042	UJ	< 0.0032	UJ												
Newport_RA_SO_VOCs	DIBROMOMETHANE	MG_KG	N	< 0.0042	UJ	< 0.0032	UJ												
Newport_RA_SO_VOCs	DICHLORODIFLUOROMETHANE	MG_KG	N	< 0.0085	UJ	< 0.0065	UJ												
Newport_RA_SO_VOCs	ETHYLBENZENE	MG_KG	N	< 0.0042	UJ	< 0.0032	UJ												
Newport_RA_SO_VOCs	HEXACHLOROBUTADIENE	MG_KG	N	< 0.0042	UJ	< 0.0032	UJ												
Newport_RA_SO_VOCs	ISOPROPYLBENZENE	MG_KG	N	< 0.0042	UJ	< 0.0032	UJ												
Newport_RA_SO_VOCs	M- AND P-XYLENE	MG_KG	N	< 0.0085	UJ	< 0.0065	UJ												
Newport_RA_SO_VOCs	METHYL ACETATE	MG_KG	N																
Newport_RA_SO_VOCs	METHYL CYCLOHEXANE	MG_KG	N	< 0.0042	UJ	< 0.0032	UJ												
Newport_RA_SO_VOCs	METHYL TERT-BUTYL ETHER	MG_KG	N	< 0.0042	UJ	< 0.0032	UJ												
Newport_RA_SO_VOCs	METHYLENE CHLORIDE	MG_KG	N	< 0.021	UJ	< 0.016	UJ												
Newport_RA_SO_VOCs	NAPHTHALENE	MG_KG	N																
Newport_RA_SO_VOCs	N-BUTYLBENZENE	MG_KG	N	< 0.0042	UJ	< 0.0032	UJ												
Newport_RA_SO_VOCs	O-XYLENE	MG_KG	N	< 0.0042	UJ	< 0.0032	UJ												
Newport_RA_SO_VOCs	PROPYLBENZENE	MG_KG	N	< 0.0042	UJ	< 0.0032	UJ												
Newport_RA_SO_VOCs	SEC-BUTYLBENZENE	MG_KG	N	< 0.0042	UJ	< 0.0032	UJ												
Newport_RA_SO_VOCs	STYRENE	MG_KG	N	< 0.0042	UJ	< 0.0032	UJ												
Newport_RA_SO_VOCs	TERT-BUTANOL	MG_KG	N	< 0.021	UJ	< 0.016	UJ												
Newport_RA_SO_VOCs	TERT-BUTYLBENZENE	MG_KG	N	< 0.0042	UJ	< 0.0032	UJ												
Newport_RA_SO_VOCs	TETRACHLOROETHENE	MG_KG	N	< 0.0042	UJ	< 0.0032	UJ												
Newport_RA_SO_VOCs	TOLUENE	MG_KG	N	< 0.0042	UJ	< 0.0032	UJ												
Newport_RA_SO_VOCs	TRANS-1,2-DICHLOROETHENE	MG_KG	N	< 0.0042	UJ	< 0.0032	UJ												
Newport_RA_SO_VOCs	TRANS-1,3-DICHLOROPROPENE	MG_KG	N	< 0.0042	UJ	< 0.0032	UJ												
Newport_RA_SO_VOCs	TRICHLOROETHENE	MG_KG	N	< 0.0042	UJ	< 0.0032	UJ												
Newport_RA_SO_VOCs	TRICHLOROFLUOROMETHANE	MG_KG	N	< 0.0085	UJ	< 0.0065	UJ												
Newport_RA_SO_VOCs	VINYL CHLORIDE	MG_KG	N	< 0.0085	UJ	< 0.0065	UJ												
Newport_RA_SO_VOCs	XYLENES, TOTAL	MG_KG	N	< 0.013	UJ	< 0.0098	UJ												

Notes:
U or < - Non-detect at laboratory detection limit.
J - The compound was positively identified; however, the associated numerical value
is an estimated concentration only (+ and - indicate bias).
Sample Type - N = normal sample, FD = duplicate sample.
mg/kg - milligram per kilogram

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	CRP-SB228		CRP-SB228		CRP-SB228		CRP-SB229		CRP-SB229		CRP-SB229		CRP-SB229		CRP-SB301	
			Sample Date	12/9/2013		12/9/2013		12/9/2013		12/10/2013		12/10/2013		12/10/2013		12/10/2013		12/6/2013	
			Sample ID	OU09 SS228 0001SL		OU09 SB228 0305		OU09 SB228 0608		OU09 SS229 0001-01		OU09 SS229 0001-02		OU09 SB229 0102		OU09 SB229 0305		OU09 SS301 0001	
			Sample Type	N		N		N		N		FD		N		N		N	
			start_depth	0		3		6		0		0		1		3		0	
			end_depth	1		5		8		1		1		2		5		1	
			depth_unit	FT		FT		FT		FT		FT		FT		FT		FT	
			depth_interval	0 - 1 ft		3 - 5 ft		6 - 8 ft		0 - 1 ft		0 - 1 ft		1 - 2 ft		3 - 5 ft		0 - 1 ft	
			task_code	MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO	
			validated_yn	Y		Y		Y		Y		Y		Y		Y		Y	
method_analyte_group	Chemical	Unit	Fraction	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers
Newport_RA_SO_Energetics	2,4-DINITROTOLUENE	MG_KG	N			< 0.048	U			< 0.049	U	< 0.042	U	< 0.042	U	< 0.046	U		
Newport_RA_SO_Energetics	2,6-DINITROTOLUENE	MG_KG	N																
Newport_RA_SO_Energetics	NITROGLYCERIN	MG_KG	N			< 0.39	U			< 0.4	U	0.58	J	< 0.34	U	< 0.36	U		
Newport_RA_SO_Metals	ALUMINUM	MG_KG	N	8400		8310		9390		10900		9360		10500		9760		8070	
Newport_RA_SO_Metals	ANTIMONY	MG_KG	N	2.3	J	0.30	J	< 0.077	UJ	1.1	J-	0.98	J-	0.28	J	0.12	J	0.79	J
Newport_RA_SO_Metals	ARSENIC	MG_KG	N	10.3	J	6.4	J	4.6	J	7.3		7.5		4.9	J	10.8	J	8.3	J
Newport_RA_SO_Metals	BARIUM	MG_KG	N	25.5		22.8		20.1		33.4		30.8		29.8		24.3		11.5	J-
Newport_RA_SO_Metals	BERYLLIUM	MG_KG	N	0.20		0.41		0.39		0.35		0.31		0.40		0.47		0.33	J-
Newport_RA_SO_Metals	CADMIUM	MG_KG	N	0.18		< 0.090	U	< 0.077	U	0.30		0.28		0.1		0.06	J	0.44	
Newport_RA_SO_Metals	CALCIUM	MG_KG	N	39500		305		281		1510	J+	1400	J+	1300	J+	215	J+	494	
Newport_RA_SO_Metals	CHROMIUM VI	MG_KG	N									< 0.31	U						
Newport_RA_SO_Metals	CHROMIUM, TOTAL	MG_KG	N	14.1	J	11.1	J	12.1	J	13.9		11.3		11.2	J	11.3	J	11.5	J-
Newport_RA_SO_Metals	COBALT	MG_KG	N	10.8	J	10.4	J	7.6	J	8.3		7.4		7.0	J	16.5	J	13.2	J-
Newport_RA_SO_Metals	COPPER	MG_KG	N	18.3		15.0		8.7		28.6		26.3		12.7		20.5		32.1	J
Newport_RA_SO_Metals	IRON	MG_KG	N	24900	J	25100	J	18500	J	21300		19500		17900	J	13000	J	29900	
Newport_RA_SO_Metals	IRON, FERROUS	MG_KG	N																
Newport_RA_SO_Metals	LEAD	MG_KG	N	216	J	16.6	J	7.7	J	125		113		24.5	J	10.3	J	48.2	J
Newport_RA_SO_Metals	MAGNESIUM	MG_KG	N	25200	J	1670	J	1740	J	2580		2250		1750	J	962	J	3220	
Newport_RA_SO_Metals	MANGANESE	MG_KG	N	438	J	383	J	242	J	326		293		327	J	597	J	756	
Newport_RA_SO_Metals	MERCURY	MG_KG	N			< 0.029	UJ	< 0.036	UJ	0.10		0.1		0.03	J	< 0.023	U	0.04	
Newport_RA_SO_Metals	NICKEL	MG_KG	N	20.6	J	16.3	J	11.8	J	18.5		17.0		14.3	J	24.8	J	29.0	J-
Newport_RA_SO_Metals	POTASSIUM	MG_KG	N	328	J	376	J	342	J	415		319		395	J	658	J	484	J-
Newport_RA_SO_Metals	SELENIUM	MG_KG	N	< 0.39	U	< 0.45	U	0.40		0.37		< 0.39	U	0.54		< 0.56	U	< 0.44	UJ
Newport_RA_SO_Metals	SILVER	MG_KG	N	0.07	J	0.05	J	0.02	J	0.38		0.35		0.10	J	0.02	J	0.04	J
Newport_RA_SO_Metals	SODIUM	MG_KG	N	< 79	U	< 90	U	< 77	U	< 73	U	< 79	U	< 87	U	< 110	U	< 87	UJ
Newport_RA_SO_Metals	THALLIUM	MG_KG	N	0.04	J	0.08	J	0.07	J	0.07	J	0.06	J	0.1		0.07	J	0.07	J
Newport_RA_SO_Metals	VANADIUM	MG_KG	N	14.8		17.0		18.4		25.1		22.1		18.7		20.1		14.4	J-
Newport_RA_SO_Metals	ZINC	MG_KG	N	66.0		45.3		29.7		113	J+	106	J+	43.3	J+	59.2	J+	78.2	
Newport_RA_SO_Other	DENSITY	G_CC	N																
Newport_RA_SO_Other	Pellet count	COUNT	N																
Newport_RA_SO_Other	Pellet weight	PCT	N																
Newport_RA_SO_Other	PERCENT FINES	PCT	N																
Newport_RA_SO_Other	PERCENT GRAVEL	PCT	N																
Newport_RA_SO_Other	PERCENT SAND	PCT	N																
Newport_RA_SO_Other	PERCENT SAND, COARSE	PCT	N																
Newport_RA_SO_Other	PERCENT SAND, FINE	PCT	N																
Newport_RA_SO_Other	PERCENT SAND, MEDIUM	PCT	N																
Newport_RA_SO_Other	PH	PH	N																
Newport_RA_SO_Other	POROSITY	PCT	N																
Newport_RA_SO_Other	SIEVE 1 INCH (25.4-MM)	PCT	N																
Newport_RA_SO_Other	SIEVE 1-1/2 INCH (37.5-MM)	PCT	N																
Newport_RA_SO_Other	SIEVE 2 INCH (50-MM)	PCT	N																
Newport_RA_SO_Other	SIEVE 3 INCH (75-MM)	PCT	N																
Newport_RA_SO_Other	SIEVE 3/4 INCH (19-MM)	PCT	N																
Newport_RA_SO_Other	SIEVE 3/8 INCH (9.5-MM)	PCT	N																
Newport_RA_SO_Other	SIEVE NO. 004 (4.75-MM)	PCT	N																
Newport_RA_SO_Other	SIEVE NO. 010 (2-MM)	PCT	N																
Newport_RA_SO_Other	SIEVE NO. 020 (850-UM)	PCT	N																
Newport_RA_SO_Other	SIEVE NO. 040 (425-UM)	PCT	N																
Newport_RA_SO_Other	SIEVE NO. 060 (250-UM)	PCT	N																
Newport_RA_SO_Other	SIEVE NO. 080 (180-UM)	PCT	N																
Newport_RA_SO_Other	SIEVE NO. 100 (150-UM)	PCT	N																
Newport_RA_SO_Other	SIEVE NO. 200 (75-UM)	PCT	N																
Newport_RA_SO_Other	SPECIFIC CONDUCTANCE	UMHO_CM	N																
Newport_RA_SO_Other	SPECIFIC GRAVITY	NONE	N																
Newport_RA_SO_Other	SULFIDE	MG_KG	N																
Newport_RA_SO_Other	TPH-DIESEL RANGE	MG_KG	N																
Newport_RA_SO_Other	TPH-TOTAL UNKNOWN GASOLINE RANGE ORGANICS	MG_KG	N																
Newport_RA_SO_Other	Void Ratio	NONE	N																
Newport_RA_SO_PCBs	AROCLOR-1016	MG_KG	N									< 0.0016	UJ					< 0.0089	UJ
Newport_RA_SO_PCBs	AROCLOR-1221	MG_KG	N									< 0.0016	U					< 0.0089	UJ
Newport_RA_SO_PCBs	AROCLOR-1232	MG_KG	N									< 0.0019	U					< 0.01	UJ
Newport_RA_SO_PCBs	AROCLOR-1242	MG_KG	N									< 0.0016	U					< 0.0089	UJ
Newport_RA_SO_PCBs	AROCLOR-1248	MG_KG	N									< 0.0016	U					< 0.0089	UJ
Newport_RA_SO_PCBs	AROCLOR-1254	MG_KG	N									< 0.0016	U					0.043	J
Newport_RA_SO_PCBs	AROCLOR-1260	MG_KG	N									< 0.0016	UJ					< 0.0089	UJ

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	CRP-SB228		CRP-SB228		CRP-SB228		CRP-SB229		CRP-SB229		CRP-SB229		CRP-SB229		CRP-SB301	
			Sample Date	12/9/2013		12/9/2013		12/9/2013		12/10/2013		12/10/2013		12/10/2013		12/10/2013		12/6/2013	
			Sample ID	OU09 SS228 0001SL		OU09 SB228 0305		OU09 SB228 0608		OU09 SS229 0001-01		OU09 SS229 0001-02		OU09 SB229 0102		OU09 SB229 0305		OU09 SS301 0001	
			Sample Type	N		N		N		N		FD		N		N		N	
			start_depth	0		3		6		0		0		1		3		0	
			end_depth	1		5		8		1		1		2		5		1	
			depth_unit	FT		FT		FT		FT		FT		FT		FT		FT	
			depth_interval	0 - 1 ft		3 - 5 ft		6 - 8 ft		0 - 1 ft		0 - 1 ft		1 - 2 ft		3 - 5 ft		0 - 1 ft	
			task_code	MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO	
			validated_yn	Y		Y		Y		Y		Y		Y		Y		Y	
method_analyte_group	Chemical	Unit	Fraction	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers
Newport_RA_SO_PCBs	AROCLOR-1262	MG_KG	N									< 0.0016	U					< 0.0089	UJ
Newport_RA_SO_PCBs	AROCLOR-1268	MG_KG	N									< 0.0016	U					< 0.0089	UJ
Newport_RA_SO_PCBs	PCB, TOTAL	MG_KG	N									< 0.0019	U					0.043	
Newport_RA_SO_PCBs	POLYCHLORINATED BIPHENYLS (PCBS)	MG_KG	N																
Newport_RA_SO_Pesticides	4,4-DDD	MG_KG	N									< 0.00032	U					< 0.0017	UJ
Newport_RA_SO_Pesticides	4,4-DDE	MG_KG	N									0.062						< 0.0017	UJ
Newport_RA_SO_Pesticides	4,4-DDT	MG_KG	N									0.0094	J					< 0.0017	UJ
Newport_RA_SO_Pesticides	ALDRIN	MG_KG	N									< 0.00016	UJ					< 0.00089	UJ
Newport_RA_SO_Pesticides	ALPHA-BHC	MG_KG	N									< 0.00016	UJ					< 0.00089	UJ
Newport_RA_SO_Pesticides	ALPHA-CHLORDANE	MG_KG	N									< 0.00016	UJ					< 0.00089	UJ
Newport_RA_SO_Pesticides	BETA-BHC	MG_KG	N									< 0.00016	UJ					< 0.00089	UJ
Newport_RA_SO_Pesticides	DDT, TOTAL	MG_KG	N																
Newport_RA_SO_Pesticides	DELTA-BHC	MG_KG	N									< 0.00016	UJ					< 0.00089	UJ
Newport_RA_SO_Pesticides	DIELDRIN	MG_KG	N									< 0.00032	UJ					< 0.0017	UJ
Newport_RA_SO_Pesticides	ENDOSULFAN I	MG_KG	N									0.0015	J					< 0.00089	UJ
Newport_RA_SO_Pesticides	ENDOSULFAN II	MG_KG	N									< 0.00032	U					< 0.0017	UJ
Newport_RA_SO_Pesticides	ENDOSULFAN SULFATE	MG_KG	N									< 0.00032	UJ					< 0.0017	UJ
Newport_RA_SO_Pesticides	ENDRIN	MG_KG	N									0.0018						< 0.0017	UJ
Newport_RA_SO_Pesticides	ENDRIN ALDEHYDE	MG_KG	N									< 0.00032	U					< 0.0017	UJ
Newport_RA_SO_Pesticides	ENDRIN KETONE	MG_KG	N									< 0.00032	U					< 0.0017	UJ
Newport_RA_SO_Pesticides	GAMMA-CHLORDANE	MG_KG	N									< 0.00016	UJ					< 0.00089	UJ
Newport_RA_SO_Pesticides	HEPTACHLOR	MG_KG	N									0.0015	J					< 0.00089	UJ
Newport_RA_SO_Pesticides	HEPTACHLOR EPOXIDE	MG_KG	N									< 0.00016	U					< 0.00089	UJ
Newport_RA_SO_Pesticides	LINDANE	MG_KG	N									< 0.00016	U					< 0.00089	UJ
Newport_RA_SO_Pesticides	METHOXYCHLOR	MG_KG	N									0.0088	J					< 0.0089	UJ
Newport_RA_SO_Pesticides	TOXAPHENE	MG_KG	N									< 0.0032	U					< 0.017	UJ
Newport_RA_SO_Pesticides	TRANS-CHLORDANE	MG_KG	N																
Newport_RA_SO_SVOCs	1,1-BIPHENYL	MG_KG	N															< 0.26	U
Newport_RA_SO_SVOCs	1-METHYLNAPHTHALENE	MG_KG	N																
Newport_RA_SO_SVOCs	1,2,4-TRICHLOROBENZENE	MG_KG	N															< 0.26	U
Newport_RA_SO_SVOCs	1,2-DICHLOROBENZENE	MG_KG	N															< 0.26	U
Newport_RA_SO_SVOCs	1,2-DIPHENYLHYDRAZINE	MG_KG	N															< 0.51	U
Newport_RA_SO_SVOCs	1,3-DICHLOROBENZENE	MG_KG	N															< 0.26	U
Newport_RA_SO_SVOCs	1,4-DICHLOROBENZENE	MG_KG	N															< 0.26	U
Newport_RA_SO_SVOCs	2,2'-OXYBIS(1-CHLOROPROPANE)	MG_KG	N															< 0.26	U
Newport_RA_SO_SVOCs	2,4,5-TRICHLOROPHENOL	MG_KG	N															< 0.64	U
Newport_RA_SO_SVOCs	2,4,6-TRICHLOROPHENOL	MG_KG	N															< 0.26	U
Newport_RA_SO_SVOCs	2,4-DICHLOROPHENOL	MG_KG	N															< 0.26	U
Newport_RA_SO_SVOCs	2,4-DIMETHYLPHENOL	MG_KG	N															< 0.26	U
Newport_RA_SO_SVOCs	2,4-DINITROPHENOL	MG_KG	N															< 0.64	U
Newport_RA_SO_SVOCs	2,4-DINITROTOLUENE	MG_KG	N															< 0.26	U
Newport_RA_SO_SVOCs	2,6-DICHLOROPHENOL	MG_KG	N															< 0.26	U
Newport_RA_SO_SVOCs	2,6-DINITROTOLUENE	MG_KG	N															< 0.26	U
Newport_RA_SO_SVOCs	2-CHLORONAPHTHALENE	MG_KG	N															< 0.26	UJ
Newport_RA_SO_SVOCs	2-CHLOROPHENOL	MG_KG	N															< 0.26	U
Newport_RA_SO_SVOCs	2-METHYLNAPHTHALENE	MG_KG	N															< 0.26	U
Newport_RA_SO_SVOCs	2-METHYLPHENOL	MG_KG	N															< 0.26	U
Newport_RA_SO_SVOCs	2-NITROANILINE	MG_KG	N															< 0.64	U
Newport_RA_SO_SVOCs	2-NITROPHENOL	MG_KG	N															< 0.26	U
Newport_RA_SO_SVOCs	3- AND 4-METHYLPHENOL	MG_KG	N															< 0.26	U
Newport_RA_SO_SVOCs	3,3-DICHLOROBENZIDINE	MG_KG	N															< 0.26	U
Newport_RA_SO_SVOCs	3-NITROANILINE	MG_KG	N															< 0.64	U
Newport_RA_SO_SVOCs	4,6-DINITRO-2-METHYLPHENOL	MG_KG	N															< 0.64	U
Newport_RA_SO_SVOCs	4-BROMOPHENYL-PHENYLETHER	MG_KG	N															< 0.26	U
Newport_RA_SO_SVOCs	4-CHLORO-3-METHYLPHENOL	MG_KG	N															< 0.26	U
Newport_RA_SO_SVOCs	4-CHLOROANILINE	MG_KG	N															< 0.26	U
Newport_RA_SO_SVOCs	4-CHLOROPHENYL-PHENYLETHER	MG_KG	N															< 0.26	U
Newport_RA_SO_SVOCs	4-METHYLPHENOL	MG_KG	N																
Newport_RA_SO_SVOCs	4-NITROANILINE	MG_KG	N															< 0.64	U
Newport_RA_SO_SVOCs	4-NITROPHENOL	MG_KG	N															< 0.64	U
Newport_RA_SO_SVOCs	ACENAPHTHENE	MG_KG	N	18	J	< 0.011	U	< 0.011	U	0.095	J	0.0050	J	0.0036	J	< 0.014	U	0.0026	J
Newport_RA_SO_SVOCs	ACENAPHTHYLENE	MG_KG	N	< 0.12	U	< 0.011	U	< 0.011	U	0.017	J	< 0.01	U	0.0025	J	< 0.014	U	< 0.01	U
Newport_RA_SO_SVOCs	ACETOPHENONE	MG_KG	N																
Newport_RA_SO_SVOCs	ANTHRACENE	MG_KG	N	21	J	0.0025	J	< 0.011	U	0.15	J	< 0.01	UJ	0.013	J	< 0.014	U	0.0040	J
Newport_RA_SO_SVOCs	ATRAZINE	MG_KG	N																
Newport_RA_SO_SVOCs	BENZALDEHYDE	MG_KG	N																

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	CRP-SB228		CRP-SB228		CRP-SB228		CRP-SB229		CRP-SB229		CRP-SB229		CRP-SB229		CRP-SB301	
			Sample Date	12/9/2013		12/9/2013		12/9/2013		12/10/2013		12/10/2013		12/10/2013		12/10/2013		12/6/2013	
			Sample ID	OU09 SS228 0001SL		OU09 SB228 0305		OU09 SB228 0608		OU09 SS229 0001-01		OU09 SS229 0001-02		OU09 SB229 0102		OU09 SB229 0305		OU09 SS301 0001	
			Sample Type	N		N		N		N		FD		N		N		N	
			start_depth	0		3		6		0		0		1		3		0	
			end_depth	1		5		8		1		1		2		5		1	
			depth_unit	FT		FT		FT		FT		FT		FT		FT		FT	
			depth_interval	0 - 1 ft		3 - 5 ft		6 - 8 ft		0 - 1 ft		0 - 1 ft		1 - 2 ft		3 - 5 ft		0 - 1 ft	
			task_code	MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO	
			validated_yn	Y		Y		Y		Y		Y		Y		Y		Y	
method_analyte_group	Chemical	Unit	Fraction	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers
Newport_RA_SO_SVOCs	BENZIDINE	MG_KG	N																R
Newport_RA_SO_SVOCs	BENZO[A]ANTHRACENE	MG_KG	N	65	J	< 0.022	U	0.0047	J	0.86	J	0.043	J	0.088		< 0.014	UJ	< 0.021	U
Newport_RA_SO_SVOCs	BENZO[A]PYRENE	MG_KG	N	80	J	< 0.022	UJ	0.0059	J	1.1	J	0.043	J	0.068	J	< 0.014	UJ	< 0.021	U
Newport_RA_SO_SVOCs	BENZO[B]FLUORANTHENE	MG_KG	N	75	J	< 0.022	U	< 0.023	UJ	1.1	J	0.056	J	0.11		< 0.014	U	0.016	J
Newport_RA_SO_SVOCs	BENZO[G,H,I]PERYLENE	MG_KG	N	32	J	0.0035	J	0.0028	J	0.75	J	0.041	J	0.038	J	< 0.014	UJ	< 0.021	UJ
Newport_RA_SO_SVOCs	BENZO[K]FLUORANTHENE	MG_KG	N	74	J	< 0.022	U	< 0.011	U	0.96	J	< 0.021	UJ	0.043	J	< 0.014	U	0.014	J
Newport_RA_SO_SVOCs	BENZOIC ACID	MG_KG	N															< 0.64	UJ
Newport_RA_SO_SVOCs	BENZYL ALCOHOL	MG_KG	N															< 0.51	U
Newport_RA_SO_SVOCs	BIS(2-CHLOROETHOXY)METHANE	MG_KG	N															< 0.26	UJ
Newport_RA_SO_SVOCs	BIS(2-CHLOROETHYL)ETHER	MG_KG	N															< 0.26	U
Newport_RA_SO_SVOCs	BIS(2-ETHYLHEXYL)PHTHALATE	MG_KG	N															< 0.26	U
Newport_RA_SO_SVOCs	BUTYLBENZYLPHTHALATE	MG_KG	N															< 0.26	U
Newport_RA_SO_SVOCs	CAPROLACTAM	MG_KG	N															< 0.26	U
Newport_RA_SO_SVOCs	CARBAZOLE	MG_KG	N															< 0.26	U
Newport_RA_SO_SVOCs	CHRYSENE	MG_KG	N	81	J	< 0.022	U	< 0.011	U	1.1	J	0.08	J	0.086		< 0.014	U	0.015	J
Newport_RA_SO_SVOCs	DIBENZ[A,H]ANTHRACENE	MG_KG	N	< 15	UJ	< 0.022	UJ	< 0.011	U	0.34	J	0.024	J	0.027	J	< 0.014	U	< 0.021	U
Newport_RA_SO_SVOCs	DIBENZOFURAN	MG_KG	N															< 0.26	U
Newport_RA_SO_SVOCs	DIETHYLPHTHALATE	MG_KG	N															< 0.26	UJ
Newport_RA_SO_SVOCs	DIMETHYL PHTHALATE	MG_KG	N															< 0.26	U
Newport_RA_SO_SVOCs	DI-N-BUTYLPHTHALATE	MG_KG	N															< 0.26	U
Newport_RA_SO_SVOCs	DI-N-OCTYLPHTHALATE	MG_KG	N															< 0.26	U
Newport_RA_SO_SVOCs	FLUORANTHENE	MG_KG	N	100	J	< 0.022	U	< 0.023	U	1.1	J	< 0.021	UJ	0.12		< 0.014	UJ	0.024	
Newport_RA_SO_SVOCs	FLUORENE	MG_KG	N	9.2	J	< 0.011	U	< 0.011	U	0.058	J	0.0039	J	< 0.012	U	< 0.014	U	< 0.01	U
Newport_RA_SO_SVOCs	HEXACHLOROBENZENE	MG_KG	N															< 0.26	U
Newport_RA_SO_SVOCs	HEXACHLOROBUTADIENE	MG_KG	N															< 0.26	U
Newport_RA_SO_SVOCs	HEXACHLOROCYCLOPENTADIENE	MG_KG	N																
Newport_RA_SO_SVOCs	HEXACHLOROETHANE	MG_KG	N															< 0.26	U
Newport_RA_SO_SVOCs	HPAH, TOTAL	MG_KG	N	650		0.0035		0.017		10		0.56		0.73		< 0.014	U	0.094	
Newport_RA_SO_SVOCs	INDENO[1,2,3-CD]PYRENE	MG_KG	N	44	J	< 0.022	U	0.0034	J	0.82	J	0.027	J	0.053	J	< 0.014	U	< 0.021	U
Newport_RA_SO_SVOCs	ISOPHORONE	MG_KG	N															< 0.26	U
Newport_RA_SO_SVOCs	LPAH, TOTAL	MG_KG	N	140		0.0025		0.0036		1.1		0.16		0.067		< 0.014	U	0.028	
Newport_RA_SO_SVOCs	NAPHTHALENE	MG_KG	N	3	J	< 0.011	U	< 0.011	U	0.02	J	< 0.01	U	< 0.012	U	< 0.014	U	< 0.01	U
Newport_RA_SO_SVOCs	NITROBENZENE	MG_KG	N															< 0.26	U
Newport_RA_SO_SVOCs	N-NITROSODIMETHYLAMINE	MG_KG	N															< 0.26	U
Newport_RA_SO_SVOCs	N-NITROSODINPROPYLAMINE	MG_KG	N															< 0.26	U
Newport_RA_SO_SVOCs	N-NITROSODIPHENYLAMINE	MG_KG	N															< 0.26	U
Newport_RA_SO_SVOCs	N-NITROSOPYRROLIDINE	MG_KG	N																R
Newport_RA_SO_SVOCs	PAH, TOTAL	MG_KG	N	790		0.0060		0.02		11		0.72		0.8		< 0.014	U	0.12	
Newport_RA_SO_SVOCs	PENTACHLOROPHENOL	MG_KG	N															< 0.64	UJ
Newport_RA_SO_SVOCs	PHENANTHRENE	MG_KG	N	86	J	< 0.022	U	0.0036	J	0.76	J	0.15	J	0.048		< 0.014	U	0.021	J
Newport_RA_SO_SVOCs	PHENOL	MG_KG	N															< 0.26	U
Newport_RA_SO_SVOCs	PYRENE	MG_KG	N	100	J	< 0.022	U	< 0.023	U	2.2	J	0.25	J	0.098	J	< 0.014	U	0.025	
Newport_RA_SO_VOCs	1,1,1,2-TETRACHLOROETHANE	MG_KG	N															< 0.0028	UJ
Newport_RA_SO_VOCs	1,1,1-TRICHLOROETHANE	MG_KG	N															< 0.0028	UJ
Newport_RA_SO_VOCs	1,1,2,2-TETRACHLOROETHANE	MG_KG	N															< 0.0028	UJ
Newport_RA_SO_VOCs	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	MG_KG	N																
Newport_RA_SO_VOCs	1,1,2-TRICHLOROETHANE	MG_KG	N															< 0.0028	UJ
Newport_RA_SO_VOCs	1,1-DICHLOROETHANE	MG_KG	N															< 0.0028	UJ
Newport_RA_SO_VOCs	1,1-DICHLOROETHENE	MG_KG	N															< 0.0028	UJ
Newport_RA_SO_VOCs	1,1-DICHLOROPROPENE	MG_KG	N															< 0.0028	UJ
Newport_RA_SO_VOCs	1,2,3-TRICHLOROBENZENE	MG_KG	N															< 0.0028	UJ
Newport_RA_SO_VOCs	1,2,3-TRICHLOROPROPANE	MG_KG	N															< 0.0028	UJ
Newport_RA_SO_VOCs	1,2,4-TRICHLOROBENZENE	MG_KG	N															< 0.0028	UJ
Newport_RA_SO_VOCs	1,2,4-TRIMETHYLBENZENE	MG_KG	N															< 0.0028	UJ
Newport_RA_SO_VOCs	1,2-DIBROMO-3-CHLOROPROPANE	MG_KG	N															< 0.0028	UJ
Newport_RA_SO_VOCs	1,2-DIBROMOETHANE	MG_KG	N															< 0.0028	UJ
Newport_RA_SO_VOCs	1,2-DICHLOROBENZENE	MG_KG	N															< 0.0028	UJ
Newport_RA_SO_VOCs	1,2-DICHLOROETHANE	MG_KG	N															< 0.0028	UJ
Newport_RA_SO_VOCs	1,2-DICHLOROETHENE, TOTAL	MG_KG	N															< 0.0055	UJ
Newport_RA_SO_VOCs	1,2-DICHLOROPROPANE	MG_KG	N															< 0.0028	UJ
Newport_RA_SO_VOCs	1,3,5-TRIMETHYLBENZENE	MG_KG	N															< 0.0028	UJ
Newport_RA_SO_VOCs	1,3-DICHLOROBENZENE	MG_KG	N															< 0.0028	UJ
Newport_RA_SO_VOCs	1,3-DICHLOROPROPANE	MG_KG	N															< 0.0028	UJ
Newport_RA_SO_VOCs	1,4-DICHLOROBENZENE	MG_KG	N															< 0.0028	UJ
Newport_RA_SO_VOCs	2,2-DICHLOROPROPANE	MG_KG	N															< 0.0028	UJ
Newport_RA_SO_VOCs	2-BUTANONE	MG_KG	N															< 0.014	UJ

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	CRP-SB228		CRP-SB228		CRP-SB228		CRP-SB229		CRP-SB229		CRP-SB229		CRP-SB229		CRP-SB301	
			Sample Date	12/9/2013		12/9/2013		12/9/2013		12/10/2013		12/10/2013		12/10/2013		12/10/2013		12/6/2013	
			Sample ID	OU09 SS228 0001SL		OU09 SB228 0305		OU09 SB228 0608		OU09 SS229 0001-01		OU09 SS229 0001-02		OU09 SB229 0102		OU09 SB229 0305		OU09 SS301 0001	
			Sample Type	N		N		N		N		FD		N		N		N	
			start_depth	0		3		6		0		0		1		3		0	
			end_depth	1		5		8		1		1		2		5		1	
			depth_unit	FT		FT		FT		FT		FT		FT		FT		FT	
			depth_interval	0 - 1 ft		3 - 5 ft		6 - 8 ft		0 - 1 ft		0 - 1 ft		1 - 2 ft		3 - 5 ft		0 - 1 ft	
			task_code	MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO	
			validated_yn	Y		Y		Y		Y		Y		Y		Y		Y	
method_analyte_group	Chemical	Unit	Fraction	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers
Newport_RA_SO_VOCs	2-CHLOROTOLUENE	MG_KG	N															< 0.0028	UJ
Newport_RA_SO_VOCs	2-HEXANONE	MG_KG	N															< 0.014	UJ
Newport_RA_SO_VOCs	4-CHLOROTOLUENE	MG_KG	N															< 0.0028	UJ
Newport_RA_SO_VOCs	4-ISOPROPYLTOLUENE	MG_KG	N															< 0.0028	UJ
Newport_RA_SO_VOCs	4-METHYL-2-PENTANONE	MG_KG	N															< 0.014	UJ
Newport_RA_SO_VOCs	ACETONE	MG_KG	N															< 0.014	UJ
Newport_RA_SO_VOCs	BENZENE	MG_KG	N															< 0.0028	UJ
Newport_RA_SO_VOCs	BROMOBENZENE	MG_KG	N															< 0.0028	UJ
Newport_RA_SO_VOCs	BROMOCHLOROMETHANE	MG_KG	N															< 0.0028	UJ
Newport_RA_SO_VOCs	BROMODICHLOROMETHANE	MG_KG	N															< 0.0028	UJ
Newport_RA_SO_VOCs	BROMOFORM	MG_KG	N															< 0.0028	UJ
Newport_RA_SO_VOCs	BROMOMETHANE	MG_KG	N															< 0.0055	UJ
Newport_RA_SO_VOCs	CARBON DISULFIDE	MG_KG	N															< 0.0028	UJ
Newport_RA_SO_VOCs	CARBON TETRACHLORIDE	MG_KG	N															< 0.0028	UJ
Newport_RA_SO_VOCs	CHLOROBENZENE	MG_KG	N															< 0.0028	UJ
Newport_RA_SO_VOCs	CHLOROETHANE	MG_KG	N															< 0.0055	UJ
Newport_RA_SO_VOCs	CHLOROFORM	MG_KG	N															< 0.0028	UJ
Newport_RA_SO_VOCs	CHLOROMETHANE	MG_KG	N															< 0.0055	UJ
Newport_RA_SO_VOCs	CIS-1,2-DICHLOROETHENE	MG_KG	N															< 0.0028	UJ
Newport_RA_SO_VOCs	CIS-1,3-DICHLOROPROPENE	MG_KG	N															< 0.0028	UJ
Newport_RA_SO_VOCs	CYCLOHEXANE	MG_KG	N																
Newport_RA_SO_VOCs	DIBROMOCHLOROMETHANE	MG_KG	N															< 0.0028	UJ
Newport_RA_SO_VOCs	DIBROMOMETHANE	MG_KG	N															< 0.0028	UJ
Newport_RA_SO_VOCs	DICHLORODIFLUOROMETHANE	MG_KG	N															< 0.0055	UJ
Newport_RA_SO_VOCs	ETHYLBENZENE	MG_KG	N															< 0.0028	UJ
Newport_RA_SO_VOCs	HEXACHLOROBUTADIENE	MG_KG	N															< 0.0028	UJ
Newport_RA_SO_VOCs	ISOPROPYLBENZENE	MG_KG	N															< 0.0028	UJ
Newport_RA_SO_VOCs	M- AND P-XYLENE	MG_KG	N															< 0.0055	UJ
Newport_RA_SO_VOCs	METHYL ACETATE	MG_KG	N																
Newport_RA_SO_VOCs	METHYL CYCLOHEXANE	MG_KG	N															< 0.0028	UJ
Newport_RA_SO_VOCs	METHYL TERT-BUTYL ETHER	MG_KG	N															< 0.0028	UJ
Newport_RA_SO_VOCs	METHYLENE CHLORIDE	MG_KG	N															< 0.014	UJ
Newport_RA_SO_VOCs	NAPHTHALENE	MG_KG	N																
Newport_RA_SO_VOCs	N-BUTYLBENZENE	MG_KG	N															< 0.0028	UJ
Newport_RA_SO_VOCs	O-XYLENE	MG_KG	N															< 0.0028	UJ
Newport_RA_SO_VOCs	PROPYLBENZENE	MG_KG	N															< 0.0028	UJ
Newport_RA_SO_VOCs	SEC-BUTYLBENZENE	MG_KG	N															< 0.0028	UJ
Newport_RA_SO_VOCs	STYRENE	MG_KG	N															< 0.0028	UJ
Newport_RA_SO_VOCs	TERT-BUTANOL	MG_KG	N															< 0.014	UJ
Newport_RA_SO_VOCs	TERT-BUTYLBENZENE	MG_KG	N															< 0.0028	UJ
Newport_RA_SO_VOCs	TETRACHLOROETHENE	MG_KG	N															< 0.0028	UJ
Newport_RA_SO_VOCs	TOLUENE	MG_KG	N															< 0.0028	UJ
Newport_RA_SO_VOCs	TRANS-1,2-DICHLOROETHENE	MG_KG	N															< 0.0028	UJ
Newport_RA_SO_VOCs	TRANS-1,3-DICHLOROPROPENE	MG_KG	N															< 0.0028	UJ
Newport_RA_SO_VOCs	TRICHLOROETHENE	MG_KG	N															< 0.0028	UJ
Newport_RA_SO_VOCs	TRICHLOROFLUOROMETHANE	MG_KG	N															< 0.0055	UJ
Newport_RA_SO_VOCs	VINYL CHLORIDE	MG_KG	N															< 0.0055	UJ
Newport_RA_SO_VOCs	XYLENES, TOTAL	MG_KG	N															< 0.0082	UJ

Notes:
U or < - Non-detect at laboratory detection limit.
J - The compound was positively identified; however, the associated numerical value
is an estimated concentration only (+ and - indicate bias).
Sample Type - N = normal sample, FD = duplicate sample.
mg/kg - milligram per kilogram

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	CRP-SB302		CRP-SB302		CRP-SB302		CRP-SB302		CRP-SB325		CRP-SB325		CRP-SB302		
			Sample Date	12/10/2013		12/10/2013		12/10/2013		12/10/2013		6/3/2014		6/3/2014		12/10/2013		
			Sample ID	FDSB12101302		OU09 SB302 0810		OU09 SS302 0001		OU09 SB302 0305		OU09 SB325 0001		OU09 SB325 0102		OU09 SB302 0608		CF
			Sample Type	FD		N		N		N		N		N		N		
			start_depth	0		8		0		3		0		1		6		
			end_depth	1		10		1		5		1		2		8		
			depth_unit	FT		FT		FT		FT		FT		FT		FT		
			depth_interval	0 - 1 ft		8 - 10 ft		0 - 1 ft		3 - 5 ft		0 - 1 ft		1-2 ft		6 - 8 ft		
			task_code	MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		IR22_RI_2014		IR22_RI_2014		MRP01_RI_SO		M
			validated_yn	Y		Y		Y		Y						Y		
method_analyte_group	Chemical	Unit	Fraction	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result
Newport_RA_SO_Energetics	2,4-DINITROTOLUENE	MG_KG	N															
Newport_RA_SO_Energetics	2,6-DINITROTOLUENE	MG_KG	N															
Newport_RA_SO_Energetics	NITROGLYCERIN	MG_KG	N															
Newport_RA_SO_Metals	ALUMINUM	MG_KG	N	9330		9780		11600		10300						7540		
Newport_RA_SO_Metals	ANTIMONY	MG_KG	N	396	J	0.12	J	0.34	J	0.08	J					0.12	J	
Newport_RA_SO_Metals	ARSENIC	MG_KG	N	130	J	9.1	J	5.1	J	8.4	J					12.5	J	
Newport_RA_SO_Metals	BARIUM	MG_KG	N	28.6		37.1		34.9		38.2						23.6		
Newport_RA_SO_Metals	BERYLLIUM	MG_KG	N	0.36		0.34		0.38		0.45						0.43		
Newport_RA_SO_Metals	CADMIUM	MG_KG	N	0.15		0.07		0.10		0.05	J					0.04	J	
Newport_RA_SO_Metals	CALCIUM	MG_KG	N	578	J+	479	J+	590	J+	350	J+					405	J+	
Newport_RA_SO_Metals	CHROMIUM VI	MG_KG	N													< 0.33	U	
Newport_RA_SO_Metals	CHROMIUM, TOTAL	MG_KG	N	7.8	J	16.4	J	9.2	J	12.0	J					12.3	J	
Newport_RA_SO_Metals	COBALT	MG_KG	N	5.4	J	13.3	J	6.4	J	16.2	J					19.2	J	
Newport_RA_SO_Metals	COPPER	MG_KG	N	14.0		20.8		12.6		16.8						28.1		
Newport_RA_SO_Metals	IRON	MG_KG	N	14600	J	32700	J	16100	J	29200	J					44700	J	
Newport_RA_SO_Metals	IRON, FERROUS	MG_KG	N															
Newport_RA_SO_Metals	LEAD	MG_KG	N	29900	J	10.2	J	295	J	8.3	J					12.4	J	63.4
Newport_RA_SO_Metals	MAGNESIUM	MG_KG	N	1500	J	4090	J	1750	J	1880	J					1410	J	
Newport_RA_SO_Metals	MANGANESE	MG_KG	N	391	J	685	J	502	J	894	J					649	J	
Newport_RA_SO_Metals	MERCURY	MG_KG	N	0.06		0.005	J	0.06		0.01	J					< 0.017	U	
Newport_RA_SO_Metals	NICKEL	MG_KG	N	11.8	J	22.3	J	13.2	J	17.3	J					26.8	J	
Newport_RA_SO_Metals	POTASSIUM	MG_KG	N	256	J	772	J	363	J	448	J					594	J	
Newport_RA_SO_Metals	SELENIUM	MG_KG	N	0.45		0.22	J	0.40	J	0.39						0.44		
Newport_RA_SO_Metals	SILVER	MG_KG	N	0.86	J	0.02	J	0.09	J	0.07	J					0.02	J	
Newport_RA_SO_Metals	SODIUM	MG_KG	N	< 73	U	< 68	U	< 96	U	< 74	U					< 81	U	
Newport_RA_SO_Metals	THALLIUM	MG_KG	N	0.09		0.12		0.08	J	0.08						0.07	J	
Newport_RA_SO_Metals	VANADIUM	MG_KG	N	14.4		21.8		15.9		18.0						18.2		
Newport_RA_SO_Metals	ZINC	MG_KG	N	54.4	J+	47.2	J+	55.5	J+	43.5	J+					69.8	J+	
Newport_RA_SO_Other	DENSITY	G_CC	N															
Newport_RA_SO_Other	Pellet count	COUNT	N															
Newport_RA_SO_Other	Pellet weight	PCT	N															
Newport_RA_SO_Other	PERCENT FINES	PCT	N															
Newport_RA_SO_Other	PERCENT GRAVEL	PCT	N															
Newport_RA_SO_Other	PERCENT SAND	PCT	N															
Newport_RA_SO_Other	PERCENT SAND, COARSE	PCT	N															
Newport_RA_SO_Other	PERCENT SAND, FINE	PCT	N															
Newport_RA_SO_Other	PERCENT SAND, MEDIUM	PCT	N															
Newport_RA_SO_Other	PH	PH	N															
Newport_RA_SO_Other	POROSITY	PCT	N															
Newport_RA_SO_Other	SIEVE 1 INCH (25.4-MM)	PCT	N															
Newport_RA_SO_Other	SIEVE 1-1/2 INCH (37.5-MM)	PCT	N															
Newport_RA_SO_Other	SIEVE 2 INCH (50-MM)	PCT	N															
Newport_RA_SO_Other	SIEVE 3 INCH (75-MM)	PCT	N															
Newport_RA_SO_Other	SIEVE 3/4 INCH (19-MM)	PCT	N															
Newport_RA_SO_Other	SIEVE 3/8 INCH (9.5-MM)	PCT	N															
Newport_RA_SO_Other	SIEVE NO. 004 (4.75-MM)	PCT	N															
Newport_RA_SO_Other	SIEVE NO. 010 (2-MM)	PCT	N															
Newport_RA_SO_Other	SIEVE NO. 020 (850-UM)	PCT	N															
Newport_RA_SO_Other	SIEVE NO. 040 (425-UM)	PCT	N															
Newport_RA_SO_Other	SIEVE NO. 060 (250-UM)	PCT	N															
Newport_RA_SO_Other	SIEVE NO. 080 (180-UM)	PCT	N															
Newport_RA_SO_Other	SIEVE NO. 100 (150-UM)	PCT	N															
Newport_RA_SO_Other	SIEVE NO. 200 (75-UM)	PCT	N															
Newport_RA_SO_Other	SPECIFIC CONDUCTANCE	UMHO_CM	N															
Newport_RA_SO_Other	SPECIFIC GRAVITY	NONE	N															
Newport_RA_SO_Other	SULFIDE	MG_KG	N															
Newport_RA_SO_Other	TPH-DIESEL RANGE	MG_KG	N															
Newport_RA_SO_Other	TPH-TOTAL UNKNOWN GASOLINE RANGE ORGANICS	MG_KG	N															
Newport_RA_SO_Other	Void Ratio	NONE	N															
Newport_RA_SO_PCBs	AROCLOR-1016	MG_KG	N	< 0.0018	U	< 0.0017	U	< 0.0019	U	< 0.0018	U	< 0.0017	U	< 0.0020	U			
Newport_RA_SO_PCBs	AROCLOR-1221	MG_KG	N	< 0.0018	U	< 0.0017	U	< 0.0019	U	< 0.0018	U	< 0.0017	U	< 0.0020	U			
Newport_RA_SO_PCBs	AROCLOR-1232	MG_KG	N	< 0.0022	U	< 0.0020	U	< 0.0023	U	< 0.0021	U	< 0.0020	U	< 0.0024	U			
Newport_RA_SO_PCBs	AROCLOR-1242	MG_KG	N	< 0.0018	U	< 0.0017	U	< 0.0019	U	< 0.0018	U	< 0.0017	U	< 0.0020	U			
Newport_RA_SO_PCBs	AROCLOR-1248	MG_KG	N	< 0.0018	U	< 0.0017	U	< 0.0019	U	< 0.0018	U	< 0.0017	U	< 0.0020	U			
Newport_RA_SO_PCBs	AROCLOR-1254	MG_KG	N	< 0.0018	U	< 0.0017	U	< 0.0019	U	< 0.0018	U	< 0.0017	U	< 0.0020	U			
Newport_RA_SO_PCBs	AROCLOR-1260	MG_KG	N	0.05		< 0.0017	U	0.031		< 0.0018	U	0.016	J	< 0.0020	U			

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	CRP-SB302		CRP-SB302		CRP-SB302		CRP-SB302		CRP-SB325		CRP-SB325		CRP-SB302		
			Sample Date	12/10/2013		12/10/2013		12/10/2013		12/10/2013		6/3/2014		6/3/2014		12/10/2013		
			Sample ID	FDSB12101302		OU09 SB302 0810		OU09 SS302 0001		OU09 SB302 0305		OU09 SB325 0001		OU09 SB325 0102		OU09 SB302 0608		CF
			Sample Type	FD		N		N		N		N		N		N		
			start_depth	0		8		0		3		0		1		6		
			end_depth	1		10		1		5		1		2		8		
			depth_unit	FT		FT		FT		FT		FT		FT		FT		
			depth_interval	0 - 1 ft		8 - 10 ft		0 - 1 ft		3 - 5 ft		0 - 1 ft		1-2 ft		6 - 8 ft		
			task_code	MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		IR22_RI_2014		IR22_RI_2014		MRP01_RI_SO		M
			validated_yn	Y		Y		Y		Y						Y		
method_analyte_group	Chemical	Unit	Fraction	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result
Newport_RA_SO_PCBs	AROCLOR-1262	MG_KG	N	< 0.0018	U	< 0.0017	U	< 0.0019	U	< 0.0018	U	< 0.0017	U	< 0.0020	U			
Newport_RA_SO_PCBs	AROCLOR-1268	MG_KG	N	< 0.0018	U	< 0.0017	U	< 0.0019	U	< 0.0018	U	< 0.0017	U	< 0.0020	U			
Newport_RA_SO_PCBs	PCB, TOTAL	MG_KG	N	0.05		< 0.0020	U	0.031		< 0.0021	U	0.016		< 0.0024	U			
Newport_RA_SO_PCBs	POLYCHLORINATED BIPHENYLS (PCBS)	MG_KG	N															
Newport_RA_SO_Pesticides	4,4-DDD	MG_KG	N	< 0.00036	U	< 0.00033	UJ	< 0.00038	U	< 0.00034	U							
Newport_RA_SO_Pesticides	4,4-DDE	MG_KG	N	0.00064	J	< 0.00033	UJ	0.00059	J	< 0.00034	U							
Newport_RA_SO_Pesticides	4,4-DDT	MG_KG	N	0.0061	J	< 0.00033	UJ	0.0042	J	< 0.00034	U							
Newport_RA_SO_Pesticides	ALDRIN	MG_KG	N	< 0.00018	U	< 0.00017	UJ	< 0.00019	U	< 0.00018	U							
Newport_RA_SO_Pesticides	ALPHA-BHC	MG_KG	N	< 0.00018	U	< 0.00017	UJ	< 0.00019	U	< 0.00018	U							
Newport_RA_SO_Pesticides	ALPHA-CHLORDANE	MG_KG	N	< 0.00018	U	< 0.00017	UJ	< 0.00019	U	< 0.00018	U							
Newport_RA_SO_Pesticides	BETA-BHC	MG_KG	N	< 0.00018	U	< 0.00017	UJ	< 0.00019	U	< 0.00018	U							
Newport_RA_SO_Pesticides	DDT, TOTAL	MG_KG	N															
Newport_RA_SO_Pesticides	DELTA-BHC	MG_KG	N	< 0.00018	U	< 0.00017	UJ	< 0.00019	U	< 0.00018	U							
Newport_RA_SO_Pesticides	DIELDRIN	MG_KG	N	< 0.00036	U	< 0.00033	UJ	< 0.00038	U	< 0.00034	U							
Newport_RA_SO_Pesticides	ENDOSULFAN I	MG_KG	N	< 0.00018	U	< 0.00017	UJ	< 0.00019	U	< 0.00018	U							
Newport_RA_SO_Pesticides	ENDOSULFAN II	MG_KG	N	0.00032	J	< 0.00033	UJ	0.00028	J	< 0.00034	U							
Newport_RA_SO_Pesticides	ENDOSULFAN SULFATE	MG_KG	N	0.0021	J	< 0.00033	UJ	< 0.00038	UJ	< 0.00034	U							
Newport_RA_SO_Pesticides	ENDRIN	MG_KG	N	< 0.00036	U	< 0.00033	UJ	< 0.00038	U	< 0.00034	U							
Newport_RA_SO_Pesticides	ENDRIN ALDEHYDE	MG_KG	N	< 0.00036	U	< 0.00033	UJ	< 0.00038	U	< 0.00034	U							
Newport_RA_SO_Pesticides	ENDRIN KETONE	MG_KG	N	0.0016	J	< 0.00033	UJ	< 0.00038	UJ	< 0.00034	U							
Newport_RA_SO_Pesticides	GAMMA-CHLORDANE	MG_KG	N	< 0.00018	U	< 0.00017	UJ	< 0.00019	U	< 0.00018	U							
Newport_RA_SO_Pesticides	HEPTACHLOR	MG_KG	N	< 0.00018	U	< 0.00017	UJ	< 0.00019	U	< 0.00018	U							
Newport_RA_SO_Pesticides	HEPTACHLOR EPOXIDE	MG_KG	N	< 0.00018	U	< 0.00017	UJ	< 0.00019	U	< 0.00018	U							
Newport_RA_SO_Pesticides	LINDANE	MG_KG	N	< 0.00018	U	< 0.00017	UJ	< 0.00019	U	< 0.00018	U							
Newport_RA_SO_Pesticides	METHOXYCHLOR	MG_KG	N	< 0.0018	U	< 0.0017	UJ	< 0.0019	U	< 0.0018	U							
Newport_RA_SO_Pesticides	TOXAPHENE	MG_KG	N	< 0.0036	U	< 0.0033	UJ	< 0.0038	U	< 0.0034	U							
Newport_RA_SO_Pesticides	TRANS-CHLORDANE	MG_KG	N															
Newport_RA_SO_SVOCs	1,1-BIPHENYL	MG_KG	N	< 0.27	U	< 0.22	U	< 0.28	U	< 0.28	U							
Newport_RA_SO_SVOCs	1-METHYLNAPHTHALENE	MG_KG	N															
Newport_RA_SO_SVOCs	1,2,4-TRICHLOROBENZENE	MG_KG	N	< 0.27	U	< 0.22	U	< 0.28	U	< 0.28	U							
Newport_RA_SO_SVOCs	1,2-DICHLOROBENZENE	MG_KG	N	< 0.27	U	< 0.22	U	< 0.28	U	< 0.28	U							
Newport_RA_SO_SVOCs	1,2-DIPHENYLHYDRAZINE	MG_KG	N	< 0.54	U	< 0.44	U	< 0.56	U	< 0.56	U							
Newport_RA_SO_SVOCs	1,3-DICHLOROBENZENE	MG_KG	N	< 0.27	U	< 0.22	U	< 0.28	U	< 0.28	U							
Newport_RA_SO_SVOCs	1,4-DICHLOROBENZENE	MG_KG	N	< 0.27	U	< 0.22	U	< 0.28	U	< 0.28	U							
Newport_RA_SO_SVOCs	2,2'-OXYBIS(1-CHLOROPROPANE)	MG_KG	N	< 0.27	U	< 0.22	U	< 0.28	U	< 0.28	U							
Newport_RA_SO_SVOCs	2,4,5-TRICHLOROPHENOL	MG_KG	N	< 0.67	U	< 0.55	U	< 0.69	U	< 0.7	U							
Newport_RA_SO_SVOCs	2,4,6-TRICHLOROPHENOL	MG_KG	N	< 0.27	U	< 0.22	U	< 0.28	U	< 0.28	U							
Newport_RA_SO_SVOCs	2,4-DICHLOROPHENOL	MG_KG	N	< 0.27	U	< 0.22	U	< 0.28	U	< 0.28	U							
Newport_RA_SO_SVOCs	2,4-DIMETHYLPHENOL	MG_KG	N	< 0.27	U	< 0.22	U	< 0.28	U	< 0.28	U							
Newport_RA_SO_SVOCs	2,4-DINITROPHENOL	MG_KG	N	< 0.67	U	< 0.55	U	< 0.69	U	< 0.7	U							
Newport_RA_SO_SVOCs	2,4-DINITROTOLUENE	MG_KG	N	< 0.27	U	< 0.22	U	< 0.28	U	< 0.28	U							
Newport_RA_SO_SVOCs	2,6-DICHLOROPHENOL	MG_KG	N	< 0.27	U	< 0.22	U	< 0.28	U	< 0.28	U							
Newport_RA_SO_SVOCs	2,6-DINITROTOLUENE	MG_KG	N	< 0.27	U	< 0.22	U	< 0.28	U	< 0.28	U							
Newport_RA_SO_SVOCs	2-CHLORONAPHTHALENE	MG_KG	N	< 0.27	UJ	< 0.22	UJ	< 0.28	UJ	< 0.28	UJ							
Newport_RA_SO_SVOCs	2-CHLOROPHENOL	MG_KG	N	< 0.27	U	< 0.22	U	< 0.28	U	< 0.28	U							
Newport_RA_SO_SVOCs	2-METHYLNAPHTHALENE	MG_KG	N	< 0.27	U	< 0.22	U	< 0.28	U	< 0.28	U							< 0.348
Newport_RA_SO_SVOCs	2-METHYLPHENOL	MG_KG	N	< 0.27	U	< 0.22	U	< 0.28	U	< 0.28	U							
Newport_RA_SO_SVOCs	2-NITROANILINE	MG_KG	N	< 0.67	U	< 0.55	U	< 0.69	U	< 0.7	U							
Newport_RA_SO_SVOCs	2-NITROPHENOL	MG_KG	N	< 0.27	U	< 0.22	U	< 0.28	U	< 0.28	U							
Newport_RA_SO_SVOCs	3- AND 4-METHYLPHENOL	MG_KG	N	< 0.27	U	< 0.22	U	< 0.28	U	< 0.28	U							
Newport_RA_SO_SVOCs	3,3-DICHLOROBENZIDINE	MG_KG	N	< 0.27	U	< 0.22	U	< 0.28	U	< 0.28	U							
Newport_RA_SO_SVOCs	3-NITROANILINE	MG_KG	N	< 0.67	U	< 0.55	U	< 0.69	U	< 0.7	U							
Newport_RA_SO_SVOCs	4,6-DINITRO-2-METHYLPHENOL	MG_KG	N	< 0.67	U	< 0.55	U	< 0.69	U	< 0.7	U							
Newport_RA_SO_SVOCs	4-BROMOPHENYL-PHENYLETHER	MG_KG	N	< 0.27	U	< 0.22	U	< 0.28	U	< 0.28	U							
Newport_RA_SO_SVOCs	4-CHLORO-3-METHYLPHENOL	MG_KG	N	< 0.27	U	< 0.22	U	< 0.28	U	< 0.28	U							
Newport_RA_SO_SVOCs	4-CHLOROANILINE	MG_KG	N	< 0.27	U	< 0.22	U	< 0.28	U	< 0.28	U							
Newport_RA_SO_SVOCs	4-CHLOROPHENYL-PHENYLETHER	MG_KG	N	< 0.27	U	< 0.22	U	< 0.28	U	< 0.28	U							
Newport_RA_SO_SVOCs	4-METHYLPHENOL	MG_KG	N															
Newport_RA_SO_SVOCs	4-NITROANILINE	MG_KG	N	< 0.67	U	< 0.55	U	< 0.69	U	< 0.7	U							
Newport_RA_SO_SVOCs	4-NITROPHENOL	MG_KG	N	< 0.67	U	< 0.55	U	< 0.69	U	< 0.7	U							
Newport_RA_SO_SVOCs	ACENAPHTHENE	MG_KG	N	0.0099	J	< 0.0089	U	0.0054	J	< 0.011	U					< 0.01	U	< 0.348
Newport_RA_SO_SVOCs	ACENAPHTHYLENE	MG_KG	N	0.0037	J	< 0.0089	U	0.0027	J	< 0.011	U					< 0.01	U	0.071
Newport_RA_SO_SVOCs	ACETOPHENONE	MG_KG	N															
Newport_RA_SO_SVOCs	ANTHRACENE	MG_KG	N	0.017	J	0.0026	J	0.0088	J	< 0.011	U					< 0.01	UJ	0.15
Newport_RA_SO_SVOCs	ATRAZINE	MG_KG	N															
Newport_RA_SO_SVOCs	BENZALDEHYDE	MG_KG	N															

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	CRP-SB302		CRP-SB302		CRP-SB302		CRP-SB302		CRP-SB325		CRP-SB325		CRP-SB302		
			Sample Date	12/10/2013		12/10/2013		12/10/2013		12/10/2013		6/3/2014		6/3/2014		12/10/2013		
			Sample ID	FDSB12101302		OU09 SB302 0810		OU09 SS302 0001		OU09 SB302 0305		OU09 SB325 0001		OU09 SB325 0102		OU09 SB302 0608		CF
			Sample Type	FD		N		N		N		N		N		N		
			start_depth	0		8		0		3		0		1		6		
			end_depth	1		10		1		5		1		2		8		
			depth_unit	FT		FT		FT		FT		FT		FT		FT		
			depth_interval	0 - 1 ft		8 - 10 ft		0 - 1 ft		3 - 5 ft		0 - 1 ft		1-2 ft		6 - 8 ft		
			task_code	MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		IR22_RI_2014		IR22_RI_2014		MRP01_RI_SO		M
			validated_yn	Y		Y		Y		Y						Y		
method_analyte_group	Chemical	Unit	Fraction	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result
Newport_RA_SO_SVOCs	BENZIDINE	MG_KG	N		R		R		R		R							
Newport_RA_SO_SVOCs	BENZO[A]ANTHRACENE	MG_KG	N	0.16	J	< 0.018	U	0.092	J	< 0.023	U					< 0.01	U	0.441
Newport_RA_SO_SVOCs	BENZO[A]PYRENE	MG_KG	N	0.13	J	< 0.018	UJ	0.081	J	< 0.011	UJ					< 0.01	U	0.342
Newport_RA_SO_SVOCs	BENZO[B]FLUORANTHENE	MG_KG	N	0.18	J	< 0.018	UJ	0.1	J	< 0.023	UJ					0.012	J	0.364
Newport_RA_SO_SVOCs	BENZO[G,H,I]PERYLENE	MG_KG	N	0.045	J	< 0.0089	UJ	0.026	J	< 0.011	UJ					< 0.01	UJ	0.224
Newport_RA_SO_SVOCs	BENZO[K]FLUORANTHENE	MG_KG	N	0.08	J	< 0.018	U	0.078		< 0.011	U					0.0037	J	0.154
Newport_RA_SO_SVOCs	BENZOIC ACID	MG_KG	N	< 0.67	UJ	< 0.55	UJ	< 0.69	UJ	< 0.7	UJ							
Newport_RA_SO_SVOCs	BENZYL ALCOHOL	MG_KG	N	< 0.54	U	< 0.44	U	< 0.56	U	< 0.56	U							
Newport_RA_SO_SVOCs	BIS(2-CHLOROETHOXY)METHANE	MG_KG	N	< 0.27	U	< 0.22	U	< 0.28	U	< 0.28	U							
Newport_RA_SO_SVOCs	BIS(2-CHLOROETHYL)ETHER	MG_KG	N	< 0.27	U	< 0.22	U	< 0.28	U	< 0.28	U							
Newport_RA_SO_SVOCs	BIS(2-ETHYLHEXYL)PHTHALATE	MG_KG	N	< 0.27	U	< 0.22	U	< 0.28	U	< 0.28	U							
Newport_RA_SO_SVOCs	BUTYLBENZYLPHTHALATE	MG_KG	N	< 0.27	U	< 0.22	U	< 0.28	U	< 0.28	U							
Newport_RA_SO_SVOCs	CAPROLACTAM	MG_KG	N	< 0.27	U	< 0.22	U	< 0.28	U	< 0.28	U							
Newport_RA_SO_SVOCs	CARBAZOLE	MG_KG	N	< 0.27	U	< 0.22	U	< 0.28	U	< 0.28	U							
Newport_RA_SO_SVOCs	CHRYSENE	MG_KG	N	0.21	J	< 0.0089	U	0.1	J	< 0.011	U					< 0.01	U	0.632
Newport_RA_SO_SVOCs	DIBENZ[A,H]ANTHRACENE	MG_KG	N	0.028	J	< 0.018	UJ	< 0.022	UJ	< 0.023	UJ					< 0.01	UJ	0.0672
Newport_RA_SO_SVOCs	DIBENZOFURAN	MG_KG	N	< 0.27	U	< 0.22	U	< 0.28	U	< 0.28	U							
Newport_RA_SO_SVOCs	DIETHYLPHTHALATE	MG_KG	N	< 0.27	UJ	< 0.22	UJ	< 0.28	UJ	< 0.28	UJ							
Newport_RA_SO_SVOCs	DIMETHYL PHTHALATE	MG_KG	N	< 0.27	U	< 0.22	U	< 0.28	U	< 0.28	U							
Newport_RA_SO_SVOCs	DI-N-BUTYLPHTHALATE	MG_KG	N	< 0.27	U	< 0.22	U	< 0.28	U	< 0.28	U							
Newport_RA_SO_SVOCs	DI-N-OCTYLPHTHALATE	MG_KG	N	< 0.27	U	< 0.22	U	< 0.28	U	< 0.28	U							
Newport_RA_SO_SVOCs	FLUORANTHENE	MG_KG	N	0.2		< 0.018	U	0.15		< 0.023	U					< 0.01	U	0.761
Newport_RA_SO_SVOCs	FLUORENE	MG_KG	N	0.012	J	< 0.0089	U	0.01	J	< 0.011	U					< 0.01	U	0.0526
Newport_RA_SO_SVOCs	HEXACHLOROBENZENE	MG_KG	N	< 0.27	U	< 0.22	U	< 0.28	U	< 0.28	U							
Newport_RA_SO_SVOCs	HEXACHLOROBUTADIENE	MG_KG	N	< 0.27	U	< 0.22	U	< 0.28	U	< 0.28	U							
Newport_RA_SO_SVOCs	HEXACHLOROCYCLOPENTADIENE	MG_KG	N															
Newport_RA_SO_SVOCs	HEXACHLOROETHANE	MG_KG	N	< 0.27	U	< 0.22	U	< 0.28	U	< 0.28	U							
Newport_RA_SO_SVOCs	HPAH, TOTAL	MG_KG	N	1.1		< 0.018	U	0.84		< 0.023	U					0.016		4.02
Newport_RA_SO_SVOCs	INDENO[1,2,3-CD]PYRENE	MG_KG	N	0.052	J	< 0.018	U	0.036		< 0.023	U					< 0.01	UJ	0.222
Newport_RA_SO_SVOCs	ISOPHORONE	MG_KG	N	< 0.27	U	< 0.22	U	< 0.28	U	< 0.28	U							
Newport_RA_SO_SVOCs	LPAH, TOTAL	MG_KG	N	0.2		0.0026		0.14		< 0.28	U					< 0.01	U	0.886
Newport_RA_SO_SVOCs	NAPHTHALENE	MG_KG	N	0.0037	J	< 0.0089	U	0.0037	J	< 0.011	U					< 0.01	U	< 0.348
Newport_RA_SO_SVOCs	NITROBENZENE	MG_KG	N	< 0.27	U	< 0.22	U	< 0.28	U	< 0.28	U							
Newport_RA_SO_SVOCs	N-NITROSODIMETHYLAMINE	MG_KG	N	< 0.27	U	< 0.22	U	< 0.28	U	< 0.28	U							
Newport_RA_SO_SVOCs	N-NITROSODINPROPYLAMINE	MG_KG	N	< 0.27	U	< 0.22	U	< 0.28	U	< 0.28	U							
Newport_RA_SO_SVOCs	N-NITROSODIPHENYLAMINE	MG_KG	N	< 0.27	U	< 0.22	U	< 0.28	U	< 0.28	U							
Newport_RA_SO_SVOCs	N-NITROSOPYRROLIDINE	MG_KG	N	< 0.27	U	< 0.22	U	< 0.28	U	< 0.28	U							
Newport_RA_SO_SVOCs	PAH, TOTAL	MG_KG	N	1.3		0.0026		0.98		< 0.28	U					0.016		4.90
Newport_RA_SO_SVOCs	PENTACHLOROPHENOL	MG_KG	N	< 0.67	U	< 0.55	U	< 0.69	U	< 0.7	U							
Newport_RA_SO_SVOCs	PHENANTHRENE	MG_KG	N	0.15		< 0.018	U	0.11		< 0.023	U					< 0.01	U	0.612
Newport_RA_SO_SVOCs	PHENOL	MG_KG	N	< 0.27	U	< 0.22	U	< 0.28	U	< 0.28	U							
Newport_RA_SO_SVOCs	PYRENE	MG_KG	N			< 0.018	U	0.18		< 0.023	U					< 0.01	UJ	0.81
Newport_RA_SO_VOCs	1,1,1,2-TETRACHLOROETHANE	MG_KG	N	< 0.0030	UJ	< 0.0015	UJ	< 0.0025	UJ	< 0.0032	UJ							
Newport_RA_SO_VOCs	1,1,1-TRICHLOROETHANE	MG_KG	N	< 0.0030	UJ	< 0.0015	UJ	< 0.0025	UJ	< 0.0032	UJ							
Newport_RA_SO_VOCs	1,1,2,2-TETRACHLOROETHANE	MG_KG	N	< 0.0030	UJ	< 0.0015	UJ	< 0.0025	UJ	< 0.0032	UJ							
Newport_RA_SO_VOCs	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	MG_KG	N															
Newport_RA_SO_VOCs	1,1,2-TRICHLOROETHANE	MG_KG	N	< 0.0030	UJ	< 0.0015	UJ	< 0.0025	UJ	< 0.0032	UJ							
Newport_RA_SO_VOCs	1,1-DICHLOROETHANE	MG_KG	N	< 0.0030	UJ	< 0.0015	UJ	< 0.0025	UJ	< 0.0032	UJ							
Newport_RA_SO_VOCs	1,1-DICHLOROETHENE	MG_KG	N	< 0.0030	UJ	< 0.0015	UJ	< 0.0025	UJ	< 0.0032	UJ							
Newport_RA_SO_VOCs	1,1-DICHLOROPROPENE	MG_KG	N	< 0.0030	UJ	< 0.0015	UJ	< 0.0025	UJ	< 0.0032	UJ							
Newport_RA_SO_VOCs	1,2,3-TRICHLOROBENZENE	MG_KG	N	< 0.0030	UJ	< 0.0015	UJ	< 0.0025	UJ	< 0.0032	UJ							
Newport_RA_SO_VOCs	1,2,3-TRICHLOROPROPANE	MG_KG	N	< 0.0030	UJ	< 0.0015	UJ	< 0.0025	UJ	< 0.0032	UJ							
Newport_RA_SO_VOCs	1,2,4-TRICHLOROBENZENE	MG_KG	N	< 0.0030	UJ	< 0.0015	UJ	< 0.0025	UJ	< 0.0032	UJ							
Newport_RA_SO_VOCs	1,2,4-TRIMETHYLBENZENE	MG_KG	N	< 0.0030	UJ	< 0.0015	UJ	< 0.0025	UJ	< 0.0032	UJ							
Newport_RA_SO_VOCs	1,2-DIBROMO-3-CHLOROPROPANE	MG_KG	N	< 0.0030	UJ	< 0.0015	UJ	< 0.0025	UJ	< 0.0032	UJ							
Newport_RA_SO_VOCs	1,2-DIBROMOETHANE	MG_KG	N	< 0.0030	UJ	< 0.0015	UJ	< 0.0025	UJ	< 0.0032	UJ							
Newport_RA_SO_VOCs	1,2-DICHLOROBENZENE	MG_KG	N	< 0.0030	UJ	< 0.0015	UJ	< 0.0025	UJ	< 0.0032	UJ							
Newport_RA_SO_VOCs	1,2-DICHLOROETHANE	MG_KG	N	< 0.0030	UJ	< 0.0015	UJ	< 0.0025	UJ	< 0.0032	UJ							
Newport_RA_SO_VOCs	1,2-DICHLOROETHENE, TOTAL	MG_KG	N	< 0.0060	UJ	< 0.0030	UJ	< 0.0050	UJ	< 0.0065	UJ							
Newport_RA_SO_VOCs	1,2-DICHLOROPROPANE	MG_KG	N	< 0.0030	UJ	< 0.0015	UJ	< 0.0025	UJ	< 0.0032	UJ							
Newport_RA_SO_VOCs	1,3,5-TRIMETHYLBENZENE	MG_KG	N	< 0.0030	UJ	< 0.0015	UJ	< 0.0025	UJ	< 0.0032	UJ							
Newport_RA_SO_VOCs	1,3-DICHLOROBENZENE	MG_KG	N	< 0.0030	UJ	< 0.0015	UJ	< 0.0025	UJ	< 0.0032	UJ							
Newport_RA_SO_VOCs	1,3-DICHLOROPROPANE	MG_KG	N	< 0.0030	UJ	< 0.0015	UJ	< 0.0025	UJ	< 0.0032	UJ							
Newport_RA_SO_VOCs	1,4-DICHLOROBENZENE	MG_KG	N	< 0.0030	UJ	< 0.0015	UJ	< 0.0025	UJ	< 0.0032	UJ							
Newport_RA_SO_VOCs	2,2-DICHLOROPROPANE	MG_KG	N	< 0.0030	UJ	< 0.0015	UJ	< 0.0025	UJ	< 0.0032	UJ							
Newport_RA_SO_VOCs	2-BUTANONE	MG_KG	N	< 0.015	UJ	< 0.0075	UJ	< 0.012	UJ	< 0.016	UJ							

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	CRP-SB302		CRP-SB302		CRP-SB302		CRP-SB302		CRP-SB325		CRP-SB325		CRP-SB302		
			Sample Date	12/10/2013		12/10/2013		12/10/2013		12/10/2013		6/3/2014		6/3/2014		12/10/2013		
			Sample ID	FDSB12101302		OU09 SB302 0810		OU09 SS302 0001		OU09 SB302 0305		OU09 SB325 0001		OU09 SB325 0102		OU09 SB302 0608		CF
			Sample Type	FD		N		N		N		N		N		N		
			start_depth	0		8		0		3		0		1		6		
			end_depth	1		10		1		5		1		2		8		
			depth_unit	FT		FT		FT		FT		FT		FT		FT		
			depth_interval	0 - 1 ft		8 - 10 ft		0 - 1 ft		3 - 5 ft		0 - 1 ft		1-2 ft		6 - 8 ft		
			task_code	MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		IR22_RI_2014		IR22_RI_2014		MRP01_RI_SO		M
			validated_yn	Y		Y		Y		Y						Y		
method_analyte_group	Chemical	Unit	Fraction	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result
Newport_RA_SO_VOCs	2-CHLOROTOLUENE	MG_KG	N	< 0.0030	UJ	< 0.0015	UJ	< 0.0025	UJ	< 0.0032	UJ							
Newport_RA_SO_VOCs	2-HEXANONE	MG_KG	N	< 0.015	UJ	< 0.0075	UJ	< 0.012	UJ	< 0.016	UJ							
Newport_RA_SO_VOCs	4-CHLOROTOLUENE	MG_KG	N	< 0.0030	UJ	< 0.0015	UJ	< 0.0025	UJ	< 0.0032	UJ							
Newport_RA_SO_VOCs	4-ISOPROPYLTOLUENE	MG_KG	N	< 0.0030	UJ	< 0.0015	UJ	< 0.0025	UJ	< 0.0032	UJ							
Newport_RA_SO_VOCs	4-METHYL-2-PENTANONE	MG_KG	N	< 0.015	UJ	< 0.0075	UJ	< 0.012	UJ	< 0.016	UJ							
Newport_RA_SO_VOCs	ACETONE	MG_KG	N	< 0.015	UJ	< 0.0075	UJ	< 0.012	UJ	< 0.016	UJ							
Newport_RA_SO_VOCs	BENZENE	MG_KG	N	< 0.0030	UJ	< 0.0015	UJ	< 0.0025	UJ	< 0.0032	UJ							
Newport_RA_SO_VOCs	BROMOBENZENE	MG_KG	N	< 0.0030	UJ	< 0.0015	UJ	< 0.0025	UJ	< 0.0032	UJ							
Newport_RA_SO_VOCs	BROMOCHLOROMETHANE	MG_KG	N	< 0.0030	UJ	< 0.0015	UJ	< 0.0025	UJ	< 0.0032	UJ							
Newport_RA_SO_VOCs	BROMODICHLOROMETHANE	MG_KG	N	< 0.0030	UJ	< 0.0015	UJ	< 0.0025	UJ	< 0.0032	UJ							
Newport_RA_SO_VOCs	BROMOFORM	MG_KG	N	< 0.0030	UJ	< 0.0015	UJ	< 0.0025	UJ	< 0.0032	UJ							
Newport_RA_SO_VOCs	BROMOMETHANE	MG_KG	N	< 0.0060	UJ	< 0.0030	UJ	< 0.0050	UJ	< 0.0065	UJ							
Newport_RA_SO_VOCs	CARBON DISULFIDE	MG_KG	N	< 0.0030	UJ	< 0.0015	UJ	< 0.0025	UJ	< 0.0032	UJ							
Newport_RA_SO_VOCs	CARBON TETRACHLORIDE	MG_KG	N	< 0.0030	UJ	< 0.0015	UJ	< 0.0025	UJ	< 0.0032	UJ							
Newport_RA_SO_VOCs	CHLOROBENZENE	MG_KG	N	< 0.0030	UJ	< 0.0015	UJ	< 0.0025	UJ	< 0.0032	UJ							
Newport_RA_SO_VOCs	CHLOROETHANE	MG_KG	N	< 0.0060	UJ	< 0.0030	UJ	< 0.0050	UJ	< 0.0065	UJ							
Newport_RA_SO_VOCs	CHLOROFORM	MG_KG	N	< 0.0030	UJ	< 0.0015	UJ	< 0.0025	UJ	< 0.0032	UJ							
Newport_RA_SO_VOCs	CHLOROMETHANE	MG_KG	N	< 0.0060	UJ	< 0.0030	UJ	< 0.0050	UJ	< 0.0065	UJ							
Newport_RA_SO_VOCs	CIS-1,2-DICHLOROETHENE	MG_KG	N	< 0.0030	UJ	< 0.0015	UJ	< 0.0025	UJ	< 0.0032	UJ							
Newport_RA_SO_VOCs	CIS-1,3-DICHLOROPROPENE	MG_KG	N	< 0.0030	UJ	< 0.0015	UJ	< 0.0025	UJ	< 0.0032	UJ							
Newport_RA_SO_VOCs	CYCLOHEXANE	MG_KG	N															
Newport_RA_SO_VOCs	DIBROMOCHLOROMETHANE	MG_KG	N	< 0.0030	UJ	< 0.0015	UJ	< 0.0025	UJ	< 0.0032	UJ							
Newport_RA_SO_VOCs	DIBROMOMETHANE	MG_KG	N	< 0.0030	UJ	< 0.0015	UJ	< 0.0025	UJ	< 0.0032	UJ							
Newport_RA_SO_VOCs	DICHLORODIFLUOROMETHANE	MG_KG	N	< 0.0060	UJ	< 0.0030	UJ	< 0.0050	UJ	< 0.0065	UJ							
Newport_RA_SO_VOCs	ETHYLBENZENE	MG_KG	N	< 0.0030	UJ	< 0.0015	UJ	< 0.0025	UJ	< 0.0032	UJ							
Newport_RA_SO_VOCs	HEXACHLOROBUTADIENE	MG_KG	N	< 0.0030	UJ	< 0.0015	UJ	< 0.0025	UJ	< 0.0032	UJ							
Newport_RA_SO_VOCs	ISOPROPYLBENZENE	MG_KG	N	< 0.0030	UJ	< 0.0015	UJ	< 0.0025	UJ	< 0.0032	UJ							
Newport_RA_SO_VOCs	M- AND P-XYLENE	MG_KG	N	< 0.0060	UJ	< 0.0030	UJ	< 0.0050	UJ	< 0.0065	UJ							
Newport_RA_SO_VOCs	METHYL ACETATE	MG_KG	N															
Newport_RA_SO_VOCs	METHYL CYCLOHEXANE	MG_KG	N	< 0.0030	UJ	< 0.0015	UJ	< 0.0025	UJ	< 0.0032	UJ							
Newport_RA_SO_VOCs	METHYL TERT-BUTYL ETHER	MG_KG	N	< 0.0030	UJ	< 0.0015	UJ	< 0.0025	UJ	< 0.0032	UJ							
Newport_RA_SO_VOCs	METHYLENE CHLORIDE	MG_KG	N	< 0.015	UJ	< 0.0075	UJ	< 0.012	UJ	< 0.016	UJ							
Newport_RA_SO_VOCs	NAPHTHALENE	MG_KG	N															
Newport_RA_SO_VOCs	N-BUTYLBENZENE	MG_KG	N	< 0.0030	UJ	< 0.0015	UJ	< 0.0025	UJ	< 0.0032	UJ							
Newport_RA_SO_VOCs	O-XYLENE	MG_KG	N	< 0.0030	UJ	< 0.0015	UJ	< 0.0025	UJ	< 0.0032	UJ							
Newport_RA_SO_VOCs	PROPYLBENZENE	MG_KG	N	< 0.0030	UJ	< 0.0015	UJ	< 0.0025	UJ	< 0.0032	UJ							
Newport_RA_SO_VOCs	SEC-BUTYLBENZENE	MG_KG	N	< 0.0030	UJ	< 0.0015	UJ	< 0.0025	UJ	< 0.0032	UJ							
Newport_RA_SO_VOCs	STYRENE	MG_KG	N	< 0.0030	UJ	< 0.0015	UJ	< 0.0025	UJ	< 0.0032	UJ							
Newport_RA_SO_VOCs	TERT-BUTANOL	MG_KG	N	< 0.015	UJ	< 0.0075	UJ	< 0.012	UJ	< 0.016	UJ							
Newport_RA_SO_VOCs	TERT-BUTYLBENZENE	MG_KG	N	< 0.0030	UJ	< 0.0015	UJ	< 0.0025	UJ	< 0.0032	UJ							
Newport_RA_SO_VOCs	TETRACHLOROETHENE	MG_KG	N	< 0.0030	UJ	< 0.0015	UJ	< 0.0025	UJ	< 0.0032	UJ							
Newport_RA_SO_VOCs	TOLUENE	MG_KG	N	< 0.0030	UJ	< 0.0015	UJ	< 0.0025	UJ	< 0.0032	UJ							
Newport_RA_SO_VOCs	TRANS-1,2-DICHLOROETHENE	MG_KG	N	< 0.0030	UJ	< 0.0015	UJ	< 0.0025	UJ	< 0.0032	UJ							
Newport_RA_SO_VOCs	TRANS-1,3-DICHLOROPROPENE	MG_KG	N	< 0.0030	UJ	< 0.0015	UJ	< 0.0025	UJ	< 0.0032	UJ							
Newport_RA_SO_VOCs	TRICHLOROETHENE	MG_KG	N	< 0.0030	UJ	< 0.0015	UJ	< 0.0025	UJ	< 0.0032	UJ							
Newport_RA_SO_VOCs	TRICHLOROFLUOROMETHANE	MG_KG	N	< 0.0060	UJ	< 0.0030	UJ	< 0.0050	UJ	< 0.0065	UJ							
Newport_RA_SO_VOCs	VINYL CHLORIDE	MG_KG	N	< 0.0060	UJ	< 0.0030	UJ	< 0.0050	UJ	< 0.0065	UJ							
Newport_RA_SO_VOCs	XYLENES, TOTAL	MG_KG	N	< 0.0090	UJ	< 0.0045	UJ	< 0.0075	UJ	< 0.0098	UJ							

Notes:
U or < - Non-detect at laboratory detection limit.
J - The compound was positively identified; however, the associated numerical value
is an estimated concentration only (+ and - indicate bias).
Sample Type - N = normal sample, FD = duplicate sample.
mg/kg - milligram per kilogram

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	CRP-SS107	CRP-SS111		CRP-SS114	
			Sample Date	1/19/2010	1/19/2010		1/19/2010	
			Sample ID	RP-SS107-0006	CRP-SS111-0006		CRP-SS114-0006	
			Sample Type	N	N		N	
			start_depth	0	0		0	
			end_depth	0.5	0.5		0.5	
			depth_unit	FT	FT		FT	
			depth_interval	0 - 0.5 ft	0 - 0.5 ft		0 - 0.5 ft	
			task_code	RP01 SI 2010	MRP01 SI 2010		MRP01 SI 2009	
			validated_yn	N	N		N	
method_analyte_group	Chemical	Unit	Fraction	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers
Newport_RA_SO_Energetics	2,4-DINITROTOLUENE	MG_KG	N					
Newport_RA_SO_Energetics	2,6-DINITROTOLUENE	MG_KG	N					
Newport_RA_SO_Energetics	NITROGLYCERIN	MG_KG	N					
Newport_RA_SO_Metals	ALUMINUM	MG_KG	N					
Newport_RA_SO_Metals	ANTIMONY	MG_KG	N					
Newport_RA_SO_Metals	ARSENIC	MG_KG	N					
Newport_RA_SO_Metals	BARIUM	MG_KG	N					
Newport_RA_SO_Metals	BERYLLIUM	MG_KG	N					
Newport_RA_SO_Metals	CADMIUM	MG_KG	N					
Newport_RA_SO_Metals	CALCIUM	MG_KG	N					
Newport_RA_SO_Metals	CHROMIUM VI	MG_KG	N					
Newport_RA_SO_Metals	CHROMIUM, TOTAL	MG_KG	N					
Newport_RA_SO_Metals	COBALT	MG_KG	N					
Newport_RA_SO_Metals	COPPER	MG_KG	N					
Newport_RA_SO_Metals	IRON	MG_KG	N					
Newport_RA_SO_Metals	IRON, FERROUS	MG_KG	N					
Newport_RA_SO_Metals	LEAD	MG_KG	N		60.4		75.7	
Newport_RA_SO_Metals	MAGNESIUM	MG_KG	N					
Newport_RA_SO_Metals	MANGANESE	MG_KG	N					
Newport_RA_SO_Metals	MERCURY	MG_KG	N					
Newport_RA_SO_Metals	NICKEL	MG_KG	N					
Newport_RA_SO_Metals	POTASSIUM	MG_KG	N					
Newport_RA_SO_Metals	SELENIUM	MG_KG	N					
Newport_RA_SO_Metals	SILVER	MG_KG	N					
Newport_RA_SO_Metals	SODIUM	MG_KG	N					
Newport_RA_SO_Metals	THALLIUM	MG_KG	N					
Newport_RA_SO_Metals	VANADIUM	MG_KG	N					
Newport_RA_SO_Metals	ZINC	MG_KG	N					
Newport_RA_SO_Other	DENSITY	G_CC	N					
Newport_RA_SO_Other	Pellet count	COUNT	N					
Newport_RA_SO_Other	Pellet weight	PCT	N					
Newport_RA_SO_Other	PERCENT FINES	PCT	N					
Newport_RA_SO_Other	PERCENT GRAVEL	PCT	N					
Newport_RA_SO_Other	PERCENT SAND	PCT	N					
Newport_RA_SO_Other	PERCENT SAND, COARSE	PCT	N					
Newport_RA_SO_Other	PERCENT SAND, FINE	PCT	N					
Newport_RA_SO_Other	PERCENT SAND, MEDIUM	PCT	N					
Newport_RA_SO_Other	PH	PH	N					
Newport_RA_SO_Other	POROSITY	PCT	N					
Newport_RA_SO_Other	SIEVE 1 INCH (25.4-MM)	PCT	N					
Newport_RA_SO_Other	SIEVE 1-1/2 INCH (37.5-MM)	PCT	N					
Newport_RA_SO_Other	SIEVE 2 INCH (50-MM)	PCT	N					
Newport_RA_SO_Other	SIEVE 3 INCH (75-MM)	PCT	N					
Newport_RA_SO_Other	SIEVE 3/4 INCH (19-MM)	PCT	N					
Newport_RA_SO_Other	SIEVE 3/8 INCH (9.5-MM)	PCT	N					
Newport_RA_SO_Other	SIEVE NO. 004 (4.75-MM)	PCT	N					
Newport_RA_SO_Other	SIEVE NO. 010 (2-MM)	PCT	N					
Newport_RA_SO_Other	SIEVE NO. 020 (850-UM)	PCT	N					
Newport_RA_SO_Other	SIEVE NO. 040 (425-UM)	PCT	N					
Newport_RA_SO_Other	SIEVE NO. 060 (250-UM)	PCT	N					
Newport_RA_SO_Other	SIEVE NO. 080 (180-UM)	PCT	N					
Newport_RA_SO_Other	SIEVE NO. 100 (150-UM)	PCT	N					
Newport_RA_SO_Other	SIEVE NO. 200 (75-UM)	PCT	N					
Newport_RA_SO_Other	SPECIFIC CONDUCTANCE	UMHO_CM	N					
Newport_RA_SO_Other	SPECIFIC GRAVITY	NONE	N					
Newport_RA_SO_Other	SULFIDE	MG_KG	N					
Newport_RA_SO_Other	TPH-DIESEL RANGE	MG_KG	N					
Newport_RA_SO_Other	TPH-TOTAL UNKNOWN GASOLINE RANGE ORGANICS	MG_KG	N					
Newport_RA_SO_Other	Void Ratio	NONE	N					
Newport_RA_SO_PCBs	AROCLOR-1016	MG_KG	N					
Newport_RA_SO_PCBs	AROCLOR-1221	MG_KG	N					
Newport_RA_SO_PCBs	AROCLOR-1232	MG_KG	N					
Newport_RA_SO_PCBs	AROCLOR-1242	MG_KG	N					
Newport_RA_SO_PCBs	AROCLOR-1248	MG_KG	N					
Newport_RA_SO_PCBs	AROCLOR-1254	MG_KG	N					
Newport_RA_SO_PCBs	AROCLOR-1260	MG_KG	N					

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	CRP-SS107		CRP-SS111		CRP-SS114	
			Sample Date	1/19/2010		1/19/2010		1/19/2010	
			Sample ID	RP-SS107-0006		CRP-SS111-0006		CRP-SS114-0006	
			Sample Type	N		N		N	
			start_depth	0		0		0	
			end_depth	0.5		0.5		0.5	
			depth_unit	FT		FT		FT	
			depth_interval	0 - 0.5 ft		0 - 0.5 ft		0 - 0.5 ft	
			task_code	RP01 SI 2010		MRP01 SI 2010		MRP01 SI 2009	
			validated_yn	N		N		N	
method_analyte_group	Chemical	Unit	Fraction	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers
Newport_RA_SO_PCBs	AROCLOR-1262	MG_KG	N					
Newport_RA_SO_PCBs	AROCLOR-1268	MG_KG	N					
Newport_RA_SO_PCBs	PCB, TOTAL	MG_KG	N					
Newport_RA_SO_PCBs	POLYCHLORINATED BIPHENYLS (PCBS)	MG_KG	N					
Newport_RA_SO_Pesticides	4,4-DDD	MG_KG	N					
Newport_RA_SO_Pesticides	4,4-DDE	MG_KG	N					
Newport_RA_SO_Pesticides	4,4-DDT	MG_KG	N					
Newport_RA_SO_Pesticides	ALDRIN	MG_KG	N					
Newport_RA_SO_Pesticides	ALPHA-BHC	MG_KG	N					
Newport_RA_SO_Pesticides	ALPHA-CHLORDANE	MG_KG	N					
Newport_RA_SO_Pesticides	BETA-BHC	MG_KG	N					
Newport_RA_SO_Pesticides	DDT, TOTAL	MG_KG	N					
Newport_RA_SO_Pesticides	DELTA-BHC	MG_KG	N					
Newport_RA_SO_Pesticides	DIELDRIN	MG_KG	N					
Newport_RA_SO_Pesticides	ENDOSULFAN I	MG_KG	N					
Newport_RA_SO_Pesticides	ENDOSULFAN II	MG_KG	N					
Newport_RA_SO_Pesticides	ENDOSULFAN SULFATE	MG_KG	N					
Newport_RA_SO_Pesticides	ENDRIN	MG_KG	N					
Newport_RA_SO_Pesticides	ENDRIN ALDEHYDE	MG_KG	N					
Newport_RA_SO_Pesticides	ENDRIN KETONE	MG_KG	N					
Newport_RA_SO_Pesticides	GAMMA-CHLORDANE	MG_KG	N					
Newport_RA_SO_Pesticides	HEPTACHLOR	MG_KG	N					
Newport_RA_SO_Pesticides	HEPTACHLOR EPOXIDE	MG_KG	N					
Newport_RA_SO_Pesticides	LINDANE	MG_KG	N					
Newport_RA_SO_Pesticides	METHOXYCHLOR	MG_KG	N					
Newport_RA_SO_Pesticides	TOXAPHENE	MG_KG	N					
Newport_RA_SO_Pesticides	TRANS-CHLORDANE	MG_KG	N					
Newport_RA_SO_SVOCs	1,1-BIPHENYL	MG_KG	N					
Newport_RA_SO_SVOCs	1-METHYLNAPHTHALENE	MG_KG	N					
Newport_RA_SO_SVOCs	1,2,4-TRICHLOROBENZENE	MG_KG	N					
Newport_RA_SO_SVOCs	1,2-DICHLOROBENZENE	MG_KG	N					
Newport_RA_SO_SVOCs	1,2-DIPHENYLHYDRAZINE	MG_KG	N					
Newport_RA_SO_SVOCs	1,3-DICHLOROBENZENE	MG_KG	N					
Newport_RA_SO_SVOCs	1,4-DICHLOROBENZENE	MG_KG	N					
Newport_RA_SO_SVOCs	2,2'-OXYBIS(1-CHLOROPROPANE)	MG_KG	N					
Newport_RA_SO_SVOCs	2,4,5-TRICHLOROPHENOL	MG_KG	N					
Newport_RA_SO_SVOCs	2,4,6-TRICHLOROPHENOL	MG_KG	N					
Newport_RA_SO_SVOCs	2,4-DICHLOROPHENOL	MG_KG	N					
Newport_RA_SO_SVOCs	2,4-DIMETHYLPHENOL	MG_KG	N					
Newport_RA_SO_SVOCs	2,4-DINITROPHENOL	MG_KG	N					
Newport_RA_SO_SVOCs	2,4-DINITROTOLUENE	MG_KG	N					
Newport_RA_SO_SVOCs	2,6-DICHLOROPHENOL	MG_KG	N					
Newport_RA_SO_SVOCs	2,6-DINITROTOLUENE	MG_KG	N					
Newport_RA_SO_SVOCs	2-CHLORONAPHTHALENE	MG_KG	N					
Newport_RA_SO_SVOCs	2-CHLOROPHENOL	MG_KG	N					
Newport_RA_SO_SVOCs	2-METHYLNAPHTHALENE	MG_KG	N	U	< 0.369	U	< 0.33	U
Newport_RA_SO_SVOCs	2-METHYLPHENOL	MG_KG	N					
Newport_RA_SO_SVOCs	2-NITROANILINE	MG_KG	N					
Newport_RA_SO_SVOCs	2-NITROPHENOL	MG_KG	N					
Newport_RA_SO_SVOCs	3- AND 4-METHYLPHENOL	MG_KG	N					
Newport_RA_SO_SVOCs	3,3-DICHLOROBENZIDINE	MG_KG	N					
Newport_RA_SO_SVOCs	3-NITROANILINE	MG_KG	N					
Newport_RA_SO_SVOCs	4,6-DINITRO-2-METHYLPHENOL	MG_KG	N					
Newport_RA_SO_SVOCs	4-BROMOPHENYL-PHENYLETHER	MG_KG	N					
Newport_RA_SO_SVOCs	4-CHLORO-3-METHYLPHENOL	MG_KG	N					
Newport_RA_SO_SVOCs	4-CHLOROANILINE	MG_KG	N					
Newport_RA_SO_SVOCs	4-CHLOROPHENYL-PHENYLETHER	MG_KG	N					
Newport_RA_SO_SVOCs	4-METHYLPHENOL	MG_KG	N					
Newport_RA_SO_SVOCs	4-NITROANILINE	MG_KG	N					
Newport_RA_SO_SVOCs	4-NITROPHENOL	MG_KG	N					
Newport_RA_SO_SVOCs	ACENAPHTHENE	MG_KG	N	U	< 0.369	U	< 0.33	U
Newport_RA_SO_SVOCs	ACENAPHTHYLENE	MG_KG	N	J	< 0.369	U	0.059	J
Newport_RA_SO_SVOCs	ACETOPHENONE	MG_KG	N					
Newport_RA_SO_SVOCs	ANTHRACENE	MG_KG	N	J	< 0.369	U	< 0.33	U
Newport_RA_SO_SVOCs	ATRAZINE	MG_KG	N					
Newport_RA_SO_SVOCs	BENZALDEHYDE	MG_KG	N					

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	CRP-SS107		CRP-SS111		CRP-SS114	
			Sample Date	1/19/2010		1/19/2010		1/19/2010	
			Sample ID	RP-SS107-0006		CRP-SS111-0006		CRP-SS114-0006	
			Sample Type	N		N		N	
			start_depth	0		0		0	
			end_depth	0.5		0.5		0.5	
			depth_unit	FT		FT		FT	
			depth_interval	0 - 0.5 ft		0 - 0.5 ft		0 - 0.5 ft	
			task_code	RP01 SI 2010		MRP01 SI 2010		MRP01 SI 2009	
			validated_yn	N		N		N	
method_analyte_group	Chemical	Unit	Fraction	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers
Newport_RA_SO_SVOCs	BENZIDINE	MG_KG	N					
Newport_RA_SO_SVOCs	BENZO[A]ANTHRACENE	MG_KG	N		0.202	J	0.264	J
Newport_RA_SO_SVOCs	BENZO[A]PYRENE	MG_KG	N	J	0.25	J	0.287	J
Newport_RA_SO_SVOCs	BENZO[B]FLUORANTHENE	MG_KG	N		0.245	J	0.282	J
Newport_RA_SO_SVOCs	BENZO[G,H,I]PERYLENE	MG_KG	N	J	0.254	J	0.203	J
Newport_RA_SO_SVOCs	BENZO[K]FLUORANTHENE	MG_KG	N	J	0.0818	J	0.114	J
Newport_RA_SO_SVOCs	BENZOIC ACID	MG_KG	N					
Newport_RA_SO_SVOCs	BENZYL ALCOHOL	MG_KG	N					
Newport_RA_SO_SVOCs	BIS(2-CHLOROETHOXY)METHANE	MG_KG	N					
Newport_RA_SO_SVOCs	BIS(2-CHLOROETHYL)ETHER	MG_KG	N					
Newport_RA_SO_SVOCs	BIS(2-ETHYLHEXYL)PHTHALATE	MG_KG	N					
Newport_RA_SO_SVOCs	BUTYLBENZYLPHTHALATE	MG_KG	N					
Newport_RA_SO_SVOCs	CAPROLACTAM	MG_KG	N					
Newport_RA_SO_SVOCs	CARBAZOLE	MG_KG	N					
Newport_RA_SO_SVOCs	CHRYSENE	MG_KG	N		0.345	J	0.396	J
Newport_RA_SO_SVOCs	DIBENZ[A,H]ANTHRACENE	MG_KG	N	J	0.0557	J	0.0518	J
Newport_RA_SO_SVOCs	DIBENZOFURAN	MG_KG	N					
Newport_RA_SO_SVOCs	DIETHYLPHTHALATE	MG_KG	N					
Newport_RA_SO_SVOCs	DIMETHYL PHTHALATE	MG_KG	N					
Newport_RA_SO_SVOCs	DI-N-BUTYLPHTHALATE	MG_KG	N					
Newport_RA_SO_SVOCs	DI-N-OCTYLPHTHALATE	MG_KG	N					
Newport_RA_SO_SVOCs	FLUORANTHENE	MG_KG	N		0.291	J	0.365	
Newport_RA_SO_SVOCs	FLUORENE	MG_KG	N	J	< 0.369	U	< 0.33	U
Newport_RA_SO_SVOCs	HEXACHLOROBENZENE	MG_KG	N					
Newport_RA_SO_SVOCs	HEXACHLOROBUTADIENE	MG_KG	N					
Newport_RA_SO_SVOCs	HEXACHLOROCYCLOPENTADIENE	MG_KG	N					
Newport_RA_SO_SVOCs	HEXACHLOROETHANE	MG_KG	N					
Newport_RA_SO_SVOCs	HPAH, TOTAL	MG_KG	N		2.25		2.61	
Newport_RA_SO_SVOCs	INDENO[1,2,3-CD]PYRENE	MG_KG	N	J	0.215	J	0.201	J
Newport_RA_SO_SVOCs	ISOPHORONE	MG_KG	N					
Newport_RA_SO_SVOCs	LPAH, TOTAL	MG_KG	N		0.153		0.229	
Newport_RA_SO_SVOCs	NAPHTHALENE	MG_KG	N	U	< 0.369	U	< 0.33	U
Newport_RA_SO_SVOCs	NITROBENZENE	MG_KG	N					
Newport_RA_SO_SVOCs	N-NITROSODIMETHYLAMINE	MG_KG	N					
Newport_RA_SO_SVOCs	N-NITROSODINPROPYLAMINE	MG_KG	N					
Newport_RA_SO_SVOCs	N-NITROSODIPHENYLAMINE	MG_KG	N					
Newport_RA_SO_SVOCs	N-NITROSOPYRROLIDINE	MG_KG	N					
Newport_RA_SO_SVOCs	PAH, TOTAL	MG_KG	N		2.40		2.83	
Newport_RA_SO_SVOCs	PENTACHLOROPHENOL	MG_KG	N					
Newport_RA_SO_SVOCs	PHENANTHRENE	MG_KG	N		0.153	J	0.17	J
Newport_RA_SO_SVOCs	PHENOL	MG_KG	N					
Newport_RA_SO_SVOCs	PYRENE	MG_KG	N		0.306	J	0.442	
Newport_RA_SO_VOCs	1,1,1,2-TETRACHLOROETHANE	MG_KG	N					
Newport_RA_SO_VOCs	1,1,1-TRICHLOROETHANE	MG_KG	N					
Newport_RA_SO_VOCs	1,1,2,2-TETRACHLOROETHANE	MG_KG	N					
Newport_RA_SO_VOCs	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	MG_KG	N					
Newport_RA_SO_VOCs	1,1,2-TRICHLOROETHANE	MG_KG	N					
Newport_RA_SO_VOCs	1,1-DICHLOROETHANE	MG_KG	N					
Newport_RA_SO_VOCs	1,1-DICHLOROETHENE	MG_KG	N					
Newport_RA_SO_VOCs	1,1-DICHLOROPROPENE	MG_KG	N					
Newport_RA_SO_VOCs	1,2,3-TRICHLOROBENZENE	MG_KG	N					
Newport_RA_SO_VOCs	1,2,3-TRICHLOROPROPANE	MG_KG	N					
Newport_RA_SO_VOCs	1,2,4-TRICHLOROBENZENE	MG_KG	N					
Newport_RA_SO_VOCs	1,2,4-TRIMETHYLBENZENE	MG_KG	N					
Newport_RA_SO_VOCs	1,2-DIBROMO-3-CHLOROPROPANE	MG_KG	N					
Newport_RA_SO_VOCs	1,2-DIBROMOETHANE	MG_KG	N					
Newport_RA_SO_VOCs	1,2-DICHLOROBENZENE	MG_KG	N					
Newport_RA_SO_VOCs	1,2-DICHLOROETHANE	MG_KG	N					
Newport_RA_SO_VOCs	1,2-DICHLOROETHENE, TOTAL	MG_KG	N					
Newport_RA_SO_VOCs	1,2-DICHLOROPROPANE	MG_KG	N					
Newport_RA_SO_VOCs	1,3,5-TRIMETHYLBENZENE	MG_KG	N					
Newport_RA_SO_VOCs	1,3-DICHLOROBENZENE	MG_KG	N					
Newport_RA_SO_VOCs	1,3-DICHLOROPROPANE	MG_KG	N					
Newport_RA_SO_VOCs	1,4-DICHLOROBENZENE	MG_KG	N					
Newport_RA_SO_VOCs	2,2-DICHLOROPROPANE	MG_KG	N					
Newport_RA_SO_VOCs	2-BUTANONE	MG_KG	N					

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	CRP-SS107		CRP-SS111		CRP-SS114	
			Sample Date	1/19/2010		1/19/2010		1/19/2010	
			Sample ID	RP-SS107-0006		CRP-SS111-0006		CRP-SS114-0006	
			Sample Type	N		N		N	
			start_depth	0		0		0	
			end_depth	0.5		0.5		0.5	
			depth_unit	FT		FT		FT	
			depth_interval	0 - 0.5 ft		0 - 0.5 ft		0 - 0.5 ft	
			task_code	RP01 SI 2010		MRP01 SI 2010		MRP01 SI 2009	
			validated_yn	N		N		N	
method_analyte_group	Chemical	Unit	Fraction	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers
Newport_RA_SO_VOCs	2-CHLOROTOLUENE	MG_KG	N					
Newport_RA_SO_VOCs	2-HEXANONE	MG_KG	N					
Newport_RA_SO_VOCs	4-CHLOROTOLUENE	MG_KG	N					
Newport_RA_SO_VOCs	4-ISOPROPYLTOLUENE	MG_KG	N					
Newport_RA_SO_VOCs	4-METHYL-2-PENTANONE	MG_KG	N					
Newport_RA_SO_VOCs	ACETONE	MG_KG	N					
Newport_RA_SO_VOCs	BENZENE	MG_KG	N					
Newport_RA_SO_VOCs	BROMOBENZENE	MG_KG	N					
Newport_RA_SO_VOCs	BROMOCHLOROMETHANE	MG_KG	N					
Newport_RA_SO_VOCs	BROMODICHLOROMETHANE	MG_KG	N					
Newport_RA_SO_VOCs	BROMOFORM	MG_KG	N					
Newport_RA_SO_VOCs	BROMOMETHANE	MG_KG	N					
Newport_RA_SO_VOCs	CARBON DISULFIDE	MG_KG	N					
Newport_RA_SO_VOCs	CARBON TETRACHLORIDE	MG_KG	N					
Newport_RA_SO_VOCs	CHLOROBENZENE	MG_KG	N					
Newport_RA_SO_VOCs	CHLOROETHANE	MG_KG	N					
Newport_RA_SO_VOCs	CHLOROFORM	MG_KG	N					
Newport_RA_SO_VOCs	CHLOROMETHANE	MG_KG	N					
Newport_RA_SO_VOCs	CIS-1,2-DICHLOROETHENE	MG_KG	N					
Newport_RA_SO_VOCs	CIS-1,3-DICHLOROPROPENE	MG_KG	N					
Newport_RA_SO_VOCs	CYCLOHEXANE	MG_KG	N					
Newport_RA_SO_VOCs	DIBROMOCHLOROMETHANE	MG_KG	N					
Newport_RA_SO_VOCs	DIBROMOMETHANE	MG_KG	N					
Newport_RA_SO_VOCs	DICHLORODIFLUOROMETHANE	MG_KG	N					
Newport_RA_SO_VOCs	ETHYLBENZENE	MG_KG	N					
Newport_RA_SO_VOCs	HEXACHLOROBUTADIENE	MG_KG	N					
Newport_RA_SO_VOCs	ISOPROPYLBENZENE	MG_KG	N					
Newport_RA_SO_VOCs	M- AND P-XYLENE	MG_KG	N					
Newport_RA_SO_VOCs	METHYL ACETATE	MG_KG	N					
Newport_RA_SO_VOCs	METHYL CYCLOHEXANE	MG_KG	N					
Newport_RA_SO_VOCs	METHYL TERT-BUTYL ETHER	MG_KG	N					
Newport_RA_SO_VOCs	METHYLENE CHLORIDE	MG_KG	N					
Newport_RA_SO_VOCs	NAPHTHALENE	MG_KG	N					
Newport_RA_SO_VOCs	N-BUTYLBENZENE	MG_KG	N					
Newport_RA_SO_VOCs	O-XYLENE	MG_KG	N					
Newport_RA_SO_VOCs	PROPYLBENZENE	MG_KG	N					
Newport_RA_SO_VOCs	SEC-BUTYLBENZENE	MG_KG	N					
Newport_RA_SO_VOCs	STYRENE	MG_KG	N					
Newport_RA_SO_VOCs	TERT-BUTANOL	MG_KG	N					
Newport_RA_SO_VOCs	TERT-BUTYLBENZENE	MG_KG	N					
Newport_RA_SO_VOCs	TETRACHLOROETHENE	MG_KG	N					
Newport_RA_SO_VOCs	TOLUENE	MG_KG	N					
Newport_RA_SO_VOCs	TRANS-1,2-DICHLOROETHENE	MG_KG	N					
Newport_RA_SO_VOCs	TRANS-1,3-DICHLOROPROPENE	MG_KG	N					
Newport_RA_SO_VOCs	TRICHLOROETHENE	MG_KG	N					
Newport_RA_SO_VOCs	TRICHLOROFLUOROMETHANE	MG_KG	N					
Newport_RA_SO_VOCs	VINYL CHLORIDE	MG_KG	N					
Newport_RA_SO_VOCs	XYLENES, TOTAL	MG_KG	N					

Notes:
U or < - Non-detect at laboratory detection limit.
J - The compound was positively identified; however, the associated numerical value is an estimated concentration only (+ and - indicate bias).
Sample Type - N = normal sample, FD = duplicate sample.
mg/kg - milligram per kilogram

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	CRP-SS114		CRP-SS115		CRP-SS115		CRP-SS116		CRP-SS116		CRP-SS117		CRP-SS118		CRP-SS118	
			Sample Date	1/19/2010		1/19/2010		1/19/2010		1/19/2010		1/19/2010		1/19/2010		1/19/2010		1/19/2010	
			Sample ID	CRP-SS114-0612		CRP-SS115-0006-D		CRP-SS115-0006		CRP-SS116-0006		CRP-SS116-0612		CRP-SS117-0006		CRP-SS118-0006		CRP-SS118-0612	
			Sample Type	N		FD		N		N		N		N		N		N	
			start_depth	0.5		0		0		0		0.5		0		0		0.5	
			end_depth	1		0.5		0.5		0.5		1		0.5		0.5		1	
			depth_unit	FT		FT		FT		FT		FT		FT		FT		FT	
			depth_interval	0.5 - 1 ft		0 - 0.5 ft		0 - 0.5 ft		0 - 0.5 ft		0.5 - 1 ft		0 - 0.5 ft		0 - 0.5 ft		0.5 - 1 ft	
			task_code	MRP01 SI 2009		MRP01 SI 2010		MRP01 SI 2009		MRP01 SI 2009		MRP01 SI 2009		MRP01 SI 2009		MRP01 SI 2009		MRP01 SI 2009	
			validated_yn	N		N		N		N		N		N		N		N	
method_analyte_group	Chemical	Unit	Fraction	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers
Newport_RA_SO_Energetics	2,4-DINITROTOLUENE	MG_KG	N																
Newport_RA_SO_Energetics	2,6-DINITROTOLUENE	MG_KG	N																
Newport_RA_SO_Energetics	NITROGLYCERIN	MG_KG	N																
Newport_RA_SO_Metals	ALUMINUM	MG_KG	N																
Newport_RA_SO_Metals	ANTIMONY	MG_KG	N																
Newport_RA_SO_Metals	ARSENIC	MG_KG	N																
Newport_RA_SO_Metals	BARIUM	MG_KG	N																
Newport_RA_SO_Metals	BERYLLIUM	MG_KG	N																
Newport_RA_SO_Metals	CADMIUM	MG_KG	N																
Newport_RA_SO_Metals	CALCIUM	MG_KG	N																
Newport_RA_SO_Metals	CHROMIUM VI	MG_KG	N																
Newport_RA_SO_Metals	CHROMIUM, TOTAL	MG_KG	N																
Newport_RA_SO_Metals	COBALT	MG_KG	N																
Newport_RA_SO_Metals	COPPER	MG_KG	N																
Newport_RA_SO_Metals	IRON	MG_KG	N																
Newport_RA_SO_Metals	IRON, FERROUS	MG_KG	N																
Newport_RA_SO_Metals	LEAD	MG_KG	N	25.7		72.7		64.2		48.5		28.5		96.6		118		82.5	
Newport_RA_SO_Metals	MAGNESIUM	MG_KG	N																
Newport_RA_SO_Metals	MANGANESE	MG_KG	N																
Newport_RA_SO_Metals	MERCURY	MG_KG	N																
Newport_RA_SO_Metals	NICKEL	MG_KG	N																
Newport_RA_SO_Metals	POTASSIUM	MG_KG	N																
Newport_RA_SO_Metals	SELENIUM	MG_KG	N																
Newport_RA_SO_Metals	SILVER	MG_KG	N																
Newport_RA_SO_Metals	SODIUM	MG_KG	N																
Newport_RA_SO_Metals	THALLIUM	MG_KG	N																
Newport_RA_SO_Metals	VANADIUM	MG_KG	N																
Newport_RA_SO_Metals	ZINC	MG_KG	N																
Newport_RA_SO_Other	DENSITY	G_CC	N																
Newport_RA_SO_Other	Pellet count	COUNT	N																
Newport_RA_SO_Other	Pellet weight	PCT	N																
Newport_RA_SO_Other	PERCENT FINES	PCT	N																
Newport_RA_SO_Other	PERCENT GRAVEL	PCT	N																
Newport_RA_SO_Other	PERCENT SAND	PCT	N																
Newport_RA_SO_Other	PERCENT SAND, COARSE	PCT	N																
Newport_RA_SO_Other	PERCENT SAND, FINE	PCT	N																
Newport_RA_SO_Other	PERCENT SAND, MEDIUM	PCT	N																
Newport_RA_SO_Other	PH	PH	N																
Newport_RA_SO_Other	POROSITY	PCT	N																
Newport_RA_SO_Other	SIEVE 1 INCH (25.4-MM)	PCT	N																
Newport_RA_SO_Other	SIEVE 1-1/2 INCH (37.5-MM)	PCT	N																
Newport_RA_SO_Other	SIEVE 2 INCH (50-MM)	PCT	N																
Newport_RA_SO_Other	SIEVE 3 INCH (75-MM)	PCT	N																
Newport_RA_SO_Other	SIEVE 3/4 INCH (19-MM)	PCT	N																
Newport_RA_SO_Other	SIEVE 3/8 INCH (9.5-MM)	PCT	N																
Newport_RA_SO_Other	SIEVE NO. 004 (4.75-MM)	PCT	N																
Newport_RA_SO_Other	SIEVE NO. 010 (2-MM)	PCT	N																
Newport_RA_SO_Other	SIEVE NO. 020 (850-UM)	PCT	N																
Newport_RA_SO_Other	SIEVE NO. 040 (425-UM)	PCT	N																
Newport_RA_SO_Other	SIEVE NO. 060 (250-UM)	PCT	N																
Newport_RA_SO_Other	SIEVE NO. 080 (180-UM)	PCT	N																
Newport_RA_SO_Other	SIEVE NO. 100 (150-UM)	PCT	N																
Newport_RA_SO_Other	SIEVE NO. 200 (75-UM)	PCT	N																
Newport_RA_SO_Other	SPECIFIC CONDUCTANCE	UMHO_CM	N																
Newport_RA_SO_Other	SPECIFIC GRAVITY	NONE	N																
Newport_RA_SO_Other	SULFIDE	MG_KG	N																
Newport_RA_SO_Other	TPH-DIESEL RANGE	MG_KG	N																
Newport_RA_SO_Other	TPH-TOTAL UNKNOWN GASOLINE RANGE ORGANICS	MG_KG	N																
Newport_RA_SO_Other	Void Ratio	NONE	N																
Newport_RA_SO_PCBs	AROCLOR-1016	MG_KG	N																
Newport_RA_SO_PCBs	AROCLOR-1221	MG_KG	N																
Newport_RA_SO_PCBs	AROCLOR-1232	MG_KG	N																
Newport_RA_SO_PCBs	AROCLOR-1242	MG_KG	N																
Newport_RA_SO_PCBs	AROCLOR-1248	MG_KG	N																
Newport_RA_SO_PCBs	AROCLOR-1254	MG_KG	N																
Newport_RA_SO_PCBs	AROCLOR-1260	MG_KG	N																

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	CRP-SS114		CRP-SS115		CRP-SS115		CRP-SS116		CRP-SS116		CRP-SS117		CRP-SS118		CRP-SS118	
			Sample Date	1/19/2010		1/19/2010		1/19/2010		1/19/2010		1/19/2010		1/19/2010		1/19/2010		1/19/2010	
			Sample ID	CRP-SS114-0612		CRP-SS115-0006-D		CRP-SS115-0006		CRP-SS116-0006		CRP-SS116-0612		CRP-SS117-0006		CRP-SS118-0006		CRP-SS118-0612	
			Sample Type	N		FD		N		N		N		N		N		N	
			start_depth	0.5		0		0		0		0.5		0		0		0.5	
			end_depth	1		0.5		0.5		0.5		1		0.5		0.5		1	
			depth_unit	FT		FT		FT		FT		FT		FT		FT		FT	
			depth_interval	0.5 - 1 ft		0 - 0.5 ft		0 - 0.5 ft		0 - 0.5 ft		0.5 - 1 ft		0 - 0.5 ft		0 - 0.5 ft		0.5 - 1 ft	
			task_code	MRP01 SI 2009		MRP01 SI 2010		MRP01 SI 2009		MRP01 SI 2009		MRP01 SI 2009		MRP01 SI 2009		MRP01 SI 2009		MRP01 SI 2009	
			validated_yn	N		N		N		N		N		N		N		N	
method_analyte_group	Chemical	Unit	Fraction	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers
Newport_RA_SO_PCBs	AROCLOR-1262	MG_KG	N																
Newport_RA_SO_PCBs	AROCLOR-1268	MG_KG	N																
Newport_RA_SO_PCBs	PCB, TOTAL	MG_KG	N																
Newport_RA_SO_PCBs	POLYCHLORINATED BIPHENYLS (PCBS)	MG_KG	N																
Newport_RA_SO_Pesticides	4,4-DDD	MG_KG	N																
Newport_RA_SO_Pesticides	4,4-DDE	MG_KG	N																
Newport_RA_SO_Pesticides	4,4-DDT	MG_KG	N																
Newport_RA_SO_Pesticides	ALDRIN	MG_KG	N																
Newport_RA_SO_Pesticides	ALPHA-BHC	MG_KG	N																
Newport_RA_SO_Pesticides	ALPHA-CHLORDANE	MG_KG	N																
Newport_RA_SO_Pesticides	BETA-BHC	MG_KG	N																
Newport_RA_SO_Pesticides	DDT, TOTAL	MG_KG	N																
Newport_RA_SO_Pesticides	DELTA-BHC	MG_KG	N																
Newport_RA_SO_Pesticides	DIELDRIN	MG_KG	N																
Newport_RA_SO_Pesticides	ENDOSULFAN I	MG_KG	N																
Newport_RA_SO_Pesticides	ENDOSULFAN II	MG_KG	N																
Newport_RA_SO_Pesticides	ENDOSULFAN SULFATE	MG_KG	N																
Newport_RA_SO_Pesticides	ENDRIN	MG_KG	N																
Newport_RA_SO_Pesticides	ENDRIN ALDEHYDE	MG_KG	N																
Newport_RA_SO_Pesticides	ENDRIN KETONE	MG_KG	N																
Newport_RA_SO_Pesticides	GAMMA-CHLORDANE	MG_KG	N																
Newport_RA_SO_Pesticides	HEPTACHLOR	MG_KG	N																
Newport_RA_SO_Pesticides	HEPTACHLOR EPOXIDE	MG_KG	N																
Newport_RA_SO_Pesticides	LINDANE	MG_KG	N																
Newport_RA_SO_Pesticides	METHOXYCHLOR	MG_KG	N																
Newport_RA_SO_Pesticides	TOXAPHENE	MG_KG	N																
Newport_RA_SO_Pesticides	TRANS-CHLORDANE	MG_KG	N																
Newport_RA_SO_SVOCs	1,1-BIPHENYL	MG_KG	N																
Newport_RA_SO_SVOCs	1-METHYLNAPHTHALENE	MG_KG	N																
Newport_RA_SO_SVOCs	1,2,4-TRICHLOROBENZENE	MG_KG	N																
Newport_RA_SO_SVOCs	1,2-DICHLOROBENZENE	MG_KG	N																
Newport_RA_SO_SVOCs	1,2-DIPHENYLHYDRAZINE	MG_KG	N																
Newport_RA_SO_SVOCs	1,3-DICHLOROBENZENE	MG_KG	N																
Newport_RA_SO_SVOCs	1,4-DICHLOROBENZENE	MG_KG	N																
Newport_RA_SO_SVOCs	2,2'-OXYBIS(1-CHLOROPROPANE)	MG_KG	N																
Newport_RA_SO_SVOCs	2,4,5-TRICHLOROPHENOL	MG_KG	N																
Newport_RA_SO_SVOCs	2,4,6-TRICHLOROPHENOL	MG_KG	N																
Newport_RA_SO_SVOCs	2,4-DICHLOROPHENOL	MG_KG	N																
Newport_RA_SO_SVOCs	2,4-DIMETHYLPHENOL	MG_KG	N																
Newport_RA_SO_SVOCs	2,4-DINITROPHENOL	MG_KG	N																
Newport_RA_SO_SVOCs	2,4-DINITROTOLUENE	MG_KG	N																
Newport_RA_SO_SVOCs	2,6-DICHLOROPHENOL	MG_KG	N																
Newport_RA_SO_SVOCs	2,6-DINITROTOLUENE	MG_KG	N																
Newport_RA_SO_SVOCs	2-CHLORONAPHTHALENE	MG_KG	N																
Newport_RA_SO_SVOCs	2-CHLOROPHENOL	MG_KG	N																
Newport_RA_SO_SVOCs	2-METHYLNAPHTHALENE	MG_KG	N	< 0.296	U	< 0.389	U	< 0.328	U	< 0.383	U	< 0.344	U	< 0.442	U	< 0.347	U	< 0.376	U
Newport_RA_SO_SVOCs	2-METHYLPHENOL	MG_KG	N																
Newport_RA_SO_SVOCs	2-NITROANILINE	MG_KG	N																
Newport_RA_SO_SVOCs	2-NITROPHENOL	MG_KG	N																
Newport_RA_SO_SVOCs	3- AND 4-METHYLPHENOL	MG_KG	N																
Newport_RA_SO_SVOCs	3,3-DICHLOROBENZIDINE	MG_KG	N																
Newport_RA_SO_SVOCs	3-NITROANILINE	MG_KG	N																
Newport_RA_SO_SVOCs	4,6-DINITRO-2-METHYLPHENOL	MG_KG	N																
Newport_RA_SO_SVOCs	4-BROMOPHENYL-PHENYLETHER	MG_KG	N																
Newport_RA_SO_SVOCs	4-CHLORO-3-METHYLPHENOL	MG_KG	N																
Newport_RA_SO_SVOCs	4-CHLOROANILINE	MG_KG	N																
Newport_RA_SO_SVOCs	4-CHLOROPHENYL-PHENYLETHER	MG_KG	N																
Newport_RA_SO_SVOCs	4-METHYLPHENOL	MG_KG	N																
Newport_RA_SO_SVOCs	4-NITROANILINE	MG_KG	N																
Newport_RA_SO_SVOCs	4-NITROPHENOL	MG_KG	N																
Newport_RA_SO_SVOCs	ACENAPHTHENE	MG_KG	N	< 0.296	U	< 0.389	U	< 0.328	U	< 0.383	U	< 0.344	U	< 0.442	U	< 0.347	U	< 0.376	U
Newport_RA_SO_SVOCs	ACENAPHTHYLENE	MG_KG	N	< 0.296	U	0.118	J	0.369	D	< 0.383	U	< 0.344	U	< 0.442	U	< 0.347	U	< 0.376	U
Newport_RA_SO_SVOCs	ACETOPHENONE	MG_KG	N																
Newport_RA_SO_SVOCs	ANTHRACENE	MG_KG	N	< 0.296	U	0.0676	J	0.194	J	< 0.383	U	< 0.344	U	< 0.442	U	0.09	J	0.0676	J
Newport_RA_SO_SVOCs	ATRAZINE	MG_KG	N																
Newport_RA_SO_SVOCs	BENZALDEHYDE	MG_KG	N																

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	CRP-SS114		CRP-SS115		CRP-SS115		CRP-SS116		CRP-SS116		CRP-SS117		CRP-SS118		CRP-SS118	
			Sample Date	1/19/2010		1/19/2010		1/19/2010		1/19/2010		1/19/2010		1/19/2010		1/19/2010		1/19/2010	
			Sample ID	CRP-SS114-0612		CRP-SS115-0006-D		CRP-SS115-0006		CRP-SS116-0006		CRP-SS116-0612		CRP-SS117-0006		CRP-SS118-0006		CRP-SS118-0612	
			Sample Type	N		FD		N		N		N		N		N		N	
			start_depth	0.5		0		0		0		0.5		0		0		0.5	
			end_depth	1		0.5		0.5		0.5		1		0.5		0.5		1	
			depth_unit	FT		FT		FT		FT		FT		FT		FT		FT	
			depth_interval	0.5 - 1 ft		0 - 0.5 ft		0 - 0.5 ft		0 - 0.5 ft		0.5 - 1 ft		0 - 0.5 ft		0 - 0.5 ft		0.5 - 1 ft	
			task_code	MRP01 SI 2009		MRP01 SI 2010		MRP01 SI 2009		MRP01 SI 2009		MRP01 SI 2009		MRP01 SI 2009		MRP01 SI 2009		MRP01 SI 2009	
			validated_yn	N		N		N		N		N		N		N		N	
method_analyte_group	Chemical	Unit	Fraction	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers
Newport_RA_SO_SVOCs	BENZIDINE	MG_KG	N																
Newport_RA_SO_SVOCs	BENZO[A]ANTHRACENE	MG_KG	N	0.0592	J	0.251	J	0.823	J	0.14	J	0.137	J	0.318	J	0.45	J	0.349	J
Newport_RA_SO_SVOCs	BENZO[A]PYRENE	MG_KG	N	0.0592	J	0.277	J	0.785	J	0.141	J	0.121	J	0.324	J	0.504		0.333	J
Newport_RA_SO_SVOCs	BENZO[B]FLUORANTHENE	MG_KG	N	0.0697	J	0.341	J	0.92	J	0.159	J	0.14	J	0.353	J	0.582		0.377	
Newport_RA_SO_SVOCs	BENZO[G,H,I]PERYLENE	MG_KG	N	0.0632	J	0.216	J	0.553		0.105	J	0.0887	J	0.219	J	0.361		0.235	J
Newport_RA_SO_SVOCs	BENZO[K]FLUORANTHENE	MG_KG	N	< 0.296	U	0.112	J	0.36		0.0654	J	0.0603	J	0.15	J	0.225	J	0.148	J
Newport_RA_SO_SVOCs	BENZOIC ACID	MG_KG	N																
Newport_RA_SO_SVOCs	BENZYL ALCOHOL	MG_KG	N																
Newport_RA_SO_SVOCs	BIS(2-CHLOROETHOXY)METHANE	MG_KG	N																
Newport_RA_SO_SVOCs	BIS(2-CHLOROETHYL)ETHER	MG_KG	N																
Newport_RA_SO_SVOCs	BIS(2-ETHYLHEXYL)PHTHALATE	MG_KG	N																
Newport_RA_SO_SVOCs	BUTYLBENZYLPHTHALATE	MG_KG	N																
Newport_RA_SO_SVOCs	CAPROLACTAM	MG_KG	N																
Newport_RA_SO_SVOCs	CARBAZOLE	MG_KG	N																
Newport_RA_SO_SVOCs	CHRYSENE	MG_KG	N	0.106	J	0.51	J	1.53	J	0.2	J	0.206	J	0.439	J	0.622	J	0.507	J
Newport_RA_SO_SVOCs	DIBENZ[A,H]ANTHRACENE	MG_KG	N	< 0.296	U	< 0.389	U	0.154	J	< 0.383	U	< 0.344	U	< 0.442	U	0.0788	J	0.0596	J
Newport_RA_SO_SVOCs	DIBENZOFURAN	MG_KG	N																
Newport_RA_SO_SVOCs	DIETHYLPHTHALATE	MG_KG	N																
Newport_RA_SO_SVOCs	DIMETHYL PHTHALATE	MG_KG	N																
Newport_RA_SO_SVOCs	DI-N-BUTYLPHTHALATE	MG_KG	N																
Newport_RA_SO_SVOCs	DI-N-OCTYLPHTHALATE	MG_KG	N																
Newport_RA_SO_SVOCs	FLUORANTHENE	MG_KG	N	0.0904	J	0.534	J	1.85	J	0.241		0.284	J	0.481		0.678		0.52	
Newport_RA_SO_SVOCs	FLUORENE	MG_KG	N	< 0.296	U	< 0.389	U	0.078	J	< 0.383	U	< 0.344	U	< 0.442	U	< 0.347	U	< 0.376	U
Newport_RA_SO_SVOCs	HEXACHLOROBENZENE	MG_KG	N																
Newport_RA_SO_SVOCs	HEXACHLOROBUTADIENE	MG_KG	N																
Newport_RA_SO_SVOCs	HEXACHLOROCYCLOPENTADIENE	MG_KG	N																
Newport_RA_SO_SVOCs	HEXACHLOROETHANE	MG_KG	N																
Newport_RA_SO_SVOCs	HPAH, TOTAL	MG_KG	N	0.595		3.08		9.80		1.38		1.39		3.01		4.51		3.28	
Newport_RA_SO_SVOCs	INDENO[1,2,3-CD]PYRENE	MG_KG	N	0.0476	J	0.191	J	0.569		0.106	J	0.0917	J	0.223	J	0.373		0.223	J
Newport_RA_SO_SVOCs	ISOPHORONE	MG_KG	N																
Newport_RA_SO_SVOCs	LPAH, TOTAL	MG_KG	N	< 0.296	U	0.476		2.06		0.113		0.150		0.202		0.428		0.308	
Newport_RA_SO_SVOCs	NAPHTHALENE	MG_KG	N	< 0.296	U	< 0.389	U	< 0.328	U	< 0.383	U	< 0.344	U	< 0.442	U	< 0.347	U	< 0.376	U
Newport_RA_SO_SVOCs	NITROBENZENE	MG_KG	N																
Newport_RA_SO_SVOCs	N-NITROSODIMETHYLAMINE	MG_KG	N																
Newport_RA_SO_SVOCs	N-NITROSODINPROPYLAMINE	MG_KG	N																
Newport_RA_SO_SVOCs	N-NITROSODIPHENYLAMINE	MG_KG	N																
Newport_RA_SO_SVOCs	N-NITROSOPYRROLIDINE	MG_KG	N																
Newport_RA_SO_SVOCs	PAH, TOTAL	MG_KG	N	0.595		3.56		11.9		1.49		1.54		3.21		4.93		3.58	
Newport_RA_SO_SVOCs	PENTACHLOROPHENOL	MG_KG	N																
Newport_RA_SO_SVOCs	PHENANTHRENE	MG_KG	N	< 0.296	U	0.29	J	1.42	J	0.113	J	0.15	J	0.202	J	0.338	J	0.24	J
Newport_RA_SO_SVOCs	PHENOL	MG_KG	N																
Newport_RA_SO_SVOCs	PYRENE	MG_KG	N	0.0996	J	0.651	J	2.26	J	0.218	J	0.259	J	0.502		0.633		0.524	
Newport_RA_SO_VOCs	1,1,1,2-TETRACHLOROETHANE	MG_KG	N																
Newport_RA_SO_VOCs	1,1,1-TRICHLOROETHANE	MG_KG	N																
Newport_RA_SO_VOCs	1,1,2,2-TETRACHLOROETHANE	MG_KG	N																
Newport_RA_SO_VOCs	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	MG_KG	N																
Newport_RA_SO_VOCs	1,1,2-TRICHLOROETHANE	MG_KG	N																
Newport_RA_SO_VOCs	1,1-DICHLOROETHANE	MG_KG	N																
Newport_RA_SO_VOCs	1,1-DICHLOROETHENE	MG_KG	N																
Newport_RA_SO_VOCs	1,1-DICHLOROPROPENE	MG_KG	N																
Newport_RA_SO_VOCs	1,2,3-TRICHLOROBENZENE	MG_KG	N																
Newport_RA_SO_VOCs	1,2,3-TRICHLOROPROPANE	MG_KG	N																
Newport_RA_SO_VOCs	1,2,4-TRICHLOROBENZENE	MG_KG	N																
Newport_RA_SO_VOCs	1,2,4-TRIMETHYLBENZENE	MG_KG	N																
Newport_RA_SO_VOCs	1,2-DIBROMO-3-CHLOROPROPANE	MG_KG	N																
Newport_RA_SO_VOCs	1,2-DIBROMOETHANE	MG_KG	N																
Newport_RA_SO_VOCs	1,2-DICHLOROBENZENE	MG_KG	N																
Newport_RA_SO_VOCs	1,2-DICHLOROETHANE	MG_KG	N																
Newport_RA_SO_VOCs	1,2-DICHLOROETHENE, TOTAL	MG_KG	N																
Newport_RA_SO_VOCs	1,2-DICHLOROPROPANE	MG_KG	N																
Newport_RA_SO_VOCs	1,3,5-TRIMETHYLBENZENE	MG_KG	N																
Newport_RA_SO_VOCs	1,3-DICHLOROBENZENE	MG_KG	N																
Newport_RA_SO_VOCs	1,3-DICHLOROPROPANE	MG_KG	N																
Newport_RA_SO_VOCs	1,4-DICHLOROBENZENE	MG_KG	N																
Newport_RA_SO_VOCs	2,2-DICHLOROPROPANE	MG_KG	N																
Newport_RA_SO_VOCs	2-BUTANONE	MG_KG	N																

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	CRP-SS114		CRP-SS115		CRP-SS115		CRP-SS116		CRP-SS116		CRP-SS117		CRP-SS118		CRP-SS118	
			Sample Date	1/19/2010		1/19/2010		1/19/2010		1/19/2010		1/19/2010		1/19/2010		1/19/2010		1/19/2010	
			Sample ID	CRP-SS114-0612		CRP-SS115-0006-D		CRP-SS115-0006		CRP-SS116-0006		CRP-SS116-0612		CRP-SS117-0006		CRP-SS118-0006		CRP-SS118-0612	
			Sample Type	N		FD		N		N		N		N		N		N	
			start_depth	0.5		0		0		0		0.5		0		0		0.5	
			end_depth	1		0.5		0.5		0.5		1		0.5		0.5		1	
			depth_unit	FT		FT		FT		FT		FT		FT		FT		FT	
			depth_interval	0.5 - 1 ft		0 - 0.5 ft		0 - 0.5 ft		0 - 0.5 ft		0.5 - 1 ft		0 - 0.5 ft		0 - 0.5 ft		0.5 - 1 ft	
			task_code	MRP01 SI 2009		MRP01 SI 2010		MRP01 SI 2009		MRP01 SI 2009		MRP01 SI 2009		MRP01 SI 2009		MRP01 SI 2009		MRP01 SI 2009	
			validated_yn	N		N		N		N		N		N		N		N	
method_analyte_group	Chemical	Unit	Fraction	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers
Newport_RA_SO_VOCs	2-CHLOROTOLUENE	MG_KG	N																
Newport_RA_SO_VOCs	2-HEXANONE	MG_KG	N																
Newport_RA_SO_VOCs	4-CHLOROTOLUENE	MG_KG	N																
Newport_RA_SO_VOCs	4-ISOPROPYLTOLUENE	MG_KG	N																
Newport_RA_SO_VOCs	4-METHYL-2-PENTANONE	MG_KG	N																
Newport_RA_SO_VOCs	ACETONE	MG_KG	N																
Newport_RA_SO_VOCs	BENZENE	MG_KG	N																
Newport_RA_SO_VOCs	BROMOBENZENE	MG_KG	N																
Newport_RA_SO_VOCs	BROMOCHLOROMETHANE	MG_KG	N																
Newport_RA_SO_VOCs	BROMODICHLOROMETHANE	MG_KG	N																
Newport_RA_SO_VOCs	BROMOFORM	MG_KG	N																
Newport_RA_SO_VOCs	BROMOMETHANE	MG_KG	N																
Newport_RA_SO_VOCs	CARBON DISULFIDE	MG_KG	N																
Newport_RA_SO_VOCs	CARBON TETRACHLORIDE	MG_KG	N																
Newport_RA_SO_VOCs	CHLOROBENZENE	MG_KG	N																
Newport_RA_SO_VOCs	CHLOROETHANE	MG_KG	N																
Newport_RA_SO_VOCs	CHLOROFORM	MG_KG	N																
Newport_RA_SO_VOCs	CHLOROMETHANE	MG_KG	N																
Newport_RA_SO_VOCs	CIS-1,2-DICHLOROETHENE	MG_KG	N																
Newport_RA_SO_VOCs	CIS-1,3-DICHLOROPROPENE	MG_KG	N																
Newport_RA_SO_VOCs	CYCLOHEXANE	MG_KG	N																
Newport_RA_SO_VOCs	DIBROMOCHLOROMETHANE	MG_KG	N																
Newport_RA_SO_VOCs	DIBROMOMETHANE	MG_KG	N																
Newport_RA_SO_VOCs	DICHLORODIFLUOROMETHANE	MG_KG	N																
Newport_RA_SO_VOCs	ETHYLBENZENE	MG_KG	N																
Newport_RA_SO_VOCs	HEXACHLOROBUTADIENE	MG_KG	N																
Newport_RA_SO_VOCs	ISOPROPYLBENZENE	MG_KG	N																
Newport_RA_SO_VOCs	M- AND P-XYLENE	MG_KG	N																
Newport_RA_SO_VOCs	METHYL ACETATE	MG_KG	N																
Newport_RA_SO_VOCs	METHYL CYCLOHEXANE	MG_KG	N																
Newport_RA_SO_VOCs	METHYL TERT-BUTYL ETHER	MG_KG	N																
Newport_RA_SO_VOCs	METHYLENE CHLORIDE	MG_KG	N																
Newport_RA_SO_VOCs	NAPHTHALENE	MG_KG	N																
Newport_RA_SO_VOCs	N-BUTYLBENZENE	MG_KG	N																
Newport_RA_SO_VOCs	O-XYLENE	MG_KG	N																
Newport_RA_SO_VOCs	PROPYLBENZENE	MG_KG	N																
Newport_RA_SO_VOCs	SEC-BUTYLBENZENE	MG_KG	N																
Newport_RA_SO_VOCs	STYRENE	MG_KG	N																
Newport_RA_SO_VOCs	TERT-BUTANOL	MG_KG	N																
Newport_RA_SO_VOCs	TERT-BUTYLBENZENE	MG_KG	N																
Newport_RA_SO_VOCs	TETRACHLOROETHENE	MG_KG	N																
Newport_RA_SO_VOCs	TOLUENE	MG_KG	N																
Newport_RA_SO_VOCs	TRANS-1,2-DICHLOROETHENE	MG_KG	N																
Newport_RA_SO_VOCs	TRANS-1,3-DICHLOROPROPENE	MG_KG	N																
Newport_RA_SO_VOCs	TRICHLOROETHENE	MG_KG	N																
Newport_RA_SO_VOCs	TRICHLOROFLUOROMETHANE	MG_KG	N																
Newport_RA_SO_VOCs	VINYL CHLORIDE	MG_KG	N																
Newport_RA_SO_VOCs	XYLENES, TOTAL	MG_KG	N																

Notes:
U or < - Non-detect at laboratory detection limit.
J - The compound was positively identified; however, the associated numerical value is an estimated concentration only (+ and - indicate bias).
Sample Type - N = normal sample, FD = duplicate sample.
mg/kg - milligram per kilogram

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	CRP-SS119		CRP-SS120		CRP-SS120		CRP-SS121		CRP-SS122		CRP-SS122		CRP-SS122		CRP-SS123		MRP
			Sample Date	1/19/2010		1/19/2010		1/19/2010		1/19/2010		1/19/2010		1/19/2010		1/19/2010		1/19/2010		4
			Sample ID	CRP-SS119-0006		CRP-SS120-0006		CRP-SS120-0612		CRP-SS121-0006		CRP-SS122-0006-D		CRP-SS122-0006		CRP-SS122-0612		CRP-SS123-0006		MRP
			Sample Type	N		N		N		N		FD		N		N		N		
			start_depth	0		0		0.5		0		0		0		0.5		0		
			end_depth	0.5		0.5		1		0.5		0.5		0.5		1		0.5		
			depth_unit	FT		FT		FT		FT		FT		FT		FT		FT		
			depth_interval	0 - 0.5 ft		0 - 0.5 ft		0.5 - 1 ft		0 - 0.5 ft		0 - 0.5 ft		0 - 0.5 ft		0.5 - 1 ft		0 - 0.5 ft		
			task_code	MRP01 SI 2009		MRP01 SI 2009		MRP01 SI 2009		MRP01 SI 2009		MRP01 SI 2010		MRP01 SI 2009		MRP01 SI 2009		MRP01 SI 2009		MRI
			validated_yn	N		N		N		N		N		N		N		N		
method_analyte_group	Chemical	Unit	Fraction	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result
Newport_RA_SO_Energetics	2,4-DINITROTOLUENE	MG_KG	N																	
Newport_RA_SO_Energetics	2,6-DINITROTOLUENE	MG_KG	N																	
Newport_RA_SO_Energetics	NITROGLYCERIN	MG_KG	N																	
Newport_RA_SO_Metals	ALUMINUM	MG_KG	N																	
Newport_RA_SO_Metals	ANTIMONY	MG_KG	N																	
Newport_RA_SO_Metals	ARSENIC	MG_KG	N																	5.2
Newport_RA_SO_Metals	BARIUM	MG_KG	N																	
Newport_RA_SO_Metals	BERYLLIUM	MG_KG	N																	
Newport_RA_SO_Metals	CADMIUM	MG_KG	N																	
Newport_RA_SO_Metals	CALCIUM	MG_KG	N																	
Newport_RA_SO_Metals	CHROMIUM VI	MG_KG	N																	
Newport_RA_SO_Metals	CHROMIUM, TOTAL	MG_KG	N																	9.6
Newport_RA_SO_Metals	COBALT	MG_KG	N																	
Newport_RA_SO_Metals	COPPER	MG_KG	N																	
Newport_RA_SO_Metals	IRON	MG_KG	N																	
Newport_RA_SO_Metals	IRON, FERROUS	MG_KG	N																	
Newport_RA_SO_Metals	LEAD	MG_KG	N	61.9		59.5		45.2		23.2		157		100		22.7		36		22
Newport_RA_SO_Metals	MAGNESIUM	MG_KG	N																	
Newport_RA_SO_Metals	MANGANESE	MG_KG	N																	
Newport_RA_SO_Metals	MERCURY	MG_KG	N																	
Newport_RA_SO_Metals	NICKEL	MG_KG	N																	
Newport_RA_SO_Metals	POTASSIUM	MG_KG	N																	
Newport_RA_SO_Metals	SELENIUM	MG_KG	N																	
Newport_RA_SO_Metals	SILVER	MG_KG	N																	
Newport_RA_SO_Metals	SODIUM	MG_KG	N																	
Newport_RA_SO_Metals	THALLIUM	MG_KG	N																	
Newport_RA_SO_Metals	VANADIUM	MG_KG	N																	
Newport_RA_SO_Metals	ZINC	MG_KG	N																	
Newport_RA_SO_Other	DENSITY	G_CC	N																	
Newport_RA_SO_Other	Pellet count	COUNT	N																	
Newport_RA_SO_Other	Pellet weight	PCT	N																	
Newport_RA_SO_Other	PERCENT FINES	PCT	N																	
Newport_RA_SO_Other	PERCENT GRAVEL	PCT	N																	
Newport_RA_SO_Other	PERCENT SAND	PCT	N																	
Newport_RA_SO_Other	PERCENT SAND, COARSE	PCT	N																	
Newport_RA_SO_Other	PERCENT SAND, FINE	PCT	N																	
Newport_RA_SO_Other	PERCENT SAND, MEDIUM	PCT	N																	
Newport_RA_SO_Other	PH	PH	N																	
Newport_RA_SO_Other	POROSITY	PCT	N																	
Newport_RA_SO_Other	SIEVE 1 INCH (25.4-MM)	PCT	N																	
Newport_RA_SO_Other	SIEVE 1-1/2 INCH (37.5-MM)	PCT	N																	
Newport_RA_SO_Other	SIEVE 2 INCH (50-MM)	PCT	N																	
Newport_RA_SO_Other	SIEVE 3 INCH (75-MM)	PCT	N																	
Newport_RA_SO_Other	SIEVE 3/4 INCH (19-MM)	PCT	N																	
Newport_RA_SO_Other	SIEVE 3/8 INCH (9.5-MM)	PCT	N																	
Newport_RA_SO_Other	SIEVE NO. 004 (4.75-MM)	PCT	N																	
Newport_RA_SO_Other	SIEVE NO. 010 (2-MM)	PCT	N																	
Newport_RA_SO_Other	SIEVE NO. 020 (850-UM)	PCT	N																	
Newport_RA_SO_Other	SIEVE NO. 040 (425-UM)	PCT	N																	
Newport_RA_SO_Other	SIEVE NO. 060 (250-UM)	PCT	N																	
Newport_RA_SO_Other	SIEVE NO. 080 (180-UM)	PCT	N																	
Newport_RA_SO_Other	SIEVE NO. 100 (150-UM)	PCT	N																	
Newport_RA_SO_Other	SIEVE NO. 200 (75-UM)	PCT	N																	
Newport_RA_SO_Other	SPECIFIC CONDUCTANCE	UMHO_CM	N																	
Newport_RA_SO_Other	SPECIFIC GRAVITY	NONE	N																	
Newport_RA_SO_Other	SULFIDE	MG_KG	N																	
Newport_RA_SO_Other	TPH-DIESEL RANGE	MG_KG	N																	
Newport_RA_SO_Other	TPH-TOTAL UNKNOWN GASOLINE RANGE ORGANICS	MG_KG	N																	
Newport_RA_SO_Other	Void Ratio	NONE	N																	
Newport_RA_SO_PCBs	AROCLOR-1016	MG_KG	N																	
Newport_RA_SO_PCBs	AROCLOR-1221	MG_KG	N																	
Newport_RA_SO_PCBs	AROCLOR-1232	MG_KG	N																	
Newport_RA_SO_PCBs	AROCLOR-1242	MG_KG	N																	
Newport_RA_SO_PCBs	AROCLOR-1248	MG_KG	N																	
Newport_RA_SO_PCBs	AROCLOR-1254	MG_KG	N																	
Newport_RA_SO_PCBs	AROCLOR-1260	MG_KG	N																	

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	CRP-SS119		CRP-SS120		CRP-SS120		CRP-SS121		CRP-SS122		CRP-SS122		CRP-SS122		CRP-SS123		MRP
			Sample Date	1/19/2010		1/19/2010		1/19/2010		1/19/2010		1/19/2010		1/19/2010		1/19/2010		1/19/2010		4
			Sample ID	CRP-SS119-0006		CRP-SS120-0006		CRP-SS120-0612		CRP-SS121-0006		CRP-SS122-0006-D		CRP-SS122-0006		CRP-SS122-0612		CRP-SS123-0006		MRP
			Sample Type	N		N		N		N		FD		N		N		N		
			start_depth	0		0		0.5		0		0		0		0.5		0		
			end_depth	0.5		0.5		1		0.5		0.5		0.5		1		0.5		
			depth_unit	FT		FT		FT		FT		FT		FT		FT		FT		
			depth_interval	0 - 0.5 ft		0 - 0.5 ft		0.5 - 1 ft		0 - 0.5 ft		0 - 0.5 ft		0 - 0.5 ft		0.5 - 1 ft		0 - 0.5 ft		
			task_code	MRP01 SI 2009		MRP01 SI 2009		MRP01 SI 2009		MRP01 SI 2009		MRP01 SI 2010		MRP01 SI 2009		MRP01 SI 2009		MRP01 SI 2009		MRI
			validated_yn	N		N		N		N		N		N		N		N		
method_analyte_group	Chemical	Unit	Fraction	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result
Newport_RA_SO_PCBs	AROCLOR-1262	MG_KG	N																	
Newport_RA_SO_PCBs	AROCLOR-1268	MG_KG	N																	
Newport_RA_SO_PCBs	PCB, TOTAL	MG_KG	N																	
Newport_RA_SO_PCBs	POLYCHLORINATED BIPHENYLS (PCBS)	MG_KG	N																	
Newport_RA_SO_Pesticides	4,4-DDD	MG_KG	N																	
Newport_RA_SO_Pesticides	4,4-DDE	MG_KG	N																	
Newport_RA_SO_Pesticides	4,4-DDT	MG_KG	N																	
Newport_RA_SO_Pesticides	ALDRIN	MG_KG	N																	
Newport_RA_SO_Pesticides	ALPHA-BHC	MG_KG	N																	
Newport_RA_SO_Pesticides	ALPHA-CHLORDANE	MG_KG	N																	
Newport_RA_SO_Pesticides	BETA-BHC	MG_KG	N																	
Newport_RA_SO_Pesticides	DDT, TOTAL	MG_KG	N																	
Newport_RA_SO_Pesticides	DELTA-BHC	MG_KG	N																	
Newport_RA_SO_Pesticides	DIELDRIN	MG_KG	N																	
Newport_RA_SO_Pesticides	ENDOSULFAN I	MG_KG	N																	
Newport_RA_SO_Pesticides	ENDOSULFAN II	MG_KG	N																	
Newport_RA_SO_Pesticides	ENDOSULFAN SULFATE	MG_KG	N																	
Newport_RA_SO_Pesticides	ENDRIN	MG_KG	N																	
Newport_RA_SO_Pesticides	ENDRIN ALDEHYDE	MG_KG	N																	
Newport_RA_SO_Pesticides	ENDRIN KETONE	MG_KG	N																	
Newport_RA_SO_Pesticides	GAMMA-CHLORDANE	MG_KG	N																	
Newport_RA_SO_Pesticides	HEPTACHLOR	MG_KG	N																	
Newport_RA_SO_Pesticides	HEPTACHLOR EPOXIDE	MG_KG	N																	
Newport_RA_SO_Pesticides	LINDANE	MG_KG	N																	
Newport_RA_SO_Pesticides	METHOXYCHLOR	MG_KG	N																	
Newport_RA_SO_Pesticides	TOXAPHENE	MG_KG	N																	
Newport_RA_SO_Pesticides	TRANS-CHLORDANE	MG_KG	N																	
Newport_RA_SO_SVOCs	1,1-BIPHENYL	MG_KG	N																	
Newport_RA_SO_SVOCs	1-METHYLNAPHTHALENE	MG_KG	N																	<0.023
Newport_RA_SO_SVOCs	1,2,4-TRICHLOROBENZENE	MG_KG	N																	
Newport_RA_SO_SVOCs	1,2-DICHLOROBENZENE	MG_KG	N																	
Newport_RA_SO_SVOCs	1,2-DIPHENYLHYDRAZINE	MG_KG	N																	
Newport_RA_SO_SVOCs	1,3-DICHLOROBENZENE	MG_KG	N																	
Newport_RA_SO_SVOCs	1,4-DICHLOROBENZENE	MG_KG	N																	
Newport_RA_SO_SVOCs	2,2'-OXYBIS(1-CHLOROPROPANE)	MG_KG	N																	
Newport_RA_SO_SVOCs	2,4,5-TRICHLOROPHENOL	MG_KG	N																	
Newport_RA_SO_SVOCs	2,4,6-TRICHLOROPHENOL	MG_KG	N																	
Newport_RA_SO_SVOCs	2,4-DICHLOROPHENOL	MG_KG	N																	
Newport_RA_SO_SVOCs	2,4-DIMETHYLPHENOL	MG_KG	N																	
Newport_RA_SO_SVOCs	2,4-DINITROPHENOL	MG_KG	N																	
Newport_RA_SO_SVOCs	2,4-DINITROTOLUENE	MG_KG	N																	
Newport_RA_SO_SVOCs	2,6-DICHLOROPHENOL	MG_KG	N																	
Newport_RA_SO_SVOCs	2,6-DINITROTOLUENE	MG_KG	N																	
Newport_RA_SO_SVOCs	2-CHLORONAPHTHALENE	MG_KG	N																	<0.023
Newport_RA_SO_SVOCs	2-CHLOROPHENOL	MG_KG	N																	
Newport_RA_SO_SVOCs	2-METHYLNAPHTHALENE	MG_KG	N	< 0.337	U	< 0.353	U	< 0.305	U	< 0.298	U	< 0.345	U	< 0.331	U	< 0.323	U	< 0.298	U	<0.023
Newport_RA_SO_SVOCs	2-METHYLPHENOL	MG_KG	N																	
Newport_RA_SO_SVOCs	2-NITROANILINE	MG_KG	N																	
Newport_RA_SO_SVOCs	2-NITROPHENOL	MG_KG	N																	
Newport_RA_SO_SVOCs	3- AND 4-METHYLPHENOL	MG_KG	N																	
Newport_RA_SO_SVOCs	3,3-DICHLOROBENZIDINE	MG_KG	N																	
Newport_RA_SO_SVOCs	3-NITROANILINE	MG_KG	N																	
Newport_RA_SO_SVOCs	4,6-DINITRO-2-METHYLPHENOL	MG_KG	N																	
Newport_RA_SO_SVOCs	4-BROMOPHENYL-PHENYLETHER	MG_KG	N																	
Newport_RA_SO_SVOCs	4-CHLORO-3-METHYLPHENOL	MG_KG	N																	
Newport_RA_SO_SVOCs	4-CHLOROANILINE	MG_KG	N																	
Newport_RA_SO_SVOCs	4-CHLOROPHENYL-PHENYLETHER	MG_KG	N																	
Newport_RA_SO_SVOCs	4-METHYLPHENOL	MG_KG	N																	
Newport_RA_SO_SVOCs	4-NITROANILINE	MG_KG	N																	
Newport_RA_SO_SVOCs	4-NITROPHENOL	MG_KG	N																	
Newport_RA_SO_SVOCs	ACENAPHTHENE	MG_KG	N	< 0.337	U	< 0.353	U	< 0.305	U	< 0.298	U	< 0.345	U	< 0.331	U	< 0.323	U	< 0.298	U	0.0012
Newport_RA_SO_SVOCs	ACENAPHTHYLENE	MG_KG	N	< 0.337	U	< 0.353	U	< 0.305	U	0.0499	J	0.201	J	0.314	J	< 0.323	U	0.0733	J	0.0021
Newport_RA_SO_SVOCs	ACETOPHENONE	MG_KG	N																	
Newport_RA_SO_SVOCs	ANTHRACENE	MG_KG	N	< 0.337	U	0.0762	J	< 0.305	U	0.0522	J	0.128	J	0.218	J	< 0.323	U	0.0958	J	0.003
Newport_RA_SO_SVOCs	ATRAZINE	MG_KG	N																	
Newport_RA_SO_SVOCs	BENZALDEHYDE	MG_KG	N																	

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	CRP-SS119		CRP-SS120		CRP-SS120		CRP-SS121		CRP-SS122		CRP-SS122		CRP-SS122		CRP-SS123		MRP
			Sample Date	1/19/2010		1/19/2010		1/19/2010		1/19/2010		1/19/2010		1/19/2010		1/19/2010		1/19/2010		4
			Sample ID	CRP-SS119-0006		CRP-SS120-0006		CRP-SS120-0612		CRP-SS121-0006		CRP-SS122-0006-D		CRP-SS122-0006		CRP-SS122-0612		CRP-SS123-0006		MRP
			Sample Type	N		N		N		N		FD		N		N		N		
			start_depth	0		0		0.5		0		0		0		0.5		0		
			end_depth	0.5		0.5		1		0.5		0.5		0.5		1		0.5		
			depth_unit	FT		FT		FT		FT		FT		FT		FT		FT		
			depth_interval	0 - 0.5 ft		0 - 0.5 ft		0.5 - 1 ft		0 - 0.5 ft		0 - 0.5 ft		0 - 0.5 ft		0.5 - 1 ft		0 - 0.5 ft		
			task_code	MRP01 SI 2009		MRP01 SI 2009		MRP01 SI 2009		MRP01 SI 2009		MRP01 SI 2010		MRP01 SI 2009		MRP01 SI 2009		MRP01 SI 2009		MRI
			validated_yn	N		N		N		N		N		N		N		N		
method_analyte_group	Chemical	Unit	Fraction	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result
Newport_RA_SO_SVOCs	BENZIDINE	MG_KG	N																	
Newport_RA_SO_SVOCs	BENZO[A]ANTHRACENE	MG_KG	N	0.25	J	0.361	J	0.118	J	0.559	J	0.423	J	0.878	J	0.0828	J	0.507	J	0.024
Newport_RA_SO_SVOCs	BENZO[A]PYRENE	MG_KG	N	0.249	J	0.412		0.109	J	0.528		0.439		0.713		0.0923	J	0.521		0.031
Newport_RA_SO_SVOCs	BENZO[B]FLUORANTHENE	MG_KG	N	0.301	J	0.476		0.129	J	0.58		0.596		0.885		0.11	J	0.568		0.02
Newport_RA_SO_SVOCs	BENZO[G,H,I]PERYLENE	MG_KG	N	0.184	J	0.305	J	0.0909	J	0.382		0.341	J	0.52		0.0715	J	0.353		0.021
Newport_RA_SO_SVOCs	BENZO[K]FLUORANTHENE	MG_KG	N	0.12	J	0.176	J	0.0608	J	0.255	J	0.208	J	0.326	J	0.0499	J	0.233	J	0.0061
Newport_RA_SO_SVOCs	BENZOIC ACID	MG_KG	N																	
Newport_RA_SO_SVOCs	BENZYL ALCOHOL	MG_KG	N																	
Newport_RA_SO_SVOCs	BIS(2-CHLOROETHOXY)METHANE	MG_KG	N																	
Newport_RA_SO_SVOCs	BIS(2-CHLOROETHYL)ETHER	MG_KG	N																	
Newport_RA_SO_SVOCs	BIS(2-ETHYLHEXYL)PHTHALATE	MG_KG	N																	
Newport_RA_SO_SVOCs	BUTYLBENZYLPHTHALATE	MG_KG	N																	
Newport_RA_SO_SVOCs	CAPROLACTAM	MG_KG	N																	
Newport_RA_SO_SVOCs	CARBAZOLE	MG_KG	N																	
Newport_RA_SO_SVOCs	CHRYSENE	MG_KG	N	0.362	J	0.575	J	0.168	J	0.731	J	0.725	J	1.3	J	0.151	J	0.686	J	0.036
Newport_RA_SO_SVOCs	DIBENZ[A,H]ANTHRACENE	MG_KG	N	< 0.337	U	0.0714	J	< 0.305	U	0.0737	J	0.0913	J	0.115	J	< 0.323	U	0.0758	J	0.0048
Newport_RA_SO_SVOCs	DIBENZOFURAN	MG_KG	N																	
Newport_RA_SO_SVOCs	DIETHYLPHTHALATE	MG_KG	N																	
Newport_RA_SO_SVOCs	DIMETHYL PHTHALATE	MG_KG	N																	
Newport_RA_SO_SVOCs	DI-N-BUTYLPHTHALATE	MG_KG	N																	
Newport_RA_SO_SVOCs	DI-N-OCTYLPHTHALATE	MG_KG	N																	
Newport_RA_SO_SVOCs	FLUORANTHENE	MG_KG	N	0.384		0.582		0.221	J	0.857		0.889		1.47		0.156	J	0.81		0.017
Newport_RA_SO_SVOCs	FLUORENE	MG_KG	N	< 0.337	U	< 0.353	U	< 0.305	U	< 0.298	U	< 0.345	U	0.0602	J	< 0.323	U	< 0.298	U	0.00095
Newport_RA_SO_SVOCs	HEXACHLOROBENZENE	MG_KG	N																	
Newport_RA_SO_SVOCs	HEXACHLOROBUTADIENE	MG_KG	N																	
Newport_RA_SO_SVOCs	HEXACHLOROCYCLOPENTADIENE	MG_KG	N																	
Newport_RA_SO_SVOCs	HEXACHLOROETHANE	MG_KG	N																	
Newport_RA_SO_SVOCs	HPAH, TOTAL	MG_KG	N	2.42		3.81		1.18		5.24		5.10		8.55		0.972		5.05		
Newport_RA_SO_SVOCs	INDENO[1,2,3-CD]PYRENE	MG_KG	N	0.191	J	0.308	J	0.084	J	0.381		0.33	J	0.528		0.0681	J	0.338		0.01
Newport_RA_SO_SVOCs	ISOPHORONE	MG_KG	N																	
Newport_RA_SO_SVOCs	LPAH, TOTAL	MG_KG	N	0.183		0.367		0.0778		0.401		0.796		1.43		0.0758		0.464		
Newport_RA_SO_SVOCs	NAPHTHALENE	MG_KG	N	< 0.337	U	< 0.353	U	< 0.305	U	< 0.298	U	< 0.345	U	< 0.331	U	< 0.323	U	< 0.298	U	<0.023
Newport_RA_SO_SVOCs	NITROBENZENE	MG_KG	N																	
Newport_RA_SO_SVOCs	N-NITROSODIMETHYLAMINE	MG_KG	N																	
Newport_RA_SO_SVOCs	N-NITROSODINPROPYLAMINE	MG_KG	N																	
Newport_RA_SO_SVOCs	N-NITROSODIPHENYLAMINE	MG_KG	N																	
Newport_RA_SO_SVOCs	N-NITROSOPYRROLIDINE	MG_KG	N																	
Newport_RA_SO_SVOCs	PAH, TOTAL	MG_KG	N	2.60		4.18		1.26		5.64		5.90		9.98		1.05		5.51		
Newport_RA_SO_SVOCs	PENTACHLOROPHENOL	MG_KG	N																	
Newport_RA_SO_SVOCs	PHENANTHRENE	MG_KG	N	0.183	J	0.291	J	0.0778	J	0.299		0.467	J	0.84	J	0.0758	J	0.295	J	0.013
Newport_RA_SO_SVOCs	PHENOL	MG_KG	N																	
Newport_RA_SO_SVOCs	PYRENE	MG_KG	N	0.375		0.548		0.197	J	0.891		1.06	J	1.81	J	0.19	J	0.955		0.035
Newport_RA_SO_VOCs	1,1,1,2-TETRACHLOROETHANE	MG_KG	N																	
Newport_RA_SO_VOCs	1,1,1-TRICHLOROETHANE	MG_KG	N																	
Newport_RA_SO_VOCs	1,1,2,2-TETRACHLOROETHANE	MG_KG	N																	
Newport_RA_SO_VOCs	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	MG_KG	N																	
Newport_RA_SO_VOCs	1,1,2-TRICHLOROETHANE	MG_KG	N																	
Newport_RA_SO_VOCs	1,1-DICHLOROETHANE	MG_KG	N																	
Newport_RA_SO_VOCs	1,1-DICHLOROETHENE	MG_KG	N																	
Newport_RA_SO_VOCs	1,1-DICHLOROPROPENE	MG_KG	N																	
Newport_RA_SO_VOCs	1,2,3-TRICHLOROBENZENE	MG_KG	N																	
Newport_RA_SO_VOCs	1,2,3-TRICHLOROPROPANE	MG_KG	N																	
Newport_RA_SO_VOCs	1,2,4-TRICHLOROBENZENE	MG_KG	N																	
Newport_RA_SO_VOCs	1,2,4-TRIMETHYLBENZENE	MG_KG	N																	
Newport_RA_SO_VOCs	1,2-DIBROMO-3-CHLOROPROPANE	MG_KG	N																	
Newport_RA_SO_VOCs	1,2-DIBROMOETHANE	MG_KG	N																	
Newport_RA_SO_VOCs	1,2-DICHLOROBENZENE	MG_KG	N																	
Newport_RA_SO_VOCs	1,2-DICHLOROETHANE	MG_KG	N																	
Newport_RA_SO_VOCs	1,2-DICHLOROETHENE, TOTAL	MG_KG	N																	
Newport_RA_SO_VOCs	1,2-DICHLOROPROPANE	MG_KG	N																	
Newport_RA_SO_VOCs	1,3,5-TRIMETHYLBENZENE	MG_KG	N																	
Newport_RA_SO_VOCs	1,3-DICHLOROBENZENE	MG_KG	N																	
Newport_RA_SO_VOCs	1,3-DICHLOROPROPANE	MG_KG	N																	
Newport_RA_SO_VOCs	1,4-DICHLOROBENZENE	MG_KG	N																	
Newport_RA_SO_VOCs	2,2-DICHLOROPROPANE	MG_KG	N																	
Newport_RA_SO_VOCs	2-BUTANONE	MG_KG	N																	

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	CRP-SS119		CRP-SS120		CRP-SS120		CRP-SS121		CRP-SS122		CRP-SS122		CRP-SS122		CRP-SS123		MRP
			Sample Date	1/19/2010		1/19/2010		1/19/2010		1/19/2010		1/19/2010		1/19/2010		1/19/2010		1/19/2010		4
			Sample ID	CRP-SS119-0006		CRP-SS120-0006		CRP-SS120-0612		CRP-SS121-0006		CRP-SS122-0006-D		CRP-SS122-0006		CRP-SS122-0612		CRP-SS123-0006		MRP
			Sample Type	N		N		N		N		FD		N		N		N		
			start_depth	0		0		0.5		0		0		0		0.5		0		
			end_depth	0.5		0.5		1		0.5		0.5		0.5		1		0.5		
			depth_unit	FT		FT		FT		FT		FT		FT		FT		FT		
			depth_interval	0 - 0.5 ft		0 - 0.5 ft		0.5 - 1 ft		0 - 0.5 ft		0 - 0.5 ft		0 - 0.5 ft		0.5 - 1 ft		0 - 0.5 ft		
			task_code	MRP01 SI 2009		MRP01 SI 2009		MRP01 SI 2009		MRP01 SI 2009		MRP01 SI 2010		MRP01 SI 2009		MRP01 SI 2009		MRP01 SI 2009		MRI
			validated_yn	N		N		N		N		N		N		N		N		
method_analyte_group	Chemical	Unit	Fraction	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result
Newport_RA_SO_VOCs	2-CHLOROTOLUENE	MG_KG	N																	
Newport_RA_SO_VOCs	2-HEXANONE	MG_KG	N																	
Newport_RA_SO_VOCs	4-CHLOROTOLUENE	MG_KG	N																	
Newport_RA_SO_VOCs	4-ISOPROPYLTOLUENE	MG_KG	N																	
Newport_RA_SO_VOCs	4-METHYL-2-PENTANONE	MG_KG	N																	
Newport_RA_SO_VOCs	ACETONE	MG_KG	N																	
Newport_RA_SO_VOCs	BENZENE	MG_KG	N																	
Newport_RA_SO_VOCs	BROMOBENZENE	MG_KG	N																	
Newport_RA_SO_VOCs	BROMOCHLOROMETHANE	MG_KG	N																	
Newport_RA_SO_VOCs	BROMODICHLOROMETHANE	MG_KG	N																	
Newport_RA_SO_VOCs	BROMOFORM	MG_KG	N																	
Newport_RA_SO_VOCs	BROMOMETHANE	MG_KG	N																	
Newport_RA_SO_VOCs	CARBON DISULFIDE	MG_KG	N																	
Newport_RA_SO_VOCs	CARBON TETRACHLORIDE	MG_KG	N																	
Newport_RA_SO_VOCs	CHLOROBENZENE	MG_KG	N																	
Newport_RA_SO_VOCs	CHLOROETHANE	MG_KG	N																	
Newport_RA_SO_VOCs	CHLOROFORM	MG_KG	N																	
Newport_RA_SO_VOCs	CHLOROMETHANE	MG_KG	N																	
Newport_RA_SO_VOCs	CIS-1,2-DICHLOROETHENE	MG_KG	N																	
Newport_RA_SO_VOCs	CIS-1,3-DICHLOROPROPENE	MG_KG	N																	
Newport_RA_SO_VOCs	CYCLOHEXANE	MG_KG	N																	
Newport_RA_SO_VOCs	DIBROMOCHLOROMETHANE	MG_KG	N																	
Newport_RA_SO_VOCs	DIBROMOMETHANE	MG_KG	N																	
Newport_RA_SO_VOCs	DICHLORODIFLUOROMETHANE	MG_KG	N																	
Newport_RA_SO_VOCs	ETHYLBENZENE	MG_KG	N																	
Newport_RA_SO_VOCs	HEXACHLOROBUTADIENE	MG_KG	N																	
Newport_RA_SO_VOCs	ISOPROPYLBENZENE	MG_KG	N																	
Newport_RA_SO_VOCs	M- AND P-XYLENE	MG_KG	N																	
Newport_RA_SO_VOCs	METHYL ACETATE	MG_KG	N																	
Newport_RA_SO_VOCs	METHYL CYCLOHEXANE	MG_KG	N																	
Newport_RA_SO_VOCs	METHYL TERT-BUTYL ETHER	MG_KG	N																	
Newport_RA_SO_VOCs	METHYLENE CHLORIDE	MG_KG	N																	
Newport_RA_SO_VOCs	NAPHTHALENE	MG_KG	N																	
Newport_RA_SO_VOCs	N-BUTYLBENZENE	MG_KG	N																	
Newport_RA_SO_VOCs	O-XYLENE	MG_KG	N																	
Newport_RA_SO_VOCs	PROPYLBENZENE	MG_KG	N																	
Newport_RA_SO_VOCs	SEC-BUTYLBENZENE	MG_KG	N																	
Newport_RA_SO_VOCs	STYRENE	MG_KG	N																	
Newport_RA_SO_VOCs	TERT-BUTANOL	MG_KG	N																	
Newport_RA_SO_VOCs	TERT-BUTYLBENZENE	MG_KG	N																	
Newport_RA_SO_VOCs	TETRACHLOROETHENE	MG_KG	N																	
Newport_RA_SO_VOCs	TOLUENE	MG_KG	N																	
Newport_RA_SO_VOCs	TRANS-1,2-DICHLOROETHENE	MG_KG	N																	
Newport_RA_SO_VOCs	TRANS-1,3-DICHLOROPROPENE	MG_KG	N																	
Newport_RA_SO_VOCs	TRICHLOROETHENE	MG_KG	N																	
Newport_RA_SO_VOCs	TRICHLOROFLUOROMETHANE	MG_KG	N																	
Newport_RA_SO_VOCs	VINYL CHLORIDE	MG_KG	N																	
Newport_RA_SO_VOCs	XYLENES, TOTAL	MG_KG	N																	

Notes:
U or < - Non-detect at laboratory detection limit.
J - The compound was positively identified; however, the associated numerical value
is an estimated concentration only (+ and - indicate bias).
Sample Type - N = normal sample, FD = duplicate sample.
mg/kg - milligram per kilogram

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

		Location ID		P-PES-1A-01	MRP1-PES-1B-01		MRP1-PES-1B-01		MRP1-PES-1C-02		MRP1-PES-1D-02		MRP1-PES-1D-02	
		Sample Date		17/2013	4/17/2013		4/17/2013		4/24/2013		4/24/2013		4/24/2013	
		Sample ID		P-PES-1A-01	MRP1-PES-1B-01		MRP1-PES-1B-01 DUP		MRP1-PES-1C-02		MRP1-PES-1D-02		MRP1-PES-1D-02 DUP	
		Sample Type		N	N		FD		N		N		FD	
		start_depth		1	1		1		2		2		2	
		end_depth		1	1		1		2		2		2	
		depth_unit		FT	FT		FT		FT		FT		FT	
		depth_interval		1 - 1 ft	1 - 1 ft		1 - 1 ft		2 - 2 ft		2 - 2 ft		2 - 2 ft	
		task_code		P01 PostEx	MRP01 PostEx		MRP01 PostEx		MRP01 PostEx		MRP01 PostEx		MRP01 PostEx	
		validated_yn		Y	Y		Y		Y		Y		Y	
method_analyte_group	Chemical	Unit	Fraction	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers
Newport_RA_SO_Energetics	2,4-DINITROTOLUENE	MG_KG	N											
Newport_RA_SO_Energetics	2,6-DINITROTOLUENE	MG_KG	N											
Newport_RA_SO_Energetics	NITROGLYCERIN	MG_KG	N											
Newport_RA_SO_Metals	ALUMINUM	MG_KG	N											
Newport_RA_SO_Metals	ANTIMONY	MG_KG	N											
Newport_RA_SO_Metals	ARSENIC	MG_KG	N		13		14		4.8		4.6		4.3	
Newport_RA_SO_Metals	BARIUM	MG_KG	N											
Newport_RA_SO_Metals	BERYLLIUM	MG_KG	N											
Newport_RA_SO_Metals	CADMIUM	MG_KG	N											
Newport_RA_SO_Metals	CALCIUM	MG_KG	N											
Newport_RA_SO_Metals	CHROMIUM VI	MG_KG	N											
Newport_RA_SO_Metals	CHROMIUM, TOTAL	MG_KG	N		12		12		12		11		10	
Newport_RA_SO_Metals	COBALT	MG_KG	N											
Newport_RA_SO_Metals	COPPER	MG_KG	N											
Newport_RA_SO_Metals	IRON	MG_KG	N											
Newport_RA_SO_Metals	IRON, FERROUS	MG_KG	N											
Newport_RA_SO_Metals	LEAD	MG_KG	N		42		34		36		18		17	
Newport_RA_SO_Metals	MAGNESIUM	MG_KG	N											
Newport_RA_SO_Metals	MANGANESE	MG_KG	N											
Newport_RA_SO_Metals	MERCURY	MG_KG	N											
Newport_RA_SO_Metals	NICKEL	MG_KG	N											
Newport_RA_SO_Metals	POTASSIUM	MG_KG	N											
Newport_RA_SO_Metals	SELENIUM	MG_KG	N											
Newport_RA_SO_Metals	SILVER	MG_KG	N											
Newport_RA_SO_Metals	SODIUM	MG_KG	N											
Newport_RA_SO_Metals	THALLIUM	MG_KG	N											
Newport_RA_SO_Metals	VANADIUM	MG_KG	N											
Newport_RA_SO_Metals	ZINC	MG_KG	N											
Newport_RA_SO_Other	DENSITY	G_CC	N											
Newport_RA_SO_Other	Pellet count	COUNT	N											
Newport_RA_SO_Other	Pellet weight	PCT	N											
Newport_RA_SO_Other	PERCENT FINES	PCT	N											
Newport_RA_SO_Other	PERCENT GRAVEL	PCT	N											
Newport_RA_SO_Other	PERCENT SAND	PCT	N											
Newport_RA_SO_Other	PERCENT SAND, COARSE	PCT	N											
Newport_RA_SO_Other	PERCENT SAND, FINE	PCT	N											
Newport_RA_SO_Other	PERCENT SAND, MEDIUM	PCT	N											
Newport_RA_SO_Other	PH	PH	N											
Newport_RA_SO_Other	POROSITY	PCT	N											
Newport_RA_SO_Other	SIEVE 1 INCH (25.4-MM)	PCT	N											
Newport_RA_SO_Other	SIEVE 1-1/2 INCH (37.5-MM)	PCT	N											
Newport_RA_SO_Other	SIEVE 2 INCH (50-MM)	PCT	N											
Newport_RA_SO_Other	SIEVE 3 INCH (75-MM)	PCT	N											
Newport_RA_SO_Other	SIEVE 3/4 INCH (19-MM)	PCT	N											
Newport_RA_SO_Other	SIEVE 3/8 INCH (9.5-MM)	PCT	N											
Newport_RA_SO_Other	SIEVE NO. 004 (4.75-MM)	PCT	N											
Newport_RA_SO_Other	SIEVE NO. 010 (2-MM)	PCT	N											
Newport_RA_SO_Other	SIEVE NO. 020 (850-UM)	PCT	N											
Newport_RA_SO_Other	SIEVE NO. 040 (425-UM)	PCT	N											
Newport_RA_SO_Other	SIEVE NO. 060 (250-UM)	PCT	N											
Newport_RA_SO_Other	SIEVE NO. 080 (180-UM)	PCT	N											
Newport_RA_SO_Other	SIEVE NO. 100 (150-UM)	PCT	N											
Newport_RA_SO_Other	SIEVE NO. 200 (75-UM)	PCT	N											
Newport_RA_SO_Other	SPECIFIC CONDUCTANCE	UMHO_CM	N											
Newport_RA_SO_Other	SPECIFIC GRAVITY	NONE	N											
Newport_RA_SO_Other	SULFIDE	MG_KG	N											
Newport_RA_SO_Other	TPH-DIESEL RANGE	MG_KG	N											
Newport_RA_SO_Other	TPH-TOTAL UNKNOWN GASOLINE RANGE ORGANICS	MG_KG	N											
Newport_RA_SO_Other	Void Ratio	NONE	N											
Newport_RA_SO_PCBs	AROCLOR-1016	MG_KG	N											
Newport_RA_SO_PCBs	AROCLOR-1221	MG_KG	N											
Newport_RA_SO_PCBs	AROCLOR-1232	MG_KG	N											
Newport_RA_SO_PCBs	AROCLOR-1242	MG_KG	N											
Newport_RA_SO_PCBs	AROCLOR-1248	MG_KG	N											
Newport_RA_SO_PCBs	AROCLOR-1254	MG_KG	N											
Newport_RA_SO_PCBs	AROCLOR-1260	MG_KG	N											

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

		Location ID		-PES-1A-01	MRP1-PES-1B-01		MRP1-PES-1B-01		MRP1-PES-1C-02		MRP1-PES-1D-02		MRP1-PES-1D-02	
		Sample Date		17/2013	4/17/2013		4/17/2013		4/24/2013		4/24/2013		4/24/2013	
		Sample ID		-PES-1A-01	MRP1-PES-1B-01		MRP1-PES-1B-01 DUP		MRP1-PES-1C-02		MRP1-PES-1D-02		MRP1-PES-1D-02 DUP	
		Sample Type		N	N		FD		N		N		FD	
		start_depth		1	1		1		2		2		2	
		end_depth		1	1		1		2		2		2	
		depth_unit		FT	FT		FT		FT		FT		FT	
		depth_interval		1 - 1 ft	1 - 1 ft		1 - 1 ft		2 - 2 ft		2 - 2 ft		2 - 2 ft	
		task_code		P01 PostEx	MRP01 PostEx		MRP01 PostEx		MRP01 PostEx		MRP01 PostEx		MRP01 PostEx	
		validated_yn		Y	Y		Y		Y		Y		Y	
method_analyte_group	Chemical	Unit	Fraction	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers
Newport_RA_SO_PCBs	AROCLOR-1262	MG_KG	N											
Newport_RA_SO_PCBs	AROCLOR-1268	MG_KG	N											
Newport_RA_SO_PCBs	PCB, TOTAL	MG_KG	N											
Newport_RA_SO_PCBs	POLYCHLORINATED BIPHENYLS (PCBS)	MG_KG	N											
Newport_RA_SO_Pesticides	4,4-DDD	MG_KG	N											
Newport_RA_SO_Pesticides	4,4-DDE	MG_KG	N											
Newport_RA_SO_Pesticides	4,4-DDT	MG_KG	N											
Newport_RA_SO_Pesticides	ALDRIN	MG_KG	N											
Newport_RA_SO_Pesticides	ALPHA-BHC	MG_KG	N											
Newport_RA_SO_Pesticides	ALPHA-CHLORDANE	MG_KG	N											
Newport_RA_SO_Pesticides	BETA-BHC	MG_KG	N											
Newport_RA_SO_Pesticides	DDT, TOTAL	MG_KG	N											
Newport_RA_SO_Pesticides	DELTA-BHC	MG_KG	N											
Newport_RA_SO_Pesticides	DIELDRIN	MG_KG	N											
Newport_RA_SO_Pesticides	ENDOSULFAN I	MG_KG	N											
Newport_RA_SO_Pesticides	ENDOSULFAN II	MG_KG	N											
Newport_RA_SO_Pesticides	ENDOSULFAN SULFATE	MG_KG	N											
Newport_RA_SO_Pesticides	ENDRIN	MG_KG	N											
Newport_RA_SO_Pesticides	ENDRIN ALDEHYDE	MG_KG	N											
Newport_RA_SO_Pesticides	ENDRIN KETONE	MG_KG	N											
Newport_RA_SO_Pesticides	GAMMA-CHLORDANE	MG_KG	N											
Newport_RA_SO_Pesticides	HEPTACHLOR	MG_KG	N											
Newport_RA_SO_Pesticides	HEPTACHLOR EPOXIDE	MG_KG	N											
Newport_RA_SO_Pesticides	LINDANE	MG_KG	N											
Newport_RA_SO_Pesticides	METHOXYCHLOR	MG_KG	N											
Newport_RA_SO_Pesticides	TOXAPHENE	MG_KG	N											
Newport_RA_SO_Pesticides	TRANS-CHLORDANE	MG_KG	N											
Newport_RA_SO_SVOCs	1,1-BIPHENYL	MG_KG	N											
Newport_RA_SO_SVOCs	1-METHYLNAPHTHALENE	MG_KG	N	U	0.0024	J	0.0031	J	<0.024	U	<0.024	U	0.0055	J
Newport_RA_SO_SVOCs	1,2,4-TRICHLOROBENZENE	MG_KG	N											
Newport_RA_SO_SVOCs	1,2-DICHLOROBENZENE	MG_KG	N											
Newport_RA_SO_SVOCs	1,2-DIPHENYLHYDRAZINE	MG_KG	N											
Newport_RA_SO_SVOCs	1,3-DICHLOROBENZENE	MG_KG	N											
Newport_RA_SO_SVOCs	1,4-DICHLOROBENZENE	MG_KG	N											
Newport_RA_SO_SVOCs	2,2'-OXYBIS(1-CHLOROPROPANE)	MG_KG	N											
Newport_RA_SO_SVOCs	2,4,5-TRICHLOROPHENOL	MG_KG	N											
Newport_RA_SO_SVOCs	2,4,6-TRICHLOROPHENOL	MG_KG	N											
Newport_RA_SO_SVOCs	2,4-DICHLOROPHENOL	MG_KG	N											
Newport_RA_SO_SVOCs	2,4-DIMETHYLPHENOL	MG_KG	N											
Newport_RA_SO_SVOCs	2,4-DINITROPHENOL	MG_KG	N											
Newport_RA_SO_SVOCs	2,4-DINITROTOLUENE	MG_KG	N											
Newport_RA_SO_SVOCs	2,6-DICHLOROPHENOL	MG_KG	N											
Newport_RA_SO_SVOCs	2,6-DINITROTOLUENE	MG_KG	N											
Newport_RA_SO_SVOCs	2-CHLORONAPHTHALENE	MG_KG	N	U	<0.022	U	<0.023	U	<0.024	U	<0.024	U	<0.024	U
Newport_RA_SO_SVOCs	2-CHLOROPHENOL	MG_KG	N											
Newport_RA_SO_SVOCs	2-METHYLNAPHTHALENE	MG_KG	N	U	0.006	J	0.0065	J	<0.024	U	<0.024	U	0.005	J
Newport_RA_SO_SVOCs	2-METHYLPHENOL	MG_KG	N											
Newport_RA_SO_SVOCs	2-NITROANILINE	MG_KG	N											
Newport_RA_SO_SVOCs	2-NITROPHENOL	MG_KG	N											
Newport_RA_SO_SVOCs	3- AND 4-METHYLPHENOL	MG_KG	N											
Newport_RA_SO_SVOCs	3,3-DICHLOROBENZIDINE	MG_KG	N											
Newport_RA_SO_SVOCs	3-NITROANILINE	MG_KG	N											
Newport_RA_SO_SVOCs	4,6-DINITRO-2-METHYLPHENOL	MG_KG	N											
Newport_RA_SO_SVOCs	4-BROMOPHENYL-PHENYLETHER	MG_KG	N											
Newport_RA_SO_SVOCs	4-CHLORO-3-METHYLPHENOL	MG_KG	N											
Newport_RA_SO_SVOCs	4-CHLOROANILINE	MG_KG	N											
Newport_RA_SO_SVOCs	4-CHLOROPHENYL-PHENYLETHER	MG_KG	N											
Newport_RA_SO_SVOCs	4-METHYLPHENOL	MG_KG	N											
Newport_RA_SO_SVOCs	4-NITROANILINE	MG_KG	N											
Newport_RA_SO_SVOCs	4-NITROPHENOL	MG_KG	N											
Newport_RA_SO_SVOCs	ACENAPHTHENE	MG_KG	N	J	0.0031	J	0.0027	J	<0.0073	U	<0.0072	U	<0.0072	U
Newport_RA_SO_SVOCs	ACENAPHTHYLENE	MG_KG	N	J	0.036		0.038		<0.0073	U	<0.0072	U	<0.0072	U
Newport_RA_SO_SVOCs	ACETOPHENONE	MG_KG	N											
Newport_RA_SO_SVOCs	ANTHRACENE	MG_KG	N	J	0.022		0.024		<0.0073	U	<0.0072	U	<0.0072	U
Newport_RA_SO_SVOCs	ATRAZINE	MG_KG	N											
Newport_RA_SO_SVOCs	BENZALDEHYDE	MG_KG	N											

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	-PES-1A-01	MRP1-PES-1B-01		MRP1-PES-1B-01		MRP1-PES-1C-02		MRP1-PES-1D-02		MRP1-PES-1D-02	
			Sample Date	17/2013	4/17/2013		4/17/2013		4/24/2013		4/24/2013		4/24/2013	
			Sample ID	-PES-1A-01	MRP1-PES-1B-01		MRP1-PES-1B-01 DUP		MRP1-PES-1C-02		MRP1-PES-1D-02		MRP1-PES-1D-02 DUP	
			Sample Type	N	N		FD		N		N		FD	
			start_depth	1	1		1		2		2		2	
			end_depth	1	1		1		2		2		2	
			depth_unit	FT	FT		FT		FT		FT		FT	
			depth_interval	1 - 1 ft	1 - 1 ft		1 - 1 ft		2 - 2 ft		2 - 2 ft		2 - 2 ft	
			task_code	P01 PostEx	MRP01 PostEx		MRP01 PostEx		MRP01 PostEx		MRP01 PostEx		MRP01 PostEx	
			validated_yn	Y	Y		Y		Y		Y		Y	
method_analyte_group	Chemical	Unit	Fraction	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers
Newport_RA_SO_SVOCs	BENZIDINE	MG_KG	N											
Newport_RA_SO_SVOCs	BENZO[A]ANTHRACENE	MG_KG	N		0.067		0.068		0.0012	J	0.00099	J	0.0012	J
Newport_RA_SO_SVOCs	BENZO[A]PYRENE	MG_KG	N		0.082		0.079		0.00098	J	0.00079	J	0.001	J
Newport_RA_SO_SVOCs	BENZO[B]FLUORANTHENE	MG_KG	N		0.093		0.092		0.0012	J	0.00099	J	0.0013	J
Newport_RA_SO_SVOCs	BENZO[G,H,I]PERYLENE	MG_KG	N		0.069		0.067		0.00089	J	<0.0072	U	0.00091	J
Newport_RA_SO_SVOCs	BENZO[K]FLUORANTHENE	MG_KG	N	J	0.036		0.037		<0.0073	U	<0.0072	U	<0.0072	U
Newport_RA_SO_SVOCs	BENZOIC ACID	MG_KG	N											
Newport_RA_SO_SVOCs	BENZYL ALCOHOL	MG_KG	N											
Newport_RA_SO_SVOCs	BIS(2-CHLOROETHOXY)METHANE	MG_KG	N											
Newport_RA_SO_SVOCs	BIS(2-CHLOROETHYL)ETHER	MG_KG	N											
Newport_RA_SO_SVOCs	BIS(2-ETHYLHEXYL)PHTHALATE	MG_KG	N											
Newport_RA_SO_SVOCs	BUTYLBENZYLPHTHALATE	MG_KG	N											
Newport_RA_SO_SVOCs	CAPROLACTAM	MG_KG	N											
Newport_RA_SO_SVOCs	CARBAZOLE	MG_KG	N											
Newport_RA_SO_SVOCs	CHRYSENE	MG_KG	N		0.09		0.09		0.001	J	0.0013	J	0.0019	J
Newport_RA_SO_SVOCs	DIBENZ[A,H]ANTHRACENE	MG_KG	N	J	0.018		0.017		<0.0073	U	<0.0072	U	<0.0072	U
Newport_RA_SO_SVOCs	DIBENZOFURAN	MG_KG	N											
Newport_RA_SO_SVOCs	DIETHYLPHTHALATE	MG_KG	N											
Newport_RA_SO_SVOCs	DIMETHYL PHTHALATE	MG_KG	N											
Newport_RA_SO_SVOCs	DI-N-BUTYLPHTHALATE	MG_KG	N											
Newport_RA_SO_SVOCs	DI-N-OCTYLPHTHALATE	MG_KG	N											
Newport_RA_SO_SVOCs	FLUORANTHENE	MG_KG	N		0.13		0.14		0.0016	J	0.0014	J	0.0018	J
Newport_RA_SO_SVOCs	FLUORENE	MG_KG	N	J	0.0051	J	0.0058	J	<0.0073	U	<0.0072	U	<0.0072	U
Newport_RA_SO_SVOCs	HEXACHLOROBENZENE	MG_KG	N											
Newport_RA_SO_SVOCs	HEXACHLOROBUTADIENE	MG_KG	N											
Newport_RA_SO_SVOCs	HEXACHLOROCYCLOPENTADIENE	MG_KG	N											
Newport_RA_SO_SVOCs	HEXACHLOROETHANE	MG_KG	N											
Newport_RA_SO_SVOCs	HPAH, TOTAL	MG_KG	N											
Newport_RA_SO_SVOCs	INDENO[1,2,3-CD]PYRENE	MG_KG	N		0.05		0.05		<0.0073	U	<0.0072	U	<0.0072	U
Newport_RA_SO_SVOCs	ISOPHORONE	MG_KG	N											
Newport_RA_SO_SVOCs	LPAH, TOTAL	MG_KG	N											
Newport_RA_SO_SVOCs	NAPHTHALENE	MG_KG	N	U	<0.022	U	<0.023	U	<0.024	U	<0.024	U	<0.024	U
Newport_RA_SO_SVOCs	NITROBENZENE	MG_KG	N											
Newport_RA_SO_SVOCs	N-NITROSODIMETHYLAMINE	MG_KG	N											
Newport_RA_SO_SVOCs	N-NITROSODINPROPYLAMINE	MG_KG	N											
Newport_RA_SO_SVOCs	N-NITROSODIPHENYLAMINE	MG_KG	N											
Newport_RA_SO_SVOCs	N-NITROSOPYRROLIDINE	MG_KG	N											
Newport_RA_SO_SVOCs	PAH, TOTAL	MG_KG	N											
Newport_RA_SO_SVOCs	PENTACHLOROPHENOL	MG_KG	N											
Newport_RA_SO_SVOCs	PHENANTHRENE	MG_KG	N		0.06		0.066		0.0011	J	0.0018	J	0.0044	J
Newport_RA_SO_SVOCs	PHENOL	MG_KG	N											
Newport_RA_SO_SVOCs	PYRENE	MG_KG	N		0.13		0.15		0.0015	J	0.0013	J	0.0018	J
Newport_RA_SO_VOCs	1,1,1,2-TETRACHLOROETHANE	MG_KG	N											
Newport_RA_SO_VOCs	1,1,1-TRICHLOROETHANE	MG_KG	N											
Newport_RA_SO_VOCs	1,1,2,2-TETRACHLOROETHANE	MG_KG	N											
Newport_RA_SO_VOCs	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	MG_KG	N											
Newport_RA_SO_VOCs	1,1,2-TRICHLOROETHANE	MG_KG	N											
Newport_RA_SO_VOCs	1,1-DICHLOROETHANE	MG_KG	N											
Newport_RA_SO_VOCs	1,1-DICHLOROETHENE	MG_KG	N											
Newport_RA_SO_VOCs	1,1-DICHLOROPROPENE	MG_KG	N											
Newport_RA_SO_VOCs	1,2,3-TRICHLOROBENZENE	MG_KG	N											
Newport_RA_SO_VOCs	1,2,3-TRICHLOROPROPANE	MG_KG	N											
Newport_RA_SO_VOCs	1,2,4-TRICHLOROBENZENE	MG_KG	N											
Newport_RA_SO_VOCs	1,2,4-TRIMETHYLBENZENE	MG_KG	N											
Newport_RA_SO_VOCs	1,2-DIBROMO-3-CHLOROPROPANE	MG_KG	N											
Newport_RA_SO_VOCs	1,2-DIBROMOETHANE	MG_KG	N											
Newport_RA_SO_VOCs	1,2-DICHLOROBENZENE	MG_KG	N											
Newport_RA_SO_VOCs	1,2-DICHLOROETHANE	MG_KG	N											
Newport_RA_SO_VOCs	1,2-DICHLOROETHENE, TOTAL	MG_KG	N											
Newport_RA_SO_VOCs	1,2-DICHLOROPROPANE	MG_KG	N											
Newport_RA_SO_VOCs	1,3,5-TRIMETHYLBENZENE	MG_KG	N											
Newport_RA_SO_VOCs	1,3-DICHLOROBENZENE	MG_KG	N											
Newport_RA_SO_VOCs	1,3-DICHLOROPROPANE	MG_KG	N											
Newport_RA_SO_VOCs	1,4-DICHLOROBENZENE	MG_KG	N											
Newport_RA_SO_VOCs	2,2-DICHLOROPROPANE	MG_KG	N											
Newport_RA_SO_VOCs	2-BUTANONE	MG_KG	N											

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	-PES-1A-01	MRP1-PES-1B-01		MRP1-PES-1B-01		MRP1-PES-1C-02		MRP1-PES-1D-02		MRP1-PES-1D-02	
			Sample Date	17/2013	4/17/2013		4/17/2013		4/24/2013		4/24/2013		4/24/2013	
			Sample ID	-PES-1A-01	MRP1-PES-1B-01		MRP1-PES-1B-01 DUP		MRP1-PES-1C-02		MRP1-PES-1D-02		MRP1-PES-1D-02 DUP	
			Sample Type	N	N		FD		N		N		FD	
			start_depth	1	1		1		2		2		2	
			end_depth	1	1		1		2		2		2	
			depth_unit	FT	FT		FT		FT		FT		FT	
			depth_interval	1 - 1 ft	1 - 1 ft		1 - 1 ft		2 - 2 ft		2 - 2 ft		2 - 2 ft	
			task_code	P01 PostEx	MRP01 PostEx		MRP01 PostEx		MRP01 PostEx		MRP01 PostEx		MRP01 PostEx	
			validated_yn	Y	Y		Y		Y		Y		Y	
method_analyte_group	Chemical	Unit	Fraction	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers
Newport_RA_SO_VOCs	2-CHLOROTOLUENE	MG_KG	N											
Newport_RA_SO_VOCs	2-HEXANONE	MG_KG	N											
Newport_RA_SO_VOCs	4-CHLOROTOLUENE	MG_KG	N											
Newport_RA_SO_VOCs	4-ISOPROPYLTOLUENE	MG_KG	N											
Newport_RA_SO_VOCs	4-METHYL-2-PENTANONE	MG_KG	N											
Newport_RA_SO_VOCs	ACETONE	MG_KG	N											
Newport_RA_SO_VOCs	BENZENE	MG_KG	N											
Newport_RA_SO_VOCs	BROMOBENZENE	MG_KG	N											
Newport_RA_SO_VOCs	BROMOCHLOROMETHANE	MG_KG	N											
Newport_RA_SO_VOCs	BROMODICHLOROMETHANE	MG_KG	N											
Newport_RA_SO_VOCs	BROMOFORM	MG_KG	N											
Newport_RA_SO_VOCs	BROMOMETHANE	MG_KG	N											
Newport_RA_SO_VOCs	CARBON DISULFIDE	MG_KG	N											
Newport_RA_SO_VOCs	CARBON TETRACHLORIDE	MG_KG	N											
Newport_RA_SO_VOCs	CHLOROBENZENE	MG_KG	N											
Newport_RA_SO_VOCs	CHLOROETHANE	MG_KG	N											
Newport_RA_SO_VOCs	CHLOROFORM	MG_KG	N											
Newport_RA_SO_VOCs	CHLOROMETHANE	MG_KG	N											
Newport_RA_SO_VOCs	CIS-1,2-DICHLOROETHENE	MG_KG	N											
Newport_RA_SO_VOCs	CIS-1,3-DICHLOROPROPENE	MG_KG	N											
Newport_RA_SO_VOCs	CYCLOHEXANE	MG_KG	N											
Newport_RA_SO_VOCs	DIBROMOCHLOROMETHANE	MG_KG	N											
Newport_RA_SO_VOCs	DIBROMOMETHANE	MG_KG	N											
Newport_RA_SO_VOCs	DICHLORODIFLUOROMETHANE	MG_KG	N											
Newport_RA_SO_VOCs	ETHYLBENZENE	MG_KG	N											
Newport_RA_SO_VOCs	HEXACHLOROBUTADIENE	MG_KG	N											
Newport_RA_SO_VOCs	ISOPROPYLBENZENE	MG_KG	N											
Newport_RA_SO_VOCs	M- AND P-XYLENE	MG_KG	N											
Newport_RA_SO_VOCs	METHYL ACETATE	MG_KG	N											
Newport_RA_SO_VOCs	METHYL CYCLOHEXANE	MG_KG	N											
Newport_RA_SO_VOCs	METHYL TERT-BUTYL ETHER	MG_KG	N											
Newport_RA_SO_VOCs	METHYLENE CHLORIDE	MG_KG	N											
Newport_RA_SO_VOCs	NAPHTHALENE	MG_KG	N											
Newport_RA_SO_VOCs	N-BUTYLBENZENE	MG_KG	N											
Newport_RA_SO_VOCs	O-XYLENE	MG_KG	N											
Newport_RA_SO_VOCs	PROPYLBENZENE	MG_KG	N											
Newport_RA_SO_VOCs	SEC-BUTYLBENZENE	MG_KG	N											
Newport_RA_SO_VOCs	STYRENE	MG_KG	N											
Newport_RA_SO_VOCs	TERT-BUTANOL	MG_KG	N											
Newport_RA_SO_VOCs	TERT-BUTYLBENZENE	MG_KG	N											
Newport_RA_SO_VOCs	TETRACHLOROETHENE	MG_KG	N											
Newport_RA_SO_VOCs	TOLUENE	MG_KG	N											
Newport_RA_SO_VOCs	TRANS-1,2-DICHLOROETHENE	MG_KG	N											
Newport_RA_SO_VOCs	TRANS-1,3-DICHLOROPROPENE	MG_KG	N											
Newport_RA_SO_VOCs	TRICHLOROETHENE	MG_KG	N											
Newport_RA_SO_VOCs	TRICHLOROFLUOROMETHANE	MG_KG	N											
Newport_RA_SO_VOCs	VINYL CHLORIDE	MG_KG	N											
Newport_RA_SO_VOCs	XYLENES, TOTAL	MG_KG	N											

Notes:
U or < - Non-detect at laboratory detection limit.
J - The compound was positively identified; however, the associated numerical value
is an estimated concentration only (+ and - indicate bias).
Sample Type - N = normal sample, FD = duplicate sample.
mg/kg - milligram per kilogram

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	MRP1-PES-1E-02		MRP1-PES-2A-02		MRP1-PES-2B-02		MRP1-PES-2B-02		MRP1-PES-2D-02		MRP1-PES-2E-02	
			Sample Date	4/24/2013		4/24/2013		4/25/2013		4/25/2013		4/26/2013		4/25/2013	
			Sample ID	MRP1-PES-1E-02		MRP1-PES-2A-02		MRP1-PES-2B-02		MRP1-PES-2B-02 DUP		MRP1-PES-2D-02		MRP1-PES-2E-02	
			Sample Type	N		N		N		FD		N		N	
			start_depth	2		2		2		2		2		2	
			end_depth	2		2		2		2		2		2	
			depth_unit	FT		FT		FT		FT		FT		FT	
			depth_interval	2 - 2 ft		2 - 2 ft		2 - 2 ft		2 - 2 ft		2 - 2 ft		2 - 2 ft	
			task_code	MRP01 PostEx		MRP01 PostEx		MRP01 PostEx		MRP01 PostEx		MRP01 PostEx		MRP01 PostEx	
			validated_yn	Y		Y		Y		Y		Y		Y	
method_analyte_group	Chemical	Unit	Fraction	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers
Newport_RA_SO_Energetics	2,4-DINITROTOLUENE	MG_KG	N												
Newport_RA_SO_Energetics	2,6-DINITROTOLUENE	MG_KG	N												
Newport_RA_SO_Energetics	NITROGLYCERIN	MG_KG	N												
Newport_RA_SO_Metals	ALUMINUM	MG_KG	N												
Newport_RA_SO_Metals	ANTIMONY	MG_KG	N												
Newport_RA_SO_Metals	ARSENIC	MG_KG	N	4.7		4.5		9.3		10		7.2		7.3	
Newport_RA_SO_Metals	BARIUM	MG_KG	N												
Newport_RA_SO_Metals	BERYLLIUM	MG_KG	N												
Newport_RA_SO_Metals	CADMIUM	MG_KG	N												
Newport_RA_SO_Metals	CALCIUM	MG_KG	N												
Newport_RA_SO_Metals	CHROMIUM VI	MG_KG	N												
Newport_RA_SO_Metals	CHROMIUM, TOTAL	MG_KG	N	10		11		10		10		10		11	
Newport_RA_SO_Metals	COBALT	MG_KG	N												
Newport_RA_SO_Metals	COPPER	MG_KG	N												
Newport_RA_SO_Metals	IRON	MG_KG	N												
Newport_RA_SO_Metals	IRON, FERROUS	MG_KG	N												
Newport_RA_SO_Metals	LEAD	MG_KG	N	13		11		8.8		8.8		8.4		12	
Newport_RA_SO_Metals	MAGNESIUM	MG_KG	N												
Newport_RA_SO_Metals	MANGANESE	MG_KG	N												
Newport_RA_SO_Metals	MERCURY	MG_KG	N												
Newport_RA_SO_Metals	NICKEL	MG_KG	N												
Newport_RA_SO_Metals	POTASSIUM	MG_KG	N												
Newport_RA_SO_Metals	SELENIUM	MG_KG	N												
Newport_RA_SO_Metals	SILVER	MG_KG	N												
Newport_RA_SO_Metals	SODIUM	MG_KG	N												
Newport_RA_SO_Metals	THALLIUM	MG_KG	N												
Newport_RA_SO_Metals	VANADIUM	MG_KG	N												
Newport_RA_SO_Metals	ZINC	MG_KG	N												
Newport_RA_SO_Other	DENSITY	G_CC	N												
Newport_RA_SO_Other	Pellet count	COUNT	N												
Newport_RA_SO_Other	Pellet weight	PCT	N												
Newport_RA_SO_Other	PERCENT FINES	PCT	N												
Newport_RA_SO_Other	PERCENT GRAVEL	PCT	N												
Newport_RA_SO_Other	PERCENT SAND	PCT	N												
Newport_RA_SO_Other	PERCENT SAND, COARSE	PCT	N												
Newport_RA_SO_Other	PERCENT SAND, FINE	PCT	N												
Newport_RA_SO_Other	PERCENT SAND, MEDIUM	PCT	N												
Newport_RA_SO_Other	PH	PH	N												
Newport_RA_SO_Other	POROSITY	PCT	N												
Newport_RA_SO_Other	SIEVE 1 INCH (25.4-MM)	PCT	N												
Newport_RA_SO_Other	SIEVE 1-1/2 INCH (37.5-MM)	PCT	N												
Newport_RA_SO_Other	SIEVE 2 INCH (50-MM)	PCT	N												
Newport_RA_SO_Other	SIEVE 3 INCH (75-MM)	PCT	N												
Newport_RA_SO_Other	SIEVE 3/4 INCH (19-MM)	PCT	N												
Newport_RA_SO_Other	SIEVE 3/8 INCH (9.5-MM)	PCT	N												
Newport_RA_SO_Other	SIEVE NO. 004 (4.75-MM)	PCT	N												
Newport_RA_SO_Other	SIEVE NO. 010 (2-MM)	PCT	N												
Newport_RA_SO_Other	SIEVE NO. 020 (850-UM)	PCT	N												
Newport_RA_SO_Other	SIEVE NO. 040 (425-UM)	PCT	N												
Newport_RA_SO_Other	SIEVE NO. 060 (250-UM)	PCT	N												
Newport_RA_SO_Other	SIEVE NO. 080 (180-UM)	PCT	N												
Newport_RA_SO_Other	SIEVE NO. 100 (150-UM)	PCT	N												
Newport_RA_SO_Other	SIEVE NO. 200 (75-UM)	PCT	N												
Newport_RA_SO_Other	SPECIFIC CONDUCTANCE	UMHO_CM	N												
Newport_RA_SO_Other	SPECIFIC GRAVITY	NONE	N												
Newport_RA_SO_Other	SULFIDE	MG_KG	N												
Newport_RA_SO_Other	TPH-DIESEL RANGE	MG_KG	N												
Newport_RA_SO_Other	TPH-TOTAL UNKNOWN GASOLINE RANGE ORGANICS	MG_KG	N												
Newport_RA_SO_Other	Void Ratio	NONE	N												
Newport_RA_SO_PCBs	AROCLOR-1016	MG_KG	N												
Newport_RA_SO_PCBs	AROCLOR-1221	MG_KG	N												
Newport_RA_SO_PCBs	AROCLOR-1232	MG_KG	N												
Newport_RA_SO_PCBs	AROCLOR-1242	MG_KG	N												
Newport_RA_SO_PCBs	AROCLOR-1248	MG_KG	N												
Newport_RA_SO_PCBs	AROCLOR-1254	MG_KG	N												
Newport_RA_SO_PCBs	AROCLOR-1260	MG_KG	N												

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	MRP1-PES-1E-02		MRP1-PES-2A-02		MRP1-PES-2B-02		MRP1-PES-2B-02		MRP1-PES-2D-02		MRP1-PES-2E-02	
			Sample Date	4/24/2013		4/24/2013		4/25/2013		4/25/2013		4/26/2013		4/25/2013	
			Sample ID	MRP1-PES-1E-02		MRP1-PES-2A-02		MRP1-PES-2B-02		MRP1-PES-2B-02 DUP		MRP1-PES-2D-02		MRP1-PES-2E-02	
			Sample Type	N		N		N		FD		N		N	
			start_depth	2		2		2		2		2		2	
			end_depth	2		2		2		2		2		2	
			depth_unit	FT		FT		FT		FT		FT		FT	
			depth_interval	2 - 2 ft		2 - 2 ft		2 - 2 ft		2 - 2 ft		2 - 2 ft		2 - 2 ft	
			task_code	MRP01 PostEx		MRP01 PostEx		MRP01 PostEx		MRP01 PostEx		MRP01 PostEx		MRP01 PostEx	
			validated_yn	Y		Y		Y		Y		Y		Y	
method_analyte_group	Chemical	Unit	Fraction	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers
Newport_RA_SO_PCBs	AROCLOR-1262	MG_KG	N												
Newport_RA_SO_PCBs	AROCLOR-1268	MG_KG	N												
Newport_RA_SO_PCBs	PCB, TOTAL	MG_KG	N												
Newport_RA_SO_PCBs	POLYCHLORINATED BIPHENYLS (PCBS)	MG_KG	N												
Newport_RA_SO_Pesticides	4,4-DDD	MG_KG	N												
Newport_RA_SO_Pesticides	4,4-DDE	MG_KG	N												
Newport_RA_SO_Pesticides	4,4-DDT	MG_KG	N												
Newport_RA_SO_Pesticides	ALDRIN	MG_KG	N												
Newport_RA_SO_Pesticides	ALPHA-BHC	MG_KG	N												
Newport_RA_SO_Pesticides	ALPHA-CHLORDANE	MG_KG	N												
Newport_RA_SO_Pesticides	BETA-BHC	MG_KG	N												
Newport_RA_SO_Pesticides	DDT, TOTAL	MG_KG	N												
Newport_RA_SO_Pesticides	DELTA-BHC	MG_KG	N												
Newport_RA_SO_Pesticides	DIELDRIN	MG_KG	N												
Newport_RA_SO_Pesticides	ENDOSULFAN I	MG_KG	N												
Newport_RA_SO_Pesticides	ENDOSULFAN II	MG_KG	N												
Newport_RA_SO_Pesticides	ENDOSULFAN SULFATE	MG_KG	N												
Newport_RA_SO_Pesticides	ENDRIN	MG_KG	N												
Newport_RA_SO_Pesticides	ENDRIN ALDEHYDE	MG_KG	N												
Newport_RA_SO_Pesticides	ENDRIN KETONE	MG_KG	N												
Newport_RA_SO_Pesticides	GAMMA-CHLORDANE	MG_KG	N												
Newport_RA_SO_Pesticides	HEPTACHLOR	MG_KG	N												
Newport_RA_SO_Pesticides	HEPTACHLOR EPOXIDE	MG_KG	N												
Newport_RA_SO_Pesticides	LINDANE	MG_KG	N												
Newport_RA_SO_Pesticides	METHOXYCHLOR	MG_KG	N												
Newport_RA_SO_Pesticides	TOXAPHENE	MG_KG	N												
Newport_RA_SO_Pesticides	TRANS-CHLORDANE	MG_KG	N												
Newport_RA_SO_SVOCs	1,1-BIPHENYL	MG_KG	N												
Newport_RA_SO_SVOCs	1-METHYLNAPHTHALENE	MG_KG	N	<0.023	U	<0.023	U	<0.022	U	<0.022	U	<0.024	U	<0.023	U
Newport_RA_SO_SVOCs	1,2,4-TRICHLOROBENZENE	MG_KG	N												
Newport_RA_SO_SVOCs	1,2-DICHLOROBENZENE	MG_KG	N												
Newport_RA_SO_SVOCs	1,2-DIPHENYLHYDRAZINE	MG_KG	N												
Newport_RA_SO_SVOCs	1,3-DICHLOROBENZENE	MG_KG	N												
Newport_RA_SO_SVOCs	1,4-DICHLOROBENZENE	MG_KG	N												
Newport_RA_SO_SVOCs	2,2'-OXYBIS(1-CHLOROPROPANE)	MG_KG	N												
Newport_RA_SO_SVOCs	2,4,5-TRICHLOROPHENOL	MG_KG	N												
Newport_RA_SO_SVOCs	2,4,6-TRICHLOROPHENOL	MG_KG	N												
Newport_RA_SO_SVOCs	2,4-DICHLOROPHENOL	MG_KG	N												
Newport_RA_SO_SVOCs	2,4-DIMETHYLPHENOL	MG_KG	N												
Newport_RA_SO_SVOCs	2,4-DINITROPHENOL	MG_KG	N												
Newport_RA_SO_SVOCs	2,4-DINITROTOLUENE	MG_KG	N												
Newport_RA_SO_SVOCs	2,6-DICHLOROPHENOL	MG_KG	N												
Newport_RA_SO_SVOCs	2,6-DINITROTOLUENE	MG_KG	N												
Newport_RA_SO_SVOCs	2-CHLORONAPHTHALENE	MG_KG	N	<0.023	U	<0.023	U	<0.022	U	<0.022	U	<0.024	U	<0.023	U
Newport_RA_SO_SVOCs	2-CHLOROPHENOL	MG_KG	N												
Newport_RA_SO_SVOCs	2-METHYLNAPHTHALENE	MG_KG	N	<0.023	U	<0.023	U	<0.022	U	<0.022	U	<0.024	U	<0.023	U
Newport_RA_SO_SVOCs	2-METHYLPHENOL	MG_KG	N												
Newport_RA_SO_SVOCs	2-NITROANILINE	MG_KG	N												
Newport_RA_SO_SVOCs	2-NITROPHENOL	MG_KG	N												
Newport_RA_SO_SVOCs	3- AND 4-METHYLPHENOL	MG_KG	N												
Newport_RA_SO_SVOCs	3,3-DICHLOROBENZIDINE	MG_KG	N												
Newport_RA_SO_SVOCs	3-NITROANILINE	MG_KG	N												
Newport_RA_SO_SVOCs	4,6-DINITRO-2-METHYLPHENOL	MG_KG	N												
Newport_RA_SO_SVOCs	4-BROMOPHENYL-PHENYLETHER	MG_KG	N												
Newport_RA_SO_SVOCs	4-CHLORO-3-METHYLPHENOL	MG_KG	N												
Newport_RA_SO_SVOCs	4-CHLOROANILINE	MG_KG	N												
Newport_RA_SO_SVOCs	4-CHLOROPHENYL-PHENYLETHER	MG_KG	N												
Newport_RA_SO_SVOCs	4-METHYLPHENOL	MG_KG	N												
Newport_RA_SO_SVOCs	4-NITROANILINE	MG_KG	N												
Newport_RA_SO_SVOCs	4-NITROPHENOL	MG_KG	N												
Newport_RA_SO_SVOCs	ACENAPHTHENE	MG_KG	N	<0.0070	U	<0.0069	U	<0.0067	U	<0.0068	U	<0.0071	U	0.015	
Newport_RA_SO_SVOCs	ACENAPHTHYLENE	MG_KG	N	<0.0070	U	<0.0069	U	<0.0067	U	0.00072	J	<0.0071	U	<0.0070	U
Newport_RA_SO_SVOCs	ACETOPHENONE	MG_KG	N												
Newport_RA_SO_SVOCs	ANTHRACENE	MG_KG	N	<0.0070	U	<0.0069	U	0.00071	J	0.0015	J	<0.0071	U	0.026	J5
Newport_RA_SO_SVOCs	ATRAZINE	MG_KG	N												
Newport_RA_SO_SVOCs	BENZALDEHYDE	MG_KG	N												

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	MRP1-PES-1E-02		MRP1-PES-2A-02		MRP1-PES-2B-02		MRP1-PES-2B-02		MRP1-PES-2D-02		MRP1-PES-2E-02	
			Sample Date	4/24/2013		4/24/2013		4/25/2013		4/25/2013		4/26/2013		4/25/2013	
			Sample ID	MRP1-PES-1E-02		MRP1-PES-2A-02		MRP1-PES-2B-02		MRP1-PES-2B-02 DUP		MRP1-PES-2D-02		MRP1-PES-2E-02	
			Sample Type	N		N		N		FD		N		N	
			start_depth	2		2		2		2		2		2	
			end_depth	2		2		2		2		2		2	
			depth_unit	FT		FT		FT		FT		FT		FT	
			depth_interval	2 - 2 ft		2 - 2 ft		2 - 2 ft		2 - 2 ft		2 - 2 ft		2 - 2 ft	
			task_code	MRP01 PostEx		MRP01 PostEx		MRP01 PostEx		MRP01 PostEx		MRP01 PostEx		MRP01 PostEx	
			validated_yn	Y		Y		Y		Y		Y		Y	
method_analyte_group	Chemical	Unit	Fraction	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers
Newport_RA_SO_SVOCs	BENZIDINE	MG_KG	N												
Newport_RA_SO_SVOCs	BENZO[A]ANTHRACENE	MG_KG	N	0.0011	J	0.0024	J	0.0039	J	0.0058	J	<0.0071	U	0.11	J5
Newport_RA_SO_SVOCs	BENZO[A]PYRENE	MG_KG	N	0.001	J	0.0029	J	0.0042	J	0.0079		<0.0071	U	0.16	J5
Newport_RA_SO_SVOCs	BENZO[B]FLUORANTHENE	MG_KG	N	0.0013	J	0.0028	J	0.0044	J	0.01		<0.0071	U	0.16	J5
Newport_RA_SO_SVOCs	BENZO[G,H,I]PERYLENE	MG_KG	N	0.00092	J	0.0024	J	0.0033	J	0.012		<0.0071	U	0.14	J5
Newport_RA_SO_SVOCs	BENZO[K]FLUORANTHENE	MG_KG	N	<0.0070	U	0.00099	J	0.0019	J	0.0028	J	<0.0071	U	0.058	J5
Newport_RA_SO_SVOCs	BENZOIC ACID	MG_KG	N												
Newport_RA_SO_SVOCs	BENZYL ALCOHOL	MG_KG	N												
Newport_RA_SO_SVOCs	BIS(2-CHLOROETHOXY)METHANE	MG_KG	N												
Newport_RA_SO_SVOCs	BIS(2-CHLOROETHYL)ETHER	MG_KG	N												
Newport_RA_SO_SVOCs	BIS(2-ETHYLHEXYL)PHTHALATE	MG_KG	N												
Newport_RA_SO_SVOCs	BUTYLBENZYLPHTHALATE	MG_KG	N												
Newport_RA_SO_SVOCs	CAPROLACTAM	MG_KG	N												
Newport_RA_SO_SVOCs	CARBAZOLE	MG_KG	N												
Newport_RA_SO_SVOCs	CHRYSENE	MG_KG	N	0.0015	J	0.0029	J	0.006	J	0.012		<0.0071	U	0.13	J5, J3
Newport_RA_SO_SVOCs	DIBENZ[A,H]ANTHRACENE	MG_KG	N	<0.0070	U	<0.0069	U	0.001	J	0.0033	J	<0.0071	U	0.038	J5
Newport_RA_SO_SVOCs	DIBENZOFURAN	MG_KG	N												
Newport_RA_SO_SVOCs	DIETHYLPHTHALATE	MG_KG	N												
Newport_RA_SO_SVOCs	DIMETHYL PHTHALATE	MG_KG	N												
Newport_RA_SO_SVOCs	DI-N-BUTYLPHTHALATE	MG_KG	N												
Newport_RA_SO_SVOCs	DI-N-OCTYLPHTHALATE	MG_KG	N												
Newport_RA_SO_SVOCs	FLUORANTHENE	MG_KG	N	0.002	J	0.0029	J	0.0078		0.0094		<0.0071	U	0.18	J5
Newport_RA_SO_SVOCs	FLUORENE	MG_KG	N	<0.0070	U	<0.0069	U	<0.0067	U	0.00096	J	<0.0071	U	0.0072	
Newport_RA_SO_SVOCs	HEXACHLOROBENZENE	MG_KG	N												
Newport_RA_SO_SVOCs	HEXACHLOROBUTADIENE	MG_KG	N												
Newport_RA_SO_SVOCs	HEXACHLOROCYCLOPENTADIENE	MG_KG	N												
Newport_RA_SO_SVOCs	HEXACHLOROETHANE	MG_KG	N												
Newport_RA_SO_SVOCs	HPAH, TOTAL	MG_KG	N												
Newport_RA_SO_SVOCs	INDENO[1,2,3-CD]PYRENE	MG_KG	N	<0.0070	U	0.0016	J	0.0022	J	0.0074		<0.0071	U	0.1	J5
Newport_RA_SO_SVOCs	ISOPHORONE	MG_KG	N												
Newport_RA_SO_SVOCs	LPAH, TOTAL	MG_KG	N												
Newport_RA_SO_SVOCs	NAPHTHALENE	MG_KG	N	<0.023	U	<0.023	U	<0.022	U	<0.022	U	<0.024	U	<0.023	U
Newport_RA_SO_SVOCs	NITROBENZENE	MG_KG	N												
Newport_RA_SO_SVOCs	N-NITROSODIMETHYLAMINE	MG_KG	N												
Newport_RA_SO_SVOCs	N-NITROSODINPROPYLAMINE	MG_KG	N												
Newport_RA_SO_SVOCs	N-NITROSODIPHENYLAMINE	MG_KG	N												
Newport_RA_SO_SVOCs	N-NITROSOPYRROLIDINE	MG_KG	N												
Newport_RA_SO_SVOCs	PAH, TOTAL	MG_KG	N												
Newport_RA_SO_SVOCs	PENTACHLOROPHENOL	MG_KG	N												
Newport_RA_SO_SVOCs	PHENANTHRENE	MG_KG	N	0.0027	J	0.0021	J	0.0034	J	0.0058	J	<0.0071	U	0.08	J5
Newport_RA_SO_SVOCs	PHENOL	MG_KG	N												
Newport_RA_SO_SVOCs	PYRENE	MG_KG	N	0.0019	J	0.003	J	0.0057	J	0.0076		<0.0071	U	0.14	J5, J3
Newport_RA_SO_VOCs	1,1,1,2-TETRACHLOROETHANE	MG_KG	N												
Newport_RA_SO_VOCs	1,1,1-TRICHLOROETHANE	MG_KG	N												
Newport_RA_SO_VOCs	1,1,2,2-TETRACHLOROETHANE	MG_KG	N												
Newport_RA_SO_VOCs	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	MG_KG	N												
Newport_RA_SO_VOCs	1,1,2-TRICHLOROETHANE	MG_KG	N												
Newport_RA_SO_VOCs	1,1-DICHLOROETHANE	MG_KG	N												
Newport_RA_SO_VOCs	1,1-DICHLOROETHENE	MG_KG	N												
Newport_RA_SO_VOCs	1,1-DICHLOROPROPENE	MG_KG	N												
Newport_RA_SO_VOCs	1,2,3-TRICHLOROBENZENE	MG_KG	N												
Newport_RA_SO_VOCs	1,2,3-TRICHLOROPROPANE	MG_KG	N												
Newport_RA_SO_VOCs	1,2,4-TRICHLOROBENZENE	MG_KG	N												
Newport_RA_SO_VOCs	1,2,4-TRIMETHYLBENZENE	MG_KG	N												
Newport_RA_SO_VOCs	1,2-DIBROMO-3-CHLOROPROPANE	MG_KG	N												
Newport_RA_SO_VOCs	1,2-DIBROMOETHANE	MG_KG	N												
Newport_RA_SO_VOCs	1,2-DICHLOROBENZENE	MG_KG	N												
Newport_RA_SO_VOCs	1,2-DICHLOROETHANE	MG_KG	N												
Newport_RA_SO_VOCs	1,2-DICHLOROETHENE, TOTAL	MG_KG	N												
Newport_RA_SO_VOCs	1,2-DICHLOROPROPANE	MG_KG	N												
Newport_RA_SO_VOCs	1,3,5-TRIMETHYLBENZENE	MG_KG	N												
Newport_RA_SO_VOCs	1,3-DICHLOROBENZENE	MG_KG	N												
Newport_RA_SO_VOCs	1,3-DICHLOROPROPANE	MG_KG	N												
Newport_RA_SO_VOCs	1,4-DICHLOROBENZENE	MG_KG	N												
Newport_RA_SO_VOCs	2,2-DICHLOROPROPANE	MG_KG	N												
Newport_RA_SO_VOCs	2-BUTANONE	MG_KG	N												

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	MRP1-PES-1E-02		MRP1-PES-2A-02		MRP1-PES-2B-02		MRP1-PES-2B-02		MRP1-PES-2D-02		MRP1-PES-2E-02	
			Sample Date	4/24/2013		4/24/2013		4/25/2013		4/25/2013		4/26/2013		4/25/2013	
			Sample ID	MRP1-PES-1E-02		MRP1-PES-2A-02		MRP1-PES-2B-02		MRP1-PES-2B-02 DUP		MRP1-PES-2D-02		MRP1-PES-2E-02	
			Sample Type	N		N		N		FD		N		N	
			start_depth	2		2		2		2		2		2	
			end_depth	2		2		2		2		2		2	
			depth_unit	FT		FT		FT		FT		FT		FT	
			depth_interval	2 - 2 ft		2 - 2 ft		2 - 2 ft		2 - 2 ft		2 - 2 ft		2 - 2 ft	
			task_code	MRP01 PostEx		MRP01 PostEx		MRP01 PostEx		MRP01 PostEx		MRP01 PostEx		MRP01 PostEx	
			validated_yn	Y		Y		Y		Y		Y		Y	
method_analyte_group	Chemical	Unit	Fraction	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers
Newport_RA_SO_VOCs	2-CHLOROTOLUENE	MG_KG	N												
Newport_RA_SO_VOCs	2-HEXANONE	MG_KG	N												
Newport_RA_SO_VOCs	4-CHLOROTOLUENE	MG_KG	N												
Newport_RA_SO_VOCs	4-ISOPROPYLTOLUENE	MG_KG	N												
Newport_RA_SO_VOCs	4-METHYL-2-PENTANONE	MG_KG	N												
Newport_RA_SO_VOCs	ACETONE	MG_KG	N												
Newport_RA_SO_VOCs	BENZENE	MG_KG	N												
Newport_RA_SO_VOCs	BROMOBENZENE	MG_KG	N												
Newport_RA_SO_VOCs	BROMOCHLOROMETHANE	MG_KG	N												
Newport_RA_SO_VOCs	BROMODICHLOROMETHANE	MG_KG	N												
Newport_RA_SO_VOCs	BROMOFORM	MG_KG	N												
Newport_RA_SO_VOCs	BROMOMETHANE	MG_KG	N												
Newport_RA_SO_VOCs	CARBON DISULFIDE	MG_KG	N												
Newport_RA_SO_VOCs	CARBON TETRACHLORIDE	MG_KG	N												
Newport_RA_SO_VOCs	CHLOROBENZENE	MG_KG	N												
Newport_RA_SO_VOCs	CHLOROETHANE	MG_KG	N												
Newport_RA_SO_VOCs	CHLOROFORM	MG_KG	N												
Newport_RA_SO_VOCs	CHLOROMETHANE	MG_KG	N												
Newport_RA_SO_VOCs	CIS-1,2-DICHLOROETHENE	MG_KG	N												
Newport_RA_SO_VOCs	CIS-1,3-DICHLOROPROPENE	MG_KG	N												
Newport_RA_SO_VOCs	CYCLOHEXANE	MG_KG	N												
Newport_RA_SO_VOCs	DIBROMOCHLOROMETHANE	MG_KG	N												
Newport_RA_SO_VOCs	DIBROMOMETHANE	MG_KG	N												
Newport_RA_SO_VOCs	DICHLORODIFLUOROMETHANE	MG_KG	N												
Newport_RA_SO_VOCs	ETHYLBENZENE	MG_KG	N												
Newport_RA_SO_VOCs	HEXACHLOROBUTADIENE	MG_KG	N												
Newport_RA_SO_VOCs	ISOPROPYLBENZENE	MG_KG	N												
Newport_RA_SO_VOCs	M- AND P-XYLENE	MG_KG	N												
Newport_RA_SO_VOCs	METHYL ACETATE	MG_KG	N												
Newport_RA_SO_VOCs	METHYL CYCLOHEXANE	MG_KG	N												
Newport_RA_SO_VOCs	METHYL TERT-BUTYL ETHER	MG_KG	N												
Newport_RA_SO_VOCs	METHYLENE CHLORIDE	MG_KG	N												
Newport_RA_SO_VOCs	NAPHTHALENE	MG_KG	N												
Newport_RA_SO_VOCs	N-BUTYLBENZENE	MG_KG	N												
Newport_RA_SO_VOCs	O-XYLENE	MG_KG	N												
Newport_RA_SO_VOCs	PROPYLBENZENE	MG_KG	N												
Newport_RA_SO_VOCs	SEC-BUTYLBENZENE	MG_KG	N												
Newport_RA_SO_VOCs	STYRENE	MG_KG	N												
Newport_RA_SO_VOCs	TERT-BUTANOL	MG_KG	N												
Newport_RA_SO_VOCs	TERT-BUTYLBENZENE	MG_KG	N												
Newport_RA_SO_VOCs	TETRACHLOROETHENE	MG_KG	N												
Newport_RA_SO_VOCs	TOLUENE	MG_KG	N												
Newport_RA_SO_VOCs	TRANS-1,2-DICHLOROETHENE	MG_KG	N												
Newport_RA_SO_VOCs	TRANS-1,3-DICHLOROPROPENE	MG_KG	N												
Newport_RA_SO_VOCs	TRICHLOROETHENE	MG_KG	N												
Newport_RA_SO_VOCs	TRICHLOROFLUOROMETHANE	MG_KG	N												
Newport_RA_SO_VOCs	VINYL CHLORIDE	MG_KG	N												
Newport_RA_SO_VOCs	XYLENES, TOTAL	MG_KG	N												

Notes:
U or < - Non-detect at laboratory detection limit.
J - The compound was positively identified; however, the associated numerical value is an estimated concentration only (+ and - indicate bias).
Sample Type - N = normal sample, FD = duplicate sample.
mg/kg - milligram per kilogram

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	MRP1-PES-3A-02		MRP1-PES-3B-01		MRP1-PES-3C-01		MRP1-PES-3D-01		MRP1-PES-3E-02		MRP1-PES-4A-01		MRP1-PES-4B-01	
			Sample Date	4/25/2013		4/20/2013		4/20/2013		4/20/2013		4/25/2013		4/19/2013		4/19/2013	
			Sample ID	MRP1-PES-3A-02		MRP1-PES-3B-01		MRP1-PES-3C-01		MRP1-PES-3D-01		MRP1-PES-3E-02		MRP1-PES-4A-01		MRP1-PES-4B-01	
			Sample Type	N		N		N		N		N		N		N	
			start_depth	2		1		1		1		2		1		1	
			end_depth	2		1		1		1		2		1		1	
			depth_unit	FT		FT		FT		FT		FT		FT		FT	
			depth_interval	2 - 2 ft		1 - 1 ft		1 - 1 ft		1 - 1 ft		2 - 2 ft		1 - 1 ft		1 - 1 ft	
			task_code	MRP01 PostEx		MRP01 PostEx		MRP01 PostEx		MRP01 PostEx		MRP01 PostEx		MRP01 PostEx		MRP01 PostEx	
			validated_yn	Y		Y		Y		Y		Y		Y		Y	
method_analyte_group	Chemical	Unit	Fraction	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers
Newport_RA_SO_Energetics	2,4-DINITROTOLUENE	MG_KG	N														
Newport_RA_SO_Energetics	2,6-DINITROTOLUENE	MG_KG	N														
Newport_RA_SO_Energetics	NITROGLYCERIN	MG_KG	N														
Newport_RA_SO_Metals	ALUMINUM	MG_KG	N														
Newport_RA_SO_Metals	ANTIMONY	MG_KG	N														
Newport_RA_SO_Metals	ARSENIC	MG_KG	N	7.6		5.7		2.2		3.2		7.6		4.9		3.6	
Newport_RA_SO_Metals	BARIUM	MG_KG	N														
Newport_RA_SO_Metals	BERYLLIUM	MG_KG	N														
Newport_RA_SO_Metals	CADMIUM	MG_KG	N														
Newport_RA_SO_Metals	CALCIUM	MG_KG	N														
Newport_RA_SO_Metals	CHROMIUM VI	MG_KG	N														
Newport_RA_SO_Metals	CHROMIUM, TOTAL	MG_KG	N	10		10		9.2		8.4		12		9.3		8.7	
Newport_RA_SO_Metals	COBALT	MG_KG	N														
Newport_RA_SO_Metals	COPPER	MG_KG	N														
Newport_RA_SO_Metals	IRON	MG_KG	N														
Newport_RA_SO_Metals	IRON, FERROUS	MG_KG	N														
Newport_RA_SO_Metals	LEAD	MG_KG	N	15		34		29		20		12		14		11	
Newport_RA_SO_Metals	MAGNESIUM	MG_KG	N														
Newport_RA_SO_Metals	MANGANESE	MG_KG	N														
Newport_RA_SO_Metals	MERCURY	MG_KG	N														
Newport_RA_SO_Metals	NICKEL	MG_KG	N														
Newport_RA_SO_Metals	POTASSIUM	MG_KG	N														
Newport_RA_SO_Metals	SELENIUM	MG_KG	N														
Newport_RA_SO_Metals	SILVER	MG_KG	N														
Newport_RA_SO_Metals	SODIUM	MG_KG	N														
Newport_RA_SO_Metals	THALLIUM	MG_KG	N														
Newport_RA_SO_Metals	VANADIUM	MG_KG	N														
Newport_RA_SO_Metals	ZINC	MG_KG	N														
Newport_RA_SO_Other	DENSITY	G_CC	N														
Newport_RA_SO_Other	Pellet count	COUNT	N														
Newport_RA_SO_Other	Pellet weight	PCT	N														
Newport_RA_SO_Other	PERCENT FINES	PCT	N														
Newport_RA_SO_Other	PERCENT GRAVEL	PCT	N														
Newport_RA_SO_Other	PERCENT SAND	PCT	N														
Newport_RA_SO_Other	PERCENT SAND, COARSE	PCT	N														
Newport_RA_SO_Other	PERCENT SAND, FINE	PCT	N														
Newport_RA_SO_Other	PERCENT SAND, MEDIUM	PCT	N														
Newport_RA_SO_Other	PH	PH	N														
Newport_RA_SO_Other	POROSITY	PCT	N														
Newport_RA_SO_Other	SIEVE 1 INCH (25.4-MM)	PCT	N														
Newport_RA_SO_Other	SIEVE 1-1/2 INCH (37.5-MM)	PCT	N														
Newport_RA_SO_Other	SIEVE 2 INCH (50-MM)	PCT	N														
Newport_RA_SO_Other	SIEVE 3 INCH (75-MM)	PCT	N														
Newport_RA_SO_Other	SIEVE 3/4 INCH (19-MM)	PCT	N														
Newport_RA_SO_Other	SIEVE 3/8 INCH (9.5-MM)	PCT	N														
Newport_RA_SO_Other	SIEVE NO. 004 (4.75-MM)	PCT	N														
Newport_RA_SO_Other	SIEVE NO. 010 (2-MM)	PCT	N														
Newport_RA_SO_Other	SIEVE NO. 020 (850-UM)	PCT	N														
Newport_RA_SO_Other	SIEVE NO. 040 (425-UM)	PCT	N														
Newport_RA_SO_Other	SIEVE NO. 060 (250-UM)	PCT	N														
Newport_RA_SO_Other	SIEVE NO. 080 (180-UM)	PCT	N														
Newport_RA_SO_Other	SIEVE NO. 100 (150-UM)	PCT	N														
Newport_RA_SO_Other	SIEVE NO. 200 (75-UM)	PCT	N														
Newport_RA_SO_Other	SPECIFIC CONDUCTANCE	UMHO_CM	N														
Newport_RA_SO_Other	SPECIFIC GRAVITY	NONE	N														
Newport_RA_SO_Other	SULFIDE	MG_KG	N														
Newport_RA_SO_Other	TPH-DIESEL RANGE	MG_KG	N														
Newport_RA_SO_Other	TPH-TOTAL UNKNOWN GASOLINE RANGE ORGANICS	MG_KG	N														
Newport_RA_SO_Other	Void Ratio	NONE	N														
Newport_RA_SO_PCBs	AROCLOR-1016	MG_KG	N														
Newport_RA_SO_PCBs	AROCLOR-1221	MG_KG	N														
Newport_RA_SO_PCBs	AROCLOR-1232	MG_KG	N														
Newport_RA_SO_PCBs	AROCLOR-1242	MG_KG	N														
Newport_RA_SO_PCBs	AROCLOR-1248	MG_KG	N														
Newport_RA_SO_PCBs	AROCLOR-1254	MG_KG	N														
Newport_RA_SO_PCBs	AROCLOR-1260	MG_KG	N														

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	MRP1-PES-3A-02		MRP1-PES-3B-01		MRP1-PES-3C-01		MRP1-PES-3D-01		MRP1-PES-3E-02		MRP1-PES-4A-01		MRP1-PES-4B-01	
			Sample Date	4/25/2013		4/20/2013		4/20/2013		4/20/2013		4/25/2013		4/19/2013		4/19/2013	
			Sample ID	MRP1-PES-3A-02		MRP1-PES-3B-01		MRP1-PES-3C-01		MRP1-PES-3D-01		MRP1-PES-3E-02		MRP1-PES-4A-01		MRP1-PES-4B-01	
			Sample Type	N		N		N		N		N		N		N	
			start_depth	2		1		1		1		2		1		1	
			end_depth	2		1		1		1		2		1		1	
			depth_unit	FT		FT		FT		FT		FT		FT		FT	
			depth_interval	2 - 2 ft		1 - 1 ft		1 - 1 ft		1 - 1 ft		2 - 2 ft		1 - 1 ft		1 - 1 ft	
			task_code	MRP01 PostEx		MRP01 PostEx		MRP01 PostEx		MRP01 PostEx		MRP01 PostEx		MRP01 PostEx		MRP01 PostEx	
			validated_yn	Y		Y		Y		Y		Y		Y		Y	
method_analyte_group	Chemical	Unit	Fraction	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers
Newport_RA_SO_PCBs	AROCLOR-1262	MG_KG	N														
Newport_RA_SO_PCBs	AROCLOR-1268	MG_KG	N														
Newport_RA_SO_PCBs	PCB, TOTAL	MG_KG	N														
Newport_RA_SO_PCBs	POLYCHLORINATED BIPHENYLS (PCBS)	MG_KG	N														
Newport_RA_SO_Pesticides	4,4-DDD	MG_KG	N														
Newport_RA_SO_Pesticides	4,4-DDE	MG_KG	N														
Newport_RA_SO_Pesticides	4,4-DDT	MG_KG	N														
Newport_RA_SO_Pesticides	ALDRIN	MG_KG	N														
Newport_RA_SO_Pesticides	ALPHA-BHC	MG_KG	N														
Newport_RA_SO_Pesticides	ALPHA-CHLORDANE	MG_KG	N														
Newport_RA_SO_Pesticides	BETA-BHC	MG_KG	N														
Newport_RA_SO_Pesticides	DDT, TOTAL	MG_KG	N														
Newport_RA_SO_Pesticides	DELTA-BHC	MG_KG	N														
Newport_RA_SO_Pesticides	DIELDRIN	MG_KG	N														
Newport_RA_SO_Pesticides	ENDOSULFAN I	MG_KG	N														
Newport_RA_SO_Pesticides	ENDOSULFAN II	MG_KG	N														
Newport_RA_SO_Pesticides	ENDOSULFAN SULFATE	MG_KG	N														
Newport_RA_SO_Pesticides	ENDRIN	MG_KG	N														
Newport_RA_SO_Pesticides	ENDRIN ALDEHYDE	MG_KG	N														
Newport_RA_SO_Pesticides	ENDRIN KETONE	MG_KG	N														
Newport_RA_SO_Pesticides	GAMMA-CHLORDANE	MG_KG	N														
Newport_RA_SO_Pesticides	HEPTACHLOR	MG_KG	N														
Newport_RA_SO_Pesticides	HEPTACHLOR EPOXIDE	MG_KG	N														
Newport_RA_SO_Pesticides	LINDANE	MG_KG	N														
Newport_RA_SO_Pesticides	METHOXYCHLOR	MG_KG	N														
Newport_RA_SO_Pesticides	TOXAPHENE	MG_KG	N														
Newport_RA_SO_Pesticides	TRANS-CHLORDANE	MG_KG	N														
Newport_RA_SO_SVOCs	1,1-BIPHENYL	MG_KG	N														
Newport_RA_SO_SVOCs	1-METHYLNAPHTHALENE	MG_KG	N	0.1		<0.024	U	<0.026	U	0.0029	J	<0.024	U	<0.12	U	<0.47	U
Newport_RA_SO_SVOCs	1,2,4-TRICHLOROBENZENE	MG_KG	N														
Newport_RA_SO_SVOCs	1,2-DICHLOROBENZENE	MG_KG	N														
Newport_RA_SO_SVOCs	1,2-DIPHENYLHYDRAZINE	MG_KG	N														
Newport_RA_SO_SVOCs	1,3-DICHLOROBENZENE	MG_KG	N														
Newport_RA_SO_SVOCs	1,4-DICHLOROBENZENE	MG_KG	N														
Newport_RA_SO_SVOCs	2,2'-OXYBIS(1-CHLOROPROPANE)	MG_KG	N														
Newport_RA_SO_SVOCs	2,4,5-TRICHLOROPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	2,4,6-TRICHLOROPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	2,4-DICHLOROPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	2,4-DIMETHYLPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	2,4-DINITROPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	2,4-DINITROTOLUENE	MG_KG	N														
Newport_RA_SO_SVOCs	2,6-DICHLOROPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	2,6-DINITROTOLUENE	MG_KG	N														
Newport_RA_SO_SVOCs	2-CHLORONAPHTHALENE	MG_KG	N	<0.022	U	<0.024	U	<0.026	U	<0.026	U	<0.024	U	<0.12	U	<0.47	U
Newport_RA_SO_SVOCs	2-CHLOROPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	2-METHYLNAPHTHALENE	MG_KG	N	0.11		<0.024	U	<0.026	U	0.0026	J	<0.024	U	0.013	J	<0.47	U
Newport_RA_SO_SVOCs	2-METHYLPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	2-NITROANILINE	MG_KG	N														
Newport_RA_SO_SVOCs	2-NITROPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	3- AND 4-METHYLPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	3,3-DICHLOROBENZIDINE	MG_KG	N														
Newport_RA_SO_SVOCs	3-NITROANILINE	MG_KG	N														
Newport_RA_SO_SVOCs	4,6-DINITRO-2-METHYLPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	4-BROMOPHENYL-PHENYLETHER	MG_KG	N														
Newport_RA_SO_SVOCs	4-CHLORO-3-METHYLPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	4-CHLOROANILINE	MG_KG	N														
Newport_RA_SO_SVOCs	4-CHLOROPHENYL-PHENYLETHER	MG_KG	N														
Newport_RA_SO_SVOCs	4-METHYLPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	4-NITROANILINE	MG_KG	N														
Newport_RA_SO_SVOCs	4-NITROPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	ACENAPHTHENE	MG_KG	N	0.0045	J	<0.0073	U	0.0018	J	0.0013	J	<0.0070	U	0.056		<0.14	U
Newport_RA_SO_SVOCs	ACENAPHTHYLENE	MG_KG	N	0.011		<0.0073	U	<0.0078	U	<0.0079	U	<0.0070	U	<0.036	U	<0.14	U
Newport_RA_SO_SVOCs	ACETOPHENONE	MG_KG	N														
Newport_RA_SO_SVOCs	ANTHRACENE	MG_KG	N	0.014		0.0013	J	0.0033	J	0.0026	J	<0.0070	U	0.12		<0.14	U
Newport_RA_SO_SVOCs	ATRAZINE	MG_KG	N														
Newport_RA_SO_SVOCs	BENZALDEHYDE	MG_KG	N														

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	MRP1-PES-3A-02		MRP1-PES-3B-01		MRP1-PES-3C-01		MRP1-PES-3D-01		MRP1-PES-3E-02		MRP1-PES-4A-01		MRP1-PES-4B-01	
			Sample Date	4/25/2013		4/20/2013		4/20/2013		4/20/2013		4/25/2013		4/19/2013		4/19/2013	
			Sample ID	MRP1-PES-3A-02		MRP1-PES-3B-01		MRP1-PES-3C-01		MRP1-PES-3D-01		MRP1-PES-3E-02		MRP1-PES-4A-01		MRP1-PES-4B-01	
			Sample Type	N		N		N		N		N		N		N	
			start_depth	2		1		1		1		2		1		1	
			end_depth	2		1		1		1		2		1		1	
			depth_unit	FT		FT		FT		FT		FT		FT		FT	
			depth_interval	2 - 2 ft		1 - 1 ft		1 - 1 ft		1 - 1 ft		2 - 2 ft		1 - 1 ft		1 - 1 ft	
			task_code	MRP01 PostEx		MRP01 PostEx		MRP01 PostEx		MRP01 PostEx		MRP01 PostEx		MRP01 PostEx		MRP01 PostEx	
			validated_yn	Y		Y		Y		Y		Y		Y		Y	
method_analyte_group	Chemical	Unit	Fraction	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers
Newport_RA_SO_SVOCs	BENZIDINE	MG_KG	N														
Newport_RA_SO_SVOCs	BENZO[A]ANTHRACENE	MG_KG	N	0.076		0.005	J	0.011		0.013		0.00074	J	0.5		0.034	J
Newport_RA_SO_SVOCs	BENZO[A]PYRENE	MG_KG	N	0.07		0.0052	J	0.014		0.014		<0.0070	U	0.69		0.025	J
Newport_RA_SO_SVOCs	BENZO[B]FLUORANTHENE	MG_KG	N	0.1		0.0062	J	0.014		0.017		<0.0070	U	0.77		0.029	J
Newport_RA_SO_SVOCs	BENZO[G,H,I]PERYLENE	MG_KG	N	0.047		0.0036	J	0.012		0.01		<0.0070	U	0.55		0.022	J
Newport_RA_SO_SVOCs	BENZO[K]FLUORANTHENE	MG_KG	N	0.035		0.0035	J	0.0068	J	0.0072	J	<0.0070	U	0.26		<0.14	U
Newport_RA_SO_SVOCs	BENZOIC ACID	MG_KG	N														
Newport_RA_SO_SVOCs	BENZYL ALCOHOL	MG_KG	N														
Newport_RA_SO_SVOCs	BIS(2-CHLOROETHOXY)METHANE	MG_KG	N														
Newport_RA_SO_SVOCs	BIS(2-CHLOROETHYL)ETHER	MG_KG	N														
Newport_RA_SO_SVOCs	BIS(2-ETHYLHEXYL)PHTHALATE	MG_KG	N														
Newport_RA_SO_SVOCs	BUTYLBENZYLPHTHALATE	MG_KG	N														
Newport_RA_SO_SVOCs	CAPROLACTAM	MG_KG	N														
Newport_RA_SO_SVOCs	CARBAZOLE	MG_KG	N														
Newport_RA_SO_SVOCs	CHRYSENE	MG_KG	N	0.1		0.0051	J	0.011		0.013		<0.0070	U	0.92		0.13	J
Newport_RA_SO_SVOCs	DIBENZ[A,H]ANTHRACENE	MG_KG	N	0.017		0.00076	J	0.0018	J	0.0021	J	<0.0070	U	0.14		<0.14	U
Newport_RA_SO_SVOCs	DIBENZOFURAN	MG_KG	N														
Newport_RA_SO_SVOCs	DIETHYLPHTHALATE	MG_KG	N														
Newport_RA_SO_SVOCs	DIMETHYL PHTHALATE	MG_KG	N														
Newport_RA_SO_SVOCs	DI-N-BUTYLPHTHALATE	MG_KG	N														
Newport_RA_SO_SVOCs	DI-N-OCTYLPHTHALATE	MG_KG	N														
Newport_RA_SO_SVOCs	FLUORANTHENE	MG_KG	N	0.12		0.0095		0.021		0.021		0.00092	J	0.93		0.042	J
Newport_RA_SO_SVOCs	FLUORENE	MG_KG	N	0.0042	J	<0.0073	U	0.00085	J	<0.0079	U	<0.0070	U	0.033	J	<0.14	U
Newport_RA_SO_SVOCs	HEXACHLOROBENZENE	MG_KG	N														
Newport_RA_SO_SVOCs	HEXACHLOROBUTADIENE	MG_KG	N														
Newport_RA_SO_SVOCs	HEXACHLOROCYCLOPENTADIENE	MG_KG	N														
Newport_RA_SO_SVOCs	HEXACHLOROETHANE	MG_KG	N														
Newport_RA_SO_SVOCs	HPAH, TOTAL	MG_KG	N														
Newport_RA_SO_SVOCs	INDENO[1,2,3-CD]PYRENE	MG_KG	N	0.04		0.0029	J	0.0088		0.0083		<0.0070	U	0.37		<0.14	U
Newport_RA_SO_SVOCs	ISOPHORONE	MG_KG	N														
Newport_RA_SO_SVOCs	LPAH, TOTAL	MG_KG	N														
Newport_RA_SO_SVOCs	NAPHTHALENE	MG_KG	N	0.077		<0.024	U	<0.026	U	0.0033	J	<0.024	U	<0.12	U	<0.47	U
Newport_RA_SO_SVOCs	NITROBENZENE	MG_KG	N														
Newport_RA_SO_SVOCs	N-NITROSODIMETHYLAMINE	MG_KG	N														
Newport_RA_SO_SVOCs	N-NITROSODINPROPYLAMINE	MG_KG	N														
Newport_RA_SO_SVOCs	N-NITROSODIPHENYLAMINE	MG_KG	N														
Newport_RA_SO_SVOCs	N-NITROSOPYRROLIDINE	MG_KG	N														
Newport_RA_SO_SVOCs	PAH, TOTAL	MG_KG	N														
Newport_RA_SO_SVOCs	PENTACHLOROPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	PHENANTHRENE	MG_KG	N	0.086		0.0043	J	0.012		0.0099		<0.0070	U	0.38		0.033	J
Newport_RA_SO_SVOCs	PHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	PYRENE	MG_KG	N	0.1		0.0072	J	0.017		0.017		0.00079	J	0.82		0.066	J
Newport_RA_SO_VOCs	1,1,1,2-TETRACHLOROETHANE	MG_KG	N														
Newport_RA_SO_VOCs	1,1,1-TRICHLOROETHANE	MG_KG	N														
Newport_RA_SO_VOCs	1,1,2,2-TETRACHLOROETHANE	MG_KG	N														
Newport_RA_SO_VOCs	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	MG_KG	N														
Newport_RA_SO_VOCs	1,1,2-TRICHLOROETHANE	MG_KG	N														
Newport_RA_SO_VOCs	1,1-DICHLOROETHANE	MG_KG	N														
Newport_RA_SO_VOCs	1,1-DICHLOROETHENE	MG_KG	N														
Newport_RA_SO_VOCs	1,1-DICHLOROPROPENE	MG_KG	N														
Newport_RA_SO_VOCs	1,2,3-TRICHLOROBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	1,2,3-TRICHLOROPROPANE	MG_KG	N														
Newport_RA_SO_VOCs	1,2,4-TRICHLOROBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	1,2,4-TRIMETHYLBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	1,2-DIBROMO-3-CHLOROPROPANE	MG_KG	N														
Newport_RA_SO_VOCs	1,2-DIBROMOETHANE	MG_KG	N														
Newport_RA_SO_VOCs	1,2-DICHLOROBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	1,2-DICHLOROETHANE	MG_KG	N														
Newport_RA_SO_VOCs	1,2-DICHLOROETHENE, TOTAL	MG_KG	N														
Newport_RA_SO_VOCs	1,2-DICHLOROPROPANE	MG_KG	N														
Newport_RA_SO_VOCs	1,3,5-TRIMETHYLBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	1,3-DICHLOROBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	1,3-DICHLOROPROPANE	MG_KG	N														
Newport_RA_SO_VOCs	1,4-DICHLOROBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	2,2-DICHLOROPROPANE	MG_KG	N														
Newport_RA_SO_VOCs	2-BUTANONE	MG_KG	N														

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	MRP1-PES-3A-02		MRP1-PES-3B-01		MRP1-PES-3C-01		MRP1-PES-3D-01		MRP1-PES-3E-02		MRP1-PES-4A-01		MRP1-PES-4B-01	
			Sample Date	4/25/2013		4/20/2013		4/20/2013		4/20/2013		4/25/2013		4/19/2013		4/19/2013	
			Sample ID	MRP1-PES-3A-02		MRP1-PES-3B-01		MRP1-PES-3C-01		MRP1-PES-3D-01		MRP1-PES-3E-02		MRP1-PES-4A-01		MRP1-PES-4B-01	
			Sample Type	N		N		N		N		N		N		N	
			start_depth	2		1		1		1		2		1		1	
			end_depth	2		1		1		1		2		1		1	
			depth_unit	FT		FT		FT		FT		FT		FT		FT	
			depth_interval	2 - 2 ft		1 - 1 ft		1 - 1 ft		1 - 1 ft		2 - 2 ft		1 - 1 ft		1 - 1 ft	
			task_code	MRP01 PostEx		MRP01 PostEx		MRP01 PostEx		MRP01 PostEx		MRP01 PostEx		MRP01 PostEx		MRP01 PostEx	
			validated_yn	Y		Y		Y		Y		Y		Y		Y	
method_analyte_group	Chemical	Unit	Fraction	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers
Newport_RA_SO_VOCs	2-CHLOROTOLUENE	MG_KG	N														
Newport_RA_SO_VOCs	2-HEXANONE	MG_KG	N														
Newport_RA_SO_VOCs	4-CHLOROTOLUENE	MG_KG	N														
Newport_RA_SO_VOCs	4-ISOPROPYLTOLUENE	MG_KG	N														
Newport_RA_SO_VOCs	4-METHYL-2-PENTANONE	MG_KG	N														
Newport_RA_SO_VOCs	ACETONE	MG_KG	N														
Newport_RA_SO_VOCs	BENZENE	MG_KG	N														
Newport_RA_SO_VOCs	BROMOBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	BROMOCHLOROMETHANE	MG_KG	N														
Newport_RA_SO_VOCs	BROMODICHLOROMETHANE	MG_KG	N														
Newport_RA_SO_VOCs	BROMOFORM	MG_KG	N														
Newport_RA_SO_VOCs	BROMOMETHANE	MG_KG	N														
Newport_RA_SO_VOCs	CARBON DISULFIDE	MG_KG	N														
Newport_RA_SO_VOCs	CARBON TETRACHLORIDE	MG_KG	N														
Newport_RA_SO_VOCs	CHLOROBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	CHLOROETHANE	MG_KG	N														
Newport_RA_SO_VOCs	CHLOROFORM	MG_KG	N														
Newport_RA_SO_VOCs	CHLOROMETHANE	MG_KG	N														
Newport_RA_SO_VOCs	CIS-1,2-DICHLOROETHENE	MG_KG	N														
Newport_RA_SO_VOCs	CIS-1,3-DICHLOROPROPENE	MG_KG	N														
Newport_RA_SO_VOCs	CYCLOHEXANE	MG_KG	N														
Newport_RA_SO_VOCs	DIBROMOCHLOROMETHANE	MG_KG	N														
Newport_RA_SO_VOCs	DIBROMOMETHANE	MG_KG	N														
Newport_RA_SO_VOCs	DICHLORODIFLUOROMETHANE	MG_KG	N														
Newport_RA_SO_VOCs	ETHYLBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	HEXACHLOROBUTADIENE	MG_KG	N														
Newport_RA_SO_VOCs	ISOPROPYLBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	M- AND P-XYLENE	MG_KG	N														
Newport_RA_SO_VOCs	METHYL ACETATE	MG_KG	N														
Newport_RA_SO_VOCs	METHYL CYCLOHEXANE	MG_KG	N														
Newport_RA_SO_VOCs	METHYL TERT-BUTYL ETHER	MG_KG	N														
Newport_RA_SO_VOCs	METHYLENE CHLORIDE	MG_KG	N														
Newport_RA_SO_VOCs	NAPHTHALENE	MG_KG	N														
Newport_RA_SO_VOCs	N-BUTYLBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	O-XYLENE	MG_KG	N														
Newport_RA_SO_VOCs	PROPYLBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	SEC-BUTYLBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	STYRENE	MG_KG	N														
Newport_RA_SO_VOCs	TERT-BUTANOL	MG_KG	N														
Newport_RA_SO_VOCs	TERT-BUTYLBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	TETRACHLOROETHENE	MG_KG	N														
Newport_RA_SO_VOCs	TOLUENE	MG_KG	N														
Newport_RA_SO_VOCs	TRANS-1,2-DICHLOROETHENE	MG_KG	N														
Newport_RA_SO_VOCs	TRANS-1,3-DICHLOROPROPENE	MG_KG	N														
Newport_RA_SO_VOCs	TRICHLOROETHENE	MG_KG	N														
Newport_RA_SO_VOCs	TRICHLOROFLUOROMETHANE	MG_KG	N														
Newport_RA_SO_VOCs	VINYL CHLORIDE	MG_KG	N														
Newport_RA_SO_VOCs	XYLENES, TOTAL	MG_KG	N														

Notes:
U or < - Non-detect at laboratory detection limit.
J - The compound was positively identified; however, the associated numerical value is an estimated concentration only (+ and - indicate bias).
Sample Type - N = normal sample, FD = duplicate sample.
mg/kg - milligram per kilogram

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	MRP1-PES-4C-01		MRP1-PES-4D-01		MRP1-PES-4E-01		MRP1-PES-4E-01		MRP1-PES-5A-01		MRP1-PES-5B-01	
			Sample Date	4/20/2013		4/20/2013		4/19/2013		4/19/2013		4/26/2013		4/26/2013	
			Sample ID	MRP1-PES-4C-01		MRP1-PES-4D-01		MRP1-PES-4E-01		MRP1-PES-4E-01DUP		MRP1-PES-5A-01		MRP1-PES-5B-01	
			Sample Type	N		N		N		FD		N		N	
			start_depth	1		1		1		1		1		1	
			end_depth	1		1		1		1		1		1	
			depth_unit	FT		FT		FT		FT		FT		FT	
			depth_interval	1 - 1 ft		1 - 1 ft		1 - 1 ft		1 - 1 ft		1 - 1 ft		1 - 1 ft	
			task_code	MRP01 PostEx		MRP01 PostEx		MRP01 PostEx		MRP01 PostEx		MRP01 PostEx		MRP01 PostEx	
			validated_yn	Y		Y		Y		Y		Y		Y	
method_analyte_group	Chemical	Unit	Fraction	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers
Newport_RA_SO_Energetics	2,4-DINITROTOLUENE	MG_KG	N												
Newport_RA_SO_Energetics	2,6-DINITROTOLUENE	MG_KG	N												
Newport_RA_SO_Energetics	NITROGLYCERIN	MG_KG	N												
Newport_RA_SO_Metals	ALUMINUM	MG_KG	N												
Newport_RA_SO_Metals	ANTIMONY	MG_KG	N												
Newport_RA_SO_Metals	ARSENIC	MG_KG	N	2.9		1.2	J	6		5.5		7.2		6.2	
Newport_RA_SO_Metals	BARIUM	MG_KG	N												
Newport_RA_SO_Metals	BERYLLIUM	MG_KG	N												
Newport_RA_SO_Metals	CADMIUM	MG_KG	N												
Newport_RA_SO_Metals	CALCIUM	MG_KG	N												
Newport_RA_SO_Metals	CHROMIUM VI	MG_KG	N												
Newport_RA_SO_Metals	CHROMIUM, TOTAL	MG_KG	N	8.3		12	J	8.9		10		9.9		12	
Newport_RA_SO_Metals	COBALT	MG_KG	N												
Newport_RA_SO_Metals	COPPER	MG_KG	N												
Newport_RA_SO_Metals	IRON	MG_KG	N												
Newport_RA_SO_Metals	IRON, FERROUS	MG_KG	N												
Newport_RA_SO_Metals	LEAD	MG_KG	N	16		29		6.4		6.5		12		26	
Newport_RA_SO_Metals	MAGNESIUM	MG_KG	N												
Newport_RA_SO_Metals	MANGANESE	MG_KG	N												
Newport_RA_SO_Metals	MERCURY	MG_KG	N												
Newport_RA_SO_Metals	NICKEL	MG_KG	N												
Newport_RA_SO_Metals	POTASSIUM	MG_KG	N												
Newport_RA_SO_Metals	SELENIUM	MG_KG	N												
Newport_RA_SO_Metals	SILVER	MG_KG	N												
Newport_RA_SO_Metals	SODIUM	MG_KG	N												
Newport_RA_SO_Metals	THALLIUM	MG_KG	N												
Newport_RA_SO_Metals	VANADIUM	MG_KG	N												
Newport_RA_SO_Metals	ZINC	MG_KG	N												
Newport_RA_SO_Other	DENSITY	G_CC	N												
Newport_RA_SO_Other	Pellet count	COUNT	N												
Newport_RA_SO_Other	Pellet weight	PCT	N												
Newport_RA_SO_Other	PERCENT FINES	PCT	N												
Newport_RA_SO_Other	PERCENT GRAVEL	PCT	N												
Newport_RA_SO_Other	PERCENT SAND	PCT	N												
Newport_RA_SO_Other	PERCENT SAND, COARSE	PCT	N												
Newport_RA_SO_Other	PERCENT SAND, FINE	PCT	N												
Newport_RA_SO_Other	PERCENT SAND, MEDIUM	PCT	N												
Newport_RA_SO_Other	PH	PH	N												
Newport_RA_SO_Other	POROSITY	PCT	N												
Newport_RA_SO_Other	SIEVE 1 INCH (25.4-MM)	PCT	N												
Newport_RA_SO_Other	SIEVE 1-1/2 INCH (37.5-MM)	PCT	N												
Newport_RA_SO_Other	SIEVE 2 INCH (50-MM)	PCT	N												
Newport_RA_SO_Other	SIEVE 3 INCH (75-MM)	PCT	N												
Newport_RA_SO_Other	SIEVE 3/4 INCH (19-MM)	PCT	N												
Newport_RA_SO_Other	SIEVE 3/8 INCH (9.5-MM)	PCT	N												
Newport_RA_SO_Other	SIEVE NO. 004 (4.75-MM)	PCT	N												
Newport_RA_SO_Other	SIEVE NO. 010 (2-MM)	PCT	N												
Newport_RA_SO_Other	SIEVE NO. 020 (850-UM)	PCT	N												
Newport_RA_SO_Other	SIEVE NO. 040 (425-UM)	PCT	N												
Newport_RA_SO_Other	SIEVE NO. 060 (250-UM)	PCT	N												
Newport_RA_SO_Other	SIEVE NO. 080 (180-UM)	PCT	N												
Newport_RA_SO_Other	SIEVE NO. 100 (150-UM)	PCT	N												
Newport_RA_SO_Other	SIEVE NO. 200 (75-UM)	PCT	N												
Newport_RA_SO_Other	SPECIFIC CONDUCTANCE	UMHO_CM	N												
Newport_RA_SO_Other	SPECIFIC GRAVITY	NONE	N												
Newport_RA_SO_Other	SULFIDE	MG_KG	N												
Newport_RA_SO_Other	TPH-DIESEL RANGE	MG_KG	N												
Newport_RA_SO_Other	TPH-TOTAL UNKNOWN GASOLINE RANGE ORGANICS	MG_KG	N												
Newport_RA_SO_Other	Void Ratio	NONE	N												
Newport_RA_SO_PCBs	AROCLOR-1016	MG_KG	N												
Newport_RA_SO_PCBs	AROCLOR-1221	MG_KG	N												
Newport_RA_SO_PCBs	AROCLOR-1232	MG_KG	N												
Newport_RA_SO_PCBs	AROCLOR-1242	MG_KG	N												
Newport_RA_SO_PCBs	AROCLOR-1248	MG_KG	N												
Newport_RA_SO_PCBs	AROCLOR-1254	MG_KG	N												
Newport_RA_SO_PCBs	AROCLOR-1260	MG_KG	N												

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	MRP1-PES-4C-01		MRP1-PES-4D-01		MRP1-PES-4E-01		MRP1-PES-4E-01		MRP1-PES-5A-01		MRP1-PES-5B-01	
			Sample Date	4/20/2013		4/20/2013		4/19/2013		4/19/2013		4/26/2013		4/26/2013	
			Sample ID	MRP1-PES-4C-01		MRP1-PES-4D-01		MRP1-PES-4E-01		MRP1-PES-4E-01DUP		MRP1-PES-5A-01		MRP1-PES-5B-01	
			Sample Type	N		N		N		FD		N		N	
			start_depth	1		1		1		1		1		1	
			end_depth	1		1		1		1		1		1	
			depth_unit	FT		FT		FT		FT		FT		FT	
			depth_interval	1 - 1 ft		1 - 1 ft		1 - 1 ft		1 - 1 ft		1 - 1 ft		1 - 1 ft	
			task_code	MRP01 PostEx		MRP01 PostEx		MRP01 PostEx		MRP01 PostEx		MRP01 PostEx		MRP01 PostEx	
			validated_yn	Y		Y		Y		Y		Y		Y	
method_analyte_group	Chemical	Unit	Fraction	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers
Newport_RA_SO_PCBs	AROCLOR-1262	MG_KG	N												
Newport_RA_SO_PCBs	AROCLOR-1268	MG_KG	N												
Newport_RA_SO_PCBs	PCB, TOTAL	MG_KG	N												
Newport_RA_SO_PCBs	POLYCHLORINATED BIPHENYLS (PCBS)	MG_KG	N												
Newport_RA_SO_Pesticides	4,4-DDD	MG_KG	N												
Newport_RA_SO_Pesticides	4,4-DDE	MG_KG	N												
Newport_RA_SO_Pesticides	4,4-DDT	MG_KG	N												
Newport_RA_SO_Pesticides	ALDRIN	MG_KG	N												
Newport_RA_SO_Pesticides	ALPHA-BHC	MG_KG	N												
Newport_RA_SO_Pesticides	ALPHA-CHLORDANE	MG_KG	N												
Newport_RA_SO_Pesticides	BETA-BHC	MG_KG	N												
Newport_RA_SO_Pesticides	DDT, TOTAL	MG_KG	N												
Newport_RA_SO_Pesticides	DELTA-BHC	MG_KG	N												
Newport_RA_SO_Pesticides	DIELDRIN	MG_KG	N												
Newport_RA_SO_Pesticides	ENDOSULFAN I	MG_KG	N												
Newport_RA_SO_Pesticides	ENDOSULFAN II	MG_KG	N												
Newport_RA_SO_Pesticides	ENDOSULFAN SULFATE	MG_KG	N												
Newport_RA_SO_Pesticides	ENDRIN	MG_KG	N												
Newport_RA_SO_Pesticides	ENDRIN ALDEHYDE	MG_KG	N												
Newport_RA_SO_Pesticides	ENDRIN KETONE	MG_KG	N												
Newport_RA_SO_Pesticides	GAMMA-CHLORDANE	MG_KG	N												
Newport_RA_SO_Pesticides	HEPTACHLOR	MG_KG	N												
Newport_RA_SO_Pesticides	HEPTACHLOR EPOXIDE	MG_KG	N												
Newport_RA_SO_Pesticides	LINDANE	MG_KG	N												
Newport_RA_SO_Pesticides	METHOXYCHLOR	MG_KG	N												
Newport_RA_SO_Pesticides	TOXAPHENE	MG_KG	N												
Newport_RA_SO_Pesticides	TRANS-CHLORDANE	MG_KG	N												
Newport_RA_SO_SVOCs	1,1-BIPHENYL	MG_KG	N												
Newport_RA_SO_SVOCs	1-METHYLNAPHTHALENE	MG_KG	N	<0.024	U	<0.024	U	0.0026	J	<0.023	U	<0.022	U	0.0094	J
Newport_RA_SO_SVOCs	1,2,4-TRICHLOROBENZENE	MG_KG	N												
Newport_RA_SO_SVOCs	1,2-DICHLOROBENZENE	MG_KG	N												
Newport_RA_SO_SVOCs	1,2-DIPHENYLHYDRAZINE	MG_KG	N												
Newport_RA_SO_SVOCs	1,3-DICHLOROBENZENE	MG_KG	N												
Newport_RA_SO_SVOCs	1,4-DICHLOROBENZENE	MG_KG	N												
Newport_RA_SO_SVOCs	2,2'-OXYBIS(1-CHLOROPROPANE)	MG_KG	N												
Newport_RA_SO_SVOCs	2,4,5-TRICHLOROPHENOL	MG_KG	N												
Newport_RA_SO_SVOCs	2,4,6-TRICHLOROPHENOL	MG_KG	N												
Newport_RA_SO_SVOCs	2,4-DICHLOROPHENOL	MG_KG	N												
Newport_RA_SO_SVOCs	2,4-DIMETHYLPHENOL	MG_KG	N												
Newport_RA_SO_SVOCs	2,4-DINITROPHENOL	MG_KG	N												
Newport_RA_SO_SVOCs	2,4-DINITROTOLUENE	MG_KG	N												
Newport_RA_SO_SVOCs	2,6-DICHLOROPHENOL	MG_KG	N												
Newport_RA_SO_SVOCs	2,6-DINITROTOLUENE	MG_KG	N												
Newport_RA_SO_SVOCs	2-CHLORONAPHTHALENE	MG_KG	N	<0.024	U	<0.024	U	<0.023	U	<0.023	U	<0.022	U	<0.029	U
Newport_RA_SO_SVOCs	2-CHLOROPHENOL	MG_KG	N												
Newport_RA_SO_SVOCs	2-METHYLNAPHTHALENE	MG_KG	N	<0.024	U	<0.024	U	0.0026	J	0.0025	J	<0.022	U	0.016	J
Newport_RA_SO_SVOCs	2-METHYLPHENOL	MG_KG	N												
Newport_RA_SO_SVOCs	2-NITROANILINE	MG_KG	N												
Newport_RA_SO_SVOCs	2-NITROPHENOL	MG_KG	N												
Newport_RA_SO_SVOCs	3- AND 4-METHYLPHENOL	MG_KG	N												
Newport_RA_SO_SVOCs	3,3-DICHLOROBENZIDINE	MG_KG	N												
Newport_RA_SO_SVOCs	3-NITROANILINE	MG_KG	N												
Newport_RA_SO_SVOCs	4,6-DINITRO-2-METHYLPHENOL	MG_KG	N												
Newport_RA_SO_SVOCs	4-BROMOPHENYL-PHENYLETHER	MG_KG	N												
Newport_RA_SO_SVOCs	4-CHLORO-3-METHYLPHENOL	MG_KG	N												
Newport_RA_SO_SVOCs	4-CHLOROANILINE	MG_KG	N												
Newport_RA_SO_SVOCs	4-CHLOROPHENYL-PHENYLETHER	MG_KG	N												
Newport_RA_SO_SVOCs	4-METHYLPHENOL	MG_KG	N												
Newport_RA_SO_SVOCs	4-NITROANILINE	MG_KG	N												
Newport_RA_SO_SVOCs	4-NITROPHENOL	MG_KG	N												
Newport_RA_SO_SVOCs	ACENAPHTHENE	MG_KG	N	<0.0073	U	<0.0072	U	<0.0069	U	0.00082	J	<0.0067	U	<0.0088	U
Newport_RA_SO_SVOCs	ACENAPHTHYLENE	MG_KG	N	<0.0073	U	<0.0072	U	<0.0069	U	<0.0069	U	<0.0067	U	<0.0088	U
Newport_RA_SO_SVOCs	ACETOPHENONE	MG_KG	N												
Newport_RA_SO_SVOCs	ANTHRACENE	MG_KG	N	0.00092	J	<0.0072	U	0.00088	J	0.0037	J	0.0013	J	0.0012	J
Newport_RA_SO_SVOCs	ATRAZINE	MG_KG	N												
Newport_RA_SO_SVOCs	BENZALDEHYDE	MG_KG	N												

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	MRP1-PES-4C-01		MRP1-PES-4D-01		MRP1-PES-4E-01		MRP1-PES-4E-01		MRP1-PES-5A-01		MRP1-PES-5B-01	
			Sample Date	4/20/2013		4/20/2013		4/19/2013		4/19/2013		4/26/2013		4/26/2013	
			Sample ID	MRP1-PES-4C-01		MRP1-PES-4D-01		MRP1-PES-4E-01		MRP1-PES-4E-01DUP		MRP1-PES-5A-01		MRP1-PES-5B-01	
			Sample Type	N		N		N		FD		N		N	
			start_depth	1		1		1		1		1		1	
			end_depth	1		1		1		1		1		1	
			depth_unit	FT		FT		FT		FT		FT		FT	
			depth_interval	1 - 1 ft		1 - 1 ft		1 - 1 ft		1 - 1 ft		1 - 1 ft		1 - 1 ft	
			task_code	MRP01 PostEx		MRP01 PostEx		MRP01 PostEx		MRP01 PostEx		MRP01 PostEx		MRP01 PostEx	
			validated_yn	Y		Y		Y		Y		Y		Y	
method_analyte_group	Chemical	Unit	Fraction	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers
Newport_RA_SO_SVOCs	BENZIDINE	MG_KG	N												
Newport_RA_SO_SVOCs	BENZO[A]ANTHRACENE	MG_KG	N	0.0049	J	0.00089	J	0.0034	J	0.002	J	0.0046	J	0.0041	J
Newport_RA_SO_SVOCs	BENZO[A]PYRENE	MG_KG	N	0.0049	J	0.00077	J	0.0047	J	0.0022	J	0.0054	J	0.0041	J
Newport_RA_SO_SVOCs	BENZO[B]FLUORANTHENE	MG_KG	N	0.0059	J	0.00077	J	0.0053	J	0.0047	J	0.0083		0.006	J
Newport_RA_SO_SVOCs	BENZO[G,H,I]PERYLENE	MG_KG	N	0.0033	J	<0.0072	U	0.004	J	0.0073		0.0044	J	0.0032	J
Newport_RA_SO_SVOCs	BENZO[K]FLUORANTHENE	MG_KG	N	0.0022	J	<0.0072	U	0.0019	J	0.0026	J	0.0034	J	0.0028	J
Newport_RA_SO_SVOCs	BENZOIC ACID	MG_KG	N												
Newport_RA_SO_SVOCs	BENZYL ALCOHOL	MG_KG	N												
Newport_RA_SO_SVOCs	BIS(2-CHLOROETHOXY)METHANE	MG_KG	N												
Newport_RA_SO_SVOCs	BIS(2-CHLOROETHYL)ETHER	MG_KG	N												
Newport_RA_SO_SVOCs	BIS(2-ETHYLHEXYL)PHTHALATE	MG_KG	N												
Newport_RA_SO_SVOCs	BUTYLBENZYLPHTHALATE	MG_KG	N												
Newport_RA_SO_SVOCs	CAPROLACTAM	MG_KG	N												
Newport_RA_SO_SVOCs	CARBAZOLE	MG_KG	N												
Newport_RA_SO_SVOCs	CHRYSENE	MG_KG	N	0.0054	J	<0.0072	U	0.0049	J	0.0054	J	0.0073		0.0052	J
Newport_RA_SO_SVOCs	DIBENZ[A,H]ANTHRACENE	MG_KG	N	0.00073	J	<0.0072	U	0.00086	J	<0.0069	U	0.0011	J	0.0009	J
Newport_RA_SO_SVOCs	DIBENZOFURAN	MG_KG	N												
Newport_RA_SO_SVOCs	DIETHYLPHTHALATE	MG_KG	N												
Newport_RA_SO_SVOCs	DIMETHYL PHTHALATE	MG_KG	N												
Newport_RA_SO_SVOCs	DI-N-BUTYLPHTHALATE	MG_KG	N												
Newport_RA_SO_SVOCs	DI-N-OCTYLPHTHALATE	MG_KG	N												
Newport_RA_SO_SVOCs	FLUORANTHENE	MG_KG	N	0.0096		0.001	J	0.0049	J	0.0068	J	0.0083		0.0088	J
Newport_RA_SO_SVOCs	FLUORENE	MG_KG	N	<0.0073	U	<0.0072	U	<0.0069	U	0.002	J	<0.0067	U	0.0011	J
Newport_RA_SO_SVOCs	HEXACHLOROBENZENE	MG_KG	N												
Newport_RA_SO_SVOCs	HEXACHLOROBUTADIENE	MG_KG	N												
Newport_RA_SO_SVOCs	HEXACHLOROCYCLOPENTADIENE	MG_KG	N												
Newport_RA_SO_SVOCs	HEXACHLOROETHANE	MG_KG	N												
Newport_RA_SO_SVOCs	HPAH, TOTAL	MG_KG	N												
Newport_RA_SO_SVOCs	INDENO[1,2,3-CD]PYRENE	MG_KG	N	0.0026	J	<0.0072	U	0.0029	J	0.0017	J	0.0035	J	0.0028	J
Newport_RA_SO_SVOCs	ISOPHORONE	MG_KG	N												
Newport_RA_SO_SVOCs	LPAH, TOTAL	MG_KG	N												
Newport_RA_SO_SVOCs	NAPHTHALENE	MG_KG	N	<0.024	U	<0.024	U	<0.023	U	<0.023	U	<0.022	U	0.0069	J
Newport_RA_SO_SVOCs	NITROBENZENE	MG_KG	N												
Newport_RA_SO_SVOCs	N-NITROSODIMETHYLAMINE	MG_KG	N												
Newport_RA_SO_SVOCs	N-NITROSODINPROPYLAMINE	MG_KG	N												
Newport_RA_SO_SVOCs	N-NITROSODIPHENYLAMINE	MG_KG	N												
Newport_RA_SO_SVOCs	N-NITROSOPYRROLIDINE	MG_KG	N												
Newport_RA_SO_SVOCs	PAH, TOTAL	MG_KG	N												
Newport_RA_SO_SVOCs	PENTACHLOROPHENOL	MG_KG	N												
Newport_RA_SO_SVOCs	PHENANTHRENE	MG_KG	N	0.0051	J	<0.0072	U	0.0045	J	0.0053	J	0.0038	J	0.0082	J
Newport_RA_SO_SVOCs	PHENOL	MG_KG	N												
Newport_RA_SO_SVOCs	PYRENE	MG_KG	N	0.0076		0.00086	J	0.005	J	0.018		0.0081		0.0071	J
Newport_RA_SO_VOCs	1,1,1,2-TETRACHLOROETHANE	MG_KG	N												
Newport_RA_SO_VOCs	1,1,1-TRICHLOROETHANE	MG_KG	N												
Newport_RA_SO_VOCs	1,1,2,2-TETRACHLOROETHANE	MG_KG	N												
Newport_RA_SO_VOCs	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	MG_KG	N												
Newport_RA_SO_VOCs	1,1,2-TRICHLOROETHANE	MG_KG	N												
Newport_RA_SO_VOCs	1,1-DICHLOROETHANE	MG_KG	N												
Newport_RA_SO_VOCs	1,1-DICHLOROETHENE	MG_KG	N												
Newport_RA_SO_VOCs	1,1-DICHLOROPROPENE	MG_KG	N												
Newport_RA_SO_VOCs	1,2,3-TRICHLOROBENZENE	MG_KG	N												
Newport_RA_SO_VOCs	1,2,3-TRICHLOROPROPANE	MG_KG	N												
Newport_RA_SO_VOCs	1,2,4-TRICHLOROBENZENE	MG_KG	N												
Newport_RA_SO_VOCs	1,2,4-TRIMETHYLBENZENE	MG_KG	N												
Newport_RA_SO_VOCs	1,2-DIBROMO-3-CHLOROPROPANE	MG_KG	N												
Newport_RA_SO_VOCs	1,2-DIBROMOETHANE	MG_KG	N												
Newport_RA_SO_VOCs	1,2-DICHLOROBENZENE	MG_KG	N												
Newport_RA_SO_VOCs	1,2-DICHLOROETHANE	MG_KG	N												
Newport_RA_SO_VOCs	1,2-DICHLOROETHENE, TOTAL	MG_KG	N												
Newport_RA_SO_VOCs	1,2-DICHLOROPROPANE	MG_KG	N												
Newport_RA_SO_VOCs	1,3,5-TRIMETHYLBENZENE	MG_KG	N												
Newport_RA_SO_VOCs	1,3-DICHLOROBENZENE	MG_KG	N												
Newport_RA_SO_VOCs	1,3-DICHLOROPROPANE	MG_KG	N												
Newport_RA_SO_VOCs	1,4-DICHLOROBENZENE	MG_KG	N												
Newport_RA_SO_VOCs	2,2-DICHLOROPROPANE	MG_KG	N												
Newport_RA_SO_VOCs	2-BUTANONE	MG_KG	N												

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	MRP1-PES-4C-01		MRP1-PES-4D-01		MRP1-PES-4E-01		MRP1-PES-4E-01		MRP1-PES-5A-01		MRP1-PES-5B-01	
			Sample Date	4/20/2013		4/20/2013		4/19/2013		4/19/2013		4/26/2013		4/26/2013	
			Sample ID	MRP1-PES-4C-01		MRP1-PES-4D-01		MRP1-PES-4E-01		MRP1-PES-4E-01DUP		MRP1-PES-5A-01		MRP1-PES-5B-01	
			Sample Type	N		N		N		FD		N		N	
			start_depth	1		1		1		1		1		1	
			end_depth	1		1		1		1		1		1	
			depth_unit	FT		FT		FT		FT		FT		FT	
			depth_interval	1 - 1 ft		1 - 1 ft		1 - 1 ft		1 - 1 ft		1 - 1 ft		1 - 1 ft	
			task_code	MRP01 PostEx		MRP01 PostEx		MRP01 PostEx		MRP01 PostEx		MRP01 PostEx		MRP01 PostEx	
			validated_yn	Y		Y		Y		Y		Y		Y	
method_analyte_group	Chemical	Unit	Fraction	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers
Newport_RA_SO_VOCs	2-CHLOROTOLUENE	MG_KG	N												
Newport_RA_SO_VOCs	2-HEXANONE	MG_KG	N												
Newport_RA_SO_VOCs	4-CHLOROTOLUENE	MG_KG	N												
Newport_RA_SO_VOCs	4-ISOPROPYLTOLUENE	MG_KG	N												
Newport_RA_SO_VOCs	4-METHYL-2-PENTANONE	MG_KG	N												
Newport_RA_SO_VOCs	ACETONE	MG_KG	N												
Newport_RA_SO_VOCs	BENZENE	MG_KG	N												
Newport_RA_SO_VOCs	BROMOBENZENE	MG_KG	N												
Newport_RA_SO_VOCs	BROMOCHLOROMETHANE	MG_KG	N												
Newport_RA_SO_VOCs	BROMODICHLOROMETHANE	MG_KG	N												
Newport_RA_SO_VOCs	BROMOFORM	MG_KG	N												
Newport_RA_SO_VOCs	BROMOMETHANE	MG_KG	N												
Newport_RA_SO_VOCs	CARBON DISULFIDE	MG_KG	N												
Newport_RA_SO_VOCs	CARBON TETRACHLORIDE	MG_KG	N												
Newport_RA_SO_VOCs	CHLOROBENZENE	MG_KG	N												
Newport_RA_SO_VOCs	CHLOROETHANE	MG_KG	N												
Newport_RA_SO_VOCs	CHLOROFORM	MG_KG	N												
Newport_RA_SO_VOCs	CHLOROMETHANE	MG_KG	N												
Newport_RA_SO_VOCs	CIS-1,2-DICHLOROETHENE	MG_KG	N												
Newport_RA_SO_VOCs	CIS-1,3-DICHLOROPROPENE	MG_KG	N												
Newport_RA_SO_VOCs	CYCLOHEXANE	MG_KG	N												
Newport_RA_SO_VOCs	DIBROMOCHLOROMETHANE	MG_KG	N												
Newport_RA_SO_VOCs	DIBROMOMETHANE	MG_KG	N												
Newport_RA_SO_VOCs	DICHLORODIFLUOROMETHANE	MG_KG	N												
Newport_RA_SO_VOCs	ETHYLBENZENE	MG_KG	N												
Newport_RA_SO_VOCs	HEXACHLOROBUTADIENE	MG_KG	N												
Newport_RA_SO_VOCs	ISOPROPYLBENZENE	MG_KG	N												
Newport_RA_SO_VOCs	M- AND P-XYLENE	MG_KG	N												
Newport_RA_SO_VOCs	METHYL ACETATE	MG_KG	N												
Newport_RA_SO_VOCs	METHYL CYCLOHEXANE	MG_KG	N												
Newport_RA_SO_VOCs	METHYL TERT-BUTYL ETHER	MG_KG	N												
Newport_RA_SO_VOCs	METHYLENE CHLORIDE	MG_KG	N												
Newport_RA_SO_VOCs	NAPHTHALENE	MG_KG	N												
Newport_RA_SO_VOCs	N-BUTYLBENZENE	MG_KG	N												
Newport_RA_SO_VOCs	O-XYLENE	MG_KG	N												
Newport_RA_SO_VOCs	PROPYLBENZENE	MG_KG	N												
Newport_RA_SO_VOCs	SEC-BUTYLBENZENE	MG_KG	N												
Newport_RA_SO_VOCs	STYRENE	MG_KG	N												
Newport_RA_SO_VOCs	TERT-BUTANOL	MG_KG	N												
Newport_RA_SO_VOCs	TERT-BUTYLBENZENE	MG_KG	N												
Newport_RA_SO_VOCs	TETRACHLOROETHENE	MG_KG	N												
Newport_RA_SO_VOCs	TOLUENE	MG_KG	N												
Newport_RA_SO_VOCs	TRANS-1,2-DICHLOROETHENE	MG_KG	N												
Newport_RA_SO_VOCs	TRANS-1,3-DICHLOROPROPENE	MG_KG	N												
Newport_RA_SO_VOCs	TRICHLOROETHENE	MG_KG	N												
Newport_RA_SO_VOCs	TRICHLOROFLUOROMETHANE	MG_KG	N												
Newport_RA_SO_VOCs	VINYL CHLORIDE	MG_KG	N												
Newport_RA_SO_VOCs	XYLENES, TOTAL	MG_KG	N												

Notes:
U or < - Non-detect at laboratory detection limit.
J - The compound was positively identified; however, the associated numerical value is an estimated concentration only (+ and - indicate bias).
Sample Type - N = normal sample, FD = duplicate sample.
mg/kg - milligram per kilogram

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	MRP1-PES-5C-02		MRP1-PES-S12-01		MRP1-PES-SW10-02		MRP1-PES-SW1-01		MRP1-PES-SW11-02		MRP1-PES-SW13-01		MRP1-PES-SW13-01	
			Sample Date	4/30/2013		5/1/2013		4/26/2013		4/24/2013		4/30/2013		5/1/2013		5/1/2013	
			Sample ID	MRP1-PES-5C-02 2 FT		MRP1-PES-S12-01 1 FT		MRP1-PES-SW10-02		MRP1-PES-SW1-01		MRP1-PES-SW11-02 2 FT		MRP1-PES-SW13-01 1 FT		MRP1-PES-SW13-01 DUP 1 FT	
			Sample Type	N		N		N		N		N		N		FD	
			start_depth	2		1		2		1		2		1		1	
			end_depth	2		1		2		1		2		1		1	
			depth_unit	FT		FT		FT		FT		FT		FT		FT	
			depth_interval	2 - 2 ft		1 - 1 ft		2 - 2 ft		1 - 1 ft		2 - 2 ft		1 - 1 ft		1 - 1 ft	
			task_code	MRP01 PostEx		MRP01 PostEx		MRP01 PostEx		MRP01 PostEx		MRP01 PostEx		MRP01 PostEx		MRP01 PostEx	
			validated_yn	Y		Y		Y		Y		Y		Y		Y	
method_analyte_group	Chemical	Unit	Fraction	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers
Newport_RA_SO_Energetics	2,4-DINITROTOLUENE	MG_KG	N														
Newport_RA_SO_Energetics	2,6-DINITROTOLUENE	MG_KG	N														
Newport_RA_SO_Energetics	NITROGLYCERIN	MG_KG	N														
Newport_RA_SO_Metals	ALUMINUM	MG_KG	N														
Newport_RA_SO_Metals	ANTIMONY	MG_KG	N														
Newport_RA_SO_Metals	ARSENIC	MG_KG	N	10		8.7		88		4		5.1		14		15	
Newport_RA_SO_Metals	BARIUM	MG_KG	N														
Newport_RA_SO_Metals	BERYLLIUM	MG_KG	N														
Newport_RA_SO_Metals	CADMIUM	MG_KG	N														
Newport_RA_SO_Metals	CALCIUM	MG_KG	N														
Newport_RA_SO_Metals	CHROMIUM VI	MG_KG	N														
Newport_RA_SO_Metals	CHROMIUM, TOTAL	MG_KG	N	7.8		11		13		5.1		9.9		14		14	
Newport_RA_SO_Metals	COBALT	MG_KG	N														
Newport_RA_SO_Metals	COPPER	MG_KG	N														
Newport_RA_SO_Metals	IRON	MG_KG	N														
Newport_RA_SO_Metals	IRON, FERROUS	MG_KG	N														
Newport_RA_SO_Metals	LEAD	MG_KG	N	18		14		12		350		29		55		69	
Newport_RA_SO_Metals	MAGNESIUM	MG_KG	N														
Newport_RA_SO_Metals	MANGANESE	MG_KG	N														
Newport_RA_SO_Metals	MERCURY	MG_KG	N														
Newport_RA_SO_Metals	NICKEL	MG_KG	N														
Newport_RA_SO_Metals	POTASSIUM	MG_KG	N														
Newport_RA_SO_Metals	SELENIUM	MG_KG	N														
Newport_RA_SO_Metals	SILVER	MG_KG	N														
Newport_RA_SO_Metals	SODIUM	MG_KG	N														
Newport_RA_SO_Metals	THALLIUM	MG_KG	N														
Newport_RA_SO_Metals	VANADIUM	MG_KG	N														
Newport_RA_SO_Metals	ZINC	MG_KG	N														
Newport_RA_SO_Other	DENSITY	G_CC	N														
Newport_RA_SO_Other	Pellet count	COUNT	N														
Newport_RA_SO_Other	Pellet weight	PCT	N														
Newport_RA_SO_Other	PERCENT FINES	PCT	N														
Newport_RA_SO_Other	PERCENT GRAVEL	PCT	N														
Newport_RA_SO_Other	PERCENT SAND	PCT	N														
Newport_RA_SO_Other	PERCENT SAND, COARSE	PCT	N														
Newport_RA_SO_Other	PERCENT SAND, FINE	PCT	N														
Newport_RA_SO_Other	PERCENT SAND, MEDIUM	PCT	N														
Newport_RA_SO_Other	PH	PH	N														
Newport_RA_SO_Other	POROSITY	PCT	N														
Newport_RA_SO_Other	SIEVE 1 INCH (25.4-MM)	PCT	N														
Newport_RA_SO_Other	SIEVE 1-1/2 INCH (37.5-MM)	PCT	N														
Newport_RA_SO_Other	SIEVE 2 INCH (50-MM)	PCT	N														
Newport_RA_SO_Other	SIEVE 3 INCH (75-MM)	PCT	N														
Newport_RA_SO_Other	SIEVE 3/4 INCH (19-MM)	PCT	N														
Newport_RA_SO_Other	SIEVE 3/8 INCH (9.5-MM)	PCT	N														
Newport_RA_SO_Other	SIEVE NO. 004 (4.75-MM)	PCT	N														
Newport_RA_SO_Other	SIEVE NO. 010 (2-MM)	PCT	N														
Newport_RA_SO_Other	SIEVE NO. 020 (850-UM)	PCT	N														
Newport_RA_SO_Other	SIEVE NO. 040 (425-UM)	PCT	N														
Newport_RA_SO_Other	SIEVE NO. 060 (250-UM)	PCT	N														
Newport_RA_SO_Other	SIEVE NO. 080 (180-UM)	PCT	N														
Newport_RA_SO_Other	SIEVE NO. 100 (150-UM)	PCT	N														
Newport_RA_SO_Other	SIEVE NO. 200 (75-UM)	PCT	N														
Newport_RA_SO_Other	SPECIFIC CONDUCTANCE	UMHO_CM	N														
Newport_RA_SO_Other	SPECIFIC GRAVITY	NONE	N														
Newport_RA_SO_Other	SULFIDE	MG_KG	N														
Newport_RA_SO_Other	TPH-DIESEL RANGE	MG_KG	N														
Newport_RA_SO_Other	TPH-TOTAL UNKNOWN GASOLINE RANGE ORGANICS	MG_KG	N														
Newport_RA_SO_Other	Void Ratio	NONE	N														
Newport_RA_SO_PCBs	AROCLOR-1016	MG_KG	N														
Newport_RA_SO_PCBs	AROCLOR-1221	MG_KG	N														
Newport_RA_SO_PCBs	AROCLOR-1232	MG_KG	N														
Newport_RA_SO_PCBs	AROCLOR-1242	MG_KG	N														
Newport_RA_SO_PCBs	AROCLOR-1248	MG_KG	N														
Newport_RA_SO_PCBs	AROCLOR-1254	MG_KG	N														
Newport_RA_SO_PCBs	AROCLOR-1260	MG_KG	N														

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	MRP1-PES-5C-02		MRP1-PES-S12-01		MRP1-PES-SW10-02		MRP1-PES-SW1-01		MRP1-PES-SW11-02		MRP1-PES-SW13-01		MRP1-PES-SW13-01	
			Sample Date	4/30/2013		5/1/2013		4/26/2013		4/24/2013		4/30/2013		5/1/2013		5/1/2013	
			Sample ID	MRP1-PES-5C-02 2 FT		MRP1-PES-S12-01 1 FT		MRP1-PES-SW10-02		MRP1-PES-SW1-01		MRP1-PES-SW11-02 2 FT		MRP1-PES-SW13-01 1 FT		MRP1-PES-SW13-01 DUP 1 FT	
			Sample Type	N		N		N		N		N		N		FD	
			start_depth	2		1		2		1		2		1		1	
			end_depth	2		1		2		1		2		1		1	
			depth_unit	FT		FT		FT		FT		FT		FT		FT	
			depth_interval	2 - 2 ft		1 - 1 ft		2 - 2 ft		1 - 1 ft		2 - 2 ft		1 - 1 ft		1 - 1 ft	
			task_code	MRP01 PostEx		MRP01 PostEx		MRP01 PostEx		MRP01 PostEx		MRP01 PostEx		MRP01 PostEx		MRP01 PostEx	
			validated_yn	Y		Y		Y		Y		Y		Y		Y	
method_analyte_group	Chemical	Unit	Fraction	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers
Newport_RA_SO_PCBs	AROCLOR-1262	MG_KG	N														
Newport_RA_SO_PCBs	AROCLOR-1268	MG_KG	N														
Newport_RA_SO_PCBs	PCB, TOTAL	MG_KG	N														
Newport_RA_SO_PCBs	POLYCHLORINATED BIPHENYLS (PCBS)	MG_KG	N														
Newport_RA_SO_Pesticides	4,4-DDD	MG_KG	N														
Newport_RA_SO_Pesticides	4,4-DDE	MG_KG	N														
Newport_RA_SO_Pesticides	4,4-DDT	MG_KG	N														
Newport_RA_SO_Pesticides	ALDRIN	MG_KG	N														
Newport_RA_SO_Pesticides	ALPHA-BHC	MG_KG	N														
Newport_RA_SO_Pesticides	ALPHA-CHLORDANE	MG_KG	N														
Newport_RA_SO_Pesticides	BETA-BHC	MG_KG	N														
Newport_RA_SO_Pesticides	DDT, TOTAL	MG_KG	N														
Newport_RA_SO_Pesticides	DELTA-BHC	MG_KG	N														
Newport_RA_SO_Pesticides	DIELDRIN	MG_KG	N														
Newport_RA_SO_Pesticides	ENDOSULFAN I	MG_KG	N														
Newport_RA_SO_Pesticides	ENDOSULFAN II	MG_KG	N														
Newport_RA_SO_Pesticides	ENDOSULFAN SULFATE	MG_KG	N														
Newport_RA_SO_Pesticides	ENDRIN	MG_KG	N														
Newport_RA_SO_Pesticides	ENDRIN ALDEHYDE	MG_KG	N														
Newport_RA_SO_Pesticides	ENDRIN KETONE	MG_KG	N														
Newport_RA_SO_Pesticides	GAMMA-CHLORDANE	MG_KG	N														
Newport_RA_SO_Pesticides	HEPTACHLOR	MG_KG	N														
Newport_RA_SO_Pesticides	HEPTACHLOR EPOXIDE	MG_KG	N														
Newport_RA_SO_Pesticides	LINDANE	MG_KG	N														
Newport_RA_SO_Pesticides	METHOXYCHLOR	MG_KG	N														
Newport_RA_SO_Pesticides	TOXAPHENE	MG_KG	N														
Newport_RA_SO_Pesticides	TRANS-CHLORDANE	MG_KG	N														
Newport_RA_SO_SVOCs	1,1-BIPHENYL	MG_KG	N														
Newport_RA_SO_SVOCs	1-METHYLNAPHTHALENE	MG_KG	N	<0.024	U	0.0036	J	<0.022	U	<0.22	U	<0.024	U	<0.47	U	0.0032	J
Newport_RA_SO_SVOCs	1,2,4-TRICHLOROBENZENE	MG_KG	N														
Newport_RA_SO_SVOCs	1,2-DICHLOROBENZENE	MG_KG	N														
Newport_RA_SO_SVOCs	1,2-DIPHENYLHYDRAZINE	MG_KG	N														
Newport_RA_SO_SVOCs	1,3-DICHLOROBENZENE	MG_KG	N														
Newport_RA_SO_SVOCs	1,4-DICHLOROBENZENE	MG_KG	N														
Newport_RA_SO_SVOCs	2,2'-OXYBIS(1-CHLOROPROPANE)	MG_KG	N														
Newport_RA_SO_SVOCs	2,4,5-TRICHLOROPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	2,4,6-TRICHLOROPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	2,4-DICHLOROPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	2,4-DIMETHYLPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	2,4-DINITROPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	2,4-DINITROTOLUENE	MG_KG	N														
Newport_RA_SO_SVOCs	2,6-DICHLOROPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	2,6-DINITROTOLUENE	MG_KG	N														
Newport_RA_SO_SVOCs	2-CHLORONAPHTHALENE	MG_KG	N	<0.024	U	<0.023	U	<0.022	U	<0.22	U	<0.024	U	<0.47	U	<0.023	U
Newport_RA_SO_SVOCs	2-CHLOROPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	2-METHYLNAPHTHALENE	MG_KG	N	<0.024	U	0.0044	J	<0.022	U	<0.22	U	<0.024	U	<0.47	U	0.0055	J
Newport_RA_SO_SVOCs	2-METHYLPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	2-NITROANILINE	MG_KG	N														
Newport_RA_SO_SVOCs	2-NITROPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	3- AND 4-METHYLPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	3,3-DICHLOROBENZIDINE	MG_KG	N														
Newport_RA_SO_SVOCs	3-NITROANILINE	MG_KG	N														
Newport_RA_SO_SVOCs	4,6-DINITRO-2-METHYLPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	4-BROMOPHENYL-PHENYLETHER	MG_KG	N														
Newport_RA_SO_SVOCs	4-CHLORO-3-METHYLPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	4-CHLOROANILINE	MG_KG	N														
Newport_RA_SO_SVOCs	4-CHLOROPHENYL-PHENYLETHER	MG_KG	N														
Newport_RA_SO_SVOCs	4-METHYLPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	4-NITROANILINE	MG_KG	N														
Newport_RA_SO_SVOCs	4-NITROPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	ACENAPHTHENE	MG_KG	N	<0.0072	U	<0.0069	U	<0.0066	U	0.012	J	<0.0073	U	0.063	J	0.027	
Newport_RA_SO_SVOCs	ACENAPHTHYLENE	MG_KG	N	<0.0072	U	<0.0069	U	<0.0066	U	<0.068	U	<0.0073	U	0.02	J	0.0094	
Newport_RA_SO_SVOCs	ACETOPHENONE	MG_KG	N														
Newport_RA_SO_SVOCs	ANTHRACENE	MG_KG	N	0.00097	J	<0.0069	U	0.001	J	0.088		<0.0073	U	0.27		0.05	
Newport_RA_SO_SVOCs	ATRAZINE	MG_KG	N														
Newport_RA_SO_SVOCs	BENZALDEHYDE	MG_KG	N														

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	MRP1-PES-5C-02		MRP1-PES-S12-01		MRP1-PES-SW10-02		MRP1-PES-SW1-01		MRP1-PES-SW11-02		MRP1-PES-SW13-01		MRP1-PES-SW13-01	
			Sample Date	4/30/2013		5/1/2013		4/26/2013		4/24/2013		4/30/2013		5/1/2013		5/1/2013	
			Sample ID	MRP1-PES-5C-02 2 FT		MRP1-PES-S12-01 1 FT		MRP1-PES-SW10-02		MRP1-PES-SW1-01		MRP1-PES-SW11-02 2 FT		MRP1-PES-SW13-01 1 FT		MRP1-PES-SW13-01 DUP 1 FT	
			Sample Type	N		N		N		N		N		N		FD	
			start_depth	2		1		2		1		2		1		1	
			end_depth	2		1		2		1		2		1		1	
			depth_unit	FT		FT		FT		FT		FT		FT		FT	
			depth_interval	2 - 2 ft		1 - 1 ft		2 - 2 ft		1 - 1 ft		2 - 2 ft		1 - 1 ft		1 - 1 ft	
			task_code	MRP01 PostEx		MRP01 PostEx		MRP01 PostEx		MRP01 PostEx		MRP01 PostEx		MRP01 PostEx		MRP01 PostEx	
			validated_yn	Y		Y		Y		Y		Y		Y		Y	
method_analyte_group	Chemical	Unit	Fraction	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers
Newport_RA_SO_SVOCs	BENZIDINE	MG_KG	N														
Newport_RA_SO_SVOCs	BENZO[A]ANTHRACENE	MG_KG	N	0.0042	J	0.0018	J	0.0052	J	0.27		0.0013	J	7.2		0.28	
Newport_RA_SO_SVOCs	BENZO[A]PYRENE	MG_KG	N	0.0037	J	0.0022	J	0.0073		0.29		0.0015	J	7.3		0.36	
Newport_RA_SO_SVOCs	BENZO[B]FLUORANTHENE	MG_KG	N	0.0053	J	0.0024	J	0.0076		0.29		0.0016	J	3.5		0.34	
Newport_RA_SO_SVOCs	BENZO[G,H,I]PERYLENE	MG_KG	N	0.0023	J	0.0018	J	0.0055	J	0.22		0.0012	J	2.7		0.23	
Newport_RA_SO_SVOCs	BENZO[K]FLUORANTHENE	MG_KG	N	0.0023	J	0.0011	J	0.0034	J	0.12		0.0011	J	0.59		0.12	
Newport_RA_SO_SVOCs	BENZOIC ACID	MG_KG	N														
Newport_RA_SO_SVOCs	BENZYL ALCOHOL	MG_KG	N														
Newport_RA_SO_SVOCs	BIS(2-CHLOROETHOXY)METHANE	MG_KG	N														
Newport_RA_SO_SVOCs	BIS(2-CHLOROETHYL)ETHER	MG_KG	N														
Newport_RA_SO_SVOCs	BIS(2-ETHYLHEXYL)PHTHALATE	MG_KG	N														
Newport_RA_SO_SVOCs	BUTYLBENZYLPHTHALATE	MG_KG	N														
Newport_RA_SO_SVOCs	CAPROLACTAM	MG_KG	N														
Newport_RA_SO_SVOCs	CARBAZOLE	MG_KG	N														
Newport_RA_SO_SVOCs	CHRYSENE	MG_KG	N	0.0042	J	0.0023	J	0.0052	J	0.26		0.0018	J	14		0.32	
Newport_RA_SO_SVOCs	DIBENZ[A,H]ANTHRACENE	MG_KG	N	<0.0072	U	<0.0069	U	0.0012	J	0.061	J	<0.0073	U	1.4		0.062	
Newport_RA_SO_SVOCs	DIBENZOFURAN	MG_KG	N														
Newport_RA_SO_SVOCs	DIETHYLPHTHALATE	MG_KG	N														
Newport_RA_SO_SVOCs	DIMETHYL PHTHALATE	MG_KG	N														
Newport_RA_SO_SVOCs	DI-N-BUTYLPHTHALATE	MG_KG	N														
Newport_RA_SO_SVOCs	DI-N-OCTYLPHTHALATE	MG_KG	N														
Newport_RA_SO_SVOCs	FLUORANTHENE	MG_KG	N	0.01		0.0032	J	0.0056	J	0.51		0.0029	J	1.2		0.4	
Newport_RA_SO_SVOCs	FLUORENE	MG_KG	N	<0.0072	U	<0.0069	U	<0.0066	U	0.014	J	<0.0073	U	0.049	J	0.014	
Newport_RA_SO_SVOCs	HEXACHLOROBENZENE	MG_KG	N														
Newport_RA_SO_SVOCs	HEXACHLOROBUTADIENE	MG_KG	N														
Newport_RA_SO_SVOCs	HEXACHLOROCYCLOPENTADIENE	MG_KG	N														
Newport_RA_SO_SVOCs	HEXACHLOROETHANE	MG_KG	N														
Newport_RA_SO_SVOCs	HPAH, TOTAL	MG_KG	N														
Newport_RA_SO_SVOCs	INDENO[1,2,3-CD]PYRENE	MG_KG	N	0.002	J	0.0013	J	0.0044	J	0.16		0.00089	J	0.94		0.18	
Newport_RA_SO_SVOCs	ISOPHORONE	MG_KG	N														
Newport_RA_SO_SVOCs	LPAH, TOTAL	MG_KG	N														
Newport_RA_SO_SVOCs	NAPHTHALENE	MG_KG	N	0.0035	J	0.006	J	<0.022	U	<0.22	U	<0.024	U	<0.47	U	0.011	J
Newport_RA_SO_SVOCs	NITROBENZENE	MG_KG	N														
Newport_RA_SO_SVOCs	N-NITROSODIMETHYLAMINE	MG_KG	N														
Newport_RA_SO_SVOCs	N-NITROSODINPROPYLAMINE	MG_KG	N														
Newport_RA_SO_SVOCs	N-NITROSODIPHENYLAMINE	MG_KG	N														
Newport_RA_SO_SVOCs	N-NITROSOPYRROLIDINE	MG_KG	N														
Newport_RA_SO_SVOCs	PAH, TOTAL	MG_KG	N														
Newport_RA_SO_SVOCs	PENTACHLOROPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	PHENANTHRENE	MG_KG	N	0.0035	J	0.0032	J	0.003	J	0.26		0.002	J	1.1		0.19	
Newport_RA_SO_SVOCs	PHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	PYRENE	MG_KG	N	0.0073		0.003	J	0.0055	J	0.54		0.0027	J	4.5		0.41	
Newport_RA_SO_VOCs	1,1,1,2-TETRACHLOROETHANE	MG_KG	N														
Newport_RA_SO_VOCs	1,1,1-TRICHLOROETHANE	MG_KG	N														
Newport_RA_SO_VOCs	1,1,2,2-TETRACHLOROETHANE	MG_KG	N														
Newport_RA_SO_VOCs	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	MG_KG	N														
Newport_RA_SO_VOCs	1,1,2-TRICHLOROETHANE	MG_KG	N														
Newport_RA_SO_VOCs	1,1-DICHLOROETHANE	MG_KG	N														
Newport_RA_SO_VOCs	1,1-DICHLOROETHENE	MG_KG	N														
Newport_RA_SO_VOCs	1,1-DICHLOROPROPENE	MG_KG	N														
Newport_RA_SO_VOCs	1,2,3-TRICHLOROBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	1,2,3-TRICHLOROPROPANE	MG_KG	N														
Newport_RA_SO_VOCs	1,2,4-TRICHLOROBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	1,2,4-TRIMETHYLBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	1,2-DIBROMO-3-CHLOROPROPANE	MG_KG	N														
Newport_RA_SO_VOCs	1,2-DIBROMOETHANE	MG_KG	N														
Newport_RA_SO_VOCs	1,2-DICHLOROBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	1,2-DICHLOROETHANE	MG_KG	N														
Newport_RA_SO_VOCs	1,2-DICHLOROETHENE, TOTAL	MG_KG	N														
Newport_RA_SO_VOCs	1,2-DICHLOROPROPANE	MG_KG	N														
Newport_RA_SO_VOCs	1,3,5-TRIMETHYLBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	1,3-DICHLOROBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	1,3-DICHLOROPROPANE	MG_KG	N														
Newport_RA_SO_VOCs	1,4-DICHLOROBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	2,2-DICHLOROPROPANE	MG_KG	N														
Newport_RA_SO_VOCs	2-BUTANONE	MG_KG	N														

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	MRP1-PES-5C-02		MRP1-PES-S12-01		MRP1-PES-SW10-02		MRP1-PES-SW1-01		MRP1-PES-SW11-02		MRP1-PES-SW13-01		MRP1-PES-SW13-01	
			Sample Date	4/30/2013		5/1/2013		4/26/2013		4/24/2013		4/30/2013		5/1/2013		5/1/2013	
			Sample ID	MRP1-PES-5C-02 2 FT		MRP1-PES-S12-01 1 FT		MRP1-PES-SW10-02		MRP1-PES-SW1-01		MRP1-PES-SW11-02 2 FT		MRP1-PES-SW13-01 1 FT		MRP1-PES-SW13-01 DUP 1 FT	
			Sample Type	N		N		N		N		N		N		FD	
			start_depth	2		1		2		1		2		1		1	
			end_depth	2		1		2		1		2		1		1	
			depth_unit	FT		FT		FT		FT		FT		FT		FT	
			depth_interval	2 - 2 ft		1 - 1 ft		2 - 2 ft		1 - 1 ft		2 - 2 ft		1 - 1 ft		1 - 1 ft	
			task_code	MRP01 PostEx		MRP01 PostEx		MRP01 PostEx		MRP01 PostEx		MRP01 PostEx		MRP01 PostEx		MRP01 PostEx	
			validated_yn	Y		Y		Y		Y		Y		Y		Y	
method_analyte_group	Chemical	Unit	Fraction	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers
Newport_RA_SO_VOCs	2-CHLOROTOLUENE	MG_KG	N														
Newport_RA_SO_VOCs	2-HEXANONE	MG_KG	N														
Newport_RA_SO_VOCs	4-CHLOROTOLUENE	MG_KG	N														
Newport_RA_SO_VOCs	4-ISOPROPYLTOLUENE	MG_KG	N														
Newport_RA_SO_VOCs	4-METHYL-2-PENTANONE	MG_KG	N														
Newport_RA_SO_VOCs	ACETONE	MG_KG	N														
Newport_RA_SO_VOCs	BENZENE	MG_KG	N														
Newport_RA_SO_VOCs	BROMOBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	BROMOCHLOROMETHANE	MG_KG	N														
Newport_RA_SO_VOCs	BROMODICHLOROMETHANE	MG_KG	N														
Newport_RA_SO_VOCs	BROMOFORM	MG_KG	N														
Newport_RA_SO_VOCs	BROMOMETHANE	MG_KG	N														
Newport_RA_SO_VOCs	CARBON DISULFIDE	MG_KG	N														
Newport_RA_SO_VOCs	CARBON TETRACHLORIDE	MG_KG	N														
Newport_RA_SO_VOCs	CHLOROBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	CHLOROETHANE	MG_KG	N														
Newport_RA_SO_VOCs	CHLOROFORM	MG_KG	N														
Newport_RA_SO_VOCs	CHLOROMETHANE	MG_KG	N														
Newport_RA_SO_VOCs	CIS-1,2-DICHLOROETHENE	MG_KG	N														
Newport_RA_SO_VOCs	CIS-1,3-DICHLOROPROPENE	MG_KG	N														
Newport_RA_SO_VOCs	CYCLOHEXANE	MG_KG	N														
Newport_RA_SO_VOCs	DIBROMOCHLOROMETHANE	MG_KG	N														
Newport_RA_SO_VOCs	DIBROMOMETHANE	MG_KG	N														
Newport_RA_SO_VOCs	DICHLORODIFLUOROMETHANE	MG_KG	N														
Newport_RA_SO_VOCs	ETHYLBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	HEXACHLOROBUTADIENE	MG_KG	N														
Newport_RA_SO_VOCs	ISOPROPYLBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	M- AND P-XYLENE	MG_KG	N														
Newport_RA_SO_VOCs	METHYL ACETATE	MG_KG	N														
Newport_RA_SO_VOCs	METHYL CYCLOHEXANE	MG_KG	N														
Newport_RA_SO_VOCs	METHYL TERT-BUTYL ETHER	MG_KG	N														
Newport_RA_SO_VOCs	METHYLENE CHLORIDE	MG_KG	N														
Newport_RA_SO_VOCs	NAPHTHALENE	MG_KG	N														
Newport_RA_SO_VOCs	N-BUTYLBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	O-XYLENE	MG_KG	N														
Newport_RA_SO_VOCs	PROPYLBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	SEC-BUTYLBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	STYRENE	MG_KG	N														
Newport_RA_SO_VOCs	TERT-BUTANOL	MG_KG	N														
Newport_RA_SO_VOCs	TERT-BUTYLBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	TETRACHLOROETHENE	MG_KG	N														
Newport_RA_SO_VOCs	TOLUENE	MG_KG	N														
Newport_RA_SO_VOCs	TRANS-1,2-DICHLOROETHENE	MG_KG	N														
Newport_RA_SO_VOCs	TRANS-1,3-DICHLOROPROPENE	MG_KG	N														
Newport_RA_SO_VOCs	TRICHLOROETHENE	MG_KG	N														
Newport_RA_SO_VOCs	TRICHLOROFLUOROMETHANE	MG_KG	N														
Newport_RA_SO_VOCs	VINYL CHLORIDE	MG_KG	N														
Newport_RA_SO_VOCs	XYLENES, TOTAL	MG_KG	N														

Notes:
U or < - Non-detect at laboratory detection limit.
J - The compound was positively identified; however, the associated numerical value is an estimated concentration only (+ and - indicate bias).
Sample Type - N = normal sample, FD = duplicate sample.
mg/kg - milligram per kilogram

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	MRP1-PES-SW2-02		MRP1-PES-SW3-02		MRP1-PES-SW4-01		MRP1-PES-SW5-01		MRP1-PES-SW6-01		MRP1-PES-SW7-02		MRP1-F
			Sample Date	4/24/2013		4/24/2013		4/25/2013		4/25/2013		4/25/2013		4/25/2013		4/2
			Sample ID	MRP1-PES-SW2-02		MRP1-PES-SW3-02		MRP1-PES-SW4-01		MRP1-PES-SW5-01		MRP1-PES-SW6-01		MRP1-PES-SW7-02		MRP1-F
			Sample Type	N		N		N		N		N		N		
			start_depth	2		2		1		1		1		2		
			end_depth	2		2		1		1		1		2		
			depth_unit	FT		FT		FT		FT		FT		FT		
			depth_interval	2 - 2 ft		2 - 2 ft		1 - 1 ft		1 - 1 ft		1 - 1 ft		2 - 2 ft		2
			task_code	MRP01 PostEx		MRP01 PostEx		MRP01 PostEx		MRP01 PostEx		MRP01 PostEx		MRP01 PostEx		MRP
			validated_yn	Y		Y		Y		Y		Y		Y		
method_analyte_group	Chemical	Unit	Fraction	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result
Newport_RA_SO_Energetics	2,4-DINITROTOLUENE	MG_KG	N													
Newport_RA_SO_Energetics	2,6-DINITROTOLUENE	MG_KG	N													
Newport_RA_SO_Energetics	NITROGLYCERIN	MG_KG	N													
Newport_RA_SO_Metals	ALUMINUM	MG_KG	N													
Newport_RA_SO_Metals	ANTIMONY	MG_KG	N													
Newport_RA_SO_Metals	ARSENIC	MG_KG	N	0.48	J	12		7.6		6.8		2.4		8		1.6
Newport_RA_SO_Metals	BARIUM	MG_KG	N													
Newport_RA_SO_Metals	BERYLLIUM	MG_KG	N													
Newport_RA_SO_Metals	CADMIUM	MG_KG	N													
Newport_RA_SO_Metals	CALCIUM	MG_KG	N													
Newport_RA_SO_Metals	CHROMIUM VI	MG_KG	N													
Newport_RA_SO_Metals	CHROMIUM, TOTAL	MG_KG	N	5.2		6.9		9.8		9.5		5		8.1		5.6
Newport_RA_SO_Metals	COBALT	MG_KG	N													
Newport_RA_SO_Metals	COPPER	MG_KG	N													
Newport_RA_SO_Metals	IRON	MG_KG	N													
Newport_RA_SO_Metals	IRON, FERROUS	MG_KG	N													
Newport_RA_SO_Metals	LEAD	MG_KG	N	6		17		120		300		30		37		12
Newport_RA_SO_Metals	MAGNESIUM	MG_KG	N													
Newport_RA_SO_Metals	MANGANESE	MG_KG	N													
Newport_RA_SO_Metals	MERCURY	MG_KG	N													
Newport_RA_SO_Metals	NICKEL	MG_KG	N													
Newport_RA_SO_Metals	POTASSIUM	MG_KG	N													
Newport_RA_SO_Metals	SELENIUM	MG_KG	N													
Newport_RA_SO_Metals	SILVER	MG_KG	N													
Newport_RA_SO_Metals	SODIUM	MG_KG	N													
Newport_RA_SO_Metals	THALLIUM	MG_KG	N													
Newport_RA_SO_Metals	VANADIUM	MG_KG	N													
Newport_RA_SO_Metals	ZINC	MG_KG	N													
Newport_RA_SO_Other	DENSITY	G_CC	N													
Newport_RA_SO_Other	Pellet count	COUNT	N													
Newport_RA_SO_Other	Pellet weight	PCT	N													
Newport_RA_SO_Other	PERCENT FINES	PCT	N													
Newport_RA_SO_Other	PERCENT GRAVEL	PCT	N													
Newport_RA_SO_Other	PERCENT SAND	PCT	N													
Newport_RA_SO_Other	PERCENT SAND, COARSE	PCT	N													
Newport_RA_SO_Other	PERCENT SAND, FINE	PCT	N													
Newport_RA_SO_Other	PERCENT SAND, MEDIUM	PCT	N													
Newport_RA_SO_Other	PH	PH	N													
Newport_RA_SO_Other	POROSITY	PCT	N													
Newport_RA_SO_Other	SIEVE 1 INCH (25.4-MM)	PCT	N													
Newport_RA_SO_Other	SIEVE 1-1/2 INCH (37.5-MM)	PCT	N													
Newport_RA_SO_Other	SIEVE 2 INCH (50-MM)	PCT	N													
Newport_RA_SO_Other	SIEVE 3 INCH (75-MM)	PCT	N													
Newport_RA_SO_Other	SIEVE 3/4 INCH (19-MM)	PCT	N													
Newport_RA_SO_Other	SIEVE 3/8 INCH (9.5-MM)	PCT	N													
Newport_RA_SO_Other	SIEVE NO. 004 (4.75-MM)	PCT	N													
Newport_RA_SO_Other	SIEVE NO. 010 (2-MM)	PCT	N													
Newport_RA_SO_Other	SIEVE NO. 020 (850-UM)	PCT	N													
Newport_RA_SO_Other	SIEVE NO. 040 (425-UM)	PCT	N													
Newport_RA_SO_Other	SIEVE NO. 060 (250-UM)	PCT	N													
Newport_RA_SO_Other	SIEVE NO. 080 (180-UM)	PCT	N													
Newport_RA_SO_Other	SIEVE NO. 100 (150-UM)	PCT	N													
Newport_RA_SO_Other	SIEVE NO. 200 (75-UM)	PCT	N													
Newport_RA_SO_Other	SPECIFIC CONDUCTANCE	UMHO_CM	N													
Newport_RA_SO_Other	SPECIFIC GRAVITY	NONE	N													
Newport_RA_SO_Other	SULFIDE	MG_KG	N													
Newport_RA_SO_Other	TPH-DIESEL RANGE	MG_KG	N													
Newport_RA_SO_Other	TPH-TOTAL UNKNOWN GASOLINE RANGE ORGANICS	MG_KG	N													
Newport_RA_SO_Other	Void Ratio	NONE	N													
Newport_RA_SO_PCBs	AROCLOR-1016	MG_KG	N													
Newport_RA_SO_PCBs	AROCLOR-1221	MG_KG	N													
Newport_RA_SO_PCBs	AROCLOR-1232	MG_KG	N													
Newport_RA_SO_PCBs	AROCLOR-1242	MG_KG	N													
Newport_RA_SO_PCBs	AROCLOR-1248	MG_KG	N													
Newport_RA_SO_PCBs	AROCLOR-1254	MG_KG	N													
Newport_RA_SO_PCBs	AROCLOR-1260	MG_KG	N													

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	MRP1-PES-SW2-02		MRP1-PES-SW3-02		MRP1-PES-SW4-01		MRP1-PES-SW5-01		MRP1-PES-SW6-01		MRP1-PES-SW7-02		MRP1-F
			Sample Date	4/24/2013		4/24/2013		4/25/2013		4/25/2013		4/25/2013		4/25/2013		4/2
			Sample ID	MRP1-PES-SW2-02		MRP1-PES-SW3-02		MRP1-PES-SW4-01		MRP1-PES-SW5-01		MRP1-PES-SW6-01		MRP1-PES-SW7-02		MRP1-F
			Sample Type	N		N		N		N		N		N		
			start_depth	2		2		1		1		1		2		
			end_depth	2		2		1		1		1		2		
			depth_unit	FT		FT		FT		FT		FT		FT		
			depth_interval	2 - 2 ft		2 - 2 ft		1 - 1 ft		1 - 1 ft		1 - 1 ft		2 - 2 ft		2
			task_code	MRP01 PostEx		MRP01 PostEx		MRP01 PostEx		MRP01 PostEx		MRP01 PostEx		MRP01 PostEx		MRP
			validated_yn	Y		Y		Y		Y		Y		Y		
method_analyte_group	Chemical	Unit	Fraction	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result
Newport_RA_SO_PCBs	AROCLOR-1262	MG_KG	N													
Newport_RA_SO_PCBs	AROCLOR-1268	MG_KG	N													
Newport_RA_SO_PCBs	PCB, TOTAL	MG_KG	N													
Newport_RA_SO_PCBs	POLYCHLORINATED BIPHENYLS (PCBS)	MG_KG	N													
Newport_RA_SO_Pesticides	4,4-DDD	MG_KG	N													
Newport_RA_SO_Pesticides	4,4-DDE	MG_KG	N													
Newport_RA_SO_Pesticides	4,4-DDT	MG_KG	N													
Newport_RA_SO_Pesticides	ALDRIN	MG_KG	N													
Newport_RA_SO_Pesticides	ALPHA-BHC	MG_KG	N													
Newport_RA_SO_Pesticides	ALPHA-CHLORDANE	MG_KG	N													
Newport_RA_SO_Pesticides	BETA-BHC	MG_KG	N													
Newport_RA_SO_Pesticides	DDT, TOTAL	MG_KG	N													
Newport_RA_SO_Pesticides	DELTA-BHC	MG_KG	N													
Newport_RA_SO_Pesticides	DIELDRIN	MG_KG	N													
Newport_RA_SO_Pesticides	ENDOSULFAN I	MG_KG	N													
Newport_RA_SO_Pesticides	ENDOSULFAN II	MG_KG	N													
Newport_RA_SO_Pesticides	ENDOSULFAN SULFATE	MG_KG	N													
Newport_RA_SO_Pesticides	ENDRIN	MG_KG	N													
Newport_RA_SO_Pesticides	ENDRIN ALDEHYDE	MG_KG	N													
Newport_RA_SO_Pesticides	ENDRIN KETONE	MG_KG	N													
Newport_RA_SO_Pesticides	GAMMA-CHLORDANE	MG_KG	N													
Newport_RA_SO_Pesticides	HEPTACHLOR	MG_KG	N													
Newport_RA_SO_Pesticides	HEPTACHLOR EPOXIDE	MG_KG	N													
Newport_RA_SO_Pesticides	LINDANE	MG_KG	N													
Newport_RA_SO_Pesticides	METHOXYCHLOR	MG_KG	N													
Newport_RA_SO_Pesticides	TOXAPHENE	MG_KG	N													
Newport_RA_SO_Pesticides	TRANS-CHLORDANE	MG_KG	N													
Newport_RA_SO_SVOCs	1,1-BIPHENYL	MG_KG	N													
Newport_RA_SO_SVOCs	1-METHYLNAPHTHALENE	MG_KG	N	<0.023	U	0.033	J	0.01	J, J6	0.0072	J	0.0028	J	<0.022	U	<0.023
Newport_RA_SO_SVOCs	1,2,4-TRICHLOROBENZENE	MG_KG	N													
Newport_RA_SO_SVOCs	1,2-DICHLOROBENZENE	MG_KG	N													
Newport_RA_SO_SVOCs	1,2-DIPHENYLHYDRAZINE	MG_KG	N													
Newport_RA_SO_SVOCs	1,3-DICHLOROBENZENE	MG_KG	N													
Newport_RA_SO_SVOCs	1,4-DICHLOROBENZENE	MG_KG	N													
Newport_RA_SO_SVOCs	2,2'-OXYBIS(1-CHLOROPROPANE)	MG_KG	N													
Newport_RA_SO_SVOCs	2,4,5-TRICHLOROPHENOL	MG_KG	N													
Newport_RA_SO_SVOCs	2,4,6-TRICHLOROPHENOL	MG_KG	N													
Newport_RA_SO_SVOCs	2,4-DICHLOROPHENOL	MG_KG	N													
Newport_RA_SO_SVOCs	2,4-DIMETHYLPHENOL	MG_KG	N													
Newport_RA_SO_SVOCs	2,4-DINITROPHENOL	MG_KG	N													
Newport_RA_SO_SVOCs	2,4-DINITROTOLUENE	MG_KG	N													
Newport_RA_SO_SVOCs	2,6-DICHLOROPHENOL	MG_KG	N													
Newport_RA_SO_SVOCs	2,6-DINITROTOLUENE	MG_KG	N													
Newport_RA_SO_SVOCs	2-CHLORONAPHTHALENE	MG_KG	N	<0.023	U	<0.11	U	<0.024	U J6	<0.023	U	<0.023	U	<0.022	U	<0.023
Newport_RA_SO_SVOCs	2-CHLOROPHENOL	MG_KG	N													
Newport_RA_SO_SVOCs	2-METHYLNAPHTHALENE	MG_KG	N	<0.023	U	0.028	J	0.013	J, J6	0.011	J	0.0031	J	0.0034	J	<0.023
Newport_RA_SO_SVOCs	2-METHYLPHENOL	MG_KG	N													
Newport_RA_SO_SVOCs	2-NITROANILINE	MG_KG	N													
Newport_RA_SO_SVOCs	2-NITROPHENOL	MG_KG	N													
Newport_RA_SO_SVOCs	3- AND 4-METHYLPHENOL	MG_KG	N													
Newport_RA_SO_SVOCs	3,3-DICHLOROBENZIDINE	MG_KG	N													
Newport_RA_SO_SVOCs	3-NITROANILINE	MG_KG	N													
Newport_RA_SO_SVOCs	4,6-DINITRO-2-METHYLPHENOL	MG_KG	N													
Newport_RA_SO_SVOCs	4-BROMOPHENYL-PHENYLETHER	MG_KG	N													
Newport_RA_SO_SVOCs	4-CHLORO-3-METHYLPHENOL	MG_KG	N													
Newport_RA_SO_SVOCs	4-CHLOROANILINE	MG_KG	N													
Newport_RA_SO_SVOCs	4-CHLOROPHENYL-PHENYLETHER	MG_KG	N													
Newport_RA_SO_SVOCs	4-METHYLPHENOL	MG_KG	N													
Newport_RA_SO_SVOCs	4-NITROANILINE	MG_KG	N													
Newport_RA_SO_SVOCs	4-NITROPHENOL	MG_KG	N													
Newport_RA_SO_SVOCs	ACENAPHTHENE	MG_KG	N	<0.0070	U	0.21	J6	0.1	J6, J3	0.027		0.025		0.0044	J	<0.0069
Newport_RA_SO_SVOCs	ACENAPHTHYLENE	MG_KG	N	<0.0070	U	<0.034	U	0.012	J6	0.0089		0.01		0.0091		0.00096
Newport_RA_SO_SVOCs	ACETOPHENONE	MG_KG	N													
Newport_RA_SO_SVOCs	ANTHRACENE	MG_KG	N	<0.0070	U	0.45	V	0.14	J6, J3	0.054		0.053		0.019		0.00089
Newport_RA_SO_SVOCs	ATRAZINE	MG_KG	N													
Newport_RA_SO_SVOCs	BENZALDEHYDE	MG_KG	N													

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	MRP1-PES-SW2-02		MRP1-PES-SW3-02		MRP1-PES-SW4-01		MRP1-PES-SW5-01		MRP1-PES-SW6-01		MRP1-PES-SW7-02		MRP1-F
			Sample Date	4/24/2013		4/24/2013		4/25/2013		4/25/2013		4/25/2013		4/25/2013		4/2
			Sample ID	MRP1-PES-SW2-02		MRP1-PES-SW3-02		MRP1-PES-SW4-01		MRP1-PES-SW5-01		MRP1-PES-SW6-01		MRP1-PES-SW7-02		MRP1-F
			Sample Type	N		N		N		N		N		N		
			start_depth	2		2		1		1		1		2		
			end_depth	2		2		1		1		1		2		
			depth_unit	FT		FT		FT		FT		FT		FT		
			depth_interval	2 - 2 ft		2 - 2 ft		1 - 1 ft		1 - 1 ft		1 - 1 ft		2 - 2 ft		2
			task_code	MRP01 PostEx		MRP01 PostEx		MRP01 PostEx		MRP01 PostEx		MRP01 PostEx		MRP01 PostEx		MRP
			validated_yn	Y		Y		Y		Y		Y		Y		
method_analyte_group	Chemical	Unit	Fraction	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result
Newport_RA_SO_SVOCs	BENZIDINE	MG_KG	N													
Newport_RA_SO_SVOCs	BENZO[A]ANTHRACENE	MG_KG	N	<0.0070	U	0.89	V	0.79	V, J3	0.27		0.24		0.052		0.01
Newport_RA_SO_SVOCs	BENZO[A]PYRENE	MG_KG	N	<0.0070	U	0.77	V	1	V, J3	0.35		0.28		0.071		0.012
Newport_RA_SO_SVOCs	BENZO[B]FLUORANTHENE	MG_KG	N	<0.0070	U	0.97	V	1.1	V, J3	0.36		0.38		0.12		0.015
Newport_RA_SO_SVOCs	BENZO[G,H,I]PERYLENE	MG_KG	N	<0.0070	U	0.55	V	0.7	V, J3	0.23		0.21		0.075		0.0086
Newport_RA_SO_SVOCs	BENZO[K]FLUORANTHENE	MG_KG	N	<0.0070	U	0.33	J6	0.3	J6, J3	0.12		0.12		0.036		0.0051
Newport_RA_SO_SVOCs	BENZOIC ACID	MG_KG	N													
Newport_RA_SO_SVOCs	BENZYL ALCOHOL	MG_KG	N													
Newport_RA_SO_SVOCs	BIS(2-CHLOROETHOXY)METHANE	MG_KG	N													
Newport_RA_SO_SVOCs	BIS(2-CHLOROETHYL)ETHER	MG_KG	N													
Newport_RA_SO_SVOCs	BIS(2-ETHYLHEXYL)PHTHALATE	MG_KG	N													
Newport_RA_SO_SVOCs	BUTYLBENZYLPHTHALATE	MG_KG	N													
Newport_RA_SO_SVOCs	CAPROLACTAM	MG_KG	N													
Newport_RA_SO_SVOCs	CARBAZOLE	MG_KG	N													
Newport_RA_SO_SVOCs	CHRYSENE	MG_KG	N	<0.0070	U	0.87	V	0.72	V, J3	0.3		0.25		0.079		0.011
Newport_RA_SO_SVOCs	DIBENZ[A,H]ANTHRACENE	MG_KG	N	<0.0070	U	0.17	J6	0.17	J6, J3	0.054		0.045		0.016		0.0021
Newport_RA_SO_SVOCs	DIBENZOFURAN	MG_KG	N													
Newport_RA_SO_SVOCs	DIETHYLPHTHALATE	MG_KG	N													
Newport_RA_SO_SVOCs	DIMETHYL PHTHALATE	MG_KG	N													
Newport_RA_SO_SVOCs	DI-N-BUTYLPHTHALATE	MG_KG	N													
Newport_RA_SO_SVOCs	DI-N-OCTYLPHTHALATE	MG_KG	N													
Newport_RA_SO_SVOCs	FLUORANTHENE	MG_KG	N	<0.0070	U	2.2	V	1.2	V, J3	0.48		0.44		0.1		0.013
Newport_RA_SO_SVOCs	FLUORENE	MG_KG	N	<0.0070	U	0.2	J6	0.068	J6	0.02		0.016		0.0036	J	<0.0069
Newport_RA_SO_SVOCs	HEXACHLOROBENZENE	MG_KG	N													
Newport_RA_SO_SVOCs	HEXACHLOROBUTADIENE	MG_KG	N													
Newport_RA_SO_SVOCs	HEXACHLOROCYCLOPENTADIENE	MG_KG	N													
Newport_RA_SO_SVOCs	HEXACHLOROETHANE	MG_KG	N													
Newport_RA_SO_SVOCs	HPAH, TOTAL	MG_KG	N													
Newport_RA_SO_SVOCs	INDENO[1,2,3-CD]PYRENE	MG_KG	N	<0.0070	U	0.45	V	0.56	V, J3	0.18		0.17		0.061		0.0071
Newport_RA_SO_SVOCs	ISOPHORONE	MG_KG	N													
Newport_RA_SO_SVOCs	LPAH, TOTAL	MG_KG	N													
Newport_RA_SO_SVOCs	NAPHTHALENE	MG_KG	N	<0.023	U	<0.11	U	0.018	J, J6	0.012	J	0.0064	J	0.0039	J	<0.023
Newport_RA_SO_SVOCs	NITROBENZENE	MG_KG	N													
Newport_RA_SO_SVOCs	N-NITROSODIMETHYLAMINE	MG_KG	N													
Newport_RA_SO_SVOCs	N-NITROSODINPROPYLAMINE	MG_KG	N													
Newport_RA_SO_SVOCs	N-NITROSODIPHENYLAMINE	MG_KG	N													
Newport_RA_SO_SVOCs	N-NITROSOPYRROLIDINE	MG_KG	N													
Newport_RA_SO_SVOCs	PAH, TOTAL	MG_KG	N													
Newport_RA_SO_SVOCs	PENTACHLOROPHENOL	MG_KG	N													
Newport_RA_SO_SVOCs	PHENANTHRENE	MG_KG	N	<0.0070	U	1.8	V	0.7	V, J3	0.25		0.18		0.033		0.0046
Newport_RA_SO_SVOCs	PHENOL	MG_KG	N													
Newport_RA_SO_SVOCs	PYRENE	MG_KG	N	<0.0070	U	1.7	V	1	V, J3	0.4		0.43		0.098		0.014
Newport_RA_SO_VOCs	1,1,1,2-TETRACHLOROETHANE	MG_KG	N													
Newport_RA_SO_VOCs	1,1,1-TRICHLOROETHANE	MG_KG	N													
Newport_RA_SO_VOCs	1,1,2,2-TETRACHLOROETHANE	MG_KG	N													
Newport_RA_SO_VOCs	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	MG_KG	N													
Newport_RA_SO_VOCs	1,1,2-TRICHLOROETHANE	MG_KG	N													
Newport_RA_SO_VOCs	1,1-DICHLOROETHANE	MG_KG	N													
Newport_RA_SO_VOCs	1,1-DICHLOROETHENE	MG_KG	N													
Newport_RA_SO_VOCs	1,1-DICHLOROPROPENE	MG_KG	N													
Newport_RA_SO_VOCs	1,2,3-TRICHLOROBENZENE	MG_KG	N													
Newport_RA_SO_VOCs	1,2,3-TRICHLOROPROPANE	MG_KG	N													
Newport_RA_SO_VOCs	1,2,4-TRICHLOROBENZENE	MG_KG	N													
Newport_RA_SO_VOCs	1,2,4-TRIMETHYLBENZENE	MG_KG	N													
Newport_RA_SO_VOCs	1,2-DIBROMO-3-CHLOROPROPANE	MG_KG	N													
Newport_RA_SO_VOCs	1,2-DIBROMOETHANE	MG_KG	N													
Newport_RA_SO_VOCs	1,2-DICHLOROBENZENE	MG_KG	N													
Newport_RA_SO_VOCs	1,2-DICHLOROETHANE	MG_KG	N													
Newport_RA_SO_VOCs	1,2-DICHLOROETHENE, TOTAL	MG_KG	N													
Newport_RA_SO_VOCs	1,2-DICHLOROPROPANE	MG_KG	N													
Newport_RA_SO_VOCs	1,3,5-TRIMETHYLBENZENE	MG_KG	N													
Newport_RA_SO_VOCs	1,3-DICHLOROBENZENE	MG_KG	N													
Newport_RA_SO_VOCs	1,3-DICHLOROPROPANE	MG_KG	N													
Newport_RA_SO_VOCs	1,4-DICHLOROBENZENE	MG_KG	N													
Newport_RA_SO_VOCs	2,2-DICHLOROPROPANE	MG_KG	N													
Newport_RA_SO_VOCs	2-BUTANONE	MG_KG	N													

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	MRP1-PES-SW2-02		MRP1-PES-SW3-02		MRP1-PES-SW4-01		MRP1-PES-SW5-01		MRP1-PES-SW6-01		MRP1-PES-SW7-02		MRP1-F
			Sample Date	4/24/2013		4/24/2013		4/25/2013		4/25/2013		4/25/2013		4/25/2013		4/2
			Sample ID	MRP1-PES-SW2-02		MRP1-PES-SW3-02		MRP1-PES-SW4-01		MRP1-PES-SW5-01		MRP1-PES-SW6-01		MRP1-PES-SW7-02		MRP1-F
			Sample Type	N		N		N		N		N		N		
			start_depth	2		2		1		1		1		2		
			end_depth	2		2		1		1		1		2		
			depth_unit	FT		FT		FT		FT		FT		FT		
			depth_interval	2 - 2 ft		2 - 2 ft		1 - 1 ft		1 - 1 ft		1 - 1 ft		2 - 2 ft		2
			task_code	MRP01 PostEx		MRP01 PostEx		MRP01 PostEx		MRP01 PostEx		MRP01 PostEx		MRP01 PostEx		MRP
			validated_yn	Y		Y		Y		Y		Y		Y		
method_analyte_group	Chemical	Unit	Fraction	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result
Newport_RA_SO_VOCs	2-CHLOROTOLUENE	MG_KG	N													
Newport_RA_SO_VOCs	2-HEXANONE	MG_KG	N													
Newport_RA_SO_VOCs	4-CHLOROTOLUENE	MG_KG	N													
Newport_RA_SO_VOCs	4-ISOPROPYLTOLUENE	MG_KG	N													
Newport_RA_SO_VOCs	4-METHYL-2-PENTANONE	MG_KG	N													
Newport_RA_SO_VOCs	ACETONE	MG_KG	N													
Newport_RA_SO_VOCs	BENZENE	MG_KG	N													
Newport_RA_SO_VOCs	BROMOBENZENE	MG_KG	N													
Newport_RA_SO_VOCs	BROMOCHLOROMETHANE	MG_KG	N													
Newport_RA_SO_VOCs	BROMODICHLOROMETHANE	MG_KG	N													
Newport_RA_SO_VOCs	BROMOFORM	MG_KG	N													
Newport_RA_SO_VOCs	BROMOMETHANE	MG_KG	N													
Newport_RA_SO_VOCs	CARBON DISULFIDE	MG_KG	N													
Newport_RA_SO_VOCs	CARBON TETRACHLORIDE	MG_KG	N													
Newport_RA_SO_VOCs	CHLOROBENZENE	MG_KG	N													
Newport_RA_SO_VOCs	CHLOROETHANE	MG_KG	N													
Newport_RA_SO_VOCs	CHLOROFORM	MG_KG	N													
Newport_RA_SO_VOCs	CHLOROMETHANE	MG_KG	N													
Newport_RA_SO_VOCs	CIS-1,2-DICHLOROETHENE	MG_KG	N													
Newport_RA_SO_VOCs	CIS-1,3-DICHLOROPROPENE	MG_KG	N													
Newport_RA_SO_VOCs	CYCLOHEXANE	MG_KG	N													
Newport_RA_SO_VOCs	DIBROMOCHLOROMETHANE	MG_KG	N													
Newport_RA_SO_VOCs	DIBROMOMETHANE	MG_KG	N													
Newport_RA_SO_VOCs	DICHLORODIFLUOROMETHANE	MG_KG	N													
Newport_RA_SO_VOCs	ETHYLBENZENE	MG_KG	N													
Newport_RA_SO_VOCs	HEXACHLOROBUTADIENE	MG_KG	N													
Newport_RA_SO_VOCs	ISOPROPYLBENZENE	MG_KG	N													
Newport_RA_SO_VOCs	M- AND P-XYLENE	MG_KG	N													
Newport_RA_SO_VOCs	METHYL ACETATE	MG_KG	N													
Newport_RA_SO_VOCs	METHYL CYCLOHEXANE	MG_KG	N													
Newport_RA_SO_VOCs	METHYL TERT-BUTYL ETHER	MG_KG	N													
Newport_RA_SO_VOCs	METHYLENE CHLORIDE	MG_KG	N													
Newport_RA_SO_VOCs	NAPHTHALENE	MG_KG	N													
Newport_RA_SO_VOCs	N-BUTYLBENZENE	MG_KG	N													
Newport_RA_SO_VOCs	O-XYLENE	MG_KG	N													
Newport_RA_SO_VOCs	PROPYLBENZENE	MG_KG	N													
Newport_RA_SO_VOCs	SEC-BUTYLBENZENE	MG_KG	N													
Newport_RA_SO_VOCs	STYRENE	MG_KG	N													
Newport_RA_SO_VOCs	TERT-BUTANOL	MG_KG	N													
Newport_RA_SO_VOCs	TERT-BUTYLBENZENE	MG_KG	N													
Newport_RA_SO_VOCs	TETRACHLOROETHENE	MG_KG	N													
Newport_RA_SO_VOCs	TOLUENE	MG_KG	N													
Newport_RA_SO_VOCs	TRANS-1,2-DICHLOROETHENE	MG_KG	N													
Newport_RA_SO_VOCs	TRANS-1,3-DICHLOROPROPENE	MG_KG	N													
Newport_RA_SO_VOCs	TRICHLOROETHENE	MG_KG	N													
Newport_RA_SO_VOCs	TRICHLOROFLUOROMETHANE	MG_KG	N													
Newport_RA_SO_VOCs	VINYL CHLORIDE	MG_KG	N													
Newport_RA_SO_VOCs	XYLENES, TOTAL	MG_KG	N													

Notes:
U or < - Non-detect at laboratory detection limit.
J - The compound was positively identified; however, the associated numerical value
is an estimated concentration only (+ and - indicate bias).
Sample Type - N = normal sample, FD = duplicate sample.
mg/kg - milligram per kilogram

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	PES-SW8-02
			Sample Date	5/2013
			Sample ID	PES-SW8-02
			Sample Type	N
			start_depth	2
			end_depth	2
			depth_unit	FT
			depth_interval	2 - 2 ft
			task_code	01 PostEx
			validated_yn	Y
method_analyte_group	Chemical	Unit	Fraction	interpreted_qualifiers
Newport_RA_SO_Energetics	2,4-DINITROTOLUENE	MG_KG	N	
Newport_RA_SO_Energetics	2,6-DINITROTOLUENE	MG_KG	N	
Newport_RA_SO_Energetics	NITROGLYCERIN	MG_KG	N	
Newport_RA_SO_Metals	ALUMINUM	MG_KG	N	
Newport_RA_SO_Metals	ANTIMONY	MG_KG	N	
Newport_RA_SO_Metals	ARSENIC	MG_KG	N	
Newport_RA_SO_Metals	BARIUM	MG_KG	N	
Newport_RA_SO_Metals	BERYLLIUM	MG_KG	N	
Newport_RA_SO_Metals	CADMIUM	MG_KG	N	
Newport_RA_SO_Metals	CALCIUM	MG_KG	N	
Newport_RA_SO_Metals	CHROMIUM VI	MG_KG	N	
Newport_RA_SO_Metals	CHROMIUM, TOTAL	MG_KG	N	
Newport_RA_SO_Metals	COBALT	MG_KG	N	
Newport_RA_SO_Metals	COPPER	MG_KG	N	
Newport_RA_SO_Metals	IRON	MG_KG	N	
Newport_RA_SO_Metals	IRON, FERROUS	MG_KG	N	
Newport_RA_SO_Metals	LEAD	MG_KG	N	
Newport_RA_SO_Metals	MAGNESIUM	MG_KG	N	
Newport_RA_SO_Metals	MANGANESE	MG_KG	N	
Newport_RA_SO_Metals	MERCURY	MG_KG	N	
Newport_RA_SO_Metals	NICKEL	MG_KG	N	
Newport_RA_SO_Metals	POTASSIUM	MG_KG	N	
Newport_RA_SO_Metals	SELENIUM	MG_KG	N	
Newport_RA_SO_Metals	SILVER	MG_KG	N	
Newport_RA_SO_Metals	SODIUM	MG_KG	N	
Newport_RA_SO_Metals	THALLIUM	MG_KG	N	
Newport_RA_SO_Metals	VANADIUM	MG_KG	N	
Newport_RA_SO_Metals	ZINC	MG_KG	N	
Newport_RA_SO_Other	DENSITY	G_CC	N	
Newport_RA_SO_Other	Pellet count	COUNT	N	
Newport_RA_SO_Other	Pellet weight	PCT	N	
Newport_RA_SO_Other	PERCENT FINES	PCT	N	
Newport_RA_SO_Other	PERCENT GRAVEL	PCT	N	
Newport_RA_SO_Other	PERCENT SAND	PCT	N	
Newport_RA_SO_Other	PERCENT SAND, COARSE	PCT	N	
Newport_RA_SO_Other	PERCENT SAND, FINE	PCT	N	
Newport_RA_SO_Other	PERCENT SAND, MEDIUM	PCT	N	
Newport_RA_SO_Other	PH	PH	N	
Newport_RA_SO_Other	POROSITY	PCT	N	
Newport_RA_SO_Other	SIEVE 1 INCH (25.4-MM)	PCT	N	
Newport_RA_SO_Other	SIEVE 1-1/2 INCH (37.5-MM)	PCT	N	
Newport_RA_SO_Other	SIEVE 2 INCH (50-MM)	PCT	N	
Newport_RA_SO_Other	SIEVE 3 INCH (75-MM)	PCT	N	
Newport_RA_SO_Other	SIEVE 3/4 INCH (19-MM)	PCT	N	
Newport_RA_SO_Other	SIEVE 3/8 INCH (9.5-MM)	PCT	N	
Newport_RA_SO_Other	SIEVE NO. 004 (4.75-MM)	PCT	N	
Newport_RA_SO_Other	SIEVE NO. 010 (2-MM)	PCT	N	
Newport_RA_SO_Other	SIEVE NO. 020 (850-UM)	PCT	N	
Newport_RA_SO_Other	SIEVE NO. 040 (425-UM)	PCT	N	
Newport_RA_SO_Other	SIEVE NO. 060 (250-UM)	PCT	N	
Newport_RA_SO_Other	SIEVE NO. 080 (180-UM)	PCT	N	
Newport_RA_SO_Other	SIEVE NO. 100 (150-UM)	PCT	N	
Newport_RA_SO_Other	SIEVE NO. 200 (75-UM)	PCT	N	
Newport_RA_SO_Other	SPECIFIC CONDUCTANCE	UMHO_CM	N	
Newport_RA_SO_Other	SPECIFIC GRAVITY	NONE	N	
Newport_RA_SO_Other	SULFIDE	MG_KG	N	
Newport_RA_SO_Other	TPH-DIESEL RANGE	MG_KG	N	
Newport_RA_SO_Other	TPH-TOTAL UNKNOWN GASOLINE RANGE ORGANICS	MG_KG	N	
Newport_RA_SO_Other	Void Ratio	NONE	N	
Newport_RA_SO_PCBs	AROCLOR-1016	MG_KG	N	
Newport_RA_SO_PCBs	AROCLOR-1221	MG_KG	N	
Newport_RA_SO_PCBs	AROCLOR-1232	MG_KG	N	
Newport_RA_SO_PCBs	AROCLOR-1242	MG_KG	N	
Newport_RA_SO_PCBs	AROCLOR-1248	MG_KG	N	
Newport_RA_SO_PCBs	AROCLOR-1254	MG_KG	N	
Newport_RA_SO_PCBs	AROCLOR-1260	MG_KG	N	

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	PES-SW8-02
			Sample Date	5/2013
			Sample ID	PES-SW8-02
			Sample Type	N
			start_depth	2
			end_depth	2
			depth_unit	FT
			depth_interval	- 2 ft
			task_code	01 PostEx
			validated_yn	Y
method_analyte_group	Chemical	Unit	Fraction	interpreted_qualifiers
Newport_RA_SO_PCBs	AROCLOR-1262	MG_KG	N	
Newport_RA_SO_PCBs	AROCLOR-1268	MG_KG	N	
Newport_RA_SO_PCBs	PCB, TOTAL	MG_KG	N	
Newport_RA_SO_PCBs	POLYCHLORINATED BIPHENYLS (PCBS)	MG_KG	N	
Newport_RA_SO_Pesticides	4,4-DDD	MG_KG	N	
Newport_RA_SO_Pesticides	4,4-DDE	MG_KG	N	
Newport_RA_SO_Pesticides	4,4-DDT	MG_KG	N	
Newport_RA_SO_Pesticides	ALDRIN	MG_KG	N	
Newport_RA_SO_Pesticides	ALPHA-BHC	MG_KG	N	
Newport_RA_SO_Pesticides	ALPHA-CHLORDANE	MG_KG	N	
Newport_RA_SO_Pesticides	BETA-BHC	MG_KG	N	
Newport_RA_SO_Pesticides	DDT, TOTAL	MG_KG	N	
Newport_RA_SO_Pesticides	DELTA-BHC	MG_KG	N	
Newport_RA_SO_Pesticides	DIELDRIN	MG_KG	N	
Newport_RA_SO_Pesticides	ENDOSULFAN I	MG_KG	N	
Newport_RA_SO_Pesticides	ENDOSULFAN II	MG_KG	N	
Newport_RA_SO_Pesticides	ENDOSULFAN SULFATE	MG_KG	N	
Newport_RA_SO_Pesticides	ENDRIN	MG_KG	N	
Newport_RA_SO_Pesticides	ENDRIN ALDEHYDE	MG_KG	N	
Newport_RA_SO_Pesticides	ENDRIN KETONE	MG_KG	N	
Newport_RA_SO_Pesticides	GAMMA-CHLORDANE	MG_KG	N	
Newport_RA_SO_Pesticides	HEPTACHLOR	MG_KG	N	
Newport_RA_SO_Pesticides	HEPTACHLOR EPOXIDE	MG_KG	N	
Newport_RA_SO_Pesticides	LINDANE	MG_KG	N	
Newport_RA_SO_Pesticides	METHOXYCHLOR	MG_KG	N	
Newport_RA_SO_Pesticides	TOXAPHENE	MG_KG	N	
Newport_RA_SO_Pesticides	TRANS-CHLORDANE	MG_KG	N	
Newport_RA_SO_SVOCs	1,1-BIPHENYL	MG_KG	N	
Newport_RA_SO_SVOCs	1-METHYLNAPHTHALENE	MG_KG	N	U
Newport_RA_SO_SVOCs	1,2,4-TRICHLOROBENZENE	MG_KG	N	
Newport_RA_SO_SVOCs	1,2-DICHLOROBENZENE	MG_KG	N	
Newport_RA_SO_SVOCs	1,2-DIPHENYLHYDRAZINE	MG_KG	N	
Newport_RA_SO_SVOCs	1,3-DICHLOROBENZENE	MG_KG	N	
Newport_RA_SO_SVOCs	1,4-DICHLOROBENZENE	MG_KG	N	
Newport_RA_SO_SVOCs	2,2'-OXYBIS(1-CHLOROPROPANE)	MG_KG	N	
Newport_RA_SO_SVOCs	2,4,5-TRICHLOROPHENOL	MG_KG	N	
Newport_RA_SO_SVOCs	2,4,6-TRICHLOROPHENOL	MG_KG	N	
Newport_RA_SO_SVOCs	2,4-DICHLOROPHENOL	MG_KG	N	
Newport_RA_SO_SVOCs	2,4-DIMETHYLPHENOL	MG_KG	N	
Newport_RA_SO_SVOCs	2,4-DINITROPHENOL	MG_KG	N	
Newport_RA_SO_SVOCs	2,4-DINITROTOLUENE	MG_KG	N	
Newport_RA_SO_SVOCs	2,6-DICHLOROPHENOL	MG_KG	N	
Newport_RA_SO_SVOCs	2,6-DINITROTOLUENE	MG_KG	N	
Newport_RA_SO_SVOCs	2-CHLORONAPHTHALENE	MG_KG	N	U
Newport_RA_SO_SVOCs	2-CHLOROPHENOL	MG_KG	N	
Newport_RA_SO_SVOCs	2-METHYLNAPHTHALENE	MG_KG	N	U
Newport_RA_SO_SVOCs	2-METHYLPHENOL	MG_KG	N	
Newport_RA_SO_SVOCs	2-NITROANILINE	MG_KG	N	
Newport_RA_SO_SVOCs	2-NITROPHENOL	MG_KG	N	
Newport_RA_SO_SVOCs	3- AND 4-METHYLPHENOL	MG_KG	N	
Newport_RA_SO_SVOCs	3,3-DICHLOROBENZIDINE	MG_KG	N	
Newport_RA_SO_SVOCs	3-NITROANILINE	MG_KG	N	
Newport_RA_SO_SVOCs	4,6-DINITRO-2-METHYLPHENOL	MG_KG	N	
Newport_RA_SO_SVOCs	4-BROMOPHENYL-PHENYLETHER	MG_KG	N	
Newport_RA_SO_SVOCs	4-CHLORO-3-METHYLPHENOL	MG_KG	N	
Newport_RA_SO_SVOCs	4-CHLOROANILINE	MG_KG	N	
Newport_RA_SO_SVOCs	4-CHLOROPHENYL-PHENYLETHER	MG_KG	N	
Newport_RA_SO_SVOCs	4-METHYLPHENOL	MG_KG	N	
Newport_RA_SO_SVOCs	4-NITROANILINE	MG_KG	N	
Newport_RA_SO_SVOCs	4-NITROPHENOL	MG_KG	N	
Newport_RA_SO_SVOCs	ACENAPHTHENE	MG_KG	N	U
Newport_RA_SO_SVOCs	ACENAPHTHYLENE	MG_KG	N	J
Newport_RA_SO_SVOCs	ACETOPHENONE	MG_KG	N	
Newport_RA_SO_SVOCs	ANTHRACENE	MG_KG	N	J
Newport_RA_SO_SVOCs	ATRAZINE	MG_KG	N	
Newport_RA_SO_SVOCs	BENZALDEHYDE	MG_KG	N	

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	PES-SW8-02
			Sample Date	5/2013
			Sample ID	PES-SW8-02
			Sample Type	N
			start_depth	2
			end_depth	2
			depth_unit	FT
			depth_interval	2 ft
			task_code	01 PostEx
			validated_yn	Y
method_analyte_group	Chemical	Unit	Fraction	interpreted_qualifiers
Newport_RA_SO_SVOCs	BENZIDINE	MG_KG	N	
Newport_RA_SO_SVOCs	BENZO[A]ANTHRACENE	MG_KG	N	
Newport_RA_SO_SVOCs	BENZO[A]PYRENE	MG_KG	N	
Newport_RA_SO_SVOCs	BENZO[B]FLUORANTHENE	MG_KG	N	
Newport_RA_SO_SVOCs	BENZO[G,H,I]PERYLENE	MG_KG	N	
Newport_RA_SO_SVOCs	BENZO[K]FLUORANTHENE	MG_KG	N	J
Newport_RA_SO_SVOCs	BENZOIC ACID	MG_KG	N	
Newport_RA_SO_SVOCs	BENZYL ALCOHOL	MG_KG	N	
Newport_RA_SO_SVOCs	BIS(2-CHLOROETHOXY)METHANE	MG_KG	N	
Newport_RA_SO_SVOCs	BIS(2-CHLOROETHYL)ETHER	MG_KG	N	
Newport_RA_SO_SVOCs	BIS(2-ETHYLHEXYL)PHTHALATE	MG_KG	N	
Newport_RA_SO_SVOCs	BUTYLBENZYLPHTHALATE	MG_KG	N	
Newport_RA_SO_SVOCs	CAPROLACTAM	MG_KG	N	
Newport_RA_SO_SVOCs	CARBAZOLE	MG_KG	N	
Newport_RA_SO_SVOCs	CHRYSENE	MG_KG	N	
Newport_RA_SO_SVOCs	DIBENZ[A,H]ANTHRACENE	MG_KG	N	J
Newport_RA_SO_SVOCs	DIBENZOFURAN	MG_KG	N	
Newport_RA_SO_SVOCs	DIETHYLPHTHALATE	MG_KG	N	
Newport_RA_SO_SVOCs	DIMETHYL PHTHALATE	MG_KG	N	
Newport_RA_SO_SVOCs	DI-N-BUTYLPHTHALATE	MG_KG	N	
Newport_RA_SO_SVOCs	DI-N-OCTYLPHTHALATE	MG_KG	N	
Newport_RA_SO_SVOCs	FLUORANTHENE	MG_KG	N	
Newport_RA_SO_SVOCs	FLUORENE	MG_KG	N	U
Newport_RA_SO_SVOCs	HEXACHLOROBENZENE	MG_KG	N	
Newport_RA_SO_SVOCs	HEXACHLOROBUTADIENE	MG_KG	N	
Newport_RA_SO_SVOCs	HEXACHLOROCYCLOPENTADIENE	MG_KG	N	
Newport_RA_SO_SVOCs	HEXACHLOROETHANE	MG_KG	N	
Newport_RA_SO_SVOCs	HPAH, TOTAL	MG_KG	N	
Newport_RA_SO_SVOCs	INDENO[1,2,3-CD]PYRENE	MG_KG	N	
Newport_RA_SO_SVOCs	ISOPHORONE	MG_KG	N	
Newport_RA_SO_SVOCs	LPAH, TOTAL	MG_KG	N	
Newport_RA_SO_SVOCs	NAPHTHALENE	MG_KG	N	U
Newport_RA_SO_SVOCs	NITROBENZENE	MG_KG	N	
Newport_RA_SO_SVOCs	N-NITROSODIMETHYLAMINE	MG_KG	N	
Newport_RA_SO_SVOCs	N-NITROSODINPROPYLAMINE	MG_KG	N	
Newport_RA_SO_SVOCs	N-NITROSODIPHENYLAMINE	MG_KG	N	
Newport_RA_SO_SVOCs	N-NITROSOPYRROLIDINE	MG_KG	N	
Newport_RA_SO_SVOCs	PAH, TOTAL	MG_KG	N	
Newport_RA_SO_SVOCs	PENTACHLOROPHENOL	MG_KG	N	
Newport_RA_SO_SVOCs	PHENANTHRENE	MG_KG	N	J
Newport_RA_SO_SVOCs	PHENOL	MG_KG	N	
Newport_RA_SO_SVOCs	PYRENE	MG_KG	N	
Newport_RA_SO_VOCs	1,1,1,2-TETRACHLOROETHANE	MG_KG	N	
Newport_RA_SO_VOCs	1,1,1-TRICHLOROETHANE	MG_KG	N	
Newport_RA_SO_VOCs	1,1,2,2-TETRACHLOROETHANE	MG_KG	N	
Newport_RA_SO_VOCs	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	MG_KG	N	
Newport_RA_SO_VOCs	1,1,2-TRICHLOROETHANE	MG_KG	N	
Newport_RA_SO_VOCs	1,1-DICHLOROETHANE	MG_KG	N	
Newport_RA_SO_VOCs	1,1-DICHLOROETHENE	MG_KG	N	
Newport_RA_SO_VOCs	1,1-DICHLOROPROPENE	MG_KG	N	
Newport_RA_SO_VOCs	1,2,3-TRICHLOROBENZENE	MG_KG	N	
Newport_RA_SO_VOCs	1,2,3-TRICHLOROPROPANE	MG_KG	N	
Newport_RA_SO_VOCs	1,2,4-TRICHLOROBENZENE	MG_KG	N	
Newport_RA_SO_VOCs	1,2,4-TRIMETHYLBENZENE	MG_KG	N	
Newport_RA_SO_VOCs	1,2-DIBROMO-3-CHLOROPROPANE	MG_KG	N	
Newport_RA_SO_VOCs	1,2-DIBROMOETHANE	MG_KG	N	
Newport_RA_SO_VOCs	1,2-DICHLOROBENZENE	MG_KG	N	
Newport_RA_SO_VOCs	1,2-DICHLOROETHANE	MG_KG	N	
Newport_RA_SO_VOCs	1,2-DICHLOROETHENE, TOTAL	MG_KG	N	
Newport_RA_SO_VOCs	1,2-DICHLOROPROPANE	MG_KG	N	
Newport_RA_SO_VOCs	1,3,5-TRIMETHYLBENZENE	MG_KG	N	
Newport_RA_SO_VOCs	1,3-DICHLOROBENZENE	MG_KG	N	
Newport_RA_SO_VOCs	1,3-DICHLOROPROPANE	MG_KG	N	
Newport_RA_SO_VOCs	1,4-DICHLOROBENZENE	MG_KG	N	
Newport_RA_SO_VOCs	2,2-DICHLOROPROPANE	MG_KG	N	
Newport_RA_SO_VOCs	2-BUTANONE	MG_KG	N	

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	PES-SW8-02
			Sample Date	5/2013
			Sample ID	PES-SW8-02
			Sample Type	N
			start_depth	2
			end_depth	2
			depth_unit	FT
			depth_interval	2 ft
			task_code	01 PostEx
			validated_yn	Y
method_analyte_group	Chemical	Unit	Fraction	interpreted_qualifiers
Newport_RA_SO_VOCs	2-CHLOROTOLUENE	MG_KG	N	
Newport_RA_SO_VOCs	2-HEXANONE	MG_KG	N	
Newport_RA_SO_VOCs	4-CHLOROTOLUENE	MG_KG	N	
Newport_RA_SO_VOCs	4-ISOPROPYLTOLUENE	MG_KG	N	
Newport_RA_SO_VOCs	4-METHYL-2-PENTANONE	MG_KG	N	
Newport_RA_SO_VOCs	ACETONE	MG_KG	N	
Newport_RA_SO_VOCs	BENZENE	MG_KG	N	
Newport_RA_SO_VOCs	BROMOBENZENE	MG_KG	N	
Newport_RA_SO_VOCs	BROMOCHLOROMETHANE	MG_KG	N	
Newport_RA_SO_VOCs	BROMODICHLOROMETHANE	MG_KG	N	
Newport_RA_SO_VOCs	BROMOFORM	MG_KG	N	
Newport_RA_SO_VOCs	BROMOMETHANE	MG_KG	N	
Newport_RA_SO_VOCs	CARBON DISULFIDE	MG_KG	N	
Newport_RA_SO_VOCs	CARBON TETRACHLORIDE	MG_KG	N	
Newport_RA_SO_VOCs	CHLOROBENZENE	MG_KG	N	
Newport_RA_SO_VOCs	CHLOROETHANE	MG_KG	N	
Newport_RA_SO_VOCs	CHLOROFORM	MG_KG	N	
Newport_RA_SO_VOCs	CHLOROMETHANE	MG_KG	N	
Newport_RA_SO_VOCs	CIS-1,2-DICHLOROETHENE	MG_KG	N	
Newport_RA_SO_VOCs	CIS-1,3-DICHLOROPROPENE	MG_KG	N	
Newport_RA_SO_VOCs	CYCLOHEXANE	MG_KG	N	
Newport_RA_SO_VOCs	DIBROMOCHLOROMETHANE	MG_KG	N	
Newport_RA_SO_VOCs	DIBROMOMETHANE	MG_KG	N	
Newport_RA_SO_VOCs	DICHLORODIFLUOROMETHANE	MG_KG	N	
Newport_RA_SO_VOCs	ETHYLBENZENE	MG_KG	N	
Newport_RA_SO_VOCs	HEXACHLOROBUTADIENE	MG_KG	N	
Newport_RA_SO_VOCs	ISOPROPYLBENZENE	MG_KG	N	
Newport_RA_SO_VOCs	M- AND P-XYLENE	MG_KG	N	
Newport_RA_SO_VOCs	METHYL ACETATE	MG_KG	N	
Newport_RA_SO_VOCs	METHYL CYCLOHEXANE	MG_KG	N	
Newport_RA_SO_VOCs	METHYL TERT-BUTYL ETHER	MG_KG	N	
Newport_RA_SO_VOCs	METHYLENE CHLORIDE	MG_KG	N	
Newport_RA_SO_VOCs	NAPHTHALENE	MG_KG	N	
Newport_RA_SO_VOCs	N-BUTYLBENZENE	MG_KG	N	
Newport_RA_SO_VOCs	O-XYLENE	MG_KG	N	
Newport_RA_SO_VOCs	PROPYLBENZENE	MG_KG	N	
Newport_RA_SO_VOCs	SEC-BUTYLBENZENE	MG_KG	N	
Newport_RA_SO_VOCs	STYRENE	MG_KG	N	
Newport_RA_SO_VOCs	TERT-BUTANOL	MG_KG	N	
Newport_RA_SO_VOCs	TERT-BUTYLBENZENE	MG_KG	N	
Newport_RA_SO_VOCs	TETRACHLOROETHENE	MG_KG	N	
Newport_RA_SO_VOCs	TOLUENE	MG_KG	N	
Newport_RA_SO_VOCs	TRANS-1,2-DICHLOROETHENE	MG_KG	N	
Newport_RA_SO_VOCs	TRANS-1,3-DICHLOROPROPENE	MG_KG	N	
Newport_RA_SO_VOCs	TRICHLOROETHENE	MG_KG	N	
Newport_RA_SO_VOCs	TRICHLOROFLUOROMETHANE	MG_KG	N	
Newport_RA_SO_VOCs	VINYL CHLORIDE	MG_KG	N	
Newport_RA_SO_VOCs	XYLENES, TOTAL	MG_KG	N	

Notes:
U or < - Non-detect at laboratory detection limit.
J - The compound was positively identified; however, the associated numerical value is an estimated concentration only (+ and - indicate bias).
Sample Type - N = normal sample, FD = duplicate sample.
mg/kg - milligram per kilogram

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	MRP1-PES-SW9-02		MW-01D		MW-11	
			Sample Date	4/26/2013		12/4/2013		12/3/2013	
			Sample ID	MRP1-PES-SW9-02		OU09 SBMW01D 0810		OU09 SBMW11 0810	
			Sample Type	N		N		N	
			start_depth	2		8		8	
			end_depth	2		10		10	
			depth_unit	FT		FT		FT	
			depth_interval	2 - 2 ft		8 - 10 ft		8 - 10 ft	
			task_code	MRP01 PostEx		MRP01_RI_SO		MRP01_RI_SO	
			validated_yn	Y		Y		Y	
method_analyte_group	Chemical	Unit	Fraction	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers
Newport_RA_SO_Energetics	2,4-DINITROTOLUENE	MG_KG	N						
Newport_RA_SO_Energetics	2,6-DINITROTOLUENE	MG_KG	N						
Newport_RA_SO_Energetics	NITROGLYCERIN	MG_KG	N						
Newport_RA_SO_Metals	ALUMINUM	MG_KG	N						
Newport_RA_SO_Metals	ANTIMONY	MG_KG	N						
Newport_RA_SO_Metals	ARSENIC	MG_KG	N	10					
Newport_RA_SO_Metals	BARIUM	MG_KG	N						
Newport_RA_SO_Metals	BERYLLIUM	MG_KG	N						
Newport_RA_SO_Metals	CADMIUM	MG_KG	N						
Newport_RA_SO_Metals	CALCIUM	MG_KG	N						
Newport_RA_SO_Metals	CHROMIUM VI	MG_KG	N			< 0.33	U	< 0.32	U
Newport_RA_SO_Metals	CHROMIUM, TOTAL	MG_KG	N	12					
Newport_RA_SO_Metals	COBALT	MG_KG	N						
Newport_RA_SO_Metals	COPPER	MG_KG	N						
Newport_RA_SO_Metals	IRON	MG_KG	N						
Newport_RA_SO_Metals	IRON, FERROUS	MG_KG	N						
Newport_RA_SO_Metals	LEAD	MG_KG	N	22					
Newport_RA_SO_Metals	MAGNESIUM	MG_KG	N						
Newport_RA_SO_Metals	MANGANESE	MG_KG	N						
Newport_RA_SO_Metals	MERCURY	MG_KG	N						
Newport_RA_SO_Metals	NICKEL	MG_KG	N						
Newport_RA_SO_Metals	POTASSIUM	MG_KG	N						
Newport_RA_SO_Metals	SELENIUM	MG_KG	N						
Newport_RA_SO_Metals	SILVER	MG_KG	N						
Newport_RA_SO_Metals	SODIUM	MG_KG	N						
Newport_RA_SO_Metals	THALLIUM	MG_KG	N						
Newport_RA_SO_Metals	VANADIUM	MG_KG	N						
Newport_RA_SO_Metals	ZINC	MG_KG	N						
Newport_RA_SO_Other	DENSITY	G_CC	N						
Newport_RA_SO_Other	Pellet count	COUNT	N						
Newport_RA_SO_Other	Pellet weight	PCT	N						
Newport_RA_SO_Other	PERCENT FINES	PCT	N						
Newport_RA_SO_Other	PERCENT GRAVEL	PCT	N						
Newport_RA_SO_Other	PERCENT SAND	PCT	N						
Newport_RA_SO_Other	PERCENT SAND, COARSE	PCT	N						
Newport_RA_SO_Other	PERCENT SAND, FINE	PCT	N						
Newport_RA_SO_Other	PERCENT SAND, MEDIUM	PCT	N						
Newport_RA_SO_Other	PH	PH	N						
Newport_RA_SO_Other	POROSITY	PCT	N						
Newport_RA_SO_Other	SIEVE 1 INCH (25.4-MM)	PCT	N						
Newport_RA_SO_Other	SIEVE 1-1/2 INCH (37.5-MM)	PCT	N						
Newport_RA_SO_Other	SIEVE 2 INCH (50-MM)	PCT	N						
Newport_RA_SO_Other	SIEVE 3 INCH (75-MM)	PCT	N						
Newport_RA_SO_Other	SIEVE 3/4 INCH (19-MM)	PCT	N						
Newport_RA_SO_Other	SIEVE 3/8 INCH (9.5-MM)	PCT	N						
Newport_RA_SO_Other	SIEVE NO. 004 (4.75-MM)	PCT	N						
Newport_RA_SO_Other	SIEVE NO. 010 (2-MM)	PCT	N						
Newport_RA_SO_Other	SIEVE NO. 020 (850-UM)	PCT	N						
Newport_RA_SO_Other	SIEVE NO. 040 (425-UM)	PCT	N						
Newport_RA_SO_Other	SIEVE NO. 060 (250-UM)	PCT	N						
Newport_RA_SO_Other	SIEVE NO. 080 (180-UM)	PCT	N						
Newport_RA_SO_Other	SIEVE NO. 100 (150-UM)	PCT	N						
Newport_RA_SO_Other	SIEVE NO. 200 (75-UM)	PCT	N						
Newport_RA_SO_Other	SPECIFIC CONDUCTANCE	UMHO_CM	N						
Newport_RA_SO_Other	SPECIFIC GRAVITY	NONE	N						
Newport_RA_SO_Other	SULFIDE	MG_KG	N						
Newport_RA_SO_Other	TPH-DIESEL RANGE	MG_KG	N						
Newport_RA_SO_Other	TPH-TOTAL UNKNOWN GASOLINE RANGE ORGANICS	MG_KG	N						
Newport_RA_SO_Other	Void Ratio	NONE	N						
Newport_RA_SO_PCBs	AROCLOR-1016	MG_KG	N						
Newport_RA_SO_PCBs	AROCLOR-1221	MG_KG	N						
Newport_RA_SO_PCBs	AROCLOR-1232	MG_KG	N						
Newport_RA_SO_PCBs	AROCLOR-1242	MG_KG	N						
Newport_RA_SO_PCBs	AROCLOR-1248	MG_KG	N						
Newport_RA_SO_PCBs	AROCLOR-1254	MG_KG	N						
Newport_RA_SO_PCBs	AROCLOR-1260	MG_KG	N						

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	MRP1-PES-SW9-02		MW-01D		MW-11	
			Sample Date	4/26/2013		12/4/2013		12/3/2013	
			Sample ID	MRP1-PES-SW9-02		OU09 SBMW01D 0810		OU09 SBMW11 0810	
			Sample Type	N		N		N	
			start_depth	2		8		8	
			end_depth	2		10		10	
			depth_unit	FT		FT		FT	
			depth_interval	2 - 2 ft		8 - 10 ft		8 - 10 ft	
			task_code	MRP01 PostEx		MRP01_RI_SO		MRP01_RI_SO	
			validated_yn	Y		Y		Y	
method_analyte_group	Chemical	Unit	Fraction	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers
Newport_RA_SO_PCBs	AROCLOR-1262	MG_KG	N						
Newport_RA_SO_PCBs	AROCLOR-1268	MG_KG	N						
Newport_RA_SO_PCBs	PCB, TOTAL	MG_KG	N						
Newport_RA_SO_PCBs	POLYCHLORINATED BIPHENYLS (PCBS)	MG_KG	N						
Newport_RA_SO_Pesticides	4,4-DDD	MG_KG	N						
Newport_RA_SO_Pesticides	4,4-DDE	MG_KG	N						
Newport_RA_SO_Pesticides	4,4-DDT	MG_KG	N						
Newport_RA_SO_Pesticides	ALDRIN	MG_KG	N						
Newport_RA_SO_Pesticides	ALPHA-BHC	MG_KG	N						
Newport_RA_SO_Pesticides	ALPHA-CHLORDANE	MG_KG	N						
Newport_RA_SO_Pesticides	BETA-BHC	MG_KG	N						
Newport_RA_SO_Pesticides	DDT, TOTAL	MG_KG	N						
Newport_RA_SO_Pesticides	DELTA-BHC	MG_KG	N						
Newport_RA_SO_Pesticides	DIELDRIN	MG_KG	N						
Newport_RA_SO_Pesticides	ENDOSULFAN I	MG_KG	N						
Newport_RA_SO_Pesticides	ENDOSULFAN II	MG_KG	N						
Newport_RA_SO_Pesticides	ENDOSULFAN SULFATE	MG_KG	N						
Newport_RA_SO_Pesticides	ENDRIN	MG_KG	N						
Newport_RA_SO_Pesticides	ENDRIN ALDEHYDE	MG_KG	N						
Newport_RA_SO_Pesticides	ENDRIN KETONE	MG_KG	N						
Newport_RA_SO_Pesticides	GAMMA-CHLORDANE	MG_KG	N						
Newport_RA_SO_Pesticides	HEPTACHLOR	MG_KG	N						
Newport_RA_SO_Pesticides	HEPTACHLOR EPOXIDE	MG_KG	N						
Newport_RA_SO_Pesticides	LINDANE	MG_KG	N						
Newport_RA_SO_Pesticides	METHOXYCHLOR	MG_KG	N						
Newport_RA_SO_Pesticides	TOXAPHENE	MG_KG	N						
Newport_RA_SO_Pesticides	TRANS-CHLORDANE	MG_KG	N						
Newport_RA_SO_SVOCs	1,1-BIPHENYL	MG_KG	N						
Newport_RA_SO_SVOCs	1-METHYLNAPHTHALENE	MG_KG	N	0.054					
Newport_RA_SO_SVOCs	1,2,4-TRICHLOROBENZENE	MG_KG	N						
Newport_RA_SO_SVOCs	1,2-DICHLOROBENZENE	MG_KG	N						
Newport_RA_SO_SVOCs	1,2-DIPHENYLHYDRAZINE	MG_KG	N						
Newport_RA_SO_SVOCs	1,3-DICHLOROBENZENE	MG_KG	N						
Newport_RA_SO_SVOCs	1,4-DICHLOROBENZENE	MG_KG	N						
Newport_RA_SO_SVOCs	2,2'-OXYBIS(1-CHLOROPROPANE)	MG_KG	N						
Newport_RA_SO_SVOCs	2,4,5-TRICHLOROPHENOL	MG_KG	N						
Newport_RA_SO_SVOCs	2,4,6-TRICHLOROPHENOL	MG_KG	N						
Newport_RA_SO_SVOCs	2,4-DICHLOROPHENOL	MG_KG	N						
Newport_RA_SO_SVOCs	2,4-DIMETHYLPHENOL	MG_KG	N						
Newport_RA_SO_SVOCs	2,4-DINITROPHENOL	MG_KG	N						
Newport_RA_SO_SVOCs	2,4-DINITROTOLUENE	MG_KG	N						
Newport_RA_SO_SVOCs	2,6-DICHLOROPHENOL	MG_KG	N						
Newport_RA_SO_SVOCs	2,6-DINITROTOLUENE	MG_KG	N						
Newport_RA_SO_SVOCs	2-CHLORONAPHTHALENE	MG_KG	N	<0.022	U				
Newport_RA_SO_SVOCs	2-CHLOROPHENOL	MG_KG	N						
Newport_RA_SO_SVOCs	2-METHYLNAPHTHALENE	MG_KG	N	0.053					
Newport_RA_SO_SVOCs	2-METHYLPHENOL	MG_KG	N						
Newport_RA_SO_SVOCs	2-NITROANILINE	MG_KG	N						
Newport_RA_SO_SVOCs	2-NITROPHENOL	MG_KG	N						
Newport_RA_SO_SVOCs	3- AND 4-METHYLPHENOL	MG_KG	N						
Newport_RA_SO_SVOCs	3,3-DICHLOROBENZIDINE	MG_KG	N						
Newport_RA_SO_SVOCs	3-NITROANILINE	MG_KG	N						
Newport_RA_SO_SVOCs	4,6-DINITRO-2-METHYLPHENOL	MG_KG	N						
Newport_RA_SO_SVOCs	4-BROMOPHENYL-PHENYLETHER	MG_KG	N						
Newport_RA_SO_SVOCs	4-CHLORO-3-METHYLPHENOL	MG_KG	N						
Newport_RA_SO_SVOCs	4-CHLOROANILINE	MG_KG	N						
Newport_RA_SO_SVOCs	4-CHLOROPHENYL-PHENYLETHER	MG_KG	N						
Newport_RA_SO_SVOCs	4-METHYLPHENOL	MG_KG	N						
Newport_RA_SO_SVOCs	4-NITROANILINE	MG_KG	N						
Newport_RA_SO_SVOCs	4-NITROPHENOL	MG_KG	N						
Newport_RA_SO_SVOCs	ACENAPHTHENE	MG_KG	N	0.0025	J				
Newport_RA_SO_SVOCs	ACENAPHTHYLENE	MG_KG	N	0.0042	J				
Newport_RA_SO_SVOCs	ACETOPHENONE	MG_KG	N						
Newport_RA_SO_SVOCs	ANTHRACENE	MG_KG	N	0.0069					
Newport_RA_SO_SVOCs	ATRAZINE	MG_KG	N						
Newport_RA_SO_SVOCs	BENZALDEHYDE	MG_KG	N						

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	MRP1-PES-SW9-02		MW-01D		MW-11	
			Sample Date	4/26/2013		12/4/2013		12/3/2013	
			Sample ID	MRP1-PES-SW9-02		OU09 SBMW01D 0810		OU09 SBMW11 0810	
			Sample Type	N		N		N	
			start_depth	2		8		8	
			end_depth	2		10		10	
			depth_unit	FT		FT		FT	
			depth_interval	2 - 2 ft		8 - 10 ft		8 - 10 ft	
			task_code	MRP01 PostEx		MRP01_RI_SO		MRP01_RI_SO	
			validated_yn	Y		Y		Y	
method_analyte_group	Chemical	Unit	Fraction	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers
Newport_RA_SO_SVOCs	BENZIDINE	MG_KG	N						
Newport_RA_SO_SVOCs	BENZO[A]ANTHRACENE	MG_KG	N	0.022					
Newport_RA_SO_SVOCs	BENZO[A]PYRENE	MG_KG	N	0.024					
Newport_RA_SO_SVOCs	BENZO[B]FLUORANTHENE	MG_KG	N	0.033					
Newport_RA_SO_SVOCs	BENZO[G,H,I]PERYLENE	MG_KG	N	0.019					
Newport_RA_SO_SVOCs	BENZO[K]FLUORANTHENE	MG_KG	N	0.012					
Newport_RA_SO_SVOCs	BENZOIC ACID	MG_KG	N						
Newport_RA_SO_SVOCs	BENZYL ALCOHOL	MG_KG	N						
Newport_RA_SO_SVOCs	BIS(2-CHLOROETHOXY)METHANE	MG_KG	N						
Newport_RA_SO_SVOCs	BIS(2-CHLOROETHYL)ETHER	MG_KG	N						
Newport_RA_SO_SVOCs	BIS(2-ETHYLHEXYL)PHTHALATE	MG_KG	N						
Newport_RA_SO_SVOCs	BUTYLBENZYLPHTHALATE	MG_KG	N						
Newport_RA_SO_SVOCs	CAPROLACTAM	MG_KG	N						
Newport_RA_SO_SVOCs	CARBAZOLE	MG_KG	N						
Newport_RA_SO_SVOCs	CHRYSENE	MG_KG	N	0.035					
Newport_RA_SO_SVOCs	DIBENZ[A,H]ANTHRACENE	MG_KG	N	0.0052	J				
Newport_RA_SO_SVOCs	DIBENZOFURAN	MG_KG	N						
Newport_RA_SO_SVOCs	DIETHYLPHTHALATE	MG_KG	N						
Newport_RA_SO_SVOCs	DIMETHYL PHTHALATE	MG_KG	N						
Newport_RA_SO_SVOCs	DI-N-BUTYLPHTHALATE	MG_KG	N						
Newport_RA_SO_SVOCs	DI-N-OCTYLPHTHALATE	MG_KG	N						
Newport_RA_SO_SVOCs	FLUORANTHENE	MG_KG	N	0.046					
Newport_RA_SO_SVOCs	FLUORENE	MG_KG	N	0.0022	J				
Newport_RA_SO_SVOCs	HEXACHLOROBENZENE	MG_KG	N						
Newport_RA_SO_SVOCs	HEXACHLOROBUTADIENE	MG_KG	N						
Newport_RA_SO_SVOCs	HEXACHLOROCYCLOPENTADIENE	MG_KG	N						
Newport_RA_SO_SVOCs	HEXACHLOROETHANE	MG_KG	N						
Newport_RA_SO_SVOCs	HPAH, TOTAL	MG_KG	N						
Newport_RA_SO_SVOCs	INDENO[1,2,3-CD]PYRENE	MG_KG	N	0.014					
Newport_RA_SO_SVOCs	ISOPHORONE	MG_KG	N						
Newport_RA_SO_SVOCs	LPAH, TOTAL	MG_KG	N						
Newport_RA_SO_SVOCs	NAPHTHALENE	MG_KG	N	0.034					
Newport_RA_SO_SVOCs	NITROBENZENE	MG_KG	N						
Newport_RA_SO_SVOCs	N-NITROSODIMETHYLAMINE	MG_KG	N						
Newport_RA_SO_SVOCs	N-NITROSODINPROPYLAMINE	MG_KG	N						
Newport_RA_SO_SVOCs	N-NITROSODIPHENYLAMINE	MG_KG	N						
Newport_RA_SO_SVOCs	N-NITROSOPYRROLIDINE	MG_KG	N						
Newport_RA_SO_SVOCs	PAH, TOTAL	MG_KG	N						
Newport_RA_SO_SVOCs	PENTACHLOROPHENOL	MG_KG	N						
Newport_RA_SO_SVOCs	PHENANTHRENE	MG_KG	N	0.06					
Newport_RA_SO_SVOCs	PHENOL	MG_KG	N						
Newport_RA_SO_SVOCs	PYRENE	MG_KG	N	0.042					
Newport_RA_SO_VOCs	1,1,1,2-TETRACHLOROETHANE	MG_KG	N						
Newport_RA_SO_VOCs	1,1,1-TRICHLOROETHANE	MG_KG	N						
Newport_RA_SO_VOCs	1,1,2,2-TETRACHLOROETHANE	MG_KG	N						
Newport_RA_SO_VOCs	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	MG_KG	N						
Newport_RA_SO_VOCs	1,1,2-TRICHLOROETHANE	MG_KG	N						
Newport_RA_SO_VOCs	1,1-DICHLOROETHANE	MG_KG	N						
Newport_RA_SO_VOCs	1,1-DICHLOROETHENE	MG_KG	N						
Newport_RA_SO_VOCs	1,1-DICHLOROPROPENE	MG_KG	N						
Newport_RA_SO_VOCs	1,2,3-TRICHLOROBENZENE	MG_KG	N						
Newport_RA_SO_VOCs	1,2,3-TRICHLOROPROPANE	MG_KG	N						
Newport_RA_SO_VOCs	1,2,4-TRICHLOROBENZENE	MG_KG	N						
Newport_RA_SO_VOCs	1,2,4-TRIMETHYLBENZENE	MG_KG	N						
Newport_RA_SO_VOCs	1,2-DIBROMO-3-CHLOROPROPANE	MG_KG	N						
Newport_RA_SO_VOCs	1,2-DIBROMOETHANE	MG_KG	N						
Newport_RA_SO_VOCs	1,2-DICHLOROBENZENE	MG_KG	N						
Newport_RA_SO_VOCs	1,2-DICHLOROETHANE	MG_KG	N						
Newport_RA_SO_VOCs	1,2-DICHLOROETHENE, TOTAL	MG_KG	N						
Newport_RA_SO_VOCs	1,2-DICHLOROPROPANE	MG_KG	N						
Newport_RA_SO_VOCs	1,3,5-TRIMETHYLBENZENE	MG_KG	N						
Newport_RA_SO_VOCs	1,3-DICHLOROBENZENE	MG_KG	N						
Newport_RA_SO_VOCs	1,3-DICHLOROPROPANE	MG_KG	N						
Newport_RA_SO_VOCs	1,4-DICHLOROBENZENE	MG_KG	N						
Newport_RA_SO_VOCs	2,2-DICHLOROPROPANE	MG_KG	N						
Newport_RA_SO_VOCs	2-BUTANONE	MG_KG	N						

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	MRP1-PES-SW9-02		MW-01D		MW-11	
			Sample Date	4/26/2013		12/4/2013		12/3/2013	
			Sample ID	MRP1-PES-SW9-02		OU09 SBMW01D 0810		OU09 SBMW11 0810	
			Sample Type	N		N		N	
			start_depth	2		8		8	
			end_depth	2		10		10	
			depth_unit	FT		FT		FT	
			depth_interval	2 - 2 ft		8 - 10 ft		8 - 10 ft	
			task_code	MRP01 PostEx		MRP01_RI_SO		MRP01_RI_SO	
			validated_yn	Y		Y		Y	
method_analyte_group	Chemical	Unit	Fraction	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers
Newport_RA_SO_VOCs	2-CHLOROTOLUENE	MG_KG	N						
Newport_RA_SO_VOCs	2-HEXANONE	MG_KG	N						
Newport_RA_SO_VOCs	4-CHLOROTOLUENE	MG_KG	N						
Newport_RA_SO_VOCs	4-ISOPROPYLTOLUENE	MG_KG	N						
Newport_RA_SO_VOCs	4-METHYL-2-PENTANONE	MG_KG	N						
Newport_RA_SO_VOCs	ACETONE	MG_KG	N						
Newport_RA_SO_VOCs	BENZENE	MG_KG	N						
Newport_RA_SO_VOCs	BROMOBENZENE	MG_KG	N						
Newport_RA_SO_VOCs	BROMOCHLOROMETHANE	MG_KG	N						
Newport_RA_SO_VOCs	BROMODICHLOROMETHANE	MG_KG	N						
Newport_RA_SO_VOCs	BROMOFORM	MG_KG	N						
Newport_RA_SO_VOCs	BROMOMETHANE	MG_KG	N						
Newport_RA_SO_VOCs	CARBON DISULFIDE	MG_KG	N						
Newport_RA_SO_VOCs	CARBON TETRACHLORIDE	MG_KG	N						
Newport_RA_SO_VOCs	CHLOROBENZENE	MG_KG	N						
Newport_RA_SO_VOCs	CHLOROETHANE	MG_KG	N						
Newport_RA_SO_VOCs	CHLOROFORM	MG_KG	N						
Newport_RA_SO_VOCs	CHLOROMETHANE	MG_KG	N						
Newport_RA_SO_VOCs	CIS-1,2-DICHLOROETHENE	MG_KG	N						
Newport_RA_SO_VOCs	CIS-1,3-DICHLOROPROPENE	MG_KG	N						
Newport_RA_SO_VOCs	CYCLOHEXANE	MG_KG	N						
Newport_RA_SO_VOCs	DIBROMOCHLOROMETHANE	MG_KG	N						
Newport_RA_SO_VOCs	DIBROMOMETHANE	MG_KG	N						
Newport_RA_SO_VOCs	DICHLORODIFLUOROMETHANE	MG_KG	N						
Newport_RA_SO_VOCs	ETHYLBENZENE	MG_KG	N						
Newport_RA_SO_VOCs	HEXACHLOROBUTADIENE	MG_KG	N						
Newport_RA_SO_VOCs	ISOPROPYLBENZENE	MG_KG	N						
Newport_RA_SO_VOCs	M- AND P-XYLENE	MG_KG	N						
Newport_RA_SO_VOCs	METHYL ACETATE	MG_KG	N						
Newport_RA_SO_VOCs	METHYL CYCLOHEXANE	MG_KG	N						
Newport_RA_SO_VOCs	METHYL TERT-BUTYL ETHER	MG_KG	N						
Newport_RA_SO_VOCs	METHYLENE CHLORIDE	MG_KG	N						
Newport_RA_SO_VOCs	NAPHTHALENE	MG_KG	N						
Newport_RA_SO_VOCs	N-BUTYLBENZENE	MG_KG	N						
Newport_RA_SO_VOCs	O-XYLENE	MG_KG	N						
Newport_RA_SO_VOCs	PROPYLBENZENE	MG_KG	N						
Newport_RA_SO_VOCs	SEC-BUTYLBENZENE	MG_KG	N						
Newport_RA_SO_VOCs	STYRENE	MG_KG	N						
Newport_RA_SO_VOCs	TERT-BUTANOL	MG_KG	N						
Newport_RA_SO_VOCs	TERT-BUTYLBENZENE	MG_KG	N						
Newport_RA_SO_VOCs	TETRACHLOROETHENE	MG_KG	N						
Newport_RA_SO_VOCs	TOLUENE	MG_KG	N						
Newport_RA_SO_VOCs	TRANS-1,2-DICHLOROETHENE	MG_KG	N						
Newport_RA_SO_VOCs	TRANS-1,3-DICHLOROPROPENE	MG_KG	N						
Newport_RA_SO_VOCs	TRICHLOROETHENE	MG_KG	N						
Newport_RA_SO_VOCs	TRICHLOROFLUOROMETHANE	MG_KG	N						
Newport_RA_SO_VOCs	VINYL CHLORIDE	MG_KG	N						
Newport_RA_SO_VOCs	XYLENES, TOTAL	MG_KG	N						

Notes:
U or < - Non-detect at laboratory detection limit.
J - The compound was positively identified; however, the associated numerical value is an estimated concentration only (+ and - indicate bias).
Sample Type - N = normal sample, FD = duplicate sample.
mg/kg - milligram per kilogram

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	MW-11		MW-12		MW-13		MW-13		MW-13		MW-13		MW-13	
			Sample Date	12/3/2013		12/2/2013		12/4/2013		12/4/2013		12/4/2013		12/4/2013		12/4/2013	
			Sample ID	OU09 SBMW11 0406		OU09 SBMW12 1014		OU09 SB207 0001		OU09 SB207 0102		OU09 SB207 0305		OU09 SB207 0709		OU09 SB207 1113	
			Sample Type	N		N		N		N		N		N		N	
			start_depth	4		10		0		1		3		7		11	
			end_depth	6		14		1		2		5		9		13	
			depth_unit	FT		FT		FT		FT		FT		FT		FT	
			depth_interval	4 - 6 ft		10 - 14 ft		0 - 1 ft		1 - 2 ft		3 - 5 ft		7 - 9 ft		11 - 13 ft	
			task_code	MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO	
			validated_yn	Y		Y		Y		Y		Y		Y		Y	
method_analyte_group	Chemical	Unit	Fraction	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers
Newport_RA_SO_Energetics	2,4-DINITROTOLUENE	MG_KG	N	< 0.05	U					< 0.049	U						
Newport_RA_SO_Energetics	2,6-DINITROTOLUENE	MG_KG	N														
Newport_RA_SO_Energetics	NITROGLYCERIN	MG_KG	N	< 0.4	U					< 0.39	U						
Newport_RA_SO_Metals	ALUMINUM	MG_KG	N	9580				18600		9670		12800		7750			
Newport_RA_SO_Metals	ANTIMONY	MG_KG	N	0.08	J			0.36	J	0.15	J	0.16	J	0.06	J		
Newport_RA_SO_Metals	ARSENIC	MG_KG	N	4.8	J			19.8	J	13.4	J	13.1	J	2.9	J		
Newport_RA_SO_Metals	BARIUM	MG_KG	N	31.0				9.3		17.4		38.0		19.2			
Newport_RA_SO_Metals	BERYLLIUM	MG_KG	N	0.56				0.26		0.39		0.72		0.31			
Newport_RA_SO_Metals	CADMIUM	MG_KG	N	< 0.074	U			0.14		0.09		0.14		< 0.072	U		
Newport_RA_SO_Metals	CALCIUM	MG_KG	N	577				1700		773		927		1070			
Newport_RA_SO_Metals	CHROMIUM VI	MG_KG	N			0.26	J									< 0.33	U
Newport_RA_SO_Metals	CHROMIUM, TOTAL	MG_KG	N	11.9				27.6		13.8		21.4		10.8			
Newport_RA_SO_Metals	COBALT	MG_KG	N	9.9				24.5		14.1		23.4		7.3			
Newport_RA_SO_Metals	COPPER	MG_KG	N	9.7	J			34.7	J	36.1	J	30.3	J	13.8	J		
Newport_RA_SO_Metals	IRON	MG_KG	N	15500	J-			48300	J-	30900	J-	49000	J-	17900	J-		
Newport_RA_SO_Metals	IRON, FERROUS	MG_KG	N														
Newport_RA_SO_Metals	LEAD	MG_KG	N	7.1	J			25.9	J	14.2	J	14.6	J	7.1	J		
Newport_RA_SO_Metals	MAGNESIUM	MG_KG	N	1690				7650		3220		3710		3010			
Newport_RA_SO_Metals	MANGANESE	MG_KG	N	770				510		409		943		186			
Newport_RA_SO_Metals	MERCURY	MG_KG	N	< 0.036	U			< 0.017	U	< 0.033	U	< 0.029	U	< 0.018	U		
Newport_RA_SO_Metals	NICKEL	MG_KG	N	13.3				50.5		26.0		38.9		15.1			
Newport_RA_SO_Metals	POTASSIUM	MG_KG	N	578				196		359		942		975			
Newport_RA_SO_Metals	SELENIUM	MG_KG	N	0.57				0.35	J	0.40		0.41	J	< 0.36	U		
Newport_RA_SO_Metals	SILVER	MG_KG	N	0.07	J			0.06	J	0.04	J	0.04	J	0.02	J		
Newport_RA_SO_Metals	SODIUM	MG_KG	N	< 74	U			< 110	U	< 78	U	< 110	U	< 72	U		
Newport_RA_SO_Metals	THALLIUM	MG_KG	N	0.11				0.03	J	0.04	J	0.09	J	0.1			
Newport_RA_SO_Metals	VANADIUM	MG_KG	N	18.2				22.1		15.9		29.0		16.8			
Newport_RA_SO_Metals	ZINC	MG_KG	N	35.5				106		64.8		102		42.0			
Newport_RA_SO_Other	DENSITY	G_CC	N														
Newport_RA_SO_Other	Pellet count	COUNT	N														
Newport_RA_SO_Other	Pellet weight	PCT	N														
Newport_RA_SO_Other	PERCENT FINES	PCT	N														
Newport_RA_SO_Other	PERCENT GRAVEL	PCT	N														
Newport_RA_SO_Other	PERCENT SAND	PCT	N														
Newport_RA_SO_Other	PERCENT SAND, COARSE	PCT	N														
Newport_RA_SO_Other	PERCENT SAND, FINE	PCT	N														
Newport_RA_SO_Other	PERCENT SAND, MEDIUM	PCT	N														
Newport_RA_SO_Other	PH	PH	N														
Newport_RA_SO_Other	POROSITY	PCT	N														
Newport_RA_SO_Other	SIEVE 1 INCH (25.4-MM)	PCT	N														
Newport_RA_SO_Other	SIEVE 1-1/2 INCH (37.5-MM)	PCT	N														
Newport_RA_SO_Other	SIEVE 2 INCH (50-MM)	PCT	N														
Newport_RA_SO_Other	SIEVE 3 INCH (75-MM)	PCT	N														
Newport_RA_SO_Other	SIEVE 3/4 INCH (19-MM)	PCT	N														
Newport_RA_SO_Other	SIEVE 3/8 INCH (9.5-MM)	PCT	N														
Newport_RA_SO_Other	SIEVE NO. 004 (4.75-MM)	PCT	N														
Newport_RA_SO_Other	SIEVE NO. 010 (2-MM)	PCT	N														
Newport_RA_SO_Other	SIEVE NO. 020 (850-UM)	PCT	N														
Newport_RA_SO_Other	SIEVE NO. 040 (425-UM)	PCT	N														
Newport_RA_SO_Other	SIEVE NO. 060 (250-UM)	PCT	N														
Newport_RA_SO_Other	SIEVE NO. 080 (180-UM)	PCT	N														
Newport_RA_SO_Other	SIEVE NO. 100 (150-UM)	PCT	N														
Newport_RA_SO_Other	SIEVE NO. 200 (75-UM)	PCT	N														
Newport_RA_SO_Other	SPECIFIC CONDUCTANCE	UMHO_CM	N														
Newport_RA_SO_Other	SPECIFIC GRAVITY	NONE	N														
Newport_RA_SO_Other	SULFIDE	MG_KG	N														
Newport_RA_SO_Other	TPH-DIESEL RANGE	MG_KG	N														
Newport_RA_SO_Other	TPH-TOTAL UNKNOWN GASOLINE RANGE ORGANICS	MG_KG	N														
Newport_RA_SO_Other	Void Ratio	NONE	N														
Newport_RA_SO_PCBs	AROCLOR-1016	MG_KG	N														
Newport_RA_SO_PCBs	AROCLOR-1221	MG_KG	N														
Newport_RA_SO_PCBs	AROCLOR-1232	MG_KG	N														
Newport_RA_SO_PCBs	AROCLOR-1242	MG_KG	N														
Newport_RA_SO_PCBs	AROCLOR-1248	MG_KG	N														
Newport_RA_SO_PCBs	AROCLOR-1254	MG_KG	N														
Newport_RA_SO_PCBs	AROCLOR-1260	MG_KG	N														

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	MW-11		MW-12		MW-13		MW-13		MW-13		MW-13		MW-13	
			Sample Date	12/3/2013		12/2/2013		12/4/2013		12/4/2013		12/4/2013		12/4/2013		12/4/2013	
			Sample ID	OU09 SBMW11 0406		OU09 SBMW12 1014		OU09 SB207 0001		OU09 SB207 0102		OU09 SB207 0305		OU09 SB207 0709		OU09 SB207 1113	
			Sample Type	N		N		N		N		N		N		N	
			start_depth	4		10		0		1		3		7		11	
			end_depth	6		14		1		2		5		9		13	
			depth_unit	FT		FT		FT		FT		FT		FT		FT	
			depth_interval	4 - 6 ft		10 - 14 ft		0 - 1 ft		1 - 2 ft		3 - 5 ft		7 - 9 ft		11 - 13 ft	
			task_code	MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO	
			validated_yn	Y		Y		Y		Y		Y		Y		Y	
method_analyte_group	Chemical	Unit	Fraction	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers
Newport_RA_SO_PCBs	AROCLOR-1262	MG_KG	N														
Newport_RA_SO_PCBs	AROCLOR-1268	MG_KG	N														
Newport_RA_SO_PCBs	PCB, TOTAL	MG_KG	N														
Newport_RA_SO_PCBs	POLYCHLORINATED BIPHENYLS (PCBS)	MG_KG	N														
Newport_RA_SO_Pesticides	4,4-DDD	MG_KG	N														
Newport_RA_SO_Pesticides	4,4-DDE	MG_KG	N														
Newport_RA_SO_Pesticides	4,4-DDT	MG_KG	N														
Newport_RA_SO_Pesticides	ALDRIN	MG_KG	N														
Newport_RA_SO_Pesticides	ALPHA-BHC	MG_KG	N														
Newport_RA_SO_Pesticides	ALPHA-CHLORDANE	MG_KG	N														
Newport_RA_SO_Pesticides	BETA-BHC	MG_KG	N														
Newport_RA_SO_Pesticides	DDT, TOTAL	MG_KG	N														
Newport_RA_SO_Pesticides	DELTA-BHC	MG_KG	N														
Newport_RA_SO_Pesticides	DIELDRIN	MG_KG	N														
Newport_RA_SO_Pesticides	ENDOSULFAN I	MG_KG	N														
Newport_RA_SO_Pesticides	ENDOSULFAN II	MG_KG	N														
Newport_RA_SO_Pesticides	ENDOSULFAN SULFATE	MG_KG	N														
Newport_RA_SO_Pesticides	ENDRIN	MG_KG	N														
Newport_RA_SO_Pesticides	ENDRIN ALDEHYDE	MG_KG	N														
Newport_RA_SO_Pesticides	ENDRIN KETONE	MG_KG	N														
Newport_RA_SO_Pesticides	GAMMA-CHLORDANE	MG_KG	N														
Newport_RA_SO_Pesticides	HEPTACHLOR	MG_KG	N														
Newport_RA_SO_Pesticides	HEPTACHLOR EPOXIDE	MG_KG	N														
Newport_RA_SO_Pesticides	LINDANE	MG_KG	N														
Newport_RA_SO_Pesticides	METHOXYCHLOR	MG_KG	N														
Newport_RA_SO_Pesticides	TOXAPHENE	MG_KG	N														
Newport_RA_SO_Pesticides	TRANS-CHLORDANE	MG_KG	N														
Newport_RA_SO_SVOCs	1,1-BIPHENYL	MG_KG	N														
Newport_RA_SO_SVOCs	1-METHYLNAPHTHALENE	MG_KG	N														
Newport_RA_SO_SVOCs	1,2,4-TRICHLOROBENZENE	MG_KG	N														
Newport_RA_SO_SVOCs	1,2-DICHLOROBENZENE	MG_KG	N														
Newport_RA_SO_SVOCs	1,2-DIPHENYLHYDRAZINE	MG_KG	N														
Newport_RA_SO_SVOCs	1,3-DICHLOROBENZENE	MG_KG	N														
Newport_RA_SO_SVOCs	1,4-DICHLOROBENZENE	MG_KG	N														
Newport_RA_SO_SVOCs	2,2'-OXYBIS(1-CHLOROPROPANE)	MG_KG	N														
Newport_RA_SO_SVOCs	2,4,5-TRICHLOROPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	2,4,6-TRICHLOROPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	2,4-DICHLOROPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	2,4-DIMETHYLPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	2,4-DINITROPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	2,4-DINITROTOLUENE	MG_KG	N														
Newport_RA_SO_SVOCs	2,6-DICHLOROPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	2,6-DINITROTOLUENE	MG_KG	N														
Newport_RA_SO_SVOCs	2-CHLORONAPHTHALENE	MG_KG	N														
Newport_RA_SO_SVOCs	2-CHLOROPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	2-METHYLNAPHTHALENE	MG_KG	N														
Newport_RA_SO_SVOCs	2-METHYLPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	2-NITROANILINE	MG_KG	N														
Newport_RA_SO_SVOCs	2-NITROPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	3- AND 4-METHYLPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	3,3-DICHLOROBENZIDINE	MG_KG	N														
Newport_RA_SO_SVOCs	3-NITROANILINE	MG_KG	N														
Newport_RA_SO_SVOCs	4,6-DINITRO-2-METHYLPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	4-BROMOPHENYL-PHENYLETHER	MG_KG	N														
Newport_RA_SO_SVOCs	4-CHLORO-3-METHYLPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	4-CHLOROANILINE	MG_KG	N														
Newport_RA_SO_SVOCs	4-CHLOROPHENYL-PHENYLETHER	MG_KG	N														
Newport_RA_SO_SVOCs	4-METHYLPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	4-NITROANILINE	MG_KG	N														
Newport_RA_SO_SVOCs	4-NITROPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	ACENAPHTHENE	MG_KG	N	0.0023	J			0.0022	J	< 0.011	U	< 0.018	U	< 0.0098	U		
Newport_RA_SO_SVOCs	ACENAPHTHYLENE	MG_KG	N	< 0.011	U			< 0.011	U	< 0.011	U	< 0.018	U	< 0.0098	U		
Newport_RA_SO_SVOCs	ACETOPHENONE	MG_KG	N														
Newport_RA_SO_SVOCs	ANTHRACENE	MG_KG	N	0.0039	J			0.0034	J	< 0.011	U	< 0.018	U	< 0.0098	U		
Newport_RA_SO_SVOCs	ATRAZINE	MG_KG	N														
Newport_RA_SO_SVOCs	BENZALDEHYDE	MG_KG	N														

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	MW-11		MW-12		MW-13		MW-13		MW-13		MW-13		MW-13	
			Sample Date	12/3/2013		12/2/2013		12/4/2013		12/4/2013		12/4/2013		12/4/2013		12/4/2013	
			Sample ID	OU09 SBMW11 0406		OU09 SBMW12 1014		OU09 SB207 0001		OU09 SB207 0102		OU09 SB207 0305		OU09 SB207 0709		OU09 SB207 1113	
			Sample Type	N		N		N		N		N		N		N	
			start_depth	4		10		0		1		3		7		11	
			end_depth	6		14		1		2		5		9		13	
			depth_unit	FT		FT		FT		FT		FT		FT		FT	
			depth_interval	4 - 6 ft		10 - 14 ft		0 - 1 ft		1 - 2 ft		3 - 5 ft		7 - 9 ft		11 - 13 ft	
			task_code	MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO	
			validated_yn	Y		Y		Y		Y		Y		Y		Y	
method_analyte_group	Chemical	Unit	Fraction	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers
Newport_RA_SO_SVOCs	BENZIDINE	MG_KG	N														
Newport_RA_SO_SVOCs	BENZO[A]ANTHRACENE	MG_KG	N	< 0.023	U			0.028		0.0022	J	< 0.018	U	< 0.0098	U		
Newport_RA_SO_SVOCs	BENZO[A]PYRENE	MG_KG	N	0.021	J			0.029		< 0.011	U	< 0.018	U	< 0.0098	U		
Newport_RA_SO_SVOCs	BENZO[B]FLUORANTHENE	MG_KG	N	0.028	J			0.063		0.0065	J	< 0.018	U	< 0.0098	U		
Newport_RA_SO_SVOCs	BENZO[G,H,I]PERYLENE	MG_KG	N	0.0054	J			0.019	J	< 0.011	U	< 0.018	U	< 0.0098	U		
Newport_RA_SO_SVOCs	BENZO[K]FLUORANTHENE	MG_KG	N	0.014	J			0.015	J	< 0.011	U	< 0.018	U	< 0.0098	U		
Newport_RA_SO_SVOCs	BENZOIC ACID	MG_KG	N														
Newport_RA_SO_SVOCs	BENZYL ALCOHOL	MG_KG	N														
Newport_RA_SO_SVOCs	BIS(2-CHLOROETHOXY)METHANE	MG_KG	N														
Newport_RA_SO_SVOCs	BIS(2-CHLOROETHYL)ETHER	MG_KG	N														
Newport_RA_SO_SVOCs	BIS(2-ETHYLHEXYL)PHTHALATE	MG_KG	N														
Newport_RA_SO_SVOCs	BUTYLBENZYLPHTHALATE	MG_KG	N														
Newport_RA_SO_SVOCs	CAPROLACTAM	MG_KG	N														
Newport_RA_SO_SVOCs	CARBAZOLE	MG_KG	N														
Newport_RA_SO_SVOCs	CHRYSENE	MG_KG	N	0.017	J			0.035		< 0.011	U	< 0.018	U	< 0.0098	U		
Newport_RA_SO_SVOCs	DIBENZ[A,H]ANTHRACENE	MG_KG	N	0.0035	J			0.0052	J	< 0.011	U	< 0.018	U	< 0.0098	U		
Newport_RA_SO_SVOCs	DIBENZOFURAN	MG_KG	N														
Newport_RA_SO_SVOCs	DIETHYLPHTHALATE	MG_KG	N														
Newport_RA_SO_SVOCs	DIMETHYL PHTHALATE	MG_KG	N														
Newport_RA_SO_SVOCs	DI-N-BUTYLPHTHALATE	MG_KG	N														
Newport_RA_SO_SVOCs	DI-N-OCTYLPHTHALATE	MG_KG	N														
Newport_RA_SO_SVOCs	FLUORANTHENE	MG_KG	N	< 0.023	U			0.046		0.0030	J	< 0.018	U	< 0.0098	U		
Newport_RA_SO_SVOCs	FLUORENE	MG_KG	N	< 0.011	U			< 0.011	U	< 0.011	U	< 0.018	U	< 0.0098	U		
Newport_RA_SO_SVOCs	HEXACHLOROBENZENE	MG_KG	N														
Newport_RA_SO_SVOCs	HEXACHLOROBUTADIENE	MG_KG	N														
Newport_RA_SO_SVOCs	HEXACHLOROCYCLOPENTADIENE	MG_KG	N														
Newport_RA_SO_SVOCs	HEXACHLOROETHANE	MG_KG	N														
Newport_RA_SO_SVOCs	HPAH, TOTAL	MG_KG	N	0.11				0.31		0.015		< 0.018	U	< 0.0098	U		
Newport_RA_SO_SVOCs	INDENO[1,2,3-CD]PYRENE	MG_KG	N	0.018	J			0.022	J	< 0.011	U	< 0.018	U	< 0.0098	U		
Newport_RA_SO_SVOCs	ISOPHORONE	MG_KG	N														
Newport_RA_SO_SVOCs	LPAH, TOTAL	MG_KG	N	0.022				0.033		< 0.011	U	< 0.018	U	< 0.0098	U		
Newport_RA_SO_SVOCs	NAPHTHALENE	MG_KG	N	< 0.011	U			< 0.011	U	< 0.011	U	< 0.018	U	< 0.0098	U		
Newport_RA_SO_SVOCs	NITROBENZENE	MG_KG	N														
Newport_RA_SO_SVOCs	N-NITROSODIMETHYLAMINE	MG_KG	N														
Newport_RA_SO_SVOCs	N-NITROSODINPROPYLAMINE	MG_KG	N														
Newport_RA_SO_SVOCs	N-NITROSODIPHENYLAMINE	MG_KG	N														
Newport_RA_SO_SVOCs	N-NITROSOPYRROLIDINE	MG_KG	N														
Newport_RA_SO_SVOCs	PAH, TOTAL	MG_KG	N	0.13				0.35		0.015		< 0.018	U	< 0.0098	U		
Newport_RA_SO_SVOCs	PENTACHLOROPHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	PHENANTHRENE	MG_KG	N	0.016	J			0.027		< 0.011	U	< 0.018	U	< 0.0098	U		
Newport_RA_SO_SVOCs	PHENOL	MG_KG	N														
Newport_RA_SO_SVOCs	PYRENE	MG_KG	N	< 0.023	U			0.052		0.0034	J	< 0.018	U	< 0.0098	U		
Newport_RA_SO_VOCs	1,1,1,2-TETRACHLOROETHANE	MG_KG	N														
Newport_RA_SO_VOCs	1,1,1-TRICHLOROETHANE	MG_KG	N														
Newport_RA_SO_VOCs	1,1,2,2-TETRACHLOROETHANE	MG_KG	N														
Newport_RA_SO_VOCs	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	MG_KG	N														
Newport_RA_SO_VOCs	1,1,2-TRICHLOROETHANE	MG_KG	N														
Newport_RA_SO_VOCs	1,1-DICHLOROETHANE	MG_KG	N														
Newport_RA_SO_VOCs	1,1-DICHLOROETHENE	MG_KG	N														
Newport_RA_SO_VOCs	1,1-DICHLOROPROPENE	MG_KG	N														
Newport_RA_SO_VOCs	1,2,3-TRICHLOROBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	1,2,3-TRICHLOROPROPANE	MG_KG	N														
Newport_RA_SO_VOCs	1,2,4-TRICHLOROBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	1,2,4-TRIMETHYLBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	1,2-DIBROMO-3-CHLOROPROPANE	MG_KG	N														
Newport_RA_SO_VOCs	1,2-DIBROMOETHANE	MG_KG	N														
Newport_RA_SO_VOCs	1,2-DICHLOROBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	1,2-DICHLOROETHANE	MG_KG	N														
Newport_RA_SO_VOCs	1,2-DICHLOROETHENE, TOTAL	MG_KG	N														
Newport_RA_SO_VOCs	1,2-DICHLOROPROPANE	MG_KG	N														
Newport_RA_SO_VOCs	1,3,5-TRIMETHYLBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	1,3-DICHLOROBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	1,3-DICHLOROPROPANE	MG_KG	N														
Newport_RA_SO_VOCs	1,4-DICHLOROBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	2,2-DICHLOROPROPANE	MG_KG	N														
Newport_RA_SO_VOCs	2-BUTANONE	MG_KG	N														

ATTACHMENT A TABLE 6
SUMMARY OF ANALYTICAL RESULTS - SURFACE/SUBSURFACE SOIL (0 - 12 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Location ID	MW-11		MW-12		MW-13		MW-13		MW-13		MW-13		MW-13	
			Sample Date	12/3/2013		12/2/2013		12/4/2013		12/4/2013		12/4/2013		12/4/2013		12/4/2013	
			Sample ID	OU09 SBMW11 0406		OU09 SBMW12 1014		OU09 SB207 0001		OU09 SB207 0102		OU09 SB207 0305		OU09 SB207 0709		OU09 SB207 1113	
			Sample Type	N		N		N		N		N		N		N	
			start_depth	4		10		0		1		3		7		11	
			end_depth	6		14		1		2		5		9		13	
			depth_unit	FT		FT		FT		FT		FT		FT		FT	
			depth_interval	4 - 6 ft		10 - 14 ft		0 - 1 ft		1 - 2 ft		3 - 5 ft		7 - 9 ft		11 - 13 ft	
			task_code	MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO		MRP01_RI_SO	
			validated_yn	Y		Y		Y		Y		Y		Y		Y	
method_analyte_group	Chemical	Unit	Fraction	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers	Result	interpreted_qualifiers
Newport_RA_SO_VOCs	2-CHLOROTOLUENE	MG_KG	N														
Newport_RA_SO_VOCs	2-HEXANONE	MG_KG	N														
Newport_RA_SO_VOCs	4-CHLOROTOLUENE	MG_KG	N														
Newport_RA_SO_VOCs	4-ISOPROPYLTOLUENE	MG_KG	N														
Newport_RA_SO_VOCs	4-METHYL-2-PENTANONE	MG_KG	N														
Newport_RA_SO_VOCs	ACETONE	MG_KG	N														
Newport_RA_SO_VOCs	BENZENE	MG_KG	N														
Newport_RA_SO_VOCs	BROMOBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	BROMOCHLOROMETHANE	MG_KG	N														
Newport_RA_SO_VOCs	BROMODICHLOROMETHANE	MG_KG	N														
Newport_RA_SO_VOCs	BROMOFORM	MG_KG	N														
Newport_RA_SO_VOCs	BROMOMETHANE	MG_KG	N														
Newport_RA_SO_VOCs	CARBON DISULFIDE	MG_KG	N														
Newport_RA_SO_VOCs	CARBON TETRACHLORIDE	MG_KG	N														
Newport_RA_SO_VOCs	CHLOROBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	CHLOROETHANE	MG_KG	N														
Newport_RA_SO_VOCs	CHLOROFORM	MG_KG	N														
Newport_RA_SO_VOCs	CHLOROMETHANE	MG_KG	N														
Newport_RA_SO_VOCs	CIS-1,2-DICHLOROETHENE	MG_KG	N														
Newport_RA_SO_VOCs	CIS-1,3-DICHLOROPROPENE	MG_KG	N														
Newport_RA_SO_VOCs	CYCLOHEXANE	MG_KG	N														
Newport_RA_SO_VOCs	DIBROMOCHLOROMETHANE	MG_KG	N														
Newport_RA_SO_VOCs	DIBROMOMETHANE	MG_KG	N														
Newport_RA_SO_VOCs	DICHLORODIFLUOROMETHANE	MG_KG	N														
Newport_RA_SO_VOCs	ETHYLBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	HEXACHLOROBUTADIENE	MG_KG	N														
Newport_RA_SO_VOCs	ISOPROPYLBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	M- AND P-XYLENE	MG_KG	N														
Newport_RA_SO_VOCs	METHYL ACETATE	MG_KG	N														
Newport_RA_SO_VOCs	METHYL CYCLOHEXANE	MG_KG	N														
Newport_RA_SO_VOCs	METHYL TERT-BUTYL ETHER	MG_KG	N														
Newport_RA_SO_VOCs	METHYLENE CHLORIDE	MG_KG	N														
Newport_RA_SO_VOCs	NAPHTHALENE	MG_KG	N														
Newport_RA_SO_VOCs	N-BUTYLBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	O-XYLENE	MG_KG	N														
Newport_RA_SO_VOCs	PROPYLBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	SEC-BUTYLBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	STYRENE	MG_KG	N														
Newport_RA_SO_VOCs	TERT-BUTANOL	MG_KG	N														
Newport_RA_SO_VOCs	TERT-BUTYLBENZENE	MG_KG	N														
Newport_RA_SO_VOCs	TETRACHLOROETHENE	MG_KG	N														
Newport_RA_SO_VOCs	TOLUENE	MG_KG	N														
Newport_RA_SO_VOCs	TRANS-1,2-DICHLOROETHENE	MG_KG	N														
Newport_RA_SO_VOCs	TRANS-1,3-DICHLOROPROPENE	MG_KG	N														
Newport_RA_SO_VOCs	TRICHLOROETHENE	MG_KG	N														
Newport_RA_SO_VOCs	TRICHLOROFLUOROMETHANE	MG_KG	N														
Newport_RA_SO_VOCs	VINYL CHLORIDE	MG_KG	N														
Newport_RA_SO_VOCs	XYLENES, TOTAL	MG_KG	N														

Notes:
U or < - Non-detect at laboratory detection limit.
J - The compound was positively identified; however, the associated numerical value is an estimated concentration only (+ and - indicate bias).
Sample Type - N = normal sample, FD = duplicate sample.
mg/kg - milligram per kilogram

ATTACHMENT A TABLE 7
SUMMARY OF ANALYTICAL RESULTS - SURFACE
SEDIMENT (0 - 1 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

	Area	Site		Site		Site		Site	
	Location ID	CRP-SD01		CRP-SD01		CRP-SD02		CRP-SD02	
	Sample Date	6/19/2009		6/19/2009		6/19/2009		6/19/2009	
	Sample ID	CRP-SD01-0006		CRP-SD01-0612		CRP-SD02-0006		CRP-SD02-0612	
	Sample Type	N		N		N		N	
	Depth Interval	0 - 0.5 ft		0.5 - 1 ft		0 - 0.5 ft		0.5 - 1 ft	
Chemical	Unit	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
INORGANICS									
ALUMINUM	mg/kg	3680	J	5070	J	4330		3380	J
ANTIMONY	mg/kg	1.3	J	3.3	J	1.6	J	< 1.8	UJ
ARSENIC	mg/kg	8.8		8.7		8.9		19.4	
BARIUM	mg/kg	6.1		8.3		13.9		19.1	
BERYLLIUM	mg/kg	0.28	J	0.33		0.26	J	0.32	
CADMIUM	mg/kg	0.15	J	< 0.6	UJ	0.17	J	< 0.61	UJ
CALCIUM	mg/kg	7130		6380		11400		4910	
CHROMIUM, TOTAL	mg/kg	13.7		17.1		13.8		11.4	
COBALT	mg/kg	7.6		10.4		9.3		18.8	
COPPER	mg/kg	207		47.9		50.7		36.9	
IRON	mg/kg	35200		35100		29600	J	44200	
LEAD	mg/kg	215	J	223	J	424		71.2	J
MAGNESIUM	mg/kg	2400		2860		2570		3260	
MANGANESE	mg/kg	299		411		437	J	2190	
NICKEL	mg/kg	23.2		47.4		23.6		44.8	
POTASSIUM	mg/kg	452	J	633	J	527	J	596	J
SELENIUM	mg/kg	< 0.78	UJ	< 0.78	UJ	< 0.41	UJ	< 2	U
SILVER	mg/kg	< 0.36	U	< 0.36	U	< 0.19	U	< 0.36	U
SODIUM	mg/kg	2670		2390		2550		1770	
THALLIUM	mg/kg	< 0.96	U	< 0.96	U	< 0.5	U	< 0.97	U
VANADIUM	mg/kg	16		17.2		18		13.1	
ZINC	mg/kg	89.3	J	72.4	J	99.7		65.1	J
SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs)									
2-METHYLNAPHTHALENE	mg/kg	< 0.25	U	< 0.24	U	< 0.25	U	< 0.24	U
ACENAPHTHENE	mg/kg	0.11	J	0.066	J	< 0.25	U	0.063	J
ACENAPHTHYLENE	mg/kg	< 0.25	U	< 0.24	U	< 0.25	U	< 0.24	U
ANTHRACENE	mg/kg	0.16	J	0.094	J	0.045	J	0.091	J
BENZO[A]ANTHRACENE	mg/kg	0.82		0.5		0.34		0.4	
BENZO[A]PYRENE	mg/kg	1.1	J	0.65		0.46		0.59	
BENZO[B]FLUORANTHENE	mg/kg	1.2	J	0.64		0.41		0.64	
BENZO[G,H,I]PERYLENE	mg/kg	0.83	J	0.53		0.35		0.51	
BENZO[K]FLUORANTHENE	mg/kg	0.44	J	0.22	J	0.14	J	0.24	J
CHRYSENE	mg/kg	0.93		0.65		0.45		0.46	
DIBENZ[A,H]ANTHRACENE	mg/kg	< 0.25	UJ	0.28		< 0.25	U	< 0.24	U
FLUORANTHENE	mg/kg	1.1		0.68		0.38		0.62	
FLUORENE	mg/kg	0.081	J	0.039	J	< 0.25	U	0.039	J
HPAH, TOTAL	mg/kg	8.4		5.4		3.4		4.7	
INDENO[1,2,3-CD]PYRENE	mg/kg	0.91	J	0.58		0.42		0.59	
LPAH, TOTAL	mg/kg	1.1		0.63		0.3		0.57	
NAPHTHALENE	mg/kg	< 0.25	U	< 0.24	U	< 0.25	U	< 0.24	U
PAH, TOTAL	mg/kg	9.5		6		3.7		5.2	
PHENANTHRENE	mg/kg	0.75		0.43		0.25	J	0.38	
PYRENE	mg/kg	1.1		0.65		0.47		0.61	

Notes:
U or < - Non-detect at laboratory detection limit.
J - The compound was positively identified; however, the associated numerical value is an estimated concentration only (+ and - indicate bias).
R - Rejected result.
Sample Type - N = normal sample, FD = duplicate sample.
mg/kg - milligram per kilogram
umol/g - micromole per gram.

ATTACHMENT A TABLE 7
SUMMARY OF ANALYTICAL RESULTS - SURFACE
SEDIMENT (0 - 1 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

	Area	Site		Site		Site		Site		Site		Site		Site	
	Location ID	CRP-SD101		CRP-SD102		CRP-SD103		CRP-SD122		CRP-SD123		CRP-SD124		CRP-SD129	
	Sample Date	12/13/2013		12/13/2013		12/13/2013		12/12/2013		12/12/2013		12/12/2013		4/1/2014	
	Sample ID	OU09 SD101 0012		OU09 SD102 0012		OU09 SD103 0012		OU09 SD122 0012		OU09 SD123 0012		OU09 SD124 0012		OU09 SD129 0012	
	Sample Type	N		N		N		N		N		N		N	
	Depth Interval	0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in	
Chemical	Unit	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
ACID VOLATILE SULFIDES AND SIMULTANEOUSLY EXTRACTED METALS															
ACID VOLATILE SULFIDES	umol/g	< 0.10	U	< 0.098	U	6.7		< 0.098	U	< 0.080	U	< 0.086	U	< 0.091	UJ
ANTIMONY	umol/g	0.0153	J-	0.00350	J-	0.00220	J-	0.024		0.0016		0.00068	J		
CADMIUM	umol/g	0.00022	J	0.000027	J	0.00034	J	0.00015	J	0.000066	J	0.000072	J	< 0.00060	U
COPPER	umol/g	0.253	J	0.0570	J	1.80	J	5.2	J	0.13	J	0.25	J	0.0140	J
LEAD	umol/g	1.48		0.131		0.213		0.74	J	0.53	J	0.22	J	0.122	
MERCURY	umol/g	< 0.000030	UJ		R		R	< 0.000024	UJ		R	< 0.000022	UJ		
NICKEL	umol/g	0.0990		0.0075		0.688		0.081		0.040		0.016		0.0223	J
ZINC	umol/g	0.209	J-	0.0244	J-	0.272	J-	0.26		0.14		0.091		0.0322	J
INORGANICS															
ALUMINUM	mg/kg	7990		6480		4800		4740		5510		5160		7950	
ANTIMONY	mg/kg	1.1	J	17.5	J	0.68	J	36.7		0.23		0.58		2.40	J-
ARSENIC	mg/kg	11.5		38.1		11.3		19.0		8.1		9.9		11.9	J-
BARIUM	mg/kg	11.0		10.6		29.6		26.6	J	15.2	J	7.8	J	8.87	
BERYLLIUM	mg/kg	0.44	J-	0.33	J-	0.29	J-	0.30		0.22		0.31		0.342	
CADMIUM	mg/kg	0.19	J	0.14	J	0.12	J	0.07		0.05	J	0.16		0.067	J
CALCIUM	mg/kg	1990		2560		4820		1520	J	4840	J	2300	J	1400	
CHROMIUM VI	mg/kg	1.2		0.42	J			< 0.39	UJ	< 0.38	U	< 0.34	UJ	< 0.46	U
CHROMIUM, TOTAL	mg/kg	13.5	J-	13.5	J-	12.4	J-	11.1	J	10.2	J	12.0	J	13.2	B
COBALT	mg/kg	16.4		9.3		15.6		14.1		8.7		10.4		10.3	
COPPER	mg/kg	39.1	J	92.2	J	43.5	J	25.8	J	31.6	J	42.0	J	21.9	J+
IRON	mg/kg	42600		36300		38200		34700		28600		39100		37000	
LEAD	mg/kg	180	J	1830	J	128	J	4290	J	98.9	J	131	J	774	
MAGNESIUM	mg/kg	3640		3040		4120		2270		2880		2280		2980	
MANGANESE	mg/kg	964		224		454		543		273		481		1510	B
MERCURY	mg/kg	0.01	J	0.02	J	0.01	J	< 0.014	U	< 0.013	U	0.004	J	0.012	J
NICKEL	mg/kg	32.6	J	23.6	J	33.7	J	23.5		20.6		23.4		26.8	
POTASSIUM	mg/kg	556	J	967	J	824	J	359		356		402		468	
SELENIUM	mg/kg	< 0.35	UJ	< 0.43	UJ	< 0.32	UJ	< 0.35	U	< 0.31	U	< 0.30	U	< 0.46	U
SILVER	mg/kg	0.02	J	0.10	J	0.16	J	0.15	J	0.02	J	0.02	J	0.035	J
SODIUM	mg/kg	1670		1540		2990		1940		757		1210		645	
THALLIUM	mg/kg	0.05	J	0.1		0.05	J	0.03	J	0.02	J	0.03	J	< 0.091	U
VANADIUM	mg/kg	19.0	J-	22.0	J-	23.5	J-	17.7		13.5		18.7		16.9	
ZINC	mg/kg	98.2	J-	90.6	J-	117	J-	91.6	J	83.4	J	110	J	82.8	J
SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs)															
2-METHYLNAPHTHALENE	mg/kg														
ACENAPHTHENE	mg/kg	0.047	J	0.0070	J	0.01	J	0.0097	J	0.032		0.044		0.019	J
ACENAPHTHYLENE	mg/kg	< 0.012	U	< 0.011	U	< 0.012	U	0.0018	J	0.0022	J	< 0.01	U	< 0.012	UJ
ANTHRACENE	mg/kg	0.062		0.011	J	0.015	J	0.015	J	0.06		0.056		0.038	J
BENZO[A]ANTHRACENE	mg/kg	0.38	J	0.074	J	0.098	J	0.11		0.42	J	0.4	J	0.24	J
BENZO[A]PYRENE	mg/kg	0.37	J	0.08	J	0.094	J	0.11	J	0.31	J	0.48	J	0.24	J
BENZO[B]FLUORANTHENE	mg/kg	0.47	J	0.1	J	0.13	J	0.081		0.26		0.32		0.2	J
BENZO[G,H,I]PERYLENE	mg/kg	0.13	J	0.036	J	0.036	J	0.043	J	0.13	J	0.16	J	0.095	J
BENZO[K]FLUORANTHENE	mg/kg	0.16	J	0.034		0.044	J	0.068		0.14		0.21		0.048	J
CHRYSENE	mg/kg	0.68		0.093		0.11	J	0.12	J	0.69	J	0.63	J	0.28	J
DIBENZ[A,H]ANTHRACENE	mg/kg	0.087	J	0.019	J	0.019	J	0.029		0.099		0.1		0.053	J
FLUORANTHENE	mg/kg	0.55		0.1		0.14	J	0.12		0.28		0.52	J	0.22	J
FLUORENE	mg/kg	0.026		0.0047	J	0.0072	J	0.0076	J	0.024		0.026		0.014	J
HPAH, TOTAL	mg/kg	3.7		0.68		0.85		0.83		3		3.9		1.7	
INDENO[1,2,3-CD]PYRENE	mg/kg	0.22	J	0.051		0.049	J	0.048		0.13		0.19		0.12	J
LPAH, TOTAL	mg/kg	0.44		0.083		0.11		0.12		0.36		0.44		0.23	
NAPHTHALENE	mg/kg	0.03	J	< 0.011	U	< 0.012	U	0.0046	J	0.0056	J	0.017	J	0.0044	J
PAH, TOTAL	mg/kg	4.1		0.76		0.96		0.94		3.4		4.3		1.9	
PHENANTHRENE	mg/kg	0.27		0.06		0.077	J	0.079		0.24		0.3		0.16	J
PYRENE	mg/kg	0.67	J	0.09	J	0.13	J	0.1	J	0.56	J	0.84	J	0.21	J

ATTACHMENT A TABLE 7
SUMMARY OF ANALYTICAL RESULTS - SURFACE
SEDIMENT (0 - 1 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

	Area	Site		Site		Site		Site		Site		Site		Site	
	Location ID	CRP-SD101		CRP-SD102		CRP-SD103		CRP-SD122		CRP-SD123		CRP-SD124		CRP-SD129	
	Sample Date	12/13/2013		12/13/2013		12/13/2013		12/12/2013		12/12/2013		12/12/2013		4/1/2014	
	Sample ID	OU09 SD101 0012		OU09 SD102 0012		OU09 SD103 0012		OU09 SD122 0012		OU09 SD123 0012		OU09 SD124 0012		OU09 SD129 0012	
	Sample Type	N		N		N		N		N		N		N	
	Depth Interval	0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in	
Chemical	Unit	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
OTHER															
PERCENT GRAVEL	%			46.7				54.2						50.9	
PERCENT SAND	%			36.6				43.2						46.2	
PERCENT SAND, COARSE	%			11.0				11.6						10.3	
PERCENT SAND, FINE	%			11.3				7.7						10.9	
PERCENT SAND, MEDIUM	%			14.3				23.9						25.0	
SIEVE 1 INCH (25.4-MM)	%			11.2				13.4						0	
SIEVE 1-1/2 INCH (37.5-MM)	%			0				0						0	
SIEVE 2 INCH (50-MM)	%			0				0						0	
SIEVE 3 INCH (75-MM)	%			0				0						0	
SIEVE 3/4 INCH (19-MM)	%			8.0				14.3						21.7	
SIEVE 3/8 INCH (9.5-MM)	%			15.8				16.9						18.7	
SIEVE NO. 004 (4.75-MM)	%			11.7				9.6						10.5	
SIEVE NO. 010 (2-MM)	%			11.0				11.6						10.3	
SIEVE NO. 020 (850-UM)	%			7.1				10.7						11.2	
SIEVE NO. 040 (425-UM)	%			7.2				13.2						13.8	
SIEVE NO. 060 (250-UM)	%			6.2				6.1						7.3	
SIEVE NO. 080 (180-UM)	%			2.2				0.9						1.9	
SIEVE NO. 100 (150-UM)	%			0.8				0.4						0.7	
SIEVE NO. 200 (75-UM)	%			2.1				0.2						1.1	
TOTAL ORGANIC CARBON	mg/kg	9300		16000		16000		16000		10000		9100		14000	

Notes:
U or < - Non-detect at laboratory detection limit.
J - The compound was positively identified; however, the associated numerical value is an estimated concentration only (+ and - indicate bias).
R - Rejected result.
Sample Type - N = normal sample, FD = duplicate sample.
mg/kg - milligram per kilogram
umol/g - micromole per gram.

ATTACHMENT A TABLE 7
SUMMARY OF ANALYTICAL RESULTS - SURFACE
SEDIMENT (0 - 1 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

	Area	Site		Site	
	Location ID	CRP-SD130		CRP-SD130	
	Sample Date	4/1/2014		4/1/2014	
	Sample ID	OU09 SD130 0012		FDSD040114	
	Sample Type	N		FD	
	Depth Interval	0 - 12 in		0 - 12 in	
Chemical	Unit	Result	Qualifier	Result	Qualifier
ACID VOLATILE SULFIDES AND SIMULTANEOUSLY EXTRACTED METALS					
ACID VOLATILE SULFIDES	umol/g	0.098	J-	0.11	J-
ANTIMONY	umol/g				
CADMIUM	umol/g	0.000090	J	0.000041	J
COPPER	umol/g	0.106	J	0.125	J
LEAD	umol/g	0.0982		0.109	
MERCURY	umol/g				
NICKEL	umol/g	0.0723	J	0.0434	J
ZINC	umol/g	0.348	J	0.212	J
INORGANICS					
ALUMINUM	mg/kg	3720		3630	
ANTIMONY	mg/kg	0.430	J-	0.604	J-
ARSENIC	mg/kg	5.67	J-	5.92	J-
BARIUM	mg/kg	5.78		6.04	
BERYLLIUM	mg/kg	0.268		0.276	
CADMIUM	mg/kg	0.0971		0.101	
CALCIUM	mg/kg	7790		8360	
CHROMIUM VI	mg/kg	< 0.48	U	< 0.50	U
CHROMIUM, TOTAL	mg/kg	12.6	B	13.5	B
COBALT	mg/kg	9.54		9.08	
COPPER	mg/kg	33.4	J+	22.3	J+
IRON	mg/kg	31100		32400	
LEAD	mg/kg	57.7		59.4	
MAGNESIUM	mg/kg	2110		2110	
MANGANESE	mg/kg	382	B	388	B
MERCURY	mg/kg	0.011	J	0.014	J
NICKEL	mg/kg	23.6		20.7	
POTASSIUM	mg/kg	334		346	
SELENIUM	mg/kg	< 0.26	U	< 0.29	U
SILVER	mg/kg	0.0706		0.051	J
SODIUM	mg/kg	1100		1110	
THALLIUM	mg/kg	< 0.053	U	< 0.059	U
VANADIUM	mg/kg	20.9		22.9	
ZINC	mg/kg	84.1	J	94.1	J
SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs)					
2-METHYLNAPHTHALENE	mg/kg				
ACENAPHTHENE	mg/kg	0.0085	J	0.012	J
ACENAPHTHYLENE	mg/kg	< 0.013	U	0.0040	J
ANTHRACENE	mg/kg	0.014	J	0.021	J
BENZO[A]ANTHRACENE	mg/kg	0.088	J	0.15	J
BENZO[A]PYRENE	mg/kg	0.1	J	0.15	J
BENZO[B]FLUORANTHENE	mg/kg	0.11	J	0.17	J
BENZO[G,H,I]PERYLENE	mg/kg	0.064	J	0.082	J
BENZO[K]FLUORANTHENE	mg/kg	0.044	J	0.042	J
CHRYSENE	mg/kg	0.11	J	0.18	J
DIBENZ[A,H]ANTHRACENE	mg/kg	0.026	J	0.038	J
FLUORANTHENE	mg/kg	0.12		0.18	
FLUORENE	mg/kg	0.0063	J	0.011	J
HPAH, TOTAL	mg/kg	0.85		1.3	
INDENO[1,2,3-CD]PYRENE	mg/kg	0.1	J	0.14	J
LPAH, TOTAL	mg/kg	0.097		0.16	
NAPHTHALENE	mg/kg	< 0.013	U	< 0.013	U
PAH, TOTAL	mg/kg	0.95		1.4	
PHENANTHRENE	mg/kg	0.068		0.11	
PYRENE	mg/kg	0.088	J	0.14	J

ATTACHMENT A TABLE 7
SUMMARY OF ANALYTICAL RESULTS - SURFACE
SEDIMENT (0 - 1 FT)
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

	Area	Site		Site	
	Location ID	CRP-SD130		CRP-SD130	
	Sample Date	4/1/2014		4/1/2014	
	Sample ID	OU09 SD130 0012		FDSD040114	
	Sample Type	N		FD	
	Depth Interval	0 - 12 in		0 - 12 in	
Chemical	Unit	Result	Qualifier	Result	Qualifier
OTHER					
PERCENT GRAVEL	%	56.5		68.7	
PERCENT SAND	%	43.3		30.7	
PERCENT SAND, COARSE	%	10.9		6.4	
PERCENT SAND, FINE	%	15.9		12.7	
PERCENT SAND, MEDIUM	%	16.5		11.6	
SIEVE 1 INCH (25.4-MM)	%	7.9		41.4	
SIEVE 1-1/2 INCH (37.5-MM)	%	23.4		0	
SIEVE 2 INCH (50-MM)	%	0		0	
SIEVE 3 INCH (75-MM)	%	0		0	
SIEVE 3/4 INCH (19-MM)	%	1.9		0	
SIEVE 3/8 INCH (9.5-MM)	%	12.0		18.3	
SIEVE NO. 004 (4.75-MM)	%	11.3		9.0	
SIEVE NO. 010 (2-MM)	%	10.9		6.4	
SIEVE NO. 020 (850-UM)	%	7.8		5.2	
SIEVE NO. 040 (425-UM)	%	8.7		6.4	
SIEVE NO. 060 (250-UM)	%	11.2		8.8	
SIEVE NO. 080 (180-UM)	%	2.9		2.4	
SIEVE NO. 100 (150-UM)	%	0.9		0.7	
SIEVE NO. 200 (75-UM)	%	0.9		0.7	
TOTAL ORGANIC CARBON	mg/kg	5900		6400	

ATTACHMENT A TABLE 8
SUMMARY OF ANALYTICAL RESULTS - SHELLFISH TISSUE
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

	Area	Site		Site		Site		Site		Site		Site	
	Location ID	CRP-SD101		CRP-SD102		CRP-SD104		CRP-SD106		CRP-SD109		CRP-SD110	
	Tissue Type	blue mussel composite		blue mussel composite		quahog composite		quahog composite		quahog composite		quahog composite	
	Sample Date	11/19/2013		11/19/2013		11/6/2013		11/6/2013		11/5/2013		11/5/2013	
	Sample ID	OU09TS101		OU09TS102		OU09-TS-104		OU09-TS-106		OU09-TS-109		OU09-TS-110	
	Sample Type	N		N		N		N		N		N	
Chemical	Unit	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
INORGANICS													
ALUMINUM	mg/kg	29.5		24.3		2.21		3.52		3.38		2.93	
ANTIMONY	mg/kg	0.0190	J+	0.0287	J+	< 0.0043	U	< 0.0057	U	< 0.0044	U	< 0.0046	U
ARSENIC	mg/kg	3.58	J+	3.38	J+	2.53	J+	2.91	J+	3.81	J+	4.38	J+
BARIUM	mg/kg	0.219	J+	0.172	J+	0.205	J+	0.263	J+	0.277	J+	0.303	J+
BERYLLIUM	mg/kg	0.0021	J	0.0023	J	0.0025		0.0017	J	0.0052		0.0061	
CADMIUM	mg/kg	0.149	J+	0.145	J+	0.0727	J+	0.0588	J+	0.0707	J+	0.116	J+
CALCIUM	mg/kg	651	J	1180	J	537	J	327	J+	377	J+	379	J+
CHROMIUM, TOTAL	mg/kg	0.550	J+	0.232	J+	0.081	J+	0.074	J+	0.247	J+	0.267	J+
COBALT	mg/kg	0.129	J+	0.120	J+	0.108	J+	0.175	J+	0.279	J+	0.146	J+
COPPER	mg/kg	1.50	J+	1.60	J+	0.580	J+	0.976	J+	0.931	J+	1.31	J+
IRON	mg/kg	82.0		79.3		11.3	J+	12.2	J+	7.84	J+	13.7	J+
LEAD	mg/kg	4.13	J	7.26	J	0.132	J	0.0692	J	0.0670	J	0.293	J
MAGNESIUM	mg/kg	763		796		887		815		795		920	
MANGANESE	mg/kg	4.76	J+	3.62	J+	4.14	J+	3.03	J+	2.42	J+	7.42	J+
MERCURY	mg/kg	0.0152		0.0164		0.00701		0.00866		0.0249		0.03	
NICKEL	mg/kg	0.465	J+	0.294	J+	0.472	J+	0.546	J+	0.810	J+	0.455	J+
POTASSIUM	mg/kg	1560	J+	1580	J+	998	J+	1330	J+	1050	J+	1170	J+
SELENIUM	mg/kg	0.44		0.50		0.18		0.20		0.45		0.46	
SILVER	mg/kg	0.0087		0.0087		0.0891	J-	0.106	J-	0.217	J-	0.274	J-
SODIUM	mg/kg	6370		6440		7540		6410		6200		7020	
THALLIUM	mg/kg	< 0.0023	U	< 0.0023	U	< 0.00034	U	< 0.00046	U	< 0.0018	U	< 0.0018	U
VANADIUM	mg/kg	0.178	J+	0.169	J+	0.087	J+	0.057	J+	0.223	J+	0.223	J+
ZINC	mg/kg	12.8	J+	14.4	J+	8.77	J+	15.2	J+	12.0	J+	13.4	J+
POLYCYCLIC AROMATIC HYRDOCARBONS (PAHs)													
ACENAPHTHENE	mg/kg	< 0.0014	UJ	< 0.0013	UJ	0.00019	J	0.00022	J	0.00016	J	0.000099	J
ACENAPHTHYLENE	mg/kg	0.00015	J	0.00015	J	0.00011	J	0.00013	J	0.00012	J	0.000094	J
ANTHRACENE	mg/kg	0.0019		0.0014		0.00015	J	0.00016	J	0.00030	J	0.00027	J
BENZO[A]ANTHRACENE	mg/kg	0.0067		0.0044		0.00040	J	0.00037	J	< 0.00024	UJ	< 0.00021	UJ
BENZO[A]PYRENE	mg/kg	0.015		0.0093		0.00035	J	0.00022	J	0.00019	J	0.00012	J
BENZO[B]FLUORANTHENE	mg/kg	0.018		0.011		0.00055		0.00055		0.00036	J	0.00023	J
BENZO[G,H,I]PERYLENE	mg/kg	0.012		0.0081		0.00038	J	0.00029	J	0.00028	J	0.00015	J
BENZO[K]FLUORANTHENE	mg/kg	0.0062		0.0043		0.00028	J	0.00024	J	0.00017	J	0.00014	J
CHRYSENE	mg/kg	0.029		0.014		0.00076	J	0.00065	J	0.00027	J	0.00020	J
DIBENZ[A,H]ANTHRACENE	mg/kg	0.0029		0.0018	J	< 0.00010	U	< 0.00010	U	< 0.00010	U	< 0.00010	U
FLUORANTHENE	mg/kg	0.017		0.012		0.0010		0.0012		0.00066		0.00047	J
FLUORENE	mg/kg	0.00078		0.00066		0.00033	J	0.00027	J	0.00030	J	0.00028	J
HPAH, TOTAL	mg/kg	0.14		0.083		0.0048		0.0047		0.0028		0.0019	
INDENO[1,2,3-CD]PYRENE	mg/kg	0.0096		0.0068		0.00021	J	0.00017	J	0.00017	J	0.00011	J
LPAH, TOTAL	mg/kg	0.011		0.0080		0.0014		0.0015		0.0015		0.00074	
NAPHTHALENE	mg/kg	< 0.0020	U	< 0.0020	U	< 0.00098	U	< 0.0010	U	< 0.00099	U	< 0.0010	U
PAH, TOTAL	mg/kg	0.15		0.091		0.0062		0.0062		0.0043		0.0027	
PHENANTHRENE	mg/kg	0.0080		0.0058		0.00062		0.00069		0.00060		< 0.00050	U
PYRENE	mg/kg	0.021		0.011		0.00088		0.0010		0.00073		0.00052	
OTHER													
INITIAL GROUP WEIGHT	grams	125		312		538		388		2148		535	
LIPIDS	%	0.61		0.41		0.13		0.29		0.20		0.21	
TOTAL COUNT OF ORGANISMS	count	9		20		4		3		7		2	
TOTAL SOLIDS	%	11.8		11.8		8.56		11.7		9.90		9.17	

Notes:
U or < - Non-detect at laboratory detection limit.
J - The compound was positively identified; however, the associated numerical value is an estimated concentration only (+ and - indicate bias).
Sample Type - N = normal sample, FD = duplicate sample.
mg/kg - milligram per kilogram

ATTACHMENT A TABLE 8
SUMMARY OF ANALYTICAL RESULTS - SHELLFISH TISSUE
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

	Area	Site		Site		Site		Site		Site		Site	
	Location ID	CRP-SD112		CRP-SD112		CRP-SD115		CRP-SD118		CRP-SD121		CRP-SD122	
	Tissue Type	quahog composite		quahog composite		quahog composite		quahog composite		quahog composite		blue mussel composite	
	Sample Date	11/5/2013		11/5/2013		11/6/2013		11/6/2013		11/6/2013		11/19/2013	
	Sample ID	OU09-TS-112		OU09-TS-201		OU09-TS-115		OU09-TS-118		OU09-TS-121		OU09TS122	
	Sample Type	N		FD		N		N		N		N	
Chemical	Unit	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
INORGANICS													
ALUMINUM	mg/kg	2.42		3.31		3.79		4.82		2.90		23.8	
ANTIMONY	mg/kg	< 0.0045	U	< 0.0045	U	< 0.0050	U	< 0.0041	U	< 0.0044	U	0.0111	J+
ARSENIC	mg/kg	3.00	J+	3.14	J+	2.18	J+	2.55	J+	3.48	J+	2.79	J+
BARIUM	mg/kg	0.153	J	0.282	J	0.284	J+	0.194	J+	0.150	J+	0.119	J+
BERYLLIUM	mg/kg	0.0061		0.0068		0.0025		0.0029		0.0052		0.0018	J
CADMIUM	mg/kg	0.0983	J+	0.0771	J+	0.0737	J+	0.0982	J+	0.0772	J+	0.116	J+
CALCIUM	mg/kg	468	J+	397	J+	340	J+	344	J+	336	J+	558	J
CHROMIUM, TOTAL	mg/kg	0.330	J+	0.325	J+	0.090	J+	0.123	J+	0.276	J+	0.509	J+
COBALT	mg/kg	0.107	J+	0.149	J+	0.144	J+	0.136	J+	0.0632	J+	0.121	J+
COPPER	mg/kg	0.866	J+	0.834	J+	0.787	J+	0.646	J+	0.707	J+	1.02	J+
IRON	mg/kg	6.33	J+	8.00	J+	11.5	J+	16.7	J+	7.88	J+	76.2	
LEAD	mg/kg	0.0841	J	0.0589	J	0.274	J	0.494	J	0.0600	J	1.44	J
MAGNESIUM	mg/kg	870		899		841		941		871		781	
MANGANESE	mg/kg	4.48	J	2.47	J	4.04	J+	4.40	J+	1.37	J+	3.77	J+
MERCURY	mg/kg	0.026		0.0196		0.013		0.0146		0.0225		0.0102	
NICKEL	mg/kg	0.585	J+	0.891	J+	0.685	J+	0.530	J+	0.322	J+	0.384	J+
POTASSIUM	mg/kg	1040	J+	1070	J+	1170	J+	940	J+	1060	J+	1460	J+
SELENIUM	mg/kg	0.49		0.37		0.18		0.18		0.40		0.42	
SILVER	mg/kg	0.250	J-	0.260	J-	0.184	J-	0.122	J-	0.245	J-	0.0047	
SODIUM	mg/kg	7010		7070		6920		7170		7020		6700	
THALLIUM	mg/kg	< 0.0018	U	< 0.0018	U	< 0.0004	U	< 0.00033	U	< 0.00035	U	< 0.0021	U
VANADIUM	mg/kg	0.299	J+	0.354	J+	0.078	J+	0.104	J+	0.348	J+	0.149	J+
ZINC	mg/kg	7.91	J+	7.67	J+	9.87	J+	8.92	J+	5.40	J+	10.8	J+
POLYCYCLIC AROMATIC HYRDOCARBONS (PAHs)													
ACENAPHTHENE	mg/kg	0.00011	J	0.000095	J	0.00013	J	0.00014	J	0.000084	J	< 0.0034	UJ
ACENAPHTHYLENE	mg/kg	0.00014	J	0.00011	J	0.00011	J	0.00016	J	0.000096	J	0.00022	J
ANTHRACENE	mg/kg	0.00026	J	0.00019	J	0.00013	J	0.00027	J	0.00017	J	0.0064	
BENZO[A]ANTHRACENE	mg/kg	< 0.00020	UJ	< 0.00016	UJ	0.00040	J	< 0.00048	UJ	< 0.00025	UJ	0.032	
BENZO[A]PYRENE	mg/kg	0.00012	J	0.000097	J	0.00034	J	0.00043	J	0.00017	J	0.04	
BENZO[B]FLUORANTHENE	mg/kg	0.00025	J	0.00019	J	0.00055		0.00065		0.00035	J	0.044	
BENZO[G,H,I]PERYLENE	mg/kg	0.00018	J	0.00014	J	0.00036	J	0.00048	J	0.00021	J	0.031	
BENZO[K]FLUORANTHENE	mg/kg	0.00012	J	0.00012	J	0.00028	J	0.00029	J	0.00013	J	0.015	
CHRYSENE	mg/kg	0.00021	J	0.00017	J	0.00079	J	0.00083	J	0.00042	J	0.05	
DIBENZ[A,H]ANTHRACENE	mg/kg	< 0.00010	U	< 0.00010	U	< 0.00010	U	< 0.00010	U	< 0.00010	U	0.0081	
FLUORANTHENE	mg/kg	0.00061		0.00044	J	0.00097		0.00093		0.00059		0.04	
FLUORENE	mg/kg	0.00032	J	0.00029	J	0.00028	J	0.00032	J	0.00025	J	0.0017	
HPAH, TOTAL	mg/kg	0.0021				0.0049		0.0049		0.0025		0.33	
INDENO[1,2,3-CD]PYRENE	mg/kg	< 0.00010	U	< 0.00010	U	0.00022	J	0.00030	J	0.00013	J	0.026	
LPAH, TOTAL	mg/kg	0.0014				0.0013		0.0016		0.00060		0.031	
NAPHTHALENE	mg/kg	< 0.00099	U	< 0.00099	U	< 0.0010	U	< 0.00099	U	< 0.00097	U	< 0.0020	U
PAH, TOTAL	mg/kg	0.0035				0.0062		0.0064		0.0031		0.36	
PHENANTHRENE	mg/kg	0.00054		< 0.00050	U	0.00067		0.00066		< 0.00049	U	0.023	
PYRENE	mg/kg	0.00059		0.00045	J	0.0010		0.00098		0.00053		0.04	
OTHER													
INITIAL GROUP WEIGHT	grams	1366		737		257		716		949		178	
LIPIDS	%	0.23		0.20		0.19		0.16		0.16		0.33	
TOTAL COUNT OF ORGANISMS	count	4		3		3		5		3		15	
TOTAL SOLIDS	%	8.99		9.27		9.99		8.17		8.91		10.6	

Notes:
U or < - Non-detect at laboratory detection limit.
J - The compound was positively identified; however, the associated numerical value is an estimated concentration only (+ and - indicate bias).
Sample Type - N = normal sample, FD = duplicate sample.
mg/kg - milligram per kilogram

ATTACHMENT A TABLE 8
SUMMARY OF ANALYTICAL RESULTS - SHELLFISH TISSUE
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

	Area	Site		Site		Background		Background		Background		Background	
	Location ID	CRP-SD123		CRP-SD124		CRP-SD301		CRP-SD302		CRP-SD303		CRP-SD304	
	Tissue Type	blue mussel composite		blue mussel composite		quahog composite		blue mussel composite		blue mussel composite		blue mussel composite	
	Sample Date	11/19/2013		11/19/2013		11/6/2013		11/6/2013		11/19/2013		11/19/2013	
	Sample ID	OU09TS123		OU09TS124		BSBG-TS-301		BSBG-TS-302		BSBGTS303		BSBGTS304	
	Sample Type	N		N		N		N		N		N	
Chemical	Unit	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
INORGANICS													
ALUMINUM	mg/kg	31.5		30.7		6.77		29.4		21.8		16.7	
ANTIMONY	mg/kg	0.0123	J+	0.0131	J+	< 0.0056	U	< 0.0053	U	< 0.0007	U	< 0.0006	U
ARSENIC	mg/kg	3.63	J+	3.55	J+	3.60	J+	2.50	J+	3.46	J+	3.58	J+
BARIUM	mg/kg	0.155	J+	0.147	J+	0.280	J+	0.259	J+	0.0974	J+	0.106	J+
BERYLLIUM	mg/kg	0.0025	J	0.0021	J	0.0035		0.0023		0.0022	J	0.0018	J
CADMIUM	mg/kg	0.132	J+	0.144	J+	0.0724	J+	0.0805	J+	0.138	J+	0.152	J+
CALCIUM	mg/kg	3980	J	697	J	358	J+	920	J+	665	J	649	J
CHROMIUM, TOTAL	mg/kg	0.771	J+	0.603	J+	0.155	J+	0.207	J+	0.543	J+	0.634	J+
COBALT	mg/kg	0.146	J+	0.145	J+	0.202	J+	0.0646	J+	0.0819	J+	0.111	J+
COPPER	mg/kg	1.35	J+	1.34	J+	1.26	J+	1.02	J+	0.920	J+	0.960	J+
IRON	mg/kg	148		95.2		19.7	J+	57.6	J+	69.7		72.3	
LEAD	mg/kg	1.86	J	2.29	J	0.148	J	0.260	J	0.426	J	0.255	J
MAGNESIUM	mg/kg	748		804		817		862		748		752	
MANGANESE	mg/kg	4.96	J+	4.95	J+	7.72	J+	5.97	J+	2.71	J+	2.60	J+
MERCURY	mg/kg	0.0110		0.0143		0.0153		0.0196		0.0171		0.0120	
NICKEL	mg/kg	0.551	J+	0.462	J+	0.707	J+	0.171	J+	0.332	J+	0.406	J+
POTASSIUM	mg/kg	1700	J+	1670	J+	1370	J+	1270	J+	1620	J+	1740	J+
SELENIUM	mg/kg	0.42		0.52		0.25		0.40		0.44		0.50	
SILVER	mg/kg	0.0056		0.0067		0.306	J-	0.0141	J-	0.0075		0.0064	
SODIUM	mg/kg	6460		6740		6680		7170		6240		6290	
THALLIUM	mg/kg	< 0.0028	U	< 0.0025	U	< 0.0023	U	< 0.0021	U	< 0.0026	U	< 0.0026	U
VANADIUM	mg/kg	0.202	J+	0.203	J+	0.123	J+	0.179	J+	0.149	J+	0.162	J+
ZINC	mg/kg	12.5	J+	12.1	J+	15.6	J+	8.69	J+	11.1	J+	12.8	J+
POLYCYCLIC AROMATIC HYRDOCARBONS (PAHs)													
ACENAPHTHENE	mg/kg	< 0.0040	UJ	0.0026		0.00015	J	< 0.00074	UJ	< 0.0028	UJ	< 0.0024	UJ
ACENAPHTHYLENE	mg/kg	0.00047	J	0.0013		0.00013	J	0.00023	J	0.0011		0.00090	J
ANTHRACENE	mg/kg	0.0030	J	0.0080		0.00021	J	0.00053		0.0052		0.0031	
BENZO[A]ANTHRACENE	mg/kg	0.023		0.018		< 0.00031	UJ	0.00095		0.015		0.0030	
BENZO[A]PYRENE	mg/kg	0.027		0.029		0.00025	J	0.00093	J	0.02		0.0030	
BENZO[B]FLUORANTHENE	mg/kg	0.032		0.034		0.00049	J	0.0024	J	0.021		0.0042	
BENZO[G,H,I]PERYLENE	mg/kg	0.021		0.021		0.00028	J	0.0012	J	0.017		0.0027	
BENZO[K]FLUORANTHENE	mg/kg	0.01		0.012		0.00031	J	0.00073	J	0.0081		0.0018	J
CHRYSENE	mg/kg	0.036		0.05		0.00037	J	0.0015		0.023		0.0049	
DIBENZ[A,H]ANTHRACENE	mg/kg	0.0051		0.0053		< 0.00010	U	< 0.00050	U	0.0037		0.00054	J
FLUORANTHENE	mg/kg	0.022		0.034		0.0012		0.0027		0.024		0.0087	
FLUORENE	mg/kg	0.0032		0.0032		0.00036	J	0.00023	J	0.0012		0.00054	
HPAH, TOTAL	mg/kg	0.22		0.25		0.0041		0.014		0.17		0.037	
INDENO[1,2,3-CD]PYRENE	mg/kg	0.017		0.017		0.00018	J	0.0011	J	0.013		0.0021	J
LPAH, TOTAL	mg/kg	0.022		0.035		0.0016		0.0021		0.023		0.01	
NAPHTHALENE	mg/kg	< 0.0061	U	< 0.0020	U	< 0.00099	U	< 0.00097	U	< 0.0020	U	< 0.0020	U
PAH, TOTAL	mg/kg	0.24		0.29		0.0056		0.016		0.19		0.047	
PHENANTHRENE	mg/kg	0.015		0.02		0.00073		0.0011		0.015		0.0057	
PYRENE	mg/kg	0.029		0.032		0.00097		0.0021		0.022		0.0059	
OTHER													
INITIAL GROUP WEIGHT	grams	100		310		1345		326		313		311	
LIPIDS	%	0.61		0.58		0.21		0.49		0.61		0.43	
TOTAL COUNT OF ORGANISMS	count	7		23		6		14		17		22	
TOTAL SOLIDS	%	14.0		12.7		11.5		10.8		13.5		13.4	

Notes:
U or < - Non-detect at laboratory detection limit.
J - The compound was positively identified; however, the associated numerical value is an estimated concentration only (+ and - indicate bias).
Sample Type - N = normal sample, FD = duplicate sample.
mg/kg - milligram per kilogram

ATTACHMENT A TABLE 9
SUMMARY OF ANALYTICAL RESULTS - SHALLOW GROUNDWATER
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

	Location ID	MW-01		MW-11		MW-12		MW-12		MW-13	
	Sample Date	12/18/2013		12/18/2013		12/18/2013		12/18/2013		12/18/2013	
	Sample ID	OU09 01 MW01		OU09 01 MW11		OU09 01 MW12		FDWG12181301		OU09 01 MW13	
	Sample Type	N		N		N		FD		N	
	task_code	MRP01_RI_WG		MRP01_RI_WG		MRP01_RI_WG		MRP01_RI_WG		MRP01_RI_WG	
Chemical	Unit	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
ALUMINUM	ug/L	605		32.1	J	42.6	J	44.6	J	416	
ANTIMONY	ug/L	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U
ARSENIC	ug/L	< 5.2	U	< 5.0	U	< 5.8	U	< 5.6	U	< 5.0	U
BARIUM	ug/L	22.0	J	14.8	J	18.4	J	18.3	J	42.6	J
BERYLLIUM	ug/L	0.06	J	< 0.20	U	< 0.20	U	< 0.20	U	< 0.20	U
CADMIUM	ug/L	0.06	J	0.05	J	< 0.20	U	0.07	J	0.15	J
CALCIUM	ug/L	10700		13400		28500		29000		19700	
CHROMIUM VI	ug/L					< 12.5	U	< 12.5	U	< 12.5	U
CHROMIUM, TOTAL	ug/L	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U
COBALT	ug/L	7.0		0.37	J	1.6		1.5		3.2	
COPPER	ug/L	8.4		< 3.3	U	14.2		9.5		< 3.0	U
IRON	ug/L	8830		< 100	U	3320		3300		387	
LEAD	ug/L	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U
MAGNESIUM	ug/L	8480		11200		12700		12700		12300	
MANGANESE	ug/L	389		59.3		1150		1130		244	
MERCURY	ug/L	< 0.10	U	< 0.10	U	< 0.10	U	< 0.10	U	< 0.10	U
NICKEL	ug/L	15.5		< 2.0	U	< 2.1	U	< 2.0	U	< 2.9	U
POTASSIUM	ug/L	1620		2080		2260		2250		3110	
SELENIUM	ug/L	< 3.0	U	1.1	J	< 3.0	U	< 3.0	U	0.91	J
SILVER	ug/L	< 0.40	U	< 0.40	U	< 0.40	U	< 0.40	U	< 0.40	U
SODIUM	ug/L	26500		14600		17100		16900		35500	
THALLIUM	ug/L	< 0.40	U	< 0.40	U	< 0.40	U	< 0.40	U	< 0.40	U
VANADIUM	ug/L	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U
ZINC	ug/L	< 28.6	U	< 10	U	< 10	U	< 10	U	< 10	U

ATTACHMENT A TABLE 9
SUMMARY OF ANALYTICAL RESULTS - SHALLOW GROUNDWATER
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

	Location ID	MW-01		MW-11		MW-12		MW-12		MW-13	
	Sample Date	12/18/2013		12/18/2013		12/18/2013		12/18/2013		12/18/2013	
	Sample ID	OU09 01 MW01		OU09 01 MW11		OU09 01 MW12		FDWG12181301		OU09 01 MW13	
	Sample Type	N		N		N		FD		N	
	task_code	MRP01_RI_WG		MRP01_RI_WG		MRP01_RI_WG		MRP01_RI_WG		MRP01_RI_WG	
Chemical	Unit	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
ACENAPHTHENE	ug/L	< 0.097	U	< 0.094	U	< 0.094	U	< 0.094	U	< 0.094	U
ACENAPHTHYLENE	ug/L	< 0.097	U	< 0.094	U	< 0.094	U	< 0.094	U	< 0.094	U
ANTHRACENE	ug/L	< 0.097	U	< 0.094	U	< 0.094	U	< 0.094	U	< 0.094	U
BENZO[A]ANTHRACENE	ug/L	< 0.097	U	< 0.094	U	< 0.094	U	< 0.094	U	< 0.094	U
BENZO[A]PYRENE	ug/L	< 0.097	U	< 0.094	U	< 0.094	U	< 0.094	U	< 0.094	U
BENZO[B]FLUORANTHENE	ug/L	< 0.097	UJ	< 0.094	UJ	< 0.094	UJ	< 0.094	UJ	< 0.094	UJ
BENZO[G,H,I]PERYLENE	ug/L	< 0.097	U	< 0.094	U	< 0.094	U	< 0.094	U	< 0.094	U
BENZO[K]FLUORANTHENE	ug/L	< 0.097	U	< 0.094	U	< 0.094	U	< 0.094	U	< 0.094	U
CHRYSENE	ug/L	< 0.097	U	< 0.094	U	< 0.094	U	< 0.094	U	< 0.094	U
DIBENZ[A,H]ANTHRACENE	ug/L	< 0.097	U	< 0.094	U	< 0.094	U	< 0.094	U	< 0.094	U
FLUORANTHENE	ug/L	< 0.097	UJ	< 0.094	UJ	< 0.094	UJ	< 0.094	UJ	< 0.094	UJ
FLUORENE	ug/L	< 0.097	U	< 0.094	U	< 0.094	U	< 0.094	U	< 0.094	U
HPAH, TOTAL	ug/L	< 0.097	U	< 0.094	U	< 0.094	U	< 0.094	U	< 0.094	U
INDENO[1,2,3-CD]PYRENE	ug/L	< 0.097	U	< 0.094	U	< 0.094	U	< 0.094	U	< 0.094	U
LPAH, TOTAL	ug/L	< 0.097	U	< 0.094	U	< 0.094	U	< 0.094	U	< 0.094	U
NAPHTHALENE	ug/L	< 0.097	U	< 0.094	U	< 0.094	U	< 0.094	U	< 0.094	U
PAH, TOTAL	ug/L	< 0.097	U	< 0.094	U	< 0.094	U	< 0.094	U	< 0.094	U
PHENANTHRENE	ug/L	< 0.097	U	< 0.094	U	< 0.094	U	< 0.094	U	< 0.094	U
PYRENE	ug/L	< 0.097	UJ	< 0.094	UJ	< 0.094	UJ	< 0.094	UJ	< 0.094	UJ

Notes:
U or < - Non-detect at laboratory detection limit.
J - The compound was positively identified; however, the associated numerical value is an estimated concentration only (+ and - indicate bias).
Sample Type - N = normal sample, FD = duplicate sample.
ug/L - Microgram per liter.

ATTACHMENT A TABLE 10
SUMMARY OF ANALYTICAL RESULTS - GROUNDWATER
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

	Location ID	MW-01		MW-01D		MW-11		MW-12		MW-12		MW-12D		MW-13	
	Sample Date	12/18/2013		12/18/2013		12/18/2013		12/18/2013		12/18/2013		12/18/2013		12/18/2013	
	Sample ID	OU09 01 MW01		OU09 01 MW01D		OU09 01 MW11		OU09 01 MW12		FDWG12181301		OU09 01 MW12D		OU09 01 MW13	
	Sample Type	N		N		N		N		FD		N		N	
	task_code	MRP01_RI_WG		MRP01_RI_WG		MRP01_RI_WG		MRP01_RI_WG		MRP01_RI_WG		MRP01_RI_WG		MRP01_RI_WG	
Chemical	Unit	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
ALUMINUM	ug/L	605		67.4	J	32.1	J	42.6	J	44.6	J	< 300	U	416	
ANTIMONY	ug/L	< 1.0	U	0.84	J	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U
ARSENIC	ug/L	< 5.2	U	< 5.0	U	< 5.0	U	< 5.8	U	< 5.6	U	< 5.1	U	< 5.0	U
BARIUM	ug/L	22.0	J	23.2	J	14.8	J	18.4	J	18.3	J	23.1	J	42.6	J
BERYLLIUM	ug/L	0.06	J	< 0.20	U	< 0.20	U	< 0.20	U	< 0.20	U	< 0.20	U	< 0.20	U
CADMIUM	ug/L	0.06	J	0.05	J	0.05	J	< 0.20	U	0.07	J	0.03	J	0.15	J
CALCIUM	ug/L	10700		15700		13400		28500		29000		21500		19700	
CHROMIUM VI	ug/L							< 12.5	U	< 12.5	U	< 12.5	U	< 12.5	U
CHROMIUM, TOTAL	ug/L	< 5.0	U	< 4.0	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U
COBALT	ug/L	7.0		9.5		0.37	J	1.6		1.5		3.5		3.2	
COPPER	ug/L	8.4		< 3.5	U	< 3.3	U	14.2		9.5		< 3.0	U	< 3.0	U
IRON	ug/L	8830		9770		< 100	U	3320		3300		6560		387	
LEAD	ug/L	< 5.0	U	< 0.50	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U
MAGNESIUM	ug/L	8480		9890		11200		12700		12700		11400		12300	
MANGANESE	ug/L	389		938		59.3		1150		1130		986		244	
MERCURY	ug/L	< 0.10	U	< 0.10	U	< 0.10	U	< 0.10	U	< 0.10	U	< 0.10	U	< 0.10	U
NICKEL	ug/L	15.5		10.0		< 2.0	U	< 2.1	U	< 2.0	U	4.9		< 2.9	U
POTASSIUM	ug/L	1620		2800		2080		2260		2250		1890		3110	
SELENIUM	ug/L	< 3.0	U	0.24	J	1.1	J	< 3.0	U	< 3.0	U	< 5.0	U	0.91	J
SILVER	ug/L	< 0.40	U	< 0.40	U	< 0.40	U	< 0.40	U	< 0.40	U	< 0.40	U	< 0.40	U
SODIUM	ug/L	26500		26000		14600		17100		16900		16400		35500	
THALLIUM	ug/L	< 0.40	U	< 0.40	U	< 0.40	U	< 0.40	U	< 0.40	U	< 0.40	U	< 0.40	U
VANADIUM	ug/L	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U
ZINC	ug/L	< 28.6	U	< 21.4	U	< 10	U	< 10	U	< 10	U	< 12.4	U	< 10	U

ATTACHMENT A TABLE 10
SUMMARY OF ANALYTICAL RESULTS - GROUNDWATER
HUMAN HEALTH RISK ASSESSMENT
CARR POINT - MRP SITE 1

	Location ID	MW-01		MW-01D		MW-11		MW-12		MW-12		MW-12D		MW-13	
	Sample Date	12/18/2013		12/18/2013		12/18/2013		12/18/2013		12/18/2013		12/18/2013		12/18/2013	
	Sample ID	OU09 01 MW01		OU09 01 MW01D		OU09 01 MW11		OU09 01 MW12		FDWG12181301		OU09 01 MW12D		OU09 01 MW13	
	Sample Type	N		N		N		N		FD		N		N	
	task_code	MRP01_RI_WG		MRP01_RI_WG		MRP01_RI_WG		MRP01_RI_WG		MRP01_RI_WG		MRP01_RI_WG		MRP01_RI_WG	
Chemical	Unit	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
ACENAPHTHENE	ug/L	< 0.097	U	< 0.094	U	< 0.094	U	< 0.094	U	< 0.094	U	< 0.094	U	< 0.094	U
ACENAPHTHYLENE	ug/L	< 0.097	U	< 0.094	U	< 0.094	U	< 0.094	U	< 0.094	U	< 0.094	U	< 0.094	U
ANTHRACENE	ug/L	< 0.097	U	< 0.094	U	< 0.094	U	< 0.094	U	< 0.094	U	< 0.094	U	< 0.094	U
BENZO[A]ANTHRACENE	ug/L	< 0.097	U	< 0.094	U	< 0.094	U	< 0.094	U	< 0.094	U	< 0.094	U	< 0.094	U
BENZO[A]PYRENE	ug/L	< 0.097	U	< 0.094	U	< 0.094	U	< 0.094	U	< 0.094	U	< 0.094	UJ	< 0.094	U
BENZO[B]FLUORANTHENE	ug/L	< 0.097	UJ	< 0.094	UJ	< 0.094	UJ	< 0.094	UJ	< 0.094	UJ	< 0.094	UJ	< 0.094	UJ
BENZO[G,H,I]PERYLENE	ug/L	< 0.097	U	< 0.094	U	< 0.094	U	< 0.094	U	< 0.094	U	< 0.094	UJ	< 0.094	U
BENZO[K]FLUORANTHENE	ug/L	< 0.097	U	< 0.094	U	< 0.094	U	< 0.094	U	< 0.094	U	< 0.094	UJ	< 0.094	U
CHRYSENE	ug/L	< 0.097	U	< 0.094	U	< 0.094	U	< 0.094	U	< 0.094	U	< 0.094	U	< 0.094	U
DIBENZ[A,H]ANTHRACENE	ug/L	< 0.097	U	< 0.094	U	< 0.094	U	< 0.094	U	< 0.094	U	< 0.094	U	< 0.094	U
FLUORANTHENE	ug/L	< 0.097	UJ	< 0.094	UJ	< 0.094	UJ	< 0.094	UJ	< 0.094	UJ	< 0.094	UJ	< 0.094	UJ
FLUORENE	ug/L	< 0.097	U	< 0.094	U	< 0.094	U	< 0.094	U	< 0.094	U	< 0.094	U	< 0.094	U
HPAH, TOTAL	ug/L	< 0.097	U	< 0.094	U	< 0.094	U	< 0.094	U	< 0.094	U	< 0.094	U	< 0.094	U
INDENO[1,2,3-CD]PYRENE	ug/L	< 0.097	U	< 0.094	U	< 0.094	U	< 0.094	U	< 0.094	U	< 0.094	U	< 0.094	U
LPAH, TOTAL	ug/L	< 0.097	U	< 0.094	U	< 0.094	U	< 0.094	U	< 0.094	U	< 0.094	U	< 0.094	U
NAPHTHALENE	ug/L	< 0.097	U	< 0.094	U	< 0.094	U	< 0.094	U	< 0.094	U	< 0.094	U	< 0.094	U
PAH, TOTAL	ug/L	< 0.097	U	< 0.094	U	< 0.094	U	< 0.094	U	< 0.094	U	< 0.094	U	< 0.094	U
PHENANTHRENE	ug/L	< 0.097	U	< 0.094	U	< 0.094	U	< 0.094	U	< 0.094	U	< 0.094	U	< 0.094	U
PYRENE	ug/L	< 0.097	UJ	< 0.094	UJ	< 0.094	UJ	< 0.094	UJ	< 0.094	UJ	< 0.094	UJ	< 0.094	UJ

Notes:
U or < - Non-detect at laboratory detection limit.
J - The compound was positively identified; however, the associated numerical value is an estimated concentration only (+ and - indicate bias).
Sample Type - N = normal sample, FD = duplicate sample.
ug/L - Microgram per liter.

ATTACHMENT B

SEDIMENT SCREENING LEVELS

Site-specific
Recreator Equation Inputs for Soil

Variable	Value
TR (target cancer risk) unitless	0.000001
SA_{recsc} (skin surface area - child) cm^2/day	1364
SA_{recsa} (skin surface area - adult) cm^2/day	4780
SA_{0-2} (skin surface area - mutagenic) cm^2/day	1364
SA_{2-6} (skin surface area - mutagenic) cm^2/day	1364
SA_{6-16} (skin surface area - mutagenic) cm^2/day	4780
SA_{16-30} (skin surface area - mutagenic) cm^2/day	4780
SA_{recsa} (skin surface area - adult) cm^2/day	4780
THQ (target hazard quotient) unitless	0.1
LT (lifetime - recreator) year	70
$IFS_{rec-adj}$ (age-adjusted soil ingestion factor) mg/kg	5460
$DFS_{rec-adj}$ (age-adjusted soil dermal factor) mg/kg	36204.48
$IFSM_{rec-adj}$ (mutagenic age-adjusted soil ingestion factor) mg/kg	24786.667
$DFSM_{rec-adj}$ (mutagenic age-adjusted soil dermal factor) mg/kg	110237.227
EF_{0-2} (exposure frequency) day/year	52
EF_{2-6} (exposure frequency) day/year	52
EF_{6-16} (exposure frequency) day/year	52
EF_{16-30} (exposure frequency) day/year	52
EF_{recsc} (exposure frequency - child) day/year	52
EF_{recsa} (exposure frequency - adult) day/year	52
EF_{recsa} (exposure frequency - adult) day/year	52
EF_{recs} (exposure frequency - recreator) day/year	52
IRS_{0-2} (soil intake rate) mg/day	200
IRS_{2-6} (soil intake rate) mg/day	200
IRS_{6-16} (soil intake rate) mg/day	100
IRS_{16-30} (soil intake rate) mg/day	100
IRS_{recsc} (soil intake rate - child) mg/day	200
IRS_{recsa} (soil intake rate - adult) mg/day	100
IRS_{recsa} (soil intake rate - adult) mg/day	100
ED_{0-2} (exposure duration) year	2
ED_{2-6} (exposure duration) year	4
ED_{6-16} (exposure duration) year	10
ED_{16-30} (exposure duration) year	10
ED_{recsc} (exposure duration - child) year	6
ED_{recsa} (exposure duration - adult) year	20
ED_{recsa} (exposure duration - adult) year	20
ED_{recs} (exposure duration - recreator) year	26
ET_{0-2} (exposure time) hr/day	0
ET_{2-6} (exposure time) hr/day	0

Site-specific
Recreator Equation Inputs for Soil

Variable	Value
$ET_{6\text{-}16}$ (exposure time) hr/day	0
$ET_{16\text{-}30}$ (exposure time) hr/day	0
ET_{recsc} (exposure time - child) hr/day	0
ET_{recsa} (exposure time - adult) hr/day	0
ET_{recsa} (exposure time - adult) hr/day	0
ET_{recs} (exposure time - recreator) hr/day	0
$BW_{0\text{-}2}$ (body weight) kg	15
$BW_{2\text{-}6}$ (body weight) kg	15
$BW_{6\text{-}16}$ (body weight) kg	80
$BW_{16\text{-}30}$ (body weight) kg	80
BW_{recsc} (body weight - child) kg	15
BW_{recsa} (body weight - adult) kg	80
BW_{recsa} (body weight - adult) kg	80
$AF_{0\text{-}2}$ (skin adherence factor) mg/cm^2	0.4
$AF_{2\text{-}6}$ (skin adherence factor) mg/cm^2	0.4
$AF_{6\text{-}16}$ (skin adherence factor) mg/cm^2	0.4
$AF_{16\text{-}30}$ (skin adherence factor) mg/cm^2	0.4
AF_{recsc} (skin adherence factor - child) mg/cm^2	0.4
AF_{recsa} (skin adherence factor - adult) mg/cm^2	0.4
AF_{recsa} (skin adherence factor - adult) mg/cm^2	0.4
City (Climate Zone) PEF Selection	Default
A_s (acres) PEF Selection	0.5
Q/C_{wp} (g/m^2-s per kg/m^3) PEF Selection	93.77
PEF (particulate emission factor) m^3/kg	1359344438
A (PEF Dispersion Constant)	16.2302
B (PEF Dispersion Constant)	18.7762
C (PEF Dispersion Constant)	216.108
V (fraction of vegetative cover) unitless	0.5
U_m (mean annual wind speed) m/s	4.69
U_t (equivalent threshold value)	11.32
F(x) (function dependant on U_m/U_t) unitless	0.194
City (Climate Zone) VF Selection	Default
A_s (acres) VF Selection	0.5
Q/C_{wp} (g/m^2-s per kg/m^3) VF Selection	68.18
foc (fraction organic carbon in soil) g/g	0.006
ρ_b (dry soil bulk density) g/cm^3	1.5
ρ_s (soil particle density) g/cm^3	2.65
θ_w (water-filled soil porosity) L_{water}/L_{soil}	0.15
T (exposure interval) s	819936000

Site-specific
Recreator Equation Inputs for Soil

Variable	Value
A (VF Dispersion Constant)	11.911
B (VF Dispersion Constant)	18.4385
C (VF Dispersion Constant)	209.7845

Output generated 12FEB2015:16:23:13

Site-specific
Recreator Screening Levels (RSL) for Soil
ca=Cancer, nc=Noncancer, ca* (Where nc SL < 100 x ca SL),
ca** (Where nc SL < 10 x ca SL), max=SL exceeds ceiling limit (see User's Guide), sat=SL exceeds csat,
Smax=Soil SL exceeds ceiling limit and has been substituted with the max value (see User's Guide)
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	Mutagen?	VOC ?	Ingestion SF (mg/kg-day)$^{-1}$	SFO Ref	Inhalation Unit Risk (ug/m^3)$^{-1}$	IUR Ref	Chronic RfD (mg/kg-day)	Chronic RfD Ref	Chronic RfC (mg/m^3)	Chronic RfC Ref	GIABS	ABS	RBA	Volatilization Factor (m^3/kg)	Soil Saturation Concentration (mg/kg)	Particulate Emission Factor (m^3/kg)	Ingestion SL TR=1.0E-6 (mg/kg)	Dermal SL TR=1.0E-6 (mg/kg)	Inhalation SL TR=1.0E-6 (mg/kg)	Carcinogenic SL TR=1.0E-6 (mg/kg)	Ingestion SL (Child) HQ=0.1 (mg/kg)	Dermal SL (Child) HQ=0.1 (mg/kg)	Inhalation SL (Child) HQ=0.1 (mg/kg)	Noncarcinogenic SL (Child) HI=0.1 (mg/kg)	Ingestion SL (Adult) HQ=0.1 (mg/kg)	Dermal SL (Adult) HQ=0.1 (mg/kg)	Inhalation SL (Adult) HQ=0.1 (mg/kg)	Noncarcinogenic SL (Adult) HI=0.1 (mg/kg)	Screening Level (mg/kg)
Acephate	30560-19-1	No	No	8.70E-03	I	-		4.00E-03	I	-		1	0.1	1	-	-	1.36E+09	5.38E+02	8.11E+02	-	3.23E+02	2.11E+02	7.72E+02	-	1.65E+02	2.25E+03	1.17E+03	-	7.71E+02	1.65E+02 nc
Acetaldehyde	75-07-0	No	Yes	-		2.20E-06	I	-		9.00E-03	I	1	-	1	8.72E+03	1.07E+05	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Acetochlor	34256-82-1	No	No	-		-		2.00E-02	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.05E+03	3.86E+03	-	8.27E+02	1.12E+04	5.87E+03	-	3.86E+03	8.27E+02 nc
Acetone	67-64-1	No	Yes	-		-		9.00E-01	I	3.09E+01	A	1	-	1	1.37E+04	1.14E+05	1.36E+09	-	-	-	-	4.74E+04	-	-	4.74E+04	5.05E+05	-	-	5.05E+05	4.74E+04 nc
Acetone Cyanohydrin	75-86-5	No	Yes	-		-		-		2.00E-03	S	1	-	1	2.38E+04	1.06E+05	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Acetonitrile	75-05-8	No	Yes	-		-		-		6.00E-02	I	1	-	1	1.30E+04	1.28E+05	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Acetophenone	98-86-2	No	Yes	-		-		1.00E-01	I	-		1	-	1	5.97E+04	2.52E+03	1.36E+09	-	-	-	-	5.26E+03	-	-	5.26E+03	5.62E+04	-	-	5.62E+04	5.26E+03 sat
Acetylaminofluorene, 2-	53-96-3	No	No	3.80E+00	C	1.30E-03	C	-		-		1	0.1	1	-	-	1.36E+09	1.23E+00	1.86E+00	-	7.40E-01	-	-	-	-	-	-	-	-	7.40E-01 ca
Acifluorofen	50594-66-6	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Acridine	260-94-6	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Acrolein	107-02-8	No	Yes	-		-		5.00E-04	I	2.00E-05	I	1	-	1	6.91E+03	2.27E+04	1.36E+09	-	-	-	-	2.63E+01	-	-	2.63E+01	2.81E+02	-	-	2.81E+02	2.63E+01 nc
Acrylamide	79-06-1	Yes	No	5.00E-01	I	1.00E-04	I	2.00E-03	I	6.00E-03	I	1	0.1	1	-	-	1.36E+09	2.06E+00	4.64E+00	-	1.43E+00	1.05E+02	3.86E+02	-	8.27E+01	1.12E+03	5.87E+02	-	3.86E+02	1.43E+00 ca*
Acrylic Acid	79-10-7	No	No	-		-		5.00E-01	I	1.00E-03	I	1	0.1	1	-	-	1.36E+09	-	-	-	-	2.63E+04	9.65E+04	-	2.07E+04	2.81E+05	1.47E+05	-	9.64E+04	2.07E+04 nc
Acrylonitrile	107-13-1	No	Yes	5.40E-01	I	6.80E-05	I	4.00E-02	A	2.00E-03	I	1	-	1	7.69E+03	1.13E+04	1.36E+09	8.67E+00	-	-	8.67E+00	2.11E+03	-	-	2.11E+03	2.25E+04	-	-	2.25E+04	8.67E+00 ca
Adiponitrile	111-69-3	No	No	-		-		-		6.00E-03	P	1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Alachlor	15972-60-8	No	No	5.60E-02	C	-		1.00E-02	I	-		1	0.1	1	-	-	1.36E+09	8.36E+01	1.26E+02	-	5.02E+01	5.26E+02	1.93E+03	-	4.14E+02	5.62E+03	2.94E+03	-	1.93E+03	5.02E+01 ca**
ALAR	1596-84-5	No	No	1.80E-02	C	5.10E-06	C	1.50E-01	I	-		1	0.1	1	-	-	1.36E+09	2.60E+02	3.92E+02	-	1.56E+02	7.90E+03	2.89E+04	-	6.20E+03	8.42E+04	4.41E+04	-	2.89E+04	1.56E+02 ca*
Aldicarb	116-06-3	No	No	-		-		1.00E-03	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	5.26E+01	1.93E+02	-	4.14E+01	5.62E+02	2.94E+02	-	1.93E+02	4.14E+01 nc
Aldicarb Sulfone	1646-88-4	No	No	-		-		1.00E-03	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	5.26E+01	1.93E+02	-	4.14E+01	5.62E+02	2.94E+02	-	1.93E+02	4.14E+01 nc
Aldicarb sulfoxide	1646-87-3	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Aldrin	309-00-2	No	No	1.70E+01	I	4.90E-03	I	3.00E-05	I	-		1	0.1	1	-	-	1.36E+09	2.75E-01	4.15E-01	-	1.66E-01	1.58E+00	5.79E+00	-	1.24E+00	1.68E+01	8.81E+00	-	5.79E+00	1.66E-01 ca**
Aliphatic Chlorinated Hydrocarbons (each	NA	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Aliphatic Chlorinated Hydrocarbons (total	NA	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Alizarin Red Compounds	NA	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Allyl	74223-64-6	No	No	-		-		2.50E-01	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.32E+04	4.82E+04	-	1.03E+04	1.40E+05	7.34E+04	-	4.82E+04	1.03E+04 nc
Allyl Alcohol	107-18-6	No	No	-		-		5.00E-03	I	1.00E-04	S	1	0.1	1	-	-	1.36E+09	-	-	-	-	2.63E+02	9.65E+02	-	2.07E+02	2.81E+03	1.47E+03	-	9.64E+02	2.07E+02 nc
Allyl Chloride	107-05-1	No	Yes	2.10E-02	C	6.00E-06	C	-		1.00E-03	I	1	-	1	1.58E+03	1.42E+03	1.36E+09	2.23E+02	-	-	2.23E+02	-	-	-	-	-	-	-	-	2.23E+02 ca
Aluminum	7429-90-5	No	No	-		-		1.00E+00	P	5.00E-03	P	1	-	1	-	-	1.36E+09	-	-	-	-	5.26E+04	-	-	5.26E+04	5.62E+05	-	-	5.62E+05	5.26E+04 nc
Aluminum Phosphide	20859-73-8	No	No	-		-		4.00E-04	I	-		1	-	1	-	-	1.36E+09	-	-	-	-	2.11E+01	-	-	2.11E+01	2.25E+02	-	-	2.25E+02	2.11E+01 nc
Amdro	67485-29-4	No	No	-		-		3.00E-04	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.58E+01	5.79E+01	-	1.24E+01	1.68E+02	8.81E+01	-	5.79E+01	1.24E+01 nc
Ametryn	834-12-8	No	No	-		-		9.00E-03	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	4.74E+02	1.74E+03	-	3.72E+02	5.05E+03	2.64E+03	-	1.74E+03	3.72E+02 nc
Amino-4-chlorobenzotrifluoride, 3-	121-50-6	No	Yes	-		-		-		-		1	-	1	2.68E+05	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Aminoazobenzene, p-	60-09-3	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Aminobiphenyl, 4-	92-67-1	No	No	2.10E+01	C	6.00E-03	C	-		-		1	0.1	1	-	-	1.36E+09	2.23E-01	3.36E-01	-	1.34E-01	-	-	-	-	-	-	-	-	1.34E-01 ca
Aminophenol, m-	591-27-5	No	No	-		-		8.00E-02	P	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	4.21E+03	1.54E+04	-	3.31E+03	4.49E+04	2.35E+04	-	1.54E+04	3.31E+03 nc
Aminophenol, o-	95-55-6	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Aminophenol, p-	123-30-8	No	No	-		-		2.00E-02	P	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.05E+03	3.86E+03	-	8.27E+02	1.12E+04	5.87E+03	-	3.86E+03	8.27E+02 nc
Aminopyridine, 4-	504-24-5	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Amitraz	33089-61-1	No	No	-		-		2.50E-03	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.32E+02	4.82E+02	-	1.03E+02	1.40E+03	7.34E+02	-	4.82E+02	1.03E+02 nc
Ammonium Sulfamate	7773-06-0	No	No	-		-		2.00E-01	I	-		1	-	1	-	-	1.36E+09	-	-	-	-	1.05E+04	-	-	1.05E+04	1.12E+05	-	-	1.12E+05	1.05E+04 nc
Amyl Alcohol, tert-	75-85-4	No	Yes	-		-		-		3.00E-03	S	1	-	1	2.62E+04	1.37E+04	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Aniline	62-53-3	No	No	5.70E-03	I	1.60E-06	C	7.00E-03	P	1.00E-03	I	1	0.1	1	-	-	1.36E+09	8.21E+02	1.24E+03	-	4.94E+02	3.69E+02	1.35E+03	-	2.90E+02	3.93E+03	2.06E+03	-	1.35E+03	2.90E+02 nc
Anilinobenzothiazole	1843-21-6	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Anthraquinone, 9,10-	84-65-1	No	No	4.00E-02	P	-		2.00E-03	S	-		1	0.1	1	-	-	1.36E+09	1.17E+02	1.76E+02	-	7.03E+01	1.05E+02	3.86E+02	-	8.27E+01	1.12E+03	5.87E+02	-	3.86E+02	7.03E+01 ca**
Antimony (metallic	7440-36-0	No	No	-		-		4.00E-04	I	-		0.15	-	1	-	-	1.36E+09	-	-	-	-	2.11E+01	-	-	2.11E+01	2.25E+02	-	-	2.25E+02	2.11E+01 nc
Antimony Pentoxide	1314-60-9	No	No	-		-		5.00E-04	H	-		0.15	-	1	-	-	1.36E+09	-	-	-	-	2.63E+01	-	-	2.63E+01	2.81E+02	-	-	2.81E+02	2.63E+01 nc
Antimony Potassium Tartrate	11071-15-1	No	No	-		-		9.00E-04	H	-		0.15	-	1	-	-	1.36E+09	-	-	-	-	4.74E+01	-	-	4.74E+01	5.05E+02	-	-	5.05E+02	4.74E+01 nc
Antimony Tetroxide	1332-81-6	No	No	-		-		4.00E-04	H	-		0.15	-	1	-	-	1.36E+09	-	-	-	-	2.11E+01	-	-	2.11E+01	2.25E+02	-	-	2.25E+02	2.11E+01 nc
Antimony Trioxide	1309-64-4	No	No	-		-		-		2.00E-04	I	0.15	-	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Antimony Trichloride	10025-91-9	No	No	-		-		-		-		1	-	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Apollo	74115-24-5	No	No	-		-		1.30E-02	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	6.84E+02	2.51E+03	-	5.38E+02	7.30E+03	3.82E+03	-	2.51E+03	5.38E+02 nc
Aramite	140-57-8	No	No	2.50E-02	I	7.10E-06	I	5.00E-02	H	-		1	0.1	1	-	-	1.36E+09	1.87E+02	2.82E+02	-	1.13E+02	2.63E+03	9.65E+03	-	2.07E+03	2.81E+04	1.47E+04	-	9.64E+03	1.13E+02 ca*
Arsenic Salts	NA	No	No	-		-		-		-		1	0.03	0.6	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Arsenic, Inorganic	7440-38-2	No	No	1.50E+00	I	4.30E-03	I	3.00E-04	I	1.50E-05	C	1	0.03	0.6	-	-	1.36E+09	5.20E+00	1.57E+01	-	3.90E+00	2.63E+01	1.93E+02	-	2.32E+01	2.81E+02	2.94E+02	-	1.44E+02	3.90E+00 ca**
Arsine	7784-42-1	No	No	-		-		3.50E-06	C	5.00E-05	I	1	-	1	-	-	1.36E+09	-	-	-	-	1.84E-01	-	-	1.84E-01	1.97E+00	-	-	1.97E+00	1.84E-01 nc
Assure	76578-14-8	No	No	-		-		9.00E-03	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	4.74E+02	1.74E+03	-	3.72E+02	5.05E+03	2.64E+03	-	1.74E+03	3.72E+02 nc
Asulam	3337-71-1	No	No	-		-		5.00E-02	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	2.63E+03	9.65E+03	-	2.07E+03	2.81E+04	1.47E+04	-	9.64E+03	2.07E+03 nc
Atrazine	1912-24-9	No	No	2.30E-01	C	-		3.50E-02	I	-		1	0.1	1	-	-	1.36E+09	2.03E+01	3.07E+01	-	1.22E+01	1.84E+03	6.75E+03	-	1.45E+03	1.97E+04	1.03E+04	-	6.75E+03	1.22E+01 ca
Auramine	492-80-8	No	No	8.80E-01	C	2.50E-04	C	-		-		1	0.1	1	-	-	1.36E+09	5.32E+00	8.02E+00	-	3.20E+00	-	-	-	-	-	-	-	-	3.20E+00 ca
Avermectin B1	65195-55-3	No	No	-		-		4.00E-04	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	2.11E+01	7.72E+01	-	1.65E+01	2.25E+02	1.17E+02	-	7.71E+01	1.65E+01 nc
Azobenzene	103-33-3	No	Yes	1.10E-01	I	3.10E-05	I	-		-		1	-	1	5.23E+05	-	1.36E+09	4.25E+01	-	-	4.25E+01	-	-	-	-	-	-	-	-	4.25E+01 ca
Azodicarbonamide	123-77-3	No	No	-		-		1.00E+00	P	7.00E-06	P	1	0.1	1	-	-	1.36E+09	-	-	-	-	5.26E+04	1.93E+05	-	4.14E+04	5.62E+05	2.94E+05	-	1.93E+05	4.14E+04 nc
Barium	7440-39-3	No	No	-		-		2.00E-01	I	5.00E-04	H	0.07	-	1	-	-	1.36E+09	-	-	-	-	1.05E+04	-	-	1.05E+04	1.12E+05	-	-	1.12E+05	1.05E+04 nc
Barium Chromate	10294-40-3	Yes	No	5.00E-01	C	1.50E-01	C	2.00E-02	C	2.00E-04	C	0.025	-	1	-	-	1.36E+09	2.06E+00	-	-	2.06E+00	1.05E+03	-	-	1.05E+03	1.12E+04	-	-	1.12E+04	2.06E+00 ca
Baygon	114-26-1	No	No	-		-		4.00E-03	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	2.11E+02	7.72E+02	-	1.65E+02	2.25E+03	1.17E+03	-	7.71E+02	1.65E+02 nc
Bayleton	43121-43-3	No	No	-		-		3.00E-02	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.58E+03	5.79E+03	-	1.24E+03	1.68E+04	8.81E+03	-	5.79E+03	1.24E+03 nc
Baythroid	68359-37-5	No	No	-		-		2.50E-02	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.32E+03	4.82E+03	-	1.03E+03	1.40E+04	7.34E+03	-	4.82E+03	1.03E+03 nc
Benefin	1861-40-1	No	No	-		-		3.00E-01	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.58E+04	5.79E+04	-	1.24E+04	1.68E+05	8.81E+04	-	5.79E+04	1.24E+04 nc
Benomyl	17804-35-2	No	No	-		-		5.00E-02	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	2.63E+03	9.65E+03	-	2.07E+03	2.81E+04	1.47E+04	-	9.64E+03	2.07E+03 nc
Bentazon	25057-89-0	No	No	-		-		3.00E-02	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.58E+03	5.79E+03	-	1.24E+03	1.68E+04	8.81E+03	-	5.79E+03	1.24E+03 nc
Benzaldehyde	100-52-7	No	Yes	-		-		1.00E-01	I	-		1	-	1	2.25E+04	1.16E+03	1.36E+09	-	-	-	-	5.26E+03	-	-	5.26E+03	5.62E+04	-	-	5.62E+04	5.26E+03 sat

Site-specific
Recreator Screening Levels (RSL) for Soil
ca=Cancer, nc=Noncancer, ca* (Where nc SL < 100 x ca SL),
ca** (Where nc SL < 10 x ca SL), max=SL exceeds ceiling limit (see User's Guide), sat=SL exceeds csat,
Smax=Soil SL exceeds ceiling limit and has been substituted with the max value (see User's Guide)
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	Mutagen?	VOC ?	Ingestion SF (mg/kg-day)$^{-1}$	SFO Ref	Inhalation Unit Risk (ug/m^3)$^{-1}$	IUR Ref	Chronic RfD (mg/kg-day)	Chronic RfD Ref	Chronic RfC (mg/m^3)	Chronic RfC Ref	GIABS	ABS	RBA	Volatilization Factor (m^3/kg)	Soil Saturation Concentration (mg/kg)	Particulate Emission Factor (m^3/kg)	Ingestion SL TR=1.0E-6 (mg/kg)	Dermal SL TR=1.0E-6 (mg/kg)	Inhalation SL TR=1.0E-6 (mg/kg)	Carcinogenic SL TR=1.0E-6 (mg/kg)	Ingestion SL (Child) HQ=0.1 (mg/kg)	Dermal SL (Child) HQ=0.1 (mg/kg)	Inhalation SL (Child) HQ=0.1 (mg/kg)	Noncarcinogenic SL (Child) HI=0.1 (mg/kg)	Ingestion SL (Adult) HQ=0.1 (mg/kg)	Dermal SL (Adult) HQ=0.1 (mg/kg)	Inhalation SL (Adult) HQ=0.1 (mg/kg)	Noncarcinogenic SL (Adult) HI=0.1 (mg/kg)	Screening Level (mg/kg)
Benzene	71-43-2	No	Yes	5.50E-02	I	7.80E-06	I	4.00E-03	I	3.00E-02	I	1	-	1	3.54E+03	1.82E+03	1.36E+09	8.51E+01	-	-	8.51E+01	2.11E+02	-	-	2.11E+02	2.25E+03	-	-	2.25E+03	8.51E+01 ca**
Benzene, Ethyldimethy	29224-55-3	No	Yes	-		-		-		-		1	-	1	7.79E+03	1.30E+02	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzene, Ethylmethyl	25550-14-5	No	Yes	-		-		-		-		1	-	1	8.32E+03	3.30E+02	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzene, Methylpropeny	768-00-3	No	Yes	-		-		-		-		1	-	1	1.15E+04	4.90E+02	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzene, Methylpropyl	28729-54-6	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzene, Trimethy	25551-13-7	No	Yes	-		-		-		-		1	-	1	5.81E+03	1.82E+02	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzenediamine-2-methyl sulfate, 1,4-	6369-59-1	No	No	1.00E-01	X	-		3.00E-04	S	-		1	0.1	1	-	-	1.36E+09	4.68E+01	7.06E+01	-	2.81E+01	1.58E+01	5.79E+01	-	1.24E+01	1.68E+02	8.81E+01	-	5.79E+01	1.24E+01 nc
Benzenethio	108-98-5	No	Yes	-		-		1.00E-03	P	-		1	-	1	1.94E+04	1.26E+03	1.36E+09	-	-	-	-	5.26E+01	-	-	5.26E+01	5.62E+02	-	-	5.62E+02	5.26E+01 nc
Benzidine	92-87-5	Yes	No	2.30E+02	I	6.70E-02	I	3.00E-03	I	-		1	0.1	1	-	-	1.36E+09	4.48E-03	1.01E-02	-	3.10E-03	1.58E+02	5.79E+02	-	1.24E+02	1.68E+03	8.81E+02	-	5.79E+02	3.10E-03 ca
Benzofluoranthenes, tota	NA	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzofluorene, 2,3-	243-17-4	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzoic Acid	65-85-0	No	No	-		-		4.00E+00	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	2.11E+05	7.72E+05	-	1.65E+05	2.25E+06	1.17E+06	-	7.71E+05	1.65E+05 max
Benzoic acid, 3,5-dichloro-	51-36-5	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzoic acid, 4-hydroxy-, methyl este	99-76-3	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzothiazole	95-16-9	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzotrichloride	98-07-7	No	Yes	1.30E+01	I	-		-		-		1	-	1	6.76E+04	3.24E+02	1.36E+09	3.60E-01	-	-	3.60E-01	-	-	-	-	-	-	-	-	3.60E-01 ca
Benzyl Alcohol	100-51-6	No	No	-		-		1.00E-01	P	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	5.26E+03	1.93E+04	-	4.14E+03	5.62E+04	2.94E+04	-	1.93E+04	4.14E+03 nc
Benzyl Chloride	100-44-7	No	Yes	1.70E-01	I	4.90E-05	C	2.00E-03	P	1.00E-03	P	1	-	1	2.55E+04	1.46E+03	1.36E+09	2.75E+01	-	-	2.75E+01	1.05E+02	-	-	1.05E+02	1.12E+03	-	-	1.12E+03	2.75E+01 ca**
Beryllium and compounds	7440-41-7	No	No	-		2.40E-03	I	2.00E-03	I	2.00E-05	I	0.007	-	1	-	-	1.36E+09	-	-	-	-	1.05E+02	-	-	1.05E+02	1.12E+03	-	-	1.12E+03	1.05E+02 nc
Bidrin	141-66-2	No	No	-		-		1.00E-04	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	5.26E+00	1.93E+01	-	4.14E+00	5.62E+01	2.94E+01	-	1.93E+01	4.14E+00 nc
Bifenox	42576-02-3	No	No	-		-		9.00E-03	P	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	4.74E+02	1.74E+03	-	3.72E+02	5.05E+03	2.64E+03	-	1.74E+03	3.72E+02 nc
Biphenthrin	82657-04-3	No	No	-		-		1.50E-02	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	7.90E+02	2.89E+03	-	6.20E+02	8.42E+03	4.41E+03	-	2.89E+03	6.20E+02 nc
Biphenyl, 1,1'-	92-52-4	No	Yes	8.00E-03	I	-		5.00E-01	I	4.00E-04	S	1	-	1	1.14E+05	-	1.36E+09	5.85E+02	-	-	5.85E+02	2.63E+04	-	-	2.63E+04	2.81E+05	-	-	2.81E+05	5.85E+02 ca*
Bis(2-chloroethoxy)methane	111-91-1	No	No	-		-		3.00E-03	P	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.58E+02	5.79E+02	-	1.24E+02	1.68E+03	8.81E+02	-	5.79E+02	1.24E+02 nc
Bis(2-chloroethyl)ether	111-44-4	No	Yes	1.10E+00	I	3.30E-04	I	-		-		1	-	1	4.25E+04	5.05E+03	1.36E+09	4.25E+00	-	-	4.25E+00	-	-	-	-	-	-	-	-	4.25E+00 ca
Bis(2-chloro-1-methylethyl) ether	108-60-1	No	Yes	7.00E-02	H	1.00E-05	H	4.00E-02	I	-		1	-	1	3.50E+04	1.02E+03	1.36E+09	6.68E+01	-	-	6.68E+01	2.11E+03	-	-	2.11E+03	2.25E+04	-	-	2.25E+04	6.68E+01 ca*
Bis(chloromethyl)ether	542-88-1	No	Yes	2.20E+02	I	6.20E-02	I	-		-		1	-	1	1.88E+03	4.22E+03	1.36E+09	2.13E-02	-	-	2.13E-02	-	-	-	-	-	-	-	-	2.13E-02 ca
Bisphenol A	80-05-7	No	No	-		-		5.00E-02	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	2.63E+03	9.65E+03	-	2.07E+03	2.81E+04	1.47E+04	-	9.64E+03	2.07E+03 nc
Boron And Borates Only	7440-42-8	No	No	-		-		2.00E-01	I	2.00E-02	H	1	-	1	-	-	1.36E+09	-	-	-	-	1.05E+04	-	-	1.05E+04	1.12E+05	-	-	1.12E+05	1.05E+04 nc
Boron Trifluoride	7637-07-2	No	No	-		-		4.00E-02	C	1.30E-02	C	1	-	1	-	-	1.36E+09	-	-	-	-	2.11E+03	-	-	2.11E+03	2.25E+04	-	-	2.25E+04	2.11E+03 nc
Boron Trichloride	10294-34-5	No	No	-		-		2.00E+00	P	2.00E-02	P	1	-	1	-	-	1.36E+09	-	-	-	-	1.05E+05	-	-	1.05E+05	1.12E+06	-	-	1.12E+06	1.05E+05 max
Bromacil	314-40-9	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromate	15541-45-4	No	No	7.00E-01	I	-		4.00E-03	I	-		1	-	1	-	-	1.36E+09	6.68E+00	-	-	6.68E+00	2.11E+02	-	-	2.11E+02	2.25E+03	-	-	2.25E+03	6.68E+00 ca*
Bromine	7726-95-6	No	No	-		-		-		-		1	-	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromo-2-chloroethane, 1-	107-04-0	No	Yes	2.00E+00	X	6.00E-04	X	-		-		1	-	1	5.92E+03	2.38E+03	1.36E+09	2.34E+00	-	-	2.34E+00	-	-	-	-	-	-	-	-	2.34E+00 ca
Bromo-3-fluorobenzene, 1-	1073-06-9	No	Yes	-		-		-		-		1	-	1	7.10E+03	9.07E+02	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromo-4-Ethylbenzene, 1-	1585-07-5	No	Yes	-		-		-		-		1	-	1	1.42E+04	2.06E+02	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromoacetic acid	79-08-3	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromoacetophenone, 3-	2142-63-4	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromobenzene	108-86-1	No	Yes	-		-		8.00E-03	I	6.00E-02	I	1	-	1	8.37E+03	6.79E+02	1.36E+09	-	-	-	-	4.21E+02	-	-	4.21E+02	4.49E+03	-	-	4.49E+03	4.21E+02 nc
Bromochloromethane	74-97-5	No	Yes	-		-		-		4.00E-02	S	1	-	1	3.58E+03	4.04E+03	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromodichloromethane	75-27-4	No	Yes	6.20E-02	I	3.70E-05	C	2.00E-02	I	-		1	-	1	3.97E+03	9.31E+02	1.36E+09	7.55E+01	-	-	7.55E+01	1.05E+03	-	-	1.05E+03	1.12E+04	-	-	1.12E+04	7.55E+01 ca*
Bromodiphenyl Ether, p-	101-55-3	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromofluorobenzene, p-	460-00-4	No	Yes	-		-		-		-		1	-	1	7.21E+03	1.06E+03	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromoform	75-25-2	No	No	7.90E-03	I	1.10E-06	I	2.00E-02	I	-		1	0.1	1	-	-	1.36E+09	5.92E+02	8.93E+02	-	3.56E+02	1.05E+03	3.86E+03	-	8.27E+02	1.12E+04	5.87E+03	-	3.86E+03	3.56E+02 ca**
Bromomethane	74-83-9	No	Yes	-		-		1.40E-03	I	5.00E-03	I	1	-	1	1.40E+03	3.59E+03	1.36E+09	-	-	-	-	7.37E+01	-	-	7.37E+01	7.86E+02	-	-	7.86E+02	7.37E+01 nc
Bromophenol, p-	106-41-2	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromophos	2104-96-3	No	No	-		-		5.00E-03	H	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	2.63E+02	9.65E+02	-	2.07E+02	2.81E+03	1.47E+03	-	9.64E+02	2.07E+02 nc
Bromopyridine, 2-	109-04-6	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromotrichloromethane	75-62-7	No	Yes	-		-		-		-		1	-	1	1.30E+04	4.25E+02	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromoxynil	1689-84-5	No	No	-		-		2.00E-02	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.05E+03	3.86E+03	-	8.27E+02	1.12E+04	5.87E+03	-	3.86E+03	8.27E+02 nc
Bromoxynil Octanoate	1689-99-2	No	No	-		-		2.00E-02	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.05E+03	3.86E+03	-	8.27E+02	1.12E+04	5.87E+03	-	3.86E+03	8.27E+02 nc
Butadiene, 1,3-	106-99-0	No	Yes	3.40E+00	C	3.00E-05	I	-		2.00E-03	I	1	-	1	8.66E+02	6.67E+02	1.36E+09	1.38E+00	-	-	1.38E+00	-	-	-	-	-	-	-	-	1.38E+00 ca
Butanediol, 2,3-	513-85-9	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	-
Butanol	35296-72-1	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	-
Butanol, N-	71-36-3	No	No	-		-		1.00E-01	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	5.26E+03	1.93E+04	-	4.14E+03	5.62E+04	2.94E+04	-	1.93E+04	4.14E+03 nc
Butanone-2, 4-chloro-4,4-difluoro	NA	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	-
Butyl alcohol, sec-	78-92-2	No	No	-		-		2.00E+00	P	3.00E+01	P	1	0.1	1	-	-	1.36E+09	-	-	-	-	1.05E+05	3.86E+05	-	8.27E+04	1.12E+06	5.87E+05	-	3.86E+05	8.27E+04 nc
Butyl Alcohol, t-	75-65-0	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	-
Butyl Benzyl Phthlat	85-68-7	No	No	1.90E-03	P	-		2.00E-01	I	-		1	0.1	1	-	-	1.36E+09	2.46E+03	3.71E+03	-	1.48E+03	1.05E+04	3.86E+04	-	8.27E+03	1.12E+05	5.87E+04	-	3.86E+04	1.48E+03 ca**
Butyl Formate, tert-	762-75-4	No	Yes	-		-		-		-		1	-	1	4.35E+03	3.00E+03	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	-
Butylacetate	123-86-4	No	Yes	-		-		-		-		1	0.1	1	8.56E+03	1.79E+03	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	-
Butylate	2008-41-5	No	No	-		-		5.00E-02	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	2.63E+03	9.65E+03	-	2.07E+03	2.81E+04	1.47E+04	-	9.64E+03	2.07E+03 nc
Butylated hydroxyanisol	25013-16-5	No	No	2.00E-04	C	5.70E-08	C	-		-		1	0.1	1	-	-	1.36E+09	2.34E+04	3.53E+04	-	1.41E+04	-	-	-	-	-	-	-	-	1.41E+04 ca
Butylated hydroxytoluene	128-37-0	No	No	3.60E-03	P	-		3.00E-01	P	-		1	0.1	1	-	-	1.36E+09	1.30E+03	1.96E+03	-	7.82E+02	1.58E+04	5.79E+04	-	1.24E+04	1.68E+05	8.81E+04	-	5.79E+04	7.82E+02 ca*
Butylbenzene, n-	104-51-8	No	Yes	-		-		5.00E-02	P	-		1	-	1	8.14E+03	1.08E+02	1.36E+09	-	-	-	-	2.63E+03	-	-	2.63E+03	2.81E+04	-	-	2.81E+04	2.63E+03 sat
Butylbenzene, sec-	135-98-8	No	Yes	-		-		1.00E-01	S	-		1	-	1	7.35E+03	1.45E+02	1.36E+09	-	-	-	-	5.26E+03	-	-	5.26E+03	5.62E+04	-	-	5.62E+04	5.26E+03 sat
Butylbenzene, tert-	98-06-6	No	Yes	-		-		1.00E-01	S	-		1	-	1	7.36E+03	1.83E+02	1.36E+09	-	-	-	-	5.26E+03	-	-	5.26E+03	5.62E+04	-	-	5.62E+04	5.26E+03 sat
Butylchloride, t-	507-20-0	No	Yes	-		-		-		-		1	-	1	1.70E+03	1.33E+03	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	-

Site-specific
Recreator Screening Levels (RSL) for Soil
ca=Cancer, nc=Noncancer, ca* (Where nc SL < 100 x ca SL),
ca** (Where nc SL < 10 x ca SL), max=SL exceeds ceiling limit (see User's Guide), sat=SL exceeds csat,
Smax=Soil SL exceeds ceiling limit and has been substituted with the max value (see User's Guide)
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	Mutagen?	VOC ?	Ingestion SF (mg/kg-day)$^{-1}$	SFO Ref	Inhalation Unit Risk (ug/m^3)$^{-1}$	IUR Ref	Chronic RfD (mg/kg-day)	Chronic RfD Ref	Chronic RfC (mg/m^3)	Chronic RfC Ref	GIABS	ABS	RBA	Volatilization Factor (m^3/kg)	Soil Saturation Concentration (mg/kg)	Particulate Emission Factor (m^3/kg)	Ingestion SL TR=1.0E-6 (mg/kg)	Dermal SL TR=1.0E-6 (mg/kg)	Inhalation SL TR=1.0E-6 (mg/kg)	Carcinogenic SL TR=1.0E-6 (mg/kg)	Ingestion SL (Child) HQ=0.1 (mg/kg)	Dermal SL (Child) HQ=0.1 (mg/kg)	Inhalation SL (Child) HQ=0.1 (mg/kg)	Noncarcinogenic SL (Child) HI=0.1 (mg/kg)	Ingestion SL (Adult) HQ=0.1 (mg/kg)	Dermal SL (Adult) HQ=0.1 (mg/kg)	Inhalation SL (Adult) HQ=0.1 (mg/kg)	Noncarcinogenic SL (Adult) HI=0.1 (mg/kg)	Screening Level (mg/kg)
Butyltin	NA	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Cacodylic Acid	75-60-5	No	No	-		-		2.00E-02	A	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.05E+03	3.86E+03	-	8.27E+02	1.12E+04	5.87E+03	-	3.86E+03	8.27E+02 nc
Cadmium (Diet)	7440-43-9	No	No	-		1.80E-03	I	1.00E-03	I	1.00E-05	A	0.025	0	1	-	-	1.36E+09	-	-	-	-	5.26E+01	4.82E+02	-	4.75E+01	5.62E+02	7.34E+02	-	3.18E+02	4.75E+01 nc
Calcium	7440-70-2	No	No	-		-		-		-		1	-	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Calcium Chlorate	10137-74-3	No	No	-		-		-		-		-	-	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Calcium Chromate	13765-19-0	Yes	No	5.00E-01	C	1.50E-01	C	2.00E-02	C	2.00E-04	C	0.025	-	1	-	-	1.36E+09	2.06E+00	-	-	2.06E+00	1.05E+03	-	-	1.05E+03	1.12E+04	-	-	1.12E+04	2.06E+00 ca
Caprolactam	105-60-2	No	No	-		-		5.00E-01	I	2.20E-03	C	1	0.1	1	-	-	1.36E+09	-	-	-	-	2.63E+04	9.65E+04	-	2.07E+04	2.81E+05	1.47E+05	-	9.64E+04	2.07E+04 nc
Captafol	2425-06-1	No	No	1.50E-01	C	4.30E-05	C	2.00E-03	I	-		1	0.1	1	-	-	1.36E+09	3.12E+01	4.70E+01	-	1.88E+01	1.05E+02	3.86E+02	-	8.27E+01	1.12E+03	5.87E+02	-	3.86E+02	1.88E+01 ca**
Captan	133-06-2	No	No	2.30E-03	C	6.60E-07	C	1.30E-01	I	-		1	0.1	1	-	-	1.36E+09	2.03E+03	3.07E+03	-	1.22E+03	6.84E+03	2.51E+04	-	5.38E+03	7.30E+04	3.82E+04	-	2.51E+04	1.22E+03 ca**
Carbaryl	63-25-2	No	No	-		-		1.00E-01	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	5.26E+03	1.93E+04	-	4.14E+03	5.62E+04	2.94E+04	-	1.93E+04	4.14E+03 nc
Carbazole	86-74-8	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Carbofuran	1563-66-2	No	No	-		-		5.00E-03	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	2.63E+02	9.65E+02	-	2.07E+02	2.81E+03	1.47E+03	-	9.64E+02	2.07E+02 nc
Carbon Disulfide	75-15-0	No	Yes	-		-		1.00E-01	I	7.00E-01	I	1	-	1	1.17E+03	7.38E+02	1.36E+09	-	-	-	-	5.26E+03	-	-	5.26E+03	5.62E+04	-	-	5.62E+04	5.26E+03 sat
Carbon Tetrachloride	56-23-5	No	Yes	7.00E-02	I	6.00E-06	I	4.00E-03	I	1.00E-01	I	1	-	1	1.49E+03	4.58E+02	1.36E+09	6.68E+01	-	-	6.68E+01	2.11E+02	-	-	2.11E+02	2.25E+03	-	-	2.25E+03	6.68E+01 ca**
Carbosulfan	55285-14-8	No	No	-		-		1.00E-02	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	5.26E+02	1.93E+03	-	4.14E+02	5.62E+03	2.94E+03	-	1.93E+03	4.14E+02 nc
Carboxin	5234-68-4	No	No	-		-		1.00E-01	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	5.26E+03	1.93E+04	-	4.14E+03	5.62E+04	2.94E+04	-	1.93E+04	4.14E+03 nc
Catechol	120-80-9	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Ceric oxide	1306-38-3	No	No	-		-		-		9.00E-04	I	1	-	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Cerium, Stable	7440-45-1	No	No	-		-		-		-		1	-	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Chloral	75-87-6	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Chloral Hydrate	302-17-0	No	No	-		-		1.00E-01	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	5.26E+03	1.93E+04	-	4.14E+03	5.62E+04	2.94E+04	-	1.93E+04	4.14E+03 nc
Chloramben	133-90-4	No	No	-		-		1.50E-02	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	7.90E+02	2.89E+03	-	6.20E+02	8.42E+03	4.41E+03	-	2.89E+03	6.20E+02 nc
Chloramine	127-65-1	No	No	-		-		-		-		1	-	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Chloranil	118-75-2	No	No	4.03E-01	H	-		-		-		1	0.1	1	-	-	1.36E+09	1.16E+01	1.75E+01	-	6.98E+00	-	-	-	-	-	-	-	-	6.98E+00 ca
Chlorate (ClO3) as	14866-68-3	No	No	-		-		-		-		1	-	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Chlordane	12789-03-6	No	No	3.50E-01	I	1.00E-04	I	5.00E-04	I	7.00E-04	I	1	0.04	1	-	-	1.36E+09	1.34E+01	5.04E+01	-	1.06E+01	2.63E+01	2.41E+02	-	2.37E+01	2.81E+02	3.67E+02	-	1.59E+02	1.06E+01 ca**
Chlordane (alpha)	5103-71-9	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Chlordane (gamma)	5103-74-2	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Chlordecone (Kepone)	143-50-0	No	No	1.00E+01	I	4.60E-03	C	3.00E-04	I	-		1	0.1	1	-	-	1.36E+09	4.68E-01	7.06E-01	-	2.81E-01	1.58E+01	5.79E+01	-	1.24E+01	1.68E+02	8.81E+01	-	5.79E+01	2.81E-01 ca*
Chlorfenvinphos	470-90-6	No	No	-		-		7.00E-04	A	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	3.69E+01	1.35E+02	-	2.90E+01	3.93E+02	2.06E+02	-	1.35E+02	2.90E+01 nc
Chloride	16887-00-6	No	No	-		-		-		-		1	-	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Chlorimuron, Ethyl-	90982-32-4	No	No	-		-		2.00E-02	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.05E+03	3.86E+03	-	8.27E+02	1.12E+04	5.87E+03	-	3.86E+03	8.27E+02 nc
Chlorinated Hydrocarbons (total)	NA	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Chlorine	7782-50-5	No	No	-		-		1.00E-01	I	1.45E-04	A	1	-	1	-	-	1.36E+09	-	-	-	-	5.26E+03	-	-	5.26E+03	5.62E+04	-	-	5.62E+04	5.26E+03 nc
Chlorine Dioxide	10049-04-4	No	No	-		-		3.00E-02	I	2.00E-04	I	1	-	1	-	-	1.36E+09	-	-	-	-	1.58E+03	-	-	1.58E+03	1.68E+04	-	-	1.68E+04	1.58E+03 nc
Chlorite	14998-27-7	No	No	-		-		-		-		1	-	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Chlorite (Sodium Salt)	7758-19-2	No	No	-		-		3.00E-02	I	-		1	-	1	-	-	1.36E+09	-	-	-	-	1.58E+03	-	-	1.58E+03	1.68E+04	-	-	1.68E+04	1.58E+03 nc
Chloro-2-methylphenol, 4-	1570-64-5	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Chloro-4-methylpheno	35421-08-0	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Chloro-1,1-difluoroethane, 1-	75-68-3	No	Yes	-		-		-		5.00E+01	I	1	-	1	1.03E+03	1.15E+03	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Chloro-1,3-butadiene, 2-	126-99-8	No	Yes	-		3.00E-04	I	2.00E-02	H	2.00E-02	I	1	-	1	1.08E+03	7.51E+02	1.36E+09	-	-	-	-	1.05E+03	-	-	1.05E+03	1.12E+04	-	-	1.12E+04	1.05E+03 sat
Chloro-2-methylaniline HCl, 4-	3165-93-3	No	No	4.60E-01	H	-		-		-		1	0.1	1	-	-	1.36E+09	1.02E+01	1.53E+01	-	6.12E+00	-	-	-	-	-	-	-	-	6.12E+00 ca
Chloro-2-methylaniline, 4	95-69-2	No	No	1.00E-01	P	7.70E-05	C	3.00E-03	S	-		1	0.1	1	-	-	1.36E+09	4.68E+01	7.06E+01	-	2.81E+01	1.58E+02	5.79E+02	-	1.24E+02	1.68E+03	8.81E+02	-	5.79E+02	2.81E+01 ca**
Chloro-6-fluorophenol, 2-	2040-90-6	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Chloroacetaldehyde, 2-	107-20-0	No	Yes	2.70E-01	X	-		-		-		1	0.1	1	1.86E+04	2.83E+04	1.36E+09	1.73E+01	2.61E+01	-	1.04E+01	-	-	-	-	-	-	-	-	1.04E+01 ca
Chloroacetamide	79-07-2	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Chloroacetic Acid	79-11-8	No	No	-		-		2.00E-03	H	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.05E+02	3.86E+02	-	8.27E+01	1.12E+03	5.87E+02	-	3.86E+02	8.27E+01 nc
Chloroacetophenone, 2-	532-27-4	No	No	-		-		-		3.00E-05	I	1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Chloroaniline	27134-26-5	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Chloroaniline, 3-	108-42-9	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Chloroaniline, p-	106-47-8	No	No	2.00E-01	P	-		4.00E-03	I	-		1	0.1	1	-	-	1.36E+09	2.34E+01	3.53E+01	-	1.41E+01	2.11E+02	7.72E+02	-	1.65E+02	2.25E+03	1.17E+03	-	7.71E+02	1.41E+01 ca*
Chlorobenzene	108-90-7	No	Yes	-		-		2.00E-02	I	5.00E-02	P	1	-	1	6.45E+03	7.61E+02	1.36E+09	-	-	-	-	1.05E+03	-	-	1.05E+03	1.12E+04	-	-	1.12E+04	1.05E+03 sat
Chlorobenzene sulfonic acid, p-	98-66-8	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Chlorobenzenes (total)	NA	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Chlorobenzilate	510-15-6	No	No	1.10E-01	C	3.10E-05	C	2.00E-02	I	-		1	0.1	1	-	-	1.36E+09	4.25E+01	6.42E+01	-	2.56E+01	1.05E+03	3.86E+03	-	8.27E+02	1.12E+04	5.87E+03	-	3.86E+03	2.56E+01 ca*
Chlorobenzoic Acid, p-	74-11-3	No	No	-		-		3.00E-02	S	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.58E+03	5.79E+03	-	1.24E+03	1.68E+04	8.81E+03	-	5.79E+03	1.24E+03 nc
Chlorobenzotrifluoride, 3-nitro-4-	121-17-5	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Chlorobenzotrifluoride, 4-	98-56-6	No	Yes	-		-		3.00E-03	P	3.00E-01	P	1	-	1	6.76E+03	1.17E+02	1.36E+09	-	-	-	-	1.58E+02	-	-	1.58E+02	1.68E+03	-	-	1.68E+03	1.58E+02 sat
Chlorobiphenyl, p	2051-62-9	No	Yes	-		-		-		-		1	-	1	9.55E+04	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Chlorobutane, 1-	109-69-3	No	Yes	-		-		4.00E-02	P	-		1	-	1	1.76E+03	7.28E+02	1.36E+09	-	-	-	-	2.11E+03	-	-	2.11E+03	2.25E+04	-	-	2.25E+04	2.11E+03 sat
Chlorobutane, 2-	78-86-4	No	Yes	-		-		-		-		1	-	1	1.46E+03	6.51E+02	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Chlorocyclopentadiene	41851-50-7	No	Yes	-		-		-		-		1	-	1	1.80E+03	9.90E+02	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Chlorodibromoethane	73506-94-2	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Chlorodifluoromethane	75-45-6	No	Yes	-		-		-		5.00E+01	I	1	-	1	9.38E+02	1.68E+03	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Chloroethanol, 2-	107-07-3	No	No	-		-		2.00E-02	P	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.05E+03	3.86E+03	-	8.27E+02	1.12E+04	5.87E+03	-	3.86E+03	8.27E+02 nc
Chloroethylvinyl ether, 2-	110-75-8	No	Yes	-		-		-		-		1	0.1	1	1.60E+03	1.64E+03	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Chloroform	67-66-3	No	Yes	3.10E-02	C	2.30E-05	I	1.00E-02	I	9.77E-02	A	1	-	1	2.63E+03	2.54E+03	1.36E+09	1.51E+02	-	-	1.51E+02	5.26E+02	-	-	5.26E+02	5.62E+03	-	-	5.62E+03	1.51E+02 ca**
Chloromethane	74-87-3	No	Yes	-		-		-		9.00E-02	I	1	-	1	1.18E+03	1.32E+03	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Chloromethyl Methyl Ethe	107-30-2	No	Yes	2.40E+00	C	6.90E-04	C	-		-		1	-	1	5.33E+03	2.58E+04	1.36E+09	1.95E+00	-	-	1.95E+00	-	-	-	-	-	-	-	-	1.95E+00 ca
Chloronaphthalene, alpha-	90-13-1	No	Yes	-		-		-		-		1	0.1	1	7.59E+04	2.66E+02	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Chloronitrobenzene, o-	88-73-3	No	No	3.00E-01	P	-		3.00E-03	P	1.00E-05	S	1	0.1	1	-	-	1.36E+09	1.56E+01	2.35E+01	-	9.38E+00	1.58E+02	5.79E+02	-	1.24E+02	1.68E+03	8.81E+02	-	5.79E+02	9.38E+00 ca*

Site-specific
Recreator Screening Levels (RSL) for Soil
ca=Cancer, nc=Noncancer, ca* (Where nc SL < 100 x ca SL),
ca** (Where nc SL < 10 x ca SL), max=SL exceeds ceiling limit (see User's Guide), sat=SL exceeds csat,
Smax=Soil SL exceeds ceiling limit and has been substituted with the max value (see User's Guide)
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	Mutagen?	VOC ?	Ingestion SF (mg/kg-day)$^{-1}$	SFO Ref	Inhalation Unit Risk (ug/m^3)$^{-1}$	IUR Ref	Chronic RfD (mg/kg-day)	Chronic RfD Ref	Chronic RfC (mg/m^3)	Chronic RfC Ref	GIABS	ABS	RBA	Volatilization Factor (m^3/kg)	Soil Saturation Concentration (mg/kg)	Particulate Emission Factor (m^3/kg)	Ingestion SL TR=1.0E-6 (mg/kg)	Dermal SL TR=1.0E-6 (mg/kg)	Inhalation SL TR=1.0E-6 (mg/kg)	Carcinogenic SL TR=1.0E-6 (mg/kg)	Ingestion SL (Child) HQ=0.1 (mg/kg)	Dermal SL (Child) HQ=0.1 (mg/kg)	Inhalation SL (Child) HQ=0.1 (mg/kg)	Noncarcinogenic SL (Child) HI=0.1 (mg/kg)	Ingestion SL (Adult) HQ=0.1 (mg/kg)	Dermal SL (Adult) HQ=0.1 (mg/kg)	Inhalation SL (Adult) HQ=0.1 (mg/kg)	Noncarcinogenic SL (Adult) HI=0.1 (mg/kg)	Screening Level (mg/kg)
Chloronitrobenzene, p-	100-00-5	No	No	6.30E-03	P	-		1.00E-03	P	6.00E-04	P	1	0.1	1	-	-	1.36E+09	7.43E+02	1.12E+03	-	4.47E+02	5.26E+01	1.93E+02	-	4.14E+01	5.62E+02	2.94E+02	-	1.93E+02	4.14E+01 nc
Chlorophenol, 2-	95-57-8	No	Yes	-		-		5.00E-03	I	-		1	-	1	1.24E+05	2.19E+04	1.36E+09	-	-	-	-	2.63E+02	-	-	2.63E+02	2.81E+03	-	-	2.81E+03	2.63E+02 nc
Chlorophenol, 3-	108-43-0	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Chlorophenol, 4-	106-48-9	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Chlorophenols (each)	NA	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Chlorophenols (total)	NA	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Chlorophenyl phenyl ether, 4-	7005-72-3	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Chlorophenyl Methyl Sulfide, p	123-09-1	No	Yes	-		-		-		-		1	-	1	4.35E+04	2.73E+02	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Chlorophenyl Methyl Sulfoxide	934-73-6	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Chloropicrin	76-06-2	No	Yes	-		-		-		4.00E-04	C	1	-	1	4.68E+03	6.17E+02	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Chloropropane, 2-	75-29-6	No	Yes	-		-		-		-		1	-	1	1.30E+03	1.32E+03	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Chlorothaloni	1897-45-6	No	No	3.10E-03	C	8.90E-07	C	1.50E-02	I	-		1	0.1	1	-	-	1.36E+09	1.51E+03	2.28E+03	-	9.08E+02	7.90E+02	2.89E+03	-	6.20E+02	8.42E+03	4.41E+03	-	2.89E+03	6.20E+02 nc
Chlorotoluene, o-	95-49-8	No	Yes	-		-		2.00E-02	I	-		1	-	1	8.12E+03	9.07E+02	1.36E+09	-	-	-	-	1.05E+03	-	-	1.05E+03	1.12E+04	-	-	1.12E+04	1.05E+03 sat
Chlorotoluene, p-	106-43-4	No	Yes	-		-		2.00E-02	S	-		1	-	1	7.29E+03	2.53E+02	1.36E+09	-	-	-	-	1.05E+03	-	-	1.05E+03	1.12E+04	-	-	1.12E+04	1.05E+03 sat
Chlorozotocin	54749-90-5	No	No	2.40E+02	C	6.90E-02	C	-		-		1	0.1	1	-	-	1.36E+09	1.95E-02	2.94E-02	-	1.17E-02	-	-	-	-	-	-	-	-	1.17E-02 ca
Chlorpropham	101-21-3	No	No	-		-		2.00E-01	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.05E+04	3.86E+04	-	8.27E+03	1.12E+05	5.87E+04	-	3.86E+04	8.27E+03 nc
Chlorpyrifos	2921-88-2	No	No	-		-		1.00E-03	A	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	5.26E+01	1.93E+02	-	4.14E+01	5.62E+02	2.94E+02	-	1.93E+02	4.14E+01 nc
Chlorpyrifos Methy	5598-13-0	No	No	-		-		1.00E-02	H	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	5.26E+02	1.93E+03	-	4.14E+02	5.62E+03	2.94E+03	-	1.93E+03	4.14E+02 nc
Chlorsulfuron	64902-72-3	No	No	-		-		5.00E-02	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	2.63E+03	9.65E+03	-	2.07E+03	2.81E+04	1.47E+04	-	9.64E+03	2.07E+03 nc
Chlorthiophos	60238-56-4	No	No	-		-		8.00E-04	H	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	4.21E+01	1.54E+02	-	3.31E+01	4.49E+02	2.35E+02	-	1.54E+02	3.31E+01 nc
Chromium(III), Insoluble Salts	16065-83-1	No	No	-		-		1.50E+00	I	-		0.013	-	1	-	-	1.36E+09	-	-	-	-	7.90E+04	-	-	7.90E+04	8.42E+05	-	-	8.42E+05	7.90E+04 nc
Chromium(VI)	18540-29-9	Yes	No	5.00E-01	J	8.40E-02	S	3.00E-03	I	1.00E-04	I	0.025	-	1	-	-	1.36E+09	2.06E+00	-	-	2.06E+00	1.58E+02	-	-	1.58E+02	1.68E+03	-	-	1.68E+03	2.06E+00 ca*
Chromium, Total	7440-47-3	No	No	-		-		-		-		0.013	-	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Cobalt	7440-48-4	No	No	-		9.00E-03	P	3.00E-04	P	6.00E-06	P	1	-	1	-	-	1.36E+09	-	-	-	-	1.58E+01	-	-	1.58E+01	1.68E+02	-	-	1.68E+02	1.58E+01 nc
Complex Mixtures of Aliphatic and Aromatic Hydrocarbons	NA	No	Yes	-		-		-		-		1	-	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Copper	7440-50-8	No	No	-		-		4.00E-02	H	-		1	-	1	-	-	1.36E+09	-	-	-	-	2.11E+03	-	-	2.11E+03	2.25E+04	-	-	2.25E+04	2.11E+03 nc
Creosote	8001-58-9	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Cresol, m-	108-39-4	No	No	-		-		5.00E-02	I	6.00E-01	C	1	0.1	1	-	-	1.36E+09	-	-	-	-	2.63E+03	9.65E+03	-	2.07E+03	2.81E+04	1.47E+04	-	9.64E+03	2.07E+03 nc
Cresol, o-	95-48-7	No	No	-		-		5.00E-02	I	6.00E-01	C	1	0.1	1	-	-	1.36E+09	-	-	-	-	2.63E+03	9.65E+03	-	2.07E+03	2.81E+04	1.47E+04	-	9.64E+03	2.07E+03 nc
Cresol, p-	106-44-5	No	No	-		-		1.00E-01	A	6.00E-01	C	1	0.1	1	-	-	1.36E+09	-	-	-	-	5.26E+03	1.93E+04	-	4.14E+03	5.62E+04	2.94E+04	-	1.93E+04	4.14E+03 nc
Cresol, p-chloro-m-	59-50-7	No	No	-		-		1.00E-01	A	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	5.26E+03	1.93E+04	-	4.14E+03	5.62E+04	2.94E+04	-	1.93E+04	4.14E+03 nc
Cresols	1319-77-3	No	No	-		-		1.00E-01	A	6.00E-01	C	1	0.1	1	-	-	1.36E+09	-	-	-	-	5.26E+03	1.93E+04	-	4.14E+03	5.62E+04	2.94E+04	-	1.93E+04	4.14E+03 nc
Crotonaldehyde	4170-30-3	No	Yes	-		-		-		-		1	0.1	1	1.89E+04	2.00E+04	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Crotonaldehyde, trans-	123-73-9	No	Yes	1.90E+00	H	-		1.00E-03	P	-		1	-	1	1.89E+04	1.66E+04	1.36E+09	2.46E+00	-	-	2.46E+00	5.26E+01	-	-	5.26E+01	5.62E+02	-	-	5.62E+02	2.46E+00 ca*
Cumene	98-82-8	No	Yes	-		-		1.00E-01	I	4.00E-01	I	1	-	1	6.21E+03	2.68E+02	1.36E+09	-	-	-	-	5.26E+03	-	-	5.26E+03	5.62E+04	-	-	5.62E+04	5.26E+03 sat
Cupferron	135-20-6	No	No	2.20E-01	C	6.30E-05	C	-		-		1	0.1	1	-	-	1.36E+09	2.13E+01	3.21E+01	-	1.28E+01	-	-	-	-	-	-	-	-	1.28E+01 ca
Cyanazine	21725-46-2	No	No	8.40E-01	H	-		2.00E-03	H	-		1	0.1	1	-	-	1.36E+09	5.57E+00	8.40E+00	-	3.35E+00	1.05E+02	3.86E+02	-	8.27E+01	1.12E+03	5.87E+02	-	3.86E+02	3.35E+00 ca*
Cyclohexane	110-82-7	No	Yes	-		-		-		6.00E+00	I	1	-	1	1.04E+03	1.17E+02	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Cyclohexane, 1,2,3,4,5-pentabromo-6-chloro-	87-84-3	No	No	2.30E-02	H	-		-		-		1	0.1	1	-	-	1.36E+09	2.03E+02	3.07E+02	-	1.22E+02	-	-	-	-	-	-	-	-	1.22E+02 ca
Cyclohexanone	108-94-1	No	No	-		-		5.00E+00	I	7.00E-01	P	1	0.1	1	-	-	1.36E+09	-	-	-	-	2.63E+05	9.65E+05	-	2.07E+05	2.81E+06	1.47E+06	-	9.64E+05	2.07E+05 max
Cyclohexene	110-83-8	No	Yes	-		-		5.00E-03	P	1.00E+00	S	1	-	1	1.33E+03	2.83E+02	1.36E+09	-	-	-	-	2.63E+02	-	-	2.63E+02	2.81E+03	-	-	2.81E+03	2.63E+02 nc
Cyclohexylamine	108-91-8	No	No	-		-		2.00E-01	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.05E+04	3.86E+04	-	8.27E+03	1.12E+05	5.87E+04	-	3.86E+04	8.27E+03 nc
Cyclopentadiene	542-92-7	No	Yes	-		-		-		-		1	-	1	1.49E+03	1.34E+03	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Cyhalothrin/karate	68085-85-8	No	No	-		-		5.00E-03	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	2.63E+02	9.65E+02	-	2.07E+02	2.81E+03	1.47E+03	-	9.64E+02	2.07E+02 nc
Cypermethrin	52315-07-8	No	No	-		-		1.00E-02	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	5.26E+02	1.93E+03	-	4.14E+02	5.62E+03	2.94E+03	-	1.93E+03	4.14E+02 nc
Cyromazine	66215-27-8	No	No	-		-		7.50E-03	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	3.95E+02	1.45E+03	-	3.10E+02	4.21E+03	2.20E+03	-	1.45E+03	3.10E+02 nc
Barium Cyanide	542-62-1	No	No	-		-		-		-		0.07	-	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Calcium Cyanide	592-01-8	No	No	-		-		1.00E-03	I	-		1	-	1	-	-	1.36E+09	-	-	-	-	5.26E+01	-	-	5.26E+01	5.62E+02	-	-	5.62E+02	5.26E+01 nc
Copper Cyanide	544-92-3	No	No	-		-		5.00E-03	I	-		1	-	1	-	-	1.36E+09	-	-	-	-	2.63E+02	-	-	2.63E+02	2.81E+03	-	-	2.81E+03	2.63E+02 nc
Cyanide (CN-)	57-12-5	No	Yes	-		-		6.00E-04	I	8.00E-04	S	1	-	1	4.66E+04	1.00E+07	1.36E+09	-	-	-	-	3.16E+01	-	-	3.16E+01	3.37E+02	-	-	3.37E+02	3.16E+01 nc
Cyanide (total complex)	NA	No	No	-		-		-		-		1	-	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Cyanogen	460-19-5	No	Yes	-		-		1.00E-03	I	-		1	-	1	-	-	1.36E+09	-	-	-	-	5.26E+01	-	-	5.26E+01	5.62E+02	-	-	5.62E+02	5.26E+01 nc
Cyanogen Bromide	506-68-3	No	Yes	-		-		9.00E-02	I	-		1	-	1	-	-	1.36E+09	-	-	-	-	4.74E+03	-	-	4.74E+03	5.05E+04	-	-	5.05E+04	4.74E+03 nc
Cyanogen Chloride	506-77-4	No	Yes	-		-		5.00E-02	I	-		1	-	1	-	-	1.36E+09	-	-	-	-	2.63E+03	-	-	2.63E+03	2.81E+04	-	-	2.81E+04	2.63E+03 nc
Hydrogen Cyanide	74-90-8	No	Yes	-		-		6.00E-04	I	8.00E-04	I	1	-	1	5.22E+04	1.00E+07	1.36E+09	-	-	-	-	3.16E+01	-	-	3.16E+01	3.37E+02	-	-	3.37E+02	3.16E+01 nc
Potassium Cyanide	151-50-8	No	No	-		-		2.00E-03	I	-		1	-	1	-	-	1.36E+09	-	-	-	-	1.05E+02	-	-	1.05E+02	1.12E+03	-	-	1.12E+03	1.05E+02 nc
Potassium Silver Cyanide	506-61-6	No	No	-		-		5.00E-03	I	-		0.04	-	1	-	-	1.36E+09	-	-	-	-	2.63E+02	-	-	2.63E+02	2.81E+03	-	-	2.81E+03	2.63E+02 nc
Silver Cyanide	506-64-9	No	No	-		-		1.00E-01	I	-		0.04	-	1	-	-	1.36E+09	-	-	-	-	5.26E+03	-	-	5.26E+03	5.62E+04	-	-	5.62E+04	5.26E+03 nc
Sodium Cyanide	143-33-9	No	No	-		-		1.00E-03	I	-		1	-	1	-	-	1.36E+09	-	-	-	-	5.26E+01	-	-	5.26E+01	5.62E+02	-	-	5.62E+02	5.26E+01 nc
Thiocyanates	NA	No	No	-		-		2.00E-04	P	-		1	-	1	-	-	1.36E+09	-	-	-	-	1.05E+01	-	-	1.05E+01	1.12E+02	-	-	1.12E+02	1.05E+01 nc
Thiocyanic Acid	463-56-9	No	No	-		-		2.00E-04	S	-		1	-	1	-	-	1.36E+09	-	-	-	-	1.05E+01	-	-	1.05E+01	1.12E+02	-	-	1.12E+02	1.05E+01 nc
Zinc Cyanide	557-21-1	No	No	-		-		5.00E-02	I	-		1	-	1	-	-	1.36E+09	-	-	-	-	2.63E+03	-	-	2.63E+03	2.81E+04	-	-	2.81E+04	2.63E+03 nc
Dacthal	1861-32-1	No	No	-		-		1.00E-02	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	5.26E+02	1.93E+03	-	4.14E+02	5.62E+03	2.94E+03	-	1.93E+03	4.14E+02 nc
Dalapon	75-99-0	No	No	-		-		3.00E-02	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.58E+03	5.79E+03	-	1.24E+03	1.68E+04	8.81E+03	-	5.79E+03	1.24E+03 nc
DDD	72-54-8	No	No	2.40E-01	I	6.90E-05	C	-		-		1	0.1	1	-	-	1.36E+09	1.95E+01	2.94E+01	-	1.17E+01	-	-	-	-	-	-	-	-	1.17E+01 ca
DDD, o,p'-	53-19-0	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
DDT/DDE/DDD (total)	NA	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
DDE, p,p'-	72-55-9	No	No	3.40E-01	I	9.70E-05	C	-		-		1	0.1	1	-	-	1.36E+09	1.38E+01	2.08E+01	-	8.28E+00	-	-	-	-	-	-	-	-	8.28E+00 ca

Site-specific
Recreator Screening Levels (RSL) for Soil
ca=Cancer, nc=Noncancer, ca* (Where nc SL < 100 x ca SL),
ca** (Where nc SL < 10 x ca SL), max=SL exceeds ceiling limit (see User's Guide), sat=SL exceeds csat,
Smax=Soil SL exceeds ceiling limit and has been substituted with the max value (see User's Guide)
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	Mutagen?	VOC ?	Ingestion SF (mg/kg-day)$^{-1}$	SFO Ref	Inhalation Unit Risk (ug/m^3)$^{-1}$	IUR Ref	Chronic RfD (mg/kg-day)	Chronic RfD Ref	Chronic RfC (mg/m^3)	Chronic RfC Ref	GIABS	ABS	RBA	Volatilization Factor (m^3/kg)	Soil Saturation Concentration (mg/kg)	Particulate Emission Factor (m^3/kg)	Ingestion SL TR=1.0E-6 (mg/kg)	Dermal SL TR=1.0E-6 (mg/kg)	Inhalation SL TR=1.0E-6 (mg/kg)	Carcinogenic SL TR=1.0E-6 (mg/kg)	Ingestion SL (Child) HQ=0.1 (mg/kg)	Dermal SL (Child) HQ=0.1 (mg/kg)	Inhalation SL (Child) HQ=0.1 (mg/kg)	Noncarcinogenic SL (Child) HI=0.1 (mg/kg)	Ingestion SL (Adult) HQ=0.1 (mg/kg)	Dermal SL (Adult) HQ=0.1 (mg/kg)	Inhalation SL (Adult) HQ=0.1 (mg/kg)	Noncarcinogenic SL (Adult) HI=0.1 (mg/kg)	Screening Level (mg/kg)
DDT	50-29-3	No	No	3.40E-01	I	9.70E-05	I	5.00E-04	I	-		1	0.03	1	-	-	1.36E+09	1.38E+01	6.92E+01	-	1.15E+01	2.63E+01	3.22E+02	-	2.43E+01	2.81E+02	4.89E+02	-	1.78E+02	1.15E+01 ca**
DDT, o,p'-	789-02-6	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Decabromodiphenyl ether, 2,2',3,3',4,4',5,5',6,6'- (BDE-209)	1163-19-5	No	No	7.00E-04	I	-		7.00E-03	I	-		1	0.1	1	-	-	1.36E+09	6.68E+03	1.01E+04	-	4.02E+03	3.69E+02	1.35E+03	-	2.90E+02	3.93E+03	2.06E+03	-	1.35E+03	2.90E+02 nc
Decane	124-18-5	No	Yes	-		-		-		-		1	0.1	1	1.13E+03	2.53E+00	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Decanol, n-	112-30-1	No	Yes	-		-		-		-		1	-	1	5.01E+04	3.19E+01	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Deltamethrin	52918-63-5	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Demeton	8065-48-3	No	No	-		-		4.00E-05	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	2.11E+00	7.72E+00	-	1.65E+00	2.25E+01	1.17E+01	-	7.71E+00	1.65E+00 nc
Di(2-ethylhexyl)adipate	103-23-1	No	No	1.20E-03	I	-		6.00E-01	I	-		1	0.1	1	-	-	1.36E+09	3.90E+03	5.88E+03	-	2.34E+03	3.16E+04	1.16E+05	-	2.48E+04	3.37E+05	1.76E+05	-	1.16E+05	2.34E+03 ca*
Diallate	2303-16-4	No	No	6.10E-02	H	-		-		-		1	0.1	1	-	-	1.36E+09	7.67E+01	1.16E+02	-	4.61E+01	-	-	-	-	-	-	-	-	4.61E+01 ca
Diazinon	333-41-5	No	No	-		-		7.00E-04	A	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	3.69E+01	1.35E+02	-	2.90E+01	3.93E+02	2.06E+02	-	1.35E+02	2.90E+01 nc
Dibenzothiophene	132-65-0	No	Yes	-		-		1.00E-02	S	-		1	-	1	4.10E+05	-	1.36E+09	-	-	-	-	5.26E+02	-	-	5.26E+02	5.62E+03	-	-	5.62E+03	5.26E+02 nc
Dibromo-3-chloropropane, 1,2-	96-12-8	Yes	Yes	8.00E-01	P	6.00E-03	P	2.00E-04	P	2.00E-04	I	1	-	1	3.20E+04	9.79E+02	1.36E+09	1.29E+00	-	-	1.29E+00	1.05E+01	-	-	1.05E+01	1.12E+02	-	-	1.12E+02	1.29E+00 ca**
Dibromoacetic acid	631-64-1	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Dibromobenzene, 1,3-	108-36-1	No	No	-		-		4.00E-04	S	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	2.11E+01	7.72E+01	-	1.65E+01	2.25E+02	1.17E+02	-	7.71E+01	1.65E+01 nc
Dibromobenzene, 1,4-	106-37-6	No	No	-		-		1.00E-02	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	5.26E+02	1.93E+03	-	4.14E+02	5.62E+03	2.94E+03	-	1.93E+03	4.14E+02 nc
Dibromochloromethane	124-48-1	No	Yes	8.40E-02	I	2.70E-05	C	2.00E-02	I	-		1	0.1	1	7.95E+03	8.02E+02	1.36E+09	5.57E+01	8.40E+01	-	3.35E+01	1.05E+03	3.86E+03	-	8.27E+02	1.12E+04	5.87E+03	-	3.86E+03	3.35E+01 ca*
Dibromodichloromethane	594-18-3	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Dibromodiphenyl Ether, p,p'	2050-47-7	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Dibromoethane, 1,2-	106-93-4	No	Yes	2.00E+00	I	6.00E-04	I	9.00E-03	I	9.00E-03	I	1	-	1	8.64E+03	1.34E+03	1.36E+09	2.34E+00	-	-	2.34E+00	4.74E+02	-	-	4.74E+02	5.05E+03	-	-	5.05E+03	2.34E+00 ca
Dibromomethane (Methylene Bromide	74-95-3	No	Yes	-		-		1.00E-02	H	4.00E-03	S	1	-	1	5.64E+03	2.82E+03	1.36E+09	-	-	-	-	5.26E+02	-	-	5.26E+02	5.62E+03	-	-	5.62E+03	5.26E+02 nc
Bis(Octanoyloxy)Di-N-Butyl Stannane	4731-77-5	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Bis(oleoyloxy)dibutyl tin	13323-62-1	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Di-n-butyltin bis(2-ethylhexanoate)	2781-10-4	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Di-n-butyltin bis(methyl maleate	15546-11-9	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Di-n-butyltin bis(n-butyl maleate)	15546-16-4	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Di-n-butyltin dilaurate	77-58-7	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Di-n-butyltin distearate	5847-55-2	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Dibutoxy di-n-butyltin	3349-36-8	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Dibutylbis((1-oxoisooctyl)oxy)stannane	85702-74-5	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Dibutylbis(octadeca-9(Z),12(Z),15(Z)-trienoyloxy)stannane	95873-60-2	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Dibutylbis(octadeca-9(Z),12(Z)-dienoyloxy)stannane	85391-79-3	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Dibutylbis(palmitoyloxy)stannane	13323-63-2	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Dibutyltin Compounds	NA	No	No	-		-		3.00E-04	P	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.58E+01	5.79E+01	-	1.24E+01	1.68E+02	8.81E+01	-	5.79E+01	1.24E+01 nc
Dibutyltin diacetate	1067-33-0	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Dibutyltin oxide	818-08-6	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Dibutyltin dichloride	683-18-1	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Dicamba	1918-00-9	No	No	-		-		3.00E-02	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.58E+03	5.79E+03	-	1.24E+03	1.68E+04	8.81E+03	-	5.79E+03	1.24E+03 nc
Dichloro-2-butene, cis-1,4-	1476-11-5	No	Yes	-		4.20E-03	P	-		-		1	0.1	1	1.11E+04	5.19E+02	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Dichloro-2-butene, trans-1,4-	110-57-6	No	Yes	-		4.20E-03	P	-		-		1	0.1	1	1.11E+04	7.60E+02	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Dichloro-2-butene, 1,4-	764-41-0	No	Yes	-		4.20E-03	P	-		-		1	-	1	1.11E+04	5.19E+02	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Dichloroacetic Acid	79-43-6	No	No	5.00E-02	I	-		4.00E-03	I	-		1	0.1	1	-	-	1.36E+09	9.36E+01	1.41E+02	-	5.63E+01	2.11E+02	7.72E+02	-	1.65E+02	2.25E+03	1.17E+03	-	7.71E+02	5.63E+01 ca**
Dichloroaniline, 2,4-	554-00-7	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Dichloroaniline, 3,4-	95-76-1	No	Yes	-		-		-		-		1	0.1	1	8.78E+04	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Dichlorobenzene	25321-22-6	No	Yes	-		-		-		-		1	0.1	1	1.06E+04	1.93E+02	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Dichlorobenzene, 1,2-	95-50-1	No	Yes	-		-		9.00E-02	I	2.00E-01	H	1	-	1	1.17E+04	3.76E+02	1.36E+09	-	-	-	-	4.74E+03	-	-	4.74E+03	5.05E+04	-	-	5.05E+04	4.74E+03 sat
Dichlorobenzene, 1,3-	541-73-1	No	Yes	-		-		-		-		1	-	1	9.93E+03	2.97E+02	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Dichlorobenzene, 1,4-	106-46-7	No	Yes	5.40E-03	C	1.10E-05	C	7.00E-02	A	8.00E-01	I	1	-	1	1.04E+04	-	1.36E+09	8.67E+02	-	-	8.67E+02	3.69E+03	-	-	3.69E+03	3.93E+04	-	-	3.93E+04	8.67E+02 ca**
Dichlorobenzidine, 3,3'	91-94-1	No	No	4.50E-01	I	3.40E-04	C	-		-		1	0.1	1	-	-	1.36E+09	1.04E+01	1.57E+01	-	6.25E+00	-	-	-	-	-	-	-	-	6.25E+00 ca
Dichlorobenzoic acid, -3,5	51-36-5	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Dichlorobenzophenone, 4,4'	90-98-2	No	No	-		-		9.00E-03	S	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	4.74E+02	1.74E+03	-	3.72E+02	5.05E+03	2.64E+03	-	1.74E+03	3.72E+02 nc
Dichlorobenzotrifluoride, 3,4-	328-84-7	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Dichlorodifluoromethane	75-71-8	No	Yes	-		-		2.00E-01	I	1.00E-01	S	1	-	1	8.41E+02	8.45E+02	1.36E+09	-	-	-	-	1.05E+04	-	-	1.05E+04	1.12E+05	-	-	1.12E+05	1.05E+04 sat
Dichlorodiisopropyl ether, 2,2'-	39638-32-9	No	Yes	-		-		-		-		1	-	1	1.06E+04	2.35E+02	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Dichloroethane, 1,1-	75-34-3	No	Yes	5.70E-03	C	1.60E-06	C	2.00E-01	P	-		1	-	1	2.08E+03	1.69E+03	1.36E+09	8.21E+02	-	-	8.21E+02	1.05E+04	-	-	1.05E+04	1.12E+05	-	-	1.12E+05	8.21E+02 ca*
Dichloroethane, 1,2-	107-06-2	No	Yes	9.10E-02	I	2.60E-05	I	6.00E-03	S	7.00E-03	P	1	-	1	4.57E+03	2.98E+03	1.36E+09	5.14E+01	-	-	5.14E+01	3.16E+02	-	-	3.16E+02	3.37E+03	-	-	3.37E+03	5.14E+01 ca**
Dichloroethylene, 1,1-	75-35-4	No	Yes	-		-		5.00E-02	I	2.00E-01	I	1	-	1	1.16E+03	1.19E+03	1.36E+09	-	-	-	-	2.63E+03	-	-	2.63E+03	2.81E+04	-	-	2.81E+04	2.63E+03 sat
Dichloroethylene, 1,2-cis-	156-59-2	No	Yes	-		-		2.00E-03	I	-		1	-	1	2.50E+03	2.37E+03	1.36E+09	-	-	-	-	1.05E+02	-	-	1.05E+02	1.12E+03	-	-	1.12E+03	1.05E+02 nc
Dichloroethylene, 1,2-trans-	156-60-5	No	Yes	-		-		2.00E-02	I	-		1	-	1	2.51E+03	1.67E+03	1.36E+09	-	-	-	-	1.05E+03	-	-	1.05E+03	1.12E+04	-	-	1.12E+04	1.05E+03 nc
Dichlorophenol, 2,6-	87-65-0	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Dichlorophenol, 3,4-	95-77-2	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Dichlorophenol, 2,3-	576-24-9	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Dichlorophenol, 2,4-	120-83-2	No	No	-		-		3.00E-03	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.58E+02	5.79E+02	-	1.24E+02	1.68E+03	8.81E+02	-	5.79E+02	1.24E+02 nc
Dichlorophenol, 2,5-	583-78-7	No	Yes	-		-		-		-		1	-	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Dichlorophenols (total)	NA	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Dichlorophenoxy Acetic Acid, 2,4-	94-75-7	No	No	-		-		1.00E-02	I	-		1	0.05	1	-	-	1.36E+09	-	-	-	-	5.26E+02	3.86E+03	-	4.63E+02	5.62E+03	5.87E+03	-	2.87E+03	4.63E+02 nc
Dichlorophenoxy)butyric Acid, 4-(2,4-	94-82-6	No	No	-		-		8.00E-03	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	4.21E+02	1.54E+03	-	3.31E+02	4.49E+03	2.35E+03	-	1.54E+03	3.31E+02 nc
Dichloropropane, 1,2-	78-87-5	No	Yes	3.60E-02	C	1.00E-05	C	9.00E-02	A	4.00E-03	I	1	-	1	3.79E+03	1.36E+03	1.36E+09	1.30E+02	-	-	1.30E+02	4.74E+03	-	-	4.74E+03	5.05E+04	-	-	5.05E+04	1.30E+02 ca*
Dichloropropane, 1,3-	142-28-9	No	Yes	-		-		2.00E-02	P	-		1	-	1	6.76E+03	1.49E+03	1.36E+09	-	-	-	-	1.05E+03	-	-	1.05E+03	1.12E+04	-	-	1.12E+04	1.05E+03 nc

Site-specific
Recreator Screening Levels (RSL) for Soil
ca=Cancer, nc=Noncancer, ca* (Where nc SL < 100 x ca SL),
ca** (Where nc SL < 10 x ca SL), max=SL exceeds ceiling limit (see User's Guide), sat=SL exceeds csat,
Smax=Soil SL exceeds ceiling limit and has been substituted with the max value (see User's Guide)
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	Mutagen?	VOC ?	Ingestion SF (mg/kg-day)$^{-1}$	SFO Ref	Inhalation Unit Risk (ug/m^3)$^{-1}$	IUR Ref	Chronic RfD (mg/kg-day)	Chronic RfD Ref	Chronic RfC (mg/m^3)	Chronic RfC Ref	GIABS	ABS	RBA	Volatilization Factor (m^3/kg)	Soil Saturation Concentration (mg/kg)	Particulate Emission Factor (m^3/kg)	Ingestion SL TR=1.0E-6 (mg/kg)	Dermal SL TR=1.0E-6 (mg/kg)	Inhalation SL TR=1.0E-6 (mg/kg)	Carcinogenic SL TR=1.0E-6 (mg/kg)	Ingestion SL (Child) HQ=0.1 (mg/kg)	Dermal SL (Child) HQ=0.1 (mg/kg)	Inhalation SL (Child) HQ=0.1 (mg/kg)	Noncarcinogenic SL (Child) HI=0.1 (mg/kg)	Ingestion SL (Adult) HQ=0.1 (mg/kg)	Dermal SL (Adult) HQ=0.1 (mg/kg)	Inhalation SL (Adult) HQ=0.1 (mg/kg)	Noncarcinogenic SL (Adult) HI=0.1 (mg/kg)	Screening Level (mg/kg)
Dichloropropane, 2,2-	594-20-7	No	Yes	-		-		-		-		1	-	1	1.51E+03	5.27E+02	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Dichloropropanol, 2,3-	616-23-9	No	No	-		-		3.00E-03	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.58E+02	5.79E+02	-	1.24E+02	1.68E+03	8.81E+02	-	5.79E+02	1.24E+02 nc
Dichloropropene, 1,3-	542-75-6	No	Yes	1.00E-01	I	4.00E-06	I	3.00E-02	I	2.00E-02	I	1	-	1	3.55E+03	1.57E+03	1.36E+09	4.68E+01	-	-	4.68E+01	1.58E+03	-	-	1.58E+03	1.68E+04	-	-	1.68E+04	4.68E+01 ca*
Dichloropropene, 2,3-	78-88-6	No	Yes	-		-		-		-		1	0.1	1	3.09E+03	1.07E+03	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Dichloropropene, cis-1,3-	10061-01-5	No	Yes	-		-		-		-		1	0.1	1	3.55E+03	1.22E+03	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Dichloropropene, trans-1,3-	10061-02-6	No	Yes	-		-		-		-		1	0.1	1	3.55E+03	1.57E+03	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Dichlorvos	62-73-7	No	No	2.90E-01	I	8.30E-05	C	5.00E-04	I	5.00E-04	I	1	0.1	1	-	-	1.36E+09	1.61E+01	2.43E+01	-	9.70E+00	2.63E+01	9.65E+01	-	2.07E+01	2.81E+02	1.47E+02	-	9.64E+01	9.70E+00 ca**
Diclofop-methyl	51338-27-3	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Dicofol	115-32-2	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Dicyclohexylamine	101-83-7	No	Yes	-		-		-		-		1	-	1	6.26E+04	2.16E+03	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Dicyclopentadiene	77-73-6	No	Yes	-		-		8.00E-02	P	3.00E-04	S	1	-	1	4.11E+03	-	1.36E+09	-	-	-	-	4.21E+03	-	-	4.21E+03	4.49E+04	-	-	4.49E+04	4.21E+03 nc
Didecyl dimethyl ammonium chlorid	7173-51-5	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Dieldrin	60-57-1	No	No	1.60E+01	I	4.60E-03	I	5.00E-05	I	-		1	0.1	1	-	-	1.36E+09	2.92E-01	4.41E-01	-	1.76E-01	2.63E+00	9.65E+00	-	2.07E+00	2.81E+01	1.47E+01	-	9.64E+00	1.76E-01 ca*
Diepoxybutane	1464-53-5	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Diethanolamine	111-42-2	No	No	-		-		2.00E-03	P	2.00E-04	P	1	0.1	1	-	-	1.36E+09	-	-	-	-	1.05E+02	3.86E+02	-	8.27E+01	1.12E+03	5.87E+02	-	3.86E+02	8.27E+01 nc
Diethyl sulfate	64-67-5	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Diethyl-p-nitrophenylphosphate	311-45-5	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Diethylene-glyco	111-46-6	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Diethylene Glycol Dinitrate (DEGDN)	693-21-0	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Diethylene Glycol Monobutyl Ethe	112-34-5	No	No	-		-		3.00E-02	P	1.00E-04	P	1	0.1	1	-	-	1.36E+09	-	-	-	-	1.58E+03	5.79E+03	-	1.24E+03	1.68E+04	8.81E+03	-	5.79E+03	1.24E+03 nc
Diethylene Glycol Monoethyl Ether	111-90-0	No	No	-		-		6.00E-02	P	3.00E-04	P	1	0.1	1	-	-	1.36E+09	-	-	-	-	3.16E+03	1.16E+04	-	2.48E+03	3.37E+04	1.76E+04	-	1.16E+04	2.48E+03 nc
Diethylformamide	617-84-5	No	No	-		-		1.00E-03	P	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	5.26E+01	1.93E+02	-	4.14E+01	5.62E+02	2.94E+02	-	1.93E+02	4.14E+01 nc
Diethylphosphorodithioate	298-06-6	No	Yes	-		-		-		-		1	-	1	1.30E+04	2.15E-02	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Diethylstilbestro	56-53-1	No	No	3.50E+02	C	1.00E-01	C	-		-		1	0.1	1	-	-	1.36E+09	1.34E-02	2.02E-02	-	8.04E-03	-	-	-	-	-	-	-	-	8.04E-03 ca
Difenzoquat	43222-48-6	No	No	-		-		8.00E-02	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	4.21E+03	1.54E+04	-	3.31E+03	4.49E+04	2.35E+04	-	1.54E+04	3.31E+03 nc
Diflubenzuron	35367-38-5	No	No	-		-		2.00E-02	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.05E+03	3.86E+03	-	8.27E+02	1.12E+04	5.87E+03	-	3.86E+03	8.27E+02 nc
Difluoroethane, 1,1-	75-37-6	No	Yes	-		-		-		4.00E+01	I	1	-	1	1.15E+03	1.43E+03	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Difluoropropane, 2,2-	420-45-1	No	Yes	-		-		-		-		1	-	1	7.30E+02	4.62E+04	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Dihydrosafrole	94-58-6	No	Yes	4.40E-02	C	1.30E-05	C	-		-		1	0.1	1	1.24E+03	-	1.36E+09	1.06E+02	1.60E+02	-	6.39E+01	-	-	-	-	-	-	-	-	6.39E+01 ca
Diisopropyl Ether	108-20-3	No	Yes	-		-		-		7.00E-01	P	1	-	1	3.06E+03	2.26E+03	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Diisopropyl Methylphosphonate	1445-75-6	No	Yes	-		-		8.00E-02	I	-		1	-	1	2.87E+04	5.30E+02	1.36E+09	-	-	-	-	4.21E+03	-	-	4.21E+03	4.49E+04	-	-	4.49E+04	4.21E+03 sat
Dimethipin	55290-64-7	No	No	-		-		2.00E-02	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.05E+03	3.86E+03	-	8.27E+02	1.12E+04	5.87E+03	-	3.86E+03	8.27E+02 nc
Dimethoate	60-51-5	No	No	-		-		2.00E-04	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.05E+01	3.86E+01	-	8.27E+00	1.12E+02	5.87E+01	-	3.86E+01	8.27E+00 nc
Dimethoxybenzidine, 3,3'	119-90-4	No	No	1.60E+00	P	-		-		-		1	0.1	1	-	-	1.36E+09	2.92E+00	4.41E+00	-	1.76E+00	-	-	-	-	-	-	-	-	1.76E+00 ca
Dimethyl methylphosphonate	756-79-6	No	No	1.70E-03	P	-		6.00E-02	P	-		1	0.1	1	-	-	1.36E+09	2.75E+03	4.15E+03	-	1.66E+03	3.16E+03	1.16E+04	-	2.48E+03	3.37E+04	1.76E+04	-	1.16E+04	1.66E+03 ca**
Dimethyl Sulfate	77-78-1	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Dimethyl Sulfide	75-18-3	No	Yes	-		-		-		-		1	-	1	2.97E+03	5.34E+03	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Dimethylamino azobenzene [p-	60-11-7	No	No	4.60E+00	C	1.30E-03	C	-		-		1	0.1	1	-	-	1.36E+09	1.02E+00	1.53E+00	-	6.12E-01	-	-	-	-	-	-	-	-	6.12E-01 ca
Dimethylaniline HCl, 2,4-	21436-96-4	No	No	5.80E-01	H	-		-		-		1	0.1	1	-	-	1.36E+09	8.07E+00	1.22E+01	-	4.85E+00	-	-	-	-	-	-	-	-	4.85E+00 ca
Dimethylaniline, 2,4-	95-68-1	No	No	2.00E-01	P	-		2.00E-03	S	-		1	0.1	1	-	-	1.36E+09	2.34E+01	3.53E+01	-	1.41E+01	1.05E+02	3.86E+02	-	8.27E+01	1.12E+03	5.87E+02	-	3.86E+02	1.41E+01 ca**
Dimethylaniline, N,N-	121-69-7	No	Yes	-		-		2.00E-03	I	-		1	-	1	3.13E+04	8.30E+02	1.36E+09	-	-	-	-	1.05E+02	-	-	1.05E+02	1.12E+03	-	-	1.12E+03	1.05E+02 nc
Dimethylbenzidine, 3,3'	119-93-7	No	No	1.10E+01	P	-		-		-		1	0.1	1	-	-	1.36E+09	4.25E-01	6.42E-01	-	2.56E-01	-	-	-	-	-	-	-	-	2.56E-01 ca
Dimethylcyclohexylamine, n,n-	98-94-2	No	Yes	-		-		-		-		1	-	1	3.28E+04	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Dimethylformamide	68-12-2	No	No	-		-		1.00E-01	P	3.00E-02	I	1	0.1	1	-	-	1.36E+09	-	-	-	-	5.26E+03	1.93E+04	-	4.14E+03	5.62E+04	2.94E+04	-	1.93E+04	4.14E+03 nc
Dimethylhydrazine, 1,1-	57-14-7	No	No	-		-		1.00E-04	S	2.00E-06	S	1	0.1	1	-	-	1.36E+09	-	-	-	-	5.26E+00	1.93E+01	-	4.14E+00	5.62E+01	2.94E+01	-	1.93E+01	4.14E+00 nc
Dimethylhydrazine, 1,2-	540-73-8	No	No	5.50E+02	C	1.60E-01	C	-		-		1	0.1	1	-	-	1.36E+09	8.51E-03	1.28E-02	-	5.12E-03	-	-	-	-	-	-	-	-	5.12E-03 ca
Dimethylphenethylamine	122-09-8	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Dimethylphenol, 2,4-	105-67-9	No	No	-		-		2.00E-02	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.05E+03	3.86E+03	-	8.27E+02	1.12E+04	5.87E+03	-	3.86E+03	8.27E+02 nc
Dimethylphenol, 2,6-	576-26-1	No	No	-		-		6.00E-04	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	3.16E+01	1.16E+02	-	2.48E+01	3.37E+02	1.76E+02	-	1.16E+02	2.48E+01 nc
Dimethylphenol, 3,4-	95-65-8	No	No	-		-		1.00E-03	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	5.26E+01	1.93E+02	-	4.14E+01	5.62E+02	2.94E+02	-	1.93E+02	4.14E+01 nc
Dimethylvinylchloride	513-37-1	No	Yes	4.50E-02	C	1.30E-05	C	-		-		1	0.1	1	1.01E+03	1.09E+03	1.36E+09	1.04E+02	1.57E+02	-	6.25E+01	-	-	-	-	-	-	-	-	6.25E+01 ca
Dinitro-o-cresol, 4,6-	534-52-1	No	No	-		-		8.00E-05	S	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	4.21E+00	1.54E+01	-	3.31E+00	4.49E+01	2.35E+01	-	1.54E+01	3.31E+00 nc
Dinitro-o-cyclohexyl Phenol, 4,6-	131-89-5	No	No	-		-		2.00E-03	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.05E+02	3.86E+02	-	8.27E+01	1.12E+03	5.87E+02	-	3.86E+02	8.27E+01 nc
Dinitroaniline, 3,5-	618-87-1	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Dinitrobenzene, 1,2-	528-29-0	No	No	-		-		1.00E-04	P	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	5.26E+00	1.93E+01	-	4.14E+00	5.62E+01	2.94E+01	-	1.93E+01	4.14E+00 nc
Dinitrobenzene, 1,3-	99-65-0	No	No	-		-		1.00E-04	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	5.26E+00	1.93E+01	-	4.14E+00	5.62E+01	2.94E+01	-	1.93E+01	4.14E+00 nc
Dinitrobenzene, 1,4-	100-25-4	No	No	-		-		1.00E-04	P	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	5.26E+00	1.93E+01	-	4.14E+00	5.62E+01	2.94E+01	-	1.93E+01	4.14E+00 nc
Dinitrophenol, 2,4-	51-28-5	No	No	-		-		2.00E-03	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.05E+02	3.86E+02	-	8.27E+01	1.12E+03	5.87E+02	-	3.86E+02	8.27E+01 nc
Dinitrophenols	25550-58-7	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Dinitrotoluene Mixture, 2,4/2,6-	NA	No	No	6.80E-01	I	-		-		-		1	0.1	1	-	-	1.36E+09	6.88E+00	1.04E+01	-	4.14E+00	-	-	-	-	-	-	-	-	4.14E+00 ca
Dinitrotoluene, 2,4-	121-14-2	No	No	3.10E-01	C	8.90E-05	C	2.00E-03	I	-		1	0.1	1	-	-	1.36E+09	1.51E+01	2.23E+01	-	9.00E+00	1.05E+02	3.78E+02	-	8.24E+01	1.12E+03	5.76E+02	-	3.81E+02	9.00E+00 ca**
Dinitrotoluene, 2,6-	606-20-2	No	No	1.50E+00	P	-		3.00E-04	S	-		1	0.1	1	-	-	1.36E+09	3.12E+00	4.75E+00	-	1.88E+00	1.58E+01	5.85E+01	-	1.24E+01	1.68E+02	8.90E+01	-	5.82E+01	1.88E+00 ca**
Dinitrotoluene, 2-Amino-4,6-	35572-78-2	No	No	-		-		2.00E-03	S	-		1	0.01	1	-	-	1.36E+09	-	-	-	-	1.05E+02	6.43E+03	-	1.04E+02	1.12E+03	9.79E+03	-	1.01E+03	1.04E+02 nc
Dinitrotoluene, 4-Amino-2,6-	19406-51-0	No	No	-		-		2.00E-03	S	-		1	0.01	1	-	-	1.36E+09	-	-	-	-	1.05E+02	4.29E+03	-	1.03E+02	1.12E+03	6.53E+03	-	9.58E+02	1.03E+02 nc
Dinitrotoluene, Technical grade	25321-14-6	No	No	4.50E-01	X	-		9.00E-04	S	-		1	0.1	1	-	-	1.36E+09	1.04E+01	1.57E+01	-	6.25E+00	4.74E+01	1.74E+02	-	3.72E+01	5.05E+02	2.64E+02	-	1.74E+02	6.25E+00 ca**
Dinoseb	88-85-7	No	No	-		-		1.00E-03	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	5.26E+01	1.93E+02	-	4.14E+01	5.62E+02	2.94E+02	-	1.93E+02	4.14E+01 nc
Dioxane, 1,4-	123-91-1	No	No	1.00E-01	I	5.00E-06	I	3.00E-02	I	3.00E-02	I	1	0.1	1	-	-	1.36E+09	4.68E+01	7.06E+01	-	2.81E+01	1.58E+03	5.79E+03	-	1.24E+03	1.68E+04	8.81E+03	-	5.79E+03	2.81E+01 ca*
Diphenamid	957-51-7	No	No	-		-		3.00E-02	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.58E+03	5.79E+03	-	1.24E+03	1.68E+04	8.81E+03	-	5.79E+03	1.24E+03 nc
Diphenyl Sulfone	127-63-9	No	No	-		-		8.00E-04	S	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	4.21E+01	1.54E+02	-	3.31E+01	4.49E+02	2.35E+02	-	1.54E+02	3.31E+01 nc
Diphenylamine	122-39-4	No	No	-		-		2.50E-02	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.32E+03	4.82E+03	-	1.03E+03	1.40E+04	7.34E+03	-	4.82E+03	1.03E+03 nc
Diphenylhydrazine, 1,2-	122-66-7	No	No	8.00E-01	I	2.20E-04	I	-		-		1	0.1	1	-	-	1.36E+09	5.85E+00	8.82E+00	-	3.52E+00	-	-	-	-	-	-	-	-	3.52E+00 ca

Site-specific
Recreator Screening Levels (RSL) for Soil
ca=Cancer, nc=Noncancer, ca* (Where nc SL < 100 x ca SL),
ca** (Where nc SL < 10 x ca SL), max=SL exceeds ceiling limit (see User's Guide), sat=SL exceeds csat,
Smax=Soil SL exceeds ceiling limit and has been substituted with the max value (see User's Guide)
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	Mutagen?	VOC ?	Ingestion SF (mg/kg-day)$^{-1}$	SFO Ref	Inhalation Unit Risk (ug/m^3)$^{-1}$	IUR Ref	Chronic RfD (mg/kg-day)	Chronic RfD Ref	Chronic RfC (mg/m^3)	Chronic RfC Ref	GIABS	ABS	RBA	Volatilization Factor (m^3/kg)	Soil Saturation Concentration (mg/kg)	Particulate Emission Factor (m^3/kg)	Ingestion SL TR=1.0E-6 (mg/kg)	Dermal SL TR=1.0E-6 (mg/kg)	Inhalation SL TR=1.0E-6 (mg/kg)	Carcinogenic SL TR=1.0E-6 (mg/kg)	Ingestion SL (Child) HQ=0.1 (mg/kg)	Dermal SL (Child) HQ=0.1 (mg/kg)	Inhalation SL (Child) HQ=0.1 (mg/kg)	Noncarcinogenic SL (Child) HI=0.1 (mg/kg)	Ingestion SL (Adult) HQ=0.1 (mg/kg)	Dermal SL (Adult) HQ=0.1 (mg/kg)	Inhalation SL (Adult) HQ=0.1 (mg/kg)	Noncarcinogenic SL (Adult) HI=0.1 (mg/kg)	Screening Level (mg/kg)
Diquat	85-00-7	No	No	-		-		2.20E-03	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.16E+02	4.25E+02	-	9.10E+01	1.24E+03	6.46E+02	-	4.24E+02	9.10E+01 nc
Direct Black 38	1937-37-7	No	No	7.10E+00	C	1.40E-01	C	-		-		1	0.1	1	-	-	1.36E+09	6.59E-01	9.94E-01	-	3.96E-01	-	-	-	-	-	-	-	-	3.96E-01 ca
Direct Blue 6	2602-46-2	No	No	7.40E+00	C	1.40E-01	C	-		-		1	0.1	1	-	-	1.36E+09	6.32E-01	9.54E-01	-	3.80E-01	-	-	-	-	-	-	-	-	3.80E-01 ca
Direct Brown 95	16071-86-6	No	No	6.70E+00	C	1.40E-01	C	-		-		1	0.1	1	-	-	1.36E+09	6.98E-01	1.05E+00	-	4.20E-01	-	-	-	-	-	-	-	-	4.20E-01 ca
Direct Sky Blue	2610-05-1	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Disulfoton	298-04-4	No	No	-		-		4.00E-05	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	2.11E+00	7.72E+00	-	1.65E+00	2.25E+01	1.17E+01	-	7.71E+00	1.65E+00 nc
Dithiane, 1,4-	505-29-3	No	Yes	-		-		1.00E-02	I	-		1	0.1	1	4.25E+04	-	1.36E+09	-	-	-	-	5.26E+02	1.93E+03	-	4.14E+02	5.62E+03	2.94E+03	-	1.93E+03	4.14E+02 nc
Diuron	330-54-1	No	No	-		-		2.00E-03	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.05E+02	3.86E+02	-	8.27E+01	1.12E+03	5.87E+02	-	3.86E+02	8.27E+01 nc
Dodecyl benzenesulfonic acic	27176-87-0	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Dodine	2439-10-3	No	No	-		-		4.00E-03	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	2.11E+02	7.72E+02	-	1.65E+02	2.25E+03	1.17E+03	-	7.71E+02	1.65E+02 nc
Hexachlorodibenzo-p-dioxir	34465-46-8	No	No	1.30E+04	W	3.80E+00	W	7.00E-09	W	4.00E-07	W	1	0.03	1	-	-	1.36E+09	3.60E-04	1.81E-03	-	3.00E-04	3.69E-04	4.50E-03	-	3.41E-04	3.93E-03	6.85E-03	-	2.50E-03	3.00E-04 ca**
Hexachlorodibenzo-p-dioxin, 1,2,3,4,7,8-	39227-28-6	No	No	1.30E+04	W	3.80E+00	W	7.00E-09	W	4.00E-07	W	1	0.03	1	-	-	1.36E+09	3.60E-04	1.81E-03	-	3.00E-04	3.69E-04	4.50E-03	-	3.41E-04	3.93E-03	6.85E-03	-	2.50E-03	3.00E-04 ca**
Hexachlorodibenzo-p-dioxin, Mixture	NA	No	No	6.20E+03	I	1.30E+00	I	-		-		1	0.03	1	-	-	1.36E+09	7.55E-04	3.79E-03	-	6.30E-04	-	-	-	-	-	-	-	-	6.30E-04 ca
HpCDD, 2,3,7,8-	37871-00-4	No	No	1.30E+03	W	3.80E-01	W	7.00E-08	W	4.00E-06	W	1	0.03	1	-	-	1.36E+09	3.60E-03	1.81E-02	-	3.00E-03	3.69E-03	4.50E-02	-	3.41E-03	3.93E-02	6.85E-02	-	2.50E-02	3.00E-03 ca**
HxCDD, 1,2,3,6,7,8-	57653-85-7	No	No	1.30E+04	W	3.80E+00	W	7.00E-09	W	4.00E-07	W	1	0.03	1	-	-	1.36E+09	3.60E-04	1.81E-03	-	3.00E-04	3.69E-04	4.50E-03	-	3.41E-04	3.93E-03	6.85E-03	-	2.50E-03	3.00E-04 ca**
HxCDD, 1,2,3,7,8,9-	19408-74-3	No	No	1.30E+04	W	3.80E+00	W	7.00E-09	W	4.00E-07	W	1	0.03	1	-	-	1.36E+09	3.60E-04	1.81E-03	-	3.00E-04	3.69E-04	4.50E-03	-	3.41E-04	3.93E-03	6.85E-03	-	2.50E-03	3.00E-04 ca**
OCDD	3268-87-9	No	No	3.90E+01	W	1.14E-02	W	2.33E-06	W	1.33E-04	W	1	0.03	1	-	-	1.36E+09	1.20E-01	6.03E-01	-	1.00E-01	1.23E-01	1.50E+00	-	1.14E-01	1.31E+00	2.28E+00	-	8.33E-01	1.00E-01 ca**
PeCDD, 2,3,7,8-	36088-22-9	No	No	1.30E+05	W	3.80E+01	W	7.00E-10	W	4.00E-08	W	1	0.03	1	-	-	1.36E+09	3.60E-05	1.81E-04	-	3.00E-05	3.69E-05	4.50E-04	-	3.41E-05	3.93E-04	6.85E-04	-	2.50E-04	3.00E-05 ca**
Pentachlorodibenzo-p-dioxin, 1,2,3,7,8	40321-76-4	No	No	1.30E+05	W	3.80E+01	W	7.00E-10	W	4.00E-08	W	1	0.03	1	-	-	1.36E+09	3.60E-05	1.81E-04	-	3.00E-05	3.69E-05	4.50E-04	-	3.41E-05	3.93E-04	6.85E-04	-	2.50E-04	3.00E-05 ca**
TCDD, 2,3,7,8-	1746-01-6	No	No	1.30E+05	C	3.80E+01	C	7.00E-10	I	4.00E-08	C	1	0.03	1	-	-	1.36E+09	3.60E-05	1.81E-04	-	3.00E-05	3.69E-05	4.50E-04	-	3.41E-05	3.93E-04	6.85E-04	-	2.50E-04	3.00E-05 ca**
Endosulfan	115-29-7	No	No	-		-		6.00E-03	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	3.16E+02	1.16E+03	-	2.48E+02	3.37E+03	1.76E+03	-	1.16E+03	2.48E+02 nc
Endosulfan I	959-98-8	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Endosulfan I	33213-65-9	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Endosulfan Sulfate	1031-07-8	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Endothal	145-73-3	No	No	-		-		2.00E-02	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.05E+03	3.86E+03	-	8.27E+02	1.12E+04	5.87E+03	-	3.86E+03	8.27E+02 nc
Endrin	72-20-8	No	No	-		-		3.00E-04	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.58E+01	5.79E+01	-	1.24E+01	1.68E+02	8.81E+01	-	5.79E+01	1.24E+01 nc
Endrin ketone	53494-70-5	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Endrin aldehyde	7421-93-4	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Epichlorohydrir	106-89-8	No	Yes	9.90E-03	I	1.20E-06	I	6.00E-03	P	1.00E-03	I	1	-	1	1.89E+04	1.05E+04	1.36E+09	4.73E+02	-	-	4.73E+02	3.16E+02	-	-	3.16E+02	3.37E+03	-	-	3.37E+03	3.16E+02 nc
Epoxybutane, 1,2-	106-88-7	No	Yes	-		-		-		2.00E-02	I	1	-	1	7.66E+03	1.53E+04	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
EPTC	759-94-4	No	Yes	-		-		2.50E-02	I	-		1	-	1	1.17E+05	-	1.36E+09	-	-	-	-	1.32E+03	-	-	1.32E+03	1.40E+04	-	-	1.40E+04	1.32E+03 nc
Ethanol	64-17-5	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Ethanol, 2-(2-methoxyethoxy)-	111-77-3	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Ethephon	16672-87-0	No	No	-		-		5.00E-03	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	2.63E+02	9.65E+02	-	2.07E+02	2.81E+03	1.47E+03	-	9.64E+02	2.07E+02 nc
Ethion	563-12-2	No	No	-		-		5.00E-04	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	2.63E+01	9.65E+01	-	2.07E+01	2.81E+02	1.47E+02	-	9.64E+01	2.07E+01 nc
Ethoxy Propanol	52125-53-8	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Ethoxyethanol Acetate, 2-	111-15-9	No	No	-		-		1.00E-01	P	6.00E-02	P	1	0.1	1	-	-	1.36E+09	-	-	-	-	5.26E+03	1.93E+04	-	4.14E+03	5.62E+04	2.94E+04	-	1.93E+04	4.14E+03 nc
Ethoxyethanol, 2-	110-80-5	No	No	-		-		9.00E-02	P	2.00E-01	I	1	0.1	1	-	-	1.36E+09	-	-	-	-	4.74E+03	1.74E+04	-	3.72E+03	5.05E+04	2.64E+04	-	1.74E+04	3.72E+03 nc
Ethyl methane sulfonate	62-50-0	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Ethyl Acetate	141-78-6	No	Yes	-		-		9.00E-01	I	7.00E-02	P	1	-	1	8.62E+03	1.08E+04	1.36E+09	-	-	-	-	4.74E+04	-	-	4.74E+04	5.05E+05	-	-	5.05E+05	4.74E+04 sat
Ethyl Acrylate	140-88-5	No	Yes	4.80E-02	H	-		5.00E-03	P	8.00E-03	P	1	-	1	6.34E+03	2.50E+03	1.36E+09	9.75E+01	-	-	9.75E+01	2.63E+02	-	-	2.63E+02	2.81E+03	-	-	2.81E+03	9.75E+01 ca**
Ethyl Chloride	75-00-3	No	Yes	-		-		-		1.00E+01	I	1	-	1	1.29E+03	2.12E+03	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Ethyl Ether	60-29-7	No	Yes	-		-		2.00E-01	I	-		1	-	1	3.12E+03	1.01E+04	1.36E+09	-	-	-	-	1.05E+04	-	-	1.05E+04	1.12E+05	-	-	1.12E+05	1.05E+04 sat
Ethyl Methacrylate	97-63-2	No	Yes	-		-		9.00E-02	H	3.00E-01	P	1	-	1	5.77E+03	1.10E+03	1.36E+09	-	-	-	-	4.74E+03	-	-	4.74E+03	5.05E+04	-	-	5.05E+04	4.74E+03 sat
Ethyl-p-nitrophenyl Phosphonate	2104-64-5	No	No	-		-		1.00E-05	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	5.26E-01	1.93E+00	-	4.14E-01	5.62E+00	2.94E+00	-	1.93E+00	4.14E-01 nc
Ethylbenzene	100-41-4	No	Yes	1.10E-02	C	2.50E-06	C	1.00E-01	I	1.00E+00	I	1	-	1	5.67E+03	4.80E+02	1.36E+09	4.25E+02	-	-	4.25E+02	5.26E+03	-	-	5.26E+03	5.62E+04	-	-	5.62E+04	4.25E+02 ca*
Ethylene Cyanohydrin	109-78-4	No	No	-		-		7.00E-02	P	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	3.69E+03	1.35E+04	-	2.90E+03	3.93E+04	2.06E+04	-	1.35E+04	2.90E+03 nc
Ethylene Diamine	107-15-3	No	No	-		-		9.00E-02	P	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	4.74E+03	1.74E+04	-	3.72E+03	5.05E+04	2.64E+04	-	1.74E+04	3.72E+03 nc
Ethylene Glycol	107-21-1	No	No	-		-		2.00E+00	I	4.00E-01	C	1	0.1	1	-	-	1.36E+09	-	-	-	-	1.05E+05	3.86E+05	-	8.27E+04	1.12E+06	5.87E+05	-	3.86E+05	8.27E+04 nc
Ethylene Glycol Monobutyl Ethe	111-76-2	No	No	-		-		1.00E-01	I	1.60E+00	I	1	0.1	1	-	-	1.36E+09	-	-	-	-	5.26E+03	1.93E+04	-	4.14E+03	5.62E+04	2.94E+04	-	1.93E+04	4.14E+03 nc
Ethylene Oxide	75-21-8	No	Yes	3.10E-01	C	8.80E-05	C	-		3.00E-02	C	1	-	1	6.09E+03	1.21E+05	1.36E+09	1.51E+01	-	-	1.51E+01	-	-	-	-	-	-	-	-	1.51E+01 ca
Ethylene Thiourea	96-45-7	No	No	4.50E-02	C	1.30E-05	C	8.00E-05	I	-		1	0.1	1	-	-	1.36E+09	1.04E+02	1.57E+02	-	6.25E+01	4.21E+00	1.54E+01	-	3.31E+00	4.49E+01	2.35E+01	-	1.54E+01	3.31E+00 nc
Ethyleneimine	151-56-4	No	Yes	6.50E+01	C	1.90E-02	C	-		-		1	0.1	1	2.39E+04	1.54E+05	1.36E+09	7.20E-02	1.09E-01	-	4.33E-02	-	-	-	-	-	-	-	-	4.33E-02 ca
Ethylphenol, 4-	123-07-9	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Ethylphthalyl Ethyl Glycolate	84-72-0	No	No	-		-		3.00E+00	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.58E+05	5.79E+05	-	1.24E+05	1.68E+06	8.81E+05	-	5.79E+05	1.24E+05 max
Express	101200-48-0	No	No	-		-		8.00E-03	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	4.21E+02	1.54E+03	-	3.31E+02	4.49E+03	2.35E+03	-	1.54E+03	3.31E+02 nc
Famphur	52-85-7	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Fenamiphos	22224-92-6	No	No	-		-		2.50E-04	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.32E+01	4.82E+01	-	1.03E+01	1.40E+02	7.34E+01	-	4.82E+01	1.03E+01 nc
Fenpropathrin	39515-41-8	No	No	-		-		2.50E-02	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.32E+03	4.82E+03	-	1.03E+03	1.40E+04	7.34E+03	-	4.82E+03	1.03E+03 nc
Fluometuron	2164-17-2	No	No	-		-		1.30E-02	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	6.84E+02	2.51E+03	-	5.38E+02	7.30E+03	3.82E+03	-	2.51E+03	5.38E+02 nc
Fluoride	16984-48-8	No	No	-		-		4.00E-02	C	1.30E-02	C	1	-	1	-	-	1.36E+09	-	-	-	-	2.11E+03	-	-	2.11E+03	2.25E+04	-	-	2.25E+04	2.11E+03 nc
Fluorine (Soluble Fluoride	7782-41-4	No	No	-		-		6.00E-02	I	1.30E-02	C	1	-	1	-	-	1.36E+09	-	-	-	-	3.16E+03	-	-	3.16E+03	3.37E+04	-	-	3.37E+04	3.16E+03 nc
Fluorobenzene	462-06-6	No	Yes	-		-		-		-		1	-	1	4.09E+03	2.39E+03	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Fluorobiphenyl, 2-	321-60-8	No	Yes	-		-		-		-		1	-	1	7.86E+04	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Fluorophenol, 2-	367-12-4	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Fluridone	59756-60-4	No	No	-		-		8.00E-02	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	4.21E+03	1.54E+04	-	3.31E+03	4.49E+04	2.35E+04	-	1.54E+04	3.31E+03 nc
Flurprimidol	56425-91-3	No	No	-		-		2.00E-02	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.05E+03	3.86E+03	-	8.27E+02	1.12E+04	5.87E+03	-	3.86E+03	8.27E+02 nc
Flutolani	66332-96-5	No	No	-		-		6.00E-02	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	3.16E+03	1.16E+04	-	2.48E+03	3.37E+04	1.76E+04	-	1.16E+04	2.48E+03 nc
Fluvalinate	69409-94-5	No	No	-		-		1.00E-02	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	5.26E+02	1.93E+03	-	4.14E+02	5.62E+03	2.94E+03	-	1.93E+03	4.14E+02 nc
Folpet	133-07-3	No	No	3.50E-03	I	-		1.00E-01	I	-		1	0.1	1	-	-	1.36E+09	1.34E+03	2.02E+03	-	8.04E+02	5.26E+03	1.93E+04	-	4.14E+03	5.62E+04	2.94E+04	-	1.93E+04	8.04E+02 ca**

Site-specific
Recreator Screening Levels (RSL) for Soil
ca=Cancer, nc=Noncancer, ca* (Where nc SL < 100 x ca SL),
ca** (Where nc SL < 10 x ca SL), max=SL exceeds ceiling limit (see User's Guide), sat=SL exceeds csat,
Smax=Soil SL exceeds ceiling limit and has been substituted with the max value (see User's Guide)
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	Mutagen?	VOC ?	Ingestion SF (mg/kg-day)$^{-1}$	SFO Ref	Inhalation Unit Risk (ug/m^3)$^{-1}$	IUR Ref	Chronic RfD (mg/kg-day)	Chronic RfD Ref	Chronic RfC (mg/m^3)	Chronic RfC Ref	GIABS	ABS	RBA	Volatilization Factor (m^3/kg)	Soil Saturation Concentration (mg/kg)	Particulate Emission Factor (m^3/kg)	Ingestion SL TR=1.0E-6 (mg/kg)	Dermal SL TR=1.0E-6 (mg/kg)	Inhalation SL TR=1.0E-6 (mg/kg)	Carcinogenic SL TR=1.0E-6 (mg/kg)	Ingestion SL (Child) HQ=0.1 (mg/kg)	Dermal SL (Child) HQ=0.1 (mg/kg)	Inhalation SL (Child) HQ=0.1 (mg/kg)	Noncarcinogenic SL (Child) HI=0.1 (mg/kg)	Ingestion SL (Adult) HQ=0.1 (mg/kg)	Dermal SL (Adult) HQ=0.1 (mg/kg)	Inhalation SL (Adult) HQ=0.1 (mg/kg)	Noncarcinogenic SL (Adult) HI=0.1 (mg/kg)	Screening Level (mg/kg)
Fomesafen	72178-02-0	No	No	1.90E-01	I	-		-		-		1	0.1	1	-	-	1.36E+09	2.46E+01	3.71E+01	-	1.48E+01	-	-	-	-	-	-	-	-	1.48E+01 ca
Fonofos	944-22-9	No	No	-		-		2.00E-03	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.05E+02	3.86E+02	-	8.27E+01	1.12E+03	5.87E+02	-	3.86E+02	8.27E+01 nc
Formaldehyde	50-00-0	No	No	-		1.30E-05	I	2.00E-01	I	9.83E-03	A	1	0.1	1	-	-	1.36E+09	-	-	-	-	1.05E+04	3.86E+04	-	8.27E+03	1.12E+05	5.87E+04	-	3.86E+04	8.27E+03 nc
Formic Acid	64-18-6	No	No	-		-		9.00E-01	P	3.00E-04	S	1	0.1	1	-	-	1.36E+09	-	-	-	-	4.74E+04	1.74E+05	-	3.72E+04	5.05E+05	2.64E+05	-	1.74E+05	3.72E+04 nc
Fosetyl-AL	39148-24-8	No	No	-		-		3.00E+00	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.58E+05	5.79E+05	-	1.24E+05	1.68E+06	8.81E+05	-	5.79E+05	1.24E+05 max
Fuel Oil Number 2	68476-30-2	No	Yes	-		-		-		-		1	-	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	-
Furazolidone	67-45-8	No	No	3.80E+00	H	-		-		-		1	0.1	1	-	-	1.36E+09	1.23E+00	1.86E+00	-	7.40E-01	-	-	-	-	-	-	-	-	7.40E-01 ca
Furfural	98-01-1	No	No	-		-		3.00E-03	I	5.00E-02	H	1	0.1	1	-	-	1.36E+09	-	-	-	-	1.58E+02	5.79E+02	-	1.24E+02	1.68E+03	8.81E+02	-	5.79E+02	1.24E+02 nc
Furium	531-82-8	No	No	1.50E+00	C	4.30E-04	C	-		-		1	0.1	1	-	-	1.36E+09	3.12E+00	4.70E+00	-	1.88E+00	-	-	-	-	-	-	-	-	1.88E+00 ca
Furmecyclox	60568-05-0	No	No	3.00E-02	I	8.60E-06	C	-		-		1	0.1	1	-	-	1.36E+09	1.56E+02	2.35E+02	-	9.38E+01	-	-	-	-	-	-	-	-	9.38E+01 ca
Dibenzofuran	132-64-9	No	Yes	-		-		1.00E-03	S	-		1	0.03	1	1.96E+05	-	1.36E+09	-	-	-	-	5.26E+01	6.43E+02	-	4.87E+01	5.62E+02	9.79E+02	-	3.57E+02	4.87E+01 nc
Furan	110-00-9	No	Yes	-		-		1.00E-03	I	-		1	0.03	1	2.62E+03	6.22E+03	1.36E+09	-	-	-	-	5.26E+01	6.43E+02	-	4.87E+01	5.62E+02	9.79E+02	-	3.57E+02	4.87E+01 nc
Heptachlorodibenzofuran, 1,2,3,4,6,7,8-	67562-39-4	No	No	1.30E+03	W	3.80E-01	W	7.00E-08	W	4.00E-06	W	1	0.03	1	-	-	1.36E+09	3.60E-03	1.81E-02	-	3.00E-03	3.69E-03	4.50E-02	-	3.41E-03	3.93E-02	6.85E-02	-	2.50E-02	3.00E-03 ca**
Hexachlorodibenzofuran, 1,2,3,4,7,8-	70648-26-9	No	No	1.30E+04	W	3.80E+00	W	7.00E-09	W	4.00E-07	W	1	0.03	1	-	-	1.36E+09	3.60E-04	1.81E-03	-	3.00E-04	3.69E-04	4.50E-03	-	3.41E-04	3.93E-03	6.85E-03	-	2.50E-03	3.00E-04 ca**
HpCDF, 1,2,3,4,7,8,9-	55673-89-7	No	No	1.30E+03	W	3.80E-01	W	7.00E-08	W	4.00E-06	W	1	0.03	1	-	-	1.36E+09	3.60E-03	1.81E-02	-	3.00E-03	3.69E-03	4.50E-02	-	3.41E-03	3.93E-02	6.85E-02	-	2.50E-02	3.00E-03 ca**
HpCDF, 2,3,7,8-	38998-75-3	No	No	1.30E+03	W	3.80E-01	W	7.00E-08	W	4.00E-06	W	1	0.03	1	-	-	1.36E+09	3.60E-03	1.81E-02	-	3.00E-03	3.69E-03	4.50E-02	-	3.41E-03	3.93E-02	6.85E-02	-	2.50E-02	3.00E-03 ca**
HxCDF, 1,2,3,6,7,8-	57117-44-9	No	No	1.30E+04	W	3.80E+00	W	7.00E-09	W	4.00E-07	W	1	0.03	1	-	-	1.36E+09	3.60E-04	1.81E-03	-	3.00E-04	3.69E-04	4.50E-03	-	3.41E-04	3.93E-03	6.85E-03	-	2.50E-03	3.00E-04 ca**
HxCDF, 1,2,3,7,8,9-	72918-21-9	No	No	1.30E+04	W	3.80E+00	W	7.00E-09	W	4.00E-07	W	1	0.03	1	-	-	1.36E+09	3.60E-04	1.81E-03	-	3.00E-04	3.69E-04	4.50E-03	-	3.41E-04	3.93E-03	6.85E-03	-	2.50E-03	3.00E-04 ca**
HxCDF, 2,3,4,6,7,8-	60851-34-5	No	No	1.30E+04	W	3.80E+00	W	7.00E-09	W	4.00E-07	W	1	0.03	1	-	-	1.36E+09	3.60E-04	1.81E-03	-	3.00E-04	3.69E-04	4.50E-03	-	3.41E-04	3.93E-03	6.85E-03	-	2.50E-03	3.00E-04 ca**
HxCDF, 2,3,7,8-	55684-94-1	No	No	1.30E+04	W	3.80E+00	W	7.00E-09	W	4.00E-07	W	1	0.03	1	-	-	1.36E+09	3.60E-04	1.81E-03	-	3.00E-04	3.69E-04	4.50E-03	-	3.41E-04	3.93E-03	6.85E-03	-	2.50E-03	3.00E-04 ca**
OCDF	39001-02-0	No	No	3.90E+01	W	1.14E-02	W	2.33E-06	W	1.33E-04	W	1	0.03	1	-	-	1.36E+09	1.20E-01	6.03E-01	-	1.00E-01	1.23E-01	1.50E+00	-	1.14E-01	1.31E+00	2.28E+00	-	8.33E-01	1.00E-01 ca**
PeCDF, 1,2,3,7,8-	57117-41-6	No	No	3.90E+03	W	1.14E+00	W	2.33E-08	W	1.33E-06	W	1	0.03	1	-	-	1.36E+09	1.20E-03	6.03E-03	-	1.00E-03	1.23E-03	1.50E-02	-	1.14E-03	1.31E-02	2.28E-02	-	8.33E-03	1.00E-03 ca**
PeCDF, 2,3,4,7,8-	57117-31-4	No	No	3.90E+04	W	1.14E+01	W	2.33E-09	W	1.33E-07	W	1	0.03	1	-	-	1.36E+09	1.20E-04	6.03E-04	-	1.00E-04	1.23E-04	1.50E-03	-	1.14E-04	1.31E-03	2.28E-03	-	8.33E-04	1.00E-04 ca**
TCDF, 2,3,7,8-	51207-31-9	No	No	1.30E+04	W	3.80E+00	W	7.00E-09	W	4.00E-07	W	1	0.03	1	-	-	1.36E+09	3.60E-04	1.81E-03	-	3.00E-04	3.69E-04	4.50E-03	-	3.41E-04	3.93E-03	6.85E-03	-	2.50E-03	3.00E-04 ca**
Tetrahydrofuran	109-99-9	No	Yes	-		-		9.00E-01	I	2.00E+00	I	1	0.03	1	1.22E+04	1.65E+05	1.36E+09	-	-	-	-	4.74E+04	5.79E+05	-	4.38E+04	5.05E+05	8.81E+05	-	3.21E+05	4.38E+04 nc
Gadolinium	7440-54-2	No	No	-		-		-		-		1	-	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Gallium	7440-55-3	No	No	-		-		-		-		1	-	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Germanium	7440-56-4	No	No	-		-		-		-		1	-	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Glufosinate, Ammonium	77182-82-2	No	No	-		-		4.00E-04	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	2.11E+01	7.72E+01	-	1.65E+01	2.25E+02	1.17E+02	-	7.71E+01	1.65E+01 nc
Glutaraldehyde	111-30-8	No	No	-		-		-		8.00E-05	C	1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	-
Glycerol	56-81-5	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Glycidyl	765-34-4	No	No	-		-		4.00E-04	I	1.00E-03	H	1	0.1	1	-	-	1.36E+09	-	-	-	-	2.11E+01	7.72E+01	-	1.65E+01	2.25E+02	1.17E+02	-	7.71E+01	1.65E+01 nc
Glyphosate	1071-83-6	No	No	-		-		1.00E-01	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	5.26E+03	1.93E+04	-	4.14E+03	5.62E+04	2.94E+04	-	1.93E+04	4.14E+03 nc
Goal	42874-03-3	No	No	-		-		3.00E-03	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.58E+02	5.79E+02	-	1.24E+02	1.68E+03	8.81E+02	-	5.79E+02	1.24E+02 nc
Guanidine Chloride	50-01-1	No	No	-		-		2.00E-02	P	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.05E+03	3.86E+03	-	8.27E+02	1.12E+04	5.87E+03	-	3.86E+03	8.27E+02 nc
Guanidine	113-00-8	No	No	-		-		1.00E-02	S	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	5.26E+02	1.93E+03	-	4.14E+02	5.62E+03	2.94E+03	-	1.93E+03	4.14E+02 nc
Guanidine Nitrate	506-93-4	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Guthion	86-50-0	No	No	-		-		3.00E-03	A	1.00E-02	A	1	0.1	1	-	-	1.36E+09	-	-	-	-	1.58E+02	5.79E+02	-	1.24E+02	1.68E+03	8.81E+02	-	5.79E+02	1.24E+02 nc
Haloacetic acids	NA	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Haloxyfop, Methy	69806-40-2	No	No	-		-		5.00E-05	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	2.63E+00	9.65E+00	-	2.07E+00	2.81E+01	1.47E+01	-	9.64E+00	2.07E+00 nc
Harmony	79277-27-3	No	No	-		-		1.30E-02	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	6.84E+02	2.51E+03	-	5.38E+02	7.30E+03	3.82E+03	-	2.51E+03	5.38E+02 nc
HCDD, 1,2,3,4,6,7,8,-	35822-46-9	No	No	1.30E+03	C	3.80E-01	C	1.00E-06	C	4.00E-06	C	1	0.1	1	-	-	1.36E+09	3.60E-03	5.43E-03	-	2.16E-03	5.26E-02	1.93E-01	-	4.14E-02	5.62E-01	2.94E-01	-	1.93E-01	2.16E-03 ca*
Heptachlor	76-44-8	No	No	4.50E+00	I	1.30E-03	I	5.00E-04	I	-		1	0.1	1	-	-	1.36E+09	1.04E+00	1.57E+00	-	6.25E-01	2.63E+01	9.65E+01	-	2.07E+01	2.81E+02	1.47E+02	-	9.64E+01	6.25E-01 ca*
Heptachlor Epoxide	1024-57-3	No	No	9.10E+00	I	2.60E-03	I	1.30E-05	I	-		1	0.1	1	-	-	1.36E+09	5.14E-01	7.76E-01	-	3.09E-01	6.84E-01	2.51E+00	-	5.38E-01	7.30E+00	3.82E+00	-	2.51E+00	3.09E-01 ca**
Heptanal, n-	111-71-7	No	Yes	-		-		-		-		1	-	1	7.82E+03	2.09E+02	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Heptane, N-	142-82-5	No	Yes	-		-		-		-		1	-	1	8.95E+02	5.79E+01	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Heptanol, n-	111-70-6	No	Yes	-		-		-		-		1	-	1	3.01E+04	3.78E+02	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	-
Hexabromobenzene	87-82-1	No	No	-		-		2.00E-03	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.05E+02	3.86E+02	-	8.27E+01	1.12E+03	5.87E+02	-	3.86E+02	8.27E+01 nc
Hexabromodiphenyl ether, 2,2',4,4',5,5'- (BDE 153)	68631-49-2	No	No	-		-		2.00E-04	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.05E+01	3.86E+01	-	8.27E+00	1.12E+02	5.87E+01	-	3.86E+01	8.27E+00 nc
Hexachlorobenzene	118-74-1	No	No	1.60E+00	I	4.60E-04	I	8.00E-04	I	-		1	0.1	1	-	-	1.36E+09	2.92E+00	4.41E+00	-	1.76E+00	4.21E+01	1.54E+02	-	3.31E+01	4.49E+02	2.35E+02	-	1.54E+02	1.76E+00 ca*
Hexachlorobutadiene	87-68-3	No	No	7.80E-02	I	2.20E-05	I	1.00E-03	P	-		1	0.1	1	-	-	1.36E+09	6.00E+01	9.05E+01	-	3.61E+01	5.26E+01	1.93E+02	-	4.14E+01	5.62E+02	2.94E+02	-	1.93E+02	3.61E+01 ca**
Hexachlorocyclohexane, Alpha-	319-84-6	No	No	6.30E+00	I	1.80E-03	I	8.00E-03	A	-		1	0.1	1	-	-	1.36E+09	7.43E-01	1.12E+00	-	4.47E-01	4.21E+02	1.54E+03	-	3.31E+02	4.49E+03	2.35E+03	-	1.54E+03	4.47E-01 ca
Hexachlorocyclohexane, Beta-	319-85-7	No	No	1.80E+00	I	5.30E-04	I	-		-		1	0.1	1	-	-	1.36E+09	2.60E+00	3.92E+00	-	1.56E+00	-	-	-	-	-	-	-	-	1.56E+00 ca
Hexachlorocyclohexane, Delta-	319-86-8	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Hexachlorocyclohexane, Epsilon	6108-10-7	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Hexachlorocyclohexane, Gamma- (Lindane)	58-89-9	No	No	1.10E+00	C	3.10E-04	C	3.00E-04	I	-		1	0.04	1	-	-	1.36E+09	4.25E+00	1.60E+01	-	3.36E+00	1.58E+01	1.45E+02	-	1.42E+01	1.68E+02	2.20E+02	-	9.55E+01	3.36E+00 ca**
Hexachlorocyclohexane, Technical	608-73-1	No	No	1.80E+00	I	5.10E-04	I	-		-		1	0.1	1	-	-	1.36E+09	2.60E+00	3.92E+00	-	1.56E+00	-	-	-	-	-	-	-	-	1.56E+00 ca
Hexachlorocyclopentadiene	77-47-4	No	No	-		-		6.00E-03	I	2.00E-04	I	1	0.1	1	-	-	1.36E+09	-	-	-	-	3.16E+02	1.16E+03	-	2.48E+02	3.37E+03	1.76E+03	-	1.16E+03	2.48E+02 nc
Hexachloroethane	67-72-1	No	No	4.00E-02	I	1.10E-05	C	7.00E-04	I	3.00E-02	I	1	0.1	1	-	-	1.36E+09	1.17E+02	1.76E+02	-	7.03E+01	3.69E+01	1.35E+02	-	2.90E+01	3.93E+02	2.06E+02	-	1.35E+02	2.90E+01 nc
Hexachlorophene	70-30-4	No	No	-		-		3.00E-04	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.58E+01	5.79E+01	-	1.24E+01	1.68E+02	8.81E+01	-	5.79E+01	1.24E+01 nc
Hexachloropropene	1888-71-7	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Hexadecanoic Acid	57-10-3	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	121-82-4	No	No	1.10E-01	I	-		3.00E-03	I	-		1	0.02	1	-	-	1.36E+09	4.25E+01	4.28E+02	-	3.87E+01	1.58E+02	3.86E+03	-	1.52E+02	1.68E+03	5.87E+03	-	1.31E+03	3.87E+01 ca**
Hexamethylene Diisocyanate, 1,6-	822-06-0	No	Yes	-		-		-		1.00E-05	I	1	-	1	3.00E+05	5.19E+03	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Hexamethylphosphoramide	680-31-9	No	No	-		-		4.00E-04	P	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	2.11E+01	7.72E+01	-	1.65E+01	2.25E+02	1.17E+02	-	7.71E+01	1.65E+01 nc
Hexane, N-	110-54-3	No	Yes	-		-		6.00E-02	H	7.00E-01	I	1	-	1	8.29E+02	1.41E+02	1.36E+09	-	-	-	-	3.16E+03	-	-	3.16E+03	3.37E+04	-	-	3.37E+04	3.16E+03 sat
Hexanedioic Acid	124-04-9	No	No	-		-		2.00E+00	P	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.05E+05	3.86E+05	-	8.27E+04	1.12E+06	5.87E+05	-	3.86E+05	8.27E+04 nc
Hexanol, n-	111-27-3	No	Yes	-		-		-		-		1	-	1	2.61E+04	9.99E+02	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	

Site-specific
Recreator Screening Levels (RSL) for Soil
ca=Cancer, nc=Noncancer, ca* (Where nc SL < 100 x ca SL),
ca** (Where nc SL < 10 x ca SL), max=SL exceeds ceiling limit (see User's Guide), sat=SL exceeds csat,
Smax=Soil SL exceeds ceiling limit and has been substituted with the max value (see User's Guide)
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	Mutagen?	VOC ?	Ingestion SF (mg/kg-day)$^{-1}$	SFO Ref	Inhalation Unit Risk (ug/m^3)$^{-1}$	IUR Ref	Chronic RfD (mg/kg-day)	Chronic RfD Ref	Chronic RfC (mg/m^3)	Chronic RfC Ref	GIABS	ABS	RBA	Volatilization Factor (m^3/kg)	Soil Saturation Concentration (mg/kg)	Particulate Emission Factor (m^3/kg)	Ingestion SL TR=1.0E-6 (mg/kg)	Dermal SL TR=1.0E-6 (mg/kg)	Inhalation SL TR=1.0E-6 (mg/kg)	Carcinogenic SL TR=1.0E-6 (mg/kg)	Ingestion SL (Child) HQ=0.1 (mg/kg)	Dermal SL (Child) HQ=0.1 (mg/kg)	Inhalation SL (Child) HQ=0.1 (mg/kg)	Noncarcinogenic SL (Child) HI=0.1 (mg/kg)	Ingestion SL (Adult) HQ=0.1 (mg/kg)	Dermal SL (Adult) HQ=0.1 (mg/kg)	Inhalation SL (Adult) HQ=0.1 (mg/kg)	Noncarcinogenic SL (Adult) HI=0.1 (mg/kg)	Screening Level (mg/kg)
Hexanone, 2-	591-78-6	No	Yes	-		-		5.00E-03	I	3.00E-02	I	1	-	1	1.33E+04	3.28E+03	1.36E+09	-	-	-	-	2.63E+02	-	-	2.63E+02	2.81E+03	-	-	2.81E+03	2.63E+02 nc
Hexazinone	51235-04-2	No	No	-		-		3.30E-02	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.74E+03	6.37E+03	-	1.36E+03	1.85E+04	9.69E+03	-	6.36E+03	1.36E+03 nc
Hydrazine	302-01-2	No	No	3.00E+00	I	4.90E-03	I	-		3.00E-05	P	1	-	1	-	-	1.36E+09	1.56E+00	-	-	1.56E+00	-	-	-	-	-	-	-	-	1.56E+00 ca
Hydrazine Sulfate	10034-93-2	No	No	3.00E+00	I	4.90E-03	I	-		-		1	-	1	-	-	1.36E+09	1.56E+00	-	-	1.56E+00	-	-	-	-	-	-	-	-	1.56E+00 ca
Hydrogen Chloride	7647-01-0	No	No	-		-		-		2.00E-02	I	1	-	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Hydrogen Fluoride	7664-39-3	No	No	-		-		4.00E-02	C	1.40E-02	C	1	-	1	-	-	1.36E+09	-	-	-	-	2.11E+03	-	-	2.11E+03	2.25E+04	-	-	2.25E+04	2.11E+03 nc
Hydrogen Selenide	77830-70-5	No	No	-		-		-		-		1	-	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Hydrogen Sulfate	12143-45-2	No	No	-		-		-		-		1	-	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Hydrogen Sulfide	7783-06-4	No	No	-		-		-		2.00E-03	I	1	-	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Hydroquinone	123-31-9	No	No	6.00E-02	P	-		4.00E-02	P	-		1	0.1	1	-	-	1.36E+09	7.80E+01	1.18E+02	-	4.69E+01	2.11E+03	7.72E+03	-	1.65E+03	2.25E+04	1.17E+04	-	7.71E+03	4.69E+01 ca*
Imazalil	35554-44-0	No	No	-		-		1.30E-02	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	6.84E+02	2.51E+03	-	5.38E+02	7.30E+03	3.82E+03	-	2.51E+03	5.38E+02 nc
Imazaquin	81335-37-7	No	No	-		-		2.50E-01	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.32E+04	4.82E+04	-	1.03E+04	1.40E+05	7.34E+04	-	4.82E+04	1.03E+04 nc
Indium	7440-74-6	No	No	-		-		-		-		1	-	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Iodide	20461-54-5	No	No	-		-		-		-		1	-	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Iodine	7553-56-2	No	No	-		-		1.00E-02	A	-		1	-	1	-	-	1.36E+09	-	-	-	-	5.26E+02	-	-	5.26E+02	5.62E+03	-	-	5.62E+03	5.26E+02 nc
Iodomethane	74-88-4	No	Yes	-		-		-		-		1	-	1	1.85E+03	3.04E+03	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Iodopropynyl Butylcarbamate (IPBC)	55406-53-6	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Iprodione	36734-19-7	No	No	-		-		4.00E-02	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	2.11E+03	7.72E+03	-	1.65E+03	2.25E+04	1.17E+04	-	7.71E+03	1.65E+03 nc
Iron	7439-89-6	No	No	-		-		7.00E-01	P	-		1	-	1	-	-	1.36E+09	-	-	-	-	3.69E+04	-	-	3.69E+04	3.93E+05	-	-	3.93E+05	3.69E+04 nc
Iron Sulfide	11126-12-8	No	No	-		-		-		-		1	-	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Isobutyl Alcohol	78-83-1	No	No	-		-		3.00E-01	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.58E+04	5.79E+04	-	1.24E+04	1.68E+05	8.81E+04	-	5.79E+04	1.24E+04 nc
Isodrin	465-73-6	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Isophorone	78-59-1	No	No	9.50E-04	I	-		2.00E-01	I	2.00E+00	C	1	0.1	1	-	-	1.36E+09	4.93E+03	7.43E+03	-	2.96E+03	1.05E+04	3.86E+04	-	8.27E+03	1.12E+05	5.87E+04	-	3.86E+04	2.96E+03 ca**
Isopropalin	33820-53-0	No	No	-		-		1.50E-02	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	7.90E+02	2.89E+03	-	6.20E+02	8.42E+03	4.41E+03	-	2.89E+03	6.20E+02 nc
Isopropanol	67-63-0	No	No	-		-		2.00E+00	P	2.00E-01	P	1	0.1	1	-	-	1.36E+09	-	-	-	-	1.05E+05	3.86E+05	-	8.27E+04	1.12E+06	5.87E+05	-	3.86E+05	8.27E+04 nc
Isopropyl Methyl Phosphonic Acid	1832-54-8	No	No	-		-		1.00E-01	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	5.26E+03	1.93E+04	-	4.14E+03	5.62E+04	2.94E+04	-	1.93E+04	4.14E+03 nc
Isopropyltoluene, p-	99-87-6	No	Yes	-		-		-		-		1	-	1	8.53E+03	1.62E+02	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Isosafrole	120-58-1	No	Yes	-		-		-		-		1	0.1	1	2.48E+03	2.05E+01	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Isoxaben	82558-50-7	No	No	-		-		5.00E-02	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	2.63E+03	9.65E+03	-	2.07E+03	2.81E+04	1.47E+04	-	9.64E+03	2.07E+03 nc
JP-4	50815-00-4	No	Yes	-		-		-		-		1	-	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
JP-5/JP-8	8002-20-6	No	Yes	-		-		-		-		1	-	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
JP-7	NA	No	Yes	-		-		-		3.00E-01	A	1	-	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Kerb	23950-58-5	No	No	-		-		7.50E-02	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	3.95E+03	1.45E+04	-	3.10E+03	4.21E+04	2.20E+04	-	1.45E+04	3.10E+03 nc
Kerosene	8008-20-6	No	Yes	-		-		-		-		1	-	1	1.06E+03	3.42E-01	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Lactofen	77501-63-4	No	No	-		-		2.00E-03	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.05E+02	3.86E+02	-	8.27E+01	1.12E+03	5.87E+02	-	3.86E+02	8.27E+01 nc
Lactonitrile	78-97-7	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Lanthanum	7439-91-0	No	No	-		-		-		-		1	-	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Linuron	330-55-2	No	No	-		-		2.00E-03	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.05E+02	3.86E+02	-	8.27E+01	1.12E+03	5.87E+02	-	3.86E+02	8.27E+01 nc
Lithium	7439-93-2	No	No	-		-		2.00E-03	P	-		1	-	1	-	-	1.36E+09	-	-	-	-	1.05E+02	-	-	1.05E+02	1.12E+03	-	-	1.12E+03	1.05E+02 nc
Londax	83055-99-6	No	No	-		-		2.00E-01	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.05E+04	3.86E+04	-	8.27E+03	1.12E+05	5.87E+04	-	3.86E+04	8.27E+03 nc
Lutetium	7439-94-3	No	No	-		-		-		-		1	-	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Dimethylethyl Leac	107584-40-7	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Lead Alkyls	NA	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Lead Chromate	7758-97-6	Yes	No	5.00E-01	C	1.50E-01	C	2.00E-02	C	2.00E-04	C	0.025	-	1	-	-	1.36E+09	2.06E+00	-	-	2.06E+00	1.05E+03	-	-	1.05E+03	1.12E+04	-	-	1.12E+04	2.06E+00 ca
Lead Phosphate	7446-27-7	No	No	8.50E-03	C	1.20E-05	C	-		-		1	-	1	-	-	1.36E+09	5.51E+02	-	-	5.51E+02	-	-	-	-	-	-	-	-	5.51E+02 ca
Lead acetate	301-04-2	No	No	2.80E-01	C	8.00E-05	C	-		-		1	0.1	1	-	-	1.36E+09	1.67E+01	2.52E+01	-	1.00E+01	-	-	-	-	-	-	-	-	1.00E+01 ca
Lead and Compounds	7439-92-1	No	No	-		-		-		-		1	-	1	-	-	1.36E+09	-	-	-	-	-	-	-	4.00E+02	-	-	-	-	4.00E+02 nc
Lead subacetate	1335-32-6	No	No	8.50E-03	C	1.20E-05	C	-		-		1	0.1	1	-	-	1.36E+09	5.51E+02	8.30E+02	-	3.31E+02	-	-	-	-	-	-	-	-	3.31E+02 ca
Methyltriethyl Lead	1762-28-3	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Tetrabutyl Lead	1920-90-7	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Tetraethyl Lead	78-00-2	No	No	-		-		1.00E-07	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	5.26E-03	1.93E-02	-	4.14E-03	5.62E-02	2.94E-02	-	1.93E-02	4.14E-03 nc
Tetramethyl Lead	75-74-1	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Tetrapropyl Lead	3440-75-3	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Magnesium	7439-95-4	No	No	-		-		-		-		1	-	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Magnesium Chlorate	10326-21-3	No	No	-		-		-		-		1	-	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Malathion	121-75-5	No	No	-		-		2.00E-02	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.05E+03	3.86E+03	-	8.27E+02	1.12E+04	5.87E+03	-	3.86E+03	8.27E+02 nc
Maleic Anhydride	108-31-6	No	No	-		-		1.00E-01	I	7.00E-04	C	1	0.1	1	-	-	1.36E+09	-	-	-	-	5.26E+03	1.93E+04	-	4.14E+03	5.62E+04	2.94E+04	-	1.93E+04	4.14E+03 nc
Maleic Hydrazide	123-33-1	No	No	-		-		5.00E-01	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	2.63E+04	9.65E+04	-	2.07E+04	2.81E+05	1.47E+05	-	9.64E+04	2.07E+04 nc
Malononitrile	109-77-3	No	No	-		-		1.00E-04	P	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	5.26E+00	1.93E+01	-	4.14E+00	5.62E+01	2.94E+01	-	1.93E+01	4.14E+00 nc
Mancozeb	8018-01-7	No	No	-		-		3.00E-02	H	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.58E+03	5.79E+03	-	1.24E+03	1.68E+04	8.81E+03	-	5.79E+03	1.24E+03 nc
Maneb	12427-38-2	No	No	-		-		5.00E-03	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	2.63E+02	9.65E+02	-	2.07E+02	2.81E+03	1.47E+03	-	9.64E+02	2.07E+02 nc
Manganese (Non-diet)	7439-96-5	No	No	-		-		2.40E-02	S	5.00E-05	I	0.04	-	1	-	-	1.36E+09	-	-	-	-	1.26E+03	-	-	1.26E+03	1.35E+04	-	-	1.35E+04	1.26E+03 nc
MCPA	94-74-6	No	No	-		-		5.00E-04	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	2.63E+01	9.65E+01	-	2.07E+01	2.81E+02	1.47E+02	-	9.64E+01	2.07E+01 nc
MCPB	94-81-5	No	No	-		-		1.00E-02	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	5.26E+02	1.93E+03	-	4.14E+02	5.62E+03	2.94E+03	-	1.93E+03	4.14E+02 nc
MCPP	93-65-2	No	No	-		-		1.00E-03	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	5.26E+01	1.93E+02	-	4.14E+01	5.62E+02	2.94E+02	-	1.93E+02	4.14E+01 nc
Mechlorethamine	51-75-2	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Mephosfolan	950-10-7	No	No	-		-		9.00E-05	H	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	4.74E+00	1.74E+01	-	3.72E+00	5.05E+01	2.64E+01	-	1.74E+01	3.72E+00 nc
Mepiquat Chloride	24307-26-4	No	No	-		-		3.00E-02	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.58E+03	5.79E+03	-	1.24E+03	1.68E+04	8.81E+03	-	5.79E+03	1.24E+03 nc
Merphos	150-50-5	No	No	-		-		3.00E-05	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.58E+00	5.79E+00	-	1.24E+00	1.68E+01	8.81E+00	-	5.79E+00	1.24E+00 nc
Merphos Oxide	78-48-8	No	No	-		-		3.00E-05	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.58E+00	5.79E+00	-	1.24E+00	1.68E+01	8.81E+00	-	5.79E+00	1.24E+00 nc
Metalaxyl	57837-19-1	No	No	-		-		6.00E-02	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	3.16E+03	1.16E+04	-	2.48E+03	3.37E+04	1.76E+04	-	1.16E+04	2.48E+03 nc

Site-specific
Recreator Screening Levels (RSL) for Soil
ca=Cancer, nc=Noncancer, ca* (Where nc SL < 100 x ca SL),
ca** (Where nc SL < 10 x ca SL), max=SL exceeds ceiling limit (see User's Guide), sat=SL exceeds csat,
Smax=Soil SL exceeds ceiling limit and has been substituted with the max value (see User's Guide)
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	Mutagen?	VOC ?	Ingestion SF (mg/kg-day)$^{-1}$	SFO Ref	Inhalation Unit Risk (ug/m^3)$^{-1}$	IUR Ref	Chronic RfD (mg/kg-day)	Chronic RfD Ref	Chronic RfC (mg/m^3)	Chronic RfC Ref	GIABS	ABS	RBA	Volatilization Factor (m^3/kg)	Soil Saturation Concentration (mg/kg)	Particulate Emission Factor (m^3/kg)	Ingestion SL TR=1.0E-6 (mg/kg)	Dermal SL TR=1.0E-6 (mg/kg)	Inhalation SL TR=1.0E-6 (mg/kg)	Carcinogenic SL TR=1.0E-6 (mg/kg)	Ingestion SL (Child) HQ=0.1 (mg/kg)	Dermal SL (Child) HQ=0.1 (mg/kg)	Inhalation SL (Child) HQ=0.1 (mg/kg)	Noncarcinogenic SL (Child) HI=0.1 (mg/kg)	Ingestion SL (Adult) HQ=0.1 (mg/kg)	Dermal SL (Adult) HQ=0.1 (mg/kg)	Inhalation SL (Adult) HQ=0.1 (mg/kg)	Noncarcinogenic SL (Adult) HI=0.1 (mg/kg)	Screening Level (mg/kg)
Methacrylonitrile	126-98-7	No	Yes	-		-		1.00E-04	I	3.00E-02	P	1	-	1	6.79E+03	4.58E+03	1.36E+09	-	-	-	-	5.26E+00	-	-	5.26E+00	5.62E+01	-	-	5.62E+01	5.26E+00 nc
Methamidophos	10265-92-6	No	No	-		-		5.00E-05	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	2.63E+00	9.65E+00	-	2.07E+00	2.81E+01	1.47E+01	-	9.64E+00	2.07E+00 nc
Methanol	67-56-1	No	No	-		-		2.00E+00	I	2.00E+01	I	1	0.1	1	-	-	1.36E+09	-	-	-	-	1.05E+05	3.86E+05	-	8.27E+04	1.12E+06	5.87E+05	-	3.86E+05	8.27E+04 nc
Methapyrilene	91-80-5	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Methidathion	950-37-8	No	No	-		-		1.00E-03	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	5.26E+01	1.93E+02	-	4.14E+01	5.62E+02	2.94E+02	-	1.93E+02	4.14E+01 nc
Methomyl	16752-77-5	No	No	-		-		2.50E-02	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.32E+03	4.82E+03	-	1.03E+03	1.40E+04	7.34E+03	-	4.82E+03	1.03E+03 nc
Methoxy-5-nitroaniline, 2-	99-59-2	No	No	4.90E-02	C	1.40E-05	C	-		-		1	0.1	1	-	-	1.36E+09	9.55E+01	1.44E+02	-	5.74E+01	-	-	-	-	-	-	-	-	5.74E+01 ca
Methoxychlor	72-43-5	No	No	-		-		5.00E-03	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	2.63E+02	9.65E+02	-	2.07E+02	2.81E+03	1.47E+03	-	9.64E+02	2.07E+02 nc
Methoxyethanol Acetate, 2-	110-49-6	No	No	-		-		8.00E-03	P	1.00E-03	P	1	0.1	1	-	-	1.36E+09	-	-	-	-	4.21E+02	1.54E+03	-	3.31E+02	4.49E+03	2.35E+03	-	1.54E+03	3.31E+02 nc
Methoxyethanol, 2-	109-86-4	No	No	-		-		5.00E-03	P	2.00E-02	I	1	0.1	1	-	-	1.36E+09	-	-	-	-	2.63E+02	9.65E+02	-	2.07E+02	2.81E+03	1.47E+03	-	9.64E+02	2.07E+02 nc
Methyl methanesulfonate	66-27-3	No	No	9.90E-02	C	2.80E-05	C	-		-		1	0.1	1	-	-	1.36E+09	4.73E+01	7.13E+01	-	2.84E+01	-	-	-	-	-	-	-	-	2.84E+01 ca
Methyl Acetate	79-20-9	No	Yes	-		-		1.00E+00	S	-		1	-	1	8.12E+03	2.90E+04	1.36E+09	-	-	-	-	5.26E+04	-	-	5.26E+04	5.62E+05	-	-	5.62E+05	5.26E+04 sat
Methyl Acrylate	96-33-3	No	Yes	-		-		3.00E-02	H	2.00E-02	P	1	-	1	6.97E+03	6.75E+03	1.36E+09	-	-	-	-	1.58E+03	-	-	1.58E+03	1.68E+04	-	-	1.68E+04	1.58E+03 nc
Methyl dicyclohexylamine, n	7560-83-0	No	Yes	-		-		-		-		1	-	1	3.22E+04	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Methyl Ethyl Ketone (2-Butanone)	78-93-3	No	Yes	-		-		6.00E-01	I	5.00E+00	I	1	-	1	1.22E+04	2.84E+04	1.36E+09	-	-	-	-	3.16E+04	-	-	3.16E+04	3.37E+05	-	-	3.37E+05	3.16E+04 sat
Methyl Hydrazine	60-34-4	No	No	-		1.00E-03	X	1.00E-03	P	2.00E-05	S	1	0.1	1	-	-	1.36E+09	-	-	-	-	5.26E+01	1.93E+02	-	4.14E+01	5.62E+02	2.94E+02	-	1.93E+02	4.14E+01 nc
Methyl Isobutyl Ketone (4-methyl-2 pentanone)	108-10-1	No	Yes	-		-		8.00E-02	H	3.00E+00	I	1	-	1	1.06E+04	3.36E+03	1.36E+09	-	-	-	-	4.21E+03	-	-	4.21E+03	4.49E+04	-	-	4.49E+04	4.21E+03 sat
Methyl Isocyanate	624-83-9	No	Yes	-		-		-		1.00E-03	C	1	0.1	1	4.42E+03	1.67E+04	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Methyl Mercaptan	74-93-1	No	Yes	-		-		-		-		1	-	1	1.78E+03	3.13E+03	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Methyl Methacrylate	80-62-6	No	Yes	-		-		1.40E+00	I	7.00E-01	I	1	-	1	6.33E+03	2.36E+03	1.36E+09	-	-	-	-	7.37E+04	-	-	7.37E+04	7.86E+05	-	-	7.86E+05	7.37E+04 sat
Methyl Parathion	298-00-0	No	No	-		-		2.50E-04	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.32E+01	4.82E+01	-	1.03E+01	1.40E+02	7.34E+01	-	4.82E+01	1.03E+01 nc
Methyl Phosphonic Acid	993-13-5	No	No	-		-		6.00E-02	S	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	3.16E+03	1.16E+04	-	2.48E+03	3.37E+04	1.76E+04	-	1.16E+04	2.48E+03 nc
Methyl Styrene (Mixed Isomers)	25013-15-4	No	Yes	-		-		6.00E-03	H	4.00E-02	H	1	-	1	1.07E+04	3.93E+02	1.36E+09	-	-	-	-	3.16E+02	-	-	3.16E+02	3.37E+03	-	-	3.37E+03	3.16E+02 nc
Methyl tert-Butyl Ether (MTBE	1634-04-4	No	Yes	1.80E-03	C	2.60E-07	C	-		3.00E+00	I	1	-	1	4.90E+03	8.87E+03	1.36E+09	2.60E+03	-	-	2.60E+03	-	-	-	-	-	-	-	-	2.60E+03 ca
Methyl-1,4-benzenediamine dihydrochloride, 2-	615-45-2	No	No	-		-		3.00E-04	S	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.58E+01	5.79E+01	-	1.24E+01	1.68E+02	8.81E+01	-	5.79E+01	1.24E+01 nc
Methyl-2-Pentanol, 4-	108-11-2	No	Yes	-		-		-		-		1	-	1	1.72E+04	2.45E+03	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Methyl-5-Nitroaniline, 2-	99-55-8	No	No	9.00E-03	P	-		2.00E-02	S	-		1	0.1	1	-	-	1.36E+09	5.20E+02	7.84E+02	-	3.13E+02	1.05E+03	3.86E+03	-	8.27E+02	1.12E+04	5.87E+03	-	3.86E+03	3.13E+02 ca**
Methyl-N-nitro-N-nitrosoguanidine, N-	70-25-7	No	No	8.30E+00	C	2.40E-03	C	-		-		1	0.1	1	-	-	1.36E+09	5.64E-01	8.50E-01	-	3.39E-01	-	-	-	-	-	-	-	-	3.39E-01 ca
Methylaniline Hydrochloride, 2-	636-21-5	No	No	1.30E-01	C	3.70E-05	C	-		-		1	0.1	1	-	-	1.36E+09	3.60E+01	5.43E+01	-	2.16E+01	-	-	-	-	-	-	-	-	2.16E+01 ca
Methylarsonic acid	124-58-3	No	No	-		-		1.00E-02	A	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	5.26E+02	1.93E+03	-	4.14E+02	5.62E+03	2.94E+03	-	1.93E+03	4.14E+02 nc
Methylaziridine, 2-	75-55-8	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Methylbenzene,1-4-diamine monohydrochloride, 2-	74612-12-7	No	No	-		-		2.00E-04	S	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.05E+01	3.86E+01	-	8.27E+00	1.12E+02	5.87E+01	-	3.86E+01	8.27E+00 nc
Methylbenzene-1,4-diamine sulfate, 2-	615-50-9	No	No	1.00E-01	X	-		3.00E-04	S	-		1	0.1	1	-	-	1.36E+09	4.68E+01	7.06E+01	-	2.81E+01	1.58E+01	5.79E+01	-	1.24E+01	1.68E+02	8.81E+01	-	5.79E+01	1.24E+01 nc
Methylcholanthrene, 3-	56-49-5	Yes	No	2.20E+01	C	6.30E-03	C	-		-		1	0.1	1	-	-	1.36E+09	4.69E-02	1.05E-01	-	3.24E-02	-	-	-	-	-	-	-	-	3.24E-02 ca
Methylcyclohexane	108-87-2	No	Yes	-		-		-		-		1	-	1	9.90E+02	6.76E+01	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Methylcyclohexylamine, n	100-60-7	No	Yes	-		-		-		-		1	-	1	2.83E+04	2.80E+04	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Methylcyclopentane	96-37-7	No	Yes	-		-		-		-		1	-	1	8.86E+02	1.55E+02	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Methylene Chloride	75-09-2	Yes	Yes	2.00E-03	I	1.00E-08	I	6.00E-03	I	6.00E-01	I	1	-	1	2.19E+03	3.32E+03	1.36E+09	5.15E+02	-	-	5.15E+02	3.16E+02	-	-	3.16E+02	3.37E+03	-	-	3.37E+03	3.16E+02 nc
Methylene-bis(2-chloroaniline), 4,4'-	101-14-4	Yes	No	1.00E-01	P	4.30E-04	C	2.00E-03	P	-		1	0.1	1	-	-	1.36E+09	1.03E+01	2.32E+01	-	7.13E+00	1.05E+02	3.86E+02	-	8.27E+01	1.12E+03	5.87E+02	-	3.86E+02	7.13E+00 ca*
Methylene-bis(N,N-dimethyl) Aniline, 4,4'	101-61-1	No	No	4.60E-02	I	1.30E-05	C	-		-		1	0.1	1	-	-	1.36E+09	1.02E+02	1.53E+02	-	6.12E+01	-	-	-	-	-	-	-	-	6.12E+01 ca
Methylenebisbenzenamine, 4,4'-	101-77-9	No	No	1.60E+00	C	4.60E-04	C	-		2.00E-02	C	1	0.1	1	-	-	1.36E+09	2.92E+00	4.41E+00	-	1.76E+00	-	-	-	-	-	-	-	-	1.76E+00 ca
Methylenediphenyl Diisocyanate	101-68-8	No	No	-		-		-		6.00E-04	I	1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Methylisothiocyanate	556-61-6	No	Yes	-		-		-		-		1	-	1	1.47E+04	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Methylnaphthalene	1321-94-4	No	Yes	-		-		-		-		1	0.1	1	5.10E+04	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Methylstyrene, Alpha-	98-83-9	No	Yes	-		-		7.00E-02	H	-		1	-	1	1.28E+04	5.00E+02	1.36E+09	-	-	-	-	3.69E+03	-	-	3.69E+03	3.93E+04	-	-	3.93E+04	3.69E+03 sat
Metolachlor	51218-45-2	No	No	-		-		1.50E-01	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	7.90E+03	2.89E+04	-	6.20E+03	8.42E+04	4.41E+04	-	2.89E+04	6.20E+03 nc
Metribuzin	21087-64-9	No	No	-		-		2.50E-02	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.32E+03	4.82E+03	-	1.03E+03	1.40E+04	7.34E+03	-	4.82E+03	1.03E+03 nc
Mineral oils	8012-95-1	No	Yes	-		-		3.00E+00	P	-		1	0.1	1	1.06E+03	3.42E-01	1.36E+09	-	-	-	-	1.58E+05	5.79E+05	-	1.24E+05	1.68E+06	8.81E+05	-	5.79E+05	1.24E+05 sat
Mirex	2385-85-5	No	No	1.80E+01	C	5.10E-03	C	2.00E-04	I	-		1	0.1	1	-	-	1.36E+09	2.60E-01	3.92E-01	-	1.56E-01	1.05E+01	3.86E+01	-	8.27E+00	1.12E+02	5.87E+01	-	3.86E+01	1.56E-01 ca*
Molinate	2212-67-1	No	No	-		-		2.00E-03	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.05E+02	3.86E+02	-	8.27E+01	1.12E+03	5.87E+02	-	3.86E+02	8.27E+01 nc
Molybdenum	7439-98-7	No	No	-		-		5.00E-03	I	-		1	-	1	-	-	1.36E+09	-	-	-	-	2.63E+02	-	-	2.63E+02	2.81E+03	-	-	2.81E+03	2.63E+02 nc
Monobutyltin Compounds	NA	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Monochloramine	10599-90-3	No	No	-		-		1.00E-01	I	-		1	-	1	-	-	1.36E+09	-	-	-	-	5.26E+03	-	-	5.26E+03	5.62E+04	-	-	5.62E+04	5.26E+03 nc
Monochlorobutanes	25154-42-1	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Monochlorophenols (total)	NA	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Monocyclic aromatic hydrocarbons (total)	NA	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Monomethylaniline	100-61-8	No	No	-		-		2.00E-03	P	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.05E+02	3.86E+02	-	8.27E+01	1.12E+03	5.87E+02	-	3.86E+02	8.27E+01 nc
Dimethylmercury	593-74-8	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Mercuric Chloride	7487-94-7	No	No	-		-		3.00E-04	I	3.00E-04	S	0.07	-	1	-	-	1.36E+09	-	-	-	-	1.58E+01	-	-	1.58E+01	1.68E+02	-	-	1.68E+02	1.58E+01 nc
Mercury (elemental)	7439-97-6	No	Yes	-		-		-		3.00E-04	I	1	-	1	3.01E+04	3.13E+00	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Methyl Mercury	22967-92-6	No	No	-		-		1.00E-04	I	-		1	-	1	-	-	1.36E+09	-	-	-	-	5.26E+00	-	-	5.26E+00	5.62E+01	-	-	5.62E+01	5.26E+00 nc
Phenylmercuric Acetate	62-38-4	No	No	-		-		8.00E-05	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	4.21E+00	1.54E+01	-	3.31E+00	4.49E+01	2.35E+01	-	1.54E+01	3.31E+00 nc
N,N'-Diphenyl-1,4-benzenediamine	74-31-7	No	No	-		-		3.00E-04	S	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.58E+01	5.79E+01	-	1.24E+01	1.68E+02	8.81E+01	-	5.79E+01	1.24E+01 nc
N-Methyl dithiocarbamate	137-42-8	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Naled	300-76-5	No	No	-		-		2.00E-03	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.05E+02	3.86E+02	-	8.27E+01	1.12E+03	5.87E+02	-	3.86E+02	8.27E+01 nc
Naphtha, High Flash Aromatic (HFAN)	64742-95-6	No	Yes	-		-		3.00E-02	S	1.00E-01	P	1	-	1	-	-	1.36E+09	-	-	-	-	1.58E+03	-	-	1.58E+03	1.68E+04	-	-	1.68E+04	1.58E+03 nc
Naphthol, 2-	135-19-3	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Naphthoquinone, 1,4-	130-15-4	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	

Site-specific
Recreator Screening Levels (RSL) for Soil
ca=Cancer, nc=Noncancer, ca* (Where nc SL < 100 x ca SL),
ca** (Where nc SL < 10 x ca SL), max=SL exceeds ceiling limit (see User's Guide), sat=SL exceeds csat,
Smax=Soil SL exceeds ceiling limit and has been substituted with the max value (see User's Guide)
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	Mutagen?	VOC ?	Ingestion SF (mg/kg-day)$^{-1}$	SFO Ref	Inhalation Unit Risk (ug/m^3)$^{-1}$	IUR Ref	Chronic RfD (mg/kg-day)	Chronic RfD Ref	Chronic RfC (mg/m^3)	Chronic RfC Ref	GIABS	ABS	RBA	Volatilization Factor (m^3/kg)	Soil Saturation Concentration (mg/kg)	Particulate Emission Factor (m^3/kg)	Ingestion SL TR=1.0E-6 (mg/kg)	Dermal SL TR=1.0E-6 (mg/kg)	Inhalation SL TR=1.0E-6 (mg/kg)	Carcinogenic SL TR=1.0E-6 (mg/kg)	Ingestion SL (Child) HQ=0.1 (mg/kg)	Dermal SL (Child) HQ=0.1 (mg/kg)	Inhalation SL (Child) HQ=0.1 (mg/kg)	Noncarcinogenic SL (Child) HI=0.1 (mg/kg)	Ingestion SL (Adult) HQ=0.1 (mg/kg)	Dermal SL (Adult) HQ=0.1 (mg/kg)	Inhalation SL (Adult) HQ=0.1 (mg/kg)	Noncarcinogenic SL (Adult) HI=0.1 (mg/kg)	Screening Level (mg/kg)
Naphthylamine, 1-	134-32-7	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Naphthylamine, 2-	91-59-8	No	No	1.80E+00	C	0.00E+00	C	-		-		1	0.1	1	-	-	1.36E+09	2.60E+00	3.92E+00	-	1.56E+00	-	-	-	-	-	-	-	-	1.56E+00 ca
Napropamide	15299-99-7	No	No	-		-		1.00E-01	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	5.26E+03	1.93E+04	-	4.14E+03	5.62E+04	2.94E+04	-	1.93E+04	4.14E+03 nc
Neodymium Chloride (Stable, Nonradioactive)	10024-93-8	No	No	-		-		-		-		1	-	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Niagara Blue 4B	2429-74-5	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Nickel Carbonyl	13463-39-3	No	No	-		2.60E-04	C	1.10E-02	C	1.40E-05	C	0.04	-	1	-	-	1.36E+09	-	-	-	-	5.79E+02	-	-	5.79E+02	6.18E+03	-	-	6.18E+03	5.79E+02 nc
Nickel Refinery Dust	NA	No	No	-		2.40E-04	I	1.10E-02	C	1.40E-05	C	0.04	-	1	-	-	1.36E+09	-	-	-	-	5.79E+02	-	-	5.79E+02	6.18E+03	-	-	6.18E+03	5.79E+02 nc
Nickel Soluble Salts	7440-02-0	No	No	-		2.60E-04	C	2.00E-02	I	9.00E-05	A	0.04	-	1	-	-	1.36E+09	-	-	-	-	1.05E+03	-	-	1.05E+03	1.12E+04	-	-	1.12E+04	1.05E+03 nc
Nickel Subsulfide	12035-72-2	No	No	1.70E+00	C	4.80E-04	I	1.10E-02	C	1.40E-05	C	0.04	-	1	-	-	1.36E+09	2.75E+00	-	-	2.75E+00	5.79E+02	-	-	5.79E+02	6.18E+03	-	-	6.18E+03	2.75E+00 ca
Nickel Acetate	373-02-4	No	No	-		2.60E-04	C	1.10E-02	C	1.40E-05	C	0.04	-	1	-	-	1.36E+09	-	-	-	-	5.79E+02	-	-	5.79E+02	6.18E+03	-	-	6.18E+03	5.79E+02 nc
Nickel Carbonate	3333-67-3	No	No	-		2.60E-04	C	1.10E-02	C	1.40E-05	C	0.04	-	1	-	-	1.36E+09	-	-	-	-	5.79E+02	-	-	5.79E+02	6.18E+03	-	-	6.18E+03	5.79E+02 nc
Nickel Hydroxide	12054-48-7	No	No	-		2.60E-04	C	1.10E-02	C	1.40E-05	C	0.04	-	1	-	-	1.36E+09	-	-	-	-	5.79E+02	-	-	5.79E+02	6.18E+03	-	-	6.18E+03	5.79E+02 nc
Nickel Oxide	1313-99-1	No	No	-		2.60E-04	C	1.10E-02	C	2.00E-05	C	0.04	-	1	-	-	1.36E+09	-	-	-	-	5.79E+02	-	-	5.79E+02	6.18E+03	-	-	6.18E+03	5.79E+02 nc
Nickelocene	1271-28-9	No	No	-		2.60E-04	C	1.10E-02	C	1.40E-05	C	0.04	-	1	-	-	1.36E+09	-	-	-	-	5.79E+02	-	-	5.79E+02	6.18E+03	-	-	6.18E+03	5.79E+02 nc
Nicotinonitrile	100-54-9	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Niobium	7440-03-1	No	No	-		-		-		-		1	-	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Nitrapyrin	1929-82-4	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Nitrate	14797-55-8	No	No	-		-		1.60E+00	I	-		1	-	1	-	-	1.36E+09	-	-	-	-	8.42E+04	-	-	8.42E+04	8.98E+05	-	-	8.98E+05	8.42E+04 nc
Nitrate + Nitrite (as N)	NA	No	No	-		-		-		-		1	-	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Nitric Acid	7697-37-2	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Nitric Oxide	10102-43-9	No	No	-		-		-		-		1	-	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Nitrite	14797-65-0	No	No	-		-		1.00E-01	I	-		1	-	1	-	-	1.36E+09	-	-	-	-	5.26E+03	-	-	5.26E+03	5.62E+04	-	-	5.62E+04	5.26E+03 nc
Nitroaniline, 2-	88-74-4	No	No	-		-		1.00E-02	S	5.00E-05	S	1	0.1	1	-	-	1.36E+09	-	-	-	-	5.26E+02	1.93E+03	-	4.14E+02	5.62E+03	2.94E+03	-	1.93E+03	4.14E+02 nc
Nitroaniline, 3-	99-09-2	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Nitroaniline, 4-	100-01-6	No	No	2.00E-02	P	-		4.00E-03	P	6.00E-03	P	1	0.1	1	-	-	1.36E+09	2.34E+02	3.53E+02	-	1.41E+02	2.11E+02	7.72E+02	-	1.65E+02	2.25E+03	1.17E+03	-	7.71E+02	1.41E+02 ca**
Nitrobenzene	98-95-3	No	Yes	-		4.00E-05	I	2.00E-03	I	9.00E-03	I	1	-	1	7.32E+04	3.05E+03	1.36E+09	-	-	-	-	1.05E+02	-	-	1.05E+02	1.12E+03	-	-	1.12E+03	1.05E+02 nc
Nitrobiphenyl, 4-	92-93-3	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Nitrocellulose	9004-70-0	No	No	-		-		3.00E+03	P	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.58E+08	5.79E+08	-	1.24E+08	1.68E+09	8.81E+08	-	5.79E+08	1.24E+08 max
Nitrodiphenylamine, 2-	119-75-5	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Nitrofurantoin	67-20-9	No	No	-		-		7.00E-02	H	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	3.69E+03	1.35E+04	-	2.90E+03	3.93E+04	2.06E+04	-	1.35E+04	2.90E+03 nc
Nitrofurazone	59-87-0	No	No	1.30E+00	C	3.70E-04	C	-		-		1	0.1	1	-	-	1.36E+09	3.60E+00	5.43E+00	-	2.16E+00	-	-	-	-	-	-	-	-	2.16E+00 ca
Nitrogen Dioxide	10102-44-0	No	No	-		-		-		-		1	-	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Nitroglycerin	55-63-0	No	No	1.70E-02	P	-		1.00E-04	P	-		1	0.1	1	-	-	1.36E+09	2.75E+02	4.15E+02	-	1.66E+02	5.26E+00	1.93E+01	-	4.14E+00	5.62E+01	2.94E+01	-	1.93E+01	4.14E+00 nc
Nitroguanidine	556-88-7	No	No	-		-		1.00E-01	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	5.26E+03	1.93E+04	-	4.14E+03	5.62E+04	2.94E+04	-	1.93E+04	4.14E+03 nc
Nitromethane	75-52-5	No	Yes	-		8.80E-06	P	-		5.00E-03	P	1	-	1	1.69E+04	1.80E+04	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Nitrophenol, 2-	88-75-5	No	Yes	-		-		-		-		1	0.1	1	1.20E+05	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Nitrophenol, 2-amino-4-	99-57-0	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Nitrophenol, 3-	554-84-7	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Nitrophenol, 4-	100-02-7	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Nitrophenol, 4-amino-2-	119-34-6	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Nitropropane, 2-	79-46-9	No	Yes	-		2.70E-03	H	-		2.00E-02	I	1	-	1	1.31E+04	4.86E+03	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Nitroquinoline-1-oxide, 4-	56-57-5	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Nitroso-di-N-butylamine, N-	924-16-3	No	Yes	5.40E+00	I	1.60E-03	I	-		-		1	-	1	1.97E+05	-	1.36E+09	8.67E-01	-	-	8.67E-01	-	-	-	-	-	-	-	-	8.67E-01 ca
Nitroso-di-N-propylamine, N-	621-64-7	No	No	7.00E+00	I	2.00E-03	C	-		-		1	0.1	1	-	-	1.36E+09	6.68E-01	1.01E+00	-	4.02E-01	-	-	-	-	-	-	-	-	4.02E-01 ca
Nitroso-N-ethylurea, N-	759-73-9	Yes	No	2.70E+01	C	7.70E-03	C	-		-		1	0.1	1	-	-	1.36E+09	3.82E-02	8.58E-02	-	2.64E-02	-	-	-	-	-	-	-	-	2.64E-02 ca
Nitroso-N-methylurea, N-	684-93-5	Yes	No	1.20E+02	C	3.40E-02	C	-		-		1	0.1	1	-	-	1.36E+09	8.59E-03	1.93E-02	-	5.95E-03	-	-	-	-	-	-	-	-	5.95E-03 ca
Nitrosodiethanolamine, N-	1116-54-7	No	No	2.80E+00	I	8.00E-04	C	-		-		1	0.1	1	-	-	1.36E+09	1.67E+00	2.52E+00	-	1.00E+00	-	-	-	-	-	-	-	-	1.00E+00 ca
Nitrosodiethylamine, N-	55-18-5	Yes	No	1.50E+02	I	4.30E-02	I	-		-		1	0.1	1	-	-	1.36E+09	6.87E-03	1.55E-02	-	4.76E-03	-	-	-	-	-	-	-	-	4.76E-03 ca
Nitrosodimethylamine, N-	62-75-9	Yes	No	5.10E+01	I	1.40E-02	I	8.00E-06	P	4.00E-05	S	1	0.1	1	-	-	1.36E+09	2.02E-02	4.54E-02	-	1.40E-02	4.21E-01	1.54E+00	-	3.31E-01	4.49E+00	2.35E+00	-	1.54E+00	1.40E-02 ca*
Nitrosodiphenylamine, N-	86-30-6	No	No	4.90E-03	I	2.60E-06	C	-		-		1	0.1	1	-	-	1.36E+09	9.55E+02	1.44E+03	-	5.74E+02	-	-	-	-	-	-	-	-	5.74E+02 ca
Nitrosomethylethylamine, N-	10595-95-6	No	No	2.20E+01	I	6.30E-03	C	-		-		1	0.1	1	-	-	1.36E+09	2.13E-01	3.21E-01	-	1.28E-01	-	-	-	-	-	-	-	-	1.28E-01 ca
Nitrosomethylvinylamine, N	4549-40-0	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Nitrosomorpholine [N-]	59-89-2	No	No	6.70E+00	C	1.90E-03	C	-		-		1	0.1	1	-	-	1.36E+09	6.98E-01	1.05E+00	-	4.20E-01	-	-	-	-	-	-	-	-	4.20E-01 ca
Nitrosopiperidine [N-]	100-75-4	No	No	9.40E+00	C	2.70E-03	C	-		-		1	0.1	1	-	-	1.36E+09	4.98E-01	7.51E-01	-	2.99E-01	-	-	-	-	-	-	-	-	2.99E-01 ca
Nitrosopyrrolidine, N-	930-55-2	No	No	2.10E+00	I	6.10E-04	I	-		-		1	0.1	1	-	-	1.36E+09	2.23E+00	3.36E+00	-	1.34E+00	-	-	-	-	-	-	-	-	1.34E+00 ca
Nitrotoluene, 4-Amino-2-	119-32-4	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Nitrotoluene, m-	99-08-1	No	No	-		-		1.00E-04	S	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	5.26E+00	1.93E+01	-	4.14E+00	5.62E+01	2.94E+01	-	1.93E+01	4.14E+00 nc
Nitrotoluene, o-	88-72-2	No	Yes	2.20E-01	P	-		9.00E-04	P	-		1	-	1	1.37E+05	1.51E+03	1.36E+09	2.13E+01	-	-	2.13E+01	4.74E+01	-	-	4.74E+01	5.05E+02	-	-	5.05E+02	2.13E+01 ca**
Nitrotoluene, p-	99-99-0	No	No	1.60E-02	P	-		4.00E-03	P	-		1	0.1	1	-	-	1.36E+09	2.92E+02	4.41E+02	-	1.76E+02	2.11E+02	7.72E+02	-	1.65E+02	2.25E+03	1.17E+03	-	7.71E+02	1.65E+02 nc
Nonachlor, trans-	39765-80-5	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Nonane, n-	111-84-2	No	Yes	-		-		3.00E-04	S	2.00E-02	P	1	-	1	1.04E+03	6.86E+00	1.36E+09	-	-	-	-	1.58E+01	-	-	1.58E+01	1.68E+02	-	-	1.68E+02	1.58E+01 sat
Nonanol, n-	143-08-8	No	Yes	-		-		-		-		1	-	1	3.84E+04	7.26E+01	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Norflurazon	27314-13-2	No	No	-		-		4.00E-02	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	2.11E+03	7.72E+03	-	1.65E+03	2.25E+04	1.17E+04	-	7.71E+03	1.65E+03 nc
Nustar	85509-19-9	No	No	-		-		7.00E-04	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	3.69E+01	1.35E+02	-	2.90E+01	3.93E+02	2.06E+02	-	1.35E+02	2.90E+01 nc
Octabromodiphenyl Ether	32536-52-0	No	No	-		-		3.00E-03	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.58E+02	5.79E+02	-	1.24E+02	1.68E+03	8.81E+02	-	5.79E+02	1.24E+02 nc
Octachlorostyrene	29082-74-4	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Octadecanoic Acid	57-11-4	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	2691-41-0	No	No	-		-		5.00E-02	I	-		1	0.01	1	-	-	1.36E+09	-	-	-	-	2.63E+03	1.61E+05	-	2.59E+03	2.81E+04	2.45E+05	-	2.52E+04	2.59E+03 nc

Site-specific
Recreator Screening Levels (RSL) for Soil
ca=Cancer, nc=Noncancer, ca* (Where nc SL < 100 x ca SL),
ca** (Where nc SL < 10 x ca SL), max=SL exceeds ceiling limit (see User's Guide), sat=SL exceeds csat,
Smax=Soil SL exceeds ceiling limit and has been substituted with the max value (see User's Guide)
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	Mutagen?	VOC ?	Ingestion SF (mg/kg-day)$^{-1}$	SFO Ref	Inhalation Unit Risk (ug/m^3)$^{-1}$	IUR Ref	Chronic RfD (mg/kg-day)	Chronic RfD Ref	Chronic RfC (mg/m^3)	Chronic RfC Ref	GIABS	ABS	RBA	Volatilization Factor (m^3/kg)	Soil Saturation Concentration (mg/kg)	Particulate Emission Factor (m^3/kg)	Ingestion SL TR=1.0E-6 (mg/kg)	Dermal SL TR=1.0E-6 (mg/kg)	Inhalation SL TR=1.0E-6 (mg/kg)	Carcinogenic SL TR=1.0E-6 (mg/kg)	Ingestion SL (Child) HQ=0.1 (mg/kg)	Dermal SL (Child) HQ=0.1 (mg/kg)	Inhalation SL (Child) HQ=0.1 (mg/kg)	Noncarcinogenic SL (Child) HI=0.1 (mg/kg)	Ingestion SL (Adult) HQ=0.1 (mg/kg)	Dermal SL (Adult) HQ=0.1 (mg/kg)	Inhalation SL (Adult) HQ=0.1 (mg/kg)	Noncarcinogenic SL (Adult) HI=0.1 (mg/kg)	Screening Level (mg/kg)
Octahydrotrimethylmethylethylphenanthrenol	511-15-9	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Octamethylpyrophosphoramide	152-16-9	No	No	-		-		2.00E-03	H	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.05E+02	3.86E+02	-	8.27E+01	1.12E+03	5.87E+02	-	3.86E+02	8.27E+01 nc
Octanol, n-	111-87-5	No	Yes	-		-		-		-		1	-	1	3.31E+04	1.78E+02	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Octanone, 2-	111-13-7	No	Yes	-		-		-		-		1	0.1	1	1.54E+04	3.60E+02	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Octanone, 3-	106-68-3	No	Yes	-		-		-		-		1	0.1	1	1.88E+04	1.07E+03	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Oleic acid	112-80-1	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Oleum	8014-95-7	No	No	-		-		-		-		1	-	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Oryzalin	19044-88-3	No	No	-		-		5.00E-02	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	2.63E+03	9.65E+03	-	2.07E+03	2.81E+04	1.47E+04	-	9.64E+03	2.07E+03 nc
Oxadiazon	19666-30-9	No	No	-		-		5.00E-03	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	2.63E+02	9.65E+02	-	2.07E+02	2.81E+03	1.47E+03	-	9.64E+02	2.07E+02 nc
Oxamyl	23135-22-0	No	No	-		-		2.50E-02	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.32E+03	4.82E+03	-	1.03E+03	1.40E+04	7.34E+03	-	4.82E+03	1.03E+03 nc
Oxychlordane	27304-13-8	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Ozone	10028-15-6	No	No	-		-		-		-		1	-	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Paclobutrazol	76738-62-0	No	No	-		-		1.30E-02	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	6.84E+02	2.51E+03	-	5.38E+02	7.30E+03	3.82E+03	-	2.51E+03	5.38E+02 nc
Coronene	191-07-1	No	No	-		-		-		-		1	0.13	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Paraquat Dichloride	1910-42-5	No	No	-		-		4.50E-03	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	2.37E+02	8.68E+02	-	1.86E+02	2.53E+03	1.32E+03	-	8.68E+02	1.86E+02 nc
Parathion	56-38-2	No	No	-		-		6.00E-03	H	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	3.16E+02	1.16E+03	-	2.48E+02	3.37E+03	1.76E+03	-	1.16E+03	2.48E+02 nc
Pebulate	1114-71-2	No	No	-		-		5.00E-02	H	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	2.63E+03	9.65E+03	-	2.07E+03	2.81E+04	1.47E+04	-	9.64E+03	2.07E+03 nc
Pendimethalin	40487-42-1	No	No	-		-		4.00E-02	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	2.11E+03	7.72E+03	-	1.65E+03	2.25E+04	1.17E+04	-	7.71E+03	1.65E+03 nc
Pentabromodiphenyl Ether	32534-81-9	No	No	-		-		2.00E-03	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.05E+02	3.86E+02	-	8.27E+01	1.12E+03	5.87E+02	-	3.86E+02	8.27E+01 nc
Pentabromodiphenyl ether, 2,2',4,4',5- (BDE 99)	60348-60-9	No	No	-		-		1.00E-04	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	5.26E+00	1.93E+01	-	4.14E+00	5.62E+01	2.94E+01	-	1.93E+01	4.14E+00 nc
Pentachloroaniline	527-20-8	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Pentachlorobenzene	608-93-5	No	No	-		-		8.00E-04	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	4.21E+01	1.54E+02	-	3.31E+01	4.49E+02	2.35E+02	-	1.54E+02	3.31E+01 nc
Pentachlorocyclopentadiene	25329-35-5	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Pentachloroethane	76-01-7	No	No	9.00E-02	P	-		-		-		1	0.1	1	-	-	1.36E+09	5.20E+01	7.84E+01	-	3.13E+01	-	-	-	-	-	-	-	-	3.13E+01 ca
Pentachloronitrobenzene	82-68-8	No	No	2.60E-01	H	-		3.00E-03	I	-		1	0.1	1	-	-	1.36E+09	1.80E+01	2.71E+01	-	1.08E+01	1.58E+02	5.79E+02	-	1.24E+02	1.68E+03	8.81E+02	-	5.79E+02	1.08E+01 ca*
Pentachlorophenol	87-86-5	No	No	4.00E-01	I	5.10E-06	C	5.00E-03	I	-		1	0.25	1	-	-	1.36E+09	1.17E+01	7.06E+00	-	4.40E+00	2.63E+02	3.86E+02	-	1.56E+02	2.81E+03	5.87E+02	-	4.86E+02	4.40E+00 ca*
Pentaerythritol tetranitrate (PETN)	78-11-5	No	No	4.00E-03	X	-		2.00E-03	P	-		1	0.1	1	-	-	1.36E+09	1.17E+03	1.76E+03	-	7.03E+02	1.05E+02	3.86E+02	-	8.27E+01	1.12E+03	5.87E+02	-	3.86E+02	8.27E+01 nc
Pentamethyl dipropylenetriamine	3855-32-1	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Pentane, n-	109-66-0	No	Yes	-		-		-		1.00E+00	P	1	-	1	7.79E+02	3.88E+02	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Pentyl Alcohol, N-	71-41-0	No	Yes	-		-		-		-		1	-	1	2.83E+04	3.04E+03	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Perfluorobutane Sulfonate	375-73-5	No	No	-		-		2.00E-02	P	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.05E+03	3.86E+03	-	8.27E+02	1.12E+04	5.87E+03	-	3.86E+03	8.27E+02 nc
Perfluorooctane Sulphonic Acid	1763-23-1	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Perfluorooctanoic acid	335-67-1	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Permethrin	52645-53-1	No	No	-		-		5.00E-02	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	2.63E+03	9.65E+03	-	2.07E+03	2.81E+04	1.47E+04	-	9.64E+03	2.07E+03 nc
Pesticides (total)	NA	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Pesticides, organochlorinated (each)	NA	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Pesticides, organochlorinated (total)	NA	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Phenacetin	62-44-2	No	No	2.20E-03	C	6.30E-07	C	-		-		1	0.1	1	-	-	1.36E+09	2.13E+03	3.21E+03	-	1.28E+03	-	-	-	-	-	-	-	-	1.28E+03 ca
Phenmedipham	13684-63-4	No	No	-		-		2.50E-01	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.32E+04	4.82E+04	-	1.03E+04	1.40E+05	7.34E+04	-	4.82E+04	1.03E+04 nc
Phenol	108-95-2	No	No	-		-		3.00E-01	I	2.00E-01	C	1	0.1	1	-	-	1.36E+09	-	-	-	-	1.58E+04	5.79E+04	-	1.24E+04	1.68E+05	8.81E+04	-	5.79E+04	1.24E+04 nc
Phenothiazine	92-84-2	No	No	-		-		5.00E-04	S	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	2.63E+01	9.65E+01	-	2.07E+01	2.81E+02	1.47E+02	-	9.64E+01	2.07E+01 nc
Phenyl Isothiocyanate	103-72-0	No	Yes	-		-		-		-		1	0.1	1	7.06E+03	1.29E+02	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Phenylenediamine, m-	108-45-2	No	No	-		-		6.00E-03	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	3.16E+02	1.16E+03	-	2.48E+02	3.37E+03	1.76E+03	-	1.16E+03	2.48E+02 nc
Phenylenediamine, o	95-54-5	No	No	4.70E-02	H	-		-		-		1	0.1	1	-	-	1.36E+09	9.96E+01	1.50E+02	-	5.99E+01	-	-	-	-	-	-	-	-	5.99E+01 ca
Phenylenediamine, p-	106-50-3	No	No	-		-		1.90E-01	H	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.00E+04	3.67E+04	-	7.86E+03	1.07E+05	5.58E+04	-	3.66E+04	7.86E+03 nc
Phenylphenol, 2-	90-43-7	No	No	1.94E-03	H	-		-		-		1	0.1	1	-	-	1.36E+09	2.41E+03	3.64E+03	-	1.45E+03	-	-	-	-	-	-	-	-	1.45E+03 ca
Phorate	298-02-2	No	No	-		-		2.00E-04	H	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.05E+01	3.86E+01	-	8.27E+00	1.12E+02	5.87E+01	-	3.86E+01	8.27E+00 nc
Phosgene	75-44-5	No	Yes	-		-		-		3.00E-04	I	1	-	1	9.81E+02	1.61E+03	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Phosmet	732-11-6	No	No	-		-		2.00E-02	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.05E+03	3.86E+03	-	8.27E+02	1.12E+04	5.87E+03	-	3.86E+03	8.27E+02 nc
Phosphine	7803-51-2	No	No	-		-		3.00E-04	I	3.00E-04	I	1	-	1	-	-	1.36E+09	-	-	-	-	1.58E+01	-	-	1.58E+01	1.68E+02	-	-	1.68E+02	1.58E+01 nc
Phosphoric Acid	7664-38-2	No	No	-		-		4.86E+01	P	1.00E-02	I	1	-	1	-	-	1.36E+09	-	-	-	-	2.56E+06	-	-	2.56E+06	2.73E+07	-	-	2.73E+07	2.56E+06 max
Phosphorus (total)	NA	No	No	-		-		-		-		1	-	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Phosphorus, White	7723-14-0	No	No	-		-		2.00E-05	I	-		1	-	1	-	-	1.36E+09	-	-	-	-	1.05E+00	-	-	1.05E+00	1.12E+01	-	-	1.12E+01	1.05E+00 nc
Phosphorus pentoxide	1314-56-3	No	No	-		-		-		-		1	-	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Picloram	1918-02-1	No	No	-		-		7.00E-02	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	3.69E+03	1.35E+04	-	2.90E+03	3.93E+04	2.06E+04	-	1.35E+04	2.90E+03 nc
Picoline, 2-	109-06-8	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Picramic Acid (2-Amino-4,6-dinitrophenol)	96-91-3	No	No	-		-		1.00E-04	S	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	5.26E+00	1.93E+01	-	4.14E+00	5.62E+01	2.94E+01	-	1.93E+01	4.14E+00 nc
Picric Acid (2,4,6-Trinitrophenol)	88-89-1	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Piperidine	110-89-4	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Pirimiphos, Methy	29232-93-7	No	No	-		-		1.00E-02	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	5.26E+02	1.93E+03	-	4.14E+02	5.62E+03	2.94E+03	-	1.93E+03	4.14E+02 nc
Polybrominated Biphenyls	59536-65-1	No	No	3.00E+01	C	8.60E-03	C	7.00E-06	H	-		1	0.1	1	-	-	1.36E+09	1.56E-01	2.35E-01	-	9.38E-02	3.69E-01	1.35E+00	-	2.90E-01	3.93E+00	2.06E+00	-	1.35E+00	9.38E-02 ca**
Polycyclic chlorinated hydrocarbons (total)	NA	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Polymeric Methylene Diphenyl Diisocyanate (PMDI)	9016-87-9	No	No	-		-		-		6.00E-04	I	1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Potassium	7440-09-7	No	No	-		-		-		-		1	-	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Potassium chlorate	3811-04-9	No	No	-		-		-		-		1	-	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Potassium Perfluorobutane Sulfonate	29420-49-3	No	No	-		-		2.00E-02	P	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.05E+03	3.86E+03	-	8.27E+02	1.12E+04	5.87E+03	-	3.86E+03	8.27E+02 nc
Praseodymium	7440-10-0	No	No	-		-		-		-		1	-	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	

Site-specific
Recreator Screening Levels (RSL) for Soil
ca=Cancer, nc=Noncancer, ca* (Where nc SL < 100 x ca SL),
ca** (Where nc SL < 10 x ca SL), max=SL exceeds ceiling limit (see User's Guide), sat=SL exceeds csat,
Smax=Soil SL exceeds ceiling limit and has been substituted with the max value (see User's Guide)
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	Mutagen?	VOC ?	Ingestion SF (mg/kg-day)$^{-1}$	SFO Ref	Inhalation Unit Risk (ug/m^3)$^{-1}$	IUR Ref	Chronic RfD (mg/kg-day)	Chronic RfD Ref	Chronic RfC (mg/m^3)	Chronic RfC Ref	GIABS	ABS	RBA	Volatilization Factor (m^3/kg)	Soil Saturation Concentration (mg/kg)	Particulate Emission Factor (m^3/kg)	Ingestion SL TR=1.0E-6 (mg/kg)	Dermal SL TR=1.0E-6 (mg/kg)	Inhalation SL TR=1.0E-6 (mg/kg)	Carcinogenic SL TR=1.0E-6 (mg/kg)	Ingestion SL (Child) HQ=0.1 (mg/kg)	Dermal SL (Child) HQ=0.1 (mg/kg)	Inhalation SL (Child) HQ=0.1 (mg/kg)	Noncarcinogenic SL (Child) HI=0.1 (mg/kg)	Ingestion SL (Adult) HQ=0.1 (mg/kg)	Dermal SL (Adult) HQ=0.1 (mg/kg)	Inhalation SL (Adult) HQ=0.1 (mg/kg)	Noncarcinogenic SL (Adult) HI=0.1 (mg/kg)	Screening Level (mg/kg)
Praseodymium Chloride (Stable, Nonradioactive)	10361-79-2	No	No	-		-		-		-		1	-	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Prochloraz	67747-09-5	No	No	1.50E-01	I	-		9.00E-03	I	-		1	0.1	1	-	-	1.36E+09	3.12E+01	4.70E+01	-	1.88E+01	4.74E+02	1.74E+03	-	3.72E+02	5.05E+03	2.64E+03	-	1.74E+03	1.88E+01 ca*
Profluralin	26399-36-0	No	No	-		-		6.00E-03	H	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	3.16E+02	1.16E+03	-	2.48E+02	3.37E+03	1.76E+03	-	1.16E+03	2.48E+02 nc
Promethium	7440-12-2	No	No	-		-		-		-		1	-	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Prometon	1610-18-0	No	No	-		-		1.50E-02	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	7.90E+02	2.89E+03	-	6.20E+02	8.42E+03	4.41E+03	-	2.89E+03	6.20E+02 nc
Prometryn	7287-19-6	No	No	-		-		4.00E-03	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	2.11E+02	7.72E+02	-	1.65E+02	2.25E+03	1.17E+03	-	7.71E+02	1.65E+02 nc
Propachlor	1918-16-7	No	No	-		-		1.30E-02	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	6.84E+02	2.51E+03	-	5.38E+02	7.30E+03	3.82E+03	-	2.51E+03	5.38E+02 nc
Propanil	709-98-8	No	No	-		-		5.00E-03	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	2.63E+02	9.65E+02	-	2.07E+02	2.81E+03	1.47E+03	-	9.64E+02	2.07E+02 nc
Propanoic acid, 2-(2,4-dichlorophenoxy)-	120-36-5	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Propargite	2312-35-8	No	No	-		-		2.00E-02	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.05E+03	3.86E+03	-	8.27E+02	1.12E+04	5.87E+03	-	3.86E+03	8.27E+02 nc
Propargyl Alcoho	107-19-7	No	No	-		-		2.00E-03	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.05E+02	3.86E+02	-	8.27E+01	1.12E+03	5.87E+02	-	3.86E+02	8.27E+01 nc
Propazine	139-40-2	No	No	-		-		2.00E-02	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.05E+03	3.86E+03	-	8.27E+02	1.12E+04	5.87E+03	-	3.86E+03	8.27E+02 nc
Propham	122-42-9	No	No	-		-		2.00E-02	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.05E+03	3.86E+03	-	8.27E+02	1.12E+04	5.87E+03	-	3.86E+03	8.27E+02 nc
Propiconazole	60207-90-1	No	No	-		-		1.30E-02	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	6.84E+02	2.51E+03	-	5.38E+02	7.30E+03	3.82E+03	-	2.51E+03	5.38E+02 nc
Propionaldehyde	123-38-6	No	Yes	-		-		-		8.00E-03	I	1	-	1	8.94E+03	3.26E+04	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Propionitrile	107-12-0	No	Yes	-		-		-		-		1	0.1	1	1.50E+04	1.56E+04	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Propionitrile, 3-(NN-dimethylamino	1738-25-6	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Propyl benzene	103-65-1	No	Yes	-		-		1.00E-01	S	1.00E+00	S	1	0.1	1	6.99E+03	2.64E+02	1.36E+09	-	-	-	-	5.26E+03	1.93E+04	-	4.14E+03	5.62E+04	2.94E+04	-	1.93E+04	4.14E+03 sat
Propyl Alcohol, n-	71-23-8	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Propylene	115-07-1	No	Yes	-		-		-		3.00E+00	C	1	0.1	1	7.04E+02	3.49E+02	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Propylene Glycol	57-55-6	No	No	-		-		2.00E+01	P	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.05E+06	3.86E+06	-	8.27E+05	1.12E+07	5.87E+06	-	3.86E+06	8.27E+05 max
Propylene Glycol Monoethyl Ether	1569-02-4	No	No	-		-		7.00E-01	H	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	3.69E+04	1.35E+05	-	2.90E+04	3.93E+05	2.06E+05	-	1.35E+05	2.90E+04 nc
Propylene Glycol Monomethyl Ethe	107-98-2	No	No	-		-		7.00E-01	H	2.00E+00	I	1	0.1	1	-	-	1.36E+09	-	-	-	-	3.69E+04	1.35E+05	-	2.90E+04	3.93E+05	2.06E+05	-	1.35E+05	2.90E+04 nc
Propylene Glycol Dinitrate	6423-43-4	No	No	-		-		-		2.72E-04	A	1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Propylene Oxide	75-56-9	No	Yes	2.40E-01	I	3.70E-06	I	-		3.00E-02	I	1	-	1	1.03E+04	7.77E+04	1.36E+09	1.95E+01	-	-	1.95E+01	-	-	-	-	-	-	-	-	1.95E+01 ca
Prussian Blue (Ferric Ferrocyanide)	14038-43-8	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Pursuit	81335-77-5	No	No	-		-		2.50E-01	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.32E+04	4.82E+04	-	1.03E+04	1.40E+05	7.34E+04	-	4.82E+04	1.03E+04 nc
Pydrin	51630-58-1	No	No	-		-		2.50E-02	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.32E+03	4.82E+03	-	1.03E+03	1.40E+04	7.34E+03	-	4.82E+03	1.03E+03 nc
Pyrazinyl phosphorothioate, O,O-diethyl O-2-	297-97-2	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Pyridine	110-86-1	No	Yes	-		-		1.00E-03	I	-		1	-	1	5.54E+04	5.30E+05	1.36E+09	-	-	-	-	5.26E+01	-	-	5.26E+01	5.62E+02	-	-	5.62E+02	5.26E+01 nc
Ammonium Perchlorate	7790-98-9	No	No	-		-		7.00E-04	I	-		1	-	1	-	-	1.36E+09	-	-	-	-	3.69E+01	-	-	3.69E+01	3.93E+02	-	-	3.93E+02	3.69E+01 nc
Lithium Perchlorate	7791-03-9	No	No	-		-		7.00E-04	I	-		1	-	1	-	-	1.36E+09	-	-	-	-	3.69E+01	-	-	3.69E+01	3.93E+02	-	-	3.93E+02	3.69E+01 nc
Perchlorate and Perchlorate Salts	14797-73-0	No	No	-		-		7.00E-04	I	-		1	-	1	-	-	1.36E+09	-	-	-	-	3.69E+01	-	-	3.69E+01	3.93E+02	-	-	3.93E+02	3.69E+01 nc
Potassium Perchlorate	7778-74-7	No	No	-		-		7.00E-04	I	-		1	-	1	-	-	1.36E+09	-	-	-	-	3.69E+01	-	-	3.69E+01	3.93E+02	-	-	3.93E+02	3.69E+01 nc
Sodium Perchlorate	7601-89-0	No	No	-		-		7.00E-04	I	-		1	-	1	-	-	1.36E+09	-	-	-	-	3.69E+01	-	-	3.69E+01	3.93E+02	-	-	3.93E+02	3.69E+01 nc
Aluminum metaphosphate	13776-88-0	No	No	-		-		4.86E+01	P	-		1	-	1	-	-	1.36E+09	-	-	-	-	2.56E+06	-	-	2.56E+06	2.73E+07	-	-	2.73E+07	2.56E+06 max
Ammonium polyphosphate	68333-79-9	No	No	-		-		4.86E+01	P	-		1	-	1	-	-	1.36E+09	-	-	-	-	2.56E+06	-	-	2.56E+06	2.73E+07	-	-	2.73E+07	2.56E+06 max
Calcium pyrophosphate	7790-76-3	No	No	-		-		4.86E+01	P	-		1	-	1	-	-	1.36E+09	-	-	-	-	2.56E+06	-	-	2.56E+06	2.73E+07	-	-	2.73E+07	2.56E+06 max
Diammonium phosphate	7783-28-0	No	No	-		-		4.86E+01	P	-		1	-	1	-	-	1.36E+09	-	-	-	-	2.56E+06	-	-	2.56E+06	2.73E+07	-	-	2.73E+07	2.56E+06 max
Dicalcium phosphate	7757-93-9	No	No	-		-		4.86E+01	P	-		1	-	1	-	-	1.36E+09	-	-	-	-	2.56E+06	-	-	2.56E+06	2.73E+07	-	-	2.73E+07	2.56E+06 max
Dimagnesium phosphate	7782-75-4	No	No	-		-		4.86E+01	P	-		1	-	1	-	-	1.36E+09	-	-	-	-	2.56E+06	-	-	2.56E+06	2.73E+07	-	-	2.73E+07	2.56E+06 max
Dipotassium phosphate	7758-11-4	No	No	-		-		4.86E+01	P	-		1	-	1	-	-	1.36E+09	-	-	-	-	2.56E+06	-	-	2.56E+06	2.73E+07	-	-	2.73E+07	2.56E+06 max
Disodium phosphate	7558-79-4	No	No	-		-		4.86E+01	P	-		1	-	1	-	-	1.36E+09	-	-	-	-	2.56E+06	-	-	2.56E+06	2.73E+07	-	-	2.73E+07	2.56E+06 max
Monoaluminum phosphate	13530-50-2	No	No	-		-		4.86E+01	P	-		1	-	1	-	-	1.36E+09	-	-	-	-	2.56E+06	-	-	2.56E+06	2.73E+07	-	-	2.73E+07	2.56E+06 max
Monoammonium phosphate	7722-76-1	No	No	-		-		4.86E+01	P	-		1	-	1	-	-	1.36E+09	-	-	-	-	2.56E+06	-	-	2.56E+06	2.73E+07	-	-	2.73E+07	2.56E+06 max
Monocalcium phosphate	7758-23-8	No	No	-		-		4.86E+01	P	-		1	-	1	-	-	1.36E+09	-	-	-	-	2.56E+06	-	-	2.56E+06	2.73E+07	-	-	2.73E+07	2.56E+06 max
Monomagnesium phosphate	7757-86-0	No	No	-		-		4.86E+01	P	-		1	-	1	-	-	1.36E+09	-	-	-	-	2.56E+06	-	-	2.56E+06	2.73E+07	-	-	2.73E+07	2.56E+06 max
Monopotassium phosphate	7778-77-0	No	No	-		-		4.86E+01	P	-		1	-	1	-	-	1.36E+09	-	-	-	-	2.56E+06	-	-	2.56E+06	2.73E+07	-	-	2.73E+07	2.56E+06 max
Monosodium phosphate	7558-80-7	No	No	-		-		4.86E+01	P	-		1	-	1	-	-	1.36E+09	-	-	-	-	2.56E+06	-	-	2.56E+06	2.73E+07	-	-	2.73E+07	2.56E+06 max
Polyphosphoric acid	8017-16-1	No	No	-		-		4.86E+01	P	-		1	-	1	-	-	1.36E+09	-	-	-	-	2.56E+06	-	-	2.56E+06	2.73E+07	-	-	2.73E+07	2.56E+06 max
Potassium tripolyphosphate	13845-36-8	No	No	-		-		4.86E+01	P	-		1	-	1	-	-	1.36E+09	-	-	-	-	2.56E+06	-	-	2.56E+06	2.73E+07	-	-	2.73E+07	2.56E+06 max
Sodium acid pyrophosphate	7758-16-9	No	No	-		-		4.86E+01	P	-		1	-	1	-	-	1.36E+09	-	-	-	-	2.56E+06	-	-	2.56E+06	2.73E+07	-	-	2.73E+07	2.56E+06 max
Sodium aluminum phosphate (acidic)	7785-88-8	No	No	-		-		4.86E+01	P	-		1	-	1	-	-	1.36E+09	-	-	-	-	2.56E+06	-	-	2.56E+06	2.73E+07	-	-	2.73E+07	2.56E+06 max
Sodium aluminum phosphate (anhydrous)	10279-59-1	No	No	-		-		4.86E+01	P	-		1	-	1	-	-	1.36E+09	-	-	-	-	2.56E+06	-	-	2.56E+06	2.73E+07	-	-	2.73E+07	2.56E+06 max

Site-specific
Recreator Screening Levels (RSL) for Soil
ca=Cancer, nc=Noncancer, ca* (Where nc SL < 100 x ca SL),
ca** (Where nc SL < 10 x ca SL), max=SL exceeds ceiling limit (see User's Guide), sat=SL exceeds csat,
Smax=Soil SL exceeds ceiling limit and has been substituted with the max value (see User's Guide)
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	Mutagen?	VOC ?	Ingestion SF (mg/kg-day)$^{-1}$	SFO Ref	Inhalation Unit Risk (ug/m^3)$^{-1}$	IUR Ref	Chronic RfD (mg/kg-day)	Chronic RfD Ref	Chronic RfC (mg/m^3)	Chronic RfC Ref	GIABS	ABS	RBA	Volatilization Factor (m^3/kg)	Soil Saturation Concentration (mg/kg)	Particulate Emission Factor (m^3/kg)	Ingestion SL TR=1.0E-6 (mg/kg)	Dermal SL TR=1.0E-6 (mg/kg)	Inhalation SL TR=1.0E-6 (mg/kg)	Carcinogenic SL TR=1.0E-6 (mg/kg)	Ingestion SL (Child) HQ=0.1 (mg/kg)	Dermal SL (Child) HQ=0.1 (mg/kg)	Inhalation SL (Child) HQ=0.1 (mg/kg)	Noncarcinogenic SL (Child) HI=0.1 (mg/kg)	Ingestion SL (Adult) HQ=0.1 (mg/kg)	Dermal SL (Adult) HQ=0.1 (mg/kg)	Inhalation SL (Adult) HQ=0.1 (mg/kg)	Noncarcinogenic SL (Adult) HI=0.1 (mg/kg)	Screening Level (mg/kg)
Sodium aluminum phosphate (tetrahydrate)	10305-76-7	No	No	-		-		4.86E+01	P	-		1	-	1	-	-	1.36E+09	-	-	-	-	2.56E+06	-	-	2.56E+06	2.73E+07	-	-	2.73E+07	2.56E+06 max
Sodium hexametaphosphate	10124-56-8	No	No	-		-		4.86E+01	P	-		1	-	1	-	-	1.36E+09	-	-	-	-	2.56E+06	-	-	2.56E+06	2.73E+07	-	-	2.73E+07	2.56E+06 max
Sodium polyphosphate	68915-31-1	No	No	-		-		4.86E+01	P	-		1	-	1	-	-	1.36E+09	-	-	-	-	2.56E+06	-	-	2.56E+06	2.73E+07	-	-	2.73E+07	2.56E+06 max
Sodium trimetaphosphate	7785-84-4	No	No	-		-		4.86E+01	P	-		1	-	1	-	-	1.36E+09	-	-	-	-	2.56E+06	-	-	2.56E+06	2.73E+07	-	-	2.73E+07	2.56E+06 max
Sodium tripolyphosphate	7758-29-4	No	No	-		-		4.86E+01	P	-		1	-	1	-	-	1.36E+09	-	-	-	-	2.56E+06	-	-	2.56E+06	2.73E+07	-	-	2.73E+07	2.56E+06 max
Tetrapotassium phosphate	7320-34-5	No	No	-		-		4.86E+01	P	-		1	-	1	-	-	1.36E+09	-	-	-	-	2.56E+06	-	-	2.56E+06	2.73E+07	-	-	2.73E+07	2.56E+06 max
Tetrasodium pyrophosphate	7722-88-5	No	No	-		-		4.86E+01	P	-		1	-	1	-	-	1.36E+09	-	-	-	-	2.56E+06	-	-	2.56E+06	2.73E+07	-	-	2.73E+07	2.56E+06 max
Trialuminum sodium tetra decahydrogenoctaorthophosphate (dihydrate)	15136-87-5	No	No	-		-		4.86E+01	P	-		1	-	1	-	-	1.36E+09	-	-	-	-	2.56E+06	-	-	2.56E+06	2.73E+07	-	-	2.73E+07	2.56E+06 max
Tricalcium phosphate	7758-87-4	No	No	-		-		4.86E+01	P	-		1	-	1	-	-	1.36E+09	-	-	-	-	2.56E+06	-	-	2.56E+06	2.73E+07	-	-	2.73E+07	2.56E+06 max
Trimagnesium phosphate	7757-87-1	No	No	-		-		4.86E+01	P	-		1	-	1	-	-	1.36E+09	-	-	-	-	2.56E+06	-	-	2.56E+06	2.73E+07	-	-	2.73E+07	2.56E+06 max
Tripotassium phosphate	7778-53-2	No	No	-		-		4.86E+01	P	-		1	-	1	-	-	1.36E+09	-	-	-	-	2.56E+06	-	-	2.56E+06	2.73E+07	-	-	2.73E+07	2.56E+06 max
Trisodium phosphate	7601-54-9	No	No	-		-		4.86E+01	P	-		1	-	1	-	-	1.36E+09	-	-	-	-	2.56E+06	-	-	2.56E+06	2.73E+07	-	-	2.73E+07	2.56E+06 max
Bis(2-ethylhexyl)phthalate	117-81-7	No	No	1.40E-02	I	2.40E-06	C	2.00E-02	I	-		1	0.1	1	-	-	1.36E+09	3.34E+02	5.04E+02	-	2.01E+02	1.05E+03	3.86E+03	-	8.27E+02	1.12E+04	5.87E+03	-	3.86E+03	2.01E+02 ca**
Bromophenyl-phenyl phthalate, 4-	NA	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Butylphthalyl Butylglycolat	85-70-1	No	No	-		-		1.00E+00	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	5.26E+04	1.93E+05	-	4.14E+04	5.62E+05	2.94E+05	-	1.93E+05	4.14E+04 nc
Di-n-hexylphthalate	84-75-3	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Dibutyl Phthalate	84-74-2	No	No	-		-		1.00E-01	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	5.26E+03	1.93E+04	-	4.14E+03	5.62E+04	2.94E+04	-	1.93E+04	4.14E+03 nc
Diethyl Phthalate	84-66-2	No	No	-		-		8.00E-01	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	4.21E+04	1.54E+05	-	3.31E+04	4.49E+05	2.35E+05	-	1.54E+05	3.31E+04 nc
Dimethylphthalate	131-11-3	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Dimethylterephthalate	120-61-6	No	Yes	-		-		1.00E-01	I	-		1	-	1	2.13E+04	-	1.36E+09	-	-	-	-	5.26E+03	-	-	5.26E+03	5.62E+04	-	-	5.62E+04	5.26E+03 nc
Octyl Phthalate, di-N-	117-84-0	No	No	-		-		1.00E-02	P	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	5.26E+02	1.93E+03	-	4.14E+02	5.62E+03	2.94E+03	-	1.93E+03	4.14E+02 nc
Phthalates (total)	NA	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Phthalic Acid, P-	100-21-0	No	No	-		-		1.00E+00	H	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	5.26E+04	1.93E+05	-	4.14E+04	5.62E+05	2.94E+05	-	1.93E+05	4.14E+04 nc
Phthalic Acid, m-	121-91-5	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Phthalic Acid, o-	88-99-3	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Phthalic Anhydride	85-44-9	No	No	-		-		2.00E+00	I	2.00E-02	C	1	0.1	1	-	-	1.36E+09	-	-	-	-	1.05E+05	3.86E+05	-	8.27E+04	1.12E+06	5.87E+05	-	3.86E+05	8.27E+04 nc
Tetrachloroterephthalate, 2,3,5,6-	2136-79-0	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Aroclor 1016	12674-11-2	No	No	7.00E-02	S	2.00E-05	S	7.00E-05	I	-		1	0.14	1	-	-	1.36E+09	6.68E+01	7.20E+01	-	3.47E+01	3.69E+00	9.65E+00	-	2.67E+00	3.93E+01	1.47E+01	-	1.07E+01	2.67E+00 nc
Aroclor 1221	11104-28-2	No	Yes	2.00E+00	S	5.71E-04	S	-		-		1	0.14	1	8.51E+04	7.57E+02	1.36E+09	2.34E+00	2.52E+00	-	1.21E+00	-	-	-	-	-	-	-	-	1.21E+00 ca
Aroclor 1232	11141-16-5	No	Yes	2.00E+00	S	5.71E-04	S	-		-		1	0.14	1	8.51E+04	7.32E+01	1.36E+09	2.34E+00	2.52E+00	-	1.21E+00	-	-	-	-	-	-	-	-	1.21E+00 ca
Aroclor 1242	53469-21-9	No	No	2.00E+00	S	5.71E-04	S	-		-		1	0.14	1	-	-	1.36E+09	2.34E+00	2.52E+00	-	1.21E+00	-	-	-	-	-	-	-	-	1.21E+00 ca
Aroclor 1248	12672-29-6	No	No	2.00E+00	S	5.71E-04	S	-		-		1	0.14	1	-	-	1.36E+09	2.34E+00	2.52E+00	-	1.21E+00	-	-	-	-	-	-	-	-	1.21E+00 ca
Aroclor 1254	11097-69-1	No	No	2.00E+00	S	5.71E-04	S	2.00E-05	I	-		1	0.14	1	-	-	1.36E+09	2.34E+00	2.52E+00	-	1.21E+00	1.05E+00	2.76E+00	-	7.62E-01	1.12E+01	4.20E+00	-	3.05E+00	7.62E-01 nc
Aroclor 1260	11096-82-5	No	No	2.00E+00	S	5.71E-04	S	-		-		1	0.14	1	-	-	1.36E+09	2.34E+00	2.52E+00	-	1.21E+00	-	-	-	-	-	-	-	-	1.21E+00 ca
Aroclor 5460	11126-42-4	No	No	-		-		6.00E-04	S	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	3.16E+01	1.16E+02	-	2.48E+01	3.37E+02	1.76E+02	-	1.16E+02	2.48E+01 nc
Heptachlorobiphenyl, 2,3,3',4,4',5,5'- (PCB 189)	39635-31-9	No	No	3.90E+00	W	1.14E-03	W	2.33E-05	W	1.33E-03	W	1	0.14	1	-	-	1.36E+09	1.20E+00	1.29E+00	-	6.22E-01	1.23E+00	3.22E+00	-	8.89E-01	1.31E+01	4.89E+00	-	3.56E+00	6.22E-01 ca**
Hexachlorobiphenyl, 2,3',4,4',5,5'- (PCB 167)	52663-72-6	No	No	3.90E+00	W	1.14E-03	W	2.33E-05	W	1.33E-03	W	1	0.14	1	-	-	1.36E+09	1.20E+00	1.29E+00	-	6.22E-01	1.23E+00	3.22E+00	-	8.89E-01	1.31E+01	4.89E+00	-	3.56E+00	6.22E-01 ca**
Hexachlorobiphenyl, 2,3,3',4,4',5'- (PCB 157)	69782-90-7	No	No	3.90E+00	W	1.14E-03	W	2.33E-05	W	1.33E-03	W	1	0.14	1	-	-	1.36E+09	1.20E+00	1.29E+00	-	6.22E-01	1.23E+00	3.22E+00	-	8.89E-01	1.31E+01	4.89E+00	-	3.56E+00	6.22E-01 ca**
Hexachlorobiphenyl, 2,3,3',4,4',5- (PCB 156)	38380-08-4	No	No	3.90E+00	W	1.14E-03	W	2.33E-05	W	1.33E-03	W	1	0.14	1	-	-	1.36E+09	1.20E+00	1.29E+00	-	6.22E-01	1.23E+00	3.22E+00	-	8.89E-01	1.31E+01	4.89E+00	-	3.56E+00	6.22E-01 ca**
Hexachlorobiphenyl, 3,3',4,4',5,5'- (PCB 169)	32774-16-6	No	No	3.90E+03	W	1.14E+00	W	2.33E-08	W	1.33E-06	W	1	0.14	1	-	-	1.36E+09	1.20E-03	1.29E-03	-	6.22E-04	1.23E-03	3.22E-03	-	8.89E-04	1.31E-02	4.89E-03	-	3.56E-03	6.22E-04 ca**
Pentachlorobiphenyl, 2',3,4,4',5- (PCB 123)	65510-44-3	No	No	3.90E+00	W	1.14E-03	W	2.33E-05	W	1.33E-03	W	1	0.14	1	-	-	1.36E+09	1.20E+00	1.29E+00	-	6.22E-01	1.23E+00	3.22E+00	-	8.89E-01	1.31E+01	4.89E+00	-	3.56E+00	6.22E-01 ca**
Pentachlorobiphenyl, 2,3',4,4',5- (PCB 118)	31508-00-6	No	No	3.90E+00	W	1.14E-03	W	2.33E-05	W	1.33E-03	W	1	0.14	1	-	-	1.36E+09	1.20E+00	1.29E+00	-	6.22E-01	1.23E+00	3.22E+00	-	8.89E-01	1.31E+01	4.89E+00	-	3.56E+00	6.22E-01 ca**
Pentachlorobiphenyl, 2,3,3',4,4'- (PCB 105)	32598-14-4	No	No	3.90E+00	W	1.14E-03	W	2.33E-05	W	1.33E-03	W	1	0.14	1	-	-	1.36E+09	1.20E+00	1.29E+00	-	6.22E-01	1.23E+00	3.22E+00	-	8.89E-01	1.31E+01	4.89E+00	-	3.56E+00	6.22E-01 ca**
Pentachlorobiphenyl, 2,3,4,4',5- (PCB 114)	74472-37-0	No	No	3.90E+00	W	1.14E-03	W	2.33E-05	W	1.33E-03	W	1	0.14	1	-	-	1.36E+09	1.20E+00	1.29E+00	-	6.22E-01	1.23E+00	3.22E+00	-	8.89E-01	1.31E+01	4.89E+00	-	3.56E+00	6.22E-01 ca**
Pentachlorobiphenyl, 3,3',4,4',5- (PCB 126)	57465-28-8	No	No	1.30E+04	W	3.80E+00	W	7.00E-09	W	4.00E-07	W	1	0.14	1	-	-	1.36E+09	3.60E-04	3.88E-04	-	1.87E-04	3.69E-04	9.65E-04	-	2.67E-04	3.93E-03	1.47E-03	-	1.07E-03	1.87E-04 ca**
Polychlorinated Biphenyls (high risk	1336-36-3	No	No	2.00E+00	I	5.71E-04	I	-		-		1	0.14	1	-	-	1.36E+09	2.34E+00	2.52E+00	-	1.21E+00	-	-	-	-	-	-	-	-	1.21E+00 ca
Tetrachlorobiphenyl, 3,3',4,4'- (PCB 77)	32598-13-3	No	No	1.30E+01	W	3.80E-03	W	7.00E-06	W	4.00E-04	W	1	0.14	1	-	-	1.36E+09	3.60E-01	3.88E-01	-	1.87E-01	3.69E-01	9.65E-01	-	2.67E-01	3.93E+00	1.47E+00	-	1.07E+00	1.87E-01 ca**
Tetrachlorobiphenyl, 3,4,4',5- (PCB 81)	70362-50-4	No	No	3.90E+01	W	1.14E-02	W	2.33E-06	W	1.33E-04	W	1	0.14	1	-	-	1.36E+09	1.20E-01	1.29E-01	-	6.22E-02	1.23E-01	3.22E-01	-	8.89E-02	1.31E+00	4.89E-01	-	3.56E-01	6.22E-02 ca**
Acenaphthene	83-32-9	No	Yes	-		-		6.00E-02	I	-		1	0.13	1	1.41E+05	-	1.36E+09	-	-	-	-	3.16E+03	8.91E+03	-	2.33E+03	3.37E+04	1.36E+04	-	9.67E+03	2.33E+03 nc
Acenaphthylene	208-96-8	No	Yes	-		-		-		-		1	0.13	1	1.89E+05	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Anthracene	120-12-7	No	Yes	-		-		3.00E-01	I	-		1	0.13	1	5.23E+05	-	1.36E+09	-	-	-	-	1.58E+04	4.45E+04	-	1.17E+04	1.68E+05	6.78E+04	-	4.83E+04	1.17E+04 nc
Benz[a]anthracene	56-55-3	Yes	No	7.30E-01	W	1.10E-04	C	-		-		1	0.13	1	-	-	1.36E+09	1.41E+00	2.44E+00	-	8.95E-01	-	-	-	-	-	-	-	-	8.95E-01 ca
Benzo(j)fluoranthene	205-82-3	No	No	1.20E+00	C	1.10E-04	C	-		-		1	0.13	1	-	-	1.36E+09	3.90E+00	4.52E+00	-	2.09E+00	-	-	-	-	-	-	-	-	2.09E+00 ca
Benzo[a]pyrene	50-32-8	Yes	No	7.30E+00	I	1.10E-03	C	-		-		1	0.13	1	-	-	1.36E+09	1.41E-01	2.44E-01	-	8.95E-02	-	-	-	-	-	-	-	-	8.95E-02 ca

Site-specific
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ca** (Where nc SL < 10 x ca SL), max=SL exceeds ceiling limit (see User's Guide), sat=SL exceeds csat,
Smax=Soil SL exceeds ceiling limit and has been substituted with the max value (see User's Guide)
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	Mutagen?	VOC ?	Ingestion SF (mg/kg-day)$^{-1}$	SFO Ref	Inhalation Unit Risk (ug/m^3)$^{-1}$	IUR Ref	Chronic RfD (mg/kg-day)	Chronic RfD Ref	Chronic RfC (mg/m^3)	Chronic RfC Ref	GIABS	ABS	RBA	Volatilization Factor (m^3/kg)	Soil Saturation Concentration (mg/kg)	Particulate Emission Factor (m^3/kg)	Ingestion SL TR=1.0E-6 (mg/kg)	Dermal SL TR=1.0E-6 (mg/kg)	Inhalation SL TR=1.0E-6 (mg/kg)	Carcinogenic SL TR=1.0E-6 (mg/kg)	Ingestion SL (Child) HQ=0.1 (mg/kg)	Dermal SL (Child) HQ=0.1 (mg/kg)	Inhalation SL (Child) HQ=0.1 (mg/kg)	Noncarcinogenic SL (Child) HI=0.1 (mg/kg)	Ingestion SL (Adult) HQ=0.1 (mg/kg)	Dermal SL (Adult) HQ=0.1 (mg/kg)	Inhalation SL (Adult) HQ=0.1 (mg/kg)	Noncarcinogenic SL (Adult) HI=0.1 (mg/kg)	Screening Level (mg/kg)
Benzo[b]fluoranthene	205-99-2	Yes	No	7.30E-01	W	1.10E-04	C	-		-		1	0.13	1	-	-	1.36E+09	1.41E+00	2.44E+00	-	8.95E-01	-	-	-	-	-	-	-	-	8.95E-01 ca
Benzo[g,h,i]perylene	191-24-2	No	No	-		-		-		-		1	0.13	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Benzo[k]fluoranthene	207-08-9	Yes	No	7.30E-02	W	1.10E-04	C	-		-		1	0.13	1	-	-	1.36E+09	1.41E+01	2.44E+01	-	8.95E+00	-	-	-	-	-	-	-	-	8.95E+00 ca
Chloronaphthalene, Beta	91-58-7	No	Yes	-		-		8.00E-02	I	-		1	-	1	7.99E+04	-	1.36E+09	-	-	-	-	4.21E+03	-	-	4.21E+03	4.49E+04	-	-	4.49E+04	4.21E+03 nc
Chrysene	218-01-9	Yes	No	7.30E-03	W	1.10E-05	C	-		-		1	0.13	1	-	-	1.36E+09	1.41E+02	2.44E+02	-	8.95E+01	-	-	-	-	-	-	-	-	8.95E+01 ca
Dibenz[a,h]anthracene	53-70-3	Yes	No	7.30E+00	W	1.20E-03	C	-		-		1	0.13	1	-	-	1.36E+09	1.41E-01	2.44E-01	-	8.95E-02	-	-	-	-	-	-	-	-	8.95E-02 ca
Dibenzo(a,e)pyrene	192-65-4	No	No	1.20E+01	C	1.10E-03	C	-		-		1	0.13	1	-	-	1.36E+09	3.90E-01	4.52E-01	-	2.09E-01	-	-	-	-	-	-	-	-	2.09E-01 ca
Dimethylbenz(a)anthracene, 7,12-	57-97-6	Yes	No	2.50E+02	C	7.10E-02	C	-		-		1	0.13	1	-	-	1.36E+09	4.12E-03	7.13E-03	-	2.61E-03	-	-	-	-	-	-	-	-	2.61E-03 ca
Fluoranthene	206-44-0	No	No	-		-		4.00E-02	I	-		1	0.13	1	-	-	1.36E+09	-	-	-	-	2.11E+03	5.94E+03	-	1.55E+03	2.25E+04	9.04E+03	-	6.44E+03	1.55E+03 nc
Fluorene	86-73-7	No	Yes	-		-		4.00E-02	I	-		1	0.13	1	2.81E+05	-	1.36E+09	-	-	-	-	2.11E+03	5.94E+03	-	1.55E+03	2.25E+04	9.04E+03	-	6.44E+03	1.55E+03 nc
Indeno[1,2,3-cd]pyrene	193-39-5	Yes	No	7.30E-01	W	1.10E-04	C	-		-		1	0.13	1	-	-	1.36E+09	1.41E+00	2.44E+00	-	8.95E-01	-	-	-	-	-	-	-	-	8.95E-01 ca
Methylnaphthalene, 1	90-12-0	No	Yes	2.90E-02	P	-		7.00E-02	A	-		1	0.13	1	5.86E+04	-	1.36E+09	1.61E+02	1.87E+02	-	8.67E+01	3.69E+03	1.04E+04	-	2.72E+03	3.93E+04	1.58E+04	-	1.13E+04	8.67E+01 ca*
Methylnaphthalene, 2-	91-57-6	No	Yes	-		-		4.00E-03	I	-		1	0.13	1	5.80E+04	-	1.36E+09	-	-	-	-	2.11E+02	5.94E+02	-	1.55E+02	2.25E+03	9.04E+02	-	6.44E+02	1.55E+02 nc
Naphthalene	91-20-3	No	Yes	-		3.40E-05	C	2.00E-02	I	3.00E-03	I	1	0.13	1	4.63E+04	-	1.36E+09	-	-	-	-	1.05E+03	2.97E+03	-	7.77E+02	1.12E+04	4.52E+03	-	3.22E+03	7.77E+02 nc
Nitropyrene, 4-	57835-92-4	No	No	1.20E+00	C	1.10E-04	C	-		-		1	0.13	1	-	-	1.36E+09	3.90E+00	4.52E+00	-	2.09E+00	-	-	-	-	-	-	-	-	2.09E+00 ca
Perylene	198-55-0	No	No	-		-		-		-		1	0.13	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Phenanthrene	85-01-8	No	Yes	-		-		-		-		1	0.13	1	6.43E+05	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Polycyclic aromatic hydrocarbons (PAH), Total	NA	No	No	-		-		-		-		1	0.13	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Polycyclic aromatic hydrocarbons (PAH), Total (high molecular weight)	NA	No	No	-		-		-		-		1	0.13	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Polycyclic aromatic hydrocarbons (PAH), Total (low molecular weight)	NA	No	No	-		-		-		-		1	0.13	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Pyrene	129-00-0	No	Yes	-		-		3.00E-02	I	-		1	0.13	1	2.38E+06	-	1.36E+09	-	-	-	-	1.58E+03	4.45E+03	-	1.17E+03	1.68E+04	6.78E+03	-	4.83E+03	1.17E+03 nc
Quinalphos	13593-03-8	No	No	-		-		5.00E-04	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	2.63E+01	9.65E+01	-	2.07E+01	2.81E+02	1.47E+02	-	9.64E+01	2.07E+01 nc
Quinoline	91-22-5	No	No	3.00E+00	I	-		-		-		1	0.1	1	-	-	1.36E+09	1.56E+00	2.35E+00	-	9.38E-01	-	-	-	-	-	-	-	-	9.38E-01 ca
Refractory Ceramic Fibers	NA	No	No	-		-		-		3.00E-02	A	1	-	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Resmethrin	10453-86-8	No	No	-		-		3.00E-02	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.58E+03	5.79E+03	-	1.24E+03	1.68E+04	8.81E+03	-	5.79E+03	1.24E+03 nc
Resorcinol	108-46-3	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Ronnel	299-84-3	No	No	-		-		5.00E-02	H	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	2.63E+03	9.65E+03	-	2.07E+03	2.81E+04	1.47E+04	-	9.64E+03	2.07E+03 nc
Rotenone	83-79-4	No	No	-		-		4.00E-03	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	2.11E+02	7.72E+02	-	1.65E+02	2.25E+03	1.17E+03	-	7.71E+02	1.65E+02 nc
Safrole	94-59-7	Yes	No	2.20E-01	C	6.30E-05	C	-		-		1	0.1	1	-	-	1.36E+09	4.69E+00	1.05E+01	-	3.24E+00	-	-	-	-	-	-	-	-	3.24E+00 ca
Samarium Chloride (Stable, Nonradioactive)	10361-82-7	No	No	-		-		-		-		1	-	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Samarium Nitrate (Stable, Nonradioactive)	10361-83-8	No	No	-		-		-		-		1	-	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Savey	78587-05-0	No	No	-		-		2.50E-02	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.32E+03	4.82E+03	-	1.03E+03	1.40E+04	7.34E+03	-	4.82E+03	1.03E+03 nc
Scandium	7440-20-2	No	No	-		-		-		-		1	-	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Selenious Acid	7783-00-8	No	No	-		-		5.00E-03	I	-		1	-	1	-	-	1.36E+09	-	-	-	-	2.63E+02	-	-	2.63E+02	2.81E+03	-	-	2.81E+03	2.63E+02 nc
Selenite	14124-67-5	No	No	-		-		-		-		1	-	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Selenium	7782-49-2	No	No	-		-		5.00E-03	I	2.00E-02	C	1	-	1	-	-	1.36E+09	-	-	-	-	2.63E+02	-	-	2.63E+02	2.81E+03	-	-	2.81E+03	2.63E+02 nc
Selenium Sulfide	7446-34-6	No	No	-		-		5.00E-03	C	2.00E-02	C	1	-	1	-	-	1.36E+09	-	-	-	-	2.63E+02	-	-	2.63E+02	2.81E+03	-	-	2.81E+03	2.63E+02 nc
Selenourea	630-10-4	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Sethoxydim	74051-80-2	No	No	-		-		9.00E-02	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	4.74E+03	1.74E+04	-	3.72E+03	5.05E+04	2.64E+04	-	1.74E+04	3.72E+03 nc
Silica (crystalline, respirable)	7631-86-9	No	No	-		-		-		3.00E-03	C	1	-	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Silicon	7440-21-3	No	No	-		-		-		-		1	-	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Silver	7440-22-4	No	No	-		-		5.00E-03	I	-		0.04	-	1	-	-	1.36E+09	-	-	-	-	2.63E+02	-	-	2.63E+02	2.81E+03	-	-	2.81E+03	2.63E+02 nc
Simazine	122-34-9	No	No	1.20E-01	H	-		5.00E-03	I	-		1	0.1	1	-	-	1.36E+09	3.90E+01	5.88E+01	-	2.34E+01	2.63E+02	9.65E+02	-	2.07E+02	2.81E+03	1.47E+03	-	9.64E+02	2.34E+01 ca**
Sodium	7440-23-5	No	No	-		-		-		-		1	-	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Sodium Acifluorfen	62476-59-9	No	No	-		-		1.30E-02	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	6.84E+02	2.51E+03	-	5.38E+02	7.30E+03	3.82E+03	-	2.51E+03	5.38E+02 nc
Sodium Azide	26628-22-8	No	No	-		-		4.00E-03	I	-		1	-	1	-	-	1.36E+09	-	-	-	-	2.11E+02	-	-	2.11E+02	2.25E+03	-	-	2.25E+03	2.11E+02 nc
Sodium Diethyldithiocarbamate	148-18-5	No	No	2.70E-01	H	-		3.00E-02	I	-		1	0.1	1	-	-	1.36E+09	1.73E+01	2.61E+01	-	1.04E+01	1.58E+03	5.79E+03	-	1.24E+03	1.68E+04	8.81E+03	-	5.79E+03	1.04E+01 ca
Sodium Fluoride	7681-49-4	No	No	-		-		5.00E-02	A	1.30E-02	C	1	-	1	-	-	1.36E+09	-	-	-	-	2.63E+03	-	-	2.63E+03	2.81E+04	-	-	2.81E+04	2.63E+03 nc
Sodium Fluoroacetate	62-74-8	No	No	-		-		2.00E-05	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.05E+00	3.86E+00	-	8.27E-01	1.12E+01	5.87E+00	-	3.86E+00	8.27E-01 nc
Sodium Metavanadate	13718-26-8	No	No	-		-		1.00E-03	H	-		1	-	1	-	-	1.36E+09	-	-	-	-	5.26E+01	-	-	5.26E+01	5.62E+02	-	-	5.62E+02	5.26E+01 nc
Sodium Chlorate	7775-09-9	No	No	-		-		-		-		1	-	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Sodium Dichromate	10588-01-9	Yes	No	5.00E-01	C	1.50E-01	C	2.00E-02	C	2.00E-04	C	0.025	-	1	-	-	1.36E+09	2.06E+00	-	-	2.06E+00	1.05E+03	-	-	1.05E+03	1.12E+04	-	-	1.12E+04	2.06E+00 ca
Sodium Hydroxide	1310-73-2	No	No	-		-		-		-		1	-	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Stearyl Acetate	822-23-1	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Stirofos (Tetrachlorovinphos)	961-11-5	No	No	2.40E-02	H	-		3.00E-02	I	-		1	0.1	1	-	-	1.36E+09	1.95E+02	2.94E+02	-	1.17E+02	1.58E+03	5.79E+03	-	1.24E+03	1.68E+04	8.81E+03	-	5.79E+03	1.17E+02 ca*
Strontium, Stable	7440-24-6	No	No	-		-		6.00E-01	I	-		1	-	1	-	-	1.36E+09	-	-	-	-	3.16E+04	-	-	3.16E+04	3.37E+05	-	-	3.37E+05	3.16E+04 nc
Strontium Chromate	7789-06-2	Yes	No	5.00E-01	C	1.50E-01	C	2.00E-02	C	2.00E-04	C	0.025	-	1	-	-	1.36E+09	2.06E+00	-	-	2.06E+00	1.05E+03	-	-	1.05E+03	1.12E+04	-	-	1.12E+04	2.06E+00 ca
Strychnine	57-24-9	No	No	-		-		3.00E-04	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.58E+01	5.79E+01	-	1.24E+01	1.68E+02	8.81E+01	-	5.79E+01	1.24E+01 nc
Styrene	100-42-5	No	Yes	-		-		2.00E-01	I	1.00E+00	I	1	-	1	9.35E+03	8.67E+02	1.36E+09	-	-	-	-	1.05E+04	-	-	1.05E+04	1.12E+05	-	-	1.12E+05	1.05E+04 sat
Styrene-Acrylonitrile (SAN) Trimer	NA	No	No	-		-		3.00E-03	P	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.58E+02	5.79E+02	-	1.24E+02	1.68E+03	8.81E+02	-	5.79E+02	1.24E+02 nc
Sulfate	14808-79-8	No	No	-		-		-		-		1	-	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Sulfide	18496-25-8	No	No	-		-		-		-		1	-	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Sulfolane	126-33-0	No	No	-		-		1.00E-03	P	2.00E-03	S	1	0.1	1	-	-	1.36E+09	-	-	-	-	5.26E+01	1.93E+02	-	4.14E+01	5.62E+02	2.94E+02	-	1.93E+02	4.14E+01 nc
Sulfonylbis(4-chlorobenzene), 1,1'	80-07-9	No	No	-		-		8.00E-04	P	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	4.21E+01	1.54E+02	-	3.31E+01	4.49E+02	2.35E+02	-	1.54E+02	3.31E+01 nc
Sulfur	7704-34-9	No	No	-		-		-		-		1	-	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Sulfur Dioxide	7446-09-5	No	No	-		-		-		-		1	-	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Sulfur Mustard	505-60-2	No	Yes	-		-		-		-		1	0.1	1	8.76E+04	1.08E+03	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Sulfur Trioxide	7446-11-9	No	No	-		-		-		1.00E-03	C	1	-	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	

Site-specific
Recreator Screening Levels (RSL) for Soil
ca=Cancer, nc=Noncancer, ca* (Where nc SL < 100 x ca SL),
ca** (Where nc SL < 10 x ca SL), max=SL exceeds ceiling limit (see User's Guide), sat=SL exceeds csat,
Smax=Soil SL exceeds ceiling limit and has been substituted with the max value (see User's Guide)
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	Mutagen?	VOC ?	Ingestion SF (mg/kg-day)$^{-1}$	SFO Ref	Inhalation Unit Risk (ug/m^3)$^{-1}$	IUR Ref	Chronic RfD (mg/kg-day)	Chronic RfD Ref	Chronic RfC (mg/m^3)	Chronic RfC Ref	GIABS	ABS	RBA	Volatilization Factor (m^3/kg)	Soil Saturation Concentration (mg/kg)	Particulate Emission Factor (m^3/kg)	Ingestion SL TR=1.0E-6 (mg/kg)	Dermal SL TR=1.0E-6 (mg/kg)	Inhalation SL TR=1.0E-6 (mg/kg)	Carcinogenic SL TR=1.0E-6 (mg/kg)	Ingestion SL (Child) HQ=0.1 (mg/kg)	Dermal SL (Child) HQ=0.1 (mg/kg)	Inhalation SL (Child) HQ=0.1 (mg/kg)	Noncarcinogenic SL (Child) HI=0.1 (mg/kg)	Ingestion SL (Adult) HQ=0.1 (mg/kg)	Dermal SL (Adult) HQ=0.1 (mg/kg)	Inhalation SL (Adult) HQ=0.1 (mg/kg)	Noncarcinogenic SL (Adult) HI=0.1 (mg/kg)	Screening Level (mg/kg)
Sulfuric Acid	7664-93-9	No	No	-		-		-		1.00E-03	C	1	-	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Systhane	88671-89-0	No	No	-		-		2.50E-02	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.32E+03	4.82E+03	-	1.03E+03	1.40E+04	7.34E+03	-	4.82E+03	1.03E+03 nc
TCMTB	21564-17-0	No	No	-		-		3.00E-02	H	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.58E+03	5.79E+03	-	1.24E+03	1.68E+04	8.81E+03	-	5.79E+03	1.24E+03 nc
Tebuthiuron	34014-18-1	No	No	-		-		7.00E-02	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	3.69E+03	1.35E+04	-	2.90E+03	3.93E+04	2.06E+04	-	1.35E+04	2.90E+03 nc
Technetium	7440-26-8	No	No	-		-		-		-		1	-	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Tellurium	13494-80-9	No	No	-		-		-		-		1	-	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Temephos	3383-96-8	No	No	-		-		2.00E-02	H	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.05E+03	3.86E+03	-	8.27E+02	1.12E+04	5.87E+03	-	3.86E+03	8.27E+02 nc
Terbacil	5902-51-2	No	No	-		-		1.30E-02	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	6.84E+02	2.51E+03	-	5.38E+02	7.30E+03	3.82E+03	-	2.51E+03	5.38E+02 nc
Terbufos	13071-79-9	No	No	-		-		2.50E-05	H	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.32E+00	4.82E+00	-	1.03E+00	1.40E+01	7.34E+00	-	4.82E+00	1.03E+00 nc
Terbutryn	886-50-0	No	No	-		-		1.00E-03	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	5.26E+01	1.93E+02	-	4.14E+01	5.62E+02	2.94E+02	-	1.93E+02	4.14E+01 nc
Tetrabromodiphenyl ether, 2,2',4,4'- (BDE-47)	5436-43-1	No	No	-		-		1.00E-04	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	5.26E+00	1.93E+01	-	4.14E+00	5.62E+01	2.94E+01	-	1.93E+01	4.14E+00 nc
Tetrachloroaniline, 2,3,5,6-	3481-20-7	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Tetrachlorobenzene, 1,2,3,4-	634-66-2	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Tetrachlorobenzene, 1,2,4,5-	95-94-3	No	No	-		-		3.00E-04	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.58E+01	5.79E+01	-	1.24E+01	1.68E+02	8.81E+01	-	5.79E+01	1.24E+01 nc
Tetrachloroethane, 1,1,1,2-	630-20-6	No	Yes	2.60E-02	I	7.40E-06	I	3.00E-02	I	-		1	-	1	5.68E+03	6.80E+02	1.36E+09	1.80E+02	-	-	1.80E+02	1.58E+03	-	-	1.58E+03	1.68E+04	-	-	1.68E+04	1.80E+02 ca**
Tetrachloroethane, 1,1,2,2-	79-34-5	No	Yes	2.00E-01	I	5.80E-05	C	2.00E-02	I	-		1	-	1	1.51E+04	1.90E+03	1.36E+09	2.34E+01	-	-	2.34E+01	1.05E+03	-	-	1.05E+03	1.12E+04	-	-	1.12E+04	2.34E+01 ca*
Tetrachloroethylene	127-18-4	No	Yes	2.10E-03	I	2.60E-07	I	6.00E-03	I	4.00E-02	I	1	-	1	2.35E+03	1.66E+02	1.36E+09	2.23E+03	-	-	2.23E+03	3.16E+02	-	-	3.16E+02	3.37E+03	-	-	3.37E+03	3.16E+02 sat
Tetrachlorophenol, 2,3,4,5-	4901-51-3	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Tetrachlorophenol, 2,3,4,6-	58-90-2	No	No	-		-		3.00E-02	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.58E+03	5.79E+03	-	1.24E+03	1.68E+04	8.81E+03	-	5.79E+03	1.24E+03 nc
Tetrachlorophenols (total)	25167-83-3	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Tetrachlorotoluene, p- alpha, alpha, alpha	5216-25-1	No	No	2.00E+01	H	-		-		-		1	0.1	1	-	-	1.36E+09	2.34E-01	3.53E-01	-	1.41E-01	-	-	-	-	-	-	-	-	1.41E-01 ca
Tetraethyl Dithiopyrophosphate	3689-24-5	No	No	-		-		5.00E-04	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	2.63E+01	9.65E+01	-	2.07E+01	2.81E+02	1.47E+02	-	9.64E+01	2.07E+01 nc
Tetrafluoroethane, 1,1,1,2-	811-97-2	No	Yes	-		-		-		8.00E+01	I	1	-	1	1.22E+03	1.09E+03	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Tetrahydrothiophene	110-01-0	No	Yes	-		-		-		-		1	-	1	1.31E+04	3.44E+03	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Tetramethylcyclohexane	30501-43-0	No	Yes	-		-		-		-		1	-	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Tetryl (Trinitrophenylmethylnitramine)	479-45-8	No	No	-		-		2.00E-03	P	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.05E+02	3.86E+02	-	8.27E+01	1.12E+03	5.87E+02	-	3.86E+02	8.27E+01 nc
Thallic Oxide	1314-32-5	No	No	-		-		-		-		1	-	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Thallium (I) Nitrate	10102-45-1	No	No	-		-		7.00E-06	S	-		1	-	1	-	-	1.36E+09	-	-	-	-	3.69E-01	-	-	3.69E-01	3.93E+00	-	-	3.93E+00	3.69E-01 nc
Thallium (Soluble Salts	7440-28-0	No	No	-		-		1.00E-05	S	-		1	-	1	-	-	1.36E+09	-	-	-	-	5.26E-01	-	-	5.26E-01	5.62E+00	-	-	5.62E+00	5.26E-01 nc
Thallium Acetate	563-68-8	No	No	-		-		6.00E-06	S	-		1	-	1	-	-	1.36E+09	-	-	-	-	3.16E-01	-	-	3.16E-01	3.37E+00	-	-	3.37E+00	3.16E-01 nc
Thallium Carbonate	6533-73-9	No	No	-		-		2.00E-05	S	-		1	-	1	-	-	1.36E+09	-	-	-	-	1.05E+00	-	-	1.05E+00	1.12E+01	-	-	1.12E+01	1.05E+00 nc
Thallium Chloride	7791-12-0	No	No	-		-		6.00E-06	S	-		1	-	1	-	-	1.36E+09	-	-	-	-	3.16E-01	-	-	3.16E-01	3.37E+00	-	-	3.37E+00	3.16E-01 nc
Thallium Selenite	12039-52-0	No	No	-		-		-		-		1	-	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Thallium Sulfate	7446-18-6	No	No	-		-		2.00E-05	S	-		1	-	1	-	-	1.36E+09	-	-	-	-	1.05E+00	-	-	1.05E+00	1.12E+01	-	-	1.12E+01	1.05E+00 nc
Thiobencarb	28249-77-6	No	No	-		-		1.00E-02	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	5.26E+02	1.93E+03	-	4.14E+02	5.62E+03	2.94E+03	-	1.93E+03	4.14E+02 nc
Thiodiglycol	111-48-8	No	No	-		-		7.00E-02	S	-		1	0.01	1	-	-	1.36E+09	-	-	-	-	3.69E+03	1.80E+05	-	3.61E+03	3.93E+04	2.74E+05	-	3.44E+04	3.61E+03 nc
Thiofanox	39196-18-4	No	No	-		-		3.00E-04	H	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.58E+01	5.79E+01	-	1.24E+01	1.68E+02	8.81E+01	-	5.79E+01	1.24E+01 nc
Thiophanate, Methyl	23564-05-8	No	No	-		-		8.00E-02	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	4.21E+03	1.54E+04	-	3.31E+03	4.49E+04	2.35E+04	-	1.54E+04	3.31E+03 nc
Thiophene	110-02-1	No	Yes	-		-		-		-		1	-	1	4.18E+03	1.80E+03	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Thiram	137-26-8	No	No	-		-		5.00E-03	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	2.63E+02	9.65E+02	-	2.07E+02	2.81E+03	1.47E+03	-	9.64E+02	2.07E+02 nc
Thorium	NA	No	No	-		-		-		-		1	-	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Thymol	89-83-8	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Tin	7440-31-5	No	No	-		-		6.00E-01	H	-		1	-	1	-	-	1.36E+09	-	-	-	-	3.16E+04	-	-	3.16E+04	3.37E+05	-	-	3.37E+05	3.16E+04 nc
Titanium	7440-32-6	No	No	-		-		-		-		1	-	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Titanium Tetrachloride	7550-45-0	No	No	-		-		-		1.00E-04	A	1	-	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Toluene	108-88-3	No	Yes	-		-		8.00E-02	I	5.00E+00	I	1	-	1	4.29E+03	8.18E+02	1.36E+09	-	-	-	-	4.21E+03	-	-	4.21E+03	4.49E+04	-	-	4.49E+04	4.21E+03 sat
Toluene-2,5-diamine	95-70-5	No	No	1.80E-01	X	-		2.00E-04	S	-		1	0.1	1	-	-	1.36E+09	2.60E+01	3.92E+01	-	1.56E+01	1.05E+01	3.86E+01	-	8.27E+00	1.12E+02	5.87E+01	-	3.86E+01	8.27E+00 nc
Toluenediamine, 2,3-	2687-25-4	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Toluenediamine, 3,4-	496-72-0	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Toluidine, p-	106-49-0	No	No	3.00E-02	P	-		4.00E-03	S	-		1	0.1	1	-	-	1.36E+09	1.56E+02	2.35E+02	-	9.38E+01	2.11E+02	7.72E+02	-	1.65E+02	2.25E+03	1.17E+03	-	7.71E+02	9.38E+01 ca**
Total Petroleum Hydrocarbons (Aliphatic High)	NA	No	Yes	-		-		3.00E+00	P	-		1	-	1	1.06E+03	3.42E-01	1.36E+09	-	-	-	-	1.58E+05	-	-	1.58E+05	1.68E+06	-	-	1.68E+06	1.58E+05 sat
Total Petroleum Hydrocarbons (Aliphatic Low)	NA	No	Yes	-		-		-		6.00E-01	P	1	-	1	8.29E+02	1.41E+02	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Total Petroleum Hydrocarbons (Aliphatic Medium)	NA	No	Yes	-		-		1.00E-02	S	1.00E-01	P	1	-	1	1.04E+03	6.86E+00	1.36E+09	-	-	-	-	5.26E+02	-	-	5.26E+02	5.62E+03	-	-	5.62E+03	5.26E+02 sat
Total Petroleum Hydrocarbons (Aromatic High)	NA	No	No	-		-		4.00E-02	P	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	2.11E+03	7.72E+03	-	1.65E+03	2.25E+04	1.17E+04	-	7.71E+03	1.65E+03 nc
Total Petroleum Hydrocarbons (Aromatic Low)	NA	No	Yes	-		-		4.00E-03	P	3.00E-02	P	1	-	1	3.54E+03	1.82E+03	1.36E+09	-	-	-	-	2.11E+02	-	-	2.11E+02	2.25E+03	-	-	2.25E+03	2.11E+02 nc
Total Petroleum Hydrocarbons (Aromatic Medium)	NA	No	Yes	-		-		4.00E-03	P	3.00E-03	P	1	-	1	5.24E+04	-	1.36E+09	-	-	-	-	2.11E+02	-	-	2.11E+02	2.25E+03	-	-	2.25E+03	2.11E+02 nc
Toxaphene	8001-35-2	No	No	1.10E+00	I	3.20E-04	I	-		-		1	0.1	1	-	-	1.36E+09	4.25E+00	6.42E+00	-	2.56E+00	-	-	-	-	-	-	-	-	2.56E+00 ca
Tralomethrin	66841-25-6	No	No	-		-		7.50E-03	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	3.95E+02	1.45E+03	-	3.10E+02	4.21E+03	2.20E+03	-	1.45E+03	3.10E+02 nc
Tri-n-butyltir	688-73-3	No	No	-		-		3.00E-04	A	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.58E+01	5.79E+01	-	1.24E+01	1.68E+02	8.81E+01	-	5.79E+01	1.24E+01 nc
Triacetin	102-76-1	No	No	-		-		8.00E+01	S	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	4.21E+06	1.54E+07	-	3.31E+06	4.49E+07	2.35E+07	-	1.54E+07	3.31E+06 max
Triallate	2303-17-5	No	No	-		-		1.30E-02	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	6.84E+02	2.51E+03	-	5.38E+02	7.30E+03	3.82E+03	-	2.51E+03	5.38E+02 nc
Triasulfuron	82097-50-5	No	No	-		-		1.00E-02	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	5.26E+02	1.93E+03	-	4.14E+02	5.62E+03	2.94E+03	-	1.93E+03	4.14E+02 nc
Triaziquone	68-76-8	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Tribromobenzene, 1,2,4-	615-54-3	No	No	-		-		5.00E-03	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	2.63E+02	9.65E+02	-	2.07E+02	2.81E+03	1.47E+03	-	9.64E+02	2.07E+02 nc
Tribromochloromethane	594-15-0	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	

Site-specific
Recreator Screening Levels (RSL) for Soil
ca=Cancer, nc=Noncancer, ca* (Where nc SL < 100 x ca SL),
ca** (Where nc SL < 10 x ca SL), max=SL exceeds ceiling limit (see User's Guide), sat=SL exceeds csat,
Smax=Soil SL exceeds ceiling limit and has been substituted with the max value (see User's Guide)
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	Mutagen?	VOC ?	Ingestion SF (mg/kg-day)$^{-1}$	SFO Ref	Inhalation Unit Risk (ug/m^3)$^{-1}$	IUR Ref	Chronic RfD (mg/kg-day)	Chronic RfD Ref	Chronic RfC (mg/m^3)	Chronic RfC Ref	GIABS	ABS	RBA	Volatilization Factor (m^3/kg)	Soil Saturation Concentration (mg/kg)	Particulate Emission Factor (m^3/kg)	Ingestion SL TR=1.0E-6 (mg/kg)	Dermal SL TR=1.0E-6 (mg/kg)	Inhalation SL TR=1.0E-6 (mg/kg)	Carcinogenic SL TR=1.0E-6 (mg/kg)	Ingestion SL (Child) HQ=0.1 (mg/kg)	Dermal SL (Child) HQ=0.1 (mg/kg)	Inhalation SL (Child) HQ=0.1 (mg/kg)	Noncarcinogenic SL (Child) HI=0.1 (mg/kg)	Ingestion SL (Adult) HQ=0.1 (mg/kg)	Dermal SL (Adult) HQ=0.1 (mg/kg)	Inhalation SL (Adult) HQ=0.1 (mg/kg)	Noncarcinogenic SL (Adult) HI=0.1 (mg/kg)	Screening Level (mg/kg)
Tribromodiphenyl Ethe	49690-94-0	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Tribromophenol, 2,4,6-	118-79-6	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Tributyl Phosphate	126-73-8	No	No	9.00E-03	P	-		1.00E-02	P	-		1	0.1	1	-	-	1.36E+09	5.20E+02	7.84E+02	-	3.13E+02	5.26E+02	1.93E+03	-	4.14E+02	5.62E+03	2.94E+03	-	1.93E+03	3.13E+02 ca**
Tributyltin	56573-85-4	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Tributyltin Compounds	NA	No	No	-		-		3.00E-04	P	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.58E+01	5.79E+01	-	1.24E+01	1.68E+02	8.81E+01	-	5.79E+01	1.24E+01 nc
Tributyltin chloride	1461-22-9	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Tributyltin fluoride	1983-10-4	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Tributyltin linoleate	24124-25-2	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Tributyltin methacrylate	2155-70-6	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Tributyltin naphthenate	85409-17-2	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Tributyltin Oxide	56-35-9	No	No	-		-		3.00E-04	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.58E+01	5.79E+01	-	1.24E+01	1.68E+02	8.81E+01	-	5.79E+01	1.24E+01 nc
Tricaine Methanesulfonate	886-86-2	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Trichloro-1,2,2-trifluoroethane, 1,1,2-	76-13-1	No	Yes	-		-		3.00E+01	I	3.00E+01	H	1	-	1	1.29E+03	9.10E+02	1.36E+09	-	-	-	-	1.58E+06	-	-	1.58E+06	1.68E+07	-	-	1.68E+07	1.58E+06 sat
Trichloro-2'-hydroxydiphenylether	3380-34-5	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Trichloroacetic Acid	76-03-9	No	No	7.00E-02	I	-		2.00E-02	I	-		1	0.1	1	-	-	1.36E+09	6.68E+01	1.01E+02	-	4.02E+01	1.05E+03	3.86E+03	-	8.27E+02	1.12E+04	5.87E+03	-	3.86E+03	4.02E+01 ca*
Trichloroaniline, 2,4,5-	636-30-6	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Trichloroaniline HCl, 2,4,6-	33663-50-2	No	No	2.90E-02	H	-		-		-		1	0.1	1	-	-	1.36E+09	1.61E+02	2.43E+02	-	9.70E+01	-	-	-	-	-	-	-	-	9.70E+01 ca
Trichloroaniline, 2,4,6-	634-93-5	No	No	7.00E-03	X	-		3.00E-05	S	-		1	0.1	1	-	-	1.36E+09	6.68E+02	1.01E+03	-	4.02E+02	1.58E+00	5.79E+00	-	1.24E+00	1.68E+01	8.81E+00	-	5.79E+00	1.24E+00 nc
Trichlorobenzene	12002-48-1	No	Yes	-		-		-		-		1	0.1	1	2.10E+04	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Trichlorobenzene, 1,2,3-	87-61-6	No	Yes	-		-		8.00E-04	S	-		1	0.1	1	3.22E+04	-	1.36E+09	-	-	-	-	4.21E+01	1.54E+02	-	3.31E+01	4.49E+02	2.35E+02	-	1.54E+02	3.31E+01 nc
Trichlorobenzene, 1,2,4-	120-82-1	No	Yes	2.90E-02	P	-		1.00E-02	I	2.00E-03	P	1	-	1	2.99E+04	4.04E+02	1.36E+09	1.61E+02	-	-	1.61E+02	5.26E+02	-	-	5.26E+02	5.62E+03	-	-	5.62E+03	1.61E+02 ca**
Trichloroethane, 1,1,1-	71-55-6	No	Yes	-		-		2.00E+00	I	5.00E+00	I	1	-	1	1.65E+03	6.40E+02	1.36E+09	-	-	-	-	1.05E+05	-	-	1.05E+05	1.12E+06	-	-	1.12E+06	1.05E+05 sat
Trichloroethane, 1,1,2-	79-00-5	No	Yes	5.70E-02	I	1.60E-05	I	4.00E-03	I	2.00E-04	S	1	-	1	7.22E+03	2.16E+03	1.36E+09	8.21E+01	-	-	8.21E+01	2.11E+02	-	-	2.11E+02	2.25E+03	-	-	2.25E+03	8.21E+01 ca**
Trichloroethylene	79-01-6	Yes	Yes	4.60E-02	I	4.10E-06	I	5.00E-04	I	2.00E-03	I	1	-	1	2.21E+03	6.92E+02	1.36E+09	5.91E+01	-	-	5.91E+01	2.63E+01	-	-	2.63E+01	2.81E+02	-	-	2.81E+02	2.63E+01 nc
Trichlorofluoromethane	75-69-4	No	Yes	-		-		3.00E-01	I	7.00E-01	H	1	-	1	1.04E+03	1.23E+03	1.36E+09	-	-	-	-	1.58E+04	-	-	1.58E+04	1.68E+05	-	-	1.68E+05	1.58E+04 sat
Trichlorophenol, 2,4,5-	95-95-4	No	No	-		-		1.00E-01	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	5.26E+03	1.93E+04	-	4.14E+03	5.62E+04	2.94E+04	-	1.93E+04	4.14E+03 nc
Trichlorophenol, 2,4,6-	88-06-2	No	No	1.10E-02	I	3.10E-06	I	1.00E-03	P	-		1	0.1	1	-	-	1.36E+09	4.25E+02	6.42E+02	-	2.56E+02	5.26E+01	1.93E+02	-	4.14E+01	5.62E+02	2.94E+02	-	1.93E+02	4.14E+01 nc
Trichlorophenoxypropionic acid, -2,4,5	93-72-1	No	No	-		-		8.00E-03	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	4.21E+02	1.54E+03	-	3.31E+02	4.49E+03	2.35E+03	-	1.54E+03	3.31E+02 nc
Trichlorophenoxyacetic Acid, 2,4,5-	93-76-5	No	No	-		-		1.00E-02	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	5.26E+02	1.93E+03	-	4.14E+02	5.62E+03	2.94E+03	-	1.93E+03	4.14E+02 nc
Trichlorophenoxyacetic acid, 2,4,5- Amine Salts, PARENT (2,4,5-T)	NA	No	No	-		-		-		-		1	-	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Trichloropropane, 1,1,2-	598-77-6	No	Yes	-		-		5.00E-03	I	-		1	-	1	1.50E+04	1.28E+03	1.36E+09	-	-	-	-	2.63E+02	-	-	2.63E+02	2.81E+03	-	-	2.81E+03	2.63E+02 nc
Trichloropropane, 1,2,3-	96-18-4	Yes	Yes	3.00E+01	I	-		4.00E-03	I	3.00E-04	I	1	-	1	1.57E+04	1.40E+03	1.36E+09	3.44E-02	-	-	3.44E-02	2.11E+02	-	-	2.11E+02	2.25E+03	-	-	2.25E+03	3.44E-02 ca
Trichloropropene, 1,2,3-	96-19-5	No	Yes	-		-		3.00E-03	S	3.00E-04	P	1	-	1	2.34E+03	4.51E+02	1.36E+09	-	-	-	-	1.58E+02	-	-	1.58E+02	1.68E+03	-	-	1.68E+03	1.58E+02 nc
Trichlorotoluene, 2,3,6-	2077-46-5	No	Yes	-		-		-		-		1	0.1	1	3.14E+04	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Trichlorotoluene, alpha 2,6	2014-83-7	No	Yes	-		-		-		-		1	0.1	1	5.24E+04	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Triclorophenols (total)	NA	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Tricresyl Phosphate (TCP)	1330-78-5	No	No	-		-		2.00E-02	A	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.05E+03	3.86E+03	-	8.27E+02	1.12E+04	5.87E+03	-	3.86E+03	8.27E+02 nc
Tridiphane	58138-08-2	No	No	-		-		3.00E-03	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.58E+02	5.79E+02	-	1.24E+02	1.68E+03	8.81E+02	-	5.79E+02	1.24E+02 nc
Tridymite	15468-32-3	No	No	-		-		-		-		1	-	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Triethyl phosphorothioate [O,O,O-]	126-68-1	No	Yes	-		-		-		-		1	0.1	1	2.81E+04	4.68E+02	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Triethyl Lead	5224-23-7	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Triethylamine	121-44-8	No	Yes	-		-		-		7.00E-03	I	1	-	1	1.58E+04	2.79E+04	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Triethylene Glyco	112-27-6	No	No	-		-		2.00E+00	P	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.05E+05	3.86E+05	-	8.27E+04	1.12E+06	5.87E+05	-	3.86E+05	8.27E+04 nc
Trifluralin	1582-09-8	No	No	7.70E-03	I	-		7.50E-03	I	-		1	0.1	1	-	-	1.36E+09	6.08E+02	9.17E+02	-	3.65E+02	3.95E+02	1.45E+03	-	3.10E+02	4.21E+03	2.20E+03	-	1.45E+03	3.10E+02 nc
Trimethyl Lead	7442-13-9	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Trimethyl Phosphate	512-56-1	No	No	2.00E-02	P	-		1.00E-02	P	-		1	0.1	1	-	-	1.36E+09	2.34E+02	3.53E+02	-	1.41E+02	5.26E+02	1.93E+03	-	4.14E+02	5.62E+03	2.94E+03	-	1.93E+03	1.41E+02 ca**
Trimethyl-4-Propenylnaphthalene, 1,2,3	26137-53-1	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Trimethylbenzene, 1,2,3-	526-73-8	No	Yes	-		-		-		5.00E-03	P	1	-	1	9.44E+03	2.93E+02	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Trimethylbenzene, 1,2,4	95-63-6	No	Yes	-		-		-		7.00E-03	P	1	-	1	7.91E+03	2.19E+02	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Trimethylbenzene, 1,3,5-	108-67-8	No	Yes	-		-		1.00E-02	S	-		1	-	1	6.61E+03	1.82E+02	1.36E+09	-	-	-	-	5.26E+02	-	-	5.26E+02	5.62E+03	-	-	5.62E+03	5.26E+02 sat
Trimethylethyl Lead	1762-26-1	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Trimethylpentane, 2,2,4-	540-84-1	No	Yes	-		-		-		-		1	-	1	9.37E+02	6.12E+01	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Trinitrobenzene, 1,3,5-	99-35-4	No	No	-		-		3.00E-02	I	-		1	0.02	1	-	-	1.36E+09	-	-	-	-	1.58E+03	3.05E+04	-	1.50E+03	1.68E+04	4.64E+04	-	1.24E+04	1.50E+03 nc
Trinitrotoluene, 2,4,6-	118-96-7	No	No	3.00E-02	I	-		5.00E-04	I	-		1	0.03	1	-	-	1.36E+09	1.56E+02	7.35E+02	-	1.29E+02	2.63E+01	3.02E+02	-	2.42E+01	2.81E+02	4.59E+02	-	1.74E+02	2.42E+01 nc
Triphenylphosphine Oxide	791-28-6	No	No	-		-		2.00E-02	P	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.05E+03	3.86E+03	-	8.27E+02	1.12E+04	5.87E+03	-	3.86E+03	8.27E+02 nc
Triphenyltin	668-34-8	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Tripropyl Lead	6618-03-7	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Tris(1,3-Dichloro-2-propyl) Phosphate	13674-87-8	No	No	-		-		2.00E-02	A	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.05E+03	3.86E+03	-	8.27E+02	1.12E+04	5.87E+03	-	3.86E+03	8.27E+02 nc
Tris(1-chloro-2-propyl)phosphate	13674-84-5	No	No	-		-		1.00E-02	S	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	5.26E+02	1.93E+03	-	4.14E+02	5.62E+03	2.94E+03	-	1.93E+03	4.14E+02 nc
Tris(2-chloroethyl)phosphate	115-96-8	No	No	2.00E-02	P	-		7.00E-03	P	-		1	0.1	1	-	-	1.36E+09	2.34E+02	3.53E+02	-	1.41E+02	3.69E+02	1.35E+03	-	2.90E+02	3.93E+03	2.06E+03	-	1.35E+03	1.41E+02 ca**
Tris(2-ethylhexyl)phosphate	78-42-2	No	No	3.20E-03	P	-		1.00E-01	P	-		1	0.1	1	-	-	1.36E+09	1.46E+03	2.21E+03	-	8.79E+02	5.26E+03	1.93E+04	-	4.14E+03	5.62E+04	2.94E+04	-	1.93E+04	8.79E+02 ca**
Trisbutoxyethyl Phosphate	78-51-3	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Trithion	786-19-6	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Tungsten	7440-33-7	No	No	-		-		-		-		1	-	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Uranium (Soluble Salts	NA	No	No	-		-		3.00E-03	I	4.00E-05	A	1	-	1	-	-	1.36E+09	-	-	-	-	1.58E+02	-	-	1.58E+02	1.68E+03	-	-	1.68E+03	1.58E+02 nc
Urea	57-13-6	No	No	-		-		-		-		1	0.1	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Urethane	51-79-6	Yes	No	1.00E+00	C	2.90E-04	C	-		-		1	0.1	1	-	-	1.36E+09	1.03E+00	2.32E+00	-	7.13E-01	-	-	-	-	-	-	-	-	7.13E-01 ca
Vanadium Pentoxide	1314-62-1	No	No	-		8.30E-03	P	9.00E-03	I	7.00E-06	P	0.026	-	1	-	-	1.36E+09	-	-	-	-	4.74E+02	-	-	4.74E+02	5.05E+03	-	-	5.05E+03	4.74E+02 nc
Vanadium Sulfate	36907-42-3	No	No	-		-		-		-		0.026	-	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Vanadium and Compounds	7440-62-2	No	No	-		-		5.04E-03	S	1.00E-04	A	0.026	-	1	-	-	1.36E+09	-	-	-	-	2.65E+02	-	-	2.65E+02	2.83E+03	-	-	2.83E+03	2.65E+02 nc

Site-specific
Recreator Screening Levels (RSL) for Soil
ca=Cancer, nc=Noncancer, ca* (Where nc SL < 100 x ca SL),
ca** (Where nc SL < 10 x ca SL), max=SL exceeds ceiling limit (see User's Guide), sat=SL exceeds csat,
Smax=Soil SL exceeds ceiling limit and has been substituted with the max value (see User's Guide)
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	Mutagen?	VOC ?	Ingestion SF (mg/kg-day)$^{-1}$	SFO Ref	Inhalation Unit Risk (ug/m^3)$^{-1}$	IUR Ref	Chronic RfD (mg/kg-day)	Chronic RfD Ref	Chronic RfC (mg/m^3)	Chronic RfC Ref	GIABS	ABS	RBA	Volatilization Factor (m^3/kg)	Soil Saturation Concentration (mg/kg)	Particulate Emission Factor (m^3/kg)	Ingestion SL TR=1.0E-6 (mg/kg)	Dermal SL TR=1.0E-6 (mg/kg)	Inhalation SL TR=1.0E-6 (mg/kg)	Carcinogenic SL TR=1.0E-6 (mg/kg)	Ingestion SL (Child) HQ=0.1 (mg/kg)	Dermal SL (Child) HQ=0.1 (mg/kg)	Inhalation SL (Child) HQ=0.1 (mg/kg)	Noncarcinogenic SL (Child) HI=0.1 (mg/kg)	Ingestion SL (Adult) HQ=0.1 (mg/kg)	Dermal SL (Adult) HQ=0.1 (mg/kg)	Inhalation SL (Adult) HQ=0.1 (mg/kg)	Noncarcinogenic SL (Adult) HI=0.1 (mg/kg)	Screening Level (mg/kg)
Vanadyl Sulfate	27774-13-6	No	No	-		-		-		-		1	-	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	-
Vernolate	1929-77-7	No	No	-		-		1.00E-03	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	5.26E+01	1.93E+02	-	4.14E+01	5.62E+02	2.94E+02	-	1.93E+02	4.14E+01 nc
Vinclozolin	50471-44-8	No	No	-		-		2.50E-02	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.32E+03	4.82E+03	-	1.03E+03	1.40E+04	7.34E+03	-	4.82E+03	1.03E+03 nc
Vinyl Acetate	108-05-4	No	Yes	-		-		1.00E+00	H	2.00E-01	I	1	-	1	4.40E+03	2.75E+03	1.36E+09	-	-	-	-	5.26E+04	-	-	5.26E+04	5.62E+05	-	-	5.62E+05	5.26E+04 sat
Vinyl Bromide	593-60-2	No	Yes	-		3.20E-05	H	-		3.00E-03	I	1	-	1	1.37E+03	3.37E+03	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	-
Vinyl Chloride	75-01-4	Yes	Yes	7.20E-01	I	4.40E-06	I	3.00E-03	I	1.00E-01	I	1	-	1	9.56E+02	3.92E+03	1.36E+09	1.03E-01	-	2.17E-01	6.96E-02	1.58E+02	-	-	1.58E+02	1.68E+03	-	-	1.68E+03	6.96E-02 ca
Warfarin	81-81-2	No	No	-		-		3.00E-04	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	1.58E+01	5.79E+01	-	1.24E+01	1.68E+02	8.81E+01	-	5.79E+01	1.24E+01 nc
Xylene, P-	106-42-3	No	Yes	-		-		2.00E-01	S	1.00E-01	S	1	-	1	5.58E+03	3.90E+02	1.36E+09	-	-	-	-	1.05E+04	-	-	1.05E+04	1.12E+05	-	-	1.12E+05	1.05E+04 sat
Xylene, m-	108-38-3	No	Yes	-		-		2.00E-01	S	1.00E-01	S	1	-	1	5.47E+03	3.88E+02	1.36E+09	-	-	-	-	1.05E+04	-	-	1.05E+04	1.12E+05	-	-	1.12E+05	1.05E+04 sat
Xylene, o-	95-47-6	No	Yes	-		-		2.00E-01	S	1.00E-01	S	1	-	1	6.46E+03	4.34E+02	1.36E+09	-	-	-	-	1.05E+04	-	-	1.05E+04	1.12E+05	-	-	1.12E+05	1.05E+04 sat
Xylenes	1330-20-7	No	Yes	-		-		2.00E-01	I	1.00E-01	I	1	-	1	5.82E+03	2.58E+02	1.36E+09	-	-	-	-	1.05E+04	-	-	1.05E+04	1.12E+05	-	-	1.12E+05	1.05E+04 sat
Ytterbium	7440-64-4	No	No	-		-		-		-		1	-	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	
Yttrium	7440-65-5	No	No	-		-		-		-		1	-	1	-	-	1.36E+09	-	-	-	-	-	-	-	-	-	-	-	-	-
Zineb	12122-67-7	No	No	-		-		5.00E-02	I	-		1	0.1	1	-	-	1.36E+09	-	-	-	-	2.63E+03	9.65E+03	-	2.07E+03	2.81E+04	1.47E+04	-	9.64E+03	2.07E+03 nc
Zirconium	7440-67-7	No	No	-		-		8.00E-05	S	-		1	-	1	-	-	1.36E+09	-	-	-	-	4.21E+00	-	-	4.21E+00	4.49E+01	-	-	4.49E+01	4.21E+00 nc
Zinc Phosphide	1314-84-7	No	No	-		-		3.00E-04	I	-		1	-	1	-	-	1.36E+09	-	-	-	-	1.58E+01	-	-	1.58E+01	1.68E+02	-	-	1.68E+02	1.58E+01 nc
Zinc and Compounds	7440-66-6	No	No	-		-		3.00E-01	I	-		1	-	1	-	-	1.36E+09	-	-	-	-	1.58E+04	-	-	1.58E+04	1.68E+05	-	-	1.68E+05	1.58E+04 nc

Output generated 12FEB2015:16:23:13

ATTACHMENT C

UCL CALCULATIONS

SURFACE SOIL

UCL Statistics for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	2/13/2015 9:55:52 AM
From File	MRP01_RI_SO_0-1ft_HH_02112015_For ProUCL.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Newport_RA_SO_SVOCs|BENZO[A]ANTHRACENE

General Statistics

Total Number of Observations	57	Number of Distinct Observations	55
		Number of Missing Observations	1
Number of Detects	55	Number of Non-Detects	2
Number of Distinct Detects	53	Number of Distinct Non-Detects	2
Minimum Detect	8.9000E-4	Minimum Non-Detect	0.021
Maximum Detect	65	Maximum Non-Detect	0.025
Variance Detects	88.78	Percent Non-Detects	3.509%
Mean Detects	2.505	SD Detects	9.422
Median Detects	0.24	CV Detects	3.762
Skewness Detects	5.811	Kurtosis Detects	37.26
Mean of Logged Detects	-1.707	SD of Logged Detects	2.335

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.297	**Normal GOF Test on Detected Observations Only**
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.46	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.119	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

Mean	2.417	Standard Error of Mean	1.227
SD	9.182	95% KM (BCA) UCL	4.969
95% KM (t) UCL	4.47	95% KM (Percentile Bootstrap) UCL	4.806
95% KM (z) UCL	4.436	95% KM Bootstrap t UCL	8.458
90% KM Chebyshev UCL	6.099	95% KM Chebyshev UCL	7.767
97.5% KM Chebyshev UCL	10.08	99% KM Chebyshev UCL	14.63

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	4.798	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.879	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.281	**Kolmogrov-Smirnoff GOF**
5% K-S Critical Value	0.131	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.268	k star (bias corrected MLE)	0.265
Theta hat (MLE)	9.361	Theta star (bias corrected MLE)	9.448
nu hat (MLE)	29.43	nu star (bias corrected)	29.16
MLE Mean (bias corrected)	2.505	MLE Sd (bias corrected)	4.865

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	0.0693	nu hat (KM)	7.899
Approximate Chi Square Value (7.90, α)	2.677	Adjusted Chi Square Value (7.90, β)	2.598
95% Gamma Approximate KM-UCL (use when n>=50)	7.133	95% Gamma Adjusted KM-UCL (use when n<50)	7.348

Gamma (KM) may not be used when k hat (KM) is < 0.1

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as < 0.1

For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	8.9000E-4	Mean	2.417
Maximum	65	Median	0.24
SD	9.264	CV	3.833
k hat (MLE)	0.262	k star (bias corrected MLE)	0.26
Theta hat (MLE)	9.229	Theta star (bias corrected MLE)	9.303
nu hat (MLE)	29.86	nu star (bias corrected)	29.62
MLE Mean (bias corrected)	2.417	MLE Sd (bias corrected)	4.742
		Adjusted Level of Significance (β)	0.0458
Approximate Chi Square Value (29.62, α)	18.19	Adjusted Chi Square Value (29.62, β)	17.96
95% Gamma Approximate UCL (use when n>=50)	3.935	95% Gamma Adjusted UCL (use when n<50)	3.986

Lognormal GOF Test on Detected Observations Only

Lilliefors Test Statistic	0.109	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.119	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	2.417	Mean in Log Scale	-1.821
SD in Original Scale	9.264	SD in Log Scale	2.371
95% t UCL (assumes normality of ROS data)	4.469	95% Percentile Bootstrap UCL	4.676
95% BCA Bootstrap UCL	5.812	95% Bootstrap t UCL	8.34
95% H-UCL (Log ROS)	10.92		

UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed

KM Mean (logged)	-1.837	95% H-UCL (KM -Log)	11.01
KM SD (logged)	2.377	95% Critical H Value (KM-Log)	4.437
KM Standard Error of Mean (logged)	0.319		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	2.417	Mean in Log Scale	-1.804
SD in Original Scale	9.264	SD in Log Scale	2.349
95% t UCL (Assumes normality)	4.47	95% H-Stat UCL	10.29

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Lognormal Distributed at 5% Significance Level

Suggested UCL to Use

99% KM (Chebyshev) UCL	14.63

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Newport_RA_SO_SVOCs|BENZO[A]PYRENE

General Statistics

Total Number of Observations	57	Number of Distinct Observations	52
		Number of Missing Observations	1
Number of Detects	56	Number of Non-Detects	1
Number of Distinct Detects	51	Number of Distinct Non-Detects	1
Minimum Detect	7.7000E-4	Minimum Non-Detect	0.021
Maximum Detect	80	Maximum Non-Detect	0.021
Variance Detects	129.6	Percent Non-Detects	1.754%
Mean Detects	2.899	SD Detects	11.39
Median Detects	0.255	CV Detects	3.927
Skewness Detects	6.024	Kurtosis Detects	39.77
Mean of Logged Detects	-1.667	SD of Logged Detects	2.347

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.283	**Normal GOF Test on Detected Observations Only**
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.46	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.118	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

Mean	2.848	Standard Error of Mean	1.496
SD	11.19	95% KM (BCA) UCL	5.609
95% KM (t) UCL	5.35	95% KM (Percentile Bootstrap) UCL	5.576
95% KM (z) UCL	5.308	95% KM Bootstrap t UCL	11.17
90% KM Chebyshev UCL	7.335	95% KM Chebyshev UCL	9.367
97.5% KM Chebyshev UCL	12.19	99% KM Chebyshev UCL	17.73

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	5.076	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.884	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.298	**Kolmogrov-Smirnoff GOF**
5% K-S Critical Value	0.13	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.259	k star (bias corrected MLE)	0.257
Theta hat (MLE)	11.21	Theta star (bias corrected MLE)	11.29
nu hat (MLE)	28.96	nu star (bias corrected)	28.75
MLE Mean (bias corrected)	2.899	MLE Sd (bias corrected)	5.722

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	0.0648	nu hat (KM)	7.385
Approximate Chi Square Value (7.38, α)	2.384	Adjusted Chi Square Value (7.38, β)	2.311
95% Gamma Approximate KM-UCL (use when n>=50)	8.822	95% Gamma Adjusted KM-UCL (use when n<50)	9.101

Gamma (KM) may not be used when k hat (KM) is < 0.1

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as < 0.1

For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	7.7000E-4	Mean	2.848
Maximum	80	Median	0.25
SD	11.29	CV	3.964
k hat (MLE)	0.256	k star (bias corrected MLE)	0.254
Theta hat (MLE)	11.13	Theta star (bias corrected MLE)	11.21
nu hat (MLE)	29.17	nu star (bias corrected)	28.97
MLE Mean (bias corrected)	2.848	MLE Sd (bias corrected)	5.65
		Adjusted Level of Significance (β)	0.0458
Approximate Chi Square Value (28.97, α)	17.68	Adjusted Chi Square Value (28.97, β)	17.45
95% Gamma Approximate UCL (use when n>=50)	4.666	95% Gamma Adjusted UCL (use when n<50)	4.727

Lognormal GOF Test on Detected Observations Only

Lilliefors Test Statistic	0.119	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.118	Detected Data Not Lognormal at 5% Significance Level

Detected Data appear Approximate Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	2.848	Mean in Log Scale	-1.726
SD in Original Scale	11.29	SD in Log Scale	2.369
95% t UCL (assumes normality of ROS data)	5.349	95% Percentile Bootstrap UCL	5.568
95% BCA Bootstrap UCL	7.296	95% Bootstrap t UCL	11.43
95% H-UCL (Log ROS)	11.91		

UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed

KM Mean (logged)	-1.733	95% H-UCL (KM -Log)	11.46
KM SD (logged)	2.359	95% Critical H Value (KM-Log)	4.402
KM Standard Error of Mean (logged)	0.316		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	2.848	Mean in Log Scale	-1.718
SD in Original Scale	11.29	SD in Log Scale	2.358
95% t UCL (Assumes normality)	5.349	95% H-Stat UCL	11.55

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Approximate Lognormal Distributed at 5% Significance Level

Suggested UCL to Use

99% KM (Chebyshev) UCL	17.73

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Newport_RA_SO_SVOCs|BENZO[B]FLUORANTHENE

General Statistics

Total Number of Observations	57	Number of Distinct Observations	55
		Number of Missing Observations	1
Minimum	7.7000E-4	Mean	2.57
Maximum	75	Median	0.29
SD	10.45	Std. Error of Mean	1.384
Coefficient of Variation	4.064	Skewness	6.298

Normal GOF Test

Shapiro Wilk Test Statistic	0.267	**Shapiro Wilk GOF Test**
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.461	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.117	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	4.885	95% Adjusted-CLT UCL (Chen-1995)	6.08
		95% Modified-t UCL (Johnson-1978)	5.077

Gamma GOF Test

A-D Test Statistic	5.007	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.876	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.293	**Kolmogrov-Smirnoff Gamma GOF Test**
5% K-S Critical Value	0.129	Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	0.274	k star (bias corrected MLE)	0.271
Theta hat (MLE)	9.388	Theta star (bias corrected MLE)	9.482
nu hat (MLE)	31.21	nu star (bias corrected)	30.9
MLE Mean (bias corrected)	2.57	MLE Sd (bias corrected)	4.937
		Approximate Chi Square Value (0.05)	19.21
Adjusted Level of Significance	0.0458	Adjusted Chi Square Value	18.97

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	4.136	95% Adjusted Gamma UCL (use when n<50)	4.188

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.966	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk P Value	0.228	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.12	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.117	Data Not Lognormal at 5% Significance Level

Data appear Approximate Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	-7.169	Mean of logged Data	-1.612
Maximum of Logged Data	4.317	SD of logged Data	2.262

Assuming Lognormal Distribution

95% H-UCL	9.217	90% Chebyshev (MVUE) UCL	5.338
95% Chebyshev (MVUE) UCL	6.744	97.5% Chebyshev (MVUE) UCL	8.696
99% Chebyshev (MVUE) UCL	12.53		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	4.846	95% Jackknife UCL	4.885
95% Standard Bootstrap UCL	4.784	95% Bootstrap-t UCL	11.08
95% Hall's Bootstrap UCL	11.43	95% Percentile Bootstrap UCL	5.071
95% BCA Bootstrap UCL	7.048		
90% Chebyshev(Mean, Sd) UCL	6.721	95% Chebyshev(Mean, Sd) UCL	8.602
97.5% Chebyshev(Mean, Sd) UCL	11.21	99% Chebyshev(Mean, Sd) UCL	16.34

Suggested UCL to Use

95% Chebyshev (Mean, Sd) UCL	8.602

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

Newport_RA_SO_SVOCs|BENZO[K]FLUORANTHENE

General Statistics

Total Number of Observations	57	Number of Distinct Observations	46
		Number of Missing Observations	1
Number of Detects	55	Number of Non-Detects	2
Number of Distinct Detects	46	Number of Distinct Non-Detects	2
Minimum Detect	0.0011	Minimum Non-Detect	0.0072
Maximum Detect	74	Maximum Non-Detect	0.14
Variance Detects	108.9	Percent Non-Detects	3.509%
Mean Detects	2.356	SD Detects	10.43
Median Detects	0.12	CV Detects	4.428
Skewness Detects	6.332	Kurtosis Detects	43.02
Mean of Logged Detects	-2.227	SD of Logged Detects	2.297

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.251	**Normal GOF Test on Detected Observations Only**
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.468	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.119	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

Mean	2.275	Standard Error of Mean	1.359
SD	10.16	95% KM (BCA) UCL	5.115
95% KM (t) UCL	4.547	95% KM (Percentile Bootstrap) UCL	4.71
95% KM (z) UCL	4.509	95% KM Bootstrap t UCL	10.83

90% KM Chebyshev UCL	6.35	95% KM Chebyshev UCL	8.197
97.5% KM Chebyshev UCL	10.76	99% KM Chebyshev UCL	15.79

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	6.653	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.897	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.298	**Kolmogrov-Smirnoff GOF**
5% K-S Critical Value	0.132	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.233	k star (bias corrected MLE)	0.232
Theta hat (MLE)	10.11	Theta star (bias corrected MLE)	10.14
nu hat (MLE)	25.63	nu star (bias corrected)	25.56
MLE Mean (bias corrected)	2.356	MLE Sd (bias corrected)	4.888

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	0.0501	nu hat (KM)	5.709
Approximate Chi Square Value (5.71, α)	1.493	Adjusted Chi Square Value (5.71, β)	1.438
95% Gamma Approximate KM-UCL (use when n>=50)	8.698	95% Gamma Adjusted KM-UCL (use when n<50)	9.028

Gamma (KM) may not be used when k hat (KM) is < 0.1

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as < 0.1

For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.0011	Mean	2.274
Maximum	74	Median	0.118
SD	10.25	CV	4.51
k hat (MLE)	0.23	k star (bias corrected MLE)	0.229
Theta hat (MLE)	9.891	Theta star (bias corrected MLE)	9.909
nu hat (MLE)	26.21	nu star (bias corrected)	26.16
MLE Mean (bias corrected)	2.274	MLE Sd (bias corrected)	4.747
		Adjusted Level of Significance (β)	0.0458
Approximate Chi Square Value (26.16, α)	15.5	Adjusted Chi Square Value (26.16, β)	15.29
95% Gamma Approximate UCL (use when n>=50)	3.837	95% Gamma Adjusted UCL (use when n<50)	3.891

Lognormal GOF Test on Detected Observations Only

Lilliefors Test Statistic	0.121	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.119	Detected Data Not Lognormal at 5% Significance Level

Detected Data appear Approximate Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	2.274	Mean in Log Scale	-2.31
SD in Original Scale	10.25	SD in Log Scale	2.306
95% t UCL (assumes normality of ROS data)	4.546	95% Percentile Bootstrap UCL	4.831
95% BCA Bootstrap UCL	6.622	95% Bootstrap t UCL	10.78
95% H-UCL (Log ROS)	5.337		

UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed

KM Mean (logged)	-2.315	95% H-UCL (KM -Log)	5.221

KM SD (logged)	2.302	95% Critical H Value (KM-Log)	4.29
KM Standard Error of Mean (logged)	0.309		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	2.275	Mean in Log Scale	-2.294
SD in Original Scale	10.25	SD in Log Scale	2.301
95% t UCL (Assumes normality)	4.546	95% H-Stat UCL	5.321

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Approximate Lognormal Distributed at 5% Significance Level

Suggested UCL to Use

99% KM (Chebyshev) UCL	15.79

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Newport_RA_SO_SVOCs|CHRYSENE

General Statistics

Total Number of Observations	57	Number of Distinct Observations	52
		Number of Missing Observations	1
Number of Detects	56	Number of Non-Detects	1
Number of Distinct Detects	51	Number of Distinct Non-Detects	1
Minimum Detect	0.0023	Minimum Non-Detect	0.0072
Maximum Detect	81	Maximum Non-Detect	0.0072
Variance Detects	140.7	Percent Non-Detects	1.754%
Mean Detects	3.311	SD Detects	11.86
Median Detects	0.3	CV Detects	3.583
Skewness Detects	5.564	Kurtosis Detects	34.67
Mean of Logged Detects	-1.369	SD of Logged Detects	2.288

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.314	**Normal GOF Test on Detected Observations Only**
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.461	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.118	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

Mean	3.253	Standard Error of Mean	1.558
SD	11.66	95% KM (BCA) UCL	5.892
95% KM (t) UCL	5.859	95% KM (Percentile Bootstrap) UCL	6.207
95% KM (z) UCL	5.816	95% KM Bootstrap t UCL	10.86
90% KM Chebyshev UCL	7.928	95% KM Chebyshev UCL	10.05
97.5% KM Chebyshev UCL	12.98	99% KM Chebyshev UCL	18.76

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	4.815	**Anderson-Darling GOF Test**	
5% A-D Critical Value	0.877	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.272	**Kolmogrov-Smirnoff GOF**	
5% K-S Critical Value	0.13	Detected Data Not Gamma Distributed at 5% Significance Level	

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.273	k star (bias corrected MLE)	0.27
Theta hat (MLE)	12.13	Theta star (bias corrected MLE)	12.25
nu hat (MLE)	30.56	nu star (bias corrected)	30.26
MLE Mean (bias corrected)	3.311	MLE Sd (bias corrected)	6.37

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	0.0778	nu hat (KM)	8.871
Approximate Chi Square Value (8.87, α)	3.249	Adjusted Chi Square Value (8.87, β)	3.161
95% Gamma Approximate KM-UCL (use when n>=50)	8.88	95% Gamma Adjusted KM-UCL (use when n<50)	9.127

Gamma (KM) may not be used when k hat (KM) is < 0.1

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as < 0.1

For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.0023	Mean	3.253
Maximum	81	Median	0.3
SD	11.76	CV	3.617
k hat (MLE)	0.269	k star (bias corrected MLE)	0.267
Theta hat (MLE)	12.08	Theta star (bias corrected MLE)	12.19
nu hat (MLE)	30.7	nu star (bias corrected)	30.42
MLE Mean (bias corrected)	3.253	MLE Sd (bias corrected)	6.297
		Adjusted Level of Significance (β)	0.0458
Approximate Chi Square Value (30.42, α)	18.82	Adjusted Chi Square Value (30.42, β)	18.59
95% Gamma Approximate UCL (use when n>=50)	5.257	95% Gamma Adjusted UCL (use when n<50)	5.324

Lognormal GOF Test on Detected Observations Only

Lilliefors Test Statistic	0.107	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.118	Detected Data appear Lognormal at 5% Significance Level	

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	3.253	Mean in Log Scale	-1.438
SD in Original Scale	11.76	SD in Log Scale	2.326
95% t UCL (assumes normality of ROS data)	5.859	95% Percentile Bootstrap UCL	6.049
95% BCA Bootstrap UCL	8.609	95% Bootstrap t UCL	10.4
95% H-UCL (Log ROS)	13.68		

UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed

KM Mean (logged)	-1.44	95% H-UCL (KM -Log)	12.88
KM SD (logged)	2.31	95% Critical H Value (KM-Log)	4.305
KM Standard Error of Mean (logged)	0.309		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	3.253	Mean in Log Scale	-1.444
SD in Original Scale	11.76	SD in Log Scale	2.336
95% t UCL (Assumes normality)	5.859	95% H-Stat UCL	14.09

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Lognormal Distributed at 5% Significance Level

Suggested UCL to Use

99% KM (Chebyshev) UCL	18.76

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Newport_RA_SO_SVOCs|DIBENZ[A,H]ANTHRACENE

General Statistics

Total Number of Observations	57	Number of Distinct Observations	53
		Number of Missing Observations	1
Number of Detects	47	Number of Non-Detects	10
Number of Distinct Detects	44	Number of Distinct Non-Detects	10
Minimum Detect	7.3000E-4	Minimum Non-Detect	0.0069
Maximum Detect	5.5	Maximum Non-Detect	15
Variance Detects	0.803	Percent Non-Detects	17.54%
Mean Detects	0.282	SD Detects	0.896
Median Detects	0.061	CV Detects	3.172
Skewness Detects	5.017	Kurtosis Detects	26.9
Mean of Logged Detects	-3.135	SD of Logged Detects	2.051

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.33	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.946	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.417	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.129	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

Mean	0.242	Standard Error of Mean	0.11
SD	0.818	95% KM (BCA) UCL	0.439
95% KM (t) UCL	0.426	95% KM (Percentile Bootstrap) UCL	0.441
95% KM (z) UCL	0.423	95% KM Bootstrap t UCL	1.489
90% KM Chebyshev UCL	0.573	95% KM Chebyshev UCL	0.723
97.5% KM Chebyshev UCL	0.932	99% KM Chebyshev UCL	1.341

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	2.92	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.848	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.222	**Kolmogrov-Smirnoff GOF**
5% K-S Critical Value	0.139	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.358	k star (bias corrected MLE)	0.349
Theta hat (MLE)	0.789	Theta star (bias corrected MLE)	0.808
nu hat (MLE)	33.67	nu star (bias corrected)	32.85
MLE Mean (bias corrected)	0.282	MLE Sd (bias corrected)	0.478

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	0.0874	nu hat (KM)	9.967
Approximate Chi Square Value (9.97, α)	3.921	Adjusted Chi Square Value (9.97, β)	3.823
95% Gamma Approximate KM-UCL (use when n>=50)	0.614	95% Gamma Adjusted KM-UCL (use when n<50)	0.63

Gamma (KM) may not be used when k hat (KM) is < 0.1

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as < 0.1

For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	7.3000E-4	Mean	0.235
Maximum	5.5	Median	0.043
SD	0.819	CV	3.489
k hat (MLE)	0.347	k star (bias corrected MLE)	0.34
Theta hat (MLE)	0.677	Theta star (bias corrected MLE)	0.69
nu hat (MLE)	39.51	nu star (bias corrected)	38.77
MLE Mean (bias corrected)	0.235	MLE Sd (bias corrected)	0.402
		Adjusted Level of Significance (β)	0.0458
Approximate Chi Square Value (38.77, α)	25.51	Adjusted Chi Square Value (38.77, β)	25.23
95% Gamma Approximate UCL (use when n>=50)	0.357	95% Gamma Adjusted UCL (use when n<50)	0.361

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.933	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.946	Detected Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.16	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.129	Detected Data Not Lognormal at 5% Significance Level

Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.235	Mean in Log Scale	-3.401
SD in Original Scale	0.818	SD in Log Scale	1.994
95% t UCL (assumes normality of ROS data)	0.417	95% Percentile Bootstrap UCL	0.427
95% BCA Bootstrap UCL	0.546	95% Bootstrap t UCL	0.9
95% H-UCL (Log ROS)	0.663		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.377	Mean in Log Scale	-3.119
SD in Original Scale	1.26	SD in Log Scale	2.093
95% t UCL (Assumes normality)	0.656	95% H-Stat UCL	1.182

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

99% KM (Chebyshev) UCL	1.341

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Newport_RA_SO_SVOCs|INDENO[1,2,3-CD]PYRENE

General Statistics

Total Number of Observations	57	Number of Distinct Observations	51
		Number of Missing Observations	1
Number of Detects	53	Number of Non-Detects	4
Number of Distinct Detects	48	Number of Distinct Non-Detects	4
Minimum Detect	0.0013	Minimum Non-Detect	0.0072
Maximum Detect	44	Maximum Non-Detect	0.14
Variance Detects	42.35	Percent Non-Detects	7.018%
Mean Detects	1.691	SD Detects	6.508
Median Detects	0.18	CV Detects	3.848
Skewness Detects	5.705	Kurtosis Detects	35.77
Mean of Logged Detects	-2.06	SD of Logged Detects	2.209

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.287	**Normal GOF Test on Detected Observations Only**
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.47	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.122	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

Mean	1.573	Standard Error of Mean	0.833
SD	6.231	95% KM (BCA) UCL	3.184
95% KM (t) UCL	2.967	95% KM (Percentile Bootstrap) UCL	3.132
95% KM (z) UCL	2.944	95% KM Bootstrap t UCL	5.859
90% KM Chebyshev UCL	4.073	95% KM Chebyshev UCL	5.205
97.5% KM Chebyshev UCL	6.777	99% KM Chebyshev UCL	9.863

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	5.417	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.877	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.29	**Kolmogrov-Smirnoff GOF**
5% K-S Critical Value	0.133	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.271	k star (bias corrected MLE)	0.268
Theta hat (MLE)	6.237	Theta star (bias corrected MLE)	6.301
nu hat (MLE)	28.74	nu star (bias corrected)	28.45
MLE Mean (bias corrected)	1.691	MLE Sd (bias corrected)	3.264

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	0.0638	nu hat (KM)	7.269
Approximate Chi Square Value (7.27, α)	2.32	Adjusted Chi Square Value (7.27, β)	2.248
95% Gamma Approximate KM-UCL (use when n>=50)	4.931	95% Gamma Adjusted KM-UCL (use when n<50)	5.088

Gamma (KM) may not be used when k hat (KM) is < 0.1

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as < 0.1

For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.0013	Mean	1.573
Maximum	44	Median	0.16
SD	6.286	CV	3.996
k hat (MLE)	0.262	k star (bias corrected MLE)	0.26
Theta hat (MLE)	6.007	Theta star (bias corrected MLE)	6.055
nu hat (MLE)	29.86	nu star (bias corrected)	29.62
MLE Mean (bias corrected)	1.573	MLE Sd (bias corrected)	3.086
		Adjusted Level of Significance (β)	0.0458
Approximate Chi Square Value (29.62, α)	18.19	Adjusted Chi Square Value (29.62, β)	17.96
95% Gamma Approximate UCL (use when n>=50)	2.561	95% Gamma Adjusted UCL (use when n<50)	2.594

Lognormal GOF Test on Detected Observations Only

Lilliefors Test Statistic	0.112	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.122	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Approximate Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	1.573	Mean in Log Scale	-2.256
SD in Original Scale	6.286	SD in Log Scale	2.252
95% t UCL (assumes normality of ROS data)	2.966	95% Percentile Bootstrap UCL	3.117
95% BCA Bootstrap UCL	3.916	95% Bootstrap t UCL	5.831
95% H-UCL (Log ROS)	4.681		

UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed

KM Mean (logged)	-2.279	95% H-UCL (KM -Log)	4.975
KM SD (logged)	2.277	95% Critical H Value (KM-Log)	4.244
KM Standard Error of Mean (logged)	0.307		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	1.574	Mean in Log Scale	-2.218
SD in Original Scale	6.286	SD in Log Scale	2.224
95% t UCL (Assumes normality)	2.967	95% H-Stat UCL	4.427

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Approximate Lognormal Distributed at 5% Significance Level

Suggested UCL to Use

99% KM (Chebyshev) UCL	9.863

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

NITROGLYCERIN

General Statistics

Total Number of Observations	12	Number of Distinct Observations	10
Number of Detects	7	Number of Non-Detects	5
Number of Distinct Detects	7	Number of Distinct Non-Detects	3
Minimum Detect	0.15	Minimum Non-Detect	0.34
Maximum Detect	4	Maximum Non-Detect	0.39
Variance Detects	1.892	Percent Non-Detects	41.67%
Mean Detects	0.9	SD Detects	1.376
Median Detects	0.44	CV Detects	1.528
Skewness Detects	2.576	Kurtosis Detects	6.722
Mean of Logged Detects	-0.708	SD of Logged Detects	1.035

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.563	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.803	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.449	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.335	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

Mean	0.626	Standard Error of Mean	0.321
SD	1.026	95% KM (BCA) UCL	1.286
95% KM (t) UCL	1.202	95% KM (Percentile Bootstrap) UCL	1.239
95% KM (z) UCL	1.154	95% KM Bootstrap t UCL	3.567
90% KM Chebyshev UCL	1.589	95% KM Chebyshev UCL	2.024
97.5% KM Chebyshev UCL	2.629	99% KM Chebyshev UCL	3.818

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.905	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.729	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.376	**Kolmogrov-Smirnoff GOF**
5% K-S Critical Value	0.32	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.962	k star (bias corrected MLE)	0.645
Theta hat (MLE)	0.935	Theta star (bias corrected MLE)	1.395
nu hat (MLE)	13.47	nu star (bias corrected)	9.033
MLE Mean (bias corrected)	0.9	MLE Sd (bias corrected)	1.12

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	0.373	nu hat (KM)	8.944
Approximate Chi Square Value (8.94, α)	3.293	Adjusted Chi Square Value (8.94, β)	2.791
95% Gamma Approximate KM-UCL (use when n>=50)	1.701	95% Gamma Adjusted KM-UCL (use when n<50)	2.007

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as < 0.1

For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	0.547
Maximum	4	Median	0.245
SD	1.107	CV	2.025
k hat (MLE)	0.441	k star (bias corrected MLE)	0.386
Theta hat (MLE)	1.241	Theta star (bias corrected MLE)	1.416
nu hat (MLE)	10.58	nu star (bias corrected)	9.266
MLE Mean (bias corrected)	0.547	MLE Sd (bias corrected)	0.88
		Adjusted Level of Significance (β)	0.029
Approximate Chi Square Value (9.27, α)	3.489	Adjusted Chi Square Value (9.27, β)	2.969
95% Gamma Approximate UCL (use when n>=50)	1.452	95% Gamma Adjusted UCL (use when n<50)	1.707

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.865	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.803	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.295	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.335	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.617	Mean in Log Scale	-1.061
SD in Original Scale	1.075	SD in Log Scale	0.905
95% t UCL (assumes normality of ROS data)	1.175	95% Percentile Bootstrap UCL	1.219
95% BCA Bootstrap UCL	1.557	95% Bootstrap t UCL	3.777
95% H-UCL (Log ROS)	1.103		

UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed

KM Mean (logged)	-1.021	95% H-UCL (KM -Log)	1.01
KM SD (logged)	0.845	95% Critical H Value (KM-Log)	2.644
KM Standard Error of Mean (logged)	0.283		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.604	Mean in Log Scale	-1.108
SD in Original Scale	1.08	SD in Log Scale	0.911
95% t UCL (Assumes normality)	1.164	95% H-Stat UCL	1.067

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Lognormal Distributed at 5% Significance Level

Suggested UCL to Use

97.5% KM (Chebyshev) UCL 2.629

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Newport_RA_SO_Pesticides|4,4-DDT

General Statistics

Total Number of Observations	4	Number of Distinct Observations	4
		Number of Missing Observations	22
Number of Detects	3	Number of Non-Detects	1
Number of Distinct Detects	3	Number of Distinct Non-Detects	1
Minimum Detect	0.0061	Minimum Non-Detect	0.0017
Maximum Detect	19	Maximum Non-Detect	0.0017
Variance Detects	120.2	Percent Non-Detects	25%
Mean Detects	6.339	SD Detects	10.97
Median Detects	0.0094	CV Detects	1.73
Skewness Detects	1.732	Kurtosis Detects	N/A
Mean of Logged Detects	-2.274	SD of Logged Detects	4.524

Warning: Data set has only 3 Detected Values.
This is not enough to compute meaningful or reliable statistics and estimates.

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.
For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).
Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.0

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.75	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.767	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.385	Lilliefors GOF Test
5% Lilliefors Critical Value	0.512	Detected Data appear Normal at 5% Significance Level

Detected Data appear Approximate Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

Mean	4.754	Standard Error of Mean	5.037
SD	8.225	95% KM (BCA) UCL	N/A
95% KM (t) UCL	16.61	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	13.04	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	19.86	95% KM Chebyshev UCL	26.71
97.5% KM Chebyshev UCL	36.21	99% KM Chebyshev UCL	54.87

Gamma GOF Tests on Detected Observations Only
Not Enough Data to Perform GOF Test

Gamma Statistics on Detected Data Only

k hat (MLE)	0.181	k star (bias corrected MLE)	N/A
Theta hat (MLE)	34.96	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	1.088	nu star (bias corrected)	N/A
MLE Mean (bias corrected)	N/A	MLE Sd (bias corrected)	N/A

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	0.334	nu hat (KM)	2.673
		Adjusted Level of Significance (β)	0.00498
Approximate Chi Square Value (2.67, α)	0.283	Adjusted Chi Square Value (2.67, β)	0.0762
95% Gamma Approximate KM-UCL (use when n>=50)	44.98	95% Gamma Adjusted KM-UCL (use when n<50)	166.9

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.79	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.767	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.368	Lilliefors GOF Test
5% Lilliefors Critical Value	0.512	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	4.754	Mean in Log Scale	-5.23

SD in Original Scale	9.497	SD in Log Scale	6.972
95% t UCL (assumes normality of ROS data)	15.93	95% Percentile Bootstrap UCL	N/A
95% BCA Bootstrap UCL	N/A	95% Bootstrap t UCL	N/A
95% H-UCL (Log ROS)	5.712E+87		

UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed

KM Mean (logged)	-3.3	95% H-UCL (KM -Log)	2.485E+23
KM SD (logged)	3.66	95% Critical H Value (KM-Log)	23.89
KM Standard Error of Mean (logged)	2.241		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	4.754	Mean in Log Scale	-3.473
SD in Original Scale	9.497	SD in Log Scale	4.404
95% t UCL (Assumes normality)	15.93	95% H-Stat UCL	2.766E+34

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Approximate Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	16.61	95% KM (Percentile Bootstrap) UCL	N/A

Warning: One or more Recommended UCL(s) not available!

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Newport_RA_SO_PCBs|AROCLOR-1260

General Statistics

Total Number of Observations	5	Number of Distinct Observations	5
		Number of Missing Observations	22
Number of Detects	3	Number of Non-Detects	2
Number of Distinct Detects	3	Number of Distinct Non-Detects	2
Minimum Detect	0.016	Minimum Non-Detect	0.0016
Maximum Detect	270	Maximum Non-Detect	0.0089
Variance Detects	24294	Percent Non-Detects	40%
Mean Detects	90.02	SD Detects	155.9
Median Detects	0.05	CV Detects	1.731
Skewness Detects	1.732	Kurtosis Detects	N/A
Mean of Logged Detects	-0.511	SD of Logged Detects	5.321

Warning: Data set has only 3 Detected Values.
This is not enough to compute meaningful or reliable statistics and estimates.

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use
guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.
For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).
Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.0

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.75	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.767	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.385	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.512	Detected Data appear Normal at 5% Significance Level

Detected Data appear Approximate Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

Mean	54.01	Standard Error of Mean	59.15
SD	108	95% KM (BCA) UCL	N/A
95% KM (t) UCL	180.1	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	151.3	95% KM Bootstrap t UCL	N/A

90% KM Chebyshev UCL	231.5	95% KM Chebyshev UCL	311.8
97.5% KM Chebyshev UCL	423.4	99% KM Chebyshev UCL	642.6

Gamma GOF Tests on Detected Observations Only

Not Enough Data to Perform GOF Test

Gamma Statistics on Detected Data Only

k hat (MLE)	0.153	k star (bias corrected MLE)	N/A
Theta hat (MLE)	588.6	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	0.918	nu star (bias corrected)	N/A
MLE Mean (bias corrected)	N/A	MLE Sd (bias corrected)	N/A

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	0.25	nu hat (KM)	2.502
		Adjusted Level of Significance (β)	0.0086
Approximate Chi Square Value (2.50, α)	0.241	Adjusted Chi Square Value (2.50, β)	0.0942
95% Gamma Approximate KM-UCL (use when n>=50)	559.5	95% Gamma Adjusted KM-UCL (use when n<50)	1434

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.836	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.767	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.346	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.512	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	54.01	Mean in Log Scale	-6.671
SD in Original Scale	120.7	SD in Log Scale	9.236
95% t UCL (assumes normality of ROS data)	169.1	95% Percentile Bootstrap UCL	N/A
95% BCA Bootstrap UCL	N/A	95% Bootstrap t UCL	N/A
95% H-UCL (Log ROS)	2.548E+101		

UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed

KM Mean (logged)	-2.882	95% H-UCL (KM -Log)	8.880E+22
KM SD (logged)	4.445	95% Critical H Value (KM-Log)	20.63
KM Standard Error of Mean (logged)	2.435		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	54.01	Mean in Log Scale	-2.816
SD in Original Scale	120.7	SD in Log Scale	4.948
95% t UCL (Assumes normality)	169.1	95% H-Stat UCL	5.706E+28

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Approximate Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	180.1	95% KM (Percentile Bootstrap) UCL	N/A

Warning: One or more Recommended UCL(s) not available!

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Newport_RA_SO_Metals|ALUMINUM

General Statistics

Total Number of Observations	27	Number of Distinct Observations	25
		Number of Missing Observations	31
Minimum	3380	Mean	9669

Maximum	18600	Median	9800
SD	3183	Std. Error of Mean	612.6
Coefficient of Variation	0.329	Skewness	0.304

Normal GOF Test

Shapiro Wilk Test Statistic	0.957	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.923	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.139	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.171	Data appear Normal at 5% Significance Level

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	10713	95% Adjusted-CLT UCL (Chen-1995)	10714
		95% Modified-t UCL (Johnson-1978)	10719

Gamma GOF Test

A-D Test Statistic	0.672	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.745	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.149	**Kolmogrov-Smirnoff Gamma GOF Test**
5% K-S Critical Value	0.168	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	8.499	k star (bias corrected MLE)	7.579
Theta hat (MLE)	1138	Theta star (bias corrected MLE)	1276
nu hat (MLE)	458.9	nu star (bias corrected)	409.3
MLE Mean (bias corrected)	9669	MLE Sd (bias corrected)	3512
		Approximate Chi Square Value (0.05)	363.4
Adjusted Level of Significance	0.0401	Adjusted Chi Square Value	360.6

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	10890	95% Adjusted Gamma UCL (use when n<50)	10973

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.921	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.923	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.169	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.171	Data appear Lognormal at 5% Significance Level

Data appear Approximate Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	8.126	Mean of logged Data	9.117
Maximum of Logged Data	9.831	SD of logged Data	0.372

Assuming Lognormal Distribution

95% H-UCL	11186	90% Chebyshev (MVUE) UCL	11875
95% Chebyshev (MVUE) UCL	12845	97.5% Chebyshev (MVUE) UCL	14192
99% Chebyshev (MVUE) UCL	16838		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	10676	95% Jackknife UCL	10713
95% Standard Bootstrap UCL	10651	95% Bootstrap-t UCL	10720
95% Hall's Bootstrap UCL	10798	95% Percentile Bootstrap UCL	10640
95% BCA Bootstrap UCL	10682		
90% Chebyshev(Mean, Sd) UCL	11506	95% Chebyshev(Mean, Sd) UCL	12339
97.5% Chebyshev(Mean, Sd) UCL	13494	99% Chebyshev(Mean, Sd) UCL	15763

Suggested UCL to Use

95% Student's-t UCL	10713

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

Newport_RA_SO_Metals|ANTIMONY

General Statistics

Total Number of Observations	27	Number of Distinct Observations	23
		Number of Missing Observations	31
Minimum	0.05	Mean	22.99
Maximum	396	Median	0.63
SD	82.85	Std. Error of Mean	15.94
Coefficient of Variation	3.604	Skewness	4.106

Normal GOF Test

Shapiro Wilk Test Statistic	0.31	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.923	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.484	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.171	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	50.18	95% Adjusted-CLT UCL (Chen-1995)	62.68
		95% Modified-t UCL (Johnson-1978)	52.28

Gamma GOF Test

A-D Test Statistic	5.424	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.886	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.365	**Kolmogrov-Smirnoff Gamma GOF Test**
5% K-S Critical Value	0.185	Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	0.233	k star (bias corrected MLE)	0.232
Theta hat (MLE)	98.67	Theta star (bias corrected MLE)	99.18
nu hat (MLE)	12.58	nu star (bias corrected)	12.52
MLE Mean (bias corrected)	22.99	MLE Sd (bias corrected)	47.75

		Approximate Chi Square Value (0.05)	5.568
Adjusted Level of Significance	0.0401	Adjusted Chi Square Value	5.274

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	51.67	95% Adjusted Gamma UCL (use when n<50)	54.55

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.812	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.923	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.232	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.171	Data Not Lognormal at 5% Significance Level

Data Not Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	-2.996	Mean of logged Data	0.0511
Maximum of Logged Data	5.981	SD of logged Data	1.951

Assuming Lognormal Distribution

95% H-UCL	32.1	90% Chebyshev (MVUE) UCL	14.69
95% Chebyshev (MVUE) UCL	18.66	97.5% Chebyshev (MVUE) UCL	24.17
99% Chebyshev (MVUE) UCL	34.99		

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution (0.05)

Nonparametric Distribution Free UCLs

95% CLT UCL	49.21	95% Jackknife UCL	50.18
95% Standard Bootstrap UCL	48.11	95% Bootstrap-t UCL	886.2
95% Hall's Bootstrap UCL	839.5	95% Percentile Bootstrap UCL	51.93
95% BCA Bootstrap UCL	66.38		
90% Chebyshev(Mean, Sd) UCL	70.82	95% Chebyshev(Mean, Sd) UCL	92.49
97.5% Chebyshev(Mean, Sd) UCL	122.6	99% Chebyshev(Mean, Sd) UCL	181.6

Suggested UCL to Use

95% Chebyshev (Mean, Sd) UCL	92.49

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

Newport_RA_SO_Metals|ARSENIC

General Statistics

Total Number of Observations	45	Number of Distinct Observations	39
		Number of Missing Observations	13
Minimum	1.2	Mean	12.5
Maximum	130	Median	8.3
SD	19.54	Std. Error of Mean	2.913
Coefficient of Variation	1.564	Skewness	5.298

Normal GOF Test

Shapiro Wilk Test Statistic	0.426	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.945	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.32	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.132	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	17.39	95% Adjusted-CLT UCL (Chen-1995)	19.75
		95% Modified-t UCL (Johnson-1978)	17.78

Gamma GOF Test

A-D Test Statistic	2.237	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.77	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.181	**Kolmogrov-Smirnoff Gamma GOF Test**
5% K-S Critical Value	0.135	Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	1.372	k star (bias corrected MLE)	1.295
Theta hat (MLE)	9.109	Theta star (bias corrected MLE)	9.648
nu hat (MLE)	123.5	nu star (bias corrected)	116.6
MLE Mean (bias corrected)	12.5	MLE Sd (bias corrected)	10.98
		Approximate Chi Square Value (0.05)	92.66
Adjusted Level of Significance	0.0447	Adjusted Chi Square Value	91.95

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	15.73	95% Adjusted Gamma UCL (use when n<50)	15.85

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.958	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.945	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.102	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.132	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	0.182	Mean of logged Data	2.119
Maximum of Logged Data	4.868	SD of logged Data	0.798

Assuming Lognormal Distribution

95% H-UCL	14.83	90% Chebyshev (MVUE) UCL	15.85
95% Chebyshev (MVUE) UCL	17.9	97.5% Chebyshev (MVUE) UCL	20.73
99% Chebyshev (MVUE) UCL	26.31		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	17.29	95% Jackknife UCL	17.39
95% Standard Bootstrap UCL	17.14	95% Bootstrap-t UCL	28.04

95% Hall's Bootstrap UCL	37.52	95% Percentile Bootstrap UCL	17.8
95% BCA Bootstrap UCL	21.08		
90% Chebyshev(Mean, Sd) UCL	21.24	95% Chebyshev(Mean, Sd) UCL	25.2
97.5% Chebyshev(Mean, Sd) UCL	30.69	99% Chebyshev(Mean, Sd) UCL	41.48

Suggested UCL to Use

95% H-UCL	14.83

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

ProUCL computes and outputs H-statistic based UCLs for historical reasons only.
H-statistic often results in unstable (both high and low) values of UCL95 as shown in examples in the Technical Guide.
It is therefore recommended to avoid the use of H-statistic based 95% UCLs.
Use of nonparametric methods are preferred to compute UCL95 for skewed data sets which do not follow a gamma distribution.

Newport_RA_SO_Metals|CHROMIUM, TOTAL

General Statistics

Total Number of Observations	45	Number of Distinct Observations	35
		Number of Missing Observations	13
Minimum	5	Mean	12.61
Maximum	30.1	Median	12
SD	4.733	Std. Error of Mean	0.706
Coefficient of Variation	0.375	Skewness	1.803

Normal GOF Test

Shapiro Wilk Test Statistic	0.85	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.945	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.162	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.132	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	13.8	95% Adjusted-CLT UCL (Chen-1995)	13.97
		95% Modified-t UCL (Johnson-1978)	13.83

Gamma GOF Test

A-D Test Statistic	0.876	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.75	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.113	**Kolmogrov-Smirnoff Gamma GOF Test**
5% K-S Critical Value	0.132	Detected data appear Gamma Distributed at 5% Significance Level

Detected data follow Appr. Gamma Distribution at 5% Significance Level

Gamma Statistics

k hat (MLE)	8.649	k star (bias corrected MLE)	8.088
Theta hat (MLE)	1.458	Theta star (bias corrected MLE)	1.559
nu hat (MLE)	778.4	nu star (bias corrected)	727.9

MLE Mean (bias corrected)	12.61	MLE Sd (bias corrected)	4.434
		Approximate Chi Square Value (0.05)	666.3
Adjusted Level of Significance	0.0447	Adjusted Chi Square Value	664.3

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50)	13.78	95% Adjusted Gamma UCL (use when n<50)	13.82

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.953	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.945	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.102	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.132	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	1.609	Mean of logged Data	2.476
Maximum of Logged Data	3.405	SD of logged Data	0.342

Assuming Lognormal Distribution

95% H-UCL	13.84	90% Chebyshev (MVUE) UCL	14.56
95% Chebyshev (MVUE) UCL	15.45	97.5% Chebyshev (MVUE) UCL	16.69
99% Chebyshev (MVUE) UCL	19.13		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	13.77	95% Jackknife UCL	13.8
95% Standard Bootstrap UCL	13.79	95% Bootstrap-t UCL	14.17
95% Hall's Bootstrap UCL	14.28	95% Percentile Bootstrap UCL	13.8
95% BCA Bootstrap UCL	13.98		
90% Chebyshev(Mean, Sd) UCL	14.73	95% Chebyshev(Mean, Sd) UCL	15.69
97.5% Chebyshev(Mean, Sd) UCL	17.02	99% Chebyshev(Mean, Sd) UCL	19.63

Suggested UCL to Use

95% Adjusted Gamma UCL	13.82

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

Newport_RA_SO_Metals|COBALT

General Statistics

Total Number of Observations	27	Number of Distinct Observations	26
		Number of Missing Observations	31
Minimum	6.4	Mean	12.4
Maximum	24.5	Median	10.8
SD	4.906	Std. Error of Mean	0.944
Coefficient of Variation	0.396	Skewness	1.218

Normal GOF Test

Shapiro Wilk Test Statistic	0.872	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.923	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.184	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.171	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	14.01	95% Adjusted-CLT UCL (Chen-1995)	14.19
		95% Modified-t UCL (Johnson-1978)	14.05

Gamma GOF Test

A-D Test Statistic	0.627	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.745	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.156	**Kolmogrov-Smirnoff Gamma GOF Test**
5% K-S Critical Value	0.168	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	7.732	k star (bias corrected MLE)	6.898
Theta hat (MLE)	1.604	Theta star (bias corrected MLE)	1.798
nu hat (MLE)	417.5	nu star (bias corrected)	372.5
MLE Mean (bias corrected)	12.4	MLE Sd (bias corrected)	4.723
		Approximate Chi Square Value (0.05)	328.8
Adjusted Level of Significance	0.0401	Adjusted Chi Square Value	326.1

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50)	14.05	95% Adjusted Gamma UCL (use when n<50)	14.17

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.956	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.923	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.135	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.171	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	1.856	Mean of logged Data	2.452
Maximum of Logged Data	3.199	SD of logged Data	0.361

Assuming Lognormal Distribution

95% H-UCL	14.14	90% Chebyshev (MVUE) UCL	15
95% Chebyshev (MVUE) UCL	16.19	97.5% Chebyshev (MVUE) UCL	17.85
99% Chebyshev (MVUE) UCL	21.1		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	13.96	95% Jackknife UCL	14.01

95% Standard Bootstrap UCL	13.96	95% Bootstrap-t UCL	14.31
95% Hall's Bootstrap UCL	14.26	95% Percentile Bootstrap UCL	13.99
95% BCA Bootstrap UCL	14.09		
90% Chebyshev(Mean, Sd) UCL	15.24	95% Chebyshev(Mean, Sd) UCL	16.52
97.5% Chebyshev(Mean, Sd) UCL	18.3	99% Chebyshev(Mean, Sd) UCL	21.8

Suggested UCL to Use

95% Adjusted Gamma UCL	14.17

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

Newport_RA_SO_Metals|IRON

General Statistics

Total Number of Observations	27	Number of Distinct Observations	27
		Number of Missing Observations	31
Minimum	16100	Mean	32552
Maximum	88500	Median	29900
SD	14693	Std. Error of Mean	2828
Coefficient of Variation	0.451	Skewness	2.314

Normal GOF Test

Shapiro Wilk Test Statistic	0.79	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.923	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.198	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.171	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	37375	95% Adjusted-CLT UCL (Chen-1995)	38548
		95% Modified-t UCL (Johnson-1978)	37585

Gamma GOF Test

A-D Test Statistic	0.672	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.746	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.144	**Kolmogrov-Smirnoff Gamma GOF Test**
5% K-S Critical Value	0.168	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	6.922	k star (bias corrected MLE)	6.177
Theta hat (MLE)	4703	Theta star (bias corrected MLE)	5270
nu hat (MLE)	373.8	nu star (bias corrected)	333.6
MLE Mean (bias corrected)	32552	MLE Sd (bias corrected)	13097
		Approximate Chi Square Value (0.05)	292.3
Adjusted Level of Significance	0.0401	Adjusted Chi Square Value	289.8

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50)	37154	95% Adjusted Gamma UCL (use when n<50)	37470

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.953	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.923	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.116	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.171	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	9.687	Mean of logged Data	10.32
Maximum of Logged Data	11.39	SD of logged Data	0.373

Assuming Lognormal Distribution

95% H-UCL	37151	90% Chebyshev (MVUE) UCL	39438
95% Chebyshev (MVUE) UCL	42664	97.5% Chebyshev (MVUE) UCL	47141
99% Chebyshev (MVUE) UCL	55936		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	37203	95% Jackknife UCL	37375
95% Standard Bootstrap UCL	37162	95% Bootstrap-t UCL	39593
95% Hall's Bootstrap UCL	44614	95% Percentile Bootstrap UCL	37437
95% BCA Bootstrap UCL	38685		
90% Chebyshev(Mean, Sd) UCL	41035	95% Chebyshev(Mean, Sd) UCL	44877
97.5% Chebyshev(Mean, Sd) UCL	50210	99% Chebyshev(Mean, Sd) UCL	60686

Suggested UCL to Use

95% Adjusted Gamma UCL	37470

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

Newport_RA_SO_Metals|LEAD

General Statistics

Total Number of Observations	57	Number of Distinct Observations	54
		Number of Missing Observations	1
Minimum	6.5	Mean	828.3
Maximum	29900	Median	60.4
SD	4179	Std. Error of Mean	553.5
Coefficient of Variation	5.045	Skewness	6.485

Normal GOF Test

Shapiro Wilk Test Statistic	0.211	**Shapiro Wilk GOF Test**
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level

Lilliefors Test Statistic	0.479	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.117	Data Not Normal at 5% Significance Level	

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	1754	95% Adjusted-CLT UCL (Chen-1995)	2247
		95% Modified-t UCL (Johnson-1978)	1833

Gamma GOF Test

A-D Test Statistic	10.88	**Anderson-Darling Gamma GOF Test**	
5% A-D Critical Value	0.874	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.361	**Kolmogrov-Smirnoff Gamma GOF Test**	
5% K-S Critical Value	0.129	Data Not Gamma Distributed at 5% Significance Level	

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	0.279	k star (bias corrected MLE)	0.276
Theta hat (MLE)	2966	Theta star (bias corrected MLE)	2998
nu hat (MLE)	31.84	nu star (bias corrected)	31.49
MLE Mean (bias corrected)	828.3	MLE Sd (bias corrected)	1576
		Approximate Chi Square Value (0.05)	19.67
Adjusted Level of Significance	0.0458	Adjusted Chi Square Value	19.43

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	1326	95% Adjusted Gamma UCL (use when n<50)	1343

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.871	**Shapiro Wilk Lognormal GOF Test**	
5% Shapiro Wilk P Value	1.8123E-6	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.139	**Lilliefors Lognormal GOF Test**	
5% Lilliefors Critical Value	0.117	Data Not Lognormal at 5% Significance Level	

Data Not Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	1.872	Mean of logged Data	4.221
Maximum of Logged Data	10.31	SD of logged Data	1.539

Assuming Lognormal Distribution

95% H-UCL	424.2	90% Chebyshev (MVUE) UCL	389.5
95% Chebyshev (MVUE) UCL	469.3	97.5% Chebyshev (MVUE) UCL	580.2
99% Chebyshev (MVUE) UCL	797.9		

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution (0.05)

Nonparametric Distribution Free UCLs

95% CLT UCL	1739	95% Jackknife UCL	1754
95% Standard Bootstrap UCL	1718	95% Bootstrap-t UCL	13618
95% Hall's Bootstrap UCL	13213	95% Percentile Bootstrap UCL	1877
95% BCA Bootstrap UCL	2741		
90% Chebyshev(Mean, Sd) UCL	2489	95% Chebyshev(Mean, Sd) UCL	3241

97.5% Chebyshev(Mean, Sd) UCL	4285	99% Chebyshev(Mean, Sd) UCL	6336

Suggested UCL to Use

95% Chebyshev (Mean, Sd) UCL	3241

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

Newport_RA_SO_Metals|MANGANESE

General Statistics

Total Number of Observations	27	Number of Distinct Observations	26
		Number of Missing Observations	31
Minimum	242	Mean	482.1
Maximum	929	Median	462
SD	161.1	Std. Error of Mean	31
Coefficient of Variation	0.334	Skewness	0.777

Normal GOF Test

Shapiro Wilk Test Statistic	0.959	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.923	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.0785	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.171	Data appear Normal at 5% Significance Level

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	535	95% Adjusted-CLT UCL (Chen-1995)	538.1
		95% Modified-t UCL (Johnson-1978)	535.8

Gamma GOF Test

A-D Test Statistic	0.116	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.744	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.0583	**Kolmogrov-Smirnoff Gamma GOF Test**
5% K-S Critical Value	0.168	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	9.587	k star (bias corrected MLE)	8.546
Theta hat (MLE)	50.29	Theta star (bias corrected MLE)	56.41
nu hat (MLE)	517.7	nu star (bias corrected)	461.5
MLE Mean (bias corrected)	482.1	MLE Sd (bias corrected)	164.9
		Approximate Chi Square Value (0.05)	412.7
Adjusted Level of Significance	0.0401	Adjusted Chi Square Value	409.7

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	539.1	95% Adjusted Gamma UCL (use when n<50)	543

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.985	**Shapiro Wilk Lognormal GOF Test**	
5% Shapiro Wilk Critical Value	0.923	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0786	**Lilliefors Lognormal GOF Test**	
5% Lilliefors Critical Value	0.171	Data appear Lognormal at 5% Significance Level	

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	5.489	Mean of logged Data	6.125
Maximum of Logged Data	6.834	SD of logged Data	0.334

Assuming Lognormal Distribution

95% H-UCL	545.6	90% Chebyshev (MVUE) UCL	577.4
95% Chebyshev (MVUE) UCL	620.4	97.5% Chebyshev (MVUE) UCL	680.1
99% Chebyshev (MVUE) UCL	797.3		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	533.1	95% Jackknife UCL	535
95% Standard Bootstrap UCL	531.7	95% Bootstrap-t UCL	544.9
95% Hall's Bootstrap UCL	550.9	95% Percentile Bootstrap UCL	534.5
95% BCA Bootstrap UCL	534.7		
90% Chebyshev(Mean, Sd) UCL	575.1	95% Chebyshev(Mean, Sd) UCL	617.2
97.5% Chebyshev(Mean, Sd) UCL	675.7	99% Chebyshev(Mean, Sd) UCL	790.5

Suggested UCL to Use

95% Student's-t UCL	535

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

Newport_RA_SO_Metals|THALLIUM

General Statistics

Total Number of Observations	27	Number of Distinct Observations	10
		Number of Missing Observations	31
Minimum	0.02	Mean	0.0578
Maximum	0.15	Median	0.05
SD	0.0307	Std. Error of Mean	0.0059
Coefficient of Variation	0.531	Skewness	1.055

Normal GOF Test

Shapiro Wilk Test Statistic	0.919	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.923	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.119	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.171	Data appear Normal at 5% Significance Level	

Data appear Approximate Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	0.0678	95% Adjusted-CLT UCL (Chen-1995)	0.0688
		95% Modified-t UCL (Johnson-1978)	0.068

Gamma GOF Test

A-D Test Statistic	0.334	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.75	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.0923	**Kolmogrov-Smirnoff Gamma GOF Test**
5% K-S Critical Value	0.169	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	3.767	k star (bias corrected MLE)	3.373
Theta hat (MLE)	0.0153	Theta star (bias corrected MLE)	0.0171
nu hat (MLE)	203.4	nu star (bias corrected)	182.1
MLE Mean (bias corrected)	0.0578	MLE Sd (bias corrected)	0.0315
		Approximate Chi Square Value (0.05)	151.9
Adjusted Level of Significance	0.0401	Adjusted Chi Square Value	150.1

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	0.0693	95% Adjusted Gamma UCL (use when n<50)	0.0701

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.95	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.923	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.125	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.171	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	-3.912	Mean of logged Data	-2.99
Maximum of Logged Data	-1.897	SD of logged Data	0.552

Assuming Lognormal Distribution

95% H-UCL	0.0728	90% Chebyshev (MVUE) UCL	0.0777
95% Chebyshev (MVUE) UCL	0.0865	97.5% Chebyshev (MVUE) UCL	0.0987
99% Chebyshev (MVUE) UCL	0.123		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	0.0675	95% Jackknife UCL	0.0678
95% Standard Bootstrap UCL	0.0674	95% Bootstrap-t UCL	0.0699
95% Hall's Bootstrap UCL	0.0708	95% Percentile Bootstrap UCL	0.0674
95% BCA Bootstrap UCL	0.0685		
90% Chebyshev(Mean, Sd) UCL	0.0755	95% Chebyshev(Mean, Sd) UCL	0.0835
97.5% Chebyshev(Mean, Sd) UCL	0.0946	99% Chebyshev(Mean, Sd) UCL	0.117

Suggested UCL to Use

95% Student's-t UCL	0.0678

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

SURFACE/SUBSURFACE SOIL

UCL Statistics for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	2/13/2015 9:34:27 AM
From File	MRP01_RI_SubSurf_SO_HH_021115_For ProUCL.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Newport_RA_SO_SVOCs|BENZO[A]ANTHRACENE

General Statistics

Total Number of Observations	128	Number of Distinct Observations	91
		Number of Missing Observations	6
Number of Detects	91	Number of Non-Detects	37
Number of Distinct Detects	81	Number of Distinct Non-Detects	14
Minimum Detect	7.4000E-4	Minimum Non-Detect	0.007
Maximum Detect	65	Maximum Non-Detect	0.39
Variance Detects	54.7	Percent Non-Detects	28.91%
Mean Detects	1.547	SD Detects	7.396
Median Detects	0.073	CV Detects	4.781
Skewness Detects	7.489	Kurtosis Detects	61.98
Mean of Logged Detects	-2.745	SD of Logged Detects	2.538

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.232	**Normal GOF Test on Detected Observations Only**
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.458	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.0929	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

Mean	1.101	Standard Error of Mean	0.555
SD	6.241	95% KM (BCA) UCL	2.15
95% KM (t) UCL	2.02	95% KM (Percentile Bootstrap) UCL	2.106
95% KM (z) UCL	2.014	95% KM Bootstrap t UCL	4.008
90% KM Chebyshev UCL	2.765	95% KM Chebyshev UCL	3.519
97.5% KM Chebyshev UCL	4.565	99% KM Chebyshev UCL	6.62

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	7.706	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.903	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.237	**Kolmogrov-Smirnoff GOF**
5% K-S Critical Value	0.103	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.227	k star (bias corrected MLE)	0.227
Theta hat (MLE)	6.82	Theta star (bias corrected MLE)	6.825
nu hat (MLE)	41.28	nu star (bias corrected)	41.25
MLE Mean (bias corrected)	1.547	MLE Sd (bias corrected)	3.249

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	0.0311	nu hat (KM)	7.97
Approximate Chi Square Value (7.97, α)	2.718	Adjusted Chi Square Value (7.97, β)	2.683
95% Gamma Approximate KM-UCL (use when n>=50)	3.229	95% Gamma Adjusted KM-UCL (use when n<50)	3.271

Gamma (KM) may not be used when k hat (KM) is < 0.1

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as < 0.1

For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	7.4000E-4	Mean	1.103
Maximum	65	Median	0.0105
SD	6.265	CV	5.682
k hat (MLE)	0.215	k star (bias corrected MLE)	0.215
Theta hat (MLE)	5.123	Theta star (bias corrected MLE)	5.119
nu hat (MLE)	55.1	nu star (bias corrected)	55.14
MLE Mean (bias corrected)	1.103	MLE Sd (bias corrected)	2.376
		Adjusted Level of Significance (β)	0.0481
Approximate Chi Square Value (55.14, α)	39.08	Adjusted Chi Square Value (55.14, β)	38.92
95% Gamma Approximate UCL (use when n>=50)	1.556	95% Gamma Adjusted UCL (use when n<50)	1.562

Lognormal GOF Test on Detected Observations Only

Lilliefors Test Statistic	0.103	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.0929	Detected Data Not Lognormal at 5% Significance Level

Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	1.102	Mean in Log Scale	-3.537
SD in Original Scale	6.265	SD in Log Scale	2.531
95% t UCL (assumes normality of ROS data)	2.019	95% Percentile Bootstrap UCL	2.142
95% BCA Bootstrap UCL	2.714	95% Bootstrap t UCL	3.791
95% H-UCL (Log ROS)	1.726		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	1.104	Mean in Log Scale	-3.338
SD in Original Scale	6.265	SD in Log Scale	2.358
95% t UCL (Assumes normality)	2.021	95% H-Stat UCL	1.242

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

97.5% KM (Chebyshev) UCL	4.565

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Newport_RA_SO_SVOCs|BENZO[A]PYRENE

General Statistics

Total Number of Observations	128	Number of Distinct Observations	88
		Number of Missing Observations	6
Number of Detects	89	Number of Non-Detects	39
Number of Distinct Detects	79	Number of Distinct Non-Detects	14
Minimum Detect	7.7000E-4	Minimum Non-Detect	0.007
Maximum Detect	80	Maximum Non-Detect	0.082
Variance Detects	82.89	Percent Non-Detects	30.47%
Mean Detects	1.855	SD Detects	9.105
Median Detects	0.073	CV Detects	4.908
Skewness Detects	7.604	Kurtosis Detects	63.46
Mean of Logged Detects	-2.527	SD of Logged Detects	2.433

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.226	**Normal GOF Test on Detected Observations Only**
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.466	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.0939	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

Mean	1.291	Standard Error of Mean	0.675
SD	7.597	95% KM (BCA) UCL	2.592
95% KM (t) UCL	2.41	95% KM (Percentile Bootstrap) UCL	2.499
95% KM (z) UCL	2.402	95% KM Bootstrap t UCL	5.095
90% KM Chebyshev UCL	3.317	95% KM Chebyshev UCL	4.235
97.5% KM Chebyshev UCL	5.509	99% KM Chebyshev UCL	8.01

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	8.353	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.902	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.255	**Kolmogrov-Smirnoff GOF**
5% K-S Critical Value	0.104	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.229	k star (bias corrected MLE)	0.229
Theta hat (MLE)	8.1	Theta star (bias corrected MLE)	8.108
nu hat (MLE)	40.77	nu star (bias corrected)	40.73
MLE Mean (bias corrected)	1.855	MLE Sd (bias corrected)	3.878

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	0.0289	nu hat (KM)	7.396
Approximate Chi Square Value (7.40, α)	2.39	Adjusted Chi Square Value (7.40, β)	2.358
95% Gamma Approximate KM-UCL (use when n>=50)	3.995	95% Gamma Adjusted KM-UCL (use when n<50)	4.05

Gamma (KM) may not be used when k hat (KM) is < 0.1

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as < 0.1

For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	7.7000E-4	Mean	1.293
Maximum	80	Median	0.0175
SD	7.627	CV	5.898
k hat (MLE)	0.213	k star (bias corrected MLE)	0.213
Theta hat (MLE)	6.065	Theta star (bias corrected MLE)	6.059
nu hat (MLE)	54.58	nu star (bias corrected)	54.64
MLE Mean (bias corrected)	1.293	MLE Sd (bias corrected)	2.799
		Adjusted Level of Significance (β)	0.0481
Approximate Chi Square Value (54.64, α)	38.65	Adjusted Chi Square Value (54.64, β)	38.5
95% Gamma Approximate UCL (use when n>=50)	1.828	95% Gamma Adjusted UCL (use when n<50)	1.835

Lognormal GOF Test on Detected Observations Only

Lilliefors Test Statistic	0.0731	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.0939	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	1.292	Mean in Log Scale	-3.474
SD in Original Scale	7.627	SD in Log Scale	2.553
95% t UCL (assumes normality of ROS data)	2.409	95% Percentile Bootstrap UCL	2.579
95% BCA Bootstrap UCL	3.256	95% Bootstrap t UCL	4.983
95% H-UCL (Log ROS)	1.969		

UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed

KM Mean (logged)	-3.491	95% H-UCL (KM -Log)	1.764
KM SD (logged)	2.524	95% Critical H Value (KM-Log)	3.905
KM Standard Error of Mean (logged)	0.232		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	1.292	Mean in Log Scale	-3.309
SD in Original Scale	7.627	SD in Log Scale	2.359
95% t UCL (Assumes normality)	2.409	95% H-Stat UCL	1.279

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Lognormal Distributed at 5% Significance Level

Suggested UCL to Use

97.5% KM (Chebyshev) UCL	5.509

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Newport_RA_SO_SVOCs|BENZO[B]FLUORANTHENE

General Statistics

Total Number of Observations	128	Number of Distinct Observations	94

		Number of Missing Observations	6
Number of Detects	93	Number of Non-Detects	35
Number of Distinct Detects	85	Number of Distinct Non-Detects	14
Minimum Detect	7.7000E-4	Minimum Non-Detect	0.007
Maximum Detect	75	Maximum Non-Detect	0.39
Variance Detects	67.92	Percent Non-Detects	27.34%
Mean Detects	1.61	SD Detects	8.241
Median Detects	0.1	CV Detects	5.119
Skewness Detects	8.047	Kurtosis Detects	70.27
Mean of Logged Detects	-2.463	SD of Logged Detects	2.341

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.211	**Normal GOF Test on Detected Observations Only**
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.461	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.0919	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

Mean	1.172	Standard Error of Mean	0.624
SD	7.023	95% KM (BCA) UCL	2.253
95% KM (t) UCL	2.206	95% KM (Percentile Bootstrap) UCL	2.349
95% KM (z) UCL	2.198	95% KM Bootstrap t UCL	4.978
90% KM Chebyshev UCL	3.044	95% KM Chebyshev UCL	3.892
97.5% KM Chebyshev UCL	5.069	99% KM Chebyshev UCL	7.382

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	8.237	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.896	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.245	**Kolmogrov-Smirnoff GOF**
5% K-S Critical Value	0.102	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.243	k star (bias corrected MLE)	0.242
Theta hat (MLE)	6.631	Theta star (bias corrected MLE)	6.649
nu hat (MLE)	45.16	nu star (bias corrected)	45.04
MLE Mean (bias corrected)	1.61	MLE Sd (bias corrected)	3.272

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	0.0278	nu hat (KM)	7.124
Approximate Chi Square Value (7.12, α)	2.239	Adjusted Chi Square Value (7.12, β)	2.208
95% Gamma Approximate KM-UCL (use when n>=50)	3.728	95% Gamma Adjusted KM-UCL (use when n<50)	3.78

Gamma (KM) may not be used when k hat (KM) is < 0.1

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as < 0.1

For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	7.7000E-4	Mean	1.173
Maximum	75	Median	0.024

SD	7.051	CV	6.013
k hat (MLE)	0.225	k star (bias corrected MLE)	0.225
Theta hat (MLE)	5.207	Theta star (bias corrected MLE)	5.209
nu hat (MLE)	57.64	nu star (bias corrected)	57.62
MLE Mean (bias corrected)	1.173	MLE Sd (bias corrected)	2.471
		Adjusted Level of Significance (β)	0.0481
Approximate Chi Square Value (57.62, α)	41.17	Adjusted Chi Square Value (57.62, β)	41.02
95% Gamma Approximate UCL (use when n>=50)	1.641	95% Gamma Adjusted UCL (use when n<50)	1.647

Lognormal GOF Test on Detected Observations Only

Lilliefors Test Statistic	0.0727	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.0919	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	1.171	Mean in Log Scale	-3.281
SD in Original Scale	7.051	SD in Log Scale	2.449
95% t UCL (assumes normality of ROS data)	2.204	95% Percentile Bootstrap UCL	2.28
95% BCA Bootstrap UCL	2.993	95% Bootstrap t UCL	5.019
95% H-UCL (Log ROS)	1.724		

UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed

KM Mean (logged)	-3.311	95% H-UCL (KM -Log)	1.732
KM SD (logged)	2.46	95% Critical H Value (KM-Log)	3.824
KM Standard Error of Mean (logged)	0.226		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	1.173	Mean in Log Scale	-3.127
SD in Original Scale	7.051	SD in Log Scale	2.297
95% t UCL (Assumes normality)	2.206	95% H-Stat UCL	1.283

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Lognormal Distributed at 5% Significance Level

Suggested UCL to Use

97.5% KM (Chebyshev) UCL	5.069

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Newport_RA_SO_SVOCs|BENZO[K]FLUORANTHENE

General Statistics

Total Number of Observations	128	Number of Distinct Observations	76
		Number of Missing Observations	6
Number of Detects	80	Number of Non-Detects	48
Number of Distinct Detects	65	Number of Distinct Non-Detects	18
Minimum Detect	9.9000E-4	Minimum Non-Detect	0.007

Maximum Detect	74	Maximum Non-Detect	0.41
Variance Detects	75.56	Percent Non-Detects	37.5%
Mean Detects	1.639	SD Detects	8.692
Median Detects	0.0714	CV Detects	5.304
Skewness Detects	7.646	Kurtosis Detects	62.76
Mean of Logged Detects	-2.821	SD of Logged Detects	2.277

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.208	**Normal GOF Test on Detected Observations Only**
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.466	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.0991	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

Mean	1.027	Standard Error of Mean	0.611
SD	6.874	95% KM (BCA) UCL	2.219
95% KM (t) UCL	2.04	95% KM (Percentile Bootstrap) UCL	2.152
95% KM (z) UCL	2.032	95% KM Bootstrap t UCL	4.905
90% KM Chebyshev UCL	2.861	95% KM Chebyshev UCL	3.692
97.5% KM Chebyshev UCL	4.845	99% KM Chebyshev UCL	7.111

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	10.05	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.905	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.291	**Kolmogrov-Smirnoff GOF**
5% K-S Critical Value	0.111	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.219	k star (bias corrected MLE)	0.219
Theta hat (MLE)	7.488	Theta star (bias corrected MLE)	7.484
nu hat (MLE)	35.02	nu star (bias corrected)	35.04
MLE Mean (bias corrected)	1.639	MLE Sd (bias corrected)	3.502

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	0.0223	nu hat (KM)	5.709
Approximate Chi Square Value (5.71, α)	1.493	Adjusted Chi Square Value (5.71, β)	1.469
95% Gamma Approximate KM-UCL (use when n>=50)	3.925	95% Gamma Adjusted KM-UCL (use when n<50)	3.99

Gamma (KM) may not be used when k hat (KM) is < 0.1

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as < 0.1

For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	9.9000E-4	Mean	1.028
Maximum	74	Median	0.01
SD	6.901	CV	6.713
k hat (MLE)	0.208	k star (bias corrected MLE)	0.208
Theta hat (MLE)	4.944	Theta star (bias corrected MLE)	4.936
nu hat (MLE)	53.23	nu star (bias corrected)	53.32

MLE Mean (bias corrected)	1.028	MLE Sd (bias corrected)	2.253
		Adjusted Level of Significance (β)	0.0481
Approximate Chi Square Value (53.32, α)	37.54	Adjusted Chi Square Value (53.32, β)	37.39
95% Gamma Approximate UCL (use when n>=50)	1.46	95% Gamma Adjusted UCL (use when n<50)	1.466

Lognormal GOF Test on Detected Observations Only

Lilliefors Test Statistic	0.0647	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.0991	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Approximate Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	1.026	Mean in Log Scale	-3.932
SD in Original Scale	6.902	SD in Log Scale	2.399
95% t UCL (assumes normality of ROS data)	2.037	95% Percentile Bootstrap UCL	2.197
95% BCA Bootstrap UCL	3.063	95% Bootstrap t UCL	4.86
95% H-UCL (Log ROS)	0.773		

UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed

KM Mean (logged)	-3.908	95% H-UCL (KM -Log)	0.635
KM SD (logged)	2.324	95% Critical H Value (KM-Log)	3.655
KM Standard Error of Mean (logged)	0.216		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	1.03	Mean in Log Scale	-3.651
SD in Original Scale	6.901	SD in Log Scale	2.156
95% t UCL (Assumes normality)	2.041	95% H-Stat UCL	0.513

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Approximate Lognormal Distributed at 5% Significance Level

Suggested UCL to Use

97.5% KM (Chebyshev) UCL	4.845

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Newport_RA_SO_SVOCs|CHRYSENE

General Statistics

Total Number of Observations	128	Number of Distinct Observations	83
		Number of Missing Observations	6
Number of Detects	85	Number of Non-Detects	43
Number of Distinct Detects	73	Number of Distinct Non-Detects	14
Minimum Detect	0.001	Minimum Non-Detect	0.007
Maximum Detect	81	Maximum Non-Detect	0.078
Variance Detects	94.43	Percent Non-Detects	33.59%
Mean Detects	2.231	SD Detects	9.718
Median Detects	0.13	CV Detects	4.357

Skewness Detects	6.874	Kurtosis Detects	52.99
Mean of Logged Detects	-2.108	SD of Logged Detects	2.404

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.256	**Normal GOF Test on Detected Observations Only**
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.459	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.0961	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

Mean	1.483	Standard Error of Mean	0.706
SD	7.942	95% KM (BCA) UCL	2.898
95% KM (t) UCL	2.653	95% KM (Percentile Bootstrap) UCL	2.741
95% KM (z) UCL	2.644	95% KM Bootstrap t UCL	4.754
90% KM Chebyshev UCL	3.601	95% KM Chebyshev UCL	4.561
97.5% KM Chebyshev UCL	5.893	99% KM Chebyshev UCL	8.509

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	7.158	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.893	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.242	**Kolmogrov-Smirnoff GOF**
5% K-S Critical Value	0.107	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.245	k star (bias corrected MLE)	0.244
Theta hat (MLE)	9.11	Theta star (bias corrected MLE)	9.14
nu hat (MLE)	41.62	nu star (bias corrected)	41.49
MLE Mean (bias corrected)	2.231	MLE Sd (bias corrected)	4.515

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	0.0348	nu hat (KM)	8.921
Approximate Chi Square Value (8.92, α)	3.28	Adjusted Chi Square Value (8.92, β)	3.241
95% Gamma Approximate KM-UCL (use when n>=50)	4.033	95% Gamma Adjusted KM-UCL (use when n<50)	4.082

Gamma (KM) may not be used when k hat (KM) is < 0.1

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as < 0.1

For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.001	Mean	1.485
Maximum	81	Median	0.0195
SD	7.973	CV	5.37
k hat (MLE)	0.217	k star (bias corrected MLE)	0.217
Theta hat (MLE)	6.831	Theta star (bias corrected MLE)	6.828
nu hat (MLE)	55.64	nu star (bias corrected)	55.66
MLE Mean (bias corrected)	1.485	MLE Sd (bias corrected)	3.184
		Adjusted Level of Significance (β)	0.0481
Approximate Chi Square Value (55.66, α)	39.52	Adjusted Chi Square Value (55.66, β)	39.36
95% Gamma Approximate UCL (use when n>=50)	2.091	95% Gamma Adjusted UCL (use when n<50)	2.099

Lognormal GOF Test on Detected Observations Only

Lilliefors Test Statistic	0.0722	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.0961	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	1.483	Mean in Log Scale	-3.325
SD in Original Scale	7.973	SD in Log Scale	2.692
95% t UCL (assumes normality of ROS data)	2.651	95% Percentile Bootstrap UCL	2.768
95% BCA Bootstrap UCL	3.514	95% Bootstrap t UCL	4.496
95% H-UCL (Log ROS)	3.597		

UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed

KM Mean (logged)	-3.311	95% H-UCL (KM -Log)	2.727
KM SD (logged)	2.603	95% Critical H Value (KM-Log)	4.005
KM Standard Error of Mean (logged)	0.239		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	1.483	Mean in Log Scale	-3.141
SD in Original Scale	7.973	SD in Log Scale	2.448
95% t UCL (Assumes normality)	2.651	95% H-Stat UCL	1.978

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Lognormal Distributed at 5% Significance Level

Suggested UCL to Use

97.5% KM (Chebyshev) UCL	5.893

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Newport_RA_SO_SVOCs|DIBENZ[A,H]ANTHRACENE

General Statistics

Total Number of Observations	128	Number of Distinct Observations	77
		Number of Missing Observations	6
Number of Detects	67	Number of Non-Detects	61
Number of Distinct Detects	57	Number of Distinct Non-Detects	24
Minimum Detect	7.3000E-4	Minimum Non-Detect	0.0069
Maximum Detect	5.5	Maximum Non-Detect	15
Variance Detects	0.573	Percent Non-Detects	47.66%
Mean Detects	0.208	SD Detects	0.757
Median Detects	0.041	CV Detects	3.646
Skewness Detects	6.009	Kurtosis Detects	38.84
Mean of Logged Detects	-3.499	SD of Logged Detects	1.955

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.285	**Normal GOF Test on Detected Observations Only**	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.414	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.108	Detected Data Not Normal at 5% Significance Level	

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

Mean	0.112	Standard Error of Mean	0.0497
SD	0.555	95% KM (BCA) UCL	0.203
95% KM (t) UCL	0.194	95% KM (Percentile Bootstrap) UCL	0.203
95% KM (z) UCL	0.194	95% KM Bootstrap t UCL	0.429
90% KM Chebyshev UCL	0.261	95% KM Chebyshev UCL	0.329
97.5% KM Chebyshev UCL	0.422	99% KM Chebyshev UCL	0.606

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	4.002	**Anderson-Darling GOF Test**	
5% A-D Critical Value	0.853	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.192	**Kolmogrov-Smirnoff GOF**	
5% K-S Critical Value	0.118	Detected Data Not Gamma Distributed at 5% Significance Level	

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.349	k star (bias corrected MLE)	0.343
Theta hat (MLE)	0.595	Theta star (bias corrected MLE)	0.605
nu hat (MLE)	46.78	nu star (bias corrected)	46.02
MLE Mean (bias corrected)	0.208	MLE Sd (bias corrected)	0.354

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	0.0408	nu hat (KM)	10.43
Approximate Chi Square Value (10.43, α)	4.215	Adjusted Chi Square Value (10.43, β)	4.17
95% Gamma Approximate KM-UCL (use when n>=50)	0.278	95% Gamma Adjusted KM-UCL (use when n<50)	0.28

Gamma (KM) may not be used when k hat (KM) is < 0.1

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as < 0.1

For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	7.3000E-4	Mean	0.113
Maximum	5.5	Median	0.01
SD	0.555	CV	4.89
k hat (MLE)	0.362	k star (bias corrected MLE)	0.358
Theta hat (MLE)	0.314	Theta star (bias corrected MLE)	0.317
nu hat (MLE)	92.57	nu star (bias corrected)	91.73
MLE Mean (bias corrected)	0.113	MLE Sd (bias corrected)	0.19
		Adjusted Level of Significance (β)	0.0481
Approximate Chi Square Value (91.73, α)	70.65	Adjusted Chi Square Value (91.73, β)	70.44
95% Gamma Approximate UCL (use when n>=50)	0.147	95% Gamma Adjusted UCL (use when n<50)	0.148

Lognormal GOF Test on Detected Observations Only

Lilliefors Test Statistic	0.104	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.108	Detected Data appear Lognormal at 5% Significance Level	

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.111	Mean in Log Scale	-4.584
SD in Original Scale	0.555	SD in Log Scale	1.926
95% t UCL (assumes normality of ROS data)	0.192	95% Percentile Bootstrap UCL	0.205
95% BCA Bootstrap UCL	0.244	95% Bootstrap t UCL	0.432
95% H-UCL (Log ROS)	0.112		

UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed

KM Mean (logged)	-4.665	95% H-UCL (KM -Log)	0.12
KM SD (logged)	1.987	95% Critical H Value (KM-Log)	3.245
KM Standard Error of Mean (logged)	0.202		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.176	Mean in Log Scale	-4.088
SD in Original Scale	0.856	SD in Log Scale	1.777
95% t UCL (Assumes normality)	0.301	95% H-Stat UCL	0.131

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Lognormal Distributed at 5% Significance Level

Suggested UCL to Use

97.5% KM (Chebyshev) UCL	0.422

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Newport_RA_SO_SVOCs|INDENO[1,2,3-CD]PYRENE

General Statistics

Total Number of Observations	128	Number of Distinct Observations	83
		Number of Missing Observations	6
Number of Detects	80	Number of Non-Detects	48
Number of Distinct Detects	72	Number of Distinct Non-Detects	18
Minimum Detect	8.9000E-4	Minimum Non-Detect	0.007
Maximum Detect	44	Maximum Non-Detect	0.41
Variance Detects	28.48	Percent Non-Detects	37.5%
Mean Detects	1.141	SD Detects	5.337
Median Detects	0.0675	CV Detects	4.678
Skewness Detects	7.028	Kurtosis Detects	54.35
Mean of Logged Detects	-2.749	SD of Logged Detects	2.255

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.235	**Normal GOF Test on Detected Observations Only**
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.465	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.0991	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

Mean	0.716	Standard Error of Mean	0.376
SD	4.229	95% KM (BCA) UCL	1.449
95% KM (t) UCL	1.339	95% KM (Percentile Bootstrap) UCL	1.428
95% KM (z) UCL	1.334	95% KM Bootstrap t UCL	2.733
90% KM Chebyshev UCL	1.844	95% KM Chebyshev UCL	2.355
97.5% KM Chebyshev UCL	3.065	99% KM Chebyshev UCL	4.458

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	7.996	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.891	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.264	**Kolmogrov-Smirnoff GOF**
5% K-S Critical Value	0.11	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.247	k star (bias corrected MLE)	0.246
Theta hat (MLE)	4.619	Theta star (bias corrected MLE)	4.636
nu hat (MLE)	39.52	nu star (bias corrected)	39.37
MLE Mean (bias corrected)	1.141	MLE Sd (bias corrected)	2.3

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	0.0286	nu hat (KM)	7.332
Approximate Chi Square Value (7.33, α)	2.355	Adjusted Chi Square Value (7.33, β)	2.323
95% Gamma Approximate KM-UCL (use when n>=50)	2.228	95% Gamma Adjusted KM-UCL (use when n<50)	2.259

Gamma (KM) may not be used when k hat (KM) is < 0.1

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as < 0.1

For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	8.9000E-4	Mean	0.717
Maximum	44	Median	0.01
SD	4.245	CV	5.922
k hat (MLE)	0.231	k star (bias corrected MLE)	0.231
Theta hat (MLE)	3.102	Theta star (bias corrected MLE)	3.104
nu hat (MLE)	59.16	nu star (bias corrected)	59.11
MLE Mean (bias corrected)	0.717	MLE Sd (bias corrected)	1.492
		Adjusted Level of Significance (β)	0.0481
Approximate Chi Square Value (59.11, α)	42.43	Adjusted Chi Square Value (59.11, β)	42.27
95% Gamma Approximate UCL (use when n>=50)	0.999	95% Gamma Adjusted UCL (use when n<50)	1.002

Lognormal GOF Test on Detected Observations Only

Lilliefors Test Statistic	0.0712	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.0991	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Approximate Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.715	Mean in Log Scale	-3.79

SD in Original Scale	4.245	SD in Log Scale	2.319
95% t UCL (assumes normality of ROS data)	1.337	95% Percentile Bootstrap UCL	1.405
95% BCA Bootstrap UCL	1.816	95% Bootstrap t UCL	2.68
95% H-UCL (Log ROS)	0.704		

UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed

KM Mean (logged)	-3.827	95% H-UCL (KM -Log)	0.656
KM SD (logged)	2.307	95% Critical H Value (KM-Log)	3.634
KM Standard Error of Mean (logged)	0.214		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.719	Mean in Log Scale	-3.549
SD in Original Scale	4.245	SD in Log Scale	2.125
95% t UCL (Assumes normality)	1.341	95% H-Stat UCL	0.523

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Approximate Lognormal Distributed at 5% Significance Level

Suggested UCL to Use

97.5% KM (Chebyshev) UCL	3.065

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

NITROGLYCERIN

General Statistics

Total Number of Observations	36	Number of Distinct Observations	15
Number of Detects	7	Number of Non-Detects	29
Number of Distinct Detects	7	Number of Distinct Non-Detects	8
Minimum Detect	0.15	Minimum Non-Detect	0.33
Maximum Detect	4	Maximum Non-Detect	0.4
Variance Detects	1.892	Percent Non-Detects	80.56%
Mean Detects	0.9	SD Detects	1.376
Median Detects	0.44	CV Detects	1.528
Skewness Detects	2.576	Kurtosis Detects	6.722
Mean of Logged Detects	-0.708	SD of Logged Detects	1.035

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.563	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.803	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.449	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.335	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

Mean	0.371	Standard Error of Mean	0.118
SD	0.622	95% KM (BCA) UCL	0.605

95% KM (t) UCL	0.57	95% KM (Percentile Bootstrap) UCL	0.586
95% KM (z) UCL	0.564	95% KM Bootstrap t UCL	0.985
90% KM Chebyshev UCL	0.724	95% KM Chebyshev UCL	0.883
97.5% KM Chebyshev UCL	1.105	99% KM Chebyshev UCL	1.541

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.905	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.729	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.376	**Kolmogrov-Smirnoff GOF**
5% K-S Critical Value	0.32	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.962	k star (bias corrected MLE)	0.645
Theta hat (MLE)	0.935	Theta star (bias corrected MLE)	1.395
nu hat (MLE)	13.47	nu star (bias corrected)	9.033
MLE Mean (bias corrected)	0.9	MLE Sd (bias corrected)	1.12

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	0.356	nu hat (KM)	25.63
Approximate Chi Square Value (25.63, α)	15.1	Adjusted Chi Square Value (25.63, β)	14.73
95% Gamma Approximate KM-UCL (use when n>=50)	0.63	95% Gamma Adjusted KM-UCL (use when n<50)	0.646

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as < 0.1

For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	0.267
Maximum	4	Median	0.0809
SD	0.668	CV	2.504
k hat (MLE)	0.424	k star (bias corrected MLE)	0.408
Theta hat (MLE)	0.629	Theta star (bias corrected MLE)	0.655
nu hat (MLE)	30.56	nu star (bias corrected)	29.35
MLE Mean (bias corrected)	0.267	MLE Sd (bias corrected)	0.418
		Adjusted Level of Significance (β)	0.0428
Approximate Chi Square Value (29.35, α)	17.98	Adjusted Chi Square Value (29.35, β)	17.58
95% Gamma Approximate UCL (use when n>=50)	0.435	95% Gamma Adjusted UCL (use when n<50)	0.446

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.865	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.803	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.295	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.335	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.364	Mean in Log Scale	-1.387
SD in Original Scale	0.636	SD in Log Scale	0.685
95% t UCL (assumes normality of ROS data)	0.543	95% Percentile Bootstrap UCL	0.566
95% BCA Bootstrap UCL	0.698	95% Bootstrap t UCL	1.065
95% H-UCL (Log ROS)	0.401		

UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed

KM Mean (logged)	-1.313	95% H-UCL (KM -Log)	0.39
KM SD (logged)	0.589	95% Critical H Value (KM-Log)	1.979
KM Standard Error of Mean (logged)	0.197		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.325	Mean in Log Scale	-1.495
SD in Original Scale	0.638	SD in Log Scale	0.583
95% t UCL (Assumes normality)	0.504	95% H-Stat UCL	0.323

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Lognormal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (BCA) UCL 0.605

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Newport_RA_SO_Pesticides|4,4-DDT

General Statistics

Total Number of Observations	9	Number of Distinct Observations	9
		Number of Missing Observations	67
Number of Detects	5	Number of Non-Detects	4
Number of Distinct Detects	5	Number of Distinct Non-Detects	4
Minimum Detect	7.4000E-4	Minimum Non-Detect	3.3000E-4
Maximum Detect	19	Maximum Non-Detect	0.0017
Variance Detects	69.9	Percent Non-Detects	44.44%
Mean Detects	4.083	SD Detects	8.361
Median Detects	0.0094	CV Detects	2.048
Skewness Detects	2.208	Kurtosis Detects	4.892
Mean of Logged Detects	-2.739	SD of Logged Detects	4.214

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use
guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.
For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).
Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.0

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.601	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.762	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.426	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.396	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

Mean	2.269	Standard Error of Mean	2.211
SD	5.931	95% KM (BCA) UCL	6.49
95% KM (t) UCL	6.379	95% KM (Percentile Bootstrap) UCL	6.336
95% KM (z) UCL	5.905	95% KM Bootstrap t UCL	3412
90% KM Chebyshev UCL	8.9	95% KM Chebyshev UCL	11.9
97.5% KM Chebyshev UCL	16.07	99% KM Chebyshev UCL	24.26

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.466	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.794	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.334	**Kolmogrov-Smirnoff GOF**
5% K-S Critical Value	0.391	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.18	k star (bias corrected MLE)	0.205
Theta hat (MLE)	22.64	Theta star (bias corrected MLE)	19.87
nu hat (MLE)	1.804	nu star (bias corrected)	2.055
MLE Mean (bias corrected)	4.083	MLE Sd (bias corrected)	9.008

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	0.146	nu hat (KM)	2.633
Approximate Chi Square Value (2.63, α)	0.273	Adjusted Chi Square Value (2.63, β)	0.173
95% Gamma Approximate KM-UCL (use when n>=50)	21.91	95% Gamma Adjusted KM-UCL (use when n<50)	34.59

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as < 0.1

For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	7.4000E-4	Mean	2.273
Maximum	19	Median	0.01
SD	6.29	CV	2.767
k hat (MLE)	0.172	k star (bias corrected MLE)	0.189
Theta hat (MLE)	13.24	Theta star (bias corrected MLE)	12.06
nu hat (MLE)	3.09	nu star (bias corrected)	3.393
MLE Mean (bias corrected)	2.273	MLE Sd (bias corrected)	5.235
		Adjusted Level of Significance (β)	0.0231
Approximate Chi Square Value (3.39, α)	0.498	Adjusted Chi Square Value (3.39, β)	0.32
95% Gamma Approximate UCL (use when n>=50)	15.49	95% Gamma Adjusted UCL (use when n<50)	24.11

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.915	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.762	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.276	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.396	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	2.268	Mean in Log Scale	-7.28
SD in Original Scale	6.291	SD in Log Scale	6.207
95% t UCL (assumes normality of ROS data)	6.168	95% Percentile Bootstrap UCL	6.336
95% BCA Bootstrap UCL	8.447	95% Bootstrap t UCL	3909
95% H-UCL (Log ROS)	2.549E+21		

UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed

KM Mean (logged)	-5.025	95% H-UCL (KM -Log)	12313713
KM SD (logged)	3.803	95% Critical H Value (KM-Log)	10.5
KM Standard Error of Mean (logged)	1.42		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	2.269	Mean in Log Scale	-5.111
SD in Original Scale	6.291	SD in Log Scale	4.126
95% t UCL (Assumes normality)	6.168	95% H-Stat UCL	4.779E+8

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Gamma Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (BCA) UCL	6.49	95% GROS Adjusted Gamma UCL	24.11

95% Adjusted Gamma KM-UCL 34.59

Warning: Recommended UCL exceeds the maximum observation

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Newport_RA_SO_PCBs|AROCLOR-1260

General Statistics

Total Number of Observations	11	Number of Distinct Observations	11
		Number of Missing Observations	67
Number of Detects	5	Number of Non-Detects	6
Number of Distinct Detects	5	Number of Distinct Non-Detects	6
Minimum Detect	0.0098	Minimum Non-Detect	0.0016
Maximum Detect	270	Maximum Non-Detect	0.019
Variance Detects	14157	Percent Non-Detects	54.55%
Mean Detects	57.62	SD Detects	119
Median Detects	0.05	CV Detects	2.065
Skewness Detects	2.213	Kurtosis Detects	4.912
Mean of Logged Detects	-0.653	SD of Logged Detects	4.611

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.596	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.762	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.43	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.396	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

Mean	26.19	Standard Error of Mean	26.05
SD	77.27	95% KM (BCA) UCL	73.65
95% KM (t) UCL	73.4	95% KM (Percentile Bootstrap) UCL	73.64
95% KM (z) UCL	69.04	95% KM Bootstrap t UCL	107343
90% KM Chebyshev UCL	104.3	95% KM Chebyshev UCL	139.7
97.5% KM Chebyshev UCL	188.9	99% KM Chebyshev UCL	285.4

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.541	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.811	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.343	**Kolmogrov-Smirnoff GOF**
5% K-S Critical Value	0.395	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.162	k star (bias corrected MLE)	0.198
Theta hat (MLE)	356.7	Theta star (bias corrected MLE)	291.1
nu hat (MLE)	1.615	nu star (bias corrected)	1.979
MLE Mean (bias corrected)	57.62	MLE Sd (bias corrected)	129.5

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	0.115	nu hat (KM)	2.527
Approximate Chi Square Value (2.53, α)	0.247	Adjusted Chi Square Value (2.53, β)	0.175
95% Gamma Approximate KM-UCL (use when n>=50)	267.6	95% Gamma Adjusted KM-UCL (use when n<50)	379.2

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs
GROS may not be used when kstar of detected data is small such as < 0.1
For such situations, GROS method tends to yield inflated values of UCLs and BTVs
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.0098	Mean	26.19
Maximum	270	Median	0.01
SD	81.04	CV	3.094
k hat (MLE)	0.129	k star (bias corrected MLE)	0.155

Theta hat (MLE)	202.7	Theta star (bias corrected MLE)	169.4
nu hat (MLE)	2.843	nu star (bias corrected)	3.401
MLE Mean (bias corrected)	26.19	MLE Sd (bias corrected)	66.62
		Adjusted Level of Significance (β)	0.0278
Approximate Chi Square Value (3.40, α)	0.501	Adjusted Chi Square Value (3.40, β)	0.357
95% Gamma Approximate UCL (use when n>=50)	178	95% Gamma Adjusted UCL (use when n<50)	249.7

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.848	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.762	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.294	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.396	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	26.19	Mean in Log Scale	-7.187
SD in Original Scale	81.04	SD in Log Scale	6.94
95% t UCL (assumes normality of ROS data)	70.48	95% Percentile Bootstrap UCL	73.64
95% BCA Bootstrap UCL	99.82	95% Bootstrap t UCL	141002
95% H-UCL (Log ROS)	3.144E+23		

UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed

KM Mean (logged)	-3.755	95% H-UCL (KM -Log)	15316503
KM SD (logged)	3.982	95% Critical H Value (KM-Log)	9.827
KM Standard Error of Mean (logged)	1.346		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	26.19	Mean in Log Scale	-3.769
SD in Original Scale	81.04	SD in Log Scale	4.238
95% t UCL (Assumes normality)	70.48	95% H-Stat UCL	2.203E+8

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Gamma Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	73.4	95% GROS Adjusted Gamma UCL	249.7
95% Adjusted Gamma KM-UCL	379.2		

Warning: Recommended UCL exceeds the maximum observation

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Newport_RA_SO_Metals|ALUMINUM

General Statistics

Total Number of Observations	80	Number of Distinct Observations	73
		Number of Missing Observations	54
Minimum	3380	Mean	8944
Maximum	18600	Median	9120
SD	2450	Std. Error of Mean	274
Coefficient of Variation	0.274	Skewness	0.69

Normal GOF Test

Shapiro Wilk Test Statistic	0.973	**Shapiro Wilk GOF Test**
5% Shapiro Wilk P Value	0.299	Data appear Normal at 5% Significance Level

Lilliefors Test Statistic	0.0627	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.0991	Data appear Normal at 5% Significance Level

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	9400	95% Adjusted-CLT UCL (Chen-1995)	9417
		95% Modified-t UCL (Johnson-1978)	9404

Gamma GOF Test

A-D Test Statistic	0.373	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.751	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.0815	**Kolmogrov-Smirnoff Gamma GOF Test**
5% K-S Critical Value	0.0996	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	13.39	k star (bias corrected MLE)	12.9
Theta hat (MLE)	667.9	Theta star (bias corrected MLE)	693.5
nu hat (MLE)	2143	nu star (bias corrected)	2064
MLE Mean (bias corrected)	8944	MLE Sd (bias corrected)	2491
		Approximate Chi Square Value (0.05)	1959
Adjusted Level of Significance	0.047	Adjusted Chi Square Value	1957

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	9421	95% Adjusted Gamma UCL (use when n<50)	9430

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.982	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk P Value	0.687	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.0954	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.0991	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	8.126	Mean of logged Data	9.061
Maximum of Logged Data	9.831	SD of logged Data	0.282

Assuming Lognormal Distribution

95% H-UCL	9471	90% Chebyshev (MVUE) UCL	9819
95% Chebyshev (MVUE) UCL	10210	97.5% Chebyshev (MVUE) UCL	10752
99% Chebyshev (MVUE) UCL	11817		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	9395	95% Jackknife UCL	9400
95% Standard Bootstrap UCL	9393	95% Bootstrap-t UCL	9398
95% Hall's Bootstrap UCL	9438	95% Percentile Bootstrap UCL	9390
95% BCA Bootstrap UCL	9398		
90% Chebyshev(Mean, Sd) UCL	9766	95% Chebyshev(Mean, Sd) UCL	10138

97.5% Chebyshev(Mean, Sd) UCL	10655	99% Chebyshev(Mean, Sd) UCL	11670

Suggested UCL to Use

95% Student's-t UCL	9400

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

Newport_RA_SO_Metals|ANTIMONY

General Statistics

Total Number of Observations	80	Number of Distinct Observations	50
		Number of Missing Observations	54
Number of Detects	72	Number of Non-Detects	8
Number of Distinct Detects	43	Number of Distinct Non-Detects	8
Minimum Detect	0.05	Minimum Non-Detect	0.073
Maximum Detect	396	Maximum Non-Detect	0.92
Variance Detects	2637	Percent Non-Detects	10%
Mean Detects	8.763	SD Detects	51.35
Median Detects	0.225	CV Detects	5.86
Skewness Detects	6.835	Kurtosis Detects	48.77
Mean of Logged Detects	-1.122	SD of Logged Detects	1.586

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.183	**Normal GOF Test on Detected Observations Only**
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.481	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.104	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

Mean	7.898	Standard Error of Mean	5.454
SD	48.44	95% KM (BCA) UCL	17.59
95% KM (t) UCL	16.98	95% KM (Percentile Bootstrap) UCL	17.88
95% KM (z) UCL	16.87	95% KM Bootstrap t UCL	285
90% KM Chebyshev UCL	24.26	95% KM Chebyshev UCL	31.67
97.5% KM Chebyshev UCL	41.96	99% KM Chebyshev UCL	62.17

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	17.39	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.905	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.398	**Kolmogrov-Smirnoff GOF**
5% K-S Critical Value	0.116	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.22	k star (bias corrected MLE)	0.22
Theta hat (MLE)	39.8	Theta star (bias corrected MLE)	39.79
nu hat (MLE)	31.71	nu star (bias corrected)	31.72
MLE Mean (bias corrected)	8.763	MLE Sd (bias corrected)	18.67

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	0.0266	nu hat (KM)	4.253
Approximate Chi Square Value (4.25, α)	0.824	Adjusted Chi Square Value (4.25, β)	0.798
95% Gamma Approximate KM-UCL (use when n>=50)	40.76	95% Gamma Adjusted KM-UCL (use when n<50)	42.1

Gamma (KM) may not be used when k hat (KM) is < 0.1

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as < 0.1

For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	7.888
Maximum	396	Median	0.185
SD	48.75	CV	6.181
k hat (MLE)	0.207	k star (bias corrected MLE)	0.208
Theta hat (MLE)	38.1	Theta star (bias corrected MLE)	37.99
nu hat (MLE)	33.13	nu star (bias corrected)	33.22
MLE Mean (bias corrected)	7.888	MLE Sd (bias corrected)	17.31
		Adjusted Level of Significance (β)	0.047
Approximate Chi Square Value (33.22, α)	21.04	Adjusted Chi Square Value (33.22, β)	20.86
95% Gamma Approximate UCL (use when n>=50)	12.45	95% Gamma Adjusted UCL (use when n<50)	12.56

Lognormal GOF Test on Detected Observations Only

Lilliefors Test Statistic	0.169	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.104	Detected Data Not Lognormal at 5% Significance Level

Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	7.894	Mean in Log Scale	-1.324
SD in Original Scale	48.75	SD in Log Scale	1.65
95% t UCL (assumes normality of ROS data)	16.97	95% Percentile Bootstrap UCL	17.7
95% BCA Bootstrap UCL	25.22	95% Bootstrap t UCL	286.4
95% H-UCL (Log ROS)	1.813		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	7.901	Mean in Log Scale	-1.268
SD in Original Scale	48.75	SD in Log Scale	1.6
95% t UCL (Assumes normality)	16.97	95% H-Stat UCL	1.719

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

97.5% KM (Chebyshev) UCL	41.96

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Newport_RA_SO_Metals|ARSENIC

General Statistics

Total Number of Observations	115	Number of Distinct Observations	76
		Number of Missing Observations	19
Minimum	0.48	Mean	10.45
Maximum	130	Median	7.6
SD	14.58	Std. Error of Mean	1.36
Coefficient of Variation	1.396	Skewness	6.41

Normal GOF Test

Shapiro Wilk Test Statistic	0.401	**Shapiro Wilk GOF Test**
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.317	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.0826	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	12.7	95% Adjusted-CLT UCL (Chen-1995)	13.55
		95% Modified-t UCL (Johnson-1978)	12.84

Gamma GOF Test

A-D Test Statistic	5.16	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.767	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.169	**Kolmogrov-Smirnoff Gamma GOF Test**
5% K-S Critical Value	0.0869	Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	1.783	k star (bias corrected MLE)	1.743
Theta hat (MLE)	5.857	Theta star (bias corrected MLE)	5.994
nu hat (MLE)	410.2	nu star (bias corrected)	400.8
MLE Mean (bias corrected)	10.45	MLE Sd (bias corrected)	7.913
		Approximate Chi Square Value (0.05)	355.4
Adjusted Level of Significance	0.0479	Adjusted Chi Square Value	354.9

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	11.78	95% Adjusted Gamma UCL (use when n<50)	11.8

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.937	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk P Value	2.2030E-5	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.112	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.0826	Data Not Lognormal at 5% Significance Level

Data Not Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	-0.734	Mean of logged Data	2.04
Maximum of Logged Data	4.868	SD of logged Data	0.707

Assuming Lognormal Distribution

95% H-UCL	11.26	90% Chebyshev (MVUE) UCL	12.01
95% Chebyshev (MVUE) UCL	12.99	97.5% Chebyshev (MVUE) UCL	14.35
99% Chebyshev (MVUE) UCL	17.02		

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution (0.05)

Nonparametric Distribution Free UCLs

95% CLT UCL	12.68	95% Jackknife UCL	12.7
95% Standard Bootstrap UCL	12.71	95% Bootstrap-t UCL	15.73
95% Hall's Bootstrap UCL	22.88	95% Percentile Bootstrap UCL	12.96
95% BCA Bootstrap UCL	13.81		
90% Chebyshev(Mean, Sd) UCL	14.53	95% Chebyshev(Mean, Sd) UCL	16.37
97.5% Chebyshev(Mean, Sd) UCL	18.94	99% Chebyshev(Mean, Sd) UCL	23.98

Suggested UCL to Use

95% Chebyshev (Mean, Sd) UCL	16.37

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

Newport_RA_SO_Metals|CHROMIUM, TOTAL

General Statistics

Total Number of Observations	115	Number of Distinct Observations	64
		Number of Missing Observations	19
Minimum	5	Mean	12.17
Maximum	34.2	Median	11.5
SD	4.169	Std. Error of Mean	0.389
Coefficient of Variation	0.343	Skewness	2.544

Normal GOF Test

Shapiro Wilk Test Statistic	0.788	**Shapiro Wilk GOF Test**
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.196	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.0826	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	12.81	95% Adjusted-CLT UCL (Chen-1995)	12.9
		95% Modified-t UCL (Johnson-1978)	12.83

Gamma GOF Test

A-D Test Statistic	3.602	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.752	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.15	**Kolmogrov-Smirnoff Gamma GOF Test**

5% K-S Critical Value	0.0855	Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	11.05	k star (bias corrected MLE)	10.77
Theta hat (MLE)	1.101	Theta star (bias corrected MLE)	1.13
nu hat (MLE)	2541	nu star (bias corrected)	2476
MLE Mean (bias corrected)	12.17	MLE Sd (bias corrected)	3.708
		Approximate Chi Square Value (0.05)	2362
Adjusted Level of Significance	0.0479	Adjusted Chi Square Value	2360

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	12.76	95% Adjusted Gamma UCL (use when n<50)	12.76

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.927	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk P Value	9.7060E-7	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.128	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.0826	Data Not Lognormal at 5% Significance Level

Data Not Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	1.609	Mean of logged Data	2.453
Maximum of Logged Data	3.532	SD of logged Data	0.296

Assuming Lognormal Distribution

95% H-UCL	12.74	90% Chebyshev (MVUE) UCL	13.16
95% Chebyshev (MVUE) UCL	13.62	97.5% Chebyshev (MVUE) UCL	14.26
99% Chebyshev (MVUE) UCL	15.53		

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution (0.05)

Nonparametric Distribution Free UCLs

95% CLT UCL	12.8	95% Jackknife UCL	12.81
95% Standard Bootstrap UCL	12.8	95% Bootstrap-t UCL	12.96
95% Hall's Bootstrap UCL	13.05	95% Percentile Bootstrap UCL	12.81
95% BCA Bootstrap UCL	12.86		
90% Chebyshev(Mean, Sd) UCL	13.33	95% Chebyshev(Mean, Sd) UCL	13.86
97.5% Chebyshev(Mean, Sd) UCL	14.59	99% Chebyshev(Mean, Sd) UCL	16.03

Suggested UCL to Use

95% Student's-t UCL	12.81	or 95% Modified-t UCL	12.83

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

General Statistics

Total Number of Observations	80	Number of Distinct Observations	65
		Number of Missing Observations	54
Minimum	6.4	Mean	13.08
Maximum	33.4	Median	12.15
SD	5.282	Std. Error of Mean	0.591
Coefficient of Variation	0.404	Skewness	1.299

Normal GOF Test

Shapiro Wilk Test Statistic	0.893	**Shapiro Wilk GOF Test**
5% Shapiro Wilk P Value	1.8783E-7	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.139	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.0991	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	14.06	95% Adjusted-CLT UCL (Chen-1995)	14.14
		95% Modified-t UCL (Johnson-1978)	14.08

Gamma GOF Test

A-D Test Statistic	0.886	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.753	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.0951	**Kolmogrov-Smirnoff Gamma GOF Test**
5% K-S Critical Value	0.0998	Detected data appear Gamma Distributed at 5% Significance Level

Detected data follow Appr. Gamma Distribution at 5% Significance Level

Gamma Statistics

k hat (MLE)	7.215	k star (bias corrected MLE)	6.952
Theta hat (MLE)	1.813	Theta star (bias corrected MLE)	1.881
nu hat (MLE)	1154	nu star (bias corrected)	1112
MLE Mean (bias corrected)	13.08	MLE Sd (bias corrected)	4.961
		Approximate Chi Square Value (0.05)	1036
Adjusted Level of Significance	0.047	Adjusted Chi Square Value	1035

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50)	14.05	95% Adjusted Gamma UCL (use when n<50)	14.06

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.966	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk P Value	0.111	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.0774	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.0991	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	1.856	Mean of logged Data	2.5
Maximum of Logged Data	3.509	SD of logged Data	0.371

Assuming Lognormal Distribution

95% H-UCL	14.06	90% Chebyshev (MVUE) UCL	14.71
95% Chebyshev (MVUE) UCL	15.47	97.5% Chebyshev (MVUE) UCL	16.52

99% Chebyshev (MVUE) UCL	18.59

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	14.05	95% Jackknife UCL	14.06
95% Standard Bootstrap UCL	14.01	95% Bootstrap-t UCL	14.16
95% Hall's Bootstrap UCL	14.24	95% Percentile Bootstrap UCL	14.12
95% BCA Bootstrap UCL	14.16		
90% Chebyshev(Mean, Sd) UCL	14.85	95% Chebyshev(Mean, Sd) UCL	15.65
97.5% Chebyshev(Mean, Sd) UCL	16.77	99% Chebyshev(Mean, Sd) UCL	18.96

Suggested UCL to Use

95% Approximate Gamma UCL	14.05

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

Newport_RA_SO_Metals|IRON

General Statistics

Total Number of Observations	80	Number of Distinct Observations	74
		Number of Missing Observations	54
Minimum	8480	Mean	30510
Maximum	88500	Median	28800
SD	12282	Std. Error of Mean	1373
Coefficient of Variation	0.403	Skewness	1.505

Normal GOF Test

Shapiro Wilk Test Statistic	0.918	**Shapiro Wilk GOF Test**
5% Shapiro Wilk P Value	2.2507E-5	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.0989	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.0991	Data appear Normal at 5% Significance Level

Data appear Approximate Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	32795	95% Adjusted-CLT UCL (Chen-1995)	33015
		95% Modified-t UCL (Johnson-1978)	32834

Gamma GOF Test

A-D Test Statistic	0.287	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.753	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.0597	**Kolmogrov-Smirnoff Gamma GOF Test**
5% K-S Critical Value	0.0999	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	6.952	k star (bias corrected MLE)	6.699
Theta hat (MLE)	4389	Theta star (bias corrected MLE)	4554
nu hat (MLE)	1112	nu star (bias corrected)	1072
MLE Mean (bias corrected)	30510	MLE Sd (bias corrected)	11787
		Approximate Chi Square Value (0.05)	996.9
Adjusted Level of Significance	0.047	Adjusted Chi Square Value	995.6

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	32805	95% Adjusted Gamma UCL (use when n<50)	32849

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.994	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk P Value	0.996	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.0431	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.0991	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	9.045	Mean of logged Data	10.25
Maximum of Logged Data	11.39	SD of logged Data	0.388

Assuming Lognormal Distribution

95% H-UCL	33042	90% Chebyshev (MVUE) UCL	34625
95% Chebyshev (MVUE) UCL	36482	97.5% Chebyshev (MVUE) UCL	39060
99% Chebyshev (MVUE) UCL	44124		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	32768	95% Jackknife UCL	32795
95% Standard Bootstrap UCL	32804	95% Bootstrap-t UCL	33135
95% Hall's Bootstrap UCL	33354	95% Percentile Bootstrap UCL	32920
95% BCA Bootstrap UCL	32963		
90% Chebyshev(Mean, Sd) UCL	34629	95% Chebyshev(Mean, Sd) UCL	36495
97.5% Chebyshev(Mean, Sd) UCL	39086	99% Chebyshev(Mean, Sd) UCL	44173

Suggested UCL to Use

95% Student's-t UCL	32795

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

Newport_RA_SO_Metals|LEAD

General Statistics

Total Number of Observations	127	Number of Distinct Observations	102
		Number of Missing Observations	7
Minimum	4.3	Mean	381.4

Maximum	29900	Median	18.3
SD	2815	Std. Error of Mean	249.8
Coefficient of Variation	7.382	Skewness	9.716

Normal GOF Test

Shapiro Wilk Test Statistic	0.139	**Shapiro Wilk GOF Test**
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.473	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.0786	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	795.3	95% Adjusted-CLT UCL (Chen-1995)	1022
		95% Modified-t UCL (Johnson-1978)	831.2

Gamma GOF Test

A-D Test Statistic	26.35	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.884	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.33	**Kolmogrov-Smirnoff Gamma GOF Test**
5% K-S Critical Value	0.0902	Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	0.268	k star (bias corrected MLE)	0.267
Theta hat (MLE)	1425	Theta star (bias corrected MLE)	1431
nu hat (MLE)	67.99	nu star (bias corrected)	67.72
MLE Mean (bias corrected)	381.4	MLE Sd (bias corrected)	738.6
		Approximate Chi Square Value (0.05)	49.78
Adjusted Level of Significance	0.0481	Adjusted Chi Square Value	49.6

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	518.8	95% Adjusted Gamma UCL (use when n<50)	520.7

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.84	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk P Value	0	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.127	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.0786	Data Not Lognormal at 5% Significance Level

Data Not Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	1.459	Mean of logged Data	3.319
Maximum of Logged Data	10.31	SD of logged Data	1.395

Assuming Lognormal Distribution

95% H-UCL	100.6	90% Chebyshev (MVUE) UCL	108.3
95% Chebyshev (MVUE) UCL	124.7	97.5% Chebyshev (MVUE) UCL	147.6
99% Chebyshev (MVUE) UCL	192.4		

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution (0.05)

Nonparametric Distribution Free UCLs

95% CLT UCL	792.3	95% Jackknife UCL	795.3
95% Standard Bootstrap UCL	783.7	95% Bootstrap-t UCL	5818
95% Hall's Bootstrap UCL	5330	95% Percentile Bootstrap UCL	848.5
95% BCA Bootstrap UCL	1248		
90% Chebyshev(Mean, Sd) UCL	1131	95% Chebyshev(Mean, Sd) UCL	1470
97.5% Chebyshev(Mean, Sd) UCL	1941	99% Chebyshev(Mean, Sd) UCL	2867

Suggested UCL to Use

95% Chebyshev (Mean, Sd) UCL 1470

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

Newport_RA_SO_Metals|MANGANESE

General Statistics

Total Number of Observations	80	Number of Distinct Observations	72
		Number of Missing Observations	54
Minimum	168	Mean	615.7
Maximum	5750	Median	467.5
SD	714	Std. Error of Mean	79.83
Coefficient of Variation	1.16	Skewness	5.966

Normal GOF Test

Shapiro Wilk Test Statistic	0.39	**Shapiro Wilk GOF Test**
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.298	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.0991	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	748.6	95% Adjusted-CLT UCL (Chen-1995)	803.9
		95% Modified-t UCL (Johnson-1978)	757.5

Gamma GOF Test

A-D Test Statistic	5.068	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.761	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.169	**Kolmogrov-Smirnoff Gamma GOF Test**
5% K-S Critical Value	0.101	Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	2.611	k star (bias corrected MLE)	2.521
Theta hat (MLE)	235.8	Theta star (bias corrected MLE)	244.2
nu hat (MLE)	417.7	nu star (bias corrected)	403.4
MLE Mean (bias corrected)	615.7	MLE Sd (bias corrected)	387.8

		Approximate Chi Square Value (0.05)	357.8
Adjusted Level of Significance	0.047	Adjusted Chi Square Value	357

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	694.1	95% Adjusted Gamma UCL (use when n<50)	695.6

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.878	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk P Value	8.4432E-9	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.0983	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.0991	Data appear Lognormal at 5% Significance Level

Data appear Approximate Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	5.124	Mean of logged Data	6.219
Maximum of Logged Data	8.657	SD of logged Data	0.523

Assuming Lognormal Distribution

95% H-UCL	643	90% Chebyshev (MVUE) UCL	681.5
95% Chebyshev (MVUE) UCL	729.9	97.5% Chebyshev (MVUE) UCL	797
99% Chebyshev (MVUE) UCL	928.8		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	747	95% Jackknife UCL	748.6
95% Standard Bootstrap UCL	745.3	95% Bootstrap-t UCL	1050
95% Hall's Bootstrap UCL	1446	95% Percentile Bootstrap UCL	756.8
95% BCA Bootstrap UCL	827.1		
90% Chebyshev(Mean, Sd) UCL	855.2	95% Chebyshev(Mean, Sd) UCL	963.7
97.5% Chebyshev(Mean, Sd) UCL	1114	99% Chebyshev(Mean, Sd) UCL	1410

Suggested UCL to Use

95% Chebyshev (Mean, Sd) UCL	963.7

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

Newport_RA_SO_Metals|THALLIUM

General Statistics

Total Number of Observations	80	Number of Distinct Observations	17
		Number of Missing Observations	54
Number of Detects	78	Number of Non-Detects	2
Number of Distinct Detects	15	Number of Distinct Non-Detects	2
Minimum Detect	0.02	Minimum Non-Detect	0.46
Maximum Detect	0.26	Maximum Non-Detect	0.49
Variance Detects	0.00141	Percent Non-Detects	2.5%
Mean Detects	0.0717	SD Detects	0.0375

Median Detects	0.06	CV Detects	0.524
Skewness Detects	2.061	Kurtosis Detects	8.068
Mean of Logged Detects	-2.759	SD of Logged Detects	0.512

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.856	**Normal GOF Test on Detected Observations Only**
5% Shapiro Wilk P Value	2.620E-10	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.135	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.1	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

Mean	0.0717	Standard Error of Mean	0.00425
SD	0.0373	95% KM (BCA) UCL	0.0794
95% KM (t) UCL	0.0787	95% KM (Percentile Bootstrap) UCL	0.079
95% KM (z) UCL	0.0787	95% KM Bootstrap t UCL	0.0801
90% KM Chebyshev UCL	0.0844	95% KM Chebyshev UCL	0.0902
97.5% KM Chebyshev UCL	0.0982	99% KM Chebyshev UCL	0.114

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.978	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.756	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.117	**Kolmogrov-Smirnoff GOF**
5% K-S Critical Value	0.101	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	4.225	k star (bias corrected MLE)	4.071
Theta hat (MLE)	0.017	Theta star (bias corrected MLE)	0.0176
nu hat (MLE)	659	nu star (bias corrected)	635
MLE Mean (bias corrected)	0.0717	MLE Sd (bias corrected)	0.0355

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	3.693	nu hat (KM)	590.9
Approximate Chi Square Value (590.86, α)	535.5	Adjusted Chi Square Value (590.86, β)	534.5
95% Gamma Approximate KM-UCL (use when n>=50)	0.0791	95% Gamma Adjusted KM-UCL (use when n<50)	0.0792

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as < 0.1

For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.02	Mean	0.0715
Maximum	0.26	Median	0.0631
SD	0.0371	CV	0.518
k hat (MLE)	4.326	k star (bias corrected MLE)	4.172
Theta hat (MLE)	0.0165	Theta star (bias corrected MLE)	0.0171
nu hat (MLE)	692.2	nu star (bias corrected)	667.6
MLE Mean (bias corrected)	0.0715	MLE Sd (bias corrected)	0.035
		Adjusted Level of Significance (β)	0.047
Approximate Chi Square Value (667.60, α)	608.7	Adjusted Chi Square Value (667.60, β)	607.6
95% Gamma Approximate UCL (use when n>=50)	0.0785	95% Gamma Adjusted UCL (use when n<50)	0.0786

Lognormal GOF Test on Detected Observations Only

Lilliefors Test Statistic	0.15	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.1	Detected Data Not Lognormal at 5% Significance Level

Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.0715	Mean in Log Scale	-2.759
SD in Original Scale	0.0371	SD in Log Scale	0.506
95% t UCL (assumes normality of ROS data)	0.0784	95% Percentile Bootstrap UCL	0.0784
95% BCA Bootstrap UCL	0.0788	95% Bootstrap t UCL	0.0799
95% H-UCL (Log ROS)	0.0801		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	0.0758	Mean in Log Scale	-2.726
SD in Original Scale	0.0453	SD in Log Scale	0.547
95% t UCL (Assumes normality)	0.0842	95% H-Stat UCL	0.0854

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (BCA) UCL	0.0794

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

SEDIMENT

UCL Statistics for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	8/8/2014 9:41:05 AM
From File	MRP01_RI_SE_0-1ft_HH_080714_For ProUCL-SCz_c.xls
Full Precision	OFF
Confidence Coefficient	95%
mber of Bootstrap Operations	2000

Newport_RA_SE_Metals|ANTIMONY

General Statistics

Total Number of Observations	10	Number of Distinct Observations	10
		Number of Missing Observations	0
Minimum	0.23	Mean	7.549
Maximum	36.7	Median	1.95
SD	11.85	Std. Error of Mean	3.748
Coefficient of Variation	1.57	Skewness	2.004

Normal GOF Test

Shapiro Wilk Test Statistic	0.682	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.842	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.368	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.28	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	14.42	95% Adjusted-CLT UCL (Chen-1995)	16.25
		95% Modified-t UCL (Johnson-1978)	14.82

Gamma GOF Test

A-D Test Statistic	0.661	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.775	etected data appear Gamma Distributed at 5% Significance Lev
K-S Test Statistic	0.285	**Kolmogrov-Smirnoff Gamma GOF Test**
5% K-S Critical Value	0.28	Data Not Gamma Distributed at 5% Significance Level

Detected data follow Appr. Gamma Distribution at 5% Significance Level

Gamma Statistics

k hat (MLE)	0.528	k star (bias corrected MLE)	0.437
Theta hat (MLE)	14.29	Theta star (bias corrected MLE)	17.29
nu hat (MLE)	10.57	nu star (bias corrected)	8.731
MLE Mean (bias corrected)	7.549	MLE Sd (bias corrected)	11.43
		Approximate Chi Square Value (0.05)	3.165
Adjusted Level of Significance	0.0267	Adjusted Chi Square Value	2.612

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50)	20.82	95% Adjusted Gamma UCL (use when n<50)	25.24

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.93	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.842	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.189	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.28	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	-1.47	Mean of logged Data	0.83
Maximum of Logged Data	3.603	SD of logged Data	1.679

Assuming Lognormal Distribution

95% H-UCL	124.9	90% Chebyshev (MVUE) UCL	19.37
95% Chebyshev (MVUE) UCL	24.86	97.5% Chebyshev (MVUE) UCL	32.48
99% Chebyshev (MVUE) UCL	47.44		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	13.71	95% Jackknife UCL	14.42
95% Standard Bootstrap UCL	13.24	95% Bootstrap-t UCL	23.59
95% Hall's Bootstrap UCL	27.55	95% Percentile Bootstrap UCL	13.68
95% BCA Bootstrap UCL	16.74		
90% Chebyshev(Mean, Sd) UCL	18.79	95% Chebyshev(Mean, Sd) UCL	23.89
97.5% Chebyshev(Mean, Sd) UCL	30.96	99% Chebyshev(Mean, Sd) UCL	44.84

Suggested UCL to Use

95% Adjusted Gamma UCL	25.24

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.

Newport_RA_SE_Metals|ARSENIC

General Statistics

Total Number of Observations	10	Number of Distinct Observations	10
		Number of Missing Observations	0
Minimum	5.92	Mean	14.38
Maximum	38.1	Median	11.6
SD	9.237	Std. Error of Mean	2.921
Coefficient of Variation	0.642	Skewness	2.165

Normal GOF Test

Shapiro Wilk Test Statistic	0.769	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.842	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.21	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.28	Data appear Normal at 5% Significance Level

Data appear Approximate Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	19.74	95% Adjusted-CLT UCL (Chen-1995)	21.32
		95% Modified-t UCL (Johnson-1978)	20.07

Gamma GOF Test

A-D Test Statistic	0.407	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.73	etected data appear Gamma Distributed at 5% Significance Lev
K-S Test Statistic	0.173	**Kolmogrov-Smirnoff Gamma GOF Test**
5% K-S Critical Value	0.268	etected data appear Gamma Distributed at 5% Significance Lev

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	3.79	k star (bias corrected MLE)	2.72
Theta hat (MLE)	3.795	Theta star (bias corrected MLE)	5.288
nu hat (MLE)	75.8	nu star (bias corrected)	54.39
MLE Mean (bias corrected)	14.38	MLE Sd (bias corrected)	8.721
		Approximate Chi Square Value (0.05)	38.45
Adjusted Level of Significance	0.0267	Adjusted Chi Square Value	36.13

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	20.35	95% Adjusted Gamma UCL (use when n<50)	21.65

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.957	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.842	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.139	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.28	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	1.778	Mean of logged Data	2.528
Maximum of Logged Data	3.64	SD of logged Data	0.523

Assuming Lognormal Distribution

95% H-UCL	21.27	90% Chebyshev (MVUE) UCL	21.3
95% Chebyshev (MVUE) UCL	24.54	97.5% Chebyshev (MVUE) UCL	29.04
99% Chebyshev (MVUE) UCL	37.87		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	19.19	95% Jackknife UCL	19.74
95% Standard Bootstrap UCL	18.98	95% Bootstrap-t UCL	25.09
95% Hall's Bootstrap UCL	39.4	95% Percentile Bootstrap UCL	19.11
95% BCA Bootstrap UCL	20.85		
90% Chebyshev(Mean, Sd) UCL	23.14	95% Chebyshev(Mean, Sd) UCL	27.11
97.5% Chebyshev(Mean, Sd) UCL	32.62	99% Chebyshev(Mean, Sd) UCL	43.44

Suggested UCL to Use

95% Student's-t UCL	19.74

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

Newport_RA_SE_Metals|CHROMIUM, TOTAL

General Statistics

Total Number of Observations	10	Number of Distinct Observations	9
		Number of Missing Observations	0
Minimum	10.2	Mean	13.01
Maximum	16.2	Median	12.9
SD	1.811	Std. Error of Mean	0.573
Coefficient of Variation	0.139	Skewness	0.371

Normal GOF Test

Shapiro Wilk Test Statistic	0.966	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.842	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.193	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.28	Data appear Normal at 5% Significance Level

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	14.06	95% Adjusted-CLT UCL (Chen-1995)	14.02
		95% Modified-t UCL (Johnson-1978)	14.07

Gamma GOF Test

A-D Test Statistic	0.212	**Anderson-Darling Gamma GOF Test**

5% A-D Critical Value	0.724	etected data appear Gamma Distributed at 5% Significance Lev
K-S Test Statistic	0.172	**Kolmogrov-Smirnoff Gamma GOF Test**
5% K-S Critical Value	0.266	etected data appear Gamma Distributed at 5% Significance Lev

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	57.92	k star (bias corrected MLE)	40.61
Theta hat (MLE)	0.225	Theta star (bias corrected MLE)	0.32
nu hat (MLE)	1158	nu star (bias corrected)	812.2
MLE Mean (bias corrected)	13.01	MLE Sd (bias corrected)	2.042
		Approximate Chi Square Value (0.05)	747.1
Adjusted Level of Significance	0.0267	Adjusted Chi Square Value	736.2

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	14.14	95% Adjusted Gamma UCL (use when n<50)	14.35

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.975	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.842	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.171	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.28	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	2.322	Mean of logged Data	2.557
Maximum of Logged Data	2.785	SD of logged Data	0.139

Assuming Lognormal Distribution

95% H-UCL	14.17	90% Chebyshev (MVUE) UCL	14.72
95% Chebyshev (MVUE) UCL	15.5	97.5% Chebyshev (MVUE) UCL	16.58
99% Chebyshev (MVUE) UCL	18.69		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	13.95	95% Jackknife UCL	14.06
95% Standard Bootstrap UCL	13.9	95% Bootstrap-t UCL	14.22
95% Hall's Bootstrap UCL	14.45	95% Percentile Bootstrap UCL	13.95
95% BCA Bootstrap UCL	13.88		
90% Chebyshev(Mean, Sd) UCL	14.73	95% Chebyshev(Mean, Sd) UCL	15.51
97.5% Chebyshev(Mean, Sd) UCL	16.59	99% Chebyshev(Mean, Sd) UCL	18.71

Suggested UCL to Use

95% Student's-t UCL	14.06

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

Newport_RA_SE_Metals|COBALT

General Statistics

Total Number of Observations	10	Number of Distinct Observations	10
		Number of Missing Observations	0
Minimum	8.7	Mean	11.74
Maximum	16.4	Median	10.35
SD	2.961	Std. Error of Mean	0.936
Coefficient of Variation	0.252	Skewness	0.562

Normal GOF Test

Shapiro Wilk Test Statistic	0.847	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.842	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.274	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.28	Data appear Normal at 5% Significance Level

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	13.46	95% Adjusted-CLT UCL (Chen-1995)	13.46
		95% Modified-t UCL (Johnson-1978)	13.48

Gamma GOF Test

A-D Test Statistic	0.728	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.725	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.266	**Kolmogrov-Smirnoff Gamma GOF Test**
5% K-S Critical Value	0.266	Detected data appear Gamma Distributed at 5% Significance Lev

Detected data follow Appr. Gamma Distribution at 5% Significance Level

Gamma Statistics

k hat (MLE)	18.29	k star (bias corrected MLE)	12.87
Theta hat (MLE)	0.642	Theta star (bias corrected MLE)	0.912
nu hat (MLE)	365.9	nu star (bias corrected)	257.4
MLE Mean (bias corrected)	11.74	MLE Sd (bias corrected)	3.272
		Approximate Chi Square Value (0.05)	221.3
Adjusted Level of Significance	0.0267	Adjusted Chi Square Value	215.5

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	13.66	95% Adjusted Gamma UCL (use when n<50)	14.03

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.86	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.842	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.249	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.28	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	2.163	Mean of logged Data	2.435
Maximum of Logged Data	2.797	SD of logged Data	0.245

Assuming Lognormal Distribution

95% H-UCL	13.77	90% Chebyshev (MVUE) UCL	14.47
95% Chebyshev (MVUE) UCL	15.71	97.5% Chebyshev (MVUE) UCL	17.44
99% Chebyshev (MVUE) UCL	20.82		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	13.28	95% Jackknife UCL	13.46
95% Standard Bootstrap UCL	13.19	95% Bootstrap-t UCL	13.8
95% Hall's Bootstrap UCL	12.96	95% Percentile Bootstrap UCL	13.33
95% BCA Bootstrap UCL	13.26		
90% Chebyshev(Mean, Sd) UCL	14.55	95% Chebyshev(Mean, Sd) UCL	15.82
97.5% Chebyshev(Mean, Sd) UCL	17.59	99% Chebyshev(Mean, Sd) UCL	21.06

Suggested UCL to Use

95% Student's-t UCL	13.46

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)

and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

Newport_RA_SE_Metals|IRON

General Statistics

Total Number of Observations	10	Number of Distinct Observations	10
		Number of Missing Observations	0
Minimum	28600	Mean	36215
Maximum	43800	Median	36600
SD	4040	Std. Error of Mean	1277
Coefficient of Variation	0.112	Skewness	-0.069

Normal GOF Test

Shapiro Wilk Test Statistic	0.969	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.842	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.154	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.28	Data appear Normal at 5% Significance Level

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	38557	95% Adjusted-CLT UCL (Chen-1995)	38286
		95% Modified-t UCL (Johnson-1978)	38552

Gamma GOF Test

A-D Test Statistic	0.276	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.724	etected data appear Gamma Distributed at 5% Significance Lev
K-S Test Statistic	0.159	**Kolmogrov-Smirnoff Gamma GOF Test**
5% K-S Critical Value	0.266	etected data appear Gamma Distributed at 5% Significance Lev

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	87.48	k star (bias corrected MLE)	61.3
Theta hat (MLE)	414	Theta star (bias corrected MLE)	590.8
nu hat (MLE)	1750	nu star (bias corrected)	1226
MLE Mean (bias corrected)	36215	MLE Sd (bias corrected)	4625
		Approximate Chi Square Value (0.05)	1146
Adjusted Level of Significance	0.0267	Adjusted Chi Square Value	1132

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	38753	95% Adjusted Gamma UCL (use when n<50)	39216

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.96	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.842	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.172	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.28	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	10.26	Mean of logged Data	10.49
Maximum of Logged Data	10.69	SD of logged Data	0.114

Assuming Lognormal Distribution

95% H-UCL	38816	90% Chebyshev (MVUE) UCL	40126
95% Chebyshev (MVUE) UCL	41897	97.5% Chebyshev (MVUE) UCL	44354
99% Chebyshev (MVUE) UCL	49181		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	38316	95% Jackknife UCL	38557
95% Standard Bootstrap UCL	38171	95% Bootstrap-t UCL	38423
95% Hall's Bootstrap UCL	38773	95% Percentile Bootstrap UCL	38145
95% BCA Bootstrap UCL	38180		
90% Chebyshev(Mean, Sd) UCL	40047	95% Chebyshev(Mean, Sd) UCL	41783
97.5% Chebyshev(Mean, Sd) UCL	44192	99% Chebyshev(Mean, Sd) UCL	48925

Suggested UCL to Use

95% Student's-t UCL 38557

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.

Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets.

Newport_RA_SE_Metals|LEAD

General Statistics

Total Number of Observations	10	Number of Distinct Observations	10
		Number of Missing Observations	0
Minimum	59.4	Mean	949.8
Maximum	4290	Median	233.3
SD	1352	Std. Error of Mean	427.5
Coefficient of Variation	1.423	Skewness	1.981

Normal GOF Test

Shapiro Wilk Test Statistic	0.711	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.842	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.298	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.28	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	1733	95% Adjusted-CLT UCL (Chen-1995)	1939
		95% Modified-t UCL (Johnson-1978)	1778

Gamma GOF Test

A-D Test Statistic	0.631	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.764	etected data appear Gamma Distributed at 5% Significance Lev
K-S Test Statistic	0.274	**Kolmogrov-Smirnoff Gamma GOF Test**
5% K-S Critical Value	0.278	etected data appear Gamma Distributed at 5% Significance Lev

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	0.657	k star (bias corrected MLE)	0.527
Theta hat (MLE)	1445	Theta star (bias corrected MLE)	1803
nu hat (MLE)	13.14	nu star (bias corrected)	10.53
MLE Mean (bias corrected)	949.8	MLE Sd (bias corrected)	1309
		Approximate Chi Square Value (0.05)	4.278
Adjusted Level of Significance	0.0267	Adjusted Chi Square Value	3.612

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50)	2339	95% Adjusted Gamma UCL (use when n<50)	2770

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.917	**Shapiro Wilk Lognormal GOF Test**	
5% Shapiro Wilk Critical Value	0.842	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.212	**Lilliefors Lognormal GOF Test**	
5% Lilliefors Critical Value	0.28	Data appear Lognormal at 5% Significance Level	

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	4.084	Mean of logged Data	5.928
Maximum of Logged Data	8.364	SD of logged Data	1.46

Assuming Lognormal Distribution

95% H-UCL	8083	90% Chebyshev (MVUE) UCL	2251
95% Chebyshev (MVUE) UCL	2857	97.5% Chebyshev (MVUE) UCL	3698
99% Chebyshev (MVUE) UCL	5350		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	1653	95% Jackknife UCL	1733
95% Standard Bootstrap UCL	1618	95% Bootstrap-t UCL	2507
95% Hall's Bootstrap UCL	2278	95% Percentile Bootstrap UCL	1643
95% BCA Bootstrap UCL	1942		
90% Chebyshev(Mean, Sd) UCL	2232	95% Chebyshev(Mean, Sd) UCL	2813
97.5% Chebyshev(Mean, Sd) UCL	3619	99% Chebyshev(Mean, Sd) UCL	5203

Suggested UCL to Use

95% Adjusted Gamma UCL	2770

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.

Newport_RA_SE_Metals|MANGANESE

General Statistics

Total Number of Observations	10	Number of Distinct Observations	10
		Number of Missing Observations	0
Minimum	224	Mean	650.6
Maximum	1510	Median	467.5
SD	451.7	Std. Error of Mean	142.8
Coefficient of Variation	0.694	Skewness	1.157

Normal GOF Test

Shapiro Wilk Test Statistic	0.825	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.842	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.294	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.28	Data Not Normal at 5% Significance Level	

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	912.4	95% Adjusted-CLT UCL (Chen-1995)	941.4
		95% Modified-t UCL (Johnson-1978)	921.1

Gamma GOF Test

A-D Test Statistic	0.508	**Anderson-Darling Gamma GOF Test**	
5% A-D Critical Value	0.733	etected data appear Gamma Distributed at 5% Significance Lev	
K-S Test Statistic	0.232	**Kolmogrov-Smirnoff Gamma GOF Test**	
5% K-S Critical Value	0.269	etected data appear Gamma Distributed at 5% Significance Lev	

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	2.704	k star (bias corrected MLE)	1.96
Theta hat (MLE)	240.6	Theta star (bias corrected MLE)	332
nu hat (MLE)	54.08	nu star (bias corrected)	39.19
MLE Mean (bias corrected)	650.6	MLE Sd (bias corrected)	464.7
		Approximate Chi Square Value (0.05)	25.85
Adjusted Level of Significance	0.0267	Adjusted Chi Square Value	23.98

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50)	986.3	95% Adjusted Gamma UCL (use when n<50)	1063

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.932	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.842	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.19	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.28	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	5.412	Mean of logged Data	6.282
Maximum of Logged Data	7.32	SD of logged Data	0.646

Assuming Lognormal Distribution

95% H-UCL	1113	90% Chebyshev (MVUE) UCL	1048
95% Chebyshev (MVUE) UCL	1231	97.5% Chebyshev (MVUE) UCL	1485
99% Chebyshev (MVUE) UCL	1985		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	885.5	95% Jackknife UCL	912.4
95% Standard Bootstrap UCL	872	95% Bootstrap-t UCL	1092
95% Hall's Bootstrap UCL	940.9	95% Percentile Bootstrap UCL	892.7
95% BCA Bootstrap UCL	931.3		
90% Chebyshev(Mean, Sd) UCL	1079	95% Chebyshev(Mean, Sd) UCL	1273
97.5% Chebyshev(Mean, Sd) UCL	1543	99% Chebyshev(Mean, Sd) UCL	2072

Suggested UCL to Use

95% Adjusted Gamma UCL	1063

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

Newport_RA_SE_SVOCs|BENZO[A]PYRENE

General Statistics

Total Number of Observations	10	Number of Distinct Observations	10
		Number of Missing Observations	0
Minimum	0.08	Mean	0.323
Maximum	0.875	Median	0.275
SD	0.251	Std. Error of Mean	0.0793
Coefficient of Variation	0.776	Skewness	1.214

Normal GOF Test

Shapiro Wilk Test Statistic	0.883	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.842	Data appear Normal at 5% Significance Level

Lilliefors Test Statistic	0.166	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.28	Data appear Normal at 5% Significance Level	

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	0.469	95% Adjusted-CLT UCL (Chen-1995)	0.486
		95% Modified-t UCL (Johnson-1978)	0.474

Gamma GOF Test

A-D Test Statistic	0.254	**Anderson-Darling Gamma GOF Test**	
5% A-D Critical Value	0.736	etected data appear Gamma Distributed at 5% Significance Lev	
K-S Test Statistic	0.156	**Kolmogrov-Smirnoff Gamma GOF Test**	
5% K-S Critical Value	0.27	etected data appear Gamma Distributed at 5% Significance Lev	

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	1.929	k star (bias corrected MLE)	1.417
Theta hat (MLE)	0.168	Theta star (bias corrected MLE)	0.228
nu hat (MLE)	38.58	nu star (bias corrected)	28.34
MLE Mean (bias corrected)	0.323	MLE Sd (bias corrected)	0.272
		Approximate Chi Square Value (0.05)	17.19
Adjusted Level of Significance	0.0267	Adjusted Chi Square Value	15.7

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	0.533	95% Adjusted Gamma UCL (use when n<50)	0.584

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.951	**Shapiro Wilk Lognormal GOF Test**	
5% Shapiro Wilk Critical Value	0.842	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.137	**Lilliefors Lognormal GOF Test**	
5% Lilliefors Critical Value	0.28	Data appear Lognormal at 5% Significance Level	

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	-2.526	Mean of logged Data	-1.41
Maximum of Logged Data	-0.134	SD of logged Data	0.812

Assuming Lognormal Distribution

95% H-UCL	0.711	90% Chebyshev (MVUE) UCL	0.587
95% Chebyshev (MVUE) UCL	0.705	97.5% Chebyshev (MVUE) UCL	0.869
99% Chebyshev (MVUE) UCL	1.19		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	0.454	95% Jackknife UCL	0.469
95% Standard Bootstrap UCL	0.447	95% Bootstrap-t UCL	0.535
95% Hall's Bootstrap UCL	0.521	95% Percentile Bootstrap UCL	0.467
95% BCA Bootstrap UCL	0.482		
90% Chebyshev(Mean, Sd) UCL	0.561	95% Chebyshev(Mean, Sd) UCL	0.669
97.5% Chebyshev(Mean, Sd) UCL	0.819	99% Chebyshev(Mean, Sd) UCL	1.113

Suggested UCL to Use

95% Student's-t UCL	0.469

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

Newport_RA_SE_SVOCs|BENZO[B]FLUORANTHENE

General Statistics

Total Number of Observations	10	Number of Distinct Observations	10
		Number of Missing Observations	0
Minimum	0.081	Mean	0.318
Maximum	0.92	Median	0.23
SD	0.26	Std. Error of Mean	0.0821
Coefficient of Variation	0.817	Skewness	1.555

Normal GOF Test

Shapiro Wilk Test Statistic	0.843	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.842	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.196	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.28	Data appear Normal at 5% Significance Level

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	0.468	95% Adjusted-CLT UCL (Chen-1995)	0.496
		95% Modified-t UCL (Johnson-1978)	0.475

Gamma GOF Test

A-D Test Statistic	0.238	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.736	etected data appear Gamma Distributed at 5% Significance Lev
K-S Test Statistic	0.139	**Kolmogrov-Smirnoff Gamma GOF Test**
5% K-S Critical Value	0.27	etected data appear Gamma Distributed at 5% Significance Lev

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	1.977	k star (bias corrected MLE)	1.451
Theta hat (MLE)	0.161	Theta star (bias corrected MLE)	0.219
nu hat (MLE)	39.54	nu star (bias corrected)	29.01
MLE Mean (bias corrected)	0.318	MLE Sd (bias corrected)	0.264
		Approximate Chi Square Value (0.05)	17.72
Adjusted Level of Significance	0.0267	Adjusted Chi Square Value	16.2

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	0.52	95% Adjusted Gamma UCL (use when n<50)	0.569

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.976	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.842	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.104	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.28	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	-2.513	Mean of logged Data	-1.421
Maximum of Logged Data	-0.0834	SD of logged Data	0.777

Assuming Lognormal Distribution

95% H-UCL	0.652	90% Chebyshev (MVUE) UCL	0.555
95% Chebyshev (MVUE) UCL	0.664	97.5% Chebyshev (MVUE) UCL	0.816
99% Chebyshev (MVUE) UCL	1.113		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	0.453	95% Jackknife UCL	0.468

95% Standard Bootstrap UCL	0.443	95% Bootstrap-t UCL	0.553
95% Hall's Bootstrap UCL	0.617	95% Percentile Bootstrap UCL	0.454
95% BCA Bootstrap UCL	0.493		
90% Chebyshev(Mean, Sd) UCL	0.564	95% Chebyshev(Mean, Sd) UCL	0.675
97.5% Chebyshev(Mean, Sd) UCL	0.83	99% Chebyshev(Mean, Sd) UCL	1.134

Suggested UCL to Use

95% Student's-t UCL	0.468

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

Newport_RA_SE_SVOCs|DIBENZ[A,H]ANTHRACENE

General Statistics

Total Number of Observations	10	Number of Distinct Observations	9
Number of Detects	9	Number of Non-Detects	1
Number of Distinct Detects	8	Number of Distinct Non-Detects	1
Minimum Detect	0.019	Minimum Non-Detect	0.25
Maximum Detect	0.28	Maximum Non-Detect	0.25
Variance Detects	0.00667	Percent Non-Detects	10%
Mean Detects	0.0804	SD Detects	0.0817
Median Detects	0.053	CV Detects	1.015
Skewness Detects	2.144	Kurtosis Detects	5.221
Mean of Logged Detects	-2.889	SD of Logged Detects	0.892

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.738	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.829	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.294	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.295	Detected Data appear Normal at 5% Significance Level

Detected Data appear Approximate Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

Mean	0.078	Standard Error of Mean	0.0251
SD	0.0741	95% KM (BCA) UCL	0.119
95% KM (t) UCL	0.124	95% KM (Percentile Bootstrap) UCL	0.119
95% KM (z) UCL	0.119	95% KM Bootstrap t UCL	0.171
90% KM Chebyshev UCL	0.153	95% KM Chebyshev UCL	0.188
97.5% KM Chebyshev UCL	0.235	99% KM Chebyshev UCL	0.328

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.391	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.734	etected data appear Gamma Distributed at 5% Significance Lev
K-S Test Statistic	0.181	**Kolmogrov-Smirnoff GOF**
5% K-S Critical Value	0.284	etected data appear Gamma Distributed at 5% Significance Lev

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	1.499	k star (bias corrected MLE)	1.073
Theta hat (MLE)	0.0537	Theta star (bias corrected MLE)	0.0749
nu hat (MLE)	26.98	nu star (bias corrected)	19.32
MLE Mean (bias corrected)	0.0804	MLE Sd (bias corrected)	0.0776

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	1.105	nu hat (KM)	22.11
Approximate Chi Square Value (22.11, α)	12.42	Adjusted Chi Square Value (22.11, β)	11.18
5% Gamma Approximate KM-UCL (use when n>=50)	0.139	95% Gamma Adjusted KM-UCL (use when n<50)	0.154

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as < 0.1

For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.019	Mean	0.0776
Maximum	0.28	Median	0.0523
SD	0.0775	CV	0.999
k hat (MLE)	1.616	k star (bias corrected MLE)	1.198
Theta hat (MLE)	0.048	Theta star (bias corrected MLE)	0.0647
nu hat (MLE)	32.33	nu star (bias corrected)	23.96
MLE Mean (bias corrected)	0.0776	MLE Sd (bias corrected)	0.0709
		Adjusted Level of Significance (β)	0.0267
Approximate Chi Square Value (23.96, α)	13.82	Adjusted Chi Square Value (23.96, β)	12.5
95% Gamma Approximate UCL (use when n>=50)	0.134	95% Gamma Adjusted UCL (use when n<50)	0.149

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.938	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.829	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.144	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.295	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.0771	Mean in Log Scale	-2.906
SD in Original Scale	0.0777	SD in Log Scale	0.843
95% t UCL (assumes normality of ROS data)	0.122	95% Percentile Bootstrap UCL	0.121
95% BCA Bootstrap UCL	0.134	95% Bootstrap t UCL	0.169
95% H-UCL (Log ROS)	0.171		

UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed

KM Mean (logged)	-2.91	95% H-UCL (KM -Log)	0.164
KM SD (logged)	0.827	95% Critical H Value (KM-Log)	2.76
KM Standard Error of Mean (logged)	0.287		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.0849	Mean in Log Scale	-2.808
SD in Original Scale	0.0783	SD in Log Scale	0.879
95% t UCL (Assumes normality)	0.13	95% H-Stat UCL	0.205

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Approximate Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	0.124	95% KM (Percentile Bootstrap) UCL	0.119

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

lowever, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statisticia

TISSUE

UCL Statistics for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	8/8/2014 9:25:02 AM
From File	RiskStatsReport_NEWPORT_Tissue_Site-SCz2_e.xls
Full Precision	OFF
Confidence Coefficient	95%
mber of Bootstrap Operations	2000

Newport_RA_TA_Metals|ARSENIC

General Statistics

Total Number of Observations	13	Number of Distinct Observations	13
		Number of Missing Observations	26
Minimum	2.18	Mean	3.224
Maximum	4.38	Median	3.38
SD	0.612	Std. Error of Mean	0.17
Coefficient of Variation	0.19	Skewness	0.0102

Normal GOF Test

Shapiro Wilk Test Statistic	0.972	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.866	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.139	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.246	Data appear Normal at 5% Significance Level

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	3.526	95% Adjusted-CLT UCL (Chen-1995)	3.503
		95% Modified-t UCL (Johnson-1978)	3.526

Gamma GOF Test

A-D Test Statistic	0.288	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.733	etected data appear Gamma Distributed at 5% Significance Lev
K-S Test Statistic	0.164	**Kolmogrov-Smirnoff Gamma GOF Test**
5% K-S Critical Value	0.236	etected data appear Gamma Distributed at 5% Significance Lev

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	29.15	k star (bias corrected MLE)	22.47
Theta hat (MLE)	0.111	Theta star (bias corrected MLE)	0.143
nu hat (MLE)	757.8	nu star (bias corrected)	584.2
MLE Mean (bias corrected)	3.224	MLE Sd (bias corrected)	0.68
		Approximate Chi Square Value (0.05)	529.2
Adjusted Level of Significance	0.0301	Adjusted Chi Square Value	521.7

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	3.559	95% Adjusted Gamma UCL (use when n<50)	3.61

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.963	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.866	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.168	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.246	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	0.779	Mean of logged Data	1.153
Maximum of Logged Data	1.477	SD of logged Data	0.196

Assuming Lognormal Distribution

95% H-UCL	3.581	90% Chebyshev (MVUE) UCL	3.752
95% Chebyshev (MVUE) UCL	3.991	97.5% Chebyshev (MVUE) UCL	4.323
99% Chebyshev (MVUE) UCL	4.974		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	3.503	95% Jackknife UCL	3.526
95% Standard Bootstrap UCL	3.483	95% Bootstrap-t UCL	3.503
95% Hall's Bootstrap UCL	3.511	95% Percentile Bootstrap UCL	3.495
95% BCA Bootstrap UCL	3.486		
90% Chebyshev(Mean, Sd) UCL	3.733	95% Chebyshev(Mean, Sd) UCL	3.963
97.5% Chebyshev(Mean, Sd) UCL	4.283	99% Chebyshev(Mean, Sd) UCL	4.911

Suggested UCL to Use

95% Student's-t UCL	3.526

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

Newport_RA_TA_Metals|CHROMIUM, TOTAL

General Statistics

Total Number of Observations	13	Number of Distinct Observations	13
		Number of Missing Observations	26
Minimum	0.074	Mean	0.319
Maximum	0.771	Median	0.267
SD	0.223	Std. Error of Mean	0.062
Coefficient of Variation	0.7	Skewness	0.747

Normal GOF Test

Shapiro Wilk Test Statistic	0.904	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.866	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.192	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.246	Data appear Normal at 5% Significance Level

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	0.43	95% Adjusted-CLT UCL (Chen-1995)	0.435
		95% Modified-t UCL (Johnson-1978)	0.432

Gamma GOF Test

A-D Test Statistic	0.351	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.743	etected data appear Gamma Distributed at 5% Significance Lev
K-S Test Statistic	0.137	**Kolmogrov-Smirnoff Gamma GOF Test**
5% K-S Critical Value	0.239	etected data appear Gamma Distributed at 5% Significance Lev

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	2.062	k star (bias corrected MLE)	1.638
Theta hat (MLE)	0.155	Theta star (bias corrected MLE)	0.195
nu hat (MLE)	53.62	nu star (bias corrected)	42.58
MLE Mean (bias corrected)	0.319	MLE Sd (bias corrected)	0.25
		Approximate Chi Square Value (0.05)	28.62
Adjusted Level of Significance	0.0301	Adjusted Chi Square Value	27

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	0.475	95% Adjusted Gamma UCL (use when n<50)	0.504

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.927	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.866	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.163	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.246	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	-2.604	Mean of logged Data	-1.403
Maximum of Logged Data	-0.26	SD of logged Data	0.794

Assuming Lognormal Distribution

95% H-UCL	0.599	90% Chebyshev (MVUE) UCL	0.555
95% Chebyshev (MVUE) UCL	0.659	97.5% Chebyshev (MVUE) UCL	0.802
99% Chebyshev (MVUE) UCL	1.084		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	0.421	95% Jackknife UCL	0.43
95% Standard Bootstrap UCL	0.42	95% Bootstrap-t UCL	0.448
95% Hall's Bootstrap UCL	0.43	95% Percentile Bootstrap UCL	0.419
95% BCA Bootstrap UCL	0.425		
90% Chebyshev(Mean, Sd) UCL	0.505	95% Chebyshev(Mean, Sd) UCL	0.59
97.5% Chebyshev(Mean, Sd) UCL	0.707	99% Chebyshev(Mean, Sd) UCL	0.936

Suggested UCL to Use

95% Student's-t UCL	0.43

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

Newport_RA_TA_Metals|COBALT

General Statistics

Total Number of Observations	13	Number of Distinct Observations	12
		Number of Missing Observations	26
Minimum	0.0632	Mean	0.143
Maximum	0.279	Median	0.144
SD	0.0487	Std. Error of Mean	0.0135
Coefficient of Variation	0.34	Skewness	1.671

Normal GOF Test

Shapiro Wilk Test Statistic	0.808	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.866	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.298	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.246	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	0.167	95% Adjusted-CLT UCL (Chen-1995)	0.172
		95% Modified-t UCL (Johnson-1978)	0.168

Gamma GOF Test

A-D Test Statistic	0.836	**Anderson-Darling Gamma GOF Test**

5% A-D Critical Value	0.734	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.254	**Kolmogrov-Smirnoff Gamma GOF Test**
5% K-S Critical Value	0.237	Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	10.41	k star (bias corrected MLE)	8.058
Theta hat (MLE)	0.0138	Theta star (bias corrected MLE)	0.0178
nu hat (MLE)	270.6	nu star (bias corrected)	209.5
MLE Mean (bias corrected)	0.143	MLE Sd (bias corrected)	0.0504
		Approximate Chi Square Value (0.05)	177
Adjusted Level of Significance	0.0301	Adjusted Chi Square Value	172.8

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	0.169	95% Adjusted Gamma UCL (use when n<50)	0.174

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.875	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.866	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.239	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.246	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	-2.761	Mean of logged Data	-1.993
Maximum of Logged Data	-1.277	SD of logged Data	0.326

Assuming Lognormal Distribution

95% H-UCL	0.173	90% Chebyshev (MVUE) UCL	0.183
95% Chebyshev (MVUE) UCL	0.2	97.5% Chebyshev (MVUE) UCL	0.225
99% Chebyshev (MVUE) UCL	0.274		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	0.165	95% Jackknife UCL	0.167
95% Standard Bootstrap UCL	0.164	95% Bootstrap-t UCL	0.177
95% Hall's Bootstrap UCL	0.301	95% Percentile Bootstrap UCL	0.165
95% BCA Bootstrap UCL	0.174		
90% Chebyshev(Mean, Sd) UCL	0.184	95% Chebyshev(Mean, Sd) UCL	0.202
97.5% Chebyshev(Mean, Sd) UCL	0.227	99% Chebyshev(Mean, Sd) UCL	0.277

Suggested UCL to Use

95% Student's-t UCL	0.167	or 95% Modified-t UCL	0.168
or 95% H-UCL	0.173		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

ProUCL computes and outputs H-statistic based UCLs for historical reasons only.
H-statistic often results in unstable (both high and low) values of UCL95 as shown in examples in the Technical Guide.
It is therefore recommended to avoid the use of H-statistic based 95% UCLs.
se of nonparametric methods are preferred to compute UCL95 for skewed data sets which do not follow a gamma distribution.

Newport_RA_TA_Metals|IRON

General Statistics

Total Number of Observations	13	Number of Distinct Observations	13

		Number of Missing Observations	26
Minimum	7.84	Mean	43.83
Maximum	148	Median	13.7
SD	46.43	Std. Error of Mean	12.88
Coefficient of Variation	1.059	Skewness	1.096

Normal GOF Test

Shapiro Wilk Test Statistic	0.768	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.866	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.336	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.246	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	66.78	95% Adjusted-CLT UCL (Chen-1995)	69.2
		95% Modified-t UCL (Johnson-1978)	67.44

Gamma GOF Test

A-D Test Statistic	1.258	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.757	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.299	**Kolmogrov-Smirnoff Gamma GOF Test**
5% K-S Critical Value	0.243	Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	1.004	k star (bias corrected MLE)	0.823
Theta hat (MLE)	43.68	Theta star (bias corrected MLE)	53.24
nu hat (MLE)	26.09	nu star (bias corrected)	21.4
MLE Mean (bias corrected)	43.83	MLE Sd (bias corrected)	48.31
		Approximate Chi Square Value (0.05)	11.89
Adjusted Level of Significance	0.0301	Adjusted Chi Square Value	10.89

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	78.89	95% Adjusted Gamma UCL (use when n<50)	86.12

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.817	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.866	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.251	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.246	Data Not Lognormal at 5% Significance Level

Data Not Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	2.059	Mean of logged Data	3.205
Maximum of Logged Data	4.997	SD of logged Data	1.125

Assuming Lognormal Distribution

95% H-UCL	125.8	90% Chebyshev (MVUE) UCL	87.36
95% Chebyshev (MVUE) UCL	107.3	97.5% Chebyshev (MVUE) UCL	135.1
99% Chebyshev (MVUE) UCL	189.5		

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution (0.05)

Nonparametric Distribution Free UCLs

95% CLT UCL	65.02	95% Jackknife UCL	66.78
95% Standard Bootstrap UCL	64.06	95% Bootstrap-t UCL	77.02
95% Hall's Bootstrap UCL	65.61	95% Percentile Bootstrap UCL	65.05
95% BCA Bootstrap UCL	69.86		
90% Chebyshev(Mean, Sd) UCL	82.47	95% Chebyshev(Mean, Sd) UCL	99.97
97.5% Chebyshev(Mean, Sd) UCL	124.3	99% Chebyshev(Mean, Sd) UCL	172

Suggested UCL to Use

95% Chebyshev (Mean, Sd) UCL 99.97

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

Newport_RA_TA_Metals|LEAD

General Statistics

Total Number of Observations	13	Number of Distinct Observations	13
		Number of Missing Observations	26
Minimum	0.06	Mean	1.419
Maximum	7.26	Median	0.293
SD	2.137	Std. Error of Mean	0.593
Coefficient of Variation	1.505	Skewness	2.061

Normal GOF Test

Shapiro Wilk Test Statistic	0.702	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.866	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.283	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.246	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	2.476	95% Adjusted-CLT UCL (Chen-1995)	2.756
		95% Modified-t UCL (Johnson-1978)	2.532

Gamma GOF Test

A-D Test Statistic	0.621	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.787	etected data appear Gamma Distributed at 5% Significance Lev
K-S Test Statistic	0.205	**Kolmogrov-Smirnoff Gamma GOF Test**
5% K-S Critical Value	0.249	etected data appear Gamma Distributed at 5% Significance Lev

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	0.536	k star (bias corrected MLE)	0.463
Theta hat (MLE)	2.65	Theta star (bias corrected MLE)	3.064
nu hat (MLE)	13.93	nu star (bias corrected)	12.05
MLE Mean (bias corrected)	1.419	MLE Sd (bias corrected)	2.085
		Approximate Chi Square Value (0.05)	5.257
Adjusted Level of Significance	0.0301	Adjusted Chi Square Value	4.634

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50)	3.253	95% Adjusted Gamma UCL (use when n<50)	3.69

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.909	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.866	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.145	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.246	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	-2.813	Mean of logged Data	-0.823
Maximum of Logged Data	1.982	SD of logged Data	1.698

Assuming Lognormal Distribution

95% H-UCL	14.12	90% Chebyshev (MVUE) UCL	3.854
95% Chebyshev (MVUE) UCL	4.922	97.5% Chebyshev (MVUE) UCL	6.404
99% Chebyshev (MVUE) UCL	9.316		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	2.394	95% Jackknife UCL	2.476
95% Standard Bootstrap UCL	2.386	95% Bootstrap-t UCL	3.783
95% Hall's Bootstrap UCL	6.42	95% Percentile Bootstrap UCL	2.404
95% BCA Bootstrap UCL	2.769		
90% Chebyshev(Mean, Sd) UCL	3.197	95% Chebyshev(Mean, Sd) UCL	4.003
97.5% Chebyshev(Mean, Sd) UCL	5.12	99% Chebyshev(Mean, Sd) UCL	7.316

Suggested UCL to Use

95% Adjusted Gamma UCL	3.69

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.

Newport_RA_TA_Metals|MERCURY

General Statistics

Total Number of Observations	13	Number of Distinct Observations	13
		Number of Missing Observations	26
Minimum	0.00701	Mean	0.0164
Maximum	0.03	Median	0.0146
SD	0.0072	Std. Error of Mean	0.002
Coefficient of Variation	0.438	Skewness	0.636

Normal GOF Test

Shapiro Wilk Test Statistic	0.926	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.866	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.195	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.246	Data appear Normal at 5% Significance Level

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	0.02	95% Adjusted-CLT UCL (Chen-1995)	0.0201
		95% Modified-t UCL (Johnson-1978)	0.0201

Gamma GOF Test

A-D Test Statistic	0.28	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.736	etected data appear Gamma Distributed at 5% Significance Lev
K-S Test Statistic	0.139	**Kolmogrov-Smirnoff Gamma GOF Test**
5% K-S Critical Value	0.237	etected data appear Gamma Distributed at 5% Significance Lev

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	5.762	k star (bias corrected MLE)	4.484
Theta hat (MLE)	0.00285	Theta star (bias corrected MLE)	0.00367
nu hat (MLE)	149.8	nu star (bias corrected)	116.6
MLE Mean (bias corrected)	0.0164	MLE Sd (bias corrected)	0.00777
		Approximate Chi Square Value (0.05)	92.65
Adjusted Level of Significance	0.0301	Adjusted Chi Square Value	89.61

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	0.0207	95% Adjusted Gamma UCL (use when n<50)	0.0214

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.967	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.866	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.126	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.246	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	-4.96	Mean of logged Data	-4.197
Maximum of Logged Data	-3.507	SD of logged Data	0.444

Assuming Lognormal Distribution

95% H-UCL	0.0216	90% Chebyshev (MVUE) UCL	0.0227
95% Chebyshev (MVUE) UCL	0.0255	97.5% Chebyshev (MVUE) UCL	0.0294
99% Chebyshev (MVUE) UCL	0.037		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	0.0197	95% Jackknife UCL	0.02
95% Standard Bootstrap UCL	0.0195	95% Bootstrap-t UCL	0.0207
95% Hall's Bootstrap UCL	0.0199	95% Percentile Bootstrap UCL	0.0198
95% BCA Bootstrap UCL	0.02		
90% Chebyshev(Mean, Sd) UCL	0.0224	95% Chebyshev(Mean, Sd) UCL	0.0252
97.5% Chebyshev(Mean, Sd) UCL	0.0289	99% Chebyshev(Mean, Sd) UCL	0.0363

Suggested UCL to Use

95% Student's-t UCL	0.02

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

Newport_RA_TA_PAHs|BENZO[A]ANTHRACENE

General Statistics

Total Number of Observations	13	Number of Distinct Observations	12
		Number of Missing Observations	26
Number of Detects	8	Number of Non-Detects	5
Number of Distinct Detects	7	Number of Distinct Non-Detects	5
Minimum Detect	3.7000E-4	Minimum Non-Detect	2.0000E-4
Maximum Detect	0.032	Maximum Non-Detect	4.8000E-4
Variance Detects	1.4755E-4	Percent Non-Detects	38.46%
Mean Detects	0.0107	SD Detects	0.0121
Median Detects	0.00555	CV Detects	1.14
Skewness Detects	0.897	Kurtosis Detects	-0.669
Mean of Logged Detects	-5.652	SD of Logged Detects	1.929

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.842	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.818	Detected Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.253	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.313	Detected Data appear Normal at 5% Significance Level

Detected Data appear Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

Mean	0.00664	Standard Error of Mean	0.00304
SD	0.0103	95% KM (BCA) UCL	0.0116

95% KM (t) UCL	0.0121	95% KM (Percentile Bootstrap) UCL	0.0118
95% KM (z) UCL	0.0116	95% KM Bootstrap t UCL	0.0153
90% KM Chebyshev UCL	0.0158	95% KM Chebyshev UCL	0.0199
97.5% KM Chebyshev UCL	0.0256	99% KM Chebyshev UCL	0.0369

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.494	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.758	etected data appear Gamma Distributed at 5% Significance Lev
K-S Test Statistic	0.247	**Kolmogrov-Smirnoff GOF**
5% K-S Critical Value	0.308	etected data appear Gamma Distributed at 5% Significance Lev

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.562	k star (bias corrected MLE)	0.435
Theta hat (MLE)	0.019	Theta star (bias corrected MLE)	0.0245
nu hat (MLE)	8.991	nu star (bias corrected)	6.953
MLE Mean (bias corrected)	0.0107	MLE Sd (bias corrected)	0.0162

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	0.419	nu hat (KM)	10.9
Approximate Chi Square Value (10.90, α)	4.511	Adjusted Chi Square Value (10.90, β)	3.942
5% Gamma Approximate KM-UCL (use when n>=50)	0.016	95% Gamma Adjusted KM-UCL (use when n<50)	0.0184

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as < 0.1

For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	3.7000E-4	Mean	0.0104
Maximum	0.032	Median	0.01
SD	0.00928	CV	0.892
k hat (MLE)	0.86	k star (bias corrected MLE)	0.713
Theta hat (MLE)	0.0121	Theta star (bias corrected MLE)	0.0146
nu hat (MLE)	22.36	nu star (bias corrected)	18.53
MLE Mean (bias corrected)	0.0104	MLE Sd (bias corrected)	0.0123
		Adjusted Level of Significance (β)	0.0301
Approximate Chi Square Value (18.53, α)	9.776	Adjusted Chi Square Value (18.53, β)	8.882
95% Gamma Approximate UCL (use when n>=50)	0.0197	95% Gamma Adjusted UCL (use when n<50)	0.0217

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.836	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.818	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.245	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.313	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.00658	Mean in Log Scale	-7.324
SD in Original Scale	0.0107	SD in Log Scale	2.671
95% t UCL (assumes normality of ROS data)	0.0119	95% Percentile Bootstrap UCL	0.0115
95% BCA Bootstrap UCL	0.013	95% Bootstrap t UCL	0.0154
95% H-UCL (Log ROS)	2.853		

UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed

KM Mean (logged)	-6.732	95% H-UCL (KM -Log)	0.123
KM SD (logged)	1.971	95% Critical H Value (KM-Log)	4.731
KM Standard Error of Mean (logged)	0.585		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00661	Mean in Log Scale	-6.918
SD in Original Scale	0.0107	SD in Log Scale	2.234

95% t UCL (Assumes normality)	0.0119	95% H-Stat UCL	0.371

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	0.0121	95% KM (Percentile Bootstrap) UCL	0.0118

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
lowever, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statisticia

Newport_RA_TA_PAHs|BENZO[A]PYRENE

General Statistics

Total Number of Observations	13	Number of Distinct Observations	12
		Number of Missing Observations	26
Minimum	1.2000E-4	Mean	0.0094
Maximum	0.04	Median	3.5000E-4
SD	0.0139	Std. Error of Mean	0.00387
Coefficient of Variation	1.483	Skewness	1.295

Normal GOF Test

Shapiro Wilk Test Statistic	0.72	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.866	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.355	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.246	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	0.0163	95% Adjusted-CLT UCL (Chen-1995)	0.0172
		95% Modified-t UCL (Johnson-1978)	0.0165

Gamma GOF Test

A-D Test Statistic	1.336	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.822	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.343	**Kolmogrov-Smirnoff Gamma GOF Test**
5% K-S Critical Value	0.255	Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	0.338	k star (bias corrected MLE)	0.311
Theta hat (MLE)	0.0278	Theta star (bias corrected MLE)	0.0302
nu hat (MLE)	8.79	nu star (bias corrected)	8.095
MLE Mean (bias corrected)	0.0094	MLE Sd (bias corrected)	0.0169
		Approximate Chi Square Value (0.05)	2.79
Adjusted Level of Significance	0.0301	Adjusted Chi Square Value	2.366

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	0.0273	95% Adjusted Gamma UCL (use when n<50)	0.0322

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.796	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.866	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.292	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.246	Data Not Lognormal at 5% Significance Level

Data Not Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	-9.028	Mean of logged Data	-6.667
Maximum of Logged Data	-3.219	SD of logged Data	2.372

Assuming Lognormal Distribution

95% H-UCL	0.986	90% Chebyshev (MVUE) UCL	0.0378
95% Chebyshev (MVUE) UCL	0.0495	97.5% Chebyshev (MVUE) UCL	0.0657
99% Chebyshev (MVUE) UCL	0.0975		

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution (0.05)

Nonparametric Distribution Free UCLs

95% CLT UCL	0.0158	95% Jackknife UCL	0.0163
95% Standard Bootstrap UCL	0.0157	95% Bootstrap-t UCL	0.0196
95% Hall's Bootstrap UCL	0.0153	95% Percentile Bootstrap UCL	0.0157
95% BCA Bootstrap UCL	0.0164		
90% Chebyshev(Mean, Sd) UCL	0.021	95% Chebyshev(Mean, Sd) UCL	0.0263
97.5% Chebyshev(Mean, Sd) UCL	0.0336	99% Chebyshev(Mean, Sd) UCL	0.0479

Suggested UCL to Use

99% Chebyshev (Mean, Sd) UCL	0.0479

Recommended UCL exceeds the maximum observation

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.

Newport_RA_TA_PAHs|BENZO[B]FLUORANTHENE

General Statistics

Total Number of Observations	13	Number of Distinct Observations	11
		Number of Missing Observations	26
Minimum	2.3000E-4	Mean	0.011
Maximum	0.044	Median	5.5000E-4
SD	0.0158	Std. Error of Mean	0.00439
Coefficient of Variation	1.443	Skewness	1.211

Normal GOF Test

Shapiro Wilk Test Statistic	0.72	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.866	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.358	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.246	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	0.0188	95% Adjusted-CLT UCL (Chen-1995)	0.0197
		95% Modified-t UCL (Johnson-1978)	0.019

Gamma GOF Test

A-D Test Statistic	1.398	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.812	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.356	**Kolmogrov-Smirnoff Gamma GOF Test**
5% K-S Critical Value	0.253	Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	0.387	k star (bias corrected MLE)	0.349

Theta hat (MLE)	0.0283	Theta star (bias corrected MLE)	0.0314
nu hat (MLE)	10.07	nu star (bias corrected)	9.076
MLE Mean (bias corrected)	0.011	MLE Sd (bias corrected)	0.0186
		Approximate Chi Square Value (0.05)	3.373
Adjusted Level of Significance	0.0301	Adjusted Chi Square Value	2.896

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	0.0295	95% Adjusted Gamma UCL (use when n<50)	0.0344

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.789	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.866	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.316	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.246	Data Not Lognormal at 5% Significance Level

Data Not Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	-8.377	Mean of logged Data	-6.222
Maximum of Logged Data	-3.124	SD of logged Data	2.126

Assuming Lognormal Distribution

95% H-UCL	0.431	90% Chebyshev (MVUE) UCL	0.0372
95% Chebyshev (MVUE) UCL	0.0484	97.5% Chebyshev (MVUE) UCL	0.0638
99% Chebyshev (MVUE) UCL	0.0942		

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution (0.05)

Nonparametric Distribution Free UCLs

95% CLT UCL	0.0182	95% Jackknife UCL	0.0188
95% Standard Bootstrap UCL	0.0179	95% Bootstrap-t UCL	0.022
95% Hall's Bootstrap UCL	0.0174	95% Percentile Bootstrap UCL	0.0186
95% BCA Bootstrap UCL	0.0196		
90% Chebyshev(Mean, Sd) UCL	0.0241	95% Chebyshev(Mean, Sd) UCL	0.0301
97.5% Chebyshev(Mean, Sd) UCL	0.0384	99% Chebyshev(Mean, Sd) UCL	0.0546

Suggested UCL to Use

99% Chebyshev (Mean, Sd) UCL	0.0546

Recommended UCL exceeds the maximum observation

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.

Newport_RA_TA_PAHs|DIBENZ[A,H]ANTHRACENE

General Statistics

Total Number of Observations	13	Number of Distinct Observations	6
		Number of Missing Observations	26
Number of Detects	5	Number of Non-Detects	8
Number of Distinct Detects	5	Number of Distinct Non-Detects	1
Minimum Detect	0.0018	Minimum Non-Detect	1.0000E-4
Maximum Detect	0.0081	Maximum Non-Detect	1.0000E-4
Variance Detects	5.9280E-6	Percent Non-Detects	61.54%
Mean Detects	0.00464	SD Detects	0.00243
Median Detects	0.0051	CV Detects	0.525
Skewness Detects	0.394	Kurtosis Detects	-0.254
Mean of Logged Detects	-5.499	SD of Logged Detects	0.586

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.958	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.762	Detected Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.193	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.396	Detected Data appear Normal at 5% Significance Level	

Detected Data appear Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

Mean	0.00185	Standard Error of Mean	8.0279E-4
SD	0.00259	95% KM (BCA) UCL	0.00315
95% KM (t) UCL	0.00328	95% KM (Percentile Bootstrap) UCL	0.00312
95% KM (z) UCL	0.00317	95% KM Bootstrap t UCL	0.00277
90% KM Chebyshev UCL	0.00425	95% KM Chebyshev UCL	0.00535
97.5% KM Chebyshev UCL	0.00686	99% KM Chebyshev UCL	0.00983

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.254	**Anderson-Darling GOF Test**	
5% A-D Critical Value	0.681	etected data appear Gamma Distributed at 5% Significance Lev	
K-S Test Statistic	0.24	**Kolmogrov-Smirnoff GOF**	
5% K-S Critical Value	0.358	etected data appear Gamma Distributed at 5% Significance Lev	

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	4.113	k star (bias corrected MLE)	1.779
Theta hat (MLE)	0.00113	Theta star (bias corrected MLE)	0.00261
nu hat (MLE)	41.13	nu star (bias corrected)	17.79
MLE Mean (bias corrected)	0.00464	MLE Sd (bias corrected)	0.00348

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	0.509	nu hat (KM)	13.22
Approximate Chi Square Value (13.22, α)	6.042	Adjusted Chi Square Value (13.22, β)	5.365
5% Gamma Approximate KM-UCL (use when n>=50)	0.00404	95% Gamma Adjusted KM-UCL (use when n<50)	0.00455

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as < 0.1

For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.0018	Mean	0.00794
Maximum	0.01	Median	0.01
SD	0.00306	CV	0.385
k hat (MLE)	4.581	k star (bias corrected MLE)	3.575
Theta hat (MLE)	0.00173	Theta star (bias corrected MLE)	0.00222
nu hat (MLE)	119.1	nu star (bias corrected)	92.95
MLE Mean (bias corrected)	0.00794	MLE Sd (bias corrected)	0.0042
		Adjusted Level of Significance (β)	0.0301
Approximate Chi Square Value (92.95, α)	71.72	Adjusted Chi Square Value (92.95, β)	69.06
95% Gamma Approximate UCL (use when n>=50)	0.0103	95% Gamma Adjusted UCL (use when n<50)	0.0107

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.954	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.762	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.247	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.396	Detected Data appear Lognormal at 5% Significance Level	

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.0022	Mean in Log Scale	-6.737
SD in Original Scale	0.00247	SD in Log Scale	1.209
95% t UCL (assumes normality of ROS data)	0.00342	95% Percentile Bootstrap UCL	0.00334
95% BCA Bootstrap UCL	0.00355	95% Bootstrap t UCL	0.00409
95% H-UCL (Log ROS)	0.00758		

UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed

KM Mean (logged)	-7.783	95% H-UCL (KM -Log)	0.0231
KM SD (logged)	1.834	95% Critical H Value (KM-Log)	4.408
KM Standard Error of Mean (logged)	0.569		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00182	Mean in Log Scale	-8.21
SD in Original Scale	0.00272	SD in Log Scale	2.256
95% t UCL (Assumes normality)	0.00316	95% H-Stat UCL	0.114

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	0.00328	95% KM (Percentile Bootstrap) UCL	0.00312

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
lowever, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statisticia

Newport_RA_TA_PAHs|INDENO[1,2,3-CD]PYRENE

General Statistics

Total Number of Observations	13	Number of Distinct Observations	11
		Number of Missing Observations	26
Number of Detects	12	Number of Non-Detects	1
Number of Distinct Detects	10	Number of Distinct Non-Detects	1
Minimum Detect	1.1000E-4	Minimum Non-Detect	1.0000E-4
Maximum Detect	0.026	Maximum Non-Detect	1.0000E-4
Variance Detects	8.0857E-5	Percent Non-Detects	7.692%
Mean Detects	0.00648	SD Detects	0.00899
Median Detects	2.6000E-4	CV Detects	1.389
Skewness Detects	1.21	Kurtosis Detects	0.326
Mean of Logged Detects	-6.822	SD of Logged Detects	2.274

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.751	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.859	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.337	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.256	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

Mean	0.00599	Standard Error of Mean	0.00245
SD	0.00844	95% KM (BCA) UCL	0.01
95% KM (t) UCL	0.0103	95% KM (Percentile Bootstrap) UCL	0.00999
95% KM (z) UCL	0.01	95% KM Bootstrap t UCL	0.0131
90% KM Chebyshev UCL	0.0133	95% KM Chebyshev UCL	0.0166
97.5% KM Chebyshev UCL	0.0213	99% KM Chebyshev UCL	0.0303

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	1.258	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.81	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.337	**Kolmogrov-Smirnoff GOF**
5% K-S Critical Value	0.263	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.373	k star (bias corrected MLE)	0.336

Theta hat (MLE)	0.0173	Theta star (bias corrected MLE)	0.0193
nu hat (MLE)	8.962	nu star (bias corrected)	8.055
MLE Mean (bias corrected)	0.00648	MLE Sd (bias corrected)	0.0112

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	0.502	nu hat (KM)	13.06
Approximate Chi Square Value (13.06, α)	5.935	Adjusted Chi Square Value (13.06, β)	5.265
5% Gamma Approximate KM-UCL (use when n>=50)	0.0132	95% Gamma Adjusted KM-UCL (use when n<50)	0.0148

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as < 0.1

For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	1.1000E-4	Mean	0.00675
Maximum	0.026	Median	3.0000E-4
SD	0.00866	CV	1.284
k hat (MLE)	0.398	k star (bias corrected MLE)	0.358
Theta hat (MLE)	0.0169	Theta star (bias corrected MLE)	0.0189
nu hat (MLE)	10.36	nu star (bias corrected)	9.302
MLE Mean (bias corrected)	0.00675	MLE Sd (bias corrected)	0.0113
		Adjusted Level of Significance (β)	0.0301
Approximate Chi Square Value (9.30, α)	3.511	Adjusted Chi Square Value (9.30, β)	3.022
95% Gamma Approximate UCL (use when n>=50)	0.0179	95% Gamma Adjusted UCL (use when n<50)	0.0208

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.781	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.859	Detected Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.298	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.256	Detected Data Not Lognormal at 5% Significance Level

Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.00598	Mean in Log Scale	-7.221
SD in Original Scale	0.00879	SD in Log Scale	2.611
95% t UCL (assumes normality of ROS data)	0.0103	95% Percentile Bootstrap UCL	0.00992
95% BCA Bootstrap UCL	0.0107	95% Bootstrap t UCL	0.0124
95% H-UCL (Log ROS)	2.197		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	0.00598	Mean in Log Scale	-7.059
SD in Original Scale	0.00879	SD in Log Scale	2.339
95% t UCL (Assumes normality)	0.0103	95% H-Stat UCL	0.557

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

99% KM (Chebyshev) UCL	0.0303

Warning: Recommended UCL exceeds the maximum observation

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statisticia

ATTACHMENT D

EXPOSURE ASSUMPTIONS

ATTACHMENT D TABLE 1
SUMMARY OF EXPOSURE ASSUMPTIONS - CURRENT/FUTURE CONSTRUCTION/UTILITY WORKER
HUMAN HEALTH RISK ASSESSMENT
NEWPORT, RHODE ISLAND

Parameter	Current/Future Construction/Utility Worker			
	RME		CTE	
Parameters Used in the Outdoor Air (Fugitive Dust and Excavation Air) Inhalation Pathway				
Exposure Time (hr/day)	8	(a)	8	(a)
Exposure Frequency (days/year)	250	(b)	130	(g)
Exposure Duration (yr)	1	(c)	0.5	(c)
Parameters Used in the Soil Pathway				
Exposure Frequency (days/year)	250	(b)	130	(g)
Exposure Duration (yr)	1	(c)	0.5	(c)
Soil Ingestion Rate (mg/day)	330	(f)	330	(f)
Exposed Skin Surface Area (cm^2)	3470	(e)	3470	(e)
Adherence Factor (mg/cm^2)	0.3	(h)	0.1	(h)
Body Weight (kg)	80	(e)	80	(e)
Parameters Used in the Groundwater Contact Pathway				
Exposure Time (hr/day)	1	(i)	1	(i)
Exposure Frequency (days/year)	250	(b)	130	(g)
Exposure Duration (yr)	1	(c)	0.5	(c)
Water Ingestion Rate (l/day)	0.005	(d)	0	(j)
Exposed Skin Surface Area (cm^2)	3470	(e)	3470	(e)
Body Weight (kg)	80	(e)	80	(e)

Notes:
RME - Reasonable Maximum Exposure.
CTE - Central Tendency Exposure.
USEPA, 2004. Risk Assessment Guidance for Superfund, Supplemental Guidance for Dermal Risk Assessment.
(a) Based on a typical 8 hour workday.
(b) Exposure frequency is equivalent to 5 days per week for the exposure duration.
(c) Construction activities are assumed to occur within a 1 year period (for RME scenario) and for a 6 month period (for CTE scenario) based on professional judgment.
(d) Based on professional judgment and USEPA, 1989, Risk Assessment Guidance for Superfund, Volume I. Value is one-tenth of that assumed to occur during a swimming event via incidental ingestion. Assumes drinking water is obtained offsite.
(e) USEPA, 2014. Human Health Evaluation Manual, Supplemental Guidance: Update of Standard Default Exposure Factors. February 6, 2014.
(f) USEPA, 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. Exhibit 1-2.
(g) Exposure frequency is equivalent to 5 days per week for exposure duration (26 weeks).
(h) USEPA, 2004. Exhibit 3-3, recommended values for construction workers.
(i) Assumes that contact with water occurs only for a fraction of the total exposure duration and time.
(j) Assumes construction workers obtain their drinking water offsite and that incidental ingestion to groundwater is trivial.

ATTACHMENT D TABLE 2
SUMMARY OF EXPOSURE ASSUMPTIONS - CURRENT ON-SITE WORKER
HUMAN HEALTH RISK ASSESSMENT
NEWPORT, RHODE ISLAND

Parameter	Current On-Site Worker			
	RME		CTE	
Parameters Used in the Outdoor Air (Fugitive Dust) Inhalation Pathway				
Exposure Time (hr/day)	2	(d)	4	(d)
Exposure Frequency (days/year)	24	(d)	2	(d)
Exposure Duration (yr)	25	(b)	7	(e)
Parameters Used in the Soil Pathway				
Exposure Frequency (days/year)	24	(d)	2	(d)
Exposure Duration (yr)	25	(a)(b)	7	(e)
Ingestion Rate (mg/day)	100	(a)	50	(f)
Fraction ingested from contaminated source (unitless)	0.25	(g)	0.5	(g)
Exposed Skin Surface Area (cm^2)	3470	(c)	3470	(c)
Adherence Factor (mg/cm^2)	0.12	(c)	0.02	(h)
Body Weight (kg)	80	(c)	80	(c)

Notes:
RME - Reasonable Maximum Exposure.
CTE - Central Tendency Exposure.
USEPA, 1997. USEPA Exposure Factors Handbook. Volume I. August 1997.
USEPA, 2004. Risk Assessment Guidance for Superfund, Supplemental Guidance for Dermal Risk Assessment. July 2004.
(a) USEPA, 1991. Standard Default Exposure Factors.
(b) USEPA, 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites, OSWER 9355.4-24, December, 2002.
(c) USEPA, 2014. Human Health Evaluation Manual, Supplemental Guidance: Update of Standard Default Exposure Factors. February 6, 2014.
(d) Based on information of current on-site worker maintenance activities provided by the Navy Remedial Program Manager.
The RME scenario represents a typical landscaper who is present on site for 2 hours per event for 2 events per month;
The CTE scenario represents other less frequent maintenance activities that occur for 4 hours per event for 2 events per year.
Additional details on this receptor are provided in the report text.
(e) USEPA, 1997. Recommended value for median occupational tenure, average of values for men and women. (Table 15-158).
(f) USEPA, 1997. Mean value for the adult population (Table 4-23).
(g) Assumes exposure occurs for 2 hours (RME scenario) and 4 hours (CTE scenario) out of a typical 8 hour workday.
(h) USEPA, 2004. Exhibit 3-5, recommended value.

ATTACHMENT D TABLE 3
SUMMARY OF EXPOSURE ASSUMPTIONS - FUTURE ON-SITE WORKER
HUMAN HEALTH RISK ASSESSMENT
NEWPORT, RHODE ISLAND

Parameter	Future On-Site Worker			
	RME		CTE	
Parameters Used in the Outdoor Air (Fugitive Dust) Inhalation Pathway				
Exposure Time (hr/day)	4	(d)	4	(d)
Exposure Frequency (days/year)	250	(a)	219	(c)
Exposure Duration (yr)	25	(b)	7	(e)
Parameters Used in the Indoor Air Inhalation Pathway				
Exposure Time (hr/day)	4	(d)	4	(d)
Exposure Frequency (days/year)	250	(a)	219	(c)
Exposure Duration (yr)	25	(a)(b)	7	(e)
Parameters Used in the Soil Pathway				
Exposure Frequency (days/year)	250	(a)	219	(c)
Exposure Duration (yr)	25	(a)(b)	7	(e)
Ingestion Rate (mg/day)	100	(a)	50	(f)
Exposed Skin Surface Area (cm^2)	3470	(h)	3470	(h)
Adherence Factor (mg/cm^2)	0.12	(h)	0.02	(c)
Body Weight (kg)	80	(h)	80	(h)
Parameters Used in the Groundwater Ingestion Pathway				
Exposure Frequency (days/year)	250	(a)	219	(c)
Exposure Duration (yr)	25	(a)(b)	7	(e)
Water Ingestion Rate (l/day)	1	(a)	0.7	(g)
Exposure Time (hr/day)	0.58	(c)	0.25	(c)
Exposed Skin Surface Area (cm^2)	3470	(h)	3470	(h)
Body Weight (kg)	80	(h)	80	(h)

Notes:
RME - Reasonable Maximum Exposure.
CTE - Central Tendency Exposure.
USEPA, 1997. USEPA Exposure Factors Handbook. Volume I. August 1997.
USEPA, 2004. Risk Assessment Guidance for Superfund, Supplemental Guidance for Dermal Risk Assessment. July 2004.
(a) USEPA, 1991. Standard Default Exposure Factors.
(b) USEPA, 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites, OSWER 9355.4-24, December, 2002.
(c) USEPA, 2004. Exhibit 3-5, recommended value.
(d) Based on professional judgment assuming an onsite worker performs both indoor and outdoor maintenance activities for a typical 8 hour workday.
(e) USEPA, 1997. Recommended value for median occupational tenure, average of values for men and women. (Table 15-158).
(f) USEPA, 1997. Mean value for the adult population (Table 4-23).
(g) One-half of the recommended mean value for the ingestion of drinking water for the associated age range (USEPA, 1997. Table 3-30), assuming workers get one-half of their daily drinking water at work.
(h) USEPA, 2014. Human Health Evaluation Manual, Supplemental Guidance: Update of Standard Default Exposure Factors. February 6, 2014.

ATTACHMENT D TABLE 4
SUMMARY OF EXPOSURE ASSUMPTIONS - CURRENT/FUTURE ADOLESCENT TRESPASSER
HUMAN HEALTH RISK ASSESSMENT
NEWPORT, RHODE ISLAND

Parameter	Adolescent Trespasser (7 to <16 years)			
	RME		CTE	
Parameters Used in the Outdoor Air (fugitive dust) Inhalation Pathway				
Exposure Time (hr/day)	4	(e)	2	(a)
Exposure Frequency (days/year)	52	(h)	26	(b)
Exposure Duration (yr)	9	(c)	9	(c)
Parameters Used in the Soil Pathway				
Exposure Frequency (days/year)	52	(h)	26	(b)
Exposure Duration (yr)	9	(c)	9	(c)
Ingestion Rate (mg/day)	100	(i)	50	(f)
Exposed Skin Surface Area (cm^2)	3624	(d)	3624	(d)
Adherence Factor (mg/cm^2)	0.1	(m)	0.1	(m)
Body Weight (kg)	44	(g)	44	(g)
Parameters Used in the Sediment Pathway				
Exposure Frequency (days/year)	52	(h)	26	(b)
Exposure Duration (yr)	9	(c)	9	(c)
Ingestion Rate (mg/day)	100	(i)	50	(f)
Exposed Skin Surface Area (cm^2)	3093	(n)	3093	(n)
Adherence Factor (mg/cm^2)	0.3	(m)	0.3	(m)
Body Weight (kg)	44	(g)	44	(g)

Notes:
RME - Reasonable Maximum Exposure.
CTE - Central Tendency Exposure.
USEPA, 2004. Risk Assessment Guidance for Superfund, Supplemental Guidance for Dermal Risk Assessment.
USEPA, 1997. USEPA Exposure Factors Handbook. Volume I. August 1997.
USEPA, 2011. Exposure Factors Handbook. September 2011.
(a) Assumes a trespasser is on-site for 2 hours per day. Based on professional judgment.
(b) 1 day per week for 26 weeks (6 warmer months) of the year.
(c) Duration reflects age-range.
(d) USEPA, 2011. Table 7-2. Represents weighted mean surface area for males and females, including hands, forearms, lower legs, and head, for ages 6-<16 years old.
(e) Assumes a trespasser is on-site for 4 hours per day. Based on professional judgment.
(f) USEPA, 1997. Mean value for the adult population (Table 4-23).
(g) USEPA, 2011. Recommended mean body weights. Weighted average of associated age range (Table 8-3). See attached calculation.
(h) 2 days per week for 26 weeks (6 warmer months) of the year.
(i) USEPA, 1991. Standard Default Exposure Factors.
(m) USEPA, 2011. See attached calculation.
(n) USEPA, 2011. Table 7-2. Represents weighted mean surface area for males and females, including hands, lower legs, and feet, for ages 6-<16 years old. These body parts were selected based on best professional judgment assuming contact with sediment may occur as part of a wading scenario.

ATTACHMENT D TABLE 5
SUMMARY OF EXPOSURE ASSUMPTIONS - HYPOTHETICAL FUTURE RESIDENT
HUMAN HEALTH RISK ASSESSMENT
NEWPORT, RHODE ISLAND

Parameter	RME				CTE			
	Young Child (0 to 6 yrs)		Adult		Young Child (0 to 6 yrs)		Adult	
Parameters Used in the Outdoor Air (Fugitive Dust) Inhalation Pathway								
Exposure Time (hr/day)	5	(d)	5	(d)	5	(d)	5	(d)
Exposure Frequency (days/year)	350	(a)	350	(a)	234	(f)	234	(f)
Exposure Duration (yr)	6	(a)	20	(y)	6	(a)	19	(h)
Parameters Used in the Indoor Air Inhalation Pathway								
Exposure Time (hr/day)	19	(k)	19	(k)	17	(b)	17	(b)
Exposure Frequency (days/year)	350	(a)	350	(a)	234	(f)	234	(f)
Exposure Duration (yr)	6	(a)	20	(y)	6	(a)	19	(h)
Parameters Used in the Soil Pathway								
Exposure Frequency (days/year)	350	(a)	350	(a)	234	(f)	234	(f)
Exposure Duration (yr)	6	(a)	20	(y)	6	(a)	19	(h)
Ingestion Rate (mg/day)	200	(a)(c)	100	(a)(c)	100	(a)(c)	50	(a)(c)
Exposed Skin Surface Area (cm^2)	2373	(y)(z)	6032	(y)	2373	(y)(z)	6032	(y)
Adherence Factor (mg/cm^2)	0.2	(n)	0.07	(n)	0.04	(n)	0.01	(n)
Body Weight (kg)	15	(l)	80	(y)	15	(l)	80	(y)
Parameters Used in the Groundwater Contact Pathway								
Exposure Frequency (days/year)	350	(a)	350	(a)	234	(f)	234	(f)
Exposure Duration (yr)	6	(a)	20	(y)	6	(a)	19	(h)
Water Ingestion Rate (l/day)	0.78	(y)	2.5	(y)	0.6	(j)	1.4	(j)
Body Weight (kg)	15	(l)	80	(y)	15	(l)	80	(y)
Parameters Used in the Showering/Bathing Pathway								
Exposure Time (hr/day)	0.54	(y)	0.71	(y)	0.33	(e)	0.25	(e)
Exposure Frequency (days/year)	350	(a)	350	(a)	234	(f)	234	(f)
Exposure Duration (yr)	6	(a)	20	(y)	6	(a)	19	(h)
Exposed Skin Surface Area (cm^2)	6378	(y)	20900	(y)	6378	(y)	20900	(y)
Body Weight (kg)	15	(l)	80	(y)	15	(l)	80	(y)
Parameters Used in the Sediment Pathway								
Exposure Frequency (days/year)	52	(p)	52	(p)	26	(q)	26	(q)
Exposure Duration (yr)	6	(a)	20	(y)	6	(a)	19	(h)
Ingestion Rate (mg/day)	200	(a)(c)	100	(a)(c)	100	(a)(c)	50	(a)(c)
Exposed Skin Surface Area (cm^2)	1364	(o)	4780	(o)	1364	(o)	4780	(o)
Adherence Factor (mg/cm^2)	0.4	(aa)	0.4	(aa)	0.4	(aa)	0.4	(aa)
Body Weight (kg)	15	(l)	80	(y)	15	(l)	80	(y)
Parameters Used in the Shellfish Ingestion Pathway								
Exposure Frequency (days/year)	365	(w)(v)	365	(w)(t)	365	(w)(v)	365	(w)(t)
Fraction Ingested (unitless)	1	(x)	1	(x)	0.5	(x)	0.5	(x)
Exposure Duration (yr)	6	(a)	20	(y)	6	(a)	19	(h)
Shellfish Ingestion Rate (g/kg-day)	0.06	(r)	0.06	(r)	0.06	(r)	0.06	(r)
Shellfish Ingestion Rate (kg/day)	0.0009	(s)(v)	0.0048	(s)(t)	0.0009	(s)(v)	0.0048	(s)(t)
Body Weight (kg)	15	(l)	80	(y)	15	(l)	80	(y)

ATTACHMENT D TABLE 5
SUMMARY OF EXPOSURE ASSUMPTIONS - HYPOTHETICAL FUTURE RESIDENT
HUMAN HEALTH RISK ASSESSMENT
NEWPORT, RHODE ISLAND

Parameter	RME		CTE	
	Young Child (0 to 6 yrs)	Adult	Young Child (0 to 6 yrs)	Adult

Notes:
NA - Not applicable.
RME - Reasonable Maximum Exposure.
CTE - Central Tendency Exposure.
USEPA, 1991. Standard Default Exposure Factors.
USEPA, 1993. USEPA Superfund's Standard Default Exposure Factors For the Central Tendency and Reasonable Maximum Exposure. Preliminary Review Draft. May 5, 1993.
USEPA, 1997. Exposure Factors Handbook. Volume I. August 1997.
USEPA, 2004. Risk Assessment Guidance for Superfund, Supplemental Guidance for Dermal Risk Assessment. July 2004.
USEPA, 2011. Exposure Factors Handbook. September 2011.
(a) USEPA, 1991.
(b) USEPA, 1997. Value for time spent indoors (at residence) (Table 15-176).
(c) USEPA, 1993.
(d) Adult and child residents are assumed to spend 5 out of 16 waking hours (or 30% of their time) outdoors (USEPA, 1991).
(e) USEPA, 2004. Exhibit 3-2, recommended value.
(f) Value recommended by USEPA (1993) for CTE scenario.
(g) USEPA, 1997. Value for time spent outdoors by a residential receptor (Table 15-176).
(h) For the CTE the children exposure remains 6 years, but the adult is reduced to 19 years based on a total residence time of 25 years (USEPA, 1997, Tabe 15-174).
(i) USEPA, 1997. Tables 6-6, 6-7, and 6-8. Represents 50th percentile surface area for males and females. For the child age groups, contact is assumed to occur with the hands, forearms, lower legs, feet, and head, consistent withUSEPA (2004). For the adolescent and adult, contact is assumed to occur with the hands, forearms, lower legs, and head, consistent with USEPA's (2004) assumptions for the adult.
(j) USEPA, 1997. Recommended mean value for the ingestion of drinking water for the associated age range (Table 3-30).
(k) Based on professional judgment; Conservatively assumes that a resident spends 24 hours per day at the residence. Equals 24 hours minus 5 hours spent outdoors as recommended by USEPA (1991) (d).
(l) USEPA, 1997. Recommended mean body weights. Weighted average of associated age ranges (Tables 7-1, 7-3).
(m) USEPA, 1997. Represents the 50th percentile total body surface area for males and females.
(n) USEPA, 2004. Exhibit 3-5, recommended value.
(o) USEPA, 2011. Table 7-2. Represents weighted mean surface area for males and females, including hands, lower legs and feet. These body parts were selected based on best professional judgment assuming contact with sediment may occur as part of a wading scenario. See attached calculation.
(p) 2 days per week for 26 weeks (6 warmer months) of the year.
(q) 1 day per week for 26 weeks (6 warmer months) of the year.
(r) Equal to the mean per capita shellfish intake rate of 0.06 g/kg-day for the whole population (uncooked weight) recommended in Table 10-9 (USEPA, 1997). The recommeded shellfish intake rate is based on the total consumption of shellfish that is then annualized over a 1 year period.
(s) Equal to the shellfish intake rate (g/kg-day) multiplied by the age-specific body weight and divided by 1000 to convert from grams to kilograms.
(t) The ingestion rate of 0.06 g/kg-day is equivalent to the consumption of approximately 13 shellfish meals per year for a 70 kg adult and approximately 8 shellfish meals per year for a 41 kg adolescent, assuming a meal consists of approximately 1 pound of unshelled clams (or other similar mollusk), which is equivalent to approximately 4 ounces (115 grams) of meat. http://www.cooksinfo.com/clams#ixzz2O2LJW2Rf.
(u) A child less than 2 years old is not assumed to consume shellfish.
(v) The ingestion rate is equivalent to the consumption of approximately 5-7 shellfish meals per year for children between the ages of 2 and 6 years old, assuming a meal consists of approximately one-half pound of unshelled clams (or other similar mollusk), which is equivalent to approximately 2 ounces (57 grams) of meat (i.e., one-half the size of an adult serving).
(w) An exposure frequency of 365 days is used because the shellfish intake rate has been annualized over a 1 year period (USEPA, 1997) as [described in (r)]. It is not assumed that people would be eating shellfish 365 days per year. The frequency of shellfish intake is described in footnotes (t) and (v).
(x) Represents the fraction of shellfish obtained from the site (versus other locations off-site). The RME scenario assumes 100% of shellfish consumed is obtained from the site. The CTE scenario assumes one-half (50%) of shellfish consumed is obtained from the site.
(y) USEPA, 2014. Human Health Evaluation Manual, Supplemental Guidance: Update of Standard Default Exposure Factors. February 6, 2014.
(z) Follow-up communication with EPA resulted in determining the USEPA, 2014 value of 2690 cm^2 was incorrect. Revised calculation attached.
(aa) USEPA, 2011. See attached calculation.

ATTACHMENT D TABLE 6
SUMMARY OF EXPOSURE ASSUMPTIONS - CURRENT RECREATIONAL ADULT AND CHILD (RV PARK VISITORS)
HUMAN HEALTH RISK ASSESSMENT
NEWPORT, RHODE ISLAND

Parameter	RME				CTE			
	Young Child (0 to 6 yrs)		Adult		Young Child (0 to 6 yrs)		Adult	
Parameters Used in the Outdoor Air (Fugitive Dust) Inhalation Pathway								
Exposure Time (hr/day)	24	(d)	24	(d)	24	(d)	24	(d)
Exposure Frequency (days/year)	14	(g)	14	(g)	7	(g)	7	(g)
Exposure Duration (yr)	6	(a)	20	(j)	6	(a)	19	(h)
Parameters Used in the Soil Pathway								
Exposure Frequency (days/year)	14	(g)	14	(g)	7	(g)	7	(g)
Exposure Duration (yr)	6	(a)	20	(j)	6	(a)	19	(h)
Ingestion Rate (mg/day)	200	(a)(b)	100	(a)(b)	100	(a)(b)	50	(a)(b)
Exposed Skin Surface Area (cm^2)	2373	(j)(k)	6032	(j)	2373	(j)(k)	6032	(j)
Adherence Factor (mg/cm^2)	0.2	(f)	0.07	(f)	0.04	(f)	0.01	(f)
Body Weight (kg)	15	(c)	80	(j)	15	(c)	80	(j)
Parameters Used in the Sediment Pathway								
Exposure Frequency (days/year)	14	(g)	14	(g)	7	(g)	7	(g)
Exposure Duration (yr)	6	(a)	20	(j)	6	(a)	19	(h)
Ingestion Rate (mg/day)	200	(a)(b)	100	(a)(b)	100	(a)(b)	50	(a)(b)
Exposed Skin Surface Area (cm^2)	1364	(e)	4780	(e)	1364	(e)	4780	(e)
Adherence Factor (mg/cm^2)	0.4	(l)	0.4	(l)	0.4	(l)	0.4	(l)
Body Weight (kg)	15	(c)	80	(j)	15	(c)	80	(j)

ATTACHMENT D TABLE 6
SUMMARY OF EXPOSURE ASSUMPTIONS - CURRENT RECREATIONAL ADULT AND CHILD (RV PARK VISITORS)
HUMAN HEALTH RISK ASSESSMENT
NEWPORT, RHODE ISLAND

Parameter	RME		CTE	
	Young Child (0 to 6 yrs)	Adult	Young Child (0 to 6 yrs)	Adult

Notes:
RME - Reasonable Maximum Exposure.
CTE - Central Tendency Exposure.
USEPA, 1993. USEPA Superfund's Standard Default Exposure Factors For the Central Tendency and Reasonable Maximum Exposure. Preliminary Review Draft. May 5, 1993.
USEPA, 1997. Exposure Factors Handbook. August 1997.
USEPA, 2004. Risk Assessment Guidance for Superfund, Supplemental Guidance for Dermal Risk Assessment. July 2004.
(a) USEPA, 1991. Standard Default Exposure Factors.
(b) USEPA, 1993.
(c) USEPA, 1997. Recommended mean body weights. Weighted average of associated age ranges (Tables 7-1, 7-3).
(d) Based on professional judgment that visitors to the RV park are present on site for 24 hours per day.
(e) USEPA, 2011. Table 7-2. Represents weighted mean surface area for males and females, including hands, lower legs and feet. These body parts were selected based on best professional judgment assuming contact with sediment may occur as part of a wading scenario. See attached calculation.
(f) USEPA, 2004. Exhibit 3-5, recommended value.
(g) RV park visitors are allowed to stay at the park for up to 2 weeks per year. Therefore, the RME scenario assumes a 14 day exposure frequency and the CTE assumes a 7 day exposure frequency (assuming visitors stay at the park for 1 week per year).
(h) For the CTE the children exposure remains 6 years, but the adult is reduced to 19 years based on a total residence time of 25 years (USEPA, 1997, Tabe 15-174).
(i) USEPA, 1997. Tables 6-6, 6-7, and 6-8. Represents 50th percentile surface area for males and females. For the child age groups, contact is assumed to occur with the hands, forearms, lower legs, feet, and head, consistent with USEPA (2004). For the adolescent and adult, contact is assumed to occur with the hands, forearms, lower legs, and head, consistent with USEPA's (2004) assumptions for the adult.
(j) USEPA, 2014. Human Health Evaluation Manual, Supplemental Guidance: Update of Standard Default Exposure Factors. February 6, 2014.
(k) Follow-up communication with EPA resulted in determining the USEPA, 2014 value of 2690 cm^2 was incorrect. Revised calculation attached.
(l) USEPA, 2011. See attached calculation.

ATTACHMENT D TABLE 7
SEDIMENT ADHERENCE FACTORS
HUMAN HEALTH RISK ASSESSMENT
NEWPORT, RHODE ISLAND

	Adult Recreational User and Resident - Sediment RME and CTE		
Body Part	**Surface Area Weighted Mean (a) (cm^2)**	**Soil Loading Reed Gatherer (mg/cm^2) (b)**	**Total Soil Mass (mg)**
Hands	980	0.658	645
Lower legs	2,505	0.159	398
Feet	1,295	0.633	820
Total	4,780	--	1863
Area-Weighted Soil Adherence factor (mg/cm^2) = Sediment mass/Surface area =			0.4

Notes:
RME - Reasonable Maximum Exposure.
CTE - Central Tendency Exposure.
USEPA, 2011. Exposure Factors Handbook. September 2011.
USEPA, 2004. Risk Assessment Guidance for Superfund, Supplemental Guidance for Dermal Risk Assessment. July 2004.
(a) Data from USEPA (2011). Table 7-2. Weighted mean values (average of men and women). Surface area for lower legs for adult males from EFH, 2011, Table 7-12. Lower leg values for adult females from EFH, 2011, Table 7-13.
(b) Data from USEPA (2004) Exhibit C-2. Geometric mean of reed gatherers. Since a high-end activity (i.e., reasonble but higher exposure) is being used to represent contact with sediment, the geometric mean adherence factor is selected for use to represent both the RME and CTE exposure scenario, in accordance with USEPA guidance (page 3-14). USEPA (2004) states that it is not recommended that a high-end soil contact activity be used with a high-end weighted adherence factor for that activity, as this use would not be consistent with the use of a RME scenario.

	Child Recreational User and Resident - Sediment RME and CTE		
Body Part	**Surface Area Weighted Mean (a) (cm^2)**	**Sediment Loading Children Playing in Wet Soil (mg/cm^2) (b)**	**Total Soil Mass (mg)**
Hands	317	0.656	207.95
Lower legs	641	0.026	16.67
Feet (c)	406	0.656	266.34
Total	1,364	--	490.95
Area-Weighted Soil Adherence factor (mg/cm^2) = Soil mass/Surface area =			0.4

Notes:
RME - Reasonable Maximum Exposure.
CTE - Central Tendency Exposure.
USEPA, 2011. Exposure Factors Handbook. September 2011.
USEPA, 2004. Risk Assessment Guidance for Superfund, Supplemental Guidance for Dermal Risk Assessment. July 2004.
(a) Data from USEPA (2011). Table 7-2. Represents weighted mean surface area for males and females. Surface area of the lower legs is assumed to be 40% of the legs.
(b) Data from USEPA (2004) Exhibit C-2. Geometric mean of children playing in wet soil. Since a high-end activity (i.e., reasonble but higher exposure) is being used to represent contact with sediment, the geometric mean adherence factor is selected for use to represent both the RME and CTE exposure scenario, in accordance with USEPA guidance (page 3-14). USEPA (2004) states that it is not recommended that a high-end soil contact activity be used with a high-end weighted adherence factor for that activity, as this use would not be consistent with the use of a RME scenario.
(c) Soil loading data not available for feet. Data for hands used as a proxy.

ATTACHMENT D TABLE 7
SEDIMENT ADHERENCE FACTORS
HUMAN HEALTH RISK ASSESSMENT
NEWPORT, RHODE ISLAND

Body Part	Adolescent Trespasser - Soil RME and CTE		
	Surface Area Weighted Mean (a) (cm^2)	Loading Children Playing in Wet Soil (mg/cm^2) (b)	Total Soil Mass (mg)
Hands	615	0.656	403.44
Forearms (c)	726	0.015	10.89
Lower legs (c)	1,588	0.026	41.29
Head (c)	695	0.004	2.78
Total	3,624	--	458.40
Area-Weighted Soil Adherence factor (mg/cm^2) = Soil mass/Surface area =			0.1

Notes:
RME - Reasonable Maximum Exposure.
CTE - Central Tendency Exposure.
USEPA, 2011. Exposure Factors Handbook. September 2011.
USEPA, 2004. Risk Assessment Guidance for Superfund, Supplemental Guidance for Dermal Risk Assessment. July 2004.
(a) Data from USEPA (2011). Table 7-2. Represents weighted mean surface area for males and females.

(b) Data from USEPA (2004) Exhibit C-2. Geometric mean of children playing in wet soil. Since a high-end activity (i.e., reasonble but higher exposure) is being used to represent contact with sediment, the geometric mean adherence factor is selected for use to represent both the RME and CTE exposure scenario, in accordance with USEPA guidance (page 3-14). USEPA (2004) states that it is not recommended that a high-end soil contact activity be used with a high-end weighted adherence factor for that activity, as this use would not be consistent with the use of a RME scenario.
(c) Soil loading data not available for head. Data for faces used as a proxy. Loading for arms used for forearms. Loading for legs used for lower legs.

Body Part	Adolescent Trespasser - Sediment RME and CTE		
	Surface Area Weighted Mean (a) (cm^2)	Loading Children Playing in Wet Soil (mg/cm^2) (b)	Total Soil Mass (mg)
Hands	615	0.656	403.44
Lower legs (c)	1,588	0.026	41.29
Feet (c)	890	0.656	583.84
Total	3,093	--	1028.57
Area-Weighted Soil Adherence factor (mg/cm^2) = Soil mass/Surface area =			0.3

Notes:
RME - Reasonable Maximum Exposure.
CTE - Central Tendency Exposure.
USEPA, 2011. Exposure Factors Handbook. September 2011.
USEPA, 2004. Risk Assessment Guidance for Superfund, Supplemental Guidance for Dermal Risk Assessment. July 2004.
(a) Data from USEPA (2011). Table 7-2. Represents weighted mean surface area for males and females.

(b) Data from USEPA (2004) Exhibit C-2. Geometric mean of children playing in wet soil. Since a high-end activity (i.e., reasonble but higher exposure) is being used to represent contact with sediment, the geometric mean adherence factor is selected for use to represent both the RME and CTE exposure scenario, in accordance with USEPA guidance (page 3-14). USEPA (2004) states that it is not recommended that a high-end soil contact activity be used with a high-end weighted adherence factor for that activity, as this use would not be consistent with the use of a RME scenario.
(c) Soil loading data not available for feet. Data for hands used as a proxy. Loading for legs used for lower legs.

ATTACHMENT D TABLE 8
CALCULTION OF AGE-WEIGHTED MEAN SURFACE AREAS
HUMAN HEALTH RISK ASSESSMENT
NEWPORT, RHODE ISLAND

	Mean Surface Area by Body Part (m^2)											Number of months within age-range
	head	trunk	arms	hands	legs	feet	forearm		lower leg		face	
Age	(a)	(a)	(a)	(a)	(a)	(a)					(o)	
children (boy/girl)												
Birth to <1 month	0.053	0.104	0.04	0.015	0.06	0.019	0.016		0.0252		0.01766667	1
1 to <3 months	0.06	0.118	0.045	0.017	0.068	0.021	0.018		0.02856		0.02	2
3 to <6 months	0.069	0.136	0.052	0.02	0.078	0.025	0.0208	(b)	0.03276	(i)	0.023	3
6 to <12 months	0.082	0.161	0.062	0.024	0.093	0.029	0.0248		0.03906		0.02733333	6
1 to <2 years	0.087	0.188	0.069	0.03	0.122	0.033	0.0276		0.05124		0.029	12
2 to <3 years	0.051	0.25	0.088	0.028	0.154	0.038	0.0352		0.06468		0.017	12
3 to <6 years	0.061	0.313	0.106	0.037	0.195	0.049	0.0424	(c)	0.078	(j)	0.02033333	36
6 to <11 years	0.066	0.428	0.151	0.051	0.311	0.073	0.05889	(d)	0.1244	(k)	0.022	60
11 to <16 years	0.073	0.63	0.227	0.072	0.483	0.105	0.08626	(e)	0.1932	(l)	0.02433333	60
16 to <21 years	0.075	0.759	0.269	0.083	0.543	0.112	0.10222	(f)	0.21177	(m)	0.025	60
adult male 21+ years	0.136	0.827	0.314	0.107	0.682	0.137	0.148	(g)	0.268	(g)	0.04533333	NA
adult female 21+ years	0.114	0.654	0.237	0.089	0.598	0.122	0.1114	(h)	0.233	(n)	0.038	NA
adult 21+ (average of male and female)	0.125	0.7405	0.2755	0.098	0.64	0.1295	0.129695		0.2505		0.04166667	NA

	Calculated Age-Weighted Mean Surface Areas by Body Part (cm^2) (p)									Number of months within receptor's age-range
Receptor	head	trunk	arms	hands	legs	feet	forearm	lower leg	face	
child - 0 to <1 year	727	1428	548	211	823	258	219	346	242	12
child - 0 to <2 years	798	1654	619	255	1022	294	248	429	266	24
child - 0 to <6 years	656	2533	883	317	1572	406	353	641	219	72
child - 2 to <6 years	280	7043	840	93	2703	168	134	454	31	48
child - 2 to <16 years	664	4628	1640	539	3364	768	634	1348	221	168
teenager - 6 to <16 years	695	5290	1890	615	3970	890	726	1588	232	120
adult 21+	1250	7405	2755	980	6400	1295	1297	2505	417	684
adult - 16 to <21 years	750	7590	2690	830	5430	1120	1022	2118	250	60
adult - 16+ (average of 16-<21 and adult 21+)	1000	7498	2723	905	5915	1208	1160	2311	333	NA
adult - 16+ (weighted average, 78 year lifetime)	1210	7420	2750	968	6322	1281	1275	2474	403	NA

ATTACHMENT D TABLE 8
CALCULTION OF AGE-WEIGHTED MEAN SURFACE AREAS
HUMAN HEALTH RISK ASSESSMENT
NEWPORT, RHODE ISLAND

Receptor	Calculated Age-Weighted Mean Surface Areas (cm^2)	Note
Child (0 to <6 years)		
Soil - head, hands, forearms, lower legs, feet	2373	USEPA, 2014. Follow-up communication with EPA resulted in determining the USEPA, 2014 value of 2690 cm^2 was incorrect.
Sediment/Surface Water - hands, lower legs, feet	1364	USEPA, 2011. Table 7-2. Represents weighted mean surface area for males and females, including hands, lower legs and feet. These body parts were selected based on best professional judgment assuming contact with sediment may occur as part of a wading scenario.
Trespassing Teenager (7 to <16 years)		
Soil - head, hands, forearms, lower legs	3624	USEPA, 2011. Table 7-2. Represents weighted mean surface area for males and females, including hands, forearms, lower legs, and head, for ages 6-<16 years old.
Sediment - wading - head, hands, forearms, lower legs	3093	USEPA, 2011. Table 7-2. Represents weighted mean surface area for males and females, including hands, lower legs, and feet, for ages 6-<16 years old. These body parts were selected based on best professional judgment assuming contact with sediment may occur as part of a wading scenario.
Adult (21+ years)		
Soil - head, hands, forearms, lower legs	6032	USEPA, 2014. Per RAGS E (Section 3.2.2.1), "The adult resident was assumed to wear a short-sleeved shirt, shorts and shoes; therefore, the exposed skin surface is limited to the head, hands, forearms and lower legs."
Sediment/Surface Water - hands, lower legs, feet	4780	USEPA, 2011. Table 7-2. Represents weighted mean surface area for males and females, including hands, lower legs and feet. These body parts were selected based on best professional judgment assuming contact with sediment may occur as part of a wading scenario. See attached calculation.

Notes:
cm^2 - square centimeter.
EFH, 2011 - USEPA Exposure Factors Handbook: 2011 Edition. September 2011.
m^2 - square meter.
NA - Not applicable.
USEPA - United States Environmental Protection Agency.
USEPA, 2014 - USEPA Human Health Evaluation Manual, Supplemental Guidance: Update of Standard Default Exposure Factors. February 6, 2014.
(a) EFH, 2011. Table 7-2. Recommended Values for Surface Area of Body Parts; Mean Surface Area by Body Part.
(b) Surface area for the arm x ratio of the forearm to the arm for the 2-year old, average of male and female (0.4) (Table 7-8).
(c) Surface area for the arm x ratio of the forearm to the arm for the 4-year old, average of male and female (0.4) (Table 7-8).
(d) Surface area for the arm x average of the ratios of the forearm to the arm for 6, 8 and 10 year-olds (0.39) (Table 7-8).
(e) Surface area for the arm x average of the ratios of the forearm to the arm for 12 and 14 year-olds (0.38) (Table 7-8).
(f) Surface area for the arm x average of the ratios of the forearm to the arm for 16 and 18 year-olds (0.38) (Table 7-8).
(g) Table 7-12.
(h) Surface area for the female forearm is equal to the female arm (Table 7-2) x (male forearm/male arm) (Table 7-12).
(i) Surface area for the leg x ratio of the lower leg to the leg for the 2-year old, average of male and female (0.42) (Table 7-8).
(j) Surface area for the leg x ratio of the lower leg to the leg for the 4-year old, average of male and female (0.4) (Table 7-8).
(k) Surface area for the leg x average of the ratios of the lower leg to the leg for the 6, 8 and 10 year-olds (0.4) (Table 7-8).
(l) Surface area for the leg x average of the ratios of the lower leg to the leg for the 12 and 14 year-olds (0.4) (Table 7-8).
(m) Surface area for the leg x average of the ratios of the lower leg to the leg for the 16 and 18 year-olds (0.39) (Table 7-8).
(n) Table 7-13.
(o) Surface area of the face is assumed to be one-third of the head.
(p) The surface areas assocated with each receptor listed in this table are age-weighted as follows:
[(Mean surface area x number of months within age-range (from above table))$_{\text{age range 1}}$ + (Mean surface area x number of months within age-range (from above table))$_{\text{age range 2}}$ ….] / number of months within receptor's age-range. A factor of 1000 is applied to convert m^2 to cm^2.

ATTACHMENT E

DERMAL INFORMATION

TABLE 1. DERMAL SCREENING - GROUNDWATER INORGANICS

(Variable Definitions follow Table)

Timeframe	Receptor	Exposure Point	Chemical	Conc ug/L	Conc mg/cm3	Kp (cm/hr)	Isc cm	IR cm^3/day	ABSGI	A cm^2	t_event hr/event	EV event/day	DA_event mg/cm2-evt	Derm/Drink Kp	Chem Assess
Future	Resident - Adult	MRP Site 1-max of all wells													
			ANTIMONY	8.4E-01	8.4E-07	1.0E-03	1.0E-03	2000	0.15	20900	0.71	1	**6.0E-10**	**5%**	N
			COBALT	9.5E+00	9.5E-06	4.0E-04	1.0E-03	2000	0.97	20900	0.71	1	**2.7E-09**	**0%**	N
			IRON	9.8E+03	9.8E-03	1.0E-03	1.0E-03	2000	0.5	20900	0.71	1	**6.9E-06**	**1%**	N
			MANGANESE	1.2E+03	1.2E-03	1.0E-03	1.0E-03	2000	0.06	20900	0.71	1	**8.2E-07**	**12%**	Y
Future	Resident - Child	MRP Site 1-max of all wells													
			ANTIMONY	8.4E-01	8.4E-07	1.0E-03	1.0E-03	2000	0.15	6378	0.54	1	**4.5E-10**	**1%**	N
			COBALT	9.5E+00	9.5E-06	4.0E-04	1.0E-03	2000	0.97	6378	0.54	1	**2.1E-09**	**0%**	N
			IRON	9.8E+03	9.8E-03	1.0E-03	1.0E-03	2000	0.5	6378	0.54	1	**5.3E-06**	**0%**	N
			MANGANESE	1.2E+03	1.2E-03	1.0E-03	1.0E-03	2000	0.06	6378	0.54	1	**6.2E-07**	**3%**	N
Future	Onsite Worker - Adult	MRP Site 1-max of all wells													
			ANTIMONY	8.4E-01	8.4E-07	1.0E-03	1.0E-03	2000	0.15	3470	0.58	1	**4.9E-10**	**1%**	N
			COBALT	9.5E+00	9.5E-06	4.0E-04	1.0E-03	2000	0.97	3470	0.58	1	**2.2E-09**	**0%**	N
			IRON	9.8E+03	9.8E-03	1.0E-03	1.0E-03	2000	0.5	3470	0.58	1	**5.7E-06**	**0%**	N
			MANGANESE	1.2E+03	1.2E-03	1.0E-03	1.0E-03	2000	0.06	3470	0.58	1	**6.7E-07**	**2%**	N
Current/ Future	Const. Worker - Adult	Shallow Groundwater													
			Cobalt	7.0E+00	7.0E-06	4.0E-04	1.0E-03	2000	0.97	3470	1	1	**2.8E-09**	**0%**	N
			Iron	8.8E+03	8.8E-03	1.0E-03	1.0E-03	2000	0.5	3470	1	1	**8.8E-06**	**0%**	N
			Manganese	1.2E+03	1.2E-03	1.0E-03	1.0E-03	2000	0.06	3470	1	1	**1.2E-06**	**3%**	N

Refer to Section 4.2.1 for details on selection of chemicals for dermal assessment.

DERMAL ABSORPTION CALCULATION EXAMPLE

Note: This EPA spreadsheet utilized as basis for Attachment E calculations

FOR INORGANIC CHEMICALS IN WATER (latest version 04/01)

Worksheet to Calculate Dermal Absorption of Inorganic Chemicals from Aqueous Media

Enter the Following Exposure Conditions: for site specific conditions, change values for A through AT (Given are default values from Table 8-6

Concentration (mg/L*L/1000 cm3):	Conc =	0.001	mg/cm3 (default value for purpose of illustration)
Input site specific concentrations in Column marked "Conc"		= 1 mg/L (1 ppm)	= 1 ug/cm3 = 1000 ppb
Area exposed (cm2):	SA=	18000	cm2
Event time (hr/event):	t_event =	0.58	hr/event (35 minutes/event)
Event frequency (events/day):	EV =	1	event/day
Exposure frequency (days/year):	EF =	350	days/yr
Exposure duration (years):	ED =	30	years
Body weight (kg):	BW =	70	kg
Averaging time (days):	AT =	25550	days
for carcinogenic effects, AT=70 years (25,550 days)			
for noncarcinogenic effects, AT=ED (in days)			

Default conditions for screening purposes:

Compare Dermal to Drinking: Adults showering for 35 minutes/day, compared to drinking 2L water/day

Dermal (mg/day) = DA_event * A * EV
Drinking (mg/day) = Conc * IR * ABSIG

IR: Ingestion rate of drinking water	IR =	2000	(cm3/day = L/day * 1000 cm3/L)
ABSIG: Absorption fraction in GI tract	Chemical specific		
Condition for screening: "Y" when Dermal is 10% of Drinking			

Compare Dermal to Total dose exposed during adult showering assuming 5 gal/min of water flow rate

Total dose (mg/day) = Q * T_event * EV

Q: Shower flow rate (5-15 gal/min; here using 5 gal/min)	Q =	1135500	(cm3/hr = gal/min * 3.785 gal/l * 60 min/hr *1000 cm3/hr)

Refer to Appendix A for equations to evaluate DA_event and DAD

CHEMICAL	Kp (cm/hr)	Source of Kp (exp or default)	Conc (mg/cm3)	DA_event (mg/cm2-event)	DAD (mg/kg-day)	ABSGI (chemical specific)	Screening	Chemicals to be assessed	Derm/ Total Dose
Antimony	1.0E-03	default	1.0E-03	5.8E-07	6.2E-05	15%	3.50%	N	0.00%

Table 2. Dermal Worksheet
Intermediate Variables for Calculating DA-even
CARR POINT - MRP SITE 1

Timeframe	Receptor	Exposure Point	Chemical of Potential Concern	Media	Dermal Absorption Fraction (soil)	FA	Kp		T(event)		Tau		T*		B
						Value	Value	Units	Value	Units	Value	Units	Value	Units	Value
All	All	All	BENZO[A]ANTHRACENE	Sediment/Soil	0.13	No data	No data	No data	No data	No data	No data	No data	No data	No data	No data
			BENZO[A]PYRENE	Sediment/Soil	0.13	No data	No data	No data	No data	No data	No data	No data	No data	No data	No data
			BENZO[B]FLUORANTHENE	Sediment/Soil	0.13	No data	No data	No data	No data	No data	No data	No data	No data	No data	No data
			BENZO[K]FLUORANTHENE	Sediment/Soil	0.13	No data	No data	No data	No data	No data	No data	No data	No data	No data	No data
			CHRYSENE	Sediment/Soil	0.13	No data	No data	No data	No data	No data	No data	No data	No data	No data	No data
			DIBENZ[A,H]ANTHRACENE	Sediment/Soil	0.13	No data	No data	No data	No data	No data	No data	No data	No data	No data	No data
			INDENO[1,2,3-CD]PYRENE	Sediment/Soil	0.13	No data	No data	No data	No data	No data	No data	No data	No data	No data	No data
			NITROGLYCERIN	Soil	0.1	No data	No data	No data	No data	No data	No data	No data	No data	No data	No data
			4,4-DDT	Sediment/Soil	0.03	No data	No data	No data	No data	No data	No data	No data	No data	No data	No data
			AROCLOR-1260	Sediment/Soil	0.14	No data	No data	No data	No data	No data	No data	No data	No data	No data	No data
			ARSENIC	Sediment/Soil	0.03	No data	No data	No data	No data	No data	No data	No data	No data	No data	No data

FA = Fraction Absorbed Water
Kp = Dermal Permeability Coefficient o
Compound in Water

T(event) = Event Duration
Tau = Lag Time

T* = Time to Reach Steady-State
B = Dimensionless Ratio of the Permeability Coefficient of a Compound Through th
Stratum Corneum Relative to its Permeability Coefficient Across the Viable Epidermi

ATTACHMENT F

LEAD MODELING

1.0 Introduction

This attachment presents an evaluation of potential risks associated with exposure of human receptors to lead in site-related media at MRP Site 1 at the Newport facility.

Lead was identified as a constituent of potential concern (COPC) in the HHRA for the following subareas and media:

- Surface soil
- Surface/subsurface soil
- Sediments
- Shellfish tissue

The lead evaluation consists of a separate evaluation for each exposure scenario evaluated in the HHRA. Lead was not detected in groundwater samples associated with the site.

2.0 Methodology

Risks associated with exposure to lead in various site-related media were evaluated using USEPA's lead models – the Adult Lead Model (ALM) and the IEUBK Model for Lead in Children (USEPA, 1994a; 2003a). Specifically, the ALM was used to evaluate potential lead risks for non-residential scenarios, and the IEUBK Model was used to evaluate potential lead risks for residential scenarios (i.e., children ages 0 to 84 months of age). Parameter values used in the ALM and IEUBK are largely based on the USEPA's recommended default values. The dose equations and modeling approaches are consistent with USEPA guidance (1994a; 2003a; 2007).

Incidental ingestion of lead in soil is generally the primary exposure pathway of concern for risk assessments. However, the models can also quantify cumulative doses and risk attributed to other sources of exposure, such as drinking water, diet, lead-based paint, and air emissions. Because lead is ubiquitous in the environment, predicted blood lead levels (PbB) associated with exposure to site-related sources of lead are added to an assumed age-specific baseline PbB that reflects exposure to non-site-related sources of lead. Multiple exposure scenarios (current and future) were evaluated using the ALM, including exposure of recreational users, onsite workers, construction workers, and adolescent trespassers. Two exposure scenarios were evaluated using the IEUBK Model: exposure of residential young children to site soil and exposure of residential young children to site soil and shellfish tissue combined.

In both the ALM and IEUBK Model, potential health risks associated with lead exposure are evaluated by comparing the estimated PbB to the target PbB of 10 micrograms per deciliter (µg/dL) (Centers for Disease Control [CDC], 1991). The target PbB is based on potentially adverse neurological effects in children (CDC, 1991). Therefore, lead risk is evaluated based on the probability that PbB among a receptor population will exceed 10 µg/dL. This is sometimes referred to as the "P10 statistic." Consistent with USEPA guidance (USEPA, 1994a; 2003b), this lead evaluation focuses on determining if P10 equals or exceeds 5 percent, which is equivalent to calculating the 95th percentile of the probability distribution of PbB among a receptor population.

The USEPA employs a simplifying assumption in both models to estimate the probability distribution of PbBs. Each model first generates a point estimate of the central tendency of the PbB distribution, and it is assumed that the value represents the geometric mean PbB among a

receptor population that is exposed to the same levels of lead in the environment. Epidemiological data on PbBs among various populations suggests that the distribution is roughly lognormal in shape (USEPA, 1994b). The USEPA applies the assumption of lognormality to both models using the following equation:

$$PbB_{0.95} = PbB_{GM} \times GSD^{1.645}$$

$PbB_{0.95}$ = 95th percentile of the distribution of PbBs (μg/dL)
PbB_{GM} = geometric mean (or 50th percentile) of the lognormal distribution of PbBs (μg/dL)
GSD = geometric standard deviation of the lognormal distribution of PbBs (unitless)

3.0 Adult Lead Model for Non-Residential Receptor Populations

The USEPA's ALM is used to evaluate risks to non-residential receptor populations (USEPA, 2007). The following equation is used in the ALM to estimate quasi-steady state PbBs:

$$PbB_{GM} = PbB_0 + \frac{PbS \times BKSF \times IR \times AF \times EF}{AT}$$

PbB_{GM} = geometric mean (or 50th percentile) of the lognormal distribution of PbBs in adult workers (μg/dL)
PbB_0 = baseline PbB due to exposure to non-site-related sources of lead (μg/dL)
PbS = soil lead concentration (milligrams per kilogram [mg/kg])
BKSF = biokinetic slope factor (μg/dL per micrograms per day)
IR = soil ingestion rate (grams per day [g/day])
AF = gastrointestinal absorption fraction for lead in soil (unitless)
EF = exposure frequency (days per year)
AT = averaging time (years)

The receptor of concern in the ALM is the fetus of an adult worker. The USEPA assumes a linear relationship between PbB in the adult woman and the fetus. Therefore, the geometric mean PbB in the fetus is equal to PbB_{GM} multiplied by a constant, R. USEPA guidance (2003b) indicates that because the IEUBK Model is limited to 0 to 84 months, the ALM may also be used to assess older children and adolescents with appropriate adjustments. A time-weighted approach was used to evaluate potential risks for recreational users and trespassers consistent with USEPA guidance (2003b).

As an additional evaluation, and as defined in the MRP Site 1 SAP (Resolution, 2013), USEPA's model for evaluating Intermittent or Variable Exposures at Lead Sites (USEPA, 2003b) Equation 8 will be used to derive a screening level for lead protective of adolescent trespasser and recreational child's exposure. As children are more sensitive to the effects of lead than adults, the screening level will also be protective of recreational adult's exposure. The use of this equation is appropriate for situations in which adolescents/children are exposed to a background level of lead at home and a different concentration of lead at a site. The equation allows for the modification of the default residential lead screening level of 400 mg/kg by using a weighted exposure time and frequency to account for the varying exposures. If the lead EPC exceeds the associated screening level, lead will be considered a COC for the trespasser/recreational exposure scenarios.

3.1 Adult Lead Model Parameter Values

Table 1 presents the central tendency parameter values used to evaluate lead risks for the following receptors:

- Current onsite worker (risks presented in Table 2)
- Current adolescent trespasser (risks presented in Table 3)
- Current adult recreational user (risks presented in Table 4)
- Future construction worker (risks presented in Table 5)
- Future onsite worker (risks presented in Table 6)
- Future adolescent trespasser (risks presented in Table 7)

Baseline Blood Lead Concentration (PbB_0)

The baseline PbB is intended to represent the best estimate of a reasonable central value of PbB in women of child-bearing age who are not exposed to lead-contaminated non-residential soil or dust at the site. The USEPA (2003b) recommends a range of baseline concentrations (1.7 to 2.2 µg/dL) based on national survey data for women from different demographic groups defined by geographic region, ethnicity, and race. A baseline value of 1.9 µg/dL was used in the ALM, which represents women 17-45 years of age (USEPA, 2009).

Geometric Standard Deviation

The USEPA recommends a range of geometric standard deviations (GSDs) that may be used in the ALM Model, depending on site-specific demographics and the characteristics of the receptor population (USEPA, 2003b). Higher GSD values imply greater variability in PbBs and will result in a higher probability of exceeding the target PbB of 10 µg/dL. A GSD of 1.8 was used in this lead evaluation to reflect women 17-45 years of age (USEPA, 2009).

Biokinetic Slope Factor

The Biokinetic Slope Factor (BKSF) represents the increase in typical adult PbB due to average daily lead uptake. The USEPA (2003b) recommends a default value of 0.4 µg lead/dL blood per µg lead absorbed per day for the BKSF. This value is based on empirical data on the relationship between tap-water lead concentrations and PbBs for a sample group of adult males. This default value was used for all exposure pathways in this evaluation.

Soil Ingestion Rate (IR_S)

Consistent with USEPA guidance (2003a; 2007), a soil ingestion rate of 50 mg/day was used to evaluate potential risks for the onsite worker, adult recreational user, and adolescent trespasser. This value represents the central tendency ingestion rate for soil non-contact-intensive activities (including soil-derived indoor dust) (USEPA, 2007). A soil ingestion rate of 100 mg/day was used to evaluate potential lead exposures for the construction worker based on the central tendency ingestion rate recommended by the USEPA (2007) for the construction worker scenario.

Exposure Frequency and Averaging Time

Exposure frequencies used in this lead evaluation were consistent with values used in the HHRA. Consistent with USEPA guidance (2003b), a time-weighted average approach was used to

evaluate potential risks for recreational users and trespassers (see Section 3.2 for additional discussion of this method).

Lead Absorption Fraction

This evaluation used a lead absorption fraction of 0.12, which is the default value recommended by the USEPA (2003b). This value is based on experimental studies of the bioavailability of ingested lead in adults with considerations for the following three major sources of variability: 1) effect of food on lead bioavailability, 2) nonlinearity in PbB, and 3) effect of lead form and particle size on bioavailability. The value assumes the a relative bioavailability of 0.6 for lead in site-related media as compared to soluble lead, and also assumes an absorption fraction (AF) of 0.2 for soluble lead. Thus, the final AF is 0.12 (i.e., AF = 0.6 x 0.2 = 0.12).

Fetal/Maternal Blood Lead Concentration ($R_{fetal/maternal}$)

This evaluation used a fetal/maternal blood lead ratio of 0.9 for adult receptors, which is the default value recommended by the USEPA (2003b) based on studies that have explored the relationship between umbilical cord and maternal PbBs. Because the older child recreational user and adolescent trespasser are not of child-bearing age, the fetal/maternal PbB ratio for these receptors was set equal to 1.

3.2 USEPA's Time-weighted Average Approach

As discussed above, USEPA's Technical Review Workgroup (TRW) developed guidance for non-continuous exposure at secondary locations where lead concentrations differ from a residential scenario (i.e., visiting and trespassing scenarios) for exposure to lead in soil and sediment (USEPA, 2003b). The guidance describes methods, assumptions, limitations, and uncertainties associated with time weighting of exposures to account for intermittent or highly varying exposure levels (USEPA, 2003b). The equation below illustrates how the time weighted approach can be used to derive a cleanup level for lead.

$$CleanupLevel(mg/kg) = PbSsite(mg/kg) = \frac{\left\lfloor PbS_w - PbS_{yard} \times \left\lfloor (f_{yard} \times EF_{site}) + EF_{yard} \right\rfloor \right\rfloor}{\left[EF_{site} \times f_{site} \right]}$$

where:

PbS_{site}	=	average soil lead concentration in an exposure area at the site (mg/kg). This value is calculated as a soil lead concentration protective of an adolescent trespasser or recreational child.
PbS_w	=	soil lead screening concentration (mg/kg). The default USEPA residential value of 400 mg/kg is assumed (USEPA, 2014).
PbS_{yard}	=	average soil lead concentration near home for a trespasser and off site for the recreational user staying onsite (mg/kg). An USEPA default value of 50 mg/kg is assumed (USEPA, 2003b).
f_{site}	=	fraction of daily outdoor time spent at secondary location on days when the site is visited (unitless). Trespasser - Soil: a value of 2 hr/day at site / total waking hours (16 hrs/day) = 0.125 is assumed. Sediment: a value of

2 hr/day at site / total waking hours (16 hrs/day) = 0.125 is assumed. Recreation User (who is staying at the site, but not assumed to be around soil areas at the site all day) - Soil: a value of 12 hr/day at site (in contact with soil) / total waking hours (16 hrs/day) = 0.75 is assumed. Sediment: a value of 2 hr/day at site (in the water) / total waking hours (16 hrs/day) = 0.125 is assumed.

EF_{site} = exposure frequency as a fraction of days/week the adult or child trespassers visit the site during exposure period (unitless). A value of 1 day/week or 0.1429 is assumed for the adolescent trespasser, while the child recreational user is exposed 7 days per year over a two week period, or 7 days per a 14-day period (0.5).

f_{yard} = fraction of daily outdoor time at residential backyard (unitless) = $1-f_{site}$. soil value = 0.875 (trespasser) and 0.25 (recreational user); sediment value = 0.875 (both receptors)

EF_{yard} = exposure frequency as a fraction of days/week the adolescent DOES NOT visit the site during exposure period (unitless) = $1 - EF_{site}$. Adolescent trespasser value = 0.8571; child recreational user value = 0.5.

3.3 Exposure Point Concentrations

The exposure point concentrations (EPCs) used in the lead evaluation are arithmetic means based on site-related data. Media were evaluated separately (i.e., medium-specific arithmetic means were used as the EPCs). Attachment A of the HHRA presents the sample groupings used to calculate EPCs for each exposure scenario evaluated. The Table 3 series of the RAGS D tables in the HHRA presents the arithmetic mean concentrations for each media.

3.4 Adult Lead Model Results

Table 2 presents the modeling results for the current onsite worker. The ALM predicts that exposure of onsite workers to surface soil at MRP Site 1 will result in a P10 less than 5 percent (i.e., less than 5 percent of fetal PbBs will be greater than the target of 10 µg/dL).

Table 3 presents the modeling results for the current adolescent trespasser. Because this receptor is not of child-bearing age, the ALM was only used to estimate the geometric mean of PbB for the exposed individual. Exposure of current adolescent trespassers to site-related media associated with MRP Site 1 results in PbBs less than 10 µg/dL.

Table 4 presents the modeling results for the current adult recreational user. Exposure of adult recreational users to site-related media associated with MRP Site 1 results in P10s less than 5 percent.

Table 5 presents the modeling results for the construction worker. Exposure of construction workers to sitewide shallow groundwater (incidental ingestion during intrusive activities) results was not evaluated, as lead was not detected in site groundwater. Exposure of construction workers to soils at MRP Site 1 results in a P10 less than 5 percent.

Table 6 presents the modeling results for the future onsite worker. The ALM predicts that exposure of onsite workers to soils at MRP Site 1 will result in a P10 less than 5 percent

Table 7 presents the modeling results for the future adolescent trespasser. Similar to the current adolescent trespasser, the ALM was only used to estimate the geometric mean of PbB for the exposed individual. Exposure of future adolescent trespassers to site-related media associated with MRP Site 1 results in PbBs less than 10 µg/dL.

3.5 Uncertainties Associated with the Adult Lead Model

A notable uncertainty associated with the ALM in this evaluation is associated with the construction worker soil ingestion rate. The HHRA uses an upper-bound soil ingestion rate of 330 mg/day, but USEPA guidance (2007) indicates that a soil ingestion rate of 100 mg/day is appropriate for evaluating contact-intensive activities for construction workers. Using a soil ingestion rate of 330 mg/day, the resulting P10 for MRP Site 1 would be 16.5 percent.

If future lead evaluations include use of a lower target blood concentration (i.e., 5 ug/dL), there would be exceedances of the 5% goal by the current adult recreational user (13% for soil and 15% for sediment), construction worker (18%) and future onsite worker (8.2%). Refer to Tables 15 through 20 for presentation of these calculations.

3.6 Concentrations Protective of Adolescent Trespassers and Recreational Users

Using the CTE exposure parameters presented in the HHRA, the adolescent trespasser is expected to visit the site and contact soils one day per week during the six warmest months of the year. During each visit, the adolescent trespasser is assumed to stay for 2 hours. The recreational user is assumed to visit the site for seven days per week during a two-week period (staying in a recreational vehicle onsite. Additional assumptions regarding fraction of time at offsite locations are presented in Section 3.2. The lead input assumptions for adolescent trespassers and child recreational user exposure to soil are presented in Tables 8 and 9, respectively. The resulting soil lead cleanup levels for the adolescent trespassers and child recreational user are 19,250 mg/kg and 583 mg/kg, respectively. Both the current and future soil CTE EPCs (828.3 mg/kg and 381.4 mg/kg, respectively) are below the screening value for the adolescent trespasser. However, the current (surface) soil CTE EPC is above the screening value for the child recreational user and, therefore, indicates the potential for unacceptable risks due to lead.

Adolescent trespassers are expected to contact sediment for the same exposure frequency and exposure time as soil. The child recreational user is expected to contact sediment for the same exposure frequency as soil, but with a smaller exposure time in the water (2 hours per day). The lead input assumptions for the adolescent trespassers and child recreational user exposure to sediment are presented in Tables 10 and 11, respectively. The resulting sediment lead cleanup levels for the adolescent trespassers and child recreational user are 19,250 mg/kg and 5,250 mg/kg, respectively. The sediment CTE EPC (949.8 mg/kg) is below these screening values.

A notable uncertainty associated with this method is the average fraction of time spent outdoors at the site for the recreational user who is at the site with a recreational vehicle. A decrease in this fraction of time to 8 hrs/day would result in a screening value above the CTE EPC. The

assumed time used in the model was based on discussions with Naval Station personnel, who provided input on the potential exposure based on observations of actual site use and through discussions with actual site recreational users.

4.0 IEUBK Model for Residential Receptor Populations

The IEUBK Model consists of four modules (exposure, uptake, biokinetics, and variability) that mathematically and statistically link environmental lead exposure to blood lead concentrations for a population of children, ages 0 to 84 months (USEPA, 2002b). USEPA's IEUBK Model (Windows version 1.1, Build 11) was used to assess risks for the following scenarios for children ages 0 to 84 months:

- Hypothetical future exposure of young child residents to shellfish collected in Narragansett Bay neighboring the site.
- Hypothetical future exposure of young child residents to site soils.

Site groundwater evaluation was not performed, as lead was not detected in MRP Site 1 wells.

The application of the IEUBK Model assumed one child, one location, and homogeneous media concentrations. Similar to the ALM, the EPC(s) used in the IEUBK Model represent arithmetic means of the available data.

4.1 IEUBK Model Parameters Values

Table 12 presents the parameter values used in the IEUBK Model. The majority of the parameter values used in the IEUBK Model were defaults, with the exception of using more recent estimates of dietary lead intake, evaluating an alternate diet intake scenario (i.e., shellfish ingestion), and using site-specific lead concentrations in soil. Attachment A of the HHRA presents the sample groupings used to calculate site-specific EPCs for each exposure scenario evaluated using the IEUBK Model.

<u>Dietary Data</u>

The default dietary lead intakes in the IEUBK Model are based on data collected by the U.S. Food and Drug Administration (USFDA) in the late 1980s. More recent USFDA (2001) data are available, and therefore, were incorporated into the model. In addition, for the shellfish consumption scenario, alternate diet intakes consisted of site-specific data for shellfish tissue collected. The lead intake from shellfish was calculated using the shellfish meat intake rate from the baseline HHRA, along with the arithmetic mean concentration of lead in shellfish tissue (see Table 12).

<u>Lead Concentration in Soil/Dust</u>

For the evaluation of hypothetical future residential young children exposed to site soils, the soil/dust lead concentration (381.4 mg/kg) represents the arithmetic mean of surface and subsurface soils from MRP Site 1.

4.2 IEUBK Model Results

Table 13 presents the input parameters and results for evaluation of hypothetical future exposure of young child residents to both soils and shellfish tissue. The results show that a combined exposure has just over a 5 percent probability (5.012%) that children exposed to lead in soil and shellfish tissue, together, will have a PbB that exceeds the target PbB of concern (10 µg/dL).

A second model simulation was performed (Table 14) with exposure of the hypothetical future exposure of young child residents to soils only. The results show that there is a 4.1 percent probability that children exposed to lead in soil will have a PbB greater than 10 µg/dL. Therefore, results indicate that neither site soils or shellfish tissue alone contribute to an exceedance of the target PbB of concern.

4.3 Uncertainties Associated with the IEUBK Model

The notable uncertainty associated with the use of the IEUBK Model is that many of the default parameters may not accurately reflect site conditions (e.g., air emissions, dietary lead intake, bioavailability). Specifically, the bioavailability factors used in the model are based on the absolute bioavailability of soluble lead acetate (50 percent) (used for lead in food and water) and the relative bioavailability of lead in soil (60 percent), which yields an absolute bioavailability for soil lead of 30 percent (i.e., 60 percent x 50 percent = 30 percent). The USEPA (1999) notes that the default estimates of bioavailability have significant variability and uncertainty due to many factors related to the site-specific conditions (e.g., lead speciation, mineralogy, soil particle size) and receptor population (complex biological process of gastrointestinal absorption).

If future lead evaluations include use of a lower target blood concentration (i.e., 5 ug/dL), there would be exceedances of the 5% goal for both the soil and shellfish scenario (43%) and the soil only scenario (40%), which shows that the primary contribution is by the soil. Refer to Tables 21 and 22 for presentation of these calculations.

5.0 Summary and Conclusions

In summary, the lead evaluation did not identify any scenarios as having estimated (potential) lead risks above the USEPA target for the target blood concentration of 10 ug/dL. However, the use of USEPA's time-weighted average approach to develop protective concentrations for comparison to adolescent trespassers and recreational users showed that the current (surface) soil concentrations exceed the protective level for recreational users, indicating the potential for unacceptable risks due to lead.

However, if future lead evaluation includes use of a lower target blood concentration (i.e., 5 ug/dL), additional unacceptable risks due to lead would be identified.

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Table 1. Summary of Parameter Values Used in the Adult Lead Model (ALM) for Evaluation of Non-Residential Lead Risks Associated with Site-Related Soil, Sediment, and Groundwater
Baseline Human Health Risk Assessment
MRP Site 1

Exposure Variable	Description	Units	Receptor Scenarios					
			Current Onsite Worker	Current Adolescent Trespasser [2,3]	Current Adult Recreational User [2]	Current/ Future Construction Worker	Future Onsite Worker	Future Adolescent Trespasser [2,3]
			Table 2	Table 3	Table 4	Table 5	Table 6	Table 7
PbS	Lead concentration in medium of interest	ppm	Site-specific[1]	Site-specific[1]	Site-specific[1]	Site-specific[1]	Site-specific[1]	Site-specific[1]
$R_{fetal/maternal}$	Fetal/maternal PbB ratio	--	0.9 [a]	1.0 [b]	0.9 [a]	0.9 [a]	0.9 [a]	1.0 [b]
$BKSF_S$	Biokinetic Slope Factor (soil, sediment, and food)	µg/dL per µg/day	0.4 [a]	0.4 [a]	0.4 [a]	0.4 [a]	0.4 [a]	0.4 [a]
$BKSF_W$	Biokinetic Slope Factor (groundwater)	µg/dL per µg/day	NA	NA	NA	NA	NA	NA
GSD_i	Geometric standard deviation PbB	--	1.8 [c]	1.8 [c]	1.8 [c]	1.8 [c]	1.8 [c]	1.8 [c]
PbB_0	Baseline PbB	µg/dL	1.9 [c]	1.9 [c]	1.9 [c]	1.9 [c]	1.9 [c]	1.9 [c]
IR_S	Soil/sediment ingestion rate (including soil-derived indoor dust)	g/day	0.05 [d]	0.05 [d]	0.05 [d]	0.10 [l]	0.05 [d]	0.05 [d]
IR_f	Food ingestion rate (fish)	g/day	NA	NA	NA	NA	NA	NA
IR_w	Shallow groundwater ingestion rate	L/day	NA	NA	NA	0.05 [m]	NA	NA
$AF_{S, D, W}$	Absorption fraction, Pb in soil, dust, sediment, and groundwater	--	0.12 [a]	0.12 [a]	0.12 [a]	0.12 [a]	0.12 [a]	0.12 [a]
AF_f	Absorption fraction, Pb in food	--	NA	NA	NA	NA	NA	NA
$EF_{S, D, W}$	Exposure frequency, Pb pathway	days/yr	2 [g]	1 [e]	7 [h]	130 [f]	219 [e]	1 [e]
$AT_{S, D, W}$	Averaging time, Pb pathway	days/yr	365 [i]	7 [k]	14 [h]	180 [j]	365 [i]	7 [k]

Table 1. Summary of Parameter Values Used in the Adult Lead Model (ALM) for Evaluation of Non-Residential Lead Risks Associated with Site-Related Soil, Sediment, and Groundwater
Baseline Human Health Risk Assessment
MRP Site 1

Notes:

[1] Consistent with the ALM guidance (USEPA, 2003a; 2007), the arithmetic mean of lead concentrations was used in the ALM.

[2] A time-weighted approach was used to evaluate potential lead risks for these receptors in the ALM, consistent with Example 6 in Appendix A in USEPA (2003b).

[3] Adolescent = 7 - <16 years of age

[4] Consistent with USEPA (2003a; 2004; 2007) guidance, dermal exposures to lead in aqueous and non-aqueous media were not quantitatively evaluated with the ALM due to the uncertainty in assigning a dermal absorption fraction that would apply to the numerous inorganic forms of lead that are typically found in environmental settings.

[a] Default value (USEPA, 2003a).

[b] Fetal/maternal PbB ratio does not apply because receptor is assumed to be an adolescent (7-16 years); risks to fetus of pregnant women are evaluated in adult receptor scenarios.

[c] Updated default value for women 17-45 years of age (USEPA, 2009).

[d] Default CTE value for soil ingestion (USEPA, 2003a; 2007). Value for onsite worker assumes non-contact-intensive activities.

[e] Reflects the same CTE value used in baseline human health risk assessment (1 days per week for approximately 6 months). Applying the time-weighted approach consistent with note [2] above, the resulting exposure frequency is set equal to 1 day/week.

[f] Same CTE value used in baseline human health risk assessment (5 days per week for approximately 12 weeks).

[g] Reflects the same CTE value used in baseline human health risk assessment (2 days per week for approximately 6 months). Applying the time-weighted approach consistent with note [2] above, the resulting exposure frequency is set equal to 2 days/week.

[h] Reflects the same CTE value used in baseline human health risk assessment (7 days per year over a two week period). Applying the time-weighted approach consistent with note [2] above, the resulting exposure frequency is set equal to 7 days per a 14 day period.

[i] Averaging time appropriate for chronic exposure scenario (USEPA, 2003a; 2007).

[j] Averaging time is based on six months to avoid diluting exposures over the entire year (180 days/year).

[k] Applying the time-weighted approach consistent with note [2] above, the resulting averaging time is set equal to 7 days/week.

[l] USEPA, 2007.

[m] Default surface water contact rate for recreational swimmers (USEPA, 1989). Assumed to provide a conservative estimate of incidental ingestion by construction workers exposed to shallow groundwater.

µg/dL = micrograms per deciliter

g/day = grams per day

L/day = liters per day

NA = not applicable

References:

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Table 2. Adult Lead Model (ALM) for Evaluation of Lead Risks for Current Onsite Workers Exposed to Site-Related Soil
Baseline Human Health Risk Assessment
MRP Site 1

Calculations of Blood Lead Concentrations (PbBs)

Exposure Variable	Description	Units	Onsite Workers Surface Soil [1]
PbS	Soil lead concentration (arithmetic mean)	mg/kg or ppm	828.3
$R_{fetal/maternal}$	Fetal/maternal PbB ratio	--	0.9
BKSF	Biokinetic Slope Factor	µg/dL per µg/day	0.4
GSD_i	Geometric standard deviation PbB	--	1.80
PbB_0	Baseline PbB	µg/dL	1.9
IR_S	Soil ingestion rate (including soil-derived indoor dust)	g/day	0.050
AF	Absorption fraction (Pb in soil and dust)	--	0.12
EF	Exposure frequency, Pb pathway	days/yr	2
AT	Averaging time, Pb pathway	days/yr	365
PbB_{adult}	**PbB of adult worker, geometric mean**	**µg/dL**	**1.9**
$PbB_{fetal, 0.95}$	95th percentile PbB among fetuses of adult workers	µg/dL	4.5
PbB_t	Target PbB level of concern	µg/dL	10.0
$P(PbB_{fetal} > PbB_t)$	**Probability that fetal PbB > PbB_t, assuming lognormal distribution**	**%**	**0.1%**

Notes:
ALM Version date 5/19/05
[1] Current scenario, as indicated in Table 1 of the baseline HHRA.
µg/dL = micrograms per deciliter
g/day = grams per day
mg/kg = milligrams per kilogram
ppm = parts per million

Table 3. Adult Lead Model (ALM) for Evaluation of Lead Risks for Current Adolescent Trespassers Exposed to Site-Related Soil and Sediment
Baseline Human Health Risk Assessment
MRP Site 1

Calculations of Blood Lead Concentrations (PbBs)

Exposure Variable	Description	Units	Adolescent Trespassers	
			Surface Soil [1]	Sediment [1]
PbS	Lead concentration in media of interest (arithmetic mean)	mg/kg or ppm	828.3	949.8
$R_{fetal/maternal}$	Fetal/maternal PbB ratio	--	1.0	1.0
BKSF	Biokinetic Slope Factor	µg/dL per µg/day	0.4	0.4
GSD_i	Geometric standard deviation PbB	--	1.80	1.80
PbB_0	Baseline PbB	µg/dL	1.9	1.9
IR_S	Soil/sediment ingestion rate (including soil-derived indoor dust)	g/day	0.050	0.050
AF	Absorption fraction (Pb in soil, dust, and sediment)	--	0.12	0.12
EF	Exposure frequency, Pb pathway	days/yr	1	1
AT	Averaging time, Pb pathway	days/yr	7	7
PbB_{adult}	**PbB of adolescent trespasser, geometric mean**	**µg/dL**	**2.2**	**2.2**
$PbB_{fetal, 0.95}$	95th percentile PbB among fetuses of adults	µg/dL	--	--
PbB_t	Target PbB level of concern	µg/dL	10.0	10.0
$P(PbB_{fetal} > PbB_t)$	**Probability that fetal PbB > PbB_t, assuming lognormal distribution**	**%**	**--**	**--**

Notes:
ALM Version date 5/19/05
[1] Current scenario, as indicated in Table 1 of the baseline HHRA.
µg/dL = micrograms per deciliter
g/day = grams per day
mg/kg = milligrams per kilogram
ppm = parts per million

Table 4. Adult Lead Model (ALM) for Evaluation of Lead Risks for Current Adult Recreational Users Exposed to Site-Related Soil and Sediment
Baseline Human Health Risk Assessment
MRP Site 1

Calculations of Blood Lead Concentrations (PbBs)

Exposure Variable	Description	Units	Adult Recreational Users	
			Surface Soil [1]	Sediment [1]
PbS	Lead concentration in media of interest (arithmetic mean)	mg/kg or ppm	828.3	949.8
$R_{fetal/maternal}$	Fetal/maternal PbB ratio	--	0.9	0.9
BKSF	Biokinetic Slope Factor	µg/dL per µg/day	0.4	0.4
GSD_i	Geometric standard deviation PbB	--	1.80	1.80
PbB_0	Baseline PbB	µg/dL	1.9	1.9
IR_S	Soil/sediment ingestion rate (including soil-derived indoor dust)	g/day	0.050	0.050
AF	Absorption fraction (Pb in soil, dust, and sediment)	--	0.12	0.12
EF	Exposure frequency, Pb pathway	days/yr	7	7
AT	Averaging time, Pb pathway	days/yr	14	14
PbB_{adult}	**PbB of adult recreational user, geometric mean**	**µg/dL**	**2.9**	**3.0**
$PbB_{fetal, 0.95}$	95th percentile PbB among fetuses of adults	µg/dL	6.8	7.2
PbB_t	Target PbB level of concern	µg/dL	10.0	10.0
$P(PbB_{fetal} > PbB_t)$	**Probability that fetal PbB > PbB_t, assuming lognormal distribution**	**%**	**1.1%**	**1.4%**

Notes:
ALM Version date 5/19/05
[1] Current scenario, as indicated in Table 1 of the baseline HHRA.
µg/dL = micrograms per deciliter
g/day = grams per day
mg/kg = milligrams per kilogram
ppm = parts per million

Table 5. Adult Lead Model (ALM) for Evaluation of Lead Risks for Construction Workers Exposed to Site-Related Soil and Shallow Groundwater
Baseline Human Health Risk Assessment
MRP Site 1

Calculations of Blood Lead Concentrations (PbBs)

Exposure Variable	Description	Units	Construction Workers Surface/ Subsurface Soil [1]
PbS	Lead concentration in medium of interest (arithmetic mean)	ppm	381.4
$R_{fetal/maternal}$	Fetal/maternal PbB ratio	--	0.9
BKSF	Biokinetic Slope Factor	µg/dL per µg/day	0.4
GSD_i	Geometric standard deviation PbB	--	1.80
PbB_0	Baseline PbB	µg/dL	1.9
$IR_{S,W}$	Ingestion rate (soil, groundwater)	g/day	0.100
AF	Absorption fraction (Pb in soil, dust, and groundwater)	--	0.12
EF	Exposure frequency, Pb pathway	days/yr	130
AT	Averaging time, Pb pathway	days/yr	180
PbB_{adult}	**PbB of adult worker, geometric mean**	**µg/dL**	**3.2**
$PbB_{fetal, 0.95}$	95th percentile PbB among fetuses of adult workers	µg/dL	7.6
PbB_t	Target PbB level of concern	µg/dL	10.0
$P(PbB_{fetal} > PbB_t)$	**Probability that fetal PbB > PbB_t, assuming lognormal distribution**	**%**	**1.8%**

Notes:
ALM Version date 5/19/05
[1] Current/Future scenario, as indicated in Table 1 of the baseline HHRA.
µg/dL = micrograms per deciliter
g/day = grams per day
mg/kg = milligrams per kilogram
ppm = parts per million

Table 6. Adult Lead Model (ALM) for Evaluation of Lead Risks for Future Onsite Workers Exposed to Site-Related Soil
Baseline Human Health Risk Assessment
MRP Site 1

Calculations of Blood Lead Concentrations (PbBs)

Exposure Variable	Description	Units	Onsite Workers Surface/ Subsurface Soil [1]
PbS	Soil lead concentration (arithmetic mean)	mg/kg or ppm	381.4
$R_{fetal/maternal}$	Fetal/maternal PbB ratio	--	0.9
BKSF	Biokinetic Slope Factor	µg/dL per µg/day	0.4
GSD_i	Geometric standard deviation PbB	--	1.80
PbB_0	Baseline PbB	µg/dL	1.9
IR_S	Soil ingestion rate (including soil-derived indoor dust)	g/day	0.050
AF	Absorption fraction (Pb in soil and dust)	--	0.12
EF	Exposure frequency, Pb pathway	days/yr	219
AT	Averaging time, Pb pathway	days/yr	365
PbB_{adult}	**PbB of adult worker, geometric mean**	**µg/dL**	**2.4**
$PbB_{fetal, 0.95}$	95th percentile PbB among fetuses of adult workers	µg/dL	5.8
PbB_t	Target PbB level of concern	µg/dL	10.0
$P(PbB_{fetal} > PbB_t)$	**Probability that fetal PbB > PbB_t, assuming lognormal distribution**	**%**	**0.5%**

Notes:
ALM Version date 5/19/05
[1] Future scenario, as indicated in Table 1 of the baseline HHRA.
µg/dL = micrograms per deciliter
g/day = grams per day
mg/kg = milligrams per kilogram
ppm = parts per million

Table 7. Adult Lead Model (ALM) for Evaluation of Lead Risks for Future Adolescent Trespassers Exposed to Site-Related Soil and Sediment
Baseline Human Health Risk Assessment
MRP Site 1

Calculations of Blood Lead Concentrations (PbBs)

Exposure Variable	Description	Units	Adolescent Trespassers	
			Surface/ Subsurface Soil [1]	Sediment [1]
PbS	Lead concentration in media of interest (arithmetic mean)	mg/kg or ppm	381.4	949.8
$R_{fetal/maternal}$	Fetal/maternal PbB ratio	--	1.0	1.0
BKSF	Biokinetic Slope Factor	µg/dL per µg/day	0.4	0.4
GSD_i	Geometric standard deviation PbB	--	1.80	1.80
PbB_0	Baseline PbB	µg/dL	1.9	1.9
IR_S	Soil/sediment ingestion rate (including soil-derived indoor dust)	g/day	0.050	0.050
AF	Absorption fraction (Pb in soil, dust, and sediment)	--	0.12	0.12
EF	Exposure frequency, Pb pathway	days/yr	1	1
AT	Averaging time, Pb pathway	days/yr	7	7
PbB_{adult}	**PbB of adolescent trespasser, geometric mean**	**µg/dL**	**2.0**	**2.2**
$PbB_{fetal, 0.95}$	95th percentile PbB among fetuses of adults	µg/dL	--	--
PbB_t	Target PbB level of concern	µg/dL	10.0	10.0
$P(PbB_{fetal} > PbB_t)$	**Probability that fetal PbB > PbB_t, assuming lognormal distribution**	**%**	**--**	**--**

Notes:
ALM Version date 5/19/05
[1] Future scenario, as indicated in Table 1 of the baseline HHRA.
µg/dL = micrograms per deciliter
g/day = grams per day
mg/kg = milligrams per kilogram
ppm = parts per million

Table 8. Calculation of Lead Cleanup Level in Soil Protective of an Adolescent Trespasser

$PbS_{site} = PbS_w - PbS_{yard} \times [(f_{yard} \times EF_{site}) + EF_{yard}] / [EF_{site} \times f_{site}]$				
Parameter	**Symbol**	**Units**	**Value**	**Reference**
Cleanup Level for Lead in Soil, Adolescent Trespasser	**PbS_{site}**	**mg/kg**	**19,250**	**Calculated (USEPA 2003; Equation 8)**
Soil lead screening concentration	PbS_w	mg/kg	400	Residential soil screening level for lead (USEPA 2015)
Average soil lead concentration near home	PbS_{yard}	mg/kg	50	EPA default value in recreational case study #1 (USEPA 2003)
Fraction of daily outdoor time spent at secondary location on days when the Site is visited	f_{site}	unitless	0.125	Waking hours at Site (2 hr/day) / Total waking hours (16 hr/day)
Exposure frequency as fraction of days/wk child visits Site during exposure period	EF_{site}	fraction days/wk	0.1429	1 d/wk = [1 day/ 7days]
Fraction of daily outdoor time at residential backyard	f_{yard}	unitless	0.875	1- f_{site}
Exposure frequency expressed as fraction of the days/week child does not visit the Site during exposure period	EF_{yard}	fraction days/wk	0.8571	1- EF_{site}

Notes:

See text for discussion of exposure assumptions.

Reference:

USEPA 2003. Assessing Intermittent or Variable Exposures at Lead Sites. Environmental Protection Agency, Office of Solid Waste and Emergency Response, Washington, D.C. EPA-540-R-03-008. OSWER #9285.7-76. November.

USEPA 2015. Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites. January 2015 Update. Available online at: http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/index.htm

Table 9. Calculation of Lead Cleanup Level in Soil Protective of a Child Recreational User

$PbS_{site} = PbS_w - PbS_{yard} \times [(f_{yard} \times EF_{site}) + EF_{yard}] / [EF_{site} \times f_{site}]$				
Parameter	**Symbol**	**Units**	**Value**	**Reference**
Cleanup Level for Lead in Soil, Child Rec. User	**PbS_{site}**	**mg/kg**	**583**	**Calculated (USEPA 2003; Equation 8)**
Soil lead screening concentration	PbS_w	mg/kg	400	Residential soil screening level for lead (USEPA 2015)
Average soil lead concentration near home	PbS_{yard}	mg/kg	50	EPA default value in recreational case study #1 (USEPA 2003)
Fraction of daily outdoor time spent at secondary location on days when the Site is visited	f_{site}	unitless	0.75	Waking hours at Site (12 hr/day) / Total waking hours (16 hr/day)
Exposure frequency as fraction of days/wk child visits Site during exposure period	EF_{site}	fraction days/wk	0.5	7 d/14 d = [7 day/ 2 weeks]
Fraction of daily outdoor time at residential backyard	f_{yard}	unitless	0.25	1- f_{site}
Exposure frequency expressed as fraction of the days/week child does not visit the Site during exposure period	EF_{yard}	fraction days/wk	0.5	1- EF_{site}

Notes:

See text for discussion of exposure assumptions.

Reference:

USEPA 2003. Assessing Intermittent or Variable Exposures at Lead Sites. Environmental Protection Agency, Office of Solid Waste and Emergency Response, Washington, D.C. EPA-540-R-03-008. OSWER #9285.7-76. November.

USEPA 2015. Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites. January 2015 Update. Available online at: http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/index.htm

Table 10. Calculation of Lead Cleanup Level in Sediment Protective of an Adolescent Trespasser

$PbS_{site} = PbS_w - PbS_{yard} \times [(f_{yard} \times EF_{site}) + EF_{yard}] / [EF_{site} \times f_{site}]$				
Parameter	**Symbol**	**Units**	**Value**	**Reference**
Cleanup Level for Lead in Sediment, Adolescent Trespasser	**PbS_{site}**	**mg/kg**	**19,250**	**Calculated (USEPA 2003; Equation 8)**
Soil lead screening concentration	PbS_w	mg/kg	400	Residential soil screening level for lead (USEPA 2015)
Average soil lead concentration near home	PbS_{yard}	mg/kg	50	EPA default value in recreational case study #1 (USEPA 2003)
Fraction of daily outdoor time spent at secondary location on days when the Site is visited	f_{site}	unitless	0.125	Waking hours at Site (2 hr/day) / Total waking hours (16 hr/day)
Exposure frequency as fraction of days/wk child visits Site during exposure period	EF_{site}	fraction days/wk	0.1429	1 d/wk = [1 day/ 7days] (See Table 5-13)
Fraction of daily outdoor time at residential backyard	f_{yard}	unitless	0.875	1- f_{site}
Exposure frequency expressed as fraction of the days/week child does not visit the Site during exposure period	EF_{yard}	fraction days/wk	0.8571	1- EF_{site}

Notes:

See text for discussion of exposure assumptions.

Reference:

USEPA 2003. Assessing Intermittent or Variable Exposures at Lead Sites. Environmental Protection Agency, Office of Solid Waste and Emergency Response, Washington, D.C. EPA-540-R-03-008. OSWER #9285.7-76. November.

USEPA 2015. Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites. January 2015 Update. Available online at: http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/index.htm

Table 11. Calculation of Lead Cleanup Level in Sediment Protective of a Child Recreational User

$PbS_{site} = PbS_w - PbS_{yard} \times [(f_{yard} \times EF_{site}) + EF_{yard}] / [EF_{site} \times f_{site}]$				
Parameter	**Symbol**	**Units**	**Value**	**Reference**
Cleanup Level for Lead in Sediment, Child Rec. User	**PbS_{site}**	**mg/kg**	**5,250**	**Calculated (USEPA 2003; Equation 8)**
Soil lead screening concentration	PbS_w	mg/kg	400	Residential soil screening level for lead (USEPA 2015)
Average soil lead concentration near home	PbS_{yard}	mg/kg	50	EPA default value in recreational case study #1 (USEPA 2003)
Fraction of daily outdoor time spent at secondary location on days when the Site is visited	f_{site}	unitless	0.125	Waking hours at Site (2 hr/day) / Total waking hours (16 hr/day)
Exposure frequency as fraction of days/wk child visits Site during exposure period	EF_{site}	fraction days/wk	0.5	7 d/14 d = [7 day/ 2 weeks]
Fraction of daily outdoor time at residential backyard	f_{yard}	unitless	0.875	1- f_{site}
Exposure frequency expressed as fraction of the days/week child does not visit the Site during exposure period	EF_{yard}	fraction days/wk	0.5	1- EF_{site}

Notes:

See text for discussion of exposure assumptions.

Reference:

USEPA 2003. Assessing Intermittent or Variable Exposures at Lead Sites. Environmental Protection Agency, Office of Solid Waste and Emergency Response, Washington, D.C. EPA-540-R-03-008. OSWER #9285.7-76. November.

USEPA 2015. Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites. January 2015 Update. Available online at: http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/index.htm

Table 12. Summary of Parameter Values Used in the Integrated Exposure Uptake Biokinetic (IEUBK) Model for Evaluation of Lead Risks Associated with Consumption of Fish Tissue and Site Soils
Baseline Human Health Risk Assessment
MRP Site 1

Receptor Scenario: Young Child [1,2] (Resident)

Parameter	Value	Units
Indoor air lead concentration (% of outdoor)	30 [a]	%
AIR (by year)		
Air Concentration		
Age (years) = 0 - 1	0.10 [a]	µg/m^3
1 - 2	0.10 [a]	µg/m^3
2 - 3	0.10 [a]	µg/m^3
3 - 4	0.10 [a]	µg/m^3
4 - 5	0.10 [a]	µg/m^3
5 - 6	0.10 [a]	µg/m^3
6 - 7	0.10 [a]	µg/m^3
Time Outdoors		
Age (years) = 0 - 1	1 [a]	hours/day
1 - 2	2 [a]	hours/day
2 - 3	3 [a]	hours/day
3 - 7	4 [a]	hours/day
Ventilation Rate		
Age (years) = 0 - 1	2 [a]	m^3/day
1 - 2	3 [a]	m^3/day
2 - 5	5 [a]	m^3/day
5 - 7	7 [a]	m^3/day
Lung Absorption	32 [a]	%
DIET (by year)		
Dietary Lead Intake		
Age (years) = 0 - 1	3.16 [b]	µg Pb/day
1 - 2	2.60 [b]	µg Pb/day
2 - 3	2.87 [b]	µg Pb/day
3 - 4	2.74 [b]	µg Pb/day
4 - 5	2.61 [b]	µg Pb/day
5 - 6	2.74 [b]	µg Pb/day
6 - 7	2.99 [b]	µg Pb/day
ALTERNATE DIET SOURCES (by food class)		
Concentration:		
home-grown fruits	0 [a]	µg Pb/g
home-grown vegetables	0 [a]	µg Pb/g
fish from fishing	0 [a]	µg Pb/g
game animals from hunting	0 [a]	µg Pb/g
Percent of food class:		
home-grown fruits	0 [a]	%
home-grown vegetables	0 [a]	%
fish from fishing	0 [a]	%
game animals from hunting	0 [a]	%

Table 12. Summary of Parameter Values Used in the Integrated Exposure Uptake Biokinetic (IEUBK) Model for Evaluation of Lead Risks Associated with Consumption of Fish Tissue and Site Soils
Baseline Human Health Risk Assessment
MRP Site 1

Receptor Scenario: Young Child [1,2] (Resident)

Parameter	Value	Units
ALTERNATE INTAKE (Fish Ingestion)		
Ingestion rate:		
Age (years) = 0 - 1	see Table 4	µg Pb/day
1 - 2	see Table 4	µg Pb/day
2 - 3	see Table 4	µg Pb/day
3 - 4	see Table 4	µg Pb/day
4 - 5	see Table 4	µg Pb/day
5 - 6	see Table 4	µg Pb/day
6 - 7	see Table 4	µg Pb/day
DRINKING WATER		
Lead Concentration in drinking water	4 [a]	µg/L
Ingestion rate:		
Age (years) = 0 - 1	0.20 [a]	L/day
1 - 2	0.50 [a]	L/day
2 - 3	0.52 [a]	L/day
3 - 4	0.53 [a]	L/day
4 - 5	0.55 [a]	L/day
5 - 6	0.58 [a]	L/day
6 - 7	0.59 [a]	L/day
SOIL/DUST INGESTION		
Concentration:		
soil	381.4 [c]	µg/g
dust	381.4 [c]	µg/g
Soil/dust ingestion weighting factor (% soil)	45 [a]	%
Soil/dust ingestion:		
Age (years) = 0 - 1	0.085 [a]	g/day
1 - 4	0.135 [a]	g/day
4 - 5	0.100 [a]	g/day
5 - 6	0.090 [a]	g/day
6 - 7	0.085 [a]	g/day
SOIL/DUST MULTIPLE SOURCE ANALYSIS		
Fraction of indoor dust lead attributable to soil	0.70 [a]	unitless
Ratio of dust lead concentration to outdoor air lead concentration	100 [a]	µg Pb/g dust per µg Pb/m^3 air
BIOAVAILABILITY FOR GUT ABSORPTION PATHWAYS		
Total lead absorption (at low intake):		
diet	50 [a]	%
drinking water	50 [a]	%
soil	30 [a]	%
dust	30 [a]	%
alternate source	50 [d]	%

Table 12. Summary of Parameter Values Used in the Integrated Exposure Uptake Biokinetic (IEUBK) Model for Evaluation of Lead Risks Associated with Consumption of Fish Tissue and Site Soils
Baseline Human Health Risk Assessment
MRP Site 1

Receptor Scenario: Young Child [1,2] (Resident)

Parameter	Value	Units
BIOAVAILABILITY FOR GUT ABSORPTION PATHWAYS (continued)		
Fraction of total net absorption at low intake rate that is attributable to non-saturable (passive) processes	0.2 [a]	unitless
ALTERNATE SOURCES OF LEAD		
Total lead intake:		
Age (years) = 0 - 1	1.3 [e]	µg/day
1 - 2	1.3 [e]	µg/day
2 - 3	1.3 [e]	µg/day
3 - 4	1.3 [e]	µg/day
4 - 5	1.3 [e]	µg/day
5 - 6	1.3 [e]	µg/day
6 - 7	1.3 [e]	µg/day
MATERNAL-TO-NEWBORN LEAD EXPOSURE		
Mothers blood lead concentration at childbirth	1 [a]	µg/dL
PLOTTING AND RISK ESTIMATION		
Geometric standard deviation (GSD) for blood lead	1.6 [a]	unitless
Blood lead level of concern	10 [a]	µg/dL
COMPUTATION OPTIONS		
Iteration time step for numerical integration	4 [a]	hours

Notes:

[1] Young child = 0 - 7 years of age (0 - 84 months)

[2] Assumes exposure to lead via consumption of edible shellfish tissue and onsite surface/subsurface soil.

[a] Default value (USEPA, 2007).

[b] Defaults in IEUBK model represent U.S. Food and Drug Administration (FDA) data collected in the late 1980s. More recent FDA (2001) data are presented. Source: FDA (2001) Total Diet Study. U. S. Food and Drug Administration Center for Food Safety and Applied Nutrition Office of Plant and Dairy Foods and Beverages. June 2001. Available online at The U.S. Food and Drug Administration Center for Food Safety and Applied Nutrition Web site. (http://www.cfsan.fda.gov/~comm/tdstoc. html).

[c] Soil concentration represents arithmetic mean of site data.

[d] Bioavailability for fish ingestion would be the same as that for diet.

[e] Ingestion rate for child from HHRA - 0.0009 kg shellfish/day; mean lead concentration in shellfish tissue - 1419 ug Pb/kg shellfish; 0.0009 x 1419 = 1.3 ug Pb/day.

L/day = liters per day
µg/m^3 = micrograms per cubic meter
µg/dL = micrograms per deciliter
µg/g = micrograms per gram

References:

USEPA. 2007. User's Guide for the Integrated Exposure Uptake Biokinetic Model for Lead in Children (IEUBK). Office of Superfund Remediation and Technology Innovation. EPA-540-K-01-005. OSWER #9285.7-42. May 2007.

Table 13. IEUBK Output – MRP Site 1 – Contribution of Site Soil and Shellfish Tissue

LEAD MODEL FOR WINDOWS Version 1.1

==========
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==========

******** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	1.000	2.000	32.000	0.100
1-2	2.000	3.000	32.000	0.100
2-3	3.000	5.000	32.000	0.100
3-4	4.000	5.000	32.000	0.100
4-5	4.000	5.000	32.000	0.100
5-6	4.000	7.000	32.000	0.100
6-7	4.000	7.000	32.000	0.100

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	3.160
1-2	2.600
2-3	2.870
3-4	2.740
4-5	2.610
5-6	2.740
6-7	2.990

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.200
1-2	0.500
2-3	0.520
3-4	0.530
4-5	0.550
5-6	0.580
6-7	0.590

Drinking Water Concentration: 4.000 µg Pb/L

****** Soil & Dust ******

Multiple Source Analysis Used
Average multiple source concentration: 276.980 µg/g

Mass fraction of outdoor soil to indoor dust conversion factor: 0.700
Outdoor airborne lead to indoor household dust lead concentration: 100.000
Use alternate indoor dust Pb sources? No

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	381.400	276.980
1-2	381.400	276.980
2-3	381.400	276.980
3-4	381.400	276.980
4-5	381.400	276.980
5-6	381.400	276.980
6-7	381.400	276.980

******** Alternate Intake ********

Age	Alternate (µg Pb/day)
.5-1	1.300
1-2	1.300
2-3	1.300
3-4	1.300
4-5	1.300
5-6	1.300
6-7	1.300

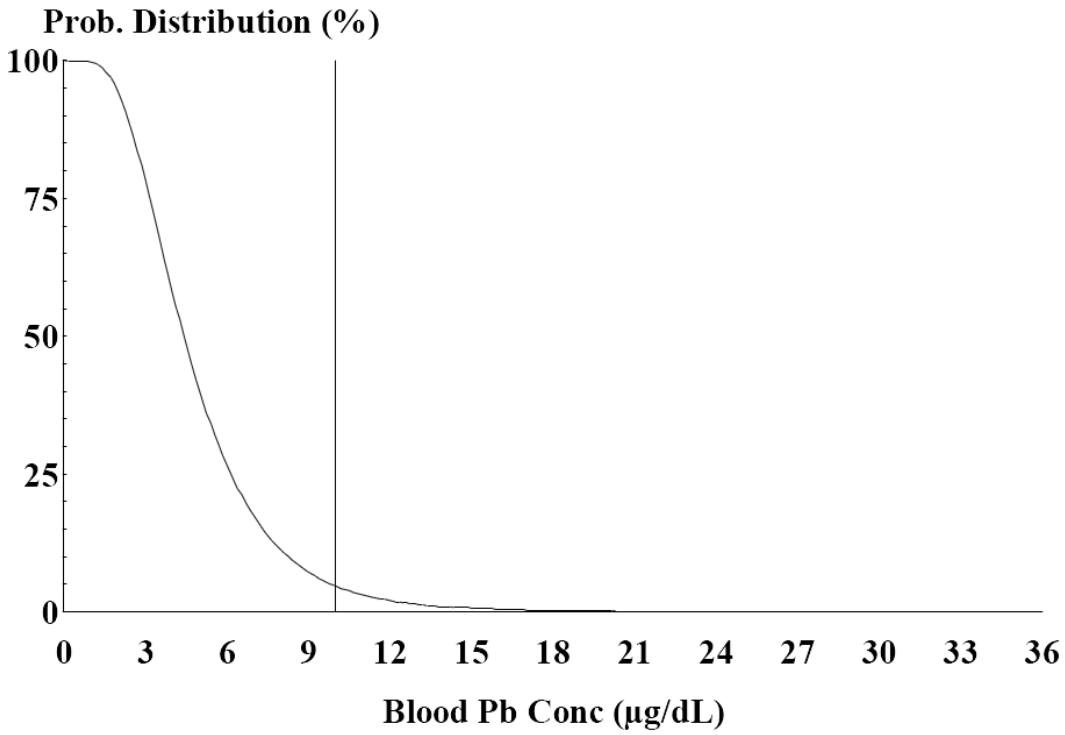
******** Maternal Contribution: Infant Model ********

Maternal Blood Concentration: 1.000 µg Pb/dL

****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.021	1.413	0.581	0.358
1-2	0.034	1.146	0.573	0.882
2-3	0.062	1.286	0.583	0.932
3-4	0.067	1.246	0.591	0.964
4-5	0.067	1.222	0.609	1.030
5-6	0.093	1.297	0.615	1.098
6-7	0.093	1.423	0.619	1.123

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	7.386	9.758	5.2
1-2	11.570	14.205	5.9
2-3	11.759	14.622	5.4
3-4	11.938	14.807	5.2
4-5	9.100	12.027	4.3
5-6	8.279	11.382	3.6
6-7	7.864	11.123	3.2



Cutoff = 10.000 µg/dl
Geo Mean = 4.618
GSD = 1.600
% Above = 5.012

Age Range = 0 to 84 months

Run Mode = Research

Table 14. IEUBK Output – MRP Site 1 – Contribution of Site Soil Only

LEAD MODEL FOR WINDOWS Version 1.1

==========
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==========

******** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	1.000	2.000	32.000	0.100
1-2	2.000	3.000	32.000	0.100
2-3	3.000	5.000	32.000	0.100
3-4	4.000	5.000	32.000	0.100
4-5	4.000	5.000	32.000	0.100
5-6	4.000	7.000	32.000	0.100
6-7	4.000	7.000	32.000	0.100

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	3.160
1-2	2.600
2-3	2.870
3-4	2.740
4-5	2.610
5-6	2.740
6-7	2.990

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.200
1-2	0.500
2-3	0.520
3-4	0.530
4-5	0.550
5-6	0.580
6-7	0.590

Drinking Water Concentration: 4.000 µg Pb/L

****** Soil & Dust ******

Multiple Source Analysis Used
Average multiple source concentration: 276.980 µg/g

Mass fraction of outdoor soil to indoor dust conversion factor: 0.700
Outdoor airborne lead to indoor household dust lead concentration: 100.000
Use alternate indoor dust Pb sources? No

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	381.400	276.980
1-2	381.400	276.980
2-3	381.400	276.980
3-4	381.400	276.980
4-5	381.400	276.980
5-6	381.400	276.980
6-7	381.400	276.980

******** Alternate Intake ********

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

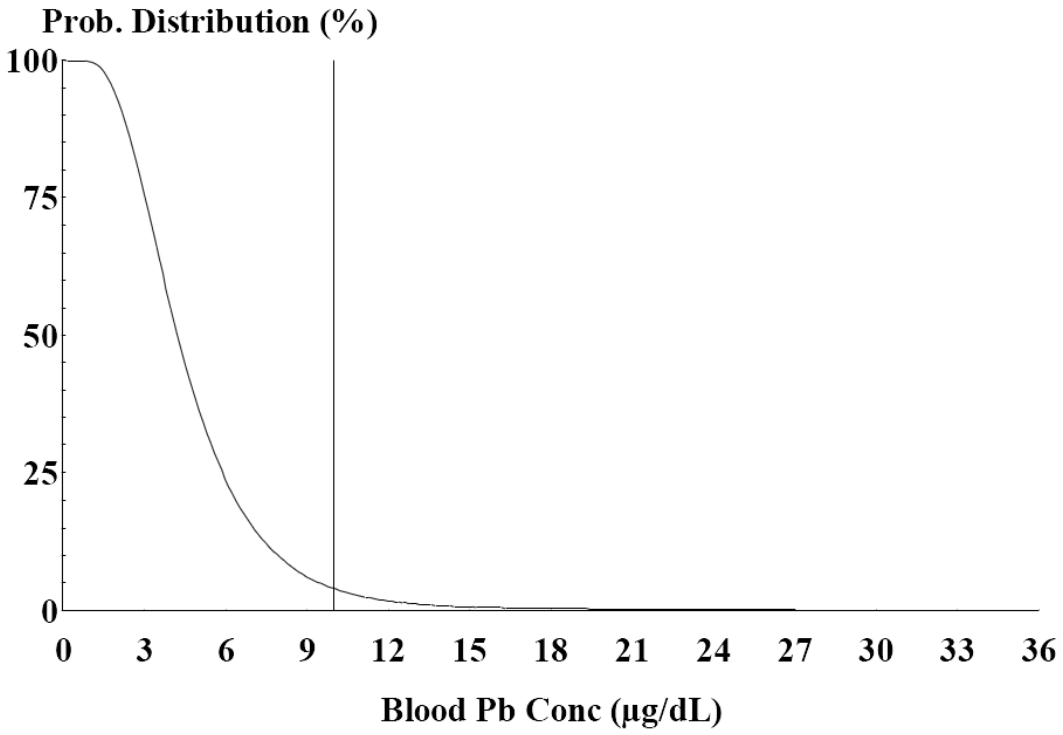
******** Maternal Contribution: Infant Model ********

Maternal Blood Concentration: 1.000 µg Pb/dL

****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.021	1.421	0.000	0.360
1-2	0.034	1.152	0.000	0.886
2-3	0.062	1.291	0.000	0.936
3-4	0.067	1.251	0.000	0.968
4-5	0.067	1.226	0.000	1.033
5-6	0.093	1.300	0.000	1.101
6-7	0.093	1.427	0.000	1.126

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	7.431	9.234	5.0
1-2	11.623	13.695	5.6
2-3	11.807	14.096	5.2
3-4	11.980	14.265	5.0
4-5	9.129	11.455	4.1
5-6	8.303	10.798	3.4
6-7	7.885	10.532	3.0



Cutoff = 10.000 µg/dl
Geo Mean = 4.422
GSD = 1.600
% Above = 4.129

Age Range = 0 to 84 months

Run Mode = Research

Table 15. Adult Lead Model (ALM) for Evaluation of Lead Risks for Current Onsite Workers Exposed to Site-Related Soil - Lower Target Blood Lead Level
Baseline Human Health Risk Assessment
MRP Site 1

Calculations of Blood Lead Concentrations (PbBs)

Exposure Variable	Description	Units	Onsite Workers Surface Soil [1]
PbS	Soil lead concentration (arithmetic mean)	mg/kg or ppm	828.3
$R_{fetal/maternal}$	Fetal/maternal PbB ratio	--	0.9
BKSF	Biokinetic Slope Factor	µg/dL per µg/day	0.4
GSD_i	Geometric standard deviation PbB	--	1.80
PbB_0	Baseline PbB	µg/dL	1.9
IR_S	Soil ingestion rate (including soil-derived indoor dust)	g/day	0.050
AF	Absorption fraction (Pb in soil and dust)	--	0.12
EF	Exposure frequency, Pb pathway	days/yr	2
AT	Averaging time, Pb pathway	days/yr	365
PbB_{adult}	**PbB of adult worker, geometric mean**	**µg/dL**	**1.9**
$PbB_{fetal, 0.95}$	95th percentile PbB among fetuses of adult workers	µg/dL	4.5
PbB_t	Target PbB level of concern	µg/dL	5.0
$P(PbB_{fetal} > PbB_t)$	**Probability that fetal PbB > PbB_t, assuming lognormal distribution**	**%**	**3.5%**

Notes:
ALM Version date 5/19/05
[1] Current scenario, as indicated in Table 1 of the baseline HHRA.
µg/dL = micrograms per deciliter
g/day = grams per day
mg/kg = milligrams per kilogram
ppm = parts per million

Table 16. Adult Lead Model (ALM) for Evaluation of Lead Risks for Current Adolescent Trespassers Exposed to Site-Related Soil and Sediment - Lower Target Blood Lead Level
Baseline Human Health Risk Assessment
MRP Site 1

Calculations of Blood Lead Concentrations (PbBs)

Exposure Variable	Description	Units	Adolescent Trespassers	
			Surface Soil [1]	Sediment [1]
PbS	Lead concentration in media of interest (arithmetic mean)	mg/kg or ppm	828.3	949.8
$R_{fetal/maternal}$	Fetal/maternal PbB ratio	--	1.0	1.0
BKSF	Biokinetic Slope Factor	µg/dL per µg/day	0.4	0.4
GSD_i	Geometric standard deviation PbB	--	1.80	1.80
PbB_0	Baseline PbB	µg/dL	1.9	1.9
IR_S	Soil/sediment ingestion rate (including soil-derived indoor dust)	g/day	0.050	0.050
AF	Absorption fraction (Pb in soil, dust, and sediment)	--	0.12	0.12
EF	Exposure frequency, Pb pathway	days/yr	1	1
AT	Averaging time, Pb pathway	days/yr	7	7
PbB_{adult}	**PbB of adolescent trespasser, geometric mean**	**µg/dL**	**2.2**	**2.2**
$PbB_{fetal, 0.95}$	95th percentile PbB among fetuses of adults	µg/dL	--	--
PbB_t	Target PbB level of concern	µg/dL	5.0	5.0
$P(PbB_{fetal} > PbB_t)$	**Probability that fetal PbB > PbB_t, assuming lognormal distribution**	**%**	**--**	**--**

Notes:
ALM Version date 5/19/05
[1] Current scenario, as indicated in Table 1 of the baseline HHRA.
µg/dL = micrograms per deciliter
g/day = grams per day
mg/kg = milligrams per kilogram
ppm = parts per million

Table 17. Adult Lead Model (ALM) for Evaluation of Lead Risks for Current Adult Recreational Users Exposed to Site-Related Soil and Sediment - Lower Target Blood Lead Level
Baseline Human Health Risk Assessment
MRP Site 1

Calculations of Blood Lead Concentrations (PbBs)

Exposure Variable	Description	Units	Adult Recreational Users	
			Surface Soil [1]	Sediment [1]
PbS	Lead concentration in media of interest (arithmetic mean)	mg/kg or ppm	828.3	949.8
$R_{fetal/maternal}$	Fetal/maternal PbB ratio	--	0.9	0.9
BKSF	Biokinetic Slope Factor	µg/dL per µg/day	0.4	0.4
GSD_i	Geometric standard deviation PbB	--	1.80	1.80
PbB_0	Baseline PbB	µg/dL	1.9	1.9
IR_S	Soil/sediment ingestion rate (including soil-derived indoor dust)	g/day	0.050	0.050
AF	Absorption fraction (Pb in soil, dust, and sediment)	--	0.12	0.12
EF	Exposure frequency, Pb pathway	days/yr	7	7
AT	Averaging time, Pb pathway	days/yr	14	14
PbB_{adult}	**PbB of adult recreational user, geometric mean**	**µg/dL**	**2.9**	**3.0**
$PbB_{fetal, 0.95}$	95th percentile PbB among fetuses of adults	µg/dL	6.8	7.2
PbB_t	Target PbB level of concern	µg/dL	5.0	5.0
$P(PbB_{fetal} > PbB_t)$	**Probability that fetal PbB > PbB_t, assuming lognormal distribution**	**%**	**13.4%**	**15.2%**

Notes:
ALM Version date 5/19/05
[1] Current scenario, as indicated in Table 1 of the baseline HHRA.
µg/dL = micrograms per deciliter
g/day = grams per day
mg/kg = milligrams per kilogram
ppm = parts per million

Table 18. Adult Lead Model (ALM) for Evaluation of Lead Risks for Construction Workers Exposed to Site-Related Soil and Shallow Groundwater - Lower Target Blood Lead Level
Baseline Human Health Risk Assessment
MRP Site 1

Calculations of Blood Lead Concentrations (PbBs)

Exposure Variable	Description	Units	Construction Workers Surface/ Subsurface Soil [1]
PbS	Lead concentration in medium of interest (arithmetic mean)	ppm	381.4
$R_{fetal/maternal}$	Fetal/maternal PbB ratio	--	0.9
BKSF	Biokinetic Slope Factor	µg/dL per µg/day	0.4
GSD_i	Geometric standard deviation PbB	--	1.80
PbB_0	Baseline PbB	µg/dL	1.9
$IR_{S,W}$	Ingestion rate (soil, groundwater)	g/day	0.100
AF	Absorption fraction (Pb in soil, dust, and groundwater)	--	0.12
EF	Exposure frequency, Pb pathway	days/yr	130
AT	Averaging time, Pb pathway	days/yr	180
PbB_{adult}	**PbB of adult worker, geometric mean**	**µg/dL**	**3.2**
$PbB_{fetal, 0.95}$	95th percentile PbB among fetuses of adult workers	µg/dL	7.6
PbB_t	Target PbB level of concern	µg/dL	5.0
$P(PbB_{fetal} > PbB_t)$	**Probability that fetal PbB > PbB_t, assuming lognormal distribution**	**%**	**17.7%**

Notes:
ALM Version date 5/19/05
[1] Current/Future scenario, as indicated in Table 1 of the baseline HHRA.
µg/dL = micrograms per deciliter
g/day = grams per day
mg/kg = milligrams per kilogram
ppm = parts per million

Table 19. Adult Lead Model (ALM) for Evaluation of Lead Risks for Future Onsite Workers Exposed to Site-Related Soil - Lower Target Blood Lead Level
Baseline Human Health Risk Assessment
MRP Site 1

Calculations of Blood Lead Concentrations (PbBs)

Exposure Variable	Description	Units	Onsite Workers Surface/ Subsurface Soil [1]
PbS	Soil lead concentration (arithmetic mean)	mg/kg or ppm	381.4
$R_{fetal/maternal}$	Fetal/maternal PbB ratio	--	0.9
BKSF	Biokinetic Slope Factor	µg/dL per µg/day	0.4
GSD_i	Geometric standard deviation PbB	--	1.80
PbB_0	Baseline PbB	µg/dL	1.9
IR_S	Soil ingestion rate (including soil-derived indoor dust)	g/day	0.050
AF	Absorption fraction (Pb in soil and dust)	--	0.12
EF	Exposure frequency, Pb pathway	days/yr	219
AT	Averaging time, Pb pathway	days/yr	365
PbB_{adult}	**PbB of adult worker, geometric mean**	**µg/dL**	**2.4**
$PbB_{fetal, 0.95}$	95th percentile PbB among fetuses of adult workers	µg/dL	5.8
PbB_t	Target PbB level of concern	µg/dL	5.0
$P(PbB_{fetal} > PbB_t)$	**Probability that fetal PbB > PbB_t, assuming lognormal distribution**	**%**	**8.2%**

Notes:
ALM Version date 5/19/05
[1] Future scenario, as indicated in Table 1 of the baseline HHRA.
µg/dL = micrograms per deciliter
g/day = grams per day
mg/kg = milligrams per kilogram
ppm = parts per million

Table 20. Adult Lead Model (ALM) for Evaluation of Lead Risks for Future Adolescent Trespassers Exposed to Site-Related Soil and Sediment - Lower Target Blood Lead Level
Baseline Human Health Risk Assessment
MRP Site 1

Calculations of Blood Lead Concentrations (PbBs)

Exposure Variable	Description	Units	Adolescent Trespassers	
			Surface/ Subsurface Soil [1]	Sediment [1]
PbS	Lead concentration in media of interest (arithmetic mean)	mg/kg or ppm	381.4	949.8
$R_{fetal/maternal}$	Fetal/maternal PbB ratio	--	1.0	1.0
BKSF	Biokinetic Slope Factor	µg/dL per µg/day	0.4	0.4
GSD_i	Geometric standard deviation PbB	--	1.80	1.80
PbB_0	Baseline PbB	µg/dL	1.9	1.9
IR_S	Soil/sediment ingestion rate (including soil-derived indoor dust)	g/day	0.050	0.050
AF	Absorption fraction (Pb in soil, dust, and sediment)	--	0.12	0.12
EF	Exposure frequency, Pb pathway	days/yr	1	1
AT	Averaging time, Pb pathway	days/yr	7	7
PbB_{adult}	**PbB of adolescent trespasser, geometric mean**	**µg/dL**	**2.0**	**2.2**
$PbB_{fetal, 0.95}$	95th percentile PbB among fetuses of adults	µg/dL	--	--
PbB_t	Target PbB level of concern	µg/dL	5.0	5.0
$P(PbB_{fetal} > PbB_t)$	**Probability that fetal PbB > PbB_t, assuming lognormal distribution**	**%**	**--**	**--**

Notes:
ALM Version date 5/19/05
[1] Future scenario, as indicated in Table 1 of the baseline HHRA.
µg/dL = micrograms per deciliter
g/day = grams per day
mg/kg = milligrams per kilogram
ppm = parts per million

Table 21. IEUBK Output – MRP Site 1 – Contribution of Site Soil and Shellfish Tissue – Lower Target Blood Lead Level

LEAD MODEL FOR WINDOWS Version 1.1

==========
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==========

******** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	1.000	2.000	32.000	0.100
1-2	2.000	3.000	32.000	0.100
2-3	3.000	5.000	32.000	0.100
3-4	4.000	5.000	32.000	0.100
4-5	4.000	5.000	32.000	0.100
5-6	4.000	7.000	32.000	0.100
6-7	4.000	7.000	32.000	0.100

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	3.160
1-2	2.600
2-3	2.870
3-4	2.740
4-5	2.610
5-6	2.740
6-7	2.990

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.200
1-2	0.500
2-3	0.520
3-4	0.530
4-5	0.550
5-6	0.580
6-7	0.590

Drinking Water Concentration: 4.000 µg Pb/L

****** Soil & Dust ******

Multiple Source Analysis Used
Average multiple source concentration: 276.980 µg/g

Mass fraction of outdoor soil to indoor dust conversion factor: 0.700
Outdoor airborne lead to indoor household dust lead concentration: 100.000
Use alternate indoor dust Pb sources? No

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	381.400	276.980
1-2	381.400	276.980
2-3	381.400	276.980
3-4	381.400	276.980
4-5	381.400	276.980
5-6	381.400	276.980
6-7	381.400	276.980

******** Alternate Intake ********

Age	Alternate (µg Pb/day)
.5-1	1.300
1-2	1.300
2-3	1.300
3-4	1.300
4-5	1.300
5-6	1.300
6-7	1.300

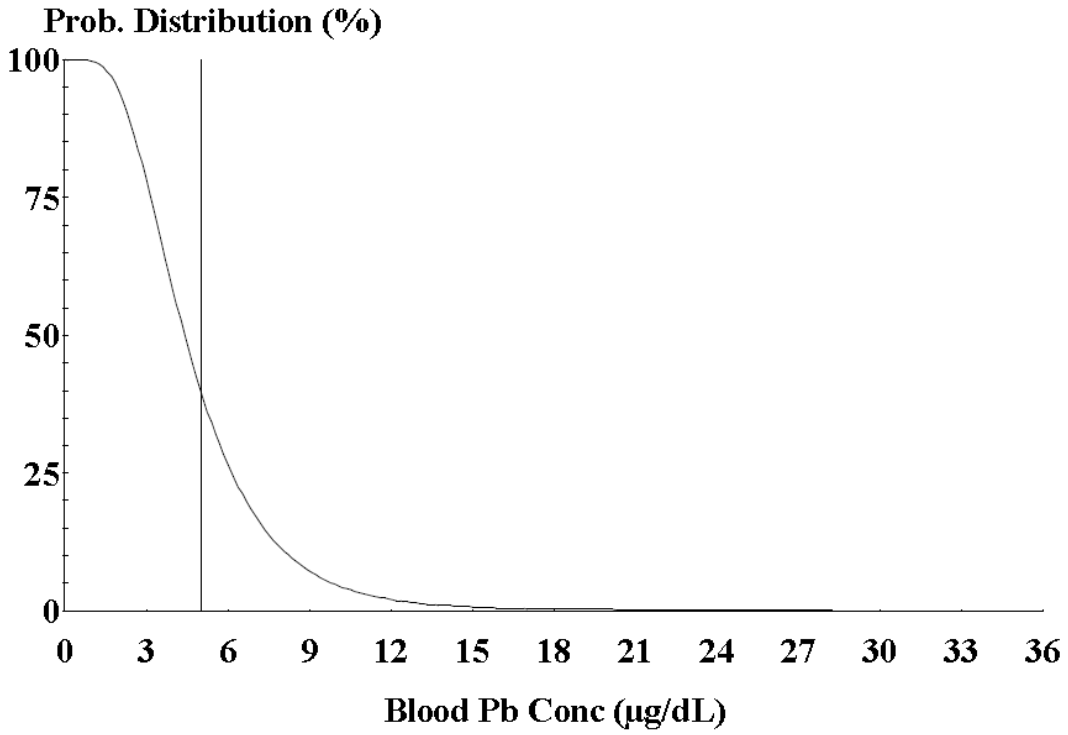
******** Maternal Contribution: Infant Model ********

Maternal Blood Concentration: 1.000 µg Pb/dL

****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.021	1.413	0.581	0.358
1-2	0.034	1.146	0.573	0.882
2-3	0.062	1.286	0.583	0.932
3-4	0.067	1.246	0.591	0.964
4-5	0.067	1.222	0.609	1.030
5-6	0.093	1.297	0.615	1.098
6-7	0.093	1.423	0.619	1.123

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	7.386	9.758	5.2
1-2	11.570	14.205	5.9
2-3	11.759	14.622	5.4
3-4	11.938	14.807	5.2
4-5	9.100	12.027	4.3
5-6	8.279	11.382	3.6
6-7	7.864	11.123	3.2



Cutoff = 5.000 µg/dl
Geo Mean = 4.618
GSD = 1.600
% Above = 43.291

Age Range = 0 to 84 months

Run Mode = Research

Table 22. IEUBK Output – MRP Site 1 – Contribution of Site Soil Only – Lower Target Blood Lead Level

LEAD MODEL FOR WINDOWS Version 1.1

==========
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==========

******** Air ********

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	1.000	2.000	32.000	0.100
1-2	2.000	3.000	32.000	0.100
2-3	3.000	5.000	32.000	0.100
3-4	4.000	5.000	32.000	0.100
4-5	4.000	5.000	32.000	0.100
5-6	4.000	7.000	32.000	0.100
6-7	4.000	7.000	32.000	0.100

******** Diet ********

Age	Diet Intake(µg/day)
.5-1	3.160
1-2	2.600
2-3	2.870
3-4	2.740
4-5	2.610
5-6	2.740
6-7	2.990

******** Drinking Water ********

Water Consumption:

Age	Water (L/day)
.5-1	0.200
1-2	0.500
2-3	0.520
3-4	0.530
4-5	0.550
5-6	0.580
6-7	0.590

Drinking Water Concentration: 4.000 µg Pb/L

******** Soil & Dust ********

Multiple Source Analysis Used
Average multiple source concentration: 276.980 µg/g

Mass fraction of outdoor soil to indoor dust conversion factor: 0.700
Outdoor airborne lead to indoor household dust lead concentration: 100.000
Use alternate indoor dust Pb sources? No

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	381.400	276.980
1-2	381.400	276.980
2-3	381.400	276.980
3-4	381.400	276.980
4-5	381.400	276.980
5-6	381.400	276.980
6-7	381.400	276.980

******** Alternate Intake ********

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Maternal Contribution: Infant Model ********

Maternal Blood Concentration: 1.000 µg Pb/dL

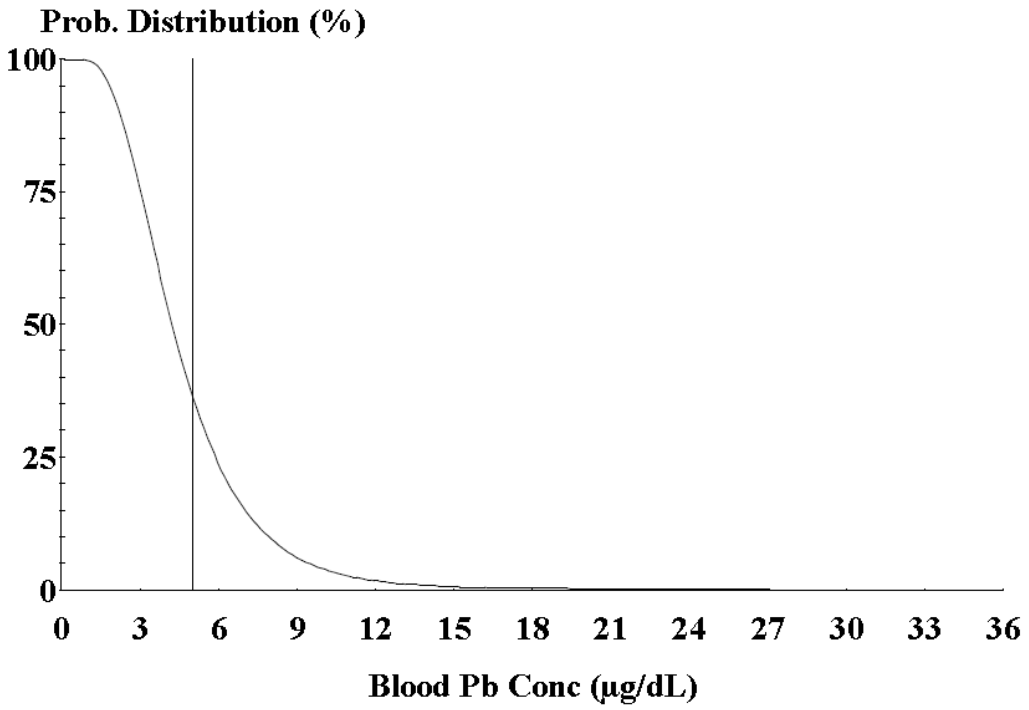
****

CALCULATED BLOOD LEAD AND LEAD UPTAKES:

****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.021	1.421	0.000	0.360
1-2	0.034	1.152	0.000	0.886
2-3	0.062	1.291	0.000	0.936
3-4	0.067	1.251	0.000	0.968
4-5	0.067	1.226	0.000	1.033
5-6	0.093	1.300	0.000	1.101
6-7	0.093	1.427	0.000	1.126

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	7.431	9.234	5.0
1-2	11.623	13.695	5.6
2-3	11.807	14.096	5.2
3-4	11.980	14.265	5.0
4-5	9.129	11.455	4.1
5-6	8.303	10.798	3.4
6-7	7.885	10.532	3.0



Cutoff = 5.000 µg/dl
Geo Mean = 4.422
GSD = 1.600
% Above = 39.698

Age Range = 0 to 84 months

Run Mode = Research

ATTACHMENT G

RISK CALCULATIONS

TABLE 7.1.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe: Current
Receptor Population: Recreational User
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	MRP Site 1	Ingestion													
				BENZO[A]ANTHRACENE	1E+01	mg/kg	2.0E-07	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	1.5E-07	7.0E-07	mg/kg-day	N/A	N/A	N/A
				BENZO[A]PYRENE	2E+01	mg/kg	2.4E-07	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	1.8E-06	8.5E-07	mg/kg-day	N/A	N/A	N/A
				BENZO[B]FLUORANTHENE	9E+00	mg/kg	1.2E-07	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	8.6E-08	4.1E-07	mg/kg-day	N/A	N/A	N/A
				BENZO[K]FLUORANTHENE	2E+01	mg/kg	2.2E-07	mg/kg-day	7.3E-02	(mg/kg-day) $^{-1}$	1.6E-08	7.6E-07	mg/kg-day	N/A	N/A	N/A
				CHRYSENE	2E+01	mg/kg	2.6E-07	mg/kg-day	7.3E-03	(mg/kg-day) $^{-1}$	1.9E-09	9.0E-07	mg/kg-day	N/A	N/A	N/A
				DIBENZ[A,H]ANTHRACENE	1E+00	mg/kg	1.8E-08	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	1.3E-07	6.4E-08	mg/kg-day	N/A	N/A	N/A
				INDENO[1,2,3-CD]PYRENE	1E+01	mg/kg	1.4E-07	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	9.9E-08	4.7E-07	mg/kg-day	N/A	N/A	N/A
				NITROGLYCERIN	3E+00	mg/kg	3.6E-08	mg/kg-day	1.7E-02	(mg/kg-day) $^{-1}$	6.1E-10	1.3E-07	mg/kg-day	1.0E-04	mg/kg-day	1.3E-03
				4,4-DDT	2E+01	mg/kg	2.6E-07	mg/kg-day	3.4E-01	(mg/kg-day) $^{-1}$	8.8E-08	9.1E-07	mg/kg-day	5.0E-04	mg/kg-day	1.8E-03
				AROCLOR-1260	3E+02	mg/kg	3.7E-06	mg/kg-day	2.0E+00	(mg/kg-day) $^{-1}$	7.4E-06	1.3E-05	mg/kg-day	2.0E-05	mg/kg-day	6.5E-01
				ALUMINUM	1E+04	mg/kg	1.5E-04	mg/kg-day	N/A	N/A	N/A	5.1E-04	mg/kg-day	1.0E+00	mg/kg-day	5.1E-04
				ANTIMONY	9E+01	mg/kg	1.3E-06	mg/kg-day	N/A	N/A	N/A	4.4E-06	mg/kg-day	4.0E-04	mg/kg-day	1.1E-02
				ARSENIC	3E+01	mg/kg	2.1E-07	mg/kg-day	1.5E+00	(mg/kg-day) $^{-1}$	3.1E-07	7.2E-07	mg/kg-day	3.0E-04	mg/kg-day	2.4E-03
				CHROMIUM, TOTAL	1E+01	mg/kg	1.9E-07	mg/kg-day	5.0E-01	(mg/kg-day)	9.5E-08	6.6E-07	mg/kg-day	3.0E-03	mg/kg-day	2.2E-04
				COBALT	1E+01	mg/kg	1.9E-07	mg/kg-day	N/A	N/A	N/A	6.8E-07	mg/kg-day	3.0E-04	mg/kg-day	2.3E-03
				IRON	4E+04	mg/kg	5.1E-04	mg/kg-day	N/A	N/A	N/A	1.8E-03	mg/kg-day	7.0E-01	mg/kg-day	2.6E-03
				LEAD												
				MANGANESE	5E+02	mg/kg	7.3E-06	mg/kg-day	N/A	N/A	N/A	2.6E-05	mg/kg-day	2.4E-02	mg/kg-day	1.1E-03
				THALLIUM	7E-02	mg/kg	9.3E-10	mg/kg-day	N/A	N/A	N/A	3.3E-09	mg/kg-day	1.0E-05	mg/kg-day	3.3E-04
			Exp. Route Total								1E-05					7E-01

TABLE 7.1.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe: Current
Receptor Population: Recreational User
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
			Dermal													
				BENZO[A]ANTHRACENE	1E+01	mg/kg	1.1E-07	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	8.0E-08	3.9E-07	mg/kg-day	N/A	N/A	N/A
				BENZO[A]PYRENE	2E+01	mg/kg	1.3E-07	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	9.7E-07	4.7E-07	mg/kg-day	N/A	N/A	N/A
				BENZO[B]FLUORANTHENE	9E+00	mg/kg	6.5E-08	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	4.7E-08	2.3E-07	mg/kg-day	N/A	N/A	N/A
				BENZO[K]FLUORANTHENE	2E+01	mg/kg	1.2E-07	mg/kg-day	7.3E-02	(mg/kg-day) $^{-1}$	8.7E-09	4.2E-07	mg/kg-day	N/A	N/A	N/A
				CHRYSENE	2E+01	mg/kg	1.4E-07	mg/kg-day	7.3E-03	(mg/kg-day) $^{-1}$	1.0E-09	4.9E-07	mg/kg-day	N/A	N/A	N/A
				DIBENZ[A,H]ANTHRACENE	1E+00	mg/kg	1.0E-08	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	7.4E-08	3.5E-08	mg/kg-day	N/A	N/A	N/A
				INDENO[1,2,3-CD]PYRENE	1E+01	mg/kg	7.4E-08	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	5.4E-08	2.6E-07	mg/kg-day	N/A	N/A	N/A
				NITROGLYCERIN	3E+00	mg/kg	1.5E-08	mg/kg-day	1.7E-02	(mg/kg-day) $^{-1}$	2.6E-10	5.3E-08	mg/kg-day	1.0E-04	mg/kg-day	5.3E-04
				4,4-DDT	2E+01	mg/kg	3.3E-08	mg/kg-day	3.4E-01	(mg/kg-day) $^{-1}$	1.1E-08	1.2E-07	mg/kg-day	5.0E-04	mg/kg-day	2.3E-04
				AROCLOR-1260	3E+02	mg/kg	2.2E-06	mg/kg-day	2.0E+00	(mg/kg-day) $^{-1}$	4.4E-06	7.7E-06	mg/kg-day	2.0E-05	mg/kg-day	3.8E-01
				ALUMINUM	1E+04	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.0E-02	mg/kg-day	N/A
				ANTIMONY	9E+01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A
				ARSENIC	3E+01	mg/kg	4.4E-08	mg/kg-day	1.5E+00	(mg/kg-day) $^{-1}$	6.6E-08	1.5E-07	mg/kg-day	3.0E-04	mg/kg-day	5.1E-04
				CHROMIUM, TOTAL	1E+01	mg/kg	N/A	N/A	1.3E-02	(mg/kg-day)	N/A	N/A	N/A	7.5E-05	mg/kg-day	N/A
				COBALT	1E+01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A
				IRON	4E+04	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
				LEAD					N/A							
				MANGANESE	5E+02	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.6E-04	mg/kg-day	N/A
				THALLIUM	7E-02	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.0E-05	mg/kg-day	N/A
			Exp. Route Total								6E-06					4E-01

TABLE 7.1.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe: Current
Receptor Population: Recreational User
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
			Inhalation of fugitive dust													
				BENZO[A]ANTHRACENE	1E+01	mg/kg	1.2E-07	ug/m3	1.1E-04	(ug/m3) $^{-1}$	1.3E-11	4.1E-07	ug/m3	N/A	N/A	N/A
				BENZO[A]PYRENE	2E+01	mg/kg	1.4E-07	ug/m3	1.1E-03	(ug/m3) $^{-1}$	1.6E-10	5.0E-07	ug/m3	N/A	N/A	N/A
				BENZO[B]FLUORANTHENE	9E+00	mg/kg	6.9E-08	ug/m3	1.1E-04	(ug/m3) $^{-1}$	7.6E-12	2.4E-07	ug/m3	N/A	N/A	N/A
				BENZO[K]FLUORANTHENE	2E+01	mg/kg	1.3E-07	ug/m3	1.1E-04	(ug/m3) $^{-1}$	1.4E-11	4.5E-07	ug/m3	N/A	N/A	N/A
				CHRYSENE	2E+01	mg/kg	1.5E-07	ug/m3	1.1E-05	(ug/m3) $^{-1}$	1.7E-12	5.3E-07	ug/m3	N/A	N/A	N/A
				DIBENZ[A,H]ANTHRACENE	1E+00	mg/kg	1.1E-08	ug/m3	1.2E-03	(ug/m3) $^{-1}$	1.3E-11	3.8E-08	ug/m3	N/A	N/A	N/A
				INDENO[1,2,3-CD]PYRENE	1E+01	mg/kg	7.9E-08	ug/m3	1.1E-04	(ug/m3) $^{-1}$	8.7E-12	2.8E-07	ug/m3	N/A	N/A	N/A
				NITROGLYCERIN	3E+00	mg/kg	2.1E-08	ug/m3	N/A	N/A	N/A	7.4E-08	ug/m3	N/A	N/A	N/A
				4,4-DDT	2E+01	mg/kg	1.5E-07	ug/m3	9.7E-05	(ug/m3) $^{-1}$	1.5E-11	5.4E-07	ug/m3	N/A	N/A	N/A
				AROCLOR-1260	3E+02	mg/kg	2.2E-06	ug/m3	5.7E-04	(ug/m3) $^{-1}$	1.2E-09	7.6E-06	ug/m3	N/A	N/A	N/A
				ALUMINUM	1E+04	mg/kg	8.6E-05	ug/m3	N/A	N/A	N/A	3.0E-04	ug/m3	5.0E+00	ug/m3	6.0E-05
				ANTIMONY	9E+01	mg/kg	7.5E-07	ug/m3	N/A	N/A	N/A	2.6E-06	ug/m3	N/A	N/A	N/A
				ARSENIC	3E+01	mg/kg	2.0E-07	ug/m3	4.3E-03	(ug/m3) $^{-1}$	8.7E-10	7.1E-07	ug/m3	1.5E-02	ug/m3	4.7E-05
				CHROMIUM, TOTAL	1E+01	mg/kg	1.1E-07	ug/m3	8.4E-02	(ug/m3) $^{-1}$	9.4E-09	3.9E-07	ug/m3	1.0E-01	ug/m3	3.9E-06
				COBALT	1E+01	mg/kg	1.1E-07	ug/m3	9.0E-03	(ug/m3) $^{-1}$	1.0E-09	4.0E-07	ug/m3	6.0E-03	ug/m3	6.7E-05
				IRON	4E+04	mg/kg	3.0E-04	ug/m3	N/A	N/A	N/A	1.1E-03	ug/m3	N/A	N/A	N/A
				LEAD												
				MANGANESE	5E+02	mg/kg	4.3E-06	ug/m3	N/A	N/A	N/A	1.5E-05	ug/m3	5.0E-02	ug/m3	3.0E-04
				THALLIUM	7E-02	mg/kg	5.5E-10	ug/m3	N/A	N/A	N/A	1.9E-09	ug/m3	N/A	N/A	N/A
			Exp. Route Total								1E-08					5E-04
		Exposure Point Total									2E-05					1E+00
	Exposure Medium Total										N/A					N/A
Medium Total											N/A					N/A

TABLE 7.1.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe: Current
Receptor Population: Recreational User
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Sediment	Sediment	MRP Site 1	Ingestion													
				BENZO[A]PYRENE	5E-01	mg/kg	6.4E-09	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	4.7E-08	2.2E-08	mg/kg-day	N/A	N/A	N/A
				BENZO[B]FLUORANTHENE	5E-01	mg/kg	6.4E-09	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	4.7E-09	2.2E-08	mg/kg-day	N/A	N/A	N/A
				DIBENZ[A,H]ANTHRACENE	1E-01	mg/kg	1.7E-09	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	1.2E-08	5.9E-09	mg/kg-day	N/A	N/A	N/A
				ANTIMONY	3E+01	mg/kg	3.5E-07	mg/kg-day	N/A	N/A	N/A	1.2E-06	mg/kg-day	4.0E-04	mg/kg-day	3.0E-03
				ARSENIC	2E+01	mg/kg	1.6E-07	mg/kg-day	1.5E+00	(mg/kg-day) $^{-1}$	2.4E-07	5.7E-07	mg/kg-day	3.0E-04	mg/kg-day	1.9E-03
				CHROMIUM, TOTAL	1E+01	mg/kg	1.9E-07	mg/kg-day	5.0E-01	(mg/kg-day)	9.6E-08	6.7E-07	mg/kg-day	3.0E-03	mg/kg-day	2.2E-04
				COBALT	1E+01	mg/kg	1.8E-07	mg/kg-day	N/A	N/A	N/A	6.5E-07	mg/kg-day	3.0E-04	mg/kg-day	2.2E-03
				IRON	4E+04	mg/kg	5.3E-04	mg/kg-day	N/A	N/A	N/A	1.8E-03	mg/kg-day	7.0E-01	mg/kg-day	2.6E-03
				LEAD												
				MANGANESE	1E+03	mg/kg	1.5E-05	mg/kg-day	N/A	N/A	N/A	5.1E-05	mg/kg-day	2.4E-02	mg/kg-day	2.1E-03
			Exp. Route Total								4E-07					1E-02
			Dermal													
				BENZO[A]PYRENE	5E-01	mg/kg	1.6E-08	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	1.2E-07	5.6E-08	mg/kg-day	N/A	N/A	N/A
				BENZO[B]FLUORANTHENE	5E-01	mg/kg	1.6E-08	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	1.2E-08	5.6E-08	mg/kg-day	N/A	N/A	N/A
				DIBENZ[A,H]ANTHRACENE	1E-01	mg/kg	4.2E-09	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	3.1E-08	1.5E-08	mg/kg-day	N/A	N/A	N/A
				ANTIMONY	3E+01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A
				ARSENIC	2E+01	mg/kg	1.6E-07	mg/kg-day	1.5E+00	(mg/kg-day) $^{-1}$	2.3E-07	5.4E-07	mg/kg-day	3.0E-04	mg/kg-day	1.8E-03
				CHROMIUM, TOTAL	1E+01	mg/kg	N/A	N/A	1.3E-02	(mg/kg-day)	N/A	N/A	N/A	7.5E-05	mg/kg-day	N/A
				COBALT	1E+01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A
				IRON	4E+04	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
				LEAD												
				MANGANESE	1E+03	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.6E-04	mg/kg-day	N/A
			Exp. Route Total								4E-07					2E-03
		Exposure Point Total									8E-07					1E-02
	Exposure Medium Total										N/A					N/A
Medium Total											N/A					N/A
										Total of Receptor Risks Across All Media	N/A				Total of Receptor Hazards Across All Media	N/A

TABLE 7.1.CT

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY

CARR POINT - MRP SITE 1

Scenario Timeframe: Current
Receptor Population: Recreational User
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	MRP Site 1	Ingestion													
				BENZO[A]ANTHRACENE	1E+01	mg/kg	4.8E-08	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	3.5E-08	1.8E-07	mg/kg-day	N/A	N/A	N/A
				BENZO[A]PYRENE	2E+01	mg/kg	5.8E-08	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	4.2E-07	2.1E-07	mg/kg-day	N/A	N/A	N/A
				BENZO[B]FLUORANTHENE	9E+00	mg/kg	2.8E-08	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	2.0E-08	1.0E-07	mg/kg-day	N/A	N/A	N/A
				BENZO[K]FLUORANTHENE	2E+01	mg/kg	5.1E-08	mg/kg-day	7.3E-02	(mg/kg-day) $^{-1}$	3.8E-09	1.9E-07	mg/kg-day	N/A	N/A	N/A
				CHRYSENE	2E+01	mg/kg	6.1E-08	mg/kg-day	7.3E-03	(mg/kg-day) $^{-1}$	4.5E-10	2.2E-07	mg/kg-day	N/A	N/A	N/A
				DIBENZ[A,H]ANTHRACENE	1E+00	mg/kg	4.4E-09	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	3.2E-08	1.6E-08	mg/kg-day	N/A	N/A	N/A
				INDENO[1,2,3-CD]PYRENE	1E+01	mg/kg	3.2E-08	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	2.3E-08	1.2E-07	mg/kg-day	N/A	N/A	N/A
				NITROGLYCERIN	3E+00	mg/kg	8.6E-09	mg/kg-day	1.7E-02	(mg/kg-day) $^{-1}$	1.5E-10	3.2E-08	mg/kg-day	1.0E-04	mg/kg-day	3.2E-04
				4,4-DDT	6E+00	mg/kg	2.1E-08	mg/kg-day	3.4E-01	(mg/kg-day) $^{-1}$	7.0E-09	7.6E-08	mg/kg-day	5.0E-04	mg/kg-day	1.5E-04
				AROCLOR-1260	9E+01	mg/kg	2.9E-07	mg/kg-day	1.0E+00	(mg/kg-day) $^{-1}$	2.9E-07	1.1E-06	mg/kg-day	2.0E-05	mg/kg-day	5.4E-02
				ALUMINUM	1E+04	mg/kg	3.5E-05	mg/kg-day	N/A	N/A	N/A	1.3E-04	mg/kg-day	1.0E+00	mg/kg-day	1.3E-04
				ANTIMONY	9E+01	mg/kg	3.0E-07	mg/kg-day	N/A	N/A	N/A	1.1E-06	mg/kg-day	4.0E-04	mg/kg-day	2.8E-03
				ARSENIC	3E+01	mg/kg	4.9E-08	mg/kg-day	1.5E+00	(mg/kg-day) $^{-1}$	7.4E-08	1.8E-07	mg/kg-day	3.0E-04	mg/kg-day	6.0E-04
				CHROMIUM, TOTAL	1E+01	mg/kg	4.5E-08	mg/kg-day	5.0E-01	(mg/kg-day)	2.2E-08	1.7E-07	mg/kg-day	3.0E-03	mg/kg-day	5.5E-05
				COBALT	1E+01	mg/kg	4.6E-08	mg/kg-day	N/A	N/A	N/A	1.7E-07	mg/kg-day	3.0E-04	mg/kg-day	5.7E-04
				IRON	4E+04	mg/kg	1.2E-04	mg/kg-day	N/A	N/A	N/A	4.5E-04	mg/kg-day	7.0E-01	mg/kg-day	6.4E-04
				LEAD												
				MANGANESE	5E+02	mg/kg	1.7E-06	mg/kg-day	N/A	N/A	N/A	6.4E-06	mg/kg-day	2.4E-02	mg/kg-day	2.7E-04
				THALLIUM	7E-02	mg/kg	2.2E-10	mg/kg-day	N/A	N/A	N/A	8.1E-10	mg/kg-day	1.0E-05	mg/kg-day	8.1E-05
			Exp. Route Total								9E-07					6E-02

TABLE 7.1.CT

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY

CARR POINT - MRP SITE 1

Scenario Timeframe: Current
Receptor Population: Recreational User
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
			Dermal													
				BENZO[A]ANTHRACENE	1E+01	mg/kg	7.5E-09	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	5.4E-09	2.8E-08	mg/kg-day	N/A	N/A	N/A
				BENZO[A]PYRENE	2E+01	mg/kg	9.0E-09	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	6.6E-08	3.3E-08	mg/kg-day	N/A	N/A	N/A
				BENZO[B]FLUORANTHENE	9E+00	mg/kg	4.4E-09	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	3.2E-09	1.6E-08	mg/kg-day	N/A	N/A	N/A
				BENZO[K]FLUORANTHENE	2E+01	mg/kg	8.1E-09	mg/kg-day	7.3E-02	(mg/kg-day) $^{-1}$	5.9E-10	3.0E-08	mg/kg-day	N/A	N/A	N/A
				CHRYSENE	2E+01	mg/kg	9.6E-09	mg/kg-day	7.3E-03	(mg/kg-day) $^{-1}$	7.0E-11	3.5E-08	mg/kg-day	N/A	N/A	N/A
				DIBENZ[A,H]ANTHRACENE	1E+00	mg/kg	6.8E-10	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	5.0E-09	2.5E-09	mg/kg-day	N/A	N/A	N/A
				INDENO[1,2,3-CD]PYRENE	1E+01	mg/kg	5.0E-09	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	3.7E-09	1.9E-08	mg/kg-day	N/A	N/A	N/A
				NITROGLYCERIN	3E+00	mg/kg	1.0E-09	mg/kg-day	1.7E-02	(mg/kg-day) $^{-1}$	1.8E-11	3.8E-09	mg/kg-day	1.0E-04	mg/kg-day	3.8E-05
				4,4-DDT	6E+00	mg/kg	7.5E-10	mg/kg-day	3.4E-01	(mg/kg-day) $^{-1}$	2.5E-10	2.7E-09	mg/kg-day	5.0E-04	mg/kg-day	5.5E-06
				AROCLOR-1260	9E+01	mg/kg	4.9E-08	mg/kg-day	1.0E+00	(mg/kg-day) $^{-1}$	4.9E-08	1.8E-07	mg/kg-day	2.0E-05	mg/kg-day	9.1E-03
				ALUMINUM	1E+04	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.0E-02	mg/kg-day	N/A
				ANTIMONY	9E+01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A
				ARSENIC	3E+01	mg/kg	3.0E-09	mg/kg-day	1.5E+00	(mg/kg-day) $^{-1}$	4.5E-09	1.1E-08	mg/kg-day	3.0E-04	mg/kg-day	3.6E-05
				CHROMIUM, TOTAL	1E+01	mg/kg	N/A	N/A	1.3E-02	(mg/kg-day)	N/A	N/A	N/A	7.5E-05	mg/kg-day	N/A
				COBALT	1E+01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A
				IRON	4E+04	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
				LEAD					N/A							
				MANGANESE	5E+02	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.6E-04	mg/kg-day	N/A
				THALLIUM	7E-02	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.0E-05	mg/kg-day	N/A
			Exp. Route Total								1E-07					9E-03

TABLE 7.1.CT

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY

CARR POINT - MRP SITE 1

Scenario Timeframe: Current
Receptor Population: Recreational User
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
			Inhalation of fugitive dust													
				BENZO[A]ANTHRACENE	1E+01	mg/kg	5.6E-08	ug/m3	1.1E-04	(ug/m3) $^{-1}$	6.2E-12	2.1E-07	ug/m3	N/A	N/A	N/A
				BENZO[A]PYRENE	2E+01	mg/kg	6.8E-08	ug/m3	1.1E-03	(ug/m3) $^{-1}$	7.5E-11	2.5E-07	ug/m3	N/A	N/A	N/A
				BENZO[B]FLUORANTHENE	9E+00	mg/kg	3.3E-08	ug/m3	1.1E-04	(ug/m3) $^{-1}$	3.6E-12	1.2E-07	ug/m3	N/A	N/A	N/A
				BENZO[K]FLUORANTHENE	2E+01	mg/kg	6.0E-08	ug/m3	1.1E-04	(ug/m3) $^{-1}$	6.6E-12	2.2E-07	ug/m3	N/A	N/A	N/A
				CHRYSENE	2E+01	mg/kg	7.2E-08	ug/m3	1.1E-05	(ug/m3) $^{-1}$	7.9E-13	2.6E-07	ug/m3	N/A	N/A	N/A
				DIBENZ[A,H]ANTHRACENE	1E+00	mg/kg	5.1E-09	ug/m3	1.2E-03	(ug/m3) $^{-1}$	6.2E-12	1.9E-08	ug/m3	N/A	N/A	N/A
				INDENO[1,2,3-CD]PYRENE	1E+01	mg/kg	3.8E-08	ug/m3	1.1E-04	(ug/m3) $^{-1}$	4.2E-12	1.4E-07	ug/m3	N/A	N/A	N/A
				NITROGLYCERIN	3E+00	mg/kg	1.0E-08	ug/m3	N/A	N/A	N/A	3.7E-08	ug/m3	N/A	N/A	N/A
				4,4-DDT	6E+00	mg/kg	2.4E-08	ug/m3	9.7E-05	(ug/m3) $^{-1}$	2.4E-12	8.9E-08	ug/m3	N/A	N/A	N/A
				AROCLOR-1260	9E+01	mg/kg	3.4E-07	ug/m3	5.7E-04	(ug/m3) $^{-1}$	2.0E-10	1.3E-06	ug/m3	N/A	N/A	N/A
				ALUMINUM	1E+04	mg/kg	4.1E-05	ug/m3	N/A	N/A	N/A	1.5E-04	ug/m3	5.0E+00	ug/m3	3.0E-05
				ANTIMONY	9E+01	mg/kg	3.5E-07	ug/m3	N/A	N/A	N/A	1.3E-06	ug/m3	N/A	N/A	N/A
				ARSENIC	3E+01	mg/kg	9.6E-08	ug/m3	4.3E-03	(ug/m3) $^{-1}$	4.1E-10	3.6E-07	ug/m3	1.5E-02	ug/m3	2.4E-05
				CHROMIUM, TOTAL	1E+01	mg/kg	5.3E-08	ug/m3	8.4E-02	(ug/m3) $^{-1}$	4.4E-09	1.9E-07	ug/m3	1.0E-01	ug/m3	1.9E-06
				COBALT	1E+01	mg/kg	5.4E-08	ug/m3	9.0E-03	(ug/m3) $^{-1}$	4.9E-10	2.0E-07	ug/m3	6.0E-03	ug/m3	3.3E-05
				IRON	4E+04	mg/kg	1.4E-04	ug/m3	N/A	N/A	N/A	5.3E-04	ug/m3	N/A	N/A	N/A
				LEAD												
				MANGANESE	5E+02	mg/kg	2.0E-06	ug/m3	N/A	N/A	N/A	7.5E-06	ug/m3	5.0E-02	ug/m3	1.5E-04
				THALLIUM	7E-02	mg/kg	2.6E-10	ug/m3	N/A	N/A	N/A	9.6E-10	ug/m3	N/A	N/A	N/A
			Exp. Route Total								6E-09					2E-04
		Exposure Point Total									1E-06					7E-02
	Exposure Medium Total										N/A					N/A
Medium Total											N/A					N/A

TABLE 7.1.CT

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY

CARR POINT - MRP SITE 1

Scenario Timeframe: Current
Receptor Population: Recreational User
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Sediment	Sediment	MRP Site 1	Ingestion													
				BENZO[A]PYRENE	5E-01	mg/kg	1.5E-09	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	1.1E-08	5.6E-09	mg/kg-day	N/A	N/A	N/A
				BENZO[B]FLUORANTHENE	5E-01	mg/kg	1.5E-09	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	1.1E-09	5.6E-09	mg/kg-day	N/A	N/A	N/A
				DIBENZ[A,H]ANTHRACENE	1E-01	mg/kg	4.0E-10	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	2.9E-09	1.5E-09	mg/kg-day	N/A	N/A	N/A
				ANTIMONY	3E+01	mg/kg	8.2E-08	mg/kg-day	N/A	N/A	N/A	3.0E-07	mg/kg-day	4.0E-04	mg/kg-day	7.6E-04
				ARSENIC	2E+01	mg/kg	3.9E-08	mg/kg-day	1.5E+00	(mg/kg-day) $^{-1}$	5.8E-08	1.4E-07	mg/kg-day	3.0E-04	mg/kg-day	4.7E-04
				CHROMIUM, TOTAL	1E+01	mg/kg	4.6E-08	mg/kg-day	5.0E-01	(mg/kg-day)	2.3E-08	1.7E-07	mg/kg-day	3.0E-03	mg/kg-day	5.6E-05
				COBALT	1E+01	mg/kg	4.4E-08	mg/kg-day	N/A	N/A	N/A	1.6E-07	mg/kg-day	3.0E-04	mg/kg-day	5.4E-04
				IRON	4E+04	mg/kg	1.3E-04	mg/kg-day	N/A	N/A	N/A	4.6E-04	mg/kg-day	7.0E-01	mg/kg-day	6.6E-04
				LEAD												
				MANGANESE	1E+03	mg/kg	3.5E-06	mg/kg-day	N/A	N/A	N/A	1.3E-05	mg/kg-day	2.4E-02	mg/kg-day	5.3E-04
			Exp. Route Total								1E-07					3E-03
			Dermal													
				BENZO[A]PYRENE	5E-01	mg/kg	7.6E-09	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	5.5E-08	2.8E-08	mg/kg-day	N/A	N/A	N/A
				BENZO[B]FLUORANTHENE	5E-01	mg/kg	7.6E-09	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	5.5E-09	2.8E-08	mg/kg-day	N/A	N/A	N/A
				DIBENZ[A,H]ANTHRACENE	1E-01	mg/kg	2.0E-09	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	1.5E-08	7.4E-09	mg/kg-day	N/A	N/A	N/A
				ANTIMONY	3E+01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A
				ARSENIC	2E+01	mg/kg	7.4E-08	mg/kg-day	1.5E+00	(mg/kg-day) $^{-1}$	1.1E-07	2.7E-07	mg/kg-day	3.0E-04	mg/kg-day	9.0E-04
				CHROMIUM, TOTAL	1E+01	mg/kg	N/A	N/A	1.3E-02	(mg/kg-day)	N/A	N/A	N/A	7.5E-05	mg/kg-day	N/A
				COBALT	1E+01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A
				IRON	4E+04	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
				LEAD												
				MANGANESE	1E+03	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.6E-04	mg/kg-day	N/A
			Exp. Route Total								2E-07					9E-04
		Exposure Point Total									3E-07					4E-03
	Exposure Medium Total										N/A					N/A
Medium Total											N/A					N/A
										Total of Receptor Risks Across All Media	N/A				Total of Receptor Hazards Across All Media	N/A

TABLE 7.2.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe: Current
Receptor Population: Recreational User
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	MRP Site 1	Ingestion													
				BENZO[A]ANTHRACENE	1E+01	mg/kg	6.4E-07	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	2.5E-06	7.5E-06	mg/kg-day	N/A	N/A	N/A
				BENZO[A]PYRENE	2E+01	mg/kg	7.8E-07	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	3.0E-05	9.1E-06	mg/kg-day	N/A	N/A	N/A
				BENZO[B]FLUORANTHENE	9E+00	mg/kg	3.8E-07	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	1.5E-06	4.4E-06	mg/kg-day	N/A	N/A	N/A
				BENZO[K]FLUORANTHENE	2E+01	mg/kg	6.9E-07	mg/kg-day	7.3E-02	(mg/kg-day) $^{-1}$	2.7E-07	8.1E-06	mg/kg-day	N/A	N/A	N/A
				CHRYSENE	2E+01	mg/kg	8.2E-07	mg/kg-day	7.3E-03	(mg/kg-day) $^{-1}$	3.2E-08	9.6E-06	mg/kg-day	N/A	N/A	N/A
				DIBENZ[A,H]ANTHRACENE	1E+00	mg/kg	5.9E-08	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	2.3E-06	6.9E-07	mg/kg-day	N/A	N/A	N/A
				INDENO[1,2,3-CD]PYRENE	1E+01	mg/kg	4.3E-07	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	1.7E-06	5.0E-06	mg/kg-day	N/A	N/A	N/A
				NITROGLYCERIN	3E+00	mg/kg	1.2E-07	mg/kg-day	1.7E-02	(mg/kg-day) $^{-1}$	2.0E-09	1.3E-06	mg/kg-day	1.0E-04	mg/kg-day	1.3E-02
				4,4-DDT	2E+01	mg/kg	8.3E-07	mg/kg-day	3.4E-01	(mg/kg-day) $^{-1}$	2.8E-07	9.7E-06	mg/kg-day	5.0E-04	mg/kg-day	1.9E-02
				AROCLOR-1260	3E+02	mg/kg	1.2E-05	mg/kg-day	2.0E+00	(mg/kg-day) $^{-1}$	2.4E-05	1.4E-04	mg/kg-day	2.0E-05	mg/kg-day	6.9E+00
				ALUMINUM	1E+04	mg/kg	4.7E-04	mg/kg-day	N/A	N/A	N/A	5.5E-03	mg/kg-day	1.0E+00	mg/kg-day	5.5E-03
				ANTIMONY	9E+01	mg/kg	4.1E-06	mg/kg-day	N/A	N/A	N/A	4.7E-05	mg/kg-day	4.0E-04	mg/kg-day	1.2E-01
				ARSENIC	3E+01	mg/kg	6.6E-07	mg/kg-day	1.5E+00	(mg/kg-day) $^{-1}$	9.9E-07	7.7E-06	mg/kg-day	3.0E-04	mg/kg-day	2.6E-02
				CHROMIUM, TOTAL	1E+01	mg/kg	6.1E-07	mg/kg-day	5.0E-01	(mg/kg-day)	1.6E-06	7.1E-06	mg/kg-day	3.0E-03	mg/kg-day	2.4E-03
				COBALT	1E+01	mg/kg	6.2E-07	mg/kg-day	N/A	N/A	N/A	7.2E-06	mg/kg-day	3.0E-04	mg/kg-day	2.4E-02
				IRON	4E+04	mg/kg	1.6E-03	mg/kg-day	N/A	N/A	N/A	1.9E-02	mg/kg-day	7.0E-01	mg/kg-day	2.7E-02
				LEAD												
				MANGANESE	5E+02	mg/kg	2.3E-05	mg/kg-day	N/A	N/A	N/A	2.7E-04	mg/kg-day	2.4E-02	mg/kg-day	1.1E-02
				THALLIUM	7E-02	mg/kg	3.0E-09	mg/kg-day	N/A	N/A	N/A	3.5E-08	mg/kg-day	1.0E-05	mg/kg-day	3.5E-03
			Exp. Route Total								7E-05					7E+00

TABLE 7.2.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe: Current
Receptor Population: Recreational User
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
			Dermal													
				BENZO[A]ANTHRACENE	1E+01	mg/kg	2.0E-07	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	7.7E-07	2.3E-06	mg/kg-day	N/A	N/A	N/A
				BENZO[A]PYRENE	2E+01	mg/kg	2.4E-07	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	9.3E-06	2.8E-06	mg/kg-day	N/A	N/A	N/A
				BENZO[B]FLUORANTHENE	9E+00	mg/kg	1.2E-07	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	4.5E-07	1.4E-06	mg/kg-day	N/A	N/A	N/A
				BENZO[K]FLUORANTHENE	2E+01	mg/kg	2.1E-07	mg/kg-day	7.3E-02	(mg/kg-day) $^{-1}$	8.3E-08	2.5E-06	mg/kg-day	N/A	N/A	N/A
				CHRYSENE	2E+01	mg/kg	2.5E-07	mg/kg-day	7.3E-03	(mg/kg-day) $^{-1}$	9.9E-09	3.0E-06	mg/kg-day	N/A	N/A	N/A
				DIBENZ[A,H]ANTHRACENE	1E+00	mg/kg	1.8E-08	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	7.1E-07	2.1E-07	mg/kg-day	N/A	N/A	N/A
				INDENO[1,2,3-CD]PYRENE	1E+01	mg/kg	1.3E-07	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	5.2E-07	1.6E-06	mg/kg-day	N/A	N/A	N/A
				NITROGLYCERIN	3E+00	mg/kg	2.7E-08	mg/kg-day	1.7E-02	(mg/kg-day) $^{-1}$	4.6E-10	3.2E-07	mg/kg-day	1.0E-04	mg/kg-day	3.2E-03
				4,4-DDT	2E+01	mg/kg	5.9E-08	mg/kg-day	3.4E-01	(mg/kg-day) $^{-1}$	2.0E-08	6.9E-07	mg/kg-day	5.0E-04	mg/kg-day	1.4E-03
				AROCLOR-1260	3E+02	mg/kg	3.9E-06	mg/kg-day	2.0E+00	(mg/kg-day) $^{-1}$	7.9E-06	4.6E-05	mg/kg-day	2.0E-05	mg/kg-day	2.3E+00
				ALUMINUM	1E+04	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.0E-02	mg/kg-day	N/A
				ANTIMONY	9E+01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A
				ARSENIC	3E+01	mg/kg	7.9E-08	mg/kg-day	1.5E+00	(mg/kg-day) $^{-1}$	1.2E-07	9.2E-07	mg/kg-day	3.0E-04	mg/kg-day	3.1E-03
				CHROMIUM, TOTAL	1E+01	mg/kg	N/A	N/A	5.0E-01	(mg/kg-day)	N/A	N/A	N/A	7.5E-05	mg/kg-day	N/A
				COBALT	1E+01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A
				IRON	4E+04	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
				LEAD												
				MANGANESE	5E+02	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.6E-04	mg/kg-day	N/A
				THALLIUM	7E-02	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.0E-05	mg/kg-day	N/A
			Exp. Route Total								2E-05					2E+00

TABLE 7.2.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe: Current
Receptor Population: Recreational User
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
			Inhalation of fugitive dust													
				BENZO[A]ANTHRACENE	1E+01	mg/kg	3.5E-08	ug/m3	1.1E-04	(ug/m3) $^{-1}$	2.1E-11	4.1E-07	ug/m3	N/A	N/A	N/A
				BENZO[A]PYRENE	2E+01	mg/kg	4.3E-08	ug/m3	1.1E-03	(ug/m3) $^{-1}$	2.5E-10	5.0E-07	ug/m3	N/A	N/A	N/A
				BENZO[B]FLUORANTHENE	9E+00	mg/kg	2.1E-08	ug/m3	1.1E-04	(ug/m3) $^{-1}$	1.2E-11	2.4E-07	ug/m3	N/A	N/A	N/A
				BENZO[K]FLUORANTHENE	2E+01	mg/kg	3.8E-08	ug/m3	1.1E-04	(ug/m3) $^{-1}$	2.2E-11	4.5E-07	ug/m3	N/A	N/A	N/A
				CHRYSENE	2E+01	mg/kg	4.5E-08	ug/m3	1.1E-05	(ug/m3) $^{-1}$	2.7E-12	5.3E-07	ug/m3	N/A	N/A	N/A
				DIBENZ[A,H]ANTHRACENE	1E+00	mg/kg	3.2E-09	ug/m3	1.2E-03	(ug/m3) $^{-1}$	2.1E-11	3.8E-08	ug/m3	N/A	N/A	N/A
				INDENO[1,2,3-CD]PYRENE	1E+01	mg/kg	2.4E-08	ug/m3	1.1E-04	(ug/m3) $^{-1}$	1.4E-11	2.8E-07	ug/m3	N/A	N/A	N/A
				NITROGLYCERIN	3E+00	mg/kg	6.4E-09	ug/m3	N/A	N/A	N/A	7.4E-08	ug/m3	N/A	N/A	N/A
				4,4-DDT	2E+01	mg/kg	4.6E-08	ug/m3	9.7E-05	(ug/m3) $^{-1}$	4.5E-12	5.4E-07	ug/m3	N/A	N/A	N/A
				AROCLOR-1260	3E+02	mg/kg	6.5E-07	ug/m3	5.7E-04	(ug/m3) $^{-1}$	3.7E-10	7.6E-06	ug/m3	N/A	N/A	N/A
				ALUMINUM	1E+04	mg/kg	2.6E-05	ug/m3	N/A	N/A	N/A	3.0E-04	ug/m3	5.0E+00	ug/m3	6.0E-05
				ANTIMONY	9E+01	mg/kg	2.2E-07	ug/m3	N/A	N/A	N/A	2.6E-06	ug/m3	N/A	N/A	N/A
				ARSENIC	3E+01	mg/kg	6.1E-08	ug/m3	4.3E-03	(ug/m3) $^{-1}$	2.6E-10	7.1E-07	ug/m3	1.5E-02	ug/m3	4.7E-05
				CHROMIUM, TOTAL	1E+01	mg/kg	3.3E-08	ug/m3	8.4E-02	(ug/m3) $^{-1}$	1.5E-08	3.9E-07	ug/m3	1.0E-01	ug/m3	3.9E-06
				COBALT	1E+01	mg/kg	3.4E-08	ug/m3	9.0E-03	(ug/m3) $^{-1}$	3.1E-10	4.0E-07	ug/m3	6.0E-03	ug/m3	6.7E-05
				IRON	4E+04	mg/kg	9.1E-05	ug/m3	N/A	N/A	N/A	1.1E-03	ug/m3	N/A	N/A	N/A
				LEAD												
				MANGANESE	5E+02	mg/kg	1.3E-06	ug/m3	N/A	N/A	N/A	1.5E-05	ug/m3	5.0E-02	ug/m3	3.0E-04
				THALLIUM	7E-02	mg/kg	1.6E-10	ug/m3	N/A	N/A	N/A	1.9E-09	ug/m3	N/A	N/A	N/A
			Exp. Route Total								2E-08					5E-04
		Exposure Point Total									8E-05					9E+00
	Exposure Medium Total										N/A					N/A
Medium Total											N/A					N/A

TABLE 7.2.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe: Current
Receptor Population: Recreational User
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Sediment	Sediment	MRP Site 1	Ingestion													
				BENZO[A]PYRENE	5E-01	mg/kg	2.1E-08	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	8.0E-07	2.4E-07	mg/kg-day	N/A	N/A	N/A
				BENZO[B]FLUORANTHENE	5E-01	mg/kg	2.1E-08	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	8.0E-08	2.4E-07	mg/kg-day	N/A	N/A	N/A
				DIBENZ[A,H]ANTHRACENE	1E-01	mg/kg	5.4E-09	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	2.1E-07	6.3E-08	mg/kg-day	N/A	N/A	N/A
				ANTIMONY	3E+01	mg/kg	1.1E-06	mg/kg-day	N/A	N/A	N/A	1.3E-05	mg/kg-day	4.0E-04	mg/kg-day	3.2E-02
				ARSENIC	2E+01	mg/kg	5.2E-07	mg/kg-day	1.5E+00	(mg/kg-day) $^{-1}$	7.8E-07	6.1E-06	mg/kg-day	3.0E-04	mg/kg-day	2.0E-02
				CHROMIUM, TOTAL	1E+01	mg/kg	6.2E-07	mg/kg-day	5.0E-01	(mg/kg-day)	1.6E-06	7.2E-06	mg/kg-day	3.0E-03	mg/kg-day	2.4E-03
				COBALT	1E+01	mg/kg	5.9E-07	mg/kg-day	N/A	N/A	N/A	6.9E-06	mg/kg-day	3.0E-04	mg/kg-day	2.3E-02
				IRON	4E+04	mg/kg	1.7E-03	mg/kg-day	N/A	N/A	N/A	2.0E-02	mg/kg-day	7.0E-01	mg/kg-day	2.8E-02
				LEAD												
				MANGANESE	1E+03	mg/kg	4.7E-05	mg/kg-day	N/A	N/A	N/A	5.4E-04	mg/kg-day	2.4E-02	mg/kg-day	2.3E-02
			Exp. Route Total								4E-06					1E-01
			Dermal													
				BENZO[A]PYRENE	5E-01	mg/kg	7.3E-09	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	2.8E-07	8.5E-08	mg/kg-day	N/A	N/A	N/A
				BENZO[B]FLUORANTHENE	5E-01	mg/kg	7.3E-09	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	2.8E-08	8.5E-08	mg/kg-day	N/A	N/A	N/A
				DIBENZ[A,H]ANTHRACENE	1E-01	mg/kg	1.9E-09	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	7.5E-08	2.2E-08	mg/kg-day	N/A	N/A	N/A
				ANTIMONY	3E+01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A
				ARSENIC	2E+01	mg/kg	7.1E-08	mg/kg-day	1.5E+00	(mg/kg-day) $^{-1}$	1.1E-07	8.3E-07	mg/kg-day	3.0E-04	mg/kg-day	2.8E-03
				CHROMIUM, TOTAL	1E+01	mg/kg	N/A	N/A	1.3E-02	(mg/kg-day)	N/A	N/A	N/A	7.5E-05	mg/kg-day	N/A
				COBALT	1E+01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A
				IRON	4E+04	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
				LEAD												
				MANGANESE	1E+03	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.6E-04	mg/kg-day	N/A
			Exp. Route Total								5E-07					3E-03
		Exposure Point Total									4E-06					1E-01
	Exposure Medium Total										N/A					N/A
Medium Total											N/A					N/A
										Total of Receptor Risks Across All Media	N/A				Total of Receptor Hazards Across All Media	N/A

Notes

Shading indicates early-life cancer risk calculations for carcinogenic PAHs and chromium (VI) calculated by multiplying the result by the default age-dependent adjustment factor (ADAF) of 10 for 2/6 of the result (ages 1-2) and an ADAF of 3 for 4/6 of the result (ages 3-6).

TABLE 7.2.CT

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY

CARR POINT - MRP SITE 1

Scenario Timeframe: Current
Receptor Population: Recreational User
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	MRP Site 1	Ingestion													
				BENZO[A]ANTHRACENE	1E+01	mg/kg	1.6E-07	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	6.2E-07	1.9E-06	mg/kg-day	N/A	N/A	N/A
				BENZO[A]PYRENE	2E+01	mg/kg	1.9E-07	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	7.6E-06	2.3E-06	mg/kg-day	N/A	N/A	N/A
				BENZO[B]FLUORANTHENE	9E+00	mg/kg	9.4E-08	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	3.7E-07	1.1E-06	mg/kg-day	N/A	N/A	N/A
				BENZO[K]FLUORANTHENE	2E+01	mg/kg	1.7E-07	mg/kg-day	7.3E-02	(mg/kg-day) $^{-1}$	6.7E-08	2.0E-06	mg/kg-day	N/A	N/A	N/A
				CHRYSENE	2E+01	mg/kg	2.1E-07	mg/kg-day	7.3E-03	(mg/kg-day) $^{-1}$	8.0E-09	2.4E-06	mg/kg-day	N/A	N/A	N/A
				DIBENZ[A,H]ANTHRACENE	1E+00	mg/kg	1.5E-08	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	5.7E-07	1.7E-07	mg/kg-day	N/A	N/A	N/A
				INDENO[1,2,3-CD]PYRENE	1E+01	mg/kg	1.1E-07	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	4.2E-07	1.3E-06	mg/kg-day	N/A	N/A	N/A
				NITROGLYCERIN	3E+00	mg/kg	2.9E-08	mg/kg-day	1.7E-02	(mg/kg-day) $^{-1}$	4.9E-10	3.4E-07	mg/kg-day	1.0E-04	mg/kg-day	3.4E-03
				4,4-DDT	6E+00	mg/kg	6.9E-08	mg/kg-day	3.4E-01	(mg/kg-day) $^{-1}$	2.4E-08	8.1E-07	mg/kg-day	5.0E-04	mg/kg-day	1.6E-03
				AROCLOR-1260	9E+01	mg/kg	9.9E-07	mg/kg-day	1.0E+00	(mg/kg-day) $^{-1}$	9.9E-07	1.2E-05	mg/kg-day	2.0E-05	mg/kg-day	5.8E-01
				ALUMINUM	1E+04	mg/kg	1.2E-04	mg/kg-day	N/A	N/A	N/A	1.4E-03	mg/kg-day	1.0E+00	mg/kg-day	1.4E-03
				ANTIMONY	9E+01	mg/kg	1.0E-06	mg/kg-day	N/A	N/A	N/A	1.2E-05	mg/kg-day	4.0E-04	mg/kg-day	3.0E-02
				ARSENIC	3E+01	mg/kg	1.7E-07	mg/kg-day	1.5E+00	(mg/kg-day) $^{-1}$	2.5E-07	1.9E-06	mg/kg-day	3.0E-04	mg/kg-day	6.4E-03
				CHROMIUM, TOTAL	1E+01	mg/kg	1.5E-07	mg/kg-day	5.0E-01	(mg/kg-day)	4.0E-07	1.8E-06	mg/kg-day	3.0E-03	mg/kg-day	5.9E-04
				COBALT	1E+01	mg/kg	1.6E-07	mg/kg-day	N/A	N/A	N/A	1.8E-06	mg/kg-day	3.0E-04	mg/kg-day	6.0E-03
				IRON	4E+04	mg/kg	4.1E-04	mg/kg-day	N/A	N/A	N/A	4.8E-03	mg/kg-day	7.0E-01	mg/kg-day	6.8E-03
				LEAD												
				MANGANESE	5E+02	mg/kg	5.9E-06	mg/kg-day	N/A	N/A	N/A	6.8E-05	mg/kg-day	2.4E-02	mg/kg-day	2.9E-03
				THALLIUM	7E-02	mg/kg	7.4E-10	mg/kg-day	N/A	N/A	N/A	8.7E-09	mg/kg-day	1.0E-05	mg/kg-day	8.7E-04
			Exp. Route Total								1E-05					6E-01

TABLE 7.2.CT

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY

CARR POINT - MRP SITE 1

Scenario Timeframe: Current
Receptor Population: Recreational User
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
			Dermal													
				BENZO[A]ANTHRACENE	1E+01	mg/kg	2.0E-08	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	7.7E-08	2.3E-07	mg/kg-day	N/A	N/A	N/A
				BENZO[A]PYRENE	2E+01	mg/kg	2.4E-08	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	9.3E-07	2.8E-07	mg/kg-day	N/A	N/A	N/A
				BENZO[B]FLUORANTHENE	9E+00	mg/kg	1.2E-08	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	4.5E-08	1.4E-07	mg/kg-day	N/A	N/A	N/A
				BENZO[K]FLUORANTHENE	2E+01	mg/kg	2.1E-08	mg/kg-day	7.3E-02	(mg/kg-day) $^{-1}$	8.3E-09	2.5E-07	mg/kg-day	N/A	N/A	N/A
				CHRYSENE	2E+01	mg/kg	2.5E-08	mg/kg-day	7.3E-03	(mg/kg-day) $^{-1}$	9.9E-10	3.0E-07	mg/kg-day	N/A	N/A	N/A
				DIBENZ[A,H]ANTHRACENE	1E+00	mg/kg	1.8E-09	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	7.1E-08	2.1E-08	mg/kg-day	N/A	N/A	N/A
				INDENO[1,2,3-CD]PYRENE	1E+01	mg/kg	1.3E-08	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	5.2E-08	1.6E-07	mg/kg-day	N/A	N/A	N/A
				NITROGLYCERIN	3E+00	mg/kg	2.7E-09	mg/kg-day	1.7E-02	(mg/kg-day) $^{-1}$	4.6E-11	3.2E-08	mg/kg-day	1.0E-04	mg/kg-day	3.2E-04
				4,4-DDT	6E+00	mg/kg	2.0E-09	mg/kg-day	3.4E-01	(mg/kg-day) $^{-1}$	6.7E-10	2.3E-08	mg/kg-day	5.0E-04	mg/kg-day	4.6E-05
				AROCLOR-1260	9E+01	mg/kg	1.3E-07	mg/kg-day	1.0E+00	(mg/kg-day) $^{-1}$	1.3E-07	1.5E-06	mg/kg-day	2.0E-05	mg/kg-day	7.6E-02
				ALUMINUM	1E+04	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.0E-02	mg/kg-day	N/A
				ANTIMONY	9E+01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A
				ARSENIC	3E+01	mg/kg	7.9E-09	mg/kg-day	1.5E+00	(mg/kg-day) $^{-1}$	1.2E-08	9.2E-08	mg/kg-day	3.0E-04	mg/kg-day	3.1E-04
				CHROMIUM, TOTAL	1E+01	mg/kg	N/A	N/A	5.0E-01	(mg/kg-day)	N/A	N/A	N/A	7.5E-05	mg/kg-day	N/A
				COBALT	1E+01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A
				IRON	4E+04	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
				LEAD												
				MANGANESE	5E+02	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.6E-04	mg/kg-day	N/A
				THALLIUM	7E-02	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.0E-05	mg/kg-day	N/A
			Exp. Route Total								1E-06					8E-02

TABLE 7.2.CT

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY

CARR POINT - MRP SITE 1

Scenario Timeframe: Current
Receptor Population: Recreational User
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
			Inhalation of fugitive dust													
				BENZO[A]ANTHRACENE	1E+01	mg/kg	1.8E-08	ug/m3	1.1E-04	(ug/m3) $^{-1}$	1.0E-11	2.1E-07	ug/m3	N/A	N/A	N/A
				BENZO[A]PYRENE	2E+01	mg/kg	2.1E-08	ug/m3	1.1E-03	(ug/m3) $^{-1}$	1.3E-10	2.5E-07	ug/m3	N/A	N/A	N/A
				BENZO[B]FLUORANTHENE	9E+00	mg/kg	1.0E-08	ug/m3	1.1E-04	(ug/m3) $^{-1}$	6.1E-12	1.2E-07	ug/m3	N/A	N/A	N/A
				BENZO[K]FLUORANTHENE	2E+01	mg/kg	1.9E-08	ug/m3	1.1E-04	(ug/m3) $^{-1}$	1.1E-11	2.2E-07	ug/m3	N/A	N/A	N/A
				CHRYSENE	2E+01	mg/kg	2.3E-08	ug/m3	1.1E-05	(ug/m3) $^{-1}$	1.3E-12	2.6E-07	ug/m3	N/A	N/A	N/A
				DIBENZ[A,H]ANTHRACENE	1E+00	mg/kg	1.6E-09	ug/m3	1.2E-03	(ug/m3) $^{-1}$	1.0E-11	1.9E-08	ug/m3	N/A	N/A	N/A
				INDENO[1,2,3-CD]PYRENE	1E+01	mg/kg	1.2E-08	ug/m3	1.1E-04	(ug/m3) $^{-1}$	7.0E-12	1.4E-07	ug/m3	N/A	N/A	N/A
				NITROGLYCERIN	3E+00	mg/kg	3.2E-09	ug/m3	N/A	N/A	N/A	3.7E-08	ug/m3	N/A	N/A	N/A
				4,4-DDT	6E+00	mg/kg	7.7E-09	ug/m3	9.7E-05	(ug/m3) $^{-1}$	7.4E-13	8.9E-08	ug/m3	N/A	N/A	N/A
				AROCLOR-1260	9E+01	mg/kg	1.1E-07	ug/m3	5.7E-04	(ug/m3) $^{-1}$	6.2E-11	1.3E-06	ug/m3	N/A	N/A	N/A
				ALUMINUM	1E+04	mg/kg	1.3E-05	ug/m3	N/A	N/A	N/A	1.5E-04	ug/m3	5.0E+00	ug/m3	3.0E-05
				ANTIMONY	9E+01	mg/kg	1.1E-07	ug/m3	N/A	N/A	N/A	1.3E-06	ug/m3	N/A	N/A	N/A
				ARSENIC	3E+01	mg/kg	3.0E-08	ug/m3	4.3E-03	(ug/m3) $^{-1}$	1.3E-10	3.6E-07	ug/m3	1.5E-02	ug/m3	2.4E-05
				CHROMIUM, TOTAL	1E+01	mg/kg	1.7E-08	ug/m3	8.4E-02	(ug/m3) $^{-1}$	7.5E-09	1.9E-07	ug/m3	1.0E-01	ug/m3	1.9E-06
				COBALT	1E+01	mg/kg	1.7E-08	ug/m3	9.0E-03	(ug/m3) $^{-1}$	1.5E-10	2.0E-07	ug/m3	6.0E-03	ug/m3	3.3E-05
				IRON	4E+04	mg/kg	4.5E-05	ug/m3	N/A	N/A	N/A	5.3E-04	ug/m3	N/A	N/A	N/A
				LEAD												
				MANGANESE	5E+02	mg/kg	6.5E-07	ug/m3	N/A	N/A	N/A	7.5E-06	ug/m3	5.0E-02	ug/m3	1.5E-04
				THALLIUM	7E-02	mg/kg	8.2E-11	ug/m3	N/A	N/A	N/A	9.6E-10	ug/m3	N/A	N/A	N/A
			Exp. Route Total								8E-09					2E-04
		Exposure Point Total									1E-05					7E-01
	Exposure Medium Total										N/A					N/A
Medium Total											N/A					N/A

TABLE 7.2.CT

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY

CARR POINT - MRP SITE 1

Scenario Timeframe: Current
Receptor Population: Recreational User
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Sediment	Sediment	MRP Site 1	Ingestion													
				BENZO[A]PYRENE	5E-01	mg/kg	5.1E-09	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	2.0E-07	6.0E-08	mg/kg-day	N/A	N/A	N/A
				BENZO[B]FLUORANTHENE	5E-01	mg/kg	5.1E-09	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	2.0E-08	6.0E-08	mg/kg-day	N/A	N/A	N/A
				DIBENZ[A,H]ANTHRACENE	1E-01	mg/kg	1.4E-09	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	5.3E-08	1.6E-08	mg/kg-day	N/A	N/A	N/A
				ANTIMONY	3E+01	mg/kg	2.8E-07	mg/kg-day	N/A	N/A	N/A	3.2E-06	mg/kg-day	4.0E-04	mg/kg-day	8.1E-03
				ARSENIC	2E+01	mg/kg	1.3E-07	mg/kg-day	1.5E+00	(mg/kg-day) $^{-1}$	1.9E-07	1.5E-06	mg/kg-day	3.0E-04	mg/kg-day	5.0E-03
				CHROMIUM, TOTAL	1E+01	mg/kg	1.5E-07	mg/kg-day	5.0E-01	(mg/kg-day)	4.1E-07	1.8E-06	mg/kg-day	3.0E-03	mg/kg-day	6.0E-04
				COBALT	1E+01	mg/kg	1.5E-07	mg/kg-day	N/A	N/A	N/A	1.7E-06	mg/kg-day	3.0E-04	mg/kg-day	5.7E-03
				IRON	4E+04	mg/kg	4.2E-04	mg/kg-day	N/A	N/A	N/A	4.9E-03	mg/kg-day	7.0E-01	mg/kg-day	7.0E-03
				LEAD												
				MANGANESE	1E+03	mg/kg	1.2E-05	mg/kg-day	N/A	N/A	N/A	1.4E-04	mg/kg-day	2.4E-02	mg/kg-day	5.7E-03
			Exp. Route Total								9E-07					3E-02
			Dermal													
				BENZO[A]PYRENE	5E-01	mg/kg	3.6E-09	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	1.4E-07	4.3E-08	mg/kg-day	N/A	N/A	N/A
				BENZO[B]FLUORANTHENE	5E-01	mg/kg	3.6E-09	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	1.4E-08	4.2E-08	mg/kg-day	N/A	N/A	N/A
				DIBENZ[A,H]ANTHRACENE	1E-01	mg/kg	9.6E-10	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	3.8E-08	1.1E-08	mg/kg-day	N/A	N/A	N/A
				ANTIMONY	3E+01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A
				ARSENIC	2E+01	mg/kg	3.5E-08	mg/kg-day	1.5E+00	(mg/kg-day) $^{-1}$	5.3E-08	4.1E-07	mg/kg-day	3.0E-04	mg/kg-day	1.4E-03
				CHROMIUM, TOTAL	1E+01	mg/kg	N/A	N/A	1.3E-02	(mg/kg-day)	N/A	N/A	N/A	7.5E-05	mg/kg-day	N/A
				COBALT	1E+01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A
				IRON	4E+04	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
				LEAD												
				MANGANESE	1E+03	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.6E-04	mg/kg-day	N/A
			Exp. Route Total								2E-07					1E-03
		Exposure Point Total									1E-06					3E-02
	Exposure Medium Total										N/A					N/A
Medium Total											N/A					N/A
										Total of Receptor Risks Across All Media	N/A				Total of Receptor Hazards Across All Media	N/A

Notes

Shading indicates early-life cancer risk calculations for carcinogenic PAHs and chromium (VI) calculated by multiplying the result by the default age-dependent adjustment factor (ADAF) of 10 for 2/6 of the result (ages 1-2) and an ADAF of 3 for 4/6 of the result (ages 3-6).

TABLE 7.3.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe: Current
Receptor Population: Onsite Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	MRP Site 1	Ingestion													
				BENZO[A]ANTHRACENE	1E+01	mg/kg	1.1E-07	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	7.8E-08	3.0E-07	mg/kg-day	N/A	N/A	N/A
				BENZO[A]PYRENE	2E+01	mg/kg	1.3E-07	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	9.5E-07	3.6E-07	mg/kg-day	N/A	N/A	N/A
				BENZO[B]FLUORANTHENE	9E+00	mg/kg	6.3E-08	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	4.6E-08	1.8E-07	mg/kg-day	N/A	N/A	N/A
				BENZO[K]FLUORANTHENE	2E+01	mg/kg	1.2E-07	mg/kg-day	7.3E-02	(mg/kg-day) $^{-1}$	8.5E-09	3.2E-07	mg/kg-day	N/A	N/A	N/A
				DIBENZ[A,H]ANTHRACENE	1E+00	mg/kg	9.8E-09	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	7.2E-08	2.8E-08	mg/kg-day	N/A	N/A	N/A
				INDENO[1,2,3-CD]PYRENE	1E+01	mg/kg	7.2E-08	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	5.3E-08	2.0E-07	mg/kg-day	N/A	N/A	N/A
				4,4-DDT	2E+01	mg/kg	1.4E-07	mg/kg-day	3.4E-01	(mg/kg-day) $^{-1}$	4.7E-08	3.9E-07	mg/kg-day	5.0E-04	mg/kg-day	7.8E-04
				AROCLOR-1260	3E+02	mg/kg	2.0E-06	mg/kg-day	2.0E+00	(mg/kg-day) $^{-1}$	4.0E-06	5.5E-06	mg/kg-day	2.0E-05	mg/kg-day	2.8E-01
				ANTIMONY	9E+01	mg/kg	6.8E-07	mg/kg-day	N/A	N/A	N/A	1.9E-06	mg/kg-day	4.0E-04	mg/kg-day	4.8E-03
				ARSENIC	3E+01	mg/kg	1.1E-07	mg/kg-day	1.5E+00	(mg/kg-day) $^{-1}$	1.7E-07	3.1E-07	mg/kg-day	3.0E-04	mg/kg-day	1.0E-03
				CHROMIUM, TOTAL	1E+01	mg/kg	1.0E-07	mg/kg-day	5.0E-01	(mg/kg-day)	5.1E-08	2.8E-07	mg/kg-day	3.0E-03	mg/kg-day	9.5E-05
				IRON	4E+04	mg/kg	2.7E-04	mg/kg-day	N/A	N/A	N/A	7.7E-04	mg/kg-day	7.0E-01	mg/kg-day	1.1E-03
				LEAD												
			Exp. Route Total								5E-06					3E-01
			Dermal													
				BENZO[A]ANTHRACENE	1E+01	mg/kg	2.3E-07	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	1.7E-07	6.5E-07	mg/kg-day	N/A	N/A	N/A
				BENZO[A]PYRENE	2E+01	mg/kg	2.8E-07	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	2.1E-06	7.9E-07	mg/kg-day	N/A	N/A	N/A
				BENZO[B]FLUORANTHENE	9E+00	mg/kg	1.4E-07	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	1.0E-07	3.8E-07	mg/kg-day	N/A	N/A	N/A
				BENZO[K]FLUORANTHENE	2E+01	mg/kg	2.5E-07	mg/kg-day	7.3E-02	(mg/kg-day) $^{-1}$	1.8E-08	7.0E-07	mg/kg-day	N/A	N/A	N/A
				DIBENZ[A,H]ANTHRACENE	1E+00	mg/kg	2.1E-08	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	1.6E-07	6.0E-08	mg/kg-day	N/A	N/A	N/A
				INDENO[1,2,3-CD]PYRENE	1E+01	mg/kg	1.6E-07	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	1.1E-07	4.4E-07	mg/kg-day	N/A	N/A	N/A
				4,4-DDT	2E+01	mg/kg	7.0E-08	mg/kg-day	3.4E-01	(mg/kg-day) $^{-1}$	2.4E-08	2.0E-07	mg/kg-day	5.0E-04	mg/kg-day	3.9E-04
				AROCLOR-1260	3E+02	mg/kg	4.6E-06	mg/kg-day	2.0E+00	(mg/kg-day) $^{-1}$	9.2E-06	1.3E-05	mg/kg-day	2.0E-05	mg/kg-day	6.5E-01
				ANTIMONY	9E+01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A
				ARSENIC	3E+01	mg/kg	9.2E-08	mg/kg-day	1.5E+00	(mg/kg-day) $^{-1}$	1.4E-07	2.6E-07	mg/kg-day	3.0E-04	mg/kg-day	8.6E-04
				CHROMIUM, TOTAL	1E+01	mg/kg	N/A	N/A	1.3E-02	(mg/kg-day)	N/A	N/A	N/A	7.5E-05	mg/kg-day	N/A
				IRON	4E+04	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
				LEAD												
			Exp. Route Total								1E-05					6E-01

TABLE 7.3.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe: Current
Receptor Population: Onsite Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
			Inhalation of fugitive dust													
				BENZO[A]ANTHRACENE	1E+01	mg/kg	2.1E-08	ug/m3	1.1E-04	(ug/m3) $^{-1}$	2.3E-12	5.9E-08	ug/m3	N/A	N/A	N/A
				BENZO[A]PYRENE	2E+01	mg/kg	2.6E-08	ug/m3	1.1E-03	(ug/m3) $^{-1}$	2.8E-11	7.1E-08	ug/m3	N/A	N/A	N/A
				BENZO[B]FLUORANTHENE	9E+00	mg/kg	1.2E-08	ug/m3	1.1E-04	(ug/m3) $^{-1}$	1.4E-12	3.5E-08	ug/m3	N/A	N/A	N/A
				BENZO[K]FLUORANTHENE	2E+01	mg/kg	2.3E-08	ug/m3	1.1E-04	(ug/m3) $^{-1}$	2.5E-12	6.4E-08	ug/m3	N/A	N/A	N/A
				DIBENZ[A,H]ANTHRACENE	1E+00	mg/kg	1.9E-09	ug/m3	1.2E-03	(ug/m3) $^{-1}$	2.3E-12	5.4E-09	ug/m3	N/A	N/A	N/A
				INDENO[1,2,3-CD]PYRENE	1E+01	mg/kg	1.4E-08	ug/m3	1.1E-04	(ug/m3) $^{-1}$	1.6E-12	4.0E-08	ug/m3	N/A	N/A	N/A
				4,4-DDT	2E+01	mg/kg	2.7E-08	ug/m3	9.7E-05	(ug/m3) $^{-1}$	2.7E-12	7.7E-08	ug/m3	N/A	N/A	N/A
				AROCLOR-1260	3E+02	mg/kg	3.9E-07	ug/m3	5.7E-04	(ug/m3) $^{-1}$	2.2E-10	1.1E-06	ug/m3	N/A	N/A	N/A
				ANTIMONY	9E+01	mg/kg	1.3E-07	ug/m3	N/A	N/A	N/A	3.7E-07	ug/m3	N/A	N/A	N/A
				ARSENIC	3E+01	mg/kg	3.6E-08	ug/m3	4.3E-03	(ug/m3) $^{-1}$	1.6E-10	1.0E-07	ug/m3	1.5E-02	ug/m3	6.8E-06
				CHROMIUM, TOTAL	1E+01	mg/kg	2.0E-08	ug/m3	8.4E-02	(ug/m3) $^{-1}$	1.7E-09	5.6E-08	ug/m3	1.0E-01	ug/m3	5.6E-07
				IRON	4E+04	mg/kg	5.4E-05	ug/m3	N/A	N/A	N/A	1.5E-04	ug/m3	N/A	N/A	N/A
				LEAD												
			Exp. Route Total								2E-09					7E-06
		Exposure Point Total									2E-05					9E-01
	Exposure Medium Total										N/A					N/A
Medium Total											N/A					N/A
										Total of Receptor Risks Across All Media	N/A				Total of Receptor Hazards Across All Media	N/A

TABLE 7.3.CT

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY

CARR POINT - MRP SITE 1

Scenario Timeframe: Current
Receptor Population: Onsite Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	MRP Site 1	Ingestion													
				BENZO[A]ANTHRACENE	1E+01	mg/kg	2.5E-09	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	1.8E-09	2.5E-08	mg/kg-day	N/A	N/A	N/A
				BENZO[A]PYRENE	2E+01	mg/kg	3.0E-09	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	2.2E-08	3.0E-08	mg/kg-day	N/A	N/A	N/A
				BENZO[B]FLUORANTHENE	9E+00	mg/kg	1.5E-09	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	1.1E-09	1.5E-08	mg/kg-day	N/A	N/A	N/A
				BENZO[K]FLUORANTHENE	2E+01	mg/kg	2.7E-09	mg/kg-day	7.3E-02	(mg/kg-day) $^{-1}$	2.0E-10	2.7E-08	mg/kg-day	N/A	N/A	N/A
				DIBENZ[A,H]ANTHRACENE	1E+00	mg/kg	2.3E-10	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	1.7E-09	2.3E-09	mg/kg-day	N/A	N/A	N/A
				INDENO[1,2,3-CD]PYRENE	1E+01	mg/kg	1.7E-09	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	1.2E-09	1.7E-08	mg/kg-day	N/A	N/A	N/A
				4,4-DDT	6E+00	mg/kg	1.1E-09	mg/kg-day	3.4E-01	(mg/kg-day) $^{-1}$	3.7E-10	1.1E-08	mg/kg-day	5.0E-04	mg/kg-day	2.2E-05
				AROCLOR-1260	9E+01	mg/kg	1.5E-08	mg/kg-day	1.0E+00	(mg/kg-day) $^{-1}$	1.5E-08	1.5E-07	mg/kg-day	2.0E-05	mg/kg-day	7.7E-03
				ANTIMONY	9E+01	mg/kg	1.6E-08	mg/kg-day	N/A	N/A	N/A	1.6E-07	mg/kg-day	4.0E-04	mg/kg-day	4.0E-04
				ARSENIC	3E+01	mg/kg	2.6E-09	mg/kg-day	1.5E+00	(mg/kg-day) $^{-1}$	3.9E-09	2.6E-08	mg/kg-day	3.0E-04	mg/kg-day	8.6E-05
				CHROMIUM, TOTAL	1E+01	mg/kg	2.4E-09	mg/kg-day	5.0E-01	(mg/kg-day)	1.2E-09	2.4E-08	mg/kg-day	3.0E-03	mg/kg-day	7.9E-06
				IRON	4E+04	mg/kg	6.4E-06	mg/kg-day	N/A	N/A	N/A	6.4E-05	mg/kg-day	7.0E-01	mg/kg-day	9.2E-05
				LEAD												
			Exp. Route Total								5E-08					8E-03
			Dermal													
				BENZO[A]ANTHRACENE	1E+01	mg/kg	9.0E-10	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	6.6E-10	9.0E-09	mg/kg-day	N/A	N/A	N/A
				BENZO[A]PYRENE	2E+01	mg/kg	1.1E-09	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	8.0E-09	1.1E-08	mg/kg-day	N/A	N/A	N/A
				BENZO[B]FLUORANTHENE	9E+00	mg/kg	5.3E-10	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	3.9E-10	5.3E-09	mg/kg-day	N/A	N/A	N/A
				BENZO[K]FLUORANTHENE	2E+01	mg/kg	9.8E-10	mg/kg-day	7.3E-02	(mg/kg-day) $^{-1}$	7.1E-11	9.8E-09	mg/kg-day	N/A	N/A	N/A
				DIBENZ[A,H]ANTHRACENE	1E+00	mg/kg	8.3E-11	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	6.0E-10	8.3E-10	mg/kg-day	N/A	N/A	N/A
				INDENO[1,2,3-CD]PYRENE	1E+01	mg/kg	6.1E-10	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	4.4E-10	6.1E-09	mg/kg-day	N/A	N/A	N/A
				4,4-DDT	6E+00	mg/kg	9.0E-11	mg/kg-day	3.4E-01	(mg/kg-day) $^{-1}$	3.1E-11	9.0E-10	mg/kg-day	5.0E-04	mg/kg-day	1.8E-06
				AROCLOR-1260	9E+01	mg/kg	6.0E-09	mg/kg-day	1.0E+00	(mg/kg-day) $^{-1}$	6.0E-09	6.0E-08	mg/kg-day	2.0E-05	mg/kg-day	3.0E-03
				ANTIMONY	9E+01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A
				ARSENIC	3E+01	mg/kg	3.6E-10	mg/kg-day	1.5E+00	(mg/kg-day) $^{-1}$	5.4E-10	3.6E-09	mg/kg-day	3.0E-04	mg/kg-day	1.2E-05
				CHROMIUM, TOTAL	1E+01	mg/kg	N/A	N/A	1.3E-02	(mg/kg-day)	N/A	N/A	N/A	7.5E-05	mg/kg-day	N/A
				IRON	4E+04	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
				LEAD												
			Exp. Route Total								2E-08					3E-03

TABLE 7.3.CT

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY

CARR POINT - MRP SITE 1

Scenario Timeframe: Current
Receptor Population: Onsite Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
			Inhalation of fugitive dust													
				BENZO[A]ANTHRACENE	1E+01	mg/kg	9.8E-10	ug/m3	1.1E-04	(ug/m3) $^{-1}$	1.1E-13	9.8E-09	ug/m3	N/A	N/A	N/A
				BENZO[A]PYRENE	2E+01	mg/kg	1.2E-09	ug/m3	1.1E-03	(ug/m3) $^{-1}$	1.3E-12	1.2E-08	ug/m3	N/A	N/A	N/A
				BENZO[B]FLUORANTHENE	9E+00	mg/kg	5.8E-10	ug/m3	1.1E-04	(ug/m3) $^{-1}$	6.4E-14	5.8E-09	ug/m3	N/A	N/A	N/A
				BENZO[K]FLUORANTHENE	2E+01	mg/kg	1.1E-09	ug/m3	1.1E-04	(ug/m3) $^{-1}$	1.2E-13	1.1E-08	ug/m3	N/A	N/A	N/A
				DIBENZ[A,H]ANTHRACENE	1E+00	mg/kg	9.0E-11	ug/m3	1.2E-03	(ug/m3) $^{-1}$	1.1E-13	9.0E-10	ug/m3	N/A	N/A	N/A
				INDENO[1,2,3-CD]PYRENE	1E+01	mg/kg	6.6E-10	ug/m3	1.1E-04	(ug/m3) $^{-1}$	7.3E-14	6.6E-09	ug/m3	N/A	N/A	N/A
				4,4-DDT	6E+00	mg/kg	4.3E-10	ug/m3	9.7E-05	(ug/m3) $^{-1}$	4.1E-14	4.3E-09	ug/m3	N/A	N/A	N/A
				AROCLOR-1260	9E+01	mg/kg	6.0E-09	ug/m3	5.7E-04	(ug/m3) $^{-1}$	3.4E-12	6.0E-08	ug/m3	N/A	N/A	N/A
				ANTIMONY	9E+01	mg/kg	6.2E-09	ug/m3	N/A	N/A	N/A	6.2E-08	ug/m3	N/A	N/A	N/A
				ARSENIC	3E+01	mg/kg	1.7E-09	ug/m3	4.3E-03	(ug/m3) $^{-1}$	7.3E-12	1.7E-08	ug/m3	1.5E-02	ug/m3	1.1E-06
				CHROMIUM, TOTAL	1E+01	mg/kg	9.3E-10	ug/m3	8.4E-02	(ug/m3) $^{-1}$	7.8E-11	9.3E-09	ug/m3	1.0E-01	ug/m3	9.3E-08
				IRON	4E+04	mg/kg	2.5E-06	ug/m3	N/A	N/A	N/A	2.5E-05	ug/m3	N/A	N/A	N/A
				LEAD												
			Exp. Route Total								9E-11					1E-06
		Exposure Point Total									7E-08					1E-02
	Exposure Medium Total										N/A					N/A
Medium Total											N/A					N/A
										Total of Receptor Risks Across All Media	N/A				Total of Receptor Hazards Across All Media	N/A

TABLE 7.4.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe: Current
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	MRP Site 1	Ingestion													
				BENZO[A]ANTHRACENE	1E+01	mg/kg	6.1E-07	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	1.3E-06	4.7E-06	mg/kg-day	N/A	N/A	N/A
				BENZO[A]PYRENE	2E+01	mg/kg	7.4E-07	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	1.6E-05	5.7E-06	mg/kg-day	N/A	N/A	N/A
				BENZO[B]FLUORANTHENE	9E+00	mg/kg	3.6E-07	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	7.8E-07	2.8E-06	mg/kg-day	N/A	N/A	N/A
				BENZO[K]FLUORANTHENE	2E+01	mg/kg	6.6E-07	mg/kg-day	7.3E-02	(mg/kg-day) $^{-1}$	1.4E-07	5.1E-06	mg/kg-day	N/A	N/A	N/A
				CHRYSENE	2E+01	mg/kg	7.8E-07	mg/kg-day	7.3E-03	(mg/kg-day) $^{-1}$	1.7E-08	6.1E-06	mg/kg-day	N/A	N/A	N/A
				DIBENZ[A,H]ANTHRACENE	1E+00	mg/kg	5.6E-08	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	1.2E-06	4.3E-07	mg/kg-day	N/A	N/A	N/A
				INDENO[1,2,3-CD]PYRENE	1E+01	mg/kg	4.1E-07	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	9.0E-07	3.2E-06	mg/kg-day	N/A	N/A	N/A
				NITROGLYCERIN	3E+00	mg/kg	1.1E-07	mg/kg-day	1.7E-02	(mg/kg-day) $^{-1}$	1.9E-09	8.5E-07	mg/kg-day	1.0E-04	mg/kg-day	8.5E-03
				4,4-DDT	2E+01	mg/kg	7.9E-07	mg/kg-day	3.4E-01	(mg/kg-day) $^{-1}$	2.7E-07	6.2E-06	mg/kg-day	5.0E-04	mg/kg-day	1.2E-02
				AROCLOR-1260	3E+02	mg/kg	1.1E-05	mg/kg-day	2.0E+00	(mg/kg-day) $^{-1}$	2.2E-05	8.7E-05	mg/kg-day	2.0E-05	mg/kg-day	4.4E+00
				ALUMINUM	1E+04	mg/kg	4.5E-04	mg/kg-day	N/A	N/A	N/A	3.5E-03	mg/kg-day	1.0E+00	mg/kg-day	3.5E-03
				ANTIMONY	9E+01	mg/kg	3.9E-06	mg/kg-day	N/A	N/A	N/A	3.0E-05	mg/kg-day	4.0E-04	mg/kg-day	7.5E-02
				ARSENIC	3E+01	mg/kg	6.3E-07	mg/kg-day	1.5E+00	(mg/kg-day) $^{-1}$	9.4E-07	4.9E-06	mg/kg-day	3.0E-04	mg/kg-day	1.6E-02
				CHROMIUM, TOTAL	1E+01	mg/kg	5.8E-07	mg/kg-day	5.0E-01	(mg/kg-day)	8.6E-07	4.5E-06	mg/kg-day	3.0E-03	mg/kg-day	1.5E-03
				COBALT	1E+01	mg/kg	5.9E-07	mg/kg-day	N/A	N/A	N/A	4.6E-06	mg/kg-day	3.0E-04	mg/kg-day	1.5E-02
				IRON	4E+04	mg/kg	1.6E-03	mg/kg-day	N/A	N/A	N/A	1.2E-02	mg/kg-day	7.0E-01	mg/kg-day	1.7E-02
				LEAD												
				MANGANESE	5E+02	mg/kg	2.2E-05	mg/kg-day	N/A	N/A	N/A	1.7E-04	mg/kg-day	2.4E-02	mg/kg-day	7.2E-03
				THALLIUM	7E-02	mg/kg	2.8E-09	mg/kg-day	N/A	N/A	N/A	2.2E-08	mg/kg-day	1.0E-05	mg/kg-day	2.2E-03
			Exp. Route Total								5E-05					5E+00

TABLE 7.4.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe: Current
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
			Dermal													
				BENZO[A]ANTHRACENE	1E+01	mg/kg	2.9E-07	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	6.3E-07	2.2E-06	mg/kg-day	N/A	N/A	N/A
				BENZO[A]PYRENE	2E+01	mg/kg	3.5E-07	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	7.6E-06	2.7E-06	mg/kg-day	N/A	N/A	N/A
				BENZO[B]FLUORANTHENE	9E+00	mg/kg	1.7E-07	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	3.7E-07	1.3E-06	mg/kg-day	N/A	N/A	N/A
				BENZO[K]FLUORANTHENE	2E+01	mg/kg	3.1E-07	mg/kg-day	7.3E-02	(mg/kg-day) $^{-1}$	6.8E-08	2.4E-06	mg/kg-day	N/A	N/A	N/A
				CHRYSENE	2E+01	mg/kg	3.7E-07	mg/kg-day	7.3E-03	(mg/kg-day) $^{-1}$	8.1E-09	2.9E-06	mg/kg-day	N/A	N/A	N/A
				DIBENZ[A,H]ANTHRACENE	1E+00	mg/kg	2.6E-08	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	5.8E-07	2.0E-07	mg/kg-day	N/A	N/A	N/A
				INDENO[1,2,3-CD]PYRENE	1E+01	mg/kg	1.9E-07	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	4.2E-07	1.5E-06	mg/kg-day	N/A	N/A	N/A
				NITROGLYCERIN	3E+00	mg/kg	4.0E-08	mg/kg-day	1.7E-02	(mg/kg-day)	6.7E-10	3.1E-07	mg/kg-day	1.0E-04	mg/kg-day	3.1E-03
				4,4-DDT	2E+01	mg/kg	8.6E-08	mg/kg-day	3.4E-01	(mg/kg-day) $^{-1}$	2.9E-08	6.7E-07	mg/kg-day	5.0E-04	mg/kg-day	1.3E-03
				AROCLOR-1260	3E+02	mg/kg	5.7E-06	mg/kg-day	2.0E+00	(mg/kg-day) $^{-1}$	1.1E-05	4.4E-05	mg/kg-day	2.0E-05	mg/kg-day	2.2E+00
				ALUMINUM	1E+04	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.0E-02	mg/kg-day	N/A
				ANTIMONY	9E+01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A
				ARSENIC	3E+01	mg/kg	1.1E-07	mg/kg-day	1.5E+00	(mg/kg-day) $^{-1}$	1.7E-07	8.9E-07	mg/kg-day	3.0E-04	mg/kg-day	3.0E-03
				CHROMIUM, TOTAL	1E+01	mg/kg	N/A	N/A	1.3E-02	(mg/kg-day)	N/A	N/A	N/A	7.5E-05	mg/kg-day	N/A
				COBALT	1E+01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A
				IRON	4E+04	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
				LEAD												
				MANGANESE	5E+02	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.6E-04	mg/kg-day	N/A
				THALLIUM	7E-02	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.0E-05	mg/kg-day	N/A
			Exp. Route Total								2E-05					2E+00

TABLE 7.4.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe: Current
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
			Inhalation of fugitive dust													
				BENZO[A]ANTHRACENE	1E+01	mg/kg	3.3E-08	ug/m3	1.1E-04	(ug/m3) $^{-1}$	1.1E-11	2.6E-07	ug/m3	N/A	N/A	N/A
				BENZO[A]PYRENE	2E+01	mg/kg	4.0E-08	ug/m3	1.1E-03	(ug/m3) $^{-1}$	1.3E-10	3.1E-07	ug/m3	N/A	N/A	N/A
				BENZO[B]FLUORANTHENE	9E+00	mg/kg	1.9E-08	ug/m3	1.1E-04	(ug/m3) $^{-1}$	6.4E-12	1.5E-07	ug/m3	N/A	N/A	N/A
				BENZO[K]FLUORANTHENE	2E+01	mg/kg	3.5E-08	ug/m3	1.1E-04	(ug/m3) $^{-1}$	1.2E-11	2.8E-07	ug/m3	N/A	N/A	N/A
				CHRYSENE	2E+01	mg/kg	4.2E-08	ug/m3	1.1E-05	(ug/m3) $^{-1}$	1.4E-12	3.3E-07	ug/m3	N/A	N/A	N/A
				DIBENZ[A,H]ANTHRACENE	1E+00	mg/kg	3.0E-09	ug/m3	1.2E-03	(ug/m3) $^{-1}$	1.1E-11	2.3E-08	ug/m3	N/A	N/A	N/A
				INDENO[1,2,3-CD]PYRENE	1E+01	mg/kg	2.2E-08	ug/m3	1.1E-04	(ug/m3) $^{-1}$	7.3E-12	1.7E-07	ug/m3	N/A	N/A	N/A
				NITROGLYCERIN	3E+00	mg/kg	5.9E-09	ug/m3	N/A	N/A	N/A	4.6E-08	ug/m3	N/A	N/A	N/A
				4,4-DDT	2E+01	mg/kg	4.3E-08	ug/m3	9.7E-05	(ug/m3) $^{-1}$	4.1E-12	3.3E-07	ug/m3	N/A	N/A	N/A
				AROCLOR-1260	3E+02	mg/kg	6.1E-07	ug/m3	5.7E-04	(ug/m3) $^{-1}$	3.5E-10	4.7E-06	ug/m3	N/A	N/A	N/A
				ALUMINUM	1E+04	mg/kg	2.4E-05	ug/m3	N/A	N/A	N/A	1.9E-04	ug/m3	5.0E+00	ug/m3	3.7E-05
				ANTIMONY	9E+01	mg/kg	2.1E-07	ug/m3	N/A	N/A	N/A	1.6E-06	ug/m3	N/A	N/A	N/A
				ARSENIC	3E+01	mg/kg	5.7E-08	ug/m3	4.3E-03	(ug/m3) $^{-1}$	2.4E-10	4.4E-07	ug/m3	1.5E-02	ug/m3	2.9E-05
				CHROMIUM, TOTAL	1E+01	mg/kg	3.1E-08	ug/m3	8.4E-02	(ug/m3) $^{-1}$	7.8E-09	2.4E-07	ug/m3	1.0E-01	ug/m3	2.4E-06
				COBALT	1E+01	mg/kg	3.2E-08	ug/m3	9.0E-03	(ug/m3) $^{-1}$	2.9E-10	2.5E-07	ug/m3	6.0E-03	ug/m3	4.1E-05
				IRON	4E+04	mg/kg	8.4E-05	ug/m3	N/A	N/A	N/A	6.5E-04	ug/m3	N/A	N/A	N/A
				LEAD												
				MANGANESE	5E+02	mg/kg	1.2E-06	ug/m3	N/A	N/A	N/A	9.3E-06	ug/m3	5.0E-02	ug/m3	1.9E-04
				THALLIUM	7E-02	mg/kg	1.5E-10	ug/m3	N/A	N/A	N/A	1.2E-09	ug/m3	N/A	N/A	N/A
			Exp. Route Total								9E-09					3E-04
		Exposure Point Total									7E-05					7E+00
	Exposure Medium Total										N/A					N/A
Medium Total											N/A					N/A

TABLE 7.4.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe: Current
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Sediment	Sediment	MRP Site 1	Ingestion													
				BENZO[A]PYRENE	5E-01	mg/kg	2.0E-08	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	4.3E-07	1.5E-07	mg/kg-day	N/A	N/A	N/A
				BENZO[B]FLUORANTHENE	5E-01	mg/kg	1.9E-08	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	4.3E-08	1.5E-07	mg/kg-day	N/A	N/A	N/A
				DIBENZ[A,H]ANTHRACENE	1E-01	mg/kg	5.2E-09	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	1.1E-07	4.0E-08	mg/kg-day	N/A	N/A	N/A
				ANTIMONY	3E+01	mg/kg	1.1E-06	mg/kg-day	N/A	N/A	N/A	8.2E-06	mg/kg-day	4.0E-04	mg/kg-day	2.0E-02
				ARSENIC	2E+01	mg/kg	4.9E-07	mg/kg-day	1.5E+00	(mg/kg-day) $^{-1}$	7.4E-07	3.8E-06	mg/kg-day	3.0E-04	mg/kg-day	1.3E-02
				CHROMIUM, TOTAL	1E+01	mg/kg	5.9E-07	mg/kg-day	5.0E-01	(mg/kg-day)	8.8E-07	4.6E-06	mg/kg-day	3.0E-03	mg/kg-day	1.5E-03
				COBALT	1E+01	mg/kg	5.6E-07	mg/kg-day	N/A	N/A	N/A	4.4E-06	mg/kg-day	3.0E-04	mg/kg-day	1.5E-02
				IRON	4E+04	mg/kg	1.6E-03	mg/kg-day	N/A	N/A	N/A	1.2E-02	mg/kg-day	7.0E-01	mg/kg-day	1.8E-02
				LEAD												
				MANGANESE	1E+03	mg/kg	4.4E-05	mg/kg-day	N/A	N/A	N/A	3.4E-04	mg/kg-day	2.4E-02	mg/kg-day	1.4E-02
			Exp. Route Total								2E-06					8E-02
			Dermal													
				BENZO[A]PYRENE	5E-01	mg/kg	2.4E-08	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	5.2E-07	1.8E-07	mg/kg-day	N/A	N/A	N/A
				BENZO[B]FLUORANTHENE	5E-01	mg/kg	2.4E-08	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	5.1E-08	1.8E-07	mg/kg-day	N/A	N/A	N/A
				DIBENZ[A,H]ANTHRACENE	1E-01	mg/kg	6.2E-09	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	1.4E-07	4.8E-08	mg/kg-day	N/A	N/A	N/A
				ANTIMONY	3E+01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A
				ARSENIC	2E+01	mg/kg	2.3E-07	mg/kg-day	1.5E+00	(mg/kg-day) $^{-1}$	3.4E-07	1.8E-06	mg/kg-day	3.0E-04	mg/kg-day	5.9E-03
				CHROMIUM, TOTAL	1E+01	mg/kg	N/A	N/A	1.3E-02	(mg/kg-day)	N/A	N/A	N/A	7.5E-05	mg/kg-day	N/A
				COBALT	1E+01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A
				IRON	4E+04	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
				LEAD												
				MANGANESE	1E+03	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.6E-04	mg/kg-day	N/A
			Exp. Route Total								1E-06					6E-03
		Exposure Point Total									3E-06					9E-02
	Exposure Medium Total										N/A					N/A
Medium Total											N/A					N/A
										Total of Receptor Risks Across All Media	N/A				Total of Receptor Hazards Across All Media	N/A

Notes

Shading indicates early-life cancer risk calculations for carcinogenic PAHs and chromium (VI) calculated by multiplying the result by the default age-dependent adjustment factor (ADAF) of 3 for an adolescent (ages 7-16).

TABLE 7.4.CT

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY

CARR POINT - MRP SITE 1

Scenario Timeframe: Current
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	MRP Site 1	Ingestion													
				BENZO[A]ANTHRACENE	1E+01	mg/kg	1.5E-07	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	3.3E-07	1.2E-06	mg/kg-day	N/A	N/A	N/A
				BENZO[A]PYRENE	2E+01	mg/kg	1.8E-07	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	4.0E-06	1.4E-06	mg/kg-day	N/A	N/A	N/A
				BENZO[B]FLUORANTHENE	9E+00	mg/kg	9.0E-08	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	2.0E-07	7.0E-07	mg/kg-day	N/A	N/A	N/A
				BENZO[K]FLUORANTHENE	2E+01	mg/kg	1.6E-07	mg/kg-day	7.3E-02	(mg/kg-day) $^{-1}$	3.6E-08	1.3E-06	mg/kg-day	N/A	N/A	N/A
				CHRYSENE	2E+01	mg/kg	2.0E-07	mg/kg-day	7.3E-03	(mg/kg-day) $^{-1}$	4.3E-09	1.5E-06	mg/kg-day	N/A	N/A	N/A
				DIBENZ[A,H]ANTHRACENE	1E+00	mg/kg	1.4E-08	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	3.1E-07	1.1E-07	mg/kg-day	N/A	N/A	N/A
				INDENO[1,2,3-CD]PYRENE	1E+01	mg/kg	1.0E-07	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	2.2E-07	8.0E-07	mg/kg-day	N/A	N/A	N/A
				NITROGLYCERIN	3E+00	mg/kg	2.7E-08	mg/kg-day	1.7E-02	(mg/kg-day) $^{-1}$	4.7E-10	2.1E-07	mg/kg-day	1.0E-04	mg/kg-day	2.1E-03
				4,4-DDT	6E+00	mg/kg	6.6E-08	mg/kg-day	3.4E-01	(mg/kg-day) $^{-1}$	2.2E-08	5.1E-07	mg/kg-day	5.0E-04	mg/kg-day	1.0E-03
				AROCLOR-1260	9E+01	mg/kg	9.4E-07	mg/kg-day	1.0E+00	(mg/kg-day) $^{-1}$	9.4E-07	7.3E-06	mg/kg-day	2.0E-05	mg/kg-day	3.6E-01
				ALUMINUM	1E+04	mg/kg	1.1E-04	mg/kg-day	N/A	N/A	N/A	8.7E-04	mg/kg-day	1.0E+00	mg/kg-day	8.7E-04
				ANTIMONY	9E+01	mg/kg	5.8E-07	mg/kg-day	N/A	N/A	N/A	4.5E-06	mg/kg-day	4.0E-04	mg/kg-day	1.1E-02
				ARSENIC	3E+01	mg/kg	2.6E-07	mg/kg-day	1.5E+00	(mg/kg-day) $^{-1}$	3.9E-07	2.0E-06	mg/kg-day	3.0E-04	mg/kg-day	6.8E-03
				CHROMIUM, TOTAL	1E+01	mg/kg	1.4E-07	mg/kg-day	5.0E-01	(mg/kg-day)	2.2E-07	1.1E-06	mg/kg-day	3.0E-03	mg/kg-day	3.7E-04
				COBALT	1E+01	mg/kg	1.5E-07	mg/kg-day	N/A	N/A	N/A	1.1E-06	mg/kg-day	3.0E-04	mg/kg-day	3.8E-03
				IRON	4E+04	mg/kg	3.9E-04	mg/kg-day	N/A	N/A	N/A	3.0E-03	mg/kg-day	7.0E-01	mg/kg-day	4.3E-03
				LEAD												
				MANGANESE	5E+02	mg/kg	5.6E-06	mg/kg-day	N/A	N/A	N/A	4.3E-05	mg/kg-day	2.4E-02	mg/kg-day	1.8E-03
				THALLIUM	7E-02	mg/kg	7.1E-10	mg/kg-day	N/A	N/A	N/A	5.5E-09	mg/kg-day	1.0E-05	mg/kg-day	5.5E-04
			Exp. Route Total								7E-06					4E-01

TABLE 7.4.CT

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY

CARR POINT - MRP SITE 1

Scenario Timeframe: Current
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
			Dermal													
				BENZO[A]ANTHRACENE	1E+01	mg/kg	1.4E-07	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	3.1E-07	1.1E-06	mg/kg-day	N/A	N/A	N/A
				BENZO[A]PYRENE	2E+01	mg/kg	1.7E-07	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	3.8E-06	1.4E-06	mg/kg-day	N/A	N/A	N/A
				BENZO[B]FLUORANTHENE	9E+00	mg/kg	8.4E-08	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	1.8E-07	6.6E-07	mg/kg-day	N/A	N/A	N/A
				BENZO[K]FLUORANTHENE	2E+01	mg/kg	1.5E-07	mg/kg-day	7.3E-02	(mg/kg-day) $^{-1}$	3.4E-08	1.2E-06	mg/kg-day	N/A	N/A	N/A
				CHRYSENE	2E+01	mg/kg	1.8E-07	mg/kg-day	7.3E-03	(mg/kg-day) $^{-1}$	4.0E-09	1.4E-06	mg/kg-day	N/A	N/A	N/A
				DIBENZ[A,H]ANTHRACENE	1E+00	mg/kg	1.3E-08	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	2.9E-07	1.0E-07	mg/kg-day	N/A	N/A	N/A
				INDENO[1,2,3-CD]PYRENE	1E+01	mg/kg	9.7E-08	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	2.1E-07	7.5E-07	mg/kg-day	N/A	N/A	N/A
				NITROGLYCERIN	3E+00	mg/kg	2.0E-08	mg/kg-day	1.7E-02	(mg/kg-day)	3.4E-10	1.5E-07	mg/kg-day	1.0E-04	mg/kg-day	1.5E-03
				4,4-DDT	6E+00	mg/kg	1.4E-08	mg/kg-day	3.4E-01	(mg/kg-day) $^{-1}$	4.9E-09	1.1E-07	mg/kg-day	5.0E-04	mg/kg-day	2.2E-04
				AROCLOR-1260	9E+01	mg/kg	9.5E-07	mg/kg-day	1.0E+00	(mg/kg-day) $^{-1}$	9.5E-07	7.4E-06	mg/kg-day	2.0E-05	mg/kg-day	3.7E-01
				ALUMINUM	1E+04	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.0E-02	mg/kg-day	N/A
				ANTIMONY	9E+01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A
				ARSENIC	3E+01	mg/kg	5.7E-08	mg/kg-day	1.5E+00	(mg/kg-day) $^{-1}$	8.6E-08	4.4E-07	mg/kg-day	3.0E-04	mg/kg-day	1.5E-03
				CHROMIUM, TOTAL	1E+01	mg/kg	N/A	N/A	1.3E-02	(mg/kg-day)	N/A	N/A	N/A	7.5E-05	mg/kg-day	N/A
				COBALT	1E+01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A
				IRON	4E+04	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
				LEAD												
				MANGANESE	5E+02	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.6E-04	mg/kg-day	N/A
				THALLIUM	7E-02	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.0E-05	mg/kg-day	N/A
			Exp. Route Total								6E-06					4E-01

TABLE 7.4.CT

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY

CARR POINT - MRP SITE 1

Scenario Timeframe: Current
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
			Inhalation of fugitive dust													
				BENZO[A]ANTHRACENE	1E+01	mg/kg	8.2E-09	ug/m3	1.1E-04	(ug/m3) $^{-1}$	2.7E-12	6.4E-08	ug/m3	N/A	N/A	N/A
				BENZO[A]PYRENE	2E+01	mg/kg	9.9E-09	ug/m3	1.1E-03	(ug/m3) $^{-1}$	3.3E-11	7.7E-08	ug/m3	N/A	N/A	N/A
				BENZO[B]FLUORANTHENE	9E+00	mg/kg	4.8E-09	ug/m3	1.1E-04	(ug/m3) $^{-1}$	1.6E-12	3.8E-08	ug/m3	N/A	N/A	N/A
				BENZO[K]FLUORANTHENE	2E+01	mg/kg	8.9E-09	ug/m3	1.1E-04	(ug/m3) $^{-1}$	2.9E-12	6.9E-08	ug/m3	N/A	N/A	N/A
				CHRYSENE	2E+01	mg/kg	1.1E-08	ug/m3	1.1E-05	(ug/m3) $^{-1}$	3.5E-13	8.2E-08	ug/m3	N/A	N/A	N/A
				DIBENZ[A,H]ANTHRACENE	1E+00	mg/kg	7.5E-10	ug/m3	1.2E-03	(ug/m3) $^{-1}$	2.7E-12	5.9E-09	ug/m3	N/A	N/A	N/A
				INDENO[1,2,3-CD]PYRENE	1E+01	mg/kg	5.5E-09	ug/m3	1.1E-04	(ug/m3) $^{-1}$	1.8E-12	4.3E-08	ug/m3	N/A	N/A	N/A
				NITROGLYCERIN	3E+00	mg/kg	1.5E-09	ug/m3	N/A	N/A	N/A	1.1E-08	ug/m3	N/A	N/A	N/A
				4,4-DDT	6E+00	mg/kg	3.6E-09	ug/m3	9.7E-05	(ug/m3) $^{-1}$	3.5E-13	2.8E-08	ug/m3	N/A	N/A	N/A
				AROCLOR-1260	9E+01	mg/kg	5.1E-08	ug/m3	5.7E-04	(ug/m3) $^{-1}$	2.9E-11	3.9E-07	ug/m3	N/A	N/A	N/A
				ALUMINUM	1E+04	mg/kg	6.0E-06	ug/m3	N/A	N/A	N/A	4.7E-05	ug/m3	5.0E+00	ug/m3	9.4E-06
				ANTIMONY	9E+01	mg/kg	5.2E-08	ug/m3	N/A	N/A	N/A	4.0E-07	ug/m3	N/A	N/A	N/A
				ARSENIC	3E+01	mg/kg	1.4E-08	ug/m3	4.3E-03	(ug/m3) $^{-1}$	6.1E-11	1.1E-07	ug/m3	1.5E-02	ug/m3	7.3E-06
				CHROMIUM, TOTAL	1E+01	mg/kg	7.8E-09	ug/m3	8.4E-02	(ug/m3) $^{-1}$	2.0E-09	6.0E-08	ug/m3	1.0E-01	ug/m3	6.0E-07
				COBALT	1E+01	mg/kg	8.0E-09	ug/m3	9.0E-03	(ug/m3) $^{-1}$	7.2E-11	6.2E-08	ug/m3	6.0E-03	ug/m3	1.0E-05
				IRON	4E+04	mg/kg	2.1E-05	ug/m3	N/A	N/A	N/A	1.6E-04	ug/m3	N/A	N/A	N/A
				LEAD												
				MANGANESE	5E+02	mg/kg	3.0E-07	ug/m3	N/A	N/A	N/A	2.3E-06	ug/m3	5.0E-02	ug/m3	4.7E-05
				THALLIUM	7E-02	mg/kg	3.8E-11	ug/m3	N/A	N/A	N/A	3.0E-10	ug/m3	N/A	N/A	N/A
			Exp. Route Total								2E-09					7E-05
		Exposure Point Total									1E-05					8E-01
	Exposure Medium Total										N/A					N/A
Medium Total											N/A					N/A

TABLE 7.4.CT

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY

CARR POINT - MRP SITE 1

Scenario Timeframe: Current
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Sediment	Sediment	MRP Site 1	Ingestion													
				BENZO[A]PYRENE	5E-01	mg/kg	4.9E-09	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	1.1E-07	3.8E-08	mg/kg-day	N/A	N/A	N/A
				BENZO[B]FLUORANTHENE	5E-01	mg/kg	4.9E-09	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	1.1E-08	3.8E-08	mg/kg-day	N/A	N/A	N/A
				DIBENZ[A,H]ANTHRACENE	1E-01	mg/kg	1.3E-09	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	2.8E-08	1.0E-08	mg/kg-day	N/A	N/A	N/A
				ANTIMONY	3E+01	mg/kg	2.6E-07	mg/kg-day	N/A	N/A	N/A	2.0E-06	mg/kg-day	4.0E-04	mg/kg-day	5.1E-03
				ARSENIC	2E+01	mg/kg	1.2E-07	mg/kg-day	1.5E+00	(mg/kg-day) $^{-1}$	1.8E-07	9.6E-07	mg/kg-day	3.0E-04	mg/kg-day	3.2E-03
				CHROMIUM, TOTAL	1E+01	mg/kg	1.5E-07	mg/kg-day	5.0E-01	(mg/kg-day)	2.2E-07	1.1E-06	mg/kg-day	3.0E-03	mg/kg-day	3.8E-04
				COBALT	1E+01	mg/kg	1.4E-07	mg/kg-day	N/A	N/A	N/A	1.1E-06	mg/kg-day	3.0E-04	mg/kg-day	3.6E-03
				IRON	4E+04	mg/kg	4.0E-04	mg/kg-day	N/A	N/A	N/A	3.1E-03	mg/kg-day	7.0E-01	mg/kg-day	4.5E-03
				LEAD												
				MANGANESE	1E+03	mg/kg	1.1E-05	mg/kg-day	N/A	N/A	N/A	8.6E-05	mg/kg-day	2.4E-02	mg/kg-day	3.6E-03
			Exp. Route Total								6E-07					2E-02
			Dermal													
				BENZO[A]PYRENE	5E-01	mg/kg	1.2E-08	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	2.6E-07	9.2E-08	mg/kg-day	N/A	N/A	N/A
				BENZO[B]FLUORANTHENE	5E-01	mg/kg	1.2E-08	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	2.6E-08	9.1E-08	mg/kg-day	N/A	N/A	N/A
				DIBENZ[A,H]ANTHRACENE	1E-01	mg/kg	3.1E-09	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	6.8E-08	2.4E-08	mg/kg-day	N/A	N/A	N/A
				ANTIMONY	3E+01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A
				ARSENIC	2E+01	mg/kg	1.1E-07	mg/kg-day	1.5E+00	(mg/kg-day) $^{-1}$	1.7E-07	8.9E-07	mg/kg-day	3.0E-04	mg/kg-day	3.0E-03
				CHROMIUM, TOTAL	1E+01	mg/kg	N/A	N/A	1.3E-02	(mg/kg-day)	N/A	N/A	N/A	7.5E-05	mg/kg-day	N/A
				COBALT	1E+01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A
				IRON	4E+04	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
				LEAD												
				MANGANESE	1E+03	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.6E-04	mg/kg-day	N/A
			Exp. Route Total								5E-07					3E-03
		Exposure Point Total									1E-06					2E-02
	Exposure Medium Total										N/A					N/A
Medium Total											N/A					N/A
										Total of Receptor Risks Across All Media	N/A				Total of Receptor Hazards Across All Media	N/A

Notes

Shading indicates early-life cancer risk calculations for carcinogenic PAHs and chromium (VI) calculated by multiplying the result by the default age-dependent adjustment factor (ADAF) of 3 for an adolescent (ages 7-16).

TABLE 7.5.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe: Current/Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface/Subsurface Soil	MRP Site 1	Ingestion													
				BENZO[A]ANTHRACENE	5E+00	mg/kg	1.8E-07	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	1.3E-07	1.3E-05	mg/kg-day	N/A	N/A	N/A
				BENZO[A]PYRENE	6E+00	mg/kg	2.2E-07	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	1.6E-06	1.6E-05	mg/kg-day	N/A	N/A	N/A
				BENZO[B]FLUORANTHENE	5E+00	mg/kg	2.0E-07	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	1.5E-07	1.4E-05	mg/kg-day	N/A	N/A	N/A
				BENZO[K]FLUORANTHENE	5E+00	mg/kg	2.0E-07	mg/kg-day	7.3E-02	(mg/kg-day) $^{-1}$	1.4E-08	1.4E-05	mg/kg-day	N/A	N/A	N/A
				DIBENZ[A,H]ANTHRACENE	4E-01	mg/kg	1.7E-08	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	1.2E-07	1.2E-06	mg/kg-day	N/A	N/A	N/A
				INDENO[1,2,3-CD]PYRENE	3E+00	mg/kg	1.2E-07	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	9.0E-08	8.7E-06	mg/kg-day	N/A	N/A	N/A
				4,4-DDT	2E+01	mg/kg	7.7E-07	mg/kg-day	3.4E-01	(mg/kg-day) $^{-1}$	2.6E-07	5.4E-05	mg/kg-day	5.0E-04	mg/kg-day	1.1E-01
				AROCLOR-1260	3E+02	mg/kg	1.1E-05	mg/kg-day	2.0E+00	(mg/kg-day) $^{-1}$	2.2E-05	7.6E-04	mg/kg-day	6.0E-05	mg/kg-day	1.3E+01
				ANTIMONY	4E+01	mg/kg	1.7E-06	mg/kg-day	N/A	N/A	N/A	1.2E-04	mg/kg-day	4.0E-04	mg/kg-day	3.0E-01
				ARSENIC	2E+01	mg/kg	4.0E-07	mg/kg-day	1.5E+00	(mg/kg-day) $^{-1}$	5.9E-07	2.8E-05	mg/kg-day	3.0E-04	mg/kg-day	9.3E-02
				CHROMIUM, TOTAL	1E+01	mg/kg	5.2E-07	mg/kg-day	5.0E-01	(mg/kg-day)	2.6E-07	3.6E-05	mg/kg-day	9.0E-03	mg/kg-day	4.0E-03
				IRON	1E+01	mg/kg	5.7E-07	mg/kg-day	N/A	N/A	N/A	4.0E-05	mg/kg-day	7.0E-01	mg/kg-day	5.7E-05
				LEAD												
				MANGANESE	1E+03	mg/kg	5.9E-05	mg/kg-day	N/A	N/A	N/A	4.2E-03	mg/kg-day	2.4E-02	mg/kg-day	1.7E-01
			Exp. Route Total								3E-05					1E+01
			Dermal													
				BENZO[A]ANTHRACENE	5E+00	mg/kg	7.6E-08	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	5.5E-08	5.3E-06	mg/kg-day	N/A	N/A	N/A
				BENZO[A]PYRENE	6E+00	mg/kg	9.1E-08	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	6.7E-07	6.4E-06	mg/kg-day	N/A	N/A	N/A
				BENZO[B]FLUORANTHENE	5E+00	mg/kg	8.4E-08	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	6.1E-08	5.9E-06	mg/kg-day	N/A	N/A	N/A
				BENZO[K]FLUORANTHENE	5E+00	mg/kg	8.0E-08	mg/kg-day	7.3E-02	(mg/kg-day) $^{-1}$	5.9E-09	5.6E-06	mg/kg-day	N/A	N/A	N/A
				DIBENZ[A,H]ANTHRACENE	4E-01	mg/kg	7.0E-09	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	5.1E-08	4.9E-07	mg/kg-day	N/A	N/A	N/A
				INDENO[1,2,3-CD]PYRENE	3E+00	mg/kg	5.1E-08	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	3.7E-08	3.6E-06	mg/kg-day	N/A	N/A	N/A
				4,4-DDT	2E+01	mg/kg	7.3E-08	mg/kg-day	3.4E-01	(mg/kg-day) $^{-1}$	2.5E-08	5.1E-06	mg/kg-day	5.0E-04	mg/kg-day	1.0E-02
				AROCLOR-1260	3E+02	mg/kg	4.8E-06	mg/kg-day	2.0E+00	(mg/kg-day) $^{-1}$	9.6E-06	3.4E-04	mg/kg-day	6.0E-05	mg/kg-day	5.6E+00
				ANTIMONY	4E+01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A
				ARSENIC	2E+01	mg/kg	6.3E-08	mg/kg-day	1.5E+00	(mg/kg-day) $^{-1}$	9.4E-08	4.4E-06	mg/kg-day	3.0E-04	mg/kg-day	1.5E-02
				CHROMIUM, TOTAL	1E+01	mg/kg	N/A	N/A	1.3E-02	(mg/kg-day)	N/A	N/A	N/A	2.3E-04	mg/kg-day	N/A
				IRON	1E+01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
				LEAD												
				MANGANESE	1E+03	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.6E-04	mg/kg-day	N/A
			Exp. Route Total								1E-05					6E+00

TABLE 7.5.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe: Current/Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
			Inhalation of fugitive dust													
				BENZO[A]ANTHRACENE	5E+00	mg/kg	1.1E-08	ug/m3	1.1E-04	(ug/m3) $^{-1}$	1.2E-12	7.7E-07	ug/m3	N/A	N/A	N/A
				BENZO[A]PYRENE	6E+00	mg/kg	1.3E-08	ug/m3	1.1E-03	(ug/m3) $^{-1}$	1.5E-11	9.2E-07	ug/m3	N/A	N/A	N/A
				BENZO[B]FLUORANTHENE	5E+00	mg/kg	1.2E-08	ug/m3	1.1E-04	(ug/m3) $^{-1}$	1.3E-12	8.5E-07	ug/m3	N/A	N/A	N/A
				BENZO[K]FLUORANTHENE	5E+00	mg/kg	1.2E-08	ug/m3	1.1E-04	(ug/m3) $^{-1}$	1.3E-12	8.1E-07	ug/m3	N/A	N/A	N/A
				DIBENZ[A,H]ANTHRACENE	4E-01	mg/kg	1.0E-09	ug/m3	1.2E-03	(ug/m3) $^{-1}$	1.2E-12	7.1E-08	ug/m3	N/A	N/A	N/A
				INDENO[1,2,3-CD]PYRENE	3E+00	mg/kg	7.4E-09	ug/m3	1.1E-04	(ug/m3) $^{-1}$	8.1E-13	5.1E-07	ug/m3	N/A	N/A	N/A
				4,4-DDT	2E+01	mg/kg	4.6E-08	ug/m3	9.7E-05	(ug/m3) $^{-1}$	4.4E-12	3.2E-06	ug/m3	N/A	N/A	N/A
				AROCLOR-1260	3E+02	mg/kg	6.5E-07	ug/m3	5.7E-04	(ug/m3) $^{-1}$	3.7E-10	4.5E-05	ug/m3	N/A	N/A	N/A
				ANTIMONY	4E+01	mg/kg	1.0E-07	ug/m3	N/A	N/A	N/A	7.0E-06	ug/m3	N/A	N/A	N/A
				ARSENIC	2E+01	mg/kg	3.9E-08	ug/m3	4.3E-03	(ug/m3) $^{-1}$	1.7E-10	2.7E-06	ug/m3	1.5E-02	ug/m3	1.8E-04
				CHROMIUM, TOTAL	1E+01	mg/kg	3.1E-08	ug/m3	8.4E-02	(ug/m3) $^{-1}$	2.6E-09	2.2E-06	ug/m3	3.0E-01	ug/m3	7.2E-06
				IRON	1E+01	mg/kg	3.4E-08	ug/m3	N/A	N/A	N/A	2.4E-06	ug/m3	N/A	N/A	N/A
				LEAD												
				MANGANESE	1E+03	mg/kg	3.5E-06	ug/m3	N/A	N/A	N/A	2.5E-04	ug/m3	5.0E-02	ug/m3	4.9E-03
			Exp. Route Total								3E-09					5E-03
		Exposure Point Total									4E-05					2E+01
	Exposure Medium Total										N/A					N/A
Medium Total											N/A					N/A
										Total of Receptor Risks Across All Media	N/A				Total of Receptor Hazards Across All Media	N/A

TABLE 7.5.CT

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY

CARR POINT - MRP SITE 1

Scenario Timeframe: Current/Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface/Subsurface Soil	MRP Site 1	Ingestion													
				BENZO[A]ANTHRACENE	5E+00	mg/kg	4.8E-08	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	3.5E-08	6.7E-06	mg/kg-day	N/A	N/A	N/A
				BENZO[A]PYRENE	6E+00	mg/kg	5.8E-08	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	4.2E-07	8.1E-06	mg/kg-day	N/A	N/A	N/A
				BENZO[B]FLUORANTHENE	5E+00	mg/kg	5.3E-08	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	3.9E-08	7.4E-06	mg/kg-day	N/A	N/A	N/A
				BENZO[K]FLUORANTHENE	5E+00	mg/kg	5.1E-08	mg/kg-day	7.3E-02	(mg/kg-day) $^{-1}$	3.7E-09	7.1E-06	mg/kg-day	N/A	N/A	N/A
				DIBENZ[A,H]ANTHRACENE	4E-01	mg/kg	4.4E-09	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	3.2E-08	6.2E-07	mg/kg-day	N/A	N/A	N/A
				INDENO[1,2,3-CD]PYRENE	3E+00	mg/kg	3.2E-08	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	2.3E-08	4.5E-06	mg/kg-day	N/A	N/A	N/A
				4,4-DDT	4E+00	mg/kg	4.3E-08	mg/kg-day	3.4E-01	(mg/kg-day) $^{-1}$	1.5E-08	6.0E-06	mg/kg-day	5.0E-04	mg/kg-day	1.2E-02
				AROCLOR-1260	6E+01	mg/kg	6.0E-07	mg/kg-day	1.0E+00	(mg/kg-day) $^{-1}$	6.0E-07	8.5E-05	mg/kg-day	6.0E-05	mg/kg-day	1.4E+00
				ANTIMONY	4E+01	mg/kg	4.4E-07	mg/kg-day	N/A	N/A	N/A	6.2E-05	mg/kg-day	4.0E-04	mg/kg-day	1.5E-01
				ARSENIC	2E+01	mg/kg	1.0E-07	mg/kg-day	1.5E+00	(mg/kg-day) $^{-1}$	1.5E-07	1.4E-05	mg/kg-day	3.0E-04	mg/kg-day	4.8E-02
				CHROMIUM, TOTAL	1E+01	mg/kg	1.3E-07	mg/kg-day	5.0E-01	(mg/kg-day)	6.7E-08	1.9E-05	mg/kg-day	9.0E-03	mg/kg-day	2.1E-03
				IRON	1E+01	mg/kg	1.5E-07	mg/kg-day	N/A	N/A	N/A	2.1E-05	mg/kg-day	7.0E-01	mg/kg-day	2.9E-05
				LEAD												
				MANGANESE	1E+03	mg/kg	1.5E-05	mg/kg-day	N/A	N/A	N/A	2.2E-03	mg/kg-day	2.4E-02	mg/kg-day	9.0E-02
			Exp. Route Total								1E-06					2E+00
			Dermal													
				BENZO[A]ANTHRACENE	5E+00	mg/kg	7.9E-09	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	5.7E-09	1.1E-06	mg/kg-day	N/A	N/A	N/A
				BENZO[A]PYRENE	6E+00	mg/kg	9.5E-09	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	6.9E-08	1.3E-06	mg/kg-day	N/A	N/A	N/A
				BENZO[B]FLUORANTHENE	5E+00	mg/kg	8.7E-09	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	6.4E-09	1.2E-06	mg/kg-day	N/A	N/A	N/A
				BENZO[K]FLUORANTHENE	5E+00	mg/kg	8.3E-09	mg/kg-day	7.3E-02	(mg/kg-day) $^{-1}$	6.1E-10	1.2E-06	mg/kg-day	N/A	N/A	N/A
				DIBENZ[A,H]ANTHRACENE	4E-01	mg/kg	7.3E-10	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	5.3E-09	1.0E-07	mg/kg-day	N/A	N/A	N/A
				INDENO[1,2,3-CD]PYRENE	3E+00	mg/kg	5.3E-09	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	3.9E-09	7.4E-07	mg/kg-day	N/A	N/A	N/A
				4,4-DDT	4E+00	mg/kg	1.6E-09	mg/kg-day	3.4E-01	(mg/kg-day) $^{-1}$	5.5E-10	2.3E-07	mg/kg-day	5.0E-04	mg/kg-day	4.5E-04
				AROCLOR-1260	6E+01	mg/kg	1.1E-07	mg/kg-day	1.0E+00	(mg/kg-day) $^{-1}$	1.1E-07	1.5E-05	mg/kg-day	6.0E-05	mg/kg-day	2.5E-01
				ANTIMONY	4E+01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A
				ARSENIC	2E+01	mg/kg	6.5E-09	mg/kg-day	1.5E+00	(mg/kg-day) $^{-1}$	9.8E-09	9.1E-07	mg/kg-day	3.0E-04	mg/kg-day	3.0E-03
				CHROMIUM, TOTAL	1E+01	mg/kg	N/A	N/A	1.3E-02	(mg/kg-day)	N/A	N/A	N/A	2.3E-04	mg/kg-day	N/A
				IRON	1E+01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
				LEAD												
				MANGANESE	1E+03	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.6E-04	mg/kg-day	N/A
			Exp. Route Total								2E-07					3E-01

TABLE 7.5.CT

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY

CARR POINT - MRP SITE 1

Scenario Timeframe: Current/Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
			Inhalation of fugitive dust													
				BENZO[A]ANTHRACENE	5E+00	mg/kg	2.8E-09	ug/m3	1.1E-04	(ug/m3) $^{-1}$	3.1E-13	4.0E-07	ug/m3	N/A	N/A	N/A
				BENZO[A]PYRENE	6E+00	mg/kg	3.4E-09	ug/m3	1.1E-03	(ug/m3) $^{-1}$	3.8E-12	4.8E-07	ug/m3	N/A	N/A	N/A
				BENZO[B]FLUORANTHENE	5E+00	mg/kg	3.2E-09	ug/m3	1.1E-04	(ug/m3) $^{-1}$	3.5E-13	4.4E-07	ug/m3	N/A	N/A	N/A
				BENZO[K]FLUORANTHENE	5E+00	mg/kg	3.0E-09	ug/m3	1.1E-04	(ug/m3) $^{-1}$	3.3E-13	4.2E-07	ug/m3	N/A	N/A	N/A
				DIBENZ[A,H]ANTHRACENE	4E-01	mg/kg	2.6E-10	ug/m3	1.2E-03	(ug/m3) $^{-1}$	3.2E-13	3.7E-08	ug/m3	N/A	N/A	N/A
				INDENO[1,2,3-CD]PYRENE	3E+00	mg/kg	1.9E-09	ug/m3	1.1E-04	(ug/m3) $^{-1}$	2.1E-13	2.7E-07	ug/m3	N/A	N/A	N/A
				4,4-DDT	4E+00	mg/kg	2.5E-09	ug/m3	9.7E-05	(ug/m3) $^{-1}$	2.5E-13	3.6E-07	ug/m3	N/A	N/A	N/A
				AROCLOR-1260	6E+01	mg/kg	3.6E-08	ug/m3	5.7E-04	(ug/m3) $^{-1}$	2.0E-11	5.0E-06	ug/m3	N/A	N/A	N/A
				ANTIMONY	4E+01	mg/kg	2.6E-08	ug/m3	N/A	N/A	N/A	3.7E-06	ug/m3	N/A	N/A	N/A
				ARSENIC	2E+01	mg/kg	1.0E-08	ug/m3	4.3E-03	(ug/m3) $^{-1}$	4.4E-11	1.4E-06	ug/m3	1.5E-02	ug/m3	9.5E-05
				CHROMIUM, TOTAL	1E+01	mg/kg	8.0E-09	ug/m3	8.4E-02	(ug/m3) $^{-1}$	6.7E-10	1.1E-06	ug/m3	3.0E-01	ug/m3	3.7E-06
				IRON	1E+01	mg/kg	8.8E-09	ug/m3	N/A	N/A	N/A	1.2E-06	ug/m3	N/A	N/A	N/A
				LEAD												
				MANGANESE	1E+03	mg/kg	9.2E-07	ug/m3	N/A	N/A	N/A	1.3E-04	ug/m3	5.0E-02	ug/m3	2.6E-03
			Exp. Route Total								7E-10					3E-03
		Exposure Point Total									2E-06					2E+00
	Exposure Medium Total										N/A					N/A
Medium Total											N/A					N/A
										Total of Receptor Risks Across All Media	N/A				Total of Receptor Hazards Across All Media	N/A

TABLE 7.6.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe: Current/Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Shallow Groundwater	MRP Site 1	Ingestion													
				COBALT	7E+00	ug/L	4.3E-09	mg/kg-day	N/A	N/A	N/A	3.0E-07	mg/kg-day	3.0E-03	mg/kg-day	1.0E-04
				IRON	9E+03	ug/L	5.4E-06	mg/kg-day	N/A	N/A	N/A	3.8E-04	mg/kg-day	7.0E-01	mg/kg-day	5.4E-04
				MANGANESE	1E+03	ug/L	7.0E-07	mg/kg-day	N/A	N/A	N/A	4.9E-05	mg/kg-day	2.4E-02	mg/kg-day	2.1E-03
			Exp. Route Total								0E+00					3E-03
			Dermal													
				COBALT	7E+00	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-03	mg/kg-day	N/A
				IRON	9E+03	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
				MANGANESE	1E+03	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.6E-04	mg/kg-day	N/A
			Exp. Route Total								0E+00					0E+00
		Exposure Point Total									0E+00					3E-03
	Exposure Medium Total										N/A					N/A
Medium Total											N/A					N/A
										Total of Receptor Risks Across All Media	N/A				Total of Receptor Hazards Across All Media	N/A

TABLE 7.6.CT

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY

CARR POINT - MRP SITE 1

Scenario Timeframe: Current/Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Shallow Groundwater	MRP Site 1	Ingestion													
				COBALT	7E+00	ug/L	0.0E+00	mg/kg-day	N/A	N/A	N/A	0.0E+00	mg/kg-day	3.0E-03	mg/kg-day	0.0E+00
				IRON	9E+03	ug/L	0.0E+00	mg/kg-day	N/A	N/A	N/A	0.0E+00	mg/kg-day	7.0E-01	mg/kg-day	0.0E+00
				MANGANESE	1E+03	ug/L	0.0E+00	mg/kg-day	N/A	N/A	N/A	0.0E+00	mg/kg-day	2.4E-02	mg/kg-day	0.0E+00
			Exp. Route Total								0E+00					0E+00
			Dermal													
				COBALT	7E+00	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-03	mg/kg-day	N/A
				IRON	9E+03	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
				MANGANESE	1E+03	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.6E-04	mg/kg-day	N/A
			Exp. Route Total								0E+00					0E+00
		Exposure Point Total									0E+00					0E+00
	Exposure Medium Total										N/A					N/A
Medium Total											N/A					N/A
										Total of Receptor Risks Across All Media	N/A				Total of Receptor Hazards Across All Media	N/A

TABLE 7.7.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Groundwater	MRP Site 1 - MW-01	Ingestion													
				ANTIMONY	ND	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4.0E-04	mg/kg-day	N/A
				COBALT	7E+00	ug/L	6.0E-05	mg/kg-day	N/A	N/A	N/A	2.1E-04	mg/kg-day	3.0E-04	mg/kg-day	7.0E-01
				IRON	9E+03	ug/L	7.6E-02	mg/kg-day	N/A	N/A	N/A	2.6E-01	mg/kg-day	7.0E-01	mg/kg-day	3.8E-01
				MANGANESE	4E+02	ug/L	3.3E-03	mg/kg-day	N/A	N/A	N/A	1.2E-02	mg/kg-day	2.4E-02	mg/kg-day	4.9E-01
			Exp. Route Total								0E+00					2E+00
			Dermal													
				ANTIMONY	ND	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A
				COBALT	7E+00	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A
				IRON	9E+03	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
				MANGANESE	4E+02	ug/L	2.0E-05	mg/kg-day	N/A	N/A	N/A	6.9E-05	mg/kg-day	9.6E-04	mg/kg-day	7.2E-02
			Exp. Route Total								0E+00					7E-02
		Exposure Point Total									0E+00					2E+00
		MRP Site 1 - MW-01D	Ingestion													
				ANTIMONY	8E-01	ug/L	7.2E-06	mg/kg-day	N/A	N/A	N/A	2.5E-05	mg/kg-day	4.0E-04	mg/kg-day	6.3E-02
				COBALT	1E+01	ug/L	8.1E-05	mg/kg-day	N/A	N/A	N/A	2.8E-04	mg/kg-day	3.0E-04	mg/kg-day	9.5E-01
				IRON	1E+04	ug/L	8.4E-02	mg/kg-day	N/A	N/A	N/A	2.9E-01	mg/kg-day	7.0E-01	mg/kg-day	4.2E-01
				MANGANESE	9E+02	ug/L	8.0E-03	mg/kg-day	N/A	N/A	N/A	2.8E-02	mg/kg-day	2.4E-02	mg/kg-day	1.2E+00
			Exp. Route Total								0E+00					3E+00
			Dermal													
				ANTIMONY	8E-01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A
				COBALT	1E+01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A
				IRON	1E+04	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
				MANGANESE	9E+02	ug/L	4.8E-05	mg/kg-day	N/A	N/A	N/A	1.7E-04	mg/kg-day	9.6E-04	mg/kg-day	1.7E-01
			Exp. Route Total								0E+00					2E-01
		Exposure Point Total									0E+00					3E+00
		MRP Site 1 - MW-11	Ingestion													
				ANTIMONY	ND	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4.0E-04	mg/kg-day	N/A
				COBALT	4E-01	ug/L	3.2E-06	mg/kg-day	N/A	N/A	N/A	1.1E-05	mg/kg-day	3.0E-04	mg/kg-day	3.7E-02
				IRON	ND	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
				MANGANESE	6E+01	ug/L	5.1E-04	mg/kg-day	N/A	N/A	N/A	1.8E-03	mg/kg-day	2.4E-02	mg/kg-day	7.4E-02
			Exp. Route Total								0E+00					1E-01
			Dermal													
				ANTIMONY	ND	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A
				COBALT	4E-01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A
				IRON	ND	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
				MANGANESE	6E+01	ug/L	3.0E-06	mg/kg-day	N/A	N/A	N/A	1.1E-05	mg/kg-day	9.6E-04	mg/kg-day	1.1E-02
			Exp. Route Total								0E+00					1E-02
		Exposure Point Total									0E+00					1E-01

TABLE 7.7.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
		MRP Site 1 - MW-12	Ingestion													
				ANTIMONY	ND	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4.0E-04	mg/kg-day	N/A
				COBALT	2E+00	ug/L	1.4E-05	mg/kg-day	N/A	N/A	N/A	4.8E-05	mg/kg-day	3.0E-04	mg/kg-day	1.6E-01
				IRON	3E+03	ug/L	2.8E-02	mg/kg-day	N/A	N/A	N/A	9.9E-02	mg/kg-day	7.0E-01	mg/kg-day	1.4E-01
				MANGANESE	1E+03	ug/L	9.8E-03	mg/kg-day	N/A	N/A	N/A	3.4E-02	mg/kg-day	2.4E-02	mg/kg-day	1.4E+00
			Exp. Route Total								0E+00					2E+00
			Dermal													
				ANTIMONY	ND	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A
				COBALT	2E+00	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A
				IRON	3E+03	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
				MANGANESE	1E+03	ug/L	5.8E-05	mg/kg-day	N/A	N/A	N/A	2.0E-04	mg/kg-day	9.6E-04	mg/kg-day	2.1E-01
			Exp. Route Total								0E+00					2E-01
		Exposure Point Total									0E+00					2E+00
		MRP Site 1 - MW-12D	Ingestion													
				ANTIMONY	ND	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4.0E-04	mg/kg-day	N/A
				COBALT	4E+00	ug/L	3.0E-05	mg/kg-day	N/A	N/A	N/A	1.0E-04	mg/kg-day	3.0E-04	mg/kg-day	3.5E-01
				IRON	7E+03	ug/L	5.6E-02	mg/kg-day	N/A	N/A	N/A	2.0E-01	mg/kg-day	7.0E-01	mg/kg-day	2.8E-01
				MANGANESE	1E+03	ug/L	8.4E-03	mg/kg-day	N/A	N/A	N/A	3.0E-02	mg/kg-day	2.4E-02	mg/kg-day	1.2E+00
			Exp. Route Total								0E+00					2E+00
			Dermal													
				ANTIMONY	ND	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A
				COBALT	4E+00	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A
				IRON	7E+03	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
				MANGANESE	1E+03	ug/L	5.0E-05	mg/kg-day	N/A	N/A	N/A	1.8E-04	mg/kg-day	9.6E-04	mg/kg-day	1.8E-01
			Exp. Route Total								0E+00					2E-01
		Exposure Point Total									0E+00					2E+00
		MRP Site 1 - MW-13	Ingestion													
				ANTIMONY	ND	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4.0E-04	mg/kg-day	N/A
				COBALT	3E+00	ug/L	2.7E-05	mg/kg-day	N/A	N/A	N/A	9.6E-05	mg/kg-day	3.0E-04	mg/kg-day	3.2E-01
				IRON	4E+02	ug/L	3.3E-03	mg/kg-day	N/A	N/A	N/A	1.2E-02	mg/kg-day	7.0E-01	mg/kg-day	1.7E-02
				MANGANESE	2E+02	ug/L	2.1E-03	mg/kg-day	N/A	N/A	N/A	7.3E-03	mg/kg-day	2.4E-02	mg/kg-day	3.0E-01
			Exp. Route Total								0E+00					6E-01
			Dermal													
				ANTIMONY	ND	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A
				COBALT	3E+00	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A
				IRON	4E+02	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
				MANGANESE	2E+02	ug/L	1.2E-05	mg/kg-day	N/A	N/A	N/A	4.3E-05	mg/kg-day	9.6E-04	mg/kg-day	4.5E-02
			Exp. Route Total								0E+00					5E-02
		Exposure Point Total									0E+00					7E-01
	Exposure Medium Total										N/A					N/A
Medium Total											N/A					N/A
										Total of Receptor Risks Across All Media	N/A				Total of Receptor Hazards Across All Media	N/A

TABLE 7.7.CT

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Groundwater	MRP Site 1 - MW-01	Ingestion													
				ANTIMONY	ND	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4.0E-04	mg/kg-day	N/A
				COBALT	7E+00	ug/L	2.1E-05	mg/kg-day	N/A	N/A	N/A	7.9E-05	mg/kg-day	3.0E-04	mg/kg-day	2.6E-01
				IRON	9E+03	ug/L	2.7E-02	mg/kg-day	N/A	N/A	N/A	9.9E-02	mg/kg-day	7.0E-01	mg/kg-day	1.4E-01
				MANGANESE	4E+02	ug/L	1.2E-03	mg/kg-day	N/A	N/A	N/A	4.4E-03	mg/kg-day	2.4E-02	mg/kg-day	1.8E-01
			Exp. Route Total								0E+00					6E-01
			Dermal													
				ANTIMONY	ND	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A
				COBALT	7E+00	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A
				IRON	9E+03	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
				MANGANESE	4E+02	ug/L	4.4E-06	mg/kg-day	N/A	N/A	N/A	1.6E-05	mg/kg-day	9.6E-04	mg/kg-day	1.7E-02
			Exp. Route Total								0E+00					2E-02
		Exposure Point Total									0E+00					6E-01
		MRP Site 1 - MW-01D	Ingestion													
				ANTIMONY	8E-01	ug/L	2.6E-06	mg/kg-day	N/A	N/A	N/A	9.4E-06	mg/kg-day	4.0E-04	mg/kg-day	2.4E-02
				COBALT	1E+01	ug/L	2.9E-05	mg/kg-day	N/A	N/A	N/A	1.1E-04	mg/kg-day	3.0E-04	mg/kg-day	3.6E-01
				IRON	1E+04	ug/L	3.0E-02	mg/kg-day	N/A	N/A	N/A	1.1E-01	mg/kg-day	7.0E-01	mg/kg-day	1.6E-01
				MANGANESE	9E+02	ug/L	2.9E-03	mg/kg-day	N/A	N/A	N/A	1.1E-02	mg/kg-day	2.4E-02	mg/kg-day	4.4E-01
			Exp. Route Total								0E+00					1E+00
			Dermal													
				ANTIMONY	8E-01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A
				COBALT	1E+01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A
				IRON	1E+04	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
				MANGANESE	9E+02	ug/L	1.1E-05	mg/kg-day	N/A	N/A	N/A	3.9E-05	mg/kg-day	9.6E-04	mg/kg-day	4.1E-02
			Exp. Route Total								0E+00					4E-02
		Exposure Point Total									0E+00					1E+00
		MRP Site 1 - MW-11	Ingestion													
				ANTIMONY	ND	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4.0E-04	mg/kg-day	N/A
				COBALT	4E-01	ug/L	1.1E-06	mg/kg-day	N/A	N/A	N/A	4.2E-06	mg/kg-day	3.0E-04	mg/kg-day	1.4E-02
				IRON	ND	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
				MANGANESE	6E+01	ug/L	1.8E-04	mg/kg-day	N/A	N/A	N/A	6.7E-04	mg/kg-day	2.4E-02	mg/kg-day	2.8E-02
			Exp. Route Total								0E+00					4E-02
			Dermal													
				ANTIMONY	ND	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A
				COBALT	4E-01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A
				IRON	ND	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
				MANGANESE	6E+01	ug/L	6.7E-07	mg/kg-day	N/A	N/A	N/A	2.5E-06	mg/kg-day	9.6E-04	mg/kg-day	2.6E-03
			Exp. Route Total								0E+00					3E-03
		Exposure Point Total									0E+00					4E-02

TABLE 7.7.CT

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
		MRP Site 1 - MW-12	Ingestion													
				ANTIMONY	ND	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4.0E-04	mg/kg-day	N/A
				COBALT	2E+00	ug/L	4.9E-06	mg/kg-day	N/A	N/A	N/A	1.8E-05	mg/kg-day	3.0E-04	mg/kg-day	6.0E-02
				IRON	3E+03	ug/L	1.0E-02	mg/kg-day	N/A	N/A	N/A	3.7E-02	mg/kg-day	7.0E-01	mg/kg-day	5.3E-02
				MANGANESE	1E+03	ug/L	3.5E-03	mg/kg-day	N/A	N/A	N/A	1.3E-02	mg/kg-day	2.4E-02	mg/kg-day	5.4E-01
			Exp. Route Total								0E+00					7E-01
			Dermal													
				ANTIMONY	ND	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A
				COBALT	2E+00	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A
				IRON	3E+03	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
				MANGANESE	1E+03	ug/L	1.3E-05	mg/kg-day	N/A	N/A	N/A	4.8E-05	mg/kg-day	9.6E-04	mg/kg-day	5.0E-02
			Exp. Route Total								0E+00					5E-02
		Exposure Point Total									0E+00					7E-01
		MRP Site 1 - MW-12D	Ingestion													
				ANTIMONY	ND	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4.0E-04	mg/kg-day	N/A
				COBALT	4E+00	ug/L	1.1E-05	mg/kg-day	N/A	N/A	N/A	3.9E-05	mg/kg-day	3.0E-04	mg/kg-day	1.3E-01
				IRON	7E+03	ug/L	2.0E-02	mg/kg-day	N/A	N/A	N/A	7.4E-02	mg/kg-day	7.0E-01	mg/kg-day	1.1E-01
				MANGANESE	1E+03	ug/L	3.0E-03	mg/kg-day	N/A	N/A	N/A	1.1E-02	mg/kg-day	2.4E-02	mg/kg-day	4.6E-01
			Exp. Route Total								0E+00					7E-01
			Dermal													
				ANTIMONY	ND	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A
				COBALT	4E+00	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A
				IRON	7E+03	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
				MANGANESE	1E+03	ug/L	1.1E-05	mg/kg-day	N/A	N/A	N/A	4.1E-05	mg/kg-day	9.6E-04	mg/kg-day	4.3E-02
			Exp. Route Total								0E+00					4E-02
		Exposure Point Total									0E+00					7E-01
		MRP Site 1 - MW-13	Ingestion													
				ANTIMONY	ND	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4.0E-04	mg/kg-day	N/A
				COBALT	3E+00	ug/L	9.7E-06	mg/kg-day	N/A	N/A	N/A	3.6E-05	mg/kg-day	3.0E-04	mg/kg-day	1.2E-01
				IRON	4E+02	ug/L	1.2E-03	mg/kg-day	N/A	N/A	N/A	4.3E-03	mg/kg-day	7.0E-01	mg/kg-day	6.2E-03
				MANGANESE	2E+02	ug/L	7.4E-04	mg/kg-day	N/A	N/A	N/A	2.7E-03	mg/kg-day	2.4E-02	mg/kg-day	1.1E-01
			Exp. Route Total								0E+00					2E-01
			Dermal													
				ANTIMONY	ND	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A
				COBALT	3E+00	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A
				IRON	4E+02	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
				MANGANESE	2E+02	ug/L	2.8E-06	mg/kg-day	N/A	N/A	N/A	1.0E-05	mg/kg-day	9.6E-04	mg/kg-day	1.1E-02
			Exp. Route Total								0E+00					1E-02
		Exposure Point Total									0E+00					3E-01
	Exposure Medium Total										N/A					N/A
Medium Total											N/A					N/A
										Total of Receptor Risks Across All Media	N/A				Total of Receptor Hazards Across All Media	N/A

TABLE 7.8.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Groundwater	MRP Site 1 - MW-01	Ingestion													
				ANTIMONY	ND	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4.0E-04	mg/kg-day	N/A
				COBALT	7E+00	ug/L	3.0E-05	mg/kg-day	N/A	N/A	N/A	3.5E-04	mg/kg-day	3.0E-04	mg/kg-day	1.2E+00
				IRON	9E+03	ug/L	3.8E-02	mg/kg-day	N/A	N/A	N/A	4.4E-01	mg/kg-day	7.0E-01	mg/kg-day	6.3E-01
				MANGANESE	4E+02	ug/L	1.7E-03	mg/kg-day	N/A	N/A	N/A	1.9E-02	mg/kg-day	2.4E-02	mg/kg-day	8.1E-01
			Exp. Route Total								0E+00					3E+00
			Dermal													
				ANTIMONY	ND	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A
				COBALT	7E+00	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A
				IRON	9E+03	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
				MANGANESE	4E+02	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.6E-04	mg/kg-day	N/A
			Exp. Route Total								0E+00					0E+00
		Exposure Point Total									0E+00					3E+00
		MRP Site 1 - MW-01D	Ingestion													
				ANTIMONY	8E-01	ug/L	3.6E-06	mg/kg-day	N/A	N/A	N/A	4.2E-05	mg/kg-day	4.0E-04	mg/kg-day	1.0E-01
				COBALT	1E+01	ug/L	4.1E-05	mg/kg-day	N/A	N/A	N/A	4.7E-04	mg/kg-day	3.0E-04	mg/kg-day	1.6E+00
				IRON	1E+04	ug/L	4.2E-02	mg/kg-day	N/A	N/A	N/A	4.9E-01	mg/kg-day	7.0E-01	mg/kg-day	7.0E-01
				MANGANESE	9E+02	ug/L	4.0E-03	mg/kg-day	N/A	N/A	N/A	4.7E-02	mg/kg-day	2.4E-02	mg/kg-day	1.9E+00
			Exp. Route Total								0E+00					4E+00
			Dermal													
				ANTIMONY	8E-01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A
				COBALT	1E+01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A
				IRON	1E+04	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
				MANGANESE	9E+02	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.6E-04	mg/kg-day	N/A
			Exp. Route Total								0E+00					0E+00
		Exposure Point Total									0E+00					4E+00
		MRP Site 1 - MW-11	Ingestion													
				ANTIMONY	ND	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4.0E-04	mg/kg-day	N/A
				COBALT	4E-01	ug/L	1.6E-06	mg/kg-day	N/A	N/A	N/A	1.8E-05	mg/kg-day	3.0E-04	mg/kg-day	6.1E-02
				IRON	ND	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
				MANGANESE	6E+01	ug/L	2.5E-04	mg/kg-day	N/A	N/A	N/A	3.0E-03	mg/kg-day	2.4E-02	mg/kg-day	1.2E-01
			Exp. Route Total								0E+00					2E-01
			Dermal													
				ANTIMONY	ND	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A
				COBALT	4E-01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A
				IRON	ND	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
				MANGANESE	6E+01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.6E-04	mg/kg-day	N/A
			Exp. Route Total								0E+00					0E+00
		Exposure Point Total									0E+00					2E-01

TABLE 7.8.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
		MRP Site 1 - MW-12	Ingestion													
				ANTIMONY	ND	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4.0E-04	mg/kg-day	N/A
				COBALT	2E+00	ug/L	6.8E-06	mg/kg-day	N/A	N/A	N/A	8.0E-05	mg/kg-day	3.0E-04	mg/kg-day	2.7E-01
				IRON	3E+03	ug/L	1.4E-02	mg/kg-day	N/A	N/A	N/A	1.7E-01	mg/kg-day	7.0E-01	mg/kg-day	2.4E-01
				MANGANESE	1E+03	ug/L	4.9E-03	mg/kg-day	N/A	N/A	N/A	5.7E-02	mg/kg-day	2.4E-02	mg/kg-day	2.4E+00
			Exp. Route Total								0E+00					3E+00
			Dermal													
				ANTIMONY	ND	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A
				COBALT	2E+00	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A
				IRON	3E+03	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
				MANGANESE	1E+03	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.6E-04	mg/kg-day	N/A
			Exp. Route Total								0E+00					0E+00
		Exposure Point Total									0E+00					3E+00
		MRP Site 1 - MW-12D	Ingestion													
				ANTIMONY	ND	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4.0E-04	mg/kg-day	N/A
				COBALT	4E+00	ug/L	1.5E-05	mg/kg-day	N/A	N/A	N/A	1.7E-04	mg/kg-day	3.0E-04	mg/kg-day	5.8E-01
				IRON	7E+03	ug/L	2.8E-02	mg/kg-day	N/A	N/A	N/A	3.3E-01	mg/kg-day	7.0E-01	mg/kg-day	4.7E-01
				MANGANESE	1E+03	ug/L	4.2E-03	mg/kg-day	N/A	N/A	N/A	4.9E-02	mg/kg-day	2.4E-02	mg/kg-day	2.0E+00
			Exp. Route Total								0E+00					3E+00
			Dermal													
				ANTIMONY	ND	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A
				COBALT	4E+00	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A
				IRON	7E+03	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
				MANGANESE	1E+03	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.6E-04	mg/kg-day	N/A
			Exp. Route Total								0E+00					0E+00
		Exposure Point Total									0E+00					3E+00
		MRP Site 1 - MW-13	Ingestion													
				ANTIMONY	ND	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4.0E-04	mg/kg-day	N/A
				COBALT	3E+00	ug/L	1.4E-05	mg/kg-day	N/A	N/A	N/A	1.6E-04	mg/kg-day	3.0E-04	mg/kg-day	5.3E-01
				IRON	4E+02	ug/L	1.7E-03	mg/kg-day	N/A	N/A	N/A	1.9E-02	mg/kg-day	7.0E-01	mg/kg-day	2.8E-02
				MANGANESE	2E+02	ug/L	1.0E-03	mg/kg-day	N/A	N/A	N/A	1.2E-02	mg/kg-day	2.4E-02	mg/kg-day	5.1E-01
			Exp. Route Total								0E+00					1E+00
			Dermal													
				ANTIMONY	ND	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A
				COBALT	3E+00	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A
				IRON	4E+02	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
				MANGANESE	2E+02	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.6E-04	mg/kg-day	N/A
			Exp. Route Total								0E+00					0E+00
		Exposure Point Total									0E+00					1E+00
	Exposure Medium Total										N/A					N/A
Medium Total											N/A					N/A
										Total of Receptor Risks Across All Media	N/A				Total of Receptor Hazards Across All Media	N/A

TABLE 7.8.CT

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Groundwater	MRP Site 1 - MW-01	Ingestion													
				ANTIMONY	ND	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4.0E-04	mg/kg-day	N/A
				COBALT	7E+00	ug/L	1.5E-05	mg/kg-day	N/A	N/A	N/A	1.8E-04	mg/kg-day	3.0E-04	mg/kg-day	6.0E-01
				IRON	9E+03	ug/L	1.9E-02	mg/kg-day	N/A	N/A	N/A	2.3E-01	mg/kg-day	7.0E-01	mg/kg-day	3.2E-01
				MANGANESE	4E+02	ug/L	8.6E-04	mg/kg-day	N/A	N/A	N/A	1.0E-02	mg/kg-day	2.4E-02	mg/kg-day	4.2E-01
			Exp. Route Total								0E+00					1E+00
			Dermal													
				ANTIMONY	ND	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A
				COBALT	7E+00	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A
				IRON	9E+03	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
				MANGANESE	4E+02	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.6E-04	mg/kg-day	N/A
			Exp. Route Total								0E+00					0E+00
		Exposure Point Total									0E+00					1E+00
		MRP Site 1 - MW-01D	Ingestion													
				ANTIMONY	8E-01	ug/L	1.8E-06	mg/kg-day	N/A	N/A	N/A	2.2E-05	mg/kg-day	4.0E-04	mg/kg-day	5.4E-02
				COBALT	1E+01	ug/L	2.1E-05	mg/kg-day	N/A	N/A	N/A	2.4E-04	mg/kg-day	3.0E-04	mg/kg-day	8.1E-01
				IRON	1E+04	ug/L	2.1E-02	mg/kg-day	N/A	N/A	N/A	2.5E-01	mg/kg-day	7.0E-01	mg/kg-day	3.6E-01
				MANGANESE	9E+02	ug/L	2.1E-03	mg/kg-day	N/A	N/A	N/A	2.4E-02	mg/kg-day	2.4E-02	mg/kg-day	1.0E+00
			Exp. Route Total								0E+00					2E+00
			Dermal													
				ANTIMONY	8E-01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A
				COBALT	1E+01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A
				IRON	1E+04	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
				MANGANESE	9E+02	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.6E-04	mg/kg-day	N/A
			Exp. Route Total								0E+00					0E+00
		Exposure Point Total									0E+00					2E+00
		MRP Site 1 - MW-11	Ingestion													
				ANTIMONY	ND	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4.0E-04	mg/kg-day	N/A
				COBALT	4E-01	ug/L	8.1E-07	mg/kg-day	N/A	N/A	N/A	9.5E-06	mg/kg-day	3.0E-04	mg/kg-day	3.2E-02
				IRON	ND	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
				MANGANESE	6E+01	ug/L	1.3E-04	mg/kg-day	N/A	N/A	N/A	1.5E-03	mg/kg-day	2.4E-02	mg/kg-day	6.3E-02
			Exp. Route Total								0E+00					9E-02
			Dermal													
				ANTIMONY	ND	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A
				COBALT	4E-01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A
				IRON	ND	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
				MANGANESE	6E+01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.6E-04	mg/kg-day	N/A
			Exp. Route Total								0E+00					0E+00
		Exposure Point Total									0E+00					9E-02

TABLE 7.8.CT

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
		MRP Site 1 - MW-12	Ingestion													
				ANTIMONY	ND	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4.0E-04	mg/kg-day	N/A
				COBALT	2E+00	ug/L	3.5E-06	mg/kg-day	N/A	N/A	N/A	4.1E-05	mg/kg-day	3.0E-04	mg/kg-day	1.4E-01
				IRON	3E+03	ug/L	7.3E-03	mg/kg-day	N/A	N/A	N/A	8.5E-02	mg/kg-day	7.0E-01	mg/kg-day	1.2E-01
				MANGANESE	1E+03	ug/L	2.5E-03	mg/kg-day	N/A	N/A	N/A	2.9E-02	mg/kg-day	2.4E-02	mg/kg-day	1.2E+00
			Exp. Route Total								0E+00					1E+00
			Dermal													
				ANTIMONY	ND	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A
				COBALT	2E+00	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A
				IRON	3E+03	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
				MANGANESE	1E+03	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.6E-04	mg/kg-day	N/A
			Exp. Route Total								0E+00					0E+00
		Exposure Point Total									0E+00					1E+00
		MRP Site 1 - MW-12D	Ingestion													
				ANTIMONY	ND	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4.0E-04	mg/kg-day	N/A
				COBALT	4E+00	ug/L	7.7E-06	mg/kg-day	N/A	N/A	N/A	9.0E-05	mg/kg-day	3.0E-04	mg/kg-day	3.0E-01
				IRON	7E+03	ug/L	1.4E-02	mg/kg-day	N/A	N/A	N/A	1.7E-01	mg/kg-day	7.0E-01	mg/kg-day	2.4E-01
				MANGANESE	1E+03	ug/L	2.2E-03	mg/kg-day	N/A	N/A	N/A	2.5E-02	mg/kg-day	2.4E-02	mg/kg-day	1.1E+00
			Exp. Route Total								0E+00					2E+00
			Dermal													
				ANTIMONY	ND	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A
				COBALT	4E+00	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A
				IRON	7E+03	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
				MANGANESE	1E+03	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.6E-04	mg/kg-day	N/A
			Exp. Route Total								0E+00					0E+00
		Exposure Point Total									0E+00					2E+00
		MRP Site 1 - MW-13	Ingestion													
				ANTIMONY	ND	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4.0E-04	mg/kg-day	N/A
				COBALT	3E+00	ug/L	7.0E-06	mg/kg-day	N/A	N/A	N/A	8.2E-05	mg/kg-day	3.0E-04	mg/kg-day	2.7E-01
				IRON	4E+02	ug/L	8.5E-04	mg/kg-day	N/A	N/A	N/A	9.9E-03	mg/kg-day	7.0E-01	mg/kg-day	1.4E-02
				MANGANESE	2E+02	ug/L	5.4E-04	mg/kg-day	N/A	N/A	N/A	6.3E-03	mg/kg-day	2.4E-02	mg/kg-day	2.6E-01
			Exp. Route Total								0E+00					5E-01
			Dermal													
				ANTIMONY	ND	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A
				COBALT	3E+00	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A
				IRON	4E+02	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
				MANGANESE	2E+02	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.6E-04	mg/kg-day	N/A
			Exp. Route Total								0E+00					0E+00
		Exposure Point Total									0E+00					5E-01
	Exposure Medium Total										N/A					N/A
Medium Total											N/A					N/A
										Total of Receptor Risks Across All Media	N/A				Total of Receptor Hazards Across All Media	N/A

TABLE 7.9.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Onsite Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Groundwater	MRP Site 1 - MW-01	Ingestion													
				ANTIMONY	ND	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4.0E-04	mg/kg-day	N/A
				COBALT	7E+00	ug/L	2.1E-05	mg/kg-day	N/A	N/A	N/A	6.0E-05	mg/kg-day	3.0E-04	mg/kg-day	2.0E-01
				IRON	9E+03	ug/L	2.7E-02	mg/kg-day	N/A	N/A	N/A	7.6E-02	mg/kg-day	7.0E-01	mg/kg-day	1.1E-01
				MANGANESE	4E+02	ug/L	1.2E-03	mg/kg-day	N/A	N/A	N/A	3.3E-03	mg/kg-day	2.4E-02	mg/kg-day	1.4E-01
			Exp. Route Total								0E+00					4E-01
			Dermal													
				ANTIMONY	ND	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A
				COBALT	7E+00	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A
				IRON	9E+03	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
				MANGANESE	4E+02	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.6E-04	mg/kg-day	N/A
			Exp. Route Total								0E+00					0E+00
		Exposure Point Total									0E+00					4E-01
		MRP Site 1 - MW-01D	Ingestion													
				ANTIMONY	8E-01	ug/L	2.6E-06	mg/kg-day	N/A	N/A	N/A	7.2E-06	mg/kg-day	4.0E-04	mg/kg-day	1.8E-02
				COBALT	1E+01	ug/L	2.9E-05	mg/kg-day	N/A	N/A	N/A	8.1E-05	mg/kg-day	3.0E-04	mg/kg-day	2.7E-01
				IRON	1E+04	ug/L	3.0E-02	mg/kg-day	N/A	N/A	N/A	8.4E-02	mg/kg-day	7.0E-01	mg/kg-day	1.2E-01
				MANGANESE	9E+02	ug/L	2.9E-03	mg/kg-day	N/A	N/A	N/A	8.0E-03	mg/kg-day	2.4E-02	mg/kg-day	3.3E-01
			Exp. Route Total								0E+00					7E-01
			Dermal													
				ANTIMONY	8E-01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A
				COBALT	1E+01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A
				IRON	1E+04	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
				MANGANESE	9E+02	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.6E-04	mg/kg-day	N/A
			Exp. Route Total								0E+00					0E+00
		Exposure Point Total									0E+00					7E-01
		MRP Site 1 - MW-11	Ingestion													
				ANTIMONY	ND	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4.0E-04	mg/kg-day	N/A
				COBALT	4E-01	ug/L	1.1E-06	mg/kg-day	N/A	N/A	N/A	3.2E-06	mg/kg-day	3.0E-04	mg/kg-day	1.1E-02
				IRON	ND	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
				MANGANESE	6E+01	ug/L	1.8E-04	mg/kg-day	N/A	N/A	N/A	5.1E-04	mg/kg-day	2.4E-02	mg/kg-day	2.1E-02
			Exp. Route Total								0E+00					3E-02
			Dermal													
				ANTIMONY	ND	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A
				COBALT	4E-01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A
				IRON	ND	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
				MANGANESE	6E+01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.6E-04	mg/kg-day	N/A
			Exp. Route Total								0E+00					0E+00
		Exposure Point Total									0E+00					3E-02

TABLE 7.9.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Onsite Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
		MRP Site 1 - MW-12	Ingestion													
				ANTIMONY	ND	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4.0E-04	mg/kg-day	N/A
				COBALT	2E+00	ug/L	4.9E-06	mg/kg-day	N/A	N/A	N/A	1.4E-05	mg/kg-day	3.0E-04	mg/kg-day	4.6E-02
				IRON	3E+03	ug/L	1.0E-02	mg/kg-day	N/A	N/A	N/A	2.8E-02	mg/kg-day	7.0E-01	mg/kg-day	4.1E-02
				MANGANESE	1E+03	ug/L	3.5E-03	mg/kg-day	N/A	N/A	N/A	9.8E-03	mg/kg-day	2.4E-02	mg/kg-day	4.1E-01
			Exp. Route Total								0E+00					5E-01
			Dermal													
				ANTIMONY	ND	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A
				COBALT	2E+00	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A
				IRON	3E+03	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
				MANGANESE	1E+03	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.6E-04	mg/kg-day	N/A
			Exp. Route Total								0E+00					0E+00
		Exposure Point Total									0E+00					5E-01
		MRP Site 1 - MW-12D	Ingestion													
				ANTIMONY	ND	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4.0E-04	mg/kg-day	N/A
				COBALT	4E+00	ug/L	1.1E-05	mg/kg-day	N/A	N/A	N/A	3.0E-05	mg/kg-day	3.0E-04	mg/kg-day	1.0E-01
				IRON	7E+03	ug/L	2.0E-02	mg/kg-day	N/A	N/A	N/A	5.6E-02	mg/kg-day	7.0E-01	mg/kg-day	8.0E-02
				MANGANESE	1E+03	ug/L	3.0E-03	mg/kg-day	N/A	N/A	N/A	8.4E-03	mg/kg-day	2.4E-02	mg/kg-day	3.5E-01
			Exp. Route Total								0E+00					5E-01
			Dermal													
				ANTIMONY	ND	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A
				COBALT	4E+00	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A
				IRON	7E+03	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
				MANGANESE	1E+03	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.6E-04	mg/kg-day	N/A
			Exp. Route Total								0E+00					0E+00
		Exposure Point Total									0E+00					5E-01
		MRP Site 1 - MW-13	Ingestion													
				ANTIMONY	ND	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4.0E-04	mg/kg-day	N/A
				COBALT	3E+00	ug/L	9.8E-06	mg/kg-day	N/A	N/A	N/A	2.7E-05	mg/kg-day	3.0E-04	mg/kg-day	9.1E-02
				IRON	4E+02	ug/L	1.2E-03	mg/kg-day	N/A	N/A	N/A	3.3E-03	mg/kg-day	7.0E-01	mg/kg-day	4.7E-03
				MANGANESE	2E+02	ug/L	7.5E-04	mg/kg-day	N/A	N/A	N/A	2.1E-03	mg/kg-day	2.4E-02	mg/kg-day	8.7E-02
			Exp. Route Total								0E+00					2E-01
			Dermal													
				ANTIMONY	ND	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A
				COBALT	3E+00	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A
				IRON	4E+02	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
				MANGANESE	2E+02	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.6E-04	mg/kg-day	N/A
			Exp. Route Total								0E+00					0E+00
		Exposure Point Total									0E+00					2E-01
	Exposure Medium Total										N/A					N/A
Medium Total											N/A					N/A
										Total of Receptor Risks Across All Media	N/A				Total of Receptor Hazards Across All Media	N/A

TABLE 7.9.CT

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Onsite Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Groundwater	MRP Site 1 - MW-01	Ingestion													
				ANTIMONY	ND	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4.0E-04	mg/kg-day	N/A
				COBALT	7E+00	ug/L	3.7E-06	mg/kg-day	N/A	N/A	N/A	3.7E-05	mg/kg-day	3.0E-04	mg/kg-day	1.2E-01
				IRON	9E+03	ug/L	4.6E-03	mg/kg-day	N/A	N/A	N/A	4.6E-02	mg/kg-day	7.0E-01	mg/kg-day	6.6E-02
				MANGANESE	4E+02	ug/L	2.0E-04	mg/kg-day	N/A	N/A	N/A	2.0E-03	mg/kg-day	2.4E-02	mg/kg-day	8.5E-02
			Exp. Route Total								0E+00					3E-01
			Dermal													
				ANTIMONY	ND	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A
				COBALT	7E+00	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A
				IRON	9E+03	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
				MANGANESE	4E+02	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.6E-04	mg/kg-day	N/A
			Exp. Route Total								0E+00					0E+00
		Exposure Point Total									0E+00					3E-01
		MRP Site 1 - MW-01D	Ingestion													
				ANTIMONY	8E-01	ug/L	4.4E-07	mg/kg-day	N/A	N/A	N/A	4.4E-06	mg/kg-day	4.0E-04	mg/kg-day	1.1E-02
				COBALT	1E+01	ug/L	5.0E-06	mg/kg-day	N/A	N/A	N/A	5.0E-05	mg/kg-day	3.0E-04	mg/kg-day	1.7E-01
				IRON	1E+04	ug/L	5.1E-03	mg/kg-day	N/A	N/A	N/A	5.1E-02	mg/kg-day	7.0E-01	mg/kg-day	7.3E-02
				MANGANESE	9E+02	ug/L	4.9E-04	mg/kg-day	N/A	N/A	N/A	4.9E-03	mg/kg-day	2.4E-02	mg/kg-day	2.1E-01
			Exp. Route Total								0E+00					5E-01
			Dermal													
				ANTIMONY	8E-01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A
				COBALT	1E+01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A
				IRON	1E+04	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
				MANGANESE	9E+02	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.6E-04	mg/kg-day	N/A
			Exp. Route Total								0E+00					0E+00
		Exposure Point Total									0E+00					5E-01
		MRP Site 1 - MW-11	Ingestion													
				ANTIMONY	ND	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4.0E-04	mg/kg-day	N/A
				COBALT	4E-01	ug/L	1.9E-07	mg/kg-day	N/A	N/A	N/A	1.9E-06	mg/kg-day	3.0E-04	mg/kg-day	6.5E-03
				IRON	ND	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
				MANGANESE	6E+01	ug/L	3.1E-05	mg/kg-day	N/A	N/A	N/A	3.1E-04	mg/kg-day	2.4E-02	mg/kg-day	1.3E-02
			Exp. Route Total								0E+00					2E-02
			Dermal													
				ANTIMONY	ND	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A
				COBALT	4E-01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A
				IRON	ND	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
				MANGANESE	6E+01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.6E-04	mg/kg-day	N/A
			Exp. Route Total								0E+00					0E+00
		Exposure Point Total									0E+00					2E-02

TABLE 7.9.CT

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Onsite Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
		MRP Site 1 - MW-12	Ingestion													
				ANTIMONY	ND	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4.0E-04	mg/kg-day	N/A
				COBALT	2E+00	ug/L	8.4E-07	mg/kg-day	N/A	N/A	N/A	8.4E-06	mg/kg-day	3.0E-04	mg/kg-day	2.8E-02
				IRON	3E+03	ug/L	1.7E-03	mg/kg-day	N/A	N/A	N/A	1.7E-02	mg/kg-day	7.0E-01	mg/kg-day	2.5E-02
				MANGANESE	1E+03	ug/L	6.0E-04	mg/kg-day	N/A	N/A	N/A	6.0E-03	mg/kg-day	2.4E-02	mg/kg-day	2.5E-01
			Exp. Route Total								0E+00					3E-01
			Dermal													
				ANTIMONY	ND	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A
				COBALT	2E+00	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A
				IRON	3E+03	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
				MANGANESE	1E+03	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.6E-04	mg/kg-day	N/A
			Exp. Route Total								0E+00					0E+00
		Exposure Point Total									0E+00					3E-01
		MRP Site 1 - MW-12D	Ingestion													
				ANTIMONY	ND	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4.0E-04	mg/kg-day	N/A
				COBALT	4E+00	ug/L	1.8E-06	mg/kg-day	N/A	N/A	N/A	1.8E-05	mg/kg-day	3.0E-04	mg/kg-day	6.1E-02
				IRON	7E+03	ug/L	3.4E-03	mg/kg-day	N/A	N/A	N/A	3.4E-02	mg/kg-day	7.0E-01	mg/kg-day	4.9E-02
				MANGANESE	1E+03	ug/L	5.2E-04	mg/kg-day	N/A	N/A	N/A	5.2E-03	mg/kg-day	2.4E-02	mg/kg-day	2.2E-01
			Exp. Route Total								0E+00					3E-01
			Dermal													
				ANTIMONY	ND	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A
				COBALT	4E+00	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A
				IRON	7E+03	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
				MANGANESE	1E+03	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.6E-04	mg/kg-day	N/A
			Exp. Route Total								0E+00					0E+00
		Exposure Point Total									0E+00					3E-01
		MRP Site 1 - MW-13	Ingestion													
				ANTIMONY	ND	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4.0E-04	mg/kg-day	N/A
				COBALT	3E+00	ug/L	1.7E-06	mg/kg-day	N/A	N/A	N/A	1.7E-05	mg/kg-day	3.0E-04	mg/kg-day	5.6E-02
				IRON	4E+02	ug/L	2.0E-04	mg/kg-day	N/A	N/A	N/A	2.0E-03	mg/kg-day	7.0E-01	mg/kg-day	2.9E-03
				MANGANESE	2E+02	ug/L	1.3E-04	mg/kg-day	N/A	N/A	N/A	1.3E-03	mg/kg-day	2.4E-02	mg/kg-day	5.3E-02
			Exp. Route Total								0E+00					1E-01
			Dermal													
				ANTIMONY	ND	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A
				COBALT	3E+00	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A
				IRON	4E+02	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
				MANGANESE	2E+02	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.6E-04	mg/kg-day	N/A
			Exp. Route Total								0E+00					0E+00
		Exposure Point Total									0E+00					1E-01
	Exposure Medium Total										N/A					N/A
Medium Total											N/A					N/A
										Total of Receptor Risks Across All Media	N/A				Total of Receptor Hazards Across All Media	N/A

TABLE 7.10.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface/Subsurface Soil	MRP Site 1	Ingestion													
				BENZO[A]ANTHRACENE	5E+00	mg/kg	1.6E-06	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	1.1E-06	5.5E-06	mg/kg-day	N/A	N/A	N/A
				BENZO[A]PYRENE	6E+00	mg/kg	1.9E-06	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	1.4E-05	6.6E-06	mg/kg-day	N/A	N/A	N/A
				BENZO[B]FLUORANTHENE	5E+00	mg/kg	1.7E-06	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	1.3E-06	6.1E-06	mg/kg-day	N/A	N/A	N/A
				BENZO[K]FLUORANTHENE	5E+00	mg/kg	1.7E-06	mg/kg-day	7.3E-02	(mg/kg-day) $^{-1}$	1.2E-07	5.8E-06	mg/kg-day	N/A	N/A	N/A
				CHRYSENE	6E+00	mg/kg	2.0E-06	mg/kg-day	7.3E-03	(mg/kg-day) $^{-1}$	1.5E-08	7.1E-06	mg/kg-day	N/A	N/A	N/A
				DIBENZ[A,H]ANTHRACENE	4E-01	mg/kg	1.4E-07	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	1.1E-06	5.1E-07	mg/kg-day	N/A	N/A	N/A
				INDENO[1,2,3-CD]PYRENE	3E+00	mg/kg	1.0E-06	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	7.7E-07	3.7E-06	mg/kg-day	N/A	N/A	N/A
				NITROGLYCERIN	6E-01	mg/kg	2.1E-07	mg/kg-day	1.7E-02	(mg/kg-day) $^{-1}$	3.5E-09	7.3E-07	mg/kg-day	1.0E-04	mg/kg-day	7.3E-03
				4,4-DDT	2E+01	mg/kg	6.5E-06	mg/kg-day	3.4E-01	(mg/kg-day) $^{-1}$	2.2E-06	2.3E-05	mg/kg-day	5.0E-04	mg/kg-day	4.6E-02
				AROCLOR-1260	3E+02	mg/kg	9.2E-05	mg/kg-day	2.0E+00	(mg/kg-day) $^{-1}$	1.8E-04	3.2E-04	mg/kg-day	2.0E-05	mg/kg-day	1.6E+01
				ALUMINUM	9E+03	mg/kg	3.2E-03	mg/kg-day	N/A	N/A	N/A	1.1E-02	mg/kg-day	1.0E+00	mg/kg-day	1.1E-02
				ANTIMONY	4E+01	mg/kg	1.4E-05	mg/kg-day	N/A	N/A	N/A	5.0E-05	mg/kg-day	4.0E-04	mg/kg-day	1.3E-01
				ARSENIC	2E+01	mg/kg	3.4E-06	mg/kg-day	1.5E+00	(mg/kg-day) $^{-1}$	5.0E-06	1.2E-05	mg/kg-day	3.0E-04	mg/kg-day	3.9E-02
				CHROMIUM, TOTAL	1E+01	mg/kg	4.4E-06	mg/kg-day	5.0E-01	(mg/kg-day)	2.2E-06	1.5E-05	mg/kg-day	3.0E-03	mg/kg-day	5.1E-03
				COBALT	1E+01	mg/kg	4.8E-06	mg/kg-day	N/A	N/A	N/A	1.7E-05	mg/kg-day	3.0E-04	mg/kg-day	5.6E-02
				IRON	3E+04	mg/kg	1.1E-02	mg/kg-day	N/A	N/A	N/A	3.9E-02	mg/kg-day	7.0E-01	mg/kg-day	5.6E-02
				LEAD												
				MANGANESE	1E+03	mg/kg	3.3E-04	mg/kg-day	N/A	N/A	N/A	1.2E-03	mg/kg-day	2.4E-02	mg/kg-day	4.8E-02
				THALLIUM	8E-02	mg/kg	2.7E-08	mg/kg-day	N/A	N/A	N/A	9.5E-08	mg/kg-day	1.0E-05	mg/kg-day	9.5E-03
			Exp. Route Total								2E-04					2E+01

TABLE 7.10.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
			Dermal													
				BENZO[A]ANTHRACENE	5E+00	mg/kg	8.6E-07	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	6.3E-07	3.0E-06	mg/kg-day	N/A	N/A	N/A
				BENZO[A]PYRENE	6E+00	mg/kg	1.0E-06	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	7.6E-06	3.6E-06	mg/kg-day	N/A	N/A	N/A
				BENZO[B]FLUORANTHENE	5E+00	mg/kg	9.5E-07	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	7.0E-07	3.3E-06	mg/kg-day	N/A	N/A	N/A
				BENZO[K]FLUORANTHENE	5E+00	mg/kg	9.1E-07	mg/kg-day	7.3E-02	(mg/kg-day) $^{-1}$	6.6E-08	3.2E-06	mg/kg-day	N/A	N/A	N/A
				CHRYSENE	6E+00	mg/kg	1.1E-06	mg/kg-day	7.3E-03	(mg/kg-day) $^{-1}$	8.1E-09	3.9E-06	mg/kg-day	N/A	N/A	N/A
				DIBENZ[A,H]ANTHRACENE	4E-01	mg/kg	7.9E-08	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	5.8E-07	2.8E-07	mg/kg-day	N/A	N/A	N/A
				INDENO[1,2,3-CD]PYRENE	3E+00	mg/kg	5.8E-07	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	4.2E-07	2.0E-06	mg/kg-day	N/A	N/A	N/A
				NITROGLYCERIN	6E-01		8.7E-08	mg/kg-day	1.7E-02	(mg/kg-day)	1.5E-09	3.1E-07	mg/kg-day	1.0E-04	mg/kg-day	3.1E-03
				4,4-DDT	2E+01	mg/kg	8.2E-07	mg/kg-day	3.4E-01	(mg/kg-day) $^{-1}$	2.8E-07	2.9E-06	mg/kg-day	5.0E-04	mg/kg-day	5.8E-03
				AROCLOR-1260	3E+02	mg/kg	5.5E-05	mg/kg-day	2.0E+00	(mg/kg-day) $^{-1}$	1.1E-04	1.9E-04	mg/kg-day	2.0E-05	mg/kg-day	9.6E+00
				ALUMINUM	9E+03	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.0E-02	mg/kg-day	N/A
				ANTIMONY	4E+01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A
				ARSENIC	2E+01	mg/kg	7.1E-07	mg/kg-day	1.5E+00	(mg/kg-day) $^{-1}$	1.1E-06	2.5E-06	mg/kg-day	3.0E-04	mg/kg-day	8.3E-03
				CHROMIUM, TOTAL	1E+01	mg/kg	N/A	N/A	1.3E-02	(mg/kg-day)	N/A	N/A	N/A	7.5E-05	mg/kg-day	N/A
				COBALT	1E+01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A
				IRON	3E+04	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
				LEAD												
				MANGANESE	1E+03	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.6E-04	mg/kg-day	N/A
				THALLIUM	8E-02	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.0E-05	mg/kg-day	N/A
			Exp. Route Total								1E-04					1E+01

TABLE 7.10.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
			Inhalation of fugitive dust													
				BENZO[A]ANTHRACENE	5E+00	mg/kg	1.9E-07	ug/m3	1.1E-04	(ug/m3) $^{-1}$	2.1E-11	6.7E-07	ug/m3	N/A	N/A	N/A
				BENZO[A]PYRENE	6E+00	mg/kg	2.3E-07	ug/m3	1.1E-03	(ug/m3) $^{-1}$	2.5E-10	8.1E-07	ug/m3	N/A	N/A	N/A
				BENZO[B]FLUORANTHENE	5E+00	mg/kg	2.1E-07	ug/m3	1.1E-04	(ug/m3) $^{-1}$	2.3E-11	7.4E-07	ug/m3	N/A	N/A	N/A
				BENZO[K]FLUORANTHENE	5E+00	mg/kg	2.0E-07	ug/m3	1.1E-04	(ug/m3) $^{-1}$	2.2E-11	7.1E-07	ug/m3	N/A	N/A	N/A
				CHRYSENE	6E+00	mg/kg	2.5E-07	ug/m3	1.1E-05	(ug/m3) $^{-1}$	2.7E-12	8.7E-07	ug/m3	N/A	N/A	N/A
				DIBENZ[A,H]ANTHRACENE	4E-01	mg/kg	1.8E-08	ug/m3	1.2E-03	(ug/m3) $^{-1}$	2.1E-11	6.2E-08	ug/m3	N/A	N/A	N/A
				INDENO[1,2,3-CD]PYRENE	3E+00	mg/kg	1.3E-07	ug/m3	1.1E-04	(ug/m3) $^{-1}$	1.4E-11	4.5E-07	ug/m3	N/A	N/A	N/A
				NITROGLYCERIN	6E-01		2.5E-08	ug/m3	N/A	N/A	N/A	8.9E-08	ug/m3	N/A	N/A	N/A
				4,4-DDT	2E+01	mg/kg	8.0E-07	ug/m3	9.7E-05	(ug/m3) $^{-1}$	7.7E-11	2.8E-06	ug/m3	N/A	N/A	N/A
				AROCLOR-1260	3E+02	mg/kg	1.1E-05	ug/m3	5.7E-04	(ug/m3) $^{-1}$	6.5E-09	4.0E-05	ug/m3	N/A	N/A	N/A
				ALUMINUM	9E+03	mg/kg	3.9E-04	ug/m3	N/A	N/A	N/A	1.4E-03	ug/m3	5.0E+00	ug/m3	2.8E-04
				ANTIMONY	4E+01	mg/kg	1.8E-06	ug/m3	N/A	N/A	N/A	6.2E-06	ug/m3	N/A	N/A	N/A
				ARSENIC	2E+01	mg/kg	6.9E-07	ug/m3	4.3E-03	(ug/m3) $^{-1}$	3.0E-09	2.4E-06	ug/m3	1.5E-02	ug/m3	1.6E-04
				CHROMIUM, TOTAL	1E+01	mg/kg	5.4E-07	ug/m3	8.4E-02	(ug/m3) $^{-1}$	4.5E-08	1.9E-06	ug/m3	1.0E-01	ug/m3	1.9E-05
				COBALT	1E+01	mg/kg	5.9E-07	ug/m3	9.0E-03	(ug/m3) $^{-1}$	5.3E-09	2.1E-06	ug/m3	6.0E-03	ug/m3	3.4E-04
				IRON	3E+04	mg/kg	1.4E-03	ug/m3	N/A	N/A	N/A	4.8E-03	ug/m3	N/A	N/A	N/A
				LEAD												
				MANGANESE	1E+03	mg/kg	4.0E-05	ug/m3	N/A	N/A	N/A	1.4E-04	ug/m3	5.0E-02	ug/m3	2.8E-03
				THALLIUM	8E-02	mg/kg	3.3E-09	ug/m3	N/A	N/A	N/A	1.2E-08	ug/m3	N/A	N/A	N/A
			Exp. Route Total								6E-08					4E-03
		Exposure Point Total									3E-04					3E+01
	Exposure Medium Total										N/A					N/A
Medium Total											N/A					N/A

TABLE 7.10.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Sediment	Sediment	MRP Site 1	Ingestion													
				BENZO[A]PYRENE	5E-01	mg/kg	2.4E-08	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	1.7E-07	8.4E-08	mg/kg-day	N/A	N/A	N/A
				BENZO[B]FLUORANTHENE	5E-01	mg/kg	2.4E-08	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	1.7E-08	8.3E-08	mg/kg-day	N/A	N/A	N/A
				DIBENZ[A,H]ANTHRACENE	1E-01	mg/kg	6.3E-09	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	4.6E-08	2.2E-08	mg/kg-day	N/A	N/A	N/A
				ANTIMONY	3E+01	mg/kg	1.3E-06	mg/kg-day	N/A	N/A	N/A	4.5E-06	mg/kg-day	4.0E-04	mg/kg-day	1.1E-02
				ARSENIC	2E+01	mg/kg	6.0E-07	mg/kg-day	1.5E+00	(mg/kg-day) $^{-1}$	9.0E-07	2.1E-06	mg/kg-day	3.0E-04	mg/kg-day	7.0E-03
				CHROMIUM, TOTAL	1E+01	mg/kg	7.2E-07	mg/kg-day	5.0E-01	(mg/kg-day)	3.6E-07	2.5E-06	mg/kg-day	3.0E-03	mg/kg-day	8.3E-04
				COBALT	1E+01	mg/kg	6.8E-07	mg/kg-day	N/A	N/A	N/A	2.4E-06	mg/kg-day	3.0E-04	mg/kg-day	8.0E-03
				IRON	4E+04	mg/kg	2.0E-03	mg/kg-day	N/A	N/A	N/A	6.9E-03	mg/kg-day	7.0E-01	mg/kg-day	9.8E-03
				LEAD												
				MANGANESE	1E+03	mg/kg	5.4E-05	mg/kg-day	N/A	N/A	N/A	1.9E-04	mg/kg-day	2.4E-02	mg/kg-day	7.9E-03
			Exp. Route Total								1E-06					4E-02
			Dermal													
				BENZO[A]PYRENE	5E-01	mg/kg	5.9E-08	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	4.3E-07	2.1E-07	mg/kg-day	N/A	N/A	N/A
				BENZO[B]FLUORANTHENE	5E-01	mg/kg	5.9E-08	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	4.3E-08	2.1E-07	mg/kg-day	N/A	N/A	N/A
				DIBENZ[A,H]ANTHRACENE	1E-01	mg/kg	1.6E-08	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	1.1E-07	5.5E-08	mg/kg-day	N/A	N/A	N/A
				ANTIMONY	3E+01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A
				ARSENIC	2E+01	mg/kg	5.8E-07	mg/kg-day	1.5E+00	(mg/kg-day) $^{-1}$	8.6E-07	2.0E-06	mg/kg-day	3.0E-04	mg/kg-day	6.7E-03
				CHROMIUM, TOTAL	1E+01	mg/kg	N/A	N/A	1.3E-02	(mg/kg-day)	N/A	N/A	N/A	7.5E-05	mg/kg-day	N/A
				COBALT	1E+01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A
				IRON	4E+04	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
				LEAD												
				MANGANESE	1E+03	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.6E-04	mg/kg-day	N/A
			Exp. Route Total								1E-06					7E-03
		Exposure Point Total									3E-06					5E-02
	Exposure Medium Total										N/A					N/A
Medium Total											N/A					N/A
										Total of Receptor Risks Across All Media	N/A				Total of Receptor Hazards Across All Media	N/A

TABLE 7.10.CT

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface/Subsurface Soil	MRP Site 1	Ingestion													
				BENZO[A]ANTHRACENE	5E+00	mg/kg	5.0E-07	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	3.6E-07	1.8E-06	mg/kg-day	N/A	N/A	N/A
				BENZO[A]PYRENE	6E+00	mg/kg	6.0E-07	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	4.4E-06	2.2E-06	mg/kg-day	N/A	N/A	N/A
				BENZO[B]FLUORANTHENE	5E+00	mg/kg	5.5E-07	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	4.0E-07	2.0E-06	mg/kg-day	N/A	N/A	N/A
				BENZO[K]FLUORANTHENE	5E+00	mg/kg	5.3E-07	mg/kg-day	7.3E-02	(mg/kg-day) $^{-1}$	3.8E-08	1.9E-06	mg/kg-day	N/A	N/A	N/A
				CHRYSENE	6E+00	mg/kg	6.4E-07	mg/kg-day	7.3E-03	(mg/kg-day) $^{-1}$	4.7E-09	2.4E-06	mg/kg-day	N/A	N/A	N/A
				DIBENZ[A,H]ANTHRACENE	4E-01	mg/kg	4.6E-08	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	3.4E-07	1.7E-07	mg/kg-day	N/A	N/A	N/A
				INDENO[1,2,3-CD]PYRENE	3E+00	mg/kg	3.3E-07	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	2.4E-07	1.2E-06	mg/kg-day	N/A	N/A	N/A
				NITROGLYCERIN	6E-01	mg/kg	6.6E-08	mg/kg-day	1.7E-02	(mg/kg-day) $^{-1}$	1.1E-09	2.4E-07	mg/kg-day	1.0E-04	mg/kg-day	2.4E-03
				4,4-DDT	4E+00	mg/kg	4.4E-07	mg/kg-day	3.4E-01	(mg/kg-day) $^{-1}$	1.5E-07	1.6E-06	mg/kg-day	5.0E-04	mg/kg-day	3.3E-03
				AROCLOR-1260	6E+01	mg/kg	6.3E-06	mg/kg-day	1.0E+00	(mg/kg-day) $^{-1}$	6.3E-06	2.3E-05	mg/kg-day	2.0E-05	mg/kg-day	1.2E+00
				ALUMINUM	9E+03	mg/kg	1.0E-03	mg/kg-day	N/A	N/A	N/A	3.8E-03	mg/kg-day	1.0E+00	mg/kg-day	3.8E-03
				ANTIMONY	4E+01	mg/kg	4.6E-06	mg/kg-day	N/A	N/A	N/A	1.7E-05	mg/kg-day	4.0E-04	mg/kg-day	4.2E-02
				ARSENIC	2E+01	mg/kg	1.1E-06	mg/kg-day	1.5E+00	(mg/kg-day) $^{-1}$	1.6E-06	3.9E-06	mg/kg-day	3.0E-04	mg/kg-day	1.3E-02
				CHROMIUM, TOTAL	1E+01	mg/kg	1.4E-06	mg/kg-day	5.0E-01	(mg/kg-day)	7.0E-07	5.1E-06	mg/kg-day	3.0E-03	mg/kg-day	1.7E-03
				COBALT	1E+01	mg/kg	1.5E-06	mg/kg-day	N/A	N/A	N/A	5.6E-06	mg/kg-day	3.0E-04	mg/kg-day	1.9E-02
				IRON	3E+04	mg/kg	3.6E-03	mg/kg-day	N/A	N/A	N/A	1.3E-02	mg/kg-day	7.0E-01	mg/kg-day	1.9E-02
				LEAD												
				MANGANESE	1E+03	mg/kg	1.0E-04	mg/kg-day	N/A	N/A	N/A	3.9E-04	mg/kg-day	2.4E-02	mg/kg-day	1.6E-02
				THALLIUM	8E-02	mg/kg	8.6E-09	mg/kg-day	N/A	N/A	N/A	3.2E-08	mg/kg-day	1.0E-05	mg/kg-day	3.2E-03
			Exp. Route Total								1E-05					1E+00

TABLE 7.10.CT

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
			Dermal													
				BENZO[A]ANTHRACENE	5E+00	mg/kg	7.8E-08	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	5.7E-08	2.9E-07	mg/kg-day	N/A	N/A	N/A
				BENZO[A]PYRENE	6E+00	mg/kg	9.4E-08	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	6.9E-07	3.5E-07	mg/kg-day	N/A	N/A	N/A
				BENZO[B]FLUORANTHENE	5E+00	mg/kg	8.6E-08	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	6.3E-08	3.2E-07	mg/kg-day	N/A	N/A	N/A
				BENZO[K]FLUORANTHENE	5E+00	mg/kg	8.3E-08	mg/kg-day	7.3E-02	(mg/kg-day) $^{-1}$	6.0E-09	3.0E-07	mg/kg-day	N/A	N/A	N/A
				CHRYSENE	6E+00	mg/kg	1.0E-07	mg/kg-day	7.3E-03	(mg/kg-day) $^{-1}$	7.3E-10	3.7E-07	mg/kg-day	N/A	N/A	N/A
				DIBENZ[A,H]ANTHRACENE	4E-01	mg/kg	7.2E-09	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	5.3E-08	2.7E-08	mg/kg-day	N/A	N/A	N/A
				INDENO[1,2,3-CD]PYRENE	3E+00	mg/kg	5.2E-08	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	3.8E-08	1.9E-07	mg/kg-day	N/A	N/A	N/A
				NITROGLYCERIN	6E-01	mg/kg	7.9E-09	mg/kg-day	1.7E-02	(mg/kg-day)	1.3E-10	2.9E-08	mg/kg-day	1.0E-04	mg/kg-day	2.9E-04
				4,4-DDT	4E+00	mg/kg	1.6E-08	mg/kg-day	3.4E-01	(mg/kg-day) $^{-1}$	5.5E-09	5.9E-08	mg/kg-day	5.0E-04	mg/kg-day	1.2E-04
				AROCLOR-1260	6E+01	mg/kg	1.1E-06	mg/kg-day	1.0E+00	(mg/kg-day) $^{-1}$	1.1E-06	3.9E-06	mg/kg-day	2.0E-05	mg/kg-day	1.9E-01
				ALUMINUM	9E+03	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.0E-02	mg/kg-day	N/A
				ANTIMONY	4E+01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A
				ARSENIC	2E+01	mg/kg	6.4E-08	mg/kg-day	1.5E+00	(mg/kg-day) $^{-1}$	9.7E-08	2.4E-07	mg/kg-day	3.0E-04	mg/kg-day	7.9E-04
				CHROMIUM, TOTAL	1E+01	mg/kg	N/A	N/A	1.3E-02	(mg/kg-day)	N/A	N/A	N/A	7.5E-05	mg/kg-day	N/A
				COBALT	1E+01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A
				IRON	3E+04	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
				LEAD												
				MANGANESE	1E+03	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.6E-04	mg/kg-day	N/A
				THALLIUM	8E-02	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.0E-05	mg/kg-day	N/A
			Exp. Route Total								2E-06					2E-01

TABLE 7.10.CT

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
			Inhalation of fugitive dust													
				BENZO[A]ANTHRACENE	5E+00	mg/kg	1.2E-07	ug/m3	1.1E-04	(ug/m3) $^{-1}$	1.3E-11	4.5E-07	ug/m3	N/A	N/A	N/A
				BENZO[A]PYRENE	6E+00	mg/kg	1.5E-07	ug/m3	1.1E-03	(ug/m3) $^{-1}$	1.6E-10	5.4E-07	ug/m3	N/A	N/A	N/A
				BENZO[B]FLUORANTHENE	5E+00	mg/kg	1.4E-07	ug/m3	1.1E-04	(ug/m3) $^{-1}$	1.5E-11	5.0E-07	ug/m3	N/A	N/A	N/A
				BENZO[K]FLUORANTHENE	5E+00	mg/kg	1.3E-07	ug/m3	1.1E-04	(ug/m3) $^{-1}$	1.4E-11	4.8E-07	ug/m3	N/A	N/A	N/A
				CHRYSENE	6E+00	mg/kg	1.6E-07	ug/m3	1.1E-05	(ug/m3) $^{-1}$	1.7E-12	5.8E-07	ug/m3	N/A	N/A	N/A
				DIBENZ[A,H]ANTHRACENE	4E-01	mg/kg	1.1E-08	ug/m3	1.2E-03	(ug/m3) $^{-1}$	1.3E-11	4.1E-08	ug/m3	N/A	N/A	N/A
				INDENO[1,2,3-CD]PYRENE	3E+00	mg/kg	8.2E-08	ug/m3	1.1E-04	(ug/m3) $^{-1}$	9.0E-12	3.0E-07	ug/m3	N/A	N/A	N/A
				NITROGLYCERIN	6E-01		1.6E-08	ug/m3	N/A	N/A	N/A	5.9E-08	ug/m3	N/A	N/A	N/A
				4,4-DDT	4E+00	mg/kg	1.1E-07	ug/m3	9.7E-05	(ug/m3) $^{-1}$	1.1E-11	4.0E-07	ug/m3	N/A	N/A	N/A
				AROCLOR-1260	6E+01	mg/kg	1.5E-06	ug/m3	5.7E-04	(ug/m3) $^{-1}$	8.8E-10	5.7E-06	ug/m3	N/A	N/A	N/A
				ALUMINUM	9E+03	mg/kg	2.5E-04	ug/m3	N/A	N/A	N/A	9.2E-04	ug/m3	5.0E+00	ug/m3	1.8E-04
				ANTIMONY	4E+01	mg/kg	1.1E-06	ug/m3	N/A	N/A	N/A	4.1E-06	ug/m3	N/A	N/A	N/A
				ARSENIC	2E+01	mg/kg	4.4E-07	ug/m3	4.3E-03	(ug/m3) $^{-1}$	1.9E-09	1.6E-06	ug/m3	1.5E-02	ug/m3	1.1E-04
				CHROMIUM, TOTAL	1E+01	mg/kg	3.4E-07	ug/m3	8.4E-02	(ug/m3) $^{-1}$	2.9E-08	1.3E-06	ug/m3	1.0E-01	ug/m3	1.3E-05
				COBALT	1E+01	mg/kg	3.7E-07	ug/m3	9.0E-03	(ug/m3) $^{-1}$	3.4E-09	1.4E-06	ug/m3	6.0E-03	ug/m3	2.3E-04
				IRON	3E+04	mg/kg	8.7E-04	ug/m3	N/A	N/A	N/A	3.2E-03	ug/m3	N/A	N/A	N/A
				LEAD												
				MANGANESE	1E+03	mg/kg	2.6E-05	ug/m3	N/A	N/A	N/A	9.5E-05	ug/m3	5.0E-02	ug/m3	1.9E-03
				THALLIUM	8E-02	mg/kg	2.1E-09	ug/m3	N/A	N/A	N/A	7.8E-09	ug/m3	N/A	N/A	N/A
			Exp. Route Total								4E-08					2E-03
		Exposure Point Total									2E-05					1E+00
	Exposure Medium Total										N/A					N/A
Medium Total											N/A					N/A

TABLE 7.10.CT

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Sediment	Sediment	MRP Site 1	Ingestion													
				BENZO[A]PYRENE	5E-01	mg/kg	5.7E-09	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	4.1E-08	2.1E-08	mg/kg-day	N/A	N/A	N/A
				BENZO[B]FLUORANTHENE	5E-01	mg/kg	5.7E-09	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	4.1E-09	2.1E-08	mg/kg-day	N/A	N/A	N/A
				DIBENZ[A,H]ANTHRACENE	1E-01	mg/kg	1.5E-09	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	1.1E-08	5.5E-09	mg/kg-day	N/A	N/A	N/A
				ANTIMONY	3E+01	mg/kg	3.1E-07	mg/kg-day	N/A	N/A	N/A	1.1E-06	mg/kg-day	4.0E-04	mg/kg-day	2.8E-03
				ARSENIC	2E+01	mg/kg	1.4E-07	mg/kg-day	1.5E+00	(mg/kg-day) $^{-1}$	2.1E-07	5.3E-07	mg/kg-day	3.0E-04	mg/kg-day	1.8E-03
				CHROMIUM, TOTAL	1E+01	mg/kg	1.7E-07	mg/kg-day	5.0E-01	(mg/kg-day)	8.5E-08	6.3E-07	mg/kg-day	3.0E-03	mg/kg-day	2.1E-04
				COBALT	1E+01	mg/kg	1.6E-07	mg/kg-day	N/A	N/A	N/A	6.0E-07	mg/kg-day	3.0E-04	mg/kg-day	2.0E-03
				IRON	4E+04	mg/kg	4.7E-04	mg/kg-day	N/A	N/A	N/A	1.7E-03	mg/kg-day	7.0E-01	mg/kg-day	2.5E-03
				LEAD												
				MANGANESE	1E+03	mg/kg	1.3E-05	mg/kg-day	N/A	N/A	N/A	4.7E-05	mg/kg-day	2.4E-02	mg/kg-day	2.0E-03
			Exp. Route Total								4E-07					1E-02
			Dermal													
				BENZO[A]PYRENE	5E-01	mg/kg	2.8E-08	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	2.1E-07	1.0E-07	mg/kg-day	N/A	N/A	N/A
				BENZO[B]FLUORANTHENE	5E-01	mg/kg	2.8E-08	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	2.1E-08	1.0E-07	mg/kg-day	N/A	N/A	N/A
				DIBENZ[A,H]ANTHRACENE	1E-01	mg/kg	7.4E-09	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	5.4E-08	2.7E-08	mg/kg-day	N/A	N/A	N/A
				ANTIMONY	3E+01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A
				ARSENIC	2E+01	mg/kg	2.7E-07	mg/kg-day	1.5E+00	(mg/kg-day) $^{-1}$	4.1E-07	1.0E-06	mg/kg-day	3.0E-04	mg/kg-day	3.4E-03
				CHROMIUM, TOTAL	1E+01	mg/kg	N/A	N/A	1.3E-02	(mg/kg-day)	N/A	N/A	N/A	7.5E-05	mg/kg-day	N/A
				COBALT	1E+01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A
				IRON	4E+04	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
				LEAD												
				MANGANESE	1E+03	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.6E-04	mg/kg-day	N/A
			Exp. Route Total								7E-07					3E-03
		Exposure Point Total									1E-06					1E-02
	Exposure Medium Total										N/A					N/A
Medium Total											N/A					N/A
										Total of Receptor Risks Across All Media	N/A				Total of Receptor Hazards Across All Media	N/A

TABLE 7.11.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface/Subsurface Soil	MRP Site 1	Ingestion													
				BENZO[A]ANTHRACENE	5E+00	mg/kg	5.0E-06	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	1.9E-05	5.8E-05	mg/kg-day	N/A	N/A	N/A
				BENZO[A]PYRENE	6E+00	mg/kg	6.0E-06	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	2.4E-04	7.0E-05	mg/kg-day	N/A	N/A	N/A
				BENZO[B]FLUORANTHENE	5E+00	mg/kg	5.6E-06	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	2.2E-05	6.5E-05	mg/kg-day	N/A	N/A	N/A
				BENZO[K]FLUORANTHENE	5E+00	mg/kg	5.3E-06	mg/kg-day	7.3E-02	(mg/kg-day) $^{-1}$	2.1E-06	6.2E-05	mg/kg-day	N/A	N/A	N/A
				CHRYSENE	6E+00	mg/kg	6.5E-06	mg/kg-day	7.3E-03	(mg/kg-day) $^{-1}$	2.5E-07	7.5E-05	mg/kg-day	N/A	N/A	N/A
				DIBENZ[A,H]ANTHRACENE	4E-01	mg/kg	4.6E-07	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	1.8E-05	5.4E-06	mg/kg-day	N/A	N/A	N/A
				INDENO[1,2,3-CD]PYRENE	3E+00	mg/kg	3.4E-06	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	1.3E-05	3.9E-05	mg/kg-day	N/A	N/A	N/A
				NITROGLYCERIN	6E-01	mg/kg	6.6E-07	mg/kg-day	1.7E-02	(mg/kg-day) $^{-1}$	1.1E-08	7.7E-06	mg/kg-day	1.0E-04	mg/kg-day	7.7E-02
				4,4-DDT	2E+01	mg/kg	2.1E-05	mg/kg-day	3.4E-01	(mg/kg-day) $^{-1}$	7.1E-06	2.4E-04	mg/kg-day	5.0E-04	mg/kg-day	4.9E-01
				AROCLOR-1260	3E+02	mg/kg	3.0E-04	mg/kg-day	2.0E+00	(mg/kg-day) $^{-1}$	5.9E-04	3.5E-03	mg/kg-day	2.0E-05	mg/kg-day	1.7E+02
				ALUMINUM	9E+03	mg/kg	1.0E-02	mg/kg-day	N/A	N/A	N/A	1.2E-01	mg/kg-day	1.0E+00	mg/kg-day	1.2E-01
				ANTIMONY	4E+01	mg/kg	4.6E-05	mg/kg-day	N/A	N/A	N/A	5.4E-04	mg/kg-day	4.0E-04	mg/kg-day	1.3E+00
				ARSENIC	2E+01	mg/kg	1.1E-05	mg/kg-day	1.5E+00	(mg/kg-day) $^{-1}$	1.6E-05	1.3E-04	mg/kg-day	3.0E-04	mg/kg-day	4.2E-01
				CHROMIUM, TOTAL	1E+01	mg/kg	1.4E-05	mg/kg-day	5.0E-01	(mg/kg-day)	3.7E-05	1.6E-04	mg/kg-day	3.0E-03	mg/kg-day	5.5E-02
				COBALT	1E+01	mg/kg	1.5E-05	mg/kg-day	N/A	N/A	N/A	1.8E-04	mg/kg-day	3.0E-04	mg/kg-day	6.0E-01
				IRON	3E+04	mg/kg	3.6E-02	mg/kg-day	N/A	N/A	N/A	4.2E-01	mg/kg-day	7.0E-01	mg/kg-day	6.0E-01
				LEAD												
				MANGANESE	1E+03	mg/kg	1.1E-03	mg/kg-day	N/A	N/A	N/A	1.2E-02	mg/kg-day	2.4E-02	mg/kg-day	5.1E-01
				THALLIUM	8E-02	mg/kg	8.7E-08	mg/kg-day	N/A	N/A	N/A	1.0E-06	mg/kg-day	1.0E-05	mg/kg-day	1.0E-01
			Exp. Route Total								1E-03					2E+02

TABLE 7.11.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
			Dermal													
				BENZO[A]ANTHRACENE	5E+00	mg/kg	1.5E-06	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	6.0E-06	1.8E-05	mg/kg-day	N/A	N/A	N/A
				BENZO[A]PYRENE	6E+00	mg/kg	1.9E-06	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	7.3E-05	2.2E-05	mg/kg-day	N/A	N/A	N/A
				BENZO[B]FLUORANTHENE	5E+00	mg/kg	1.7E-06	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	6.7E-06	2.0E-05	mg/kg-day	N/A	N/A	N/A
				BENZO[K]FLUORANTHENE	5E+00	mg/kg	1.6E-06	mg/kg-day	7.3E-02	(mg/kg-day) $^{-1}$	6.4E-07	1.9E-05	mg/kg-day	N/A	N/A	N/A
				CHRYSENE	6E+00	mg/kg	2.0E-06	mg/kg-day	7.3E-03	(mg/kg-day) $^{-1}$	7.8E-08	2.3E-05	mg/kg-day	N/A	N/A	N/A
				DIBENZ[A,H]ANTHRACENE	4E-01	mg/kg	1.4E-07	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	5.6E-06	1.7E-06	mg/kg-day	N/A	N/A	N/A
				INDENO[1,2,3-CD]PYRENE	3E+00	mg/kg	1.0E-06	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	4.0E-06	1.2E-05	mg/kg-day	N/A	N/A	N/A
				NITROGLYCERIN	6E-01	mg/kg	1.6E-07	mg/kg-day	1.7E-02	(mg/kg-day)	2.7E-09	1.8E-06	mg/kg-day	1.0E-04	mg/kg-day	1.8E-02
				4,4-DDT	2E+01	mg/kg	1.5E-06	mg/kg-day	3.4E-01	(mg/kg-day) $^{-1}$	5.0E-07	1.7E-05	mg/kg-day	5.0E-04	mg/kg-day	3.5E-02
				AROCLOR-1260	3E+02	mg/kg	9.8E-05	mg/kg-day	2.0E+00	(mg/kg-day) $^{-1}$	2.0E-04	1.1E-03	mg/kg-day	2.0E-05	mg/kg-day	5.7E+01
				ALUMINUM	9E+03	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.0E-02	mg/kg-day	N/A
				ANTIMONY	4E+01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A
				ARSENIC	2E+01	mg/kg	1.3E-06	mg/kg-day	1.5E+00	(mg/kg-day) $^{-1}$	1.9E-06	1.5E-05	mg/kg-day	3.0E-04	mg/kg-day	5.0E-02
				CHROMIUM, TOTAL	1E+01	mg/kg	N/A	N/A	1.3E-02	(mg/kg-day)	N/A	N/A	N/A	7.5E-05	mg/kg-day	N/A
				COBALT	1E+01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A
				IRON	3E+04	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
				LEAD												
				MANGANESE	1E+03	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.6E-04	mg/kg-day	N/A
				THALLIUM	8E-02	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.0E-05	mg/kg-day	N/A
			Exp. Route Total								3E-04					6E+01

TABLE 7.11.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
			Inhalation of fugitive dust													
				BENZO[A]ANTHRACENE	5E+00	mg/kg	5.7E-08	ug/m3	1.1E-04	(ug/m3) $^{-1}$	3.4E-11	6.7E-07	ug/m3	N/A	N/A	N/A
				BENZO[A]PYRENE	6E+00	mg/kg	6.9E-08	ug/m3	1.1E-03	(ug/m3) $^{-1}$	4.1E-10	8.1E-07	ug/m3	N/A	N/A	N/A
				BENZO[B]FLUORANTHENE	5E+00	mg/kg	6.4E-08	ug/m3	1.1E-04	(ug/m3) $^{-1}$	3.7E-11	7.4E-07	ug/m3	N/A	N/A	N/A
				BENZO[K]FLUORANTHENE	5E+00	mg/kg	6.1E-08	ug/m3	1.1E-04	(ug/m3) $^{-1}$	3.6E-11	7.1E-07	ug/m3	N/A	N/A	N/A
				CHRYSENE	6E+00	mg/kg	7.4E-08	ug/m3	1.1E-05	(ug/m3) $^{-1}$	4.4E-12	8.7E-07	ug/m3	N/A	N/A	N/A
				DIBENZ[A,H]ANTHRACENE	4E-01	mg/kg	5.3E-09	ug/m3	1.2E-03	(ug/m3) $^{-1}$	3.4E-11	6.2E-08	ug/m3	N/A	N/A	N/A
				INDENO[1,2,3-CD]PYRENE	3E+00	mg/kg	3.9E-08	ug/m3	1.1E-04	(ug/m3) $^{-1}$	2.3E-11	4.5E-07	ug/m3	N/A	N/A	N/A
				NITROGLYCERIN	6E-01	mg/kg	7.6E-09	ug/m3	N/A	N/A	N/A	8.9E-08	ug/m3	N/A	N/A	N/A
				4,4-DDT	2E+01	mg/kg	2.4E-07	ug/m3	9.7E-05	(ug/m3) $^{-1}$	2.3E-11	2.8E-06	ug/m3	N/A	N/A	N/A
				AROCLOR-1260	3E+02	mg/kg	3.4E-06	ug/m3	5.7E-04	(ug/m3) $^{-1}$	1.9E-09	4.0E-05	ug/m3	N/A	N/A	N/A
				ALUMINUM	9E+03	mg/kg	1.2E-04	ug/m3	N/A	N/A	N/A	1.4E-03	ug/m3	5.0E+00	ug/m3	2.8E-04
				ANTIMONY	4E+01	mg/kg	5.3E-07	ug/m3	N/A	N/A	N/A	6.2E-06	ug/m3	N/A	N/A	N/A
				ARSENIC	2E+01	mg/kg	2.1E-07	ug/m3	4.3E-03	(ug/m3) $^{-1}$	8.9E-10	2.4E-06	ug/m3	1.5E-02	ug/m3	1.6E-04
				CHROMIUM, TOTAL	1E+01	mg/kg	1.6E-07	ug/m3	8.4E-02	(ug/m3) $^{-1}$	7.2E-08	1.9E-06	ug/m3	1.0E-01	ug/m3	1.9E-05
				COBALT	1E+01	mg/kg	1.8E-07	ug/m3	9.0E-03	(ug/m3) $^{-1}$	1.6E-09	2.1E-06	ug/m3	6.0E-03	ug/m3	3.4E-04
				IRON	3E+04	mg/kg	4.1E-04	ug/m3	N/A	N/A	N/A	4.8E-03	ug/m3	N/A	N/A	N/A
				LEAD												
				MANGANESE	1E+03	mg/kg	1.2E-05	ug/m3	N/A	N/A	N/A	1.4E-04	ug/m3	5.0E-02	ug/m3	2.8E-03
				THALLIUM	8E-02	mg/kg	1.0E-09	ug/m3	N/A	N/A	N/A	1.2E-08	ug/m3	N/A	N/A	N/A
			Exp. Route Total								8E-08					4E-03
		Exposure Point Total									1E-03					2E+02
	Exposure Medium Total										N/A					N/A
Medium Total											N/A					N/A

TABLE 7.11.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Sediment	Sediment	MRP Site 1	Ingestion													
				BENZO[A]PYRENE	5E-01	mg/kg	7.6E-08	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	3.0E-06	8.9E-07	mg/kg-day	N/A	N/A	N/A
				BENZO[B]FLUORANTHENE	5E-01	mg/kg	7.6E-08	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	3.0E-07	8.9E-07	mg/kg-day	N/A	N/A	N/A
				DIBENZ[A,H]ANTHRACENE	1E-01	mg/kg	2.0E-08	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	7.9E-07	2.4E-07	mg/kg-day	N/A	N/A	N/A
				ANTIMONY	3E+01	mg/kg	4.1E-06	mg/kg-day	N/A	N/A	N/A	4.8E-05	mg/kg-day	4.0E-04	mg/kg-day	1.2E-01
				ARSENIC	2E+01	mg/kg	1.9E-06	mg/kg-day	1.5E+00	(mg/kg-day) $^{-1}$	2.9E-06	2.2E-05	mg/kg-day	3.0E-04	mg/kg-day	7.5E-02
				CHROMIUM, TOTAL	1E+01	mg/kg	2.3E-06	mg/kg-day	5.0E-01	(mg/kg-day)	6.1E-06	2.7E-05	mg/kg-day	3.0E-03	mg/kg-day	8.9E-03
				COBALT	1E+01	mg/kg	2.2E-06	mg/kg-day	N/A	N/A	N/A	2.6E-05	mg/kg-day	3.0E-04	mg/kg-day	8.5E-02
				IRON	4E+04	mg/kg	6.3E-03	mg/kg-day	N/A	N/A	N/A	7.3E-02	mg/kg-day	7.0E-01	mg/kg-day	1.0E-01
				LEAD												
				MANGANESE	1E+03	mg/kg	1.7E-04	mg/kg-day	N/A	N/A	N/A	2.0E-03	mg/kg-day	2.4E-02	mg/kg-day	8.4E-02
			Exp. Route Total								1E-05					5E-01
			Dermal													
				BENZO[A]PYRENE	5E-01	mg/kg	2.7E-08	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	1.1E-06	3.2E-07	mg/kg-day	N/A	N/A	N/A
				BENZO[B]FLUORANTHENE	5E-01	mg/kg	2.7E-08	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	1.1E-07	3.2E-07	mg/kg-day	N/A	N/A	N/A
				DIBENZ[A,H]ANTHRACENE	1E-01	mg/kg	7.2E-09	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	2.8E-07	8.4E-08	mg/kg-day	N/A	N/A	N/A
				ANTIMONY	3E+01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A
				ARSENIC	2E+01	mg/kg	2.6E-07	mg/kg-day	1.5E+00	(mg/kg-day) $^{-1}$	3.9E-07	3.1E-06	mg/kg-day	3.0E-04	mg/kg-day	1.0E-02
				CHROMIUM, TOTAL	1E+01	mg/kg	N/A	N/A	1.3E-02	(mg/kg-day)	N/A	N/A	N/A	7.5E-05	mg/kg-day	N/A
				COBALT	1E+01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A
				IRON	4E+04	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
				LEAD												
				MANGANESE	1E+03	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.6E-04	mg/kg-day	N/A
			Exp. Route Total								2E-06					1E-02
		Exposure Point Total									1E-05					5E-01
	Exposure Medium Total										N/A					N/A
Medium Total											N/A					N/A
										Total of Receptor Risks Across All Media	N/A				Total of Receptor Hazards Across All Media	N/A

Notes

Shading indicates early-life cancer risk calculations for carcinogenic PAHs and chromium (VI) calculated by multiplying the result by the default age-dependent adjustment factor (ADAF) of 10 for 2/6 of the result (ages 1-2) and an ADAF of 3 for 4/6 of the result (ages 3-6).

TABLE 7.11.CT

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface/Subsurface Soil	MRP Site 1	Ingestion													
				BENZO[A]ANTHRACENE	5E+00	mg/kg	1.7E-06	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	6.5E-06	2.0E-05	mg/kg-day	N/A	N/A	N/A
				BENZO[A]PYRENE	6E+00	mg/kg	2.0E-06	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	7.9E-05	2.4E-05	mg/kg-day	N/A	N/A	N/A
				BENZO[B]FLUORANTHENE	5E+00	mg/kg	1.9E-06	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	7.2E-06	2.2E-05	mg/kg-day	N/A	N/A	N/A
				BENZO[K]FLUORANTHENE	5E+00	mg/kg	1.8E-06	mg/kg-day	7.3E-02	(mg/kg-day) $^{-1}$	6.9E-07	2.1E-05	mg/kg-day	N/A	N/A	N/A
				CHRYSENE	6E+00	mg/kg	2.2E-06	mg/kg-day	7.3E-03	(mg/kg-day) $^{-1}$	8.4E-08	2.5E-05	mg/kg-day	N/A	N/A	N/A
				DIBENZ[A,H]ANTHRACENE	4E-01	mg/kg	1.5E-07	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	6.0E-06	1.8E-06	mg/kg-day	N/A	N/A	N/A
				INDENO[1,2,3-CD]PYRENE	3E+00	mg/kg	1.1E-06	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	4.4E-06	1.3E-05	mg/kg-day	N/A	N/A	N/A
				NITROGLYCERIN	6E-01	mg/kg	2.2E-07	mg/kg-day	1.7E-02	(mg/kg-day) $^{-1}$	3.8E-09	2.6E-06	mg/kg-day	1.0E-04	mg/kg-day	2.6E-02
				4,4-DDT	4E+00	mg/kg	1.5E-06	mg/kg-day	3.4E-01	(mg/kg-day) $^{-1}$	5.1E-07	1.7E-05	mg/kg-day	5.0E-04	mg/kg-day	3.5E-02
				AROCLOR-1260	6E+01	mg/kg	2.1E-05	mg/kg-day	1.0E+00	(mg/kg-day) $^{-1}$	2.1E-05	2.5E-04	mg/kg-day	2.0E-05	mg/kg-day	1.2E+01
				ALUMINUM	9E+03	mg/kg	3.4E-03	mg/kg-day	N/A	N/A	N/A	4.0E-02	mg/kg-day	1.0E+00	mg/kg-day	4.0E-02
				ANTIMONY	4E+01	mg/kg	1.5E-05	mg/kg-day	N/A	N/A	N/A	1.8E-04	mg/kg-day	4.0E-04	mg/kg-day	4.5E-01
				ARSENIC	2E+01	mg/kg	3.6E-06	mg/kg-day	1.5E+00	(mg/kg-day) $^{-1}$	5.4E-06	4.2E-05	mg/kg-day	3.0E-04	mg/kg-day	1.4E-01
				CHROMIUM, TOTAL	1E+01	mg/kg	4.7E-06	mg/kg-day	5.0E-01	(mg/kg-day)	1.3E-05	5.5E-05	mg/kg-day	3.0E-03	mg/kg-day	1.8E-02
				COBALT	1E+01	mg/kg	5.1E-06	mg/kg-day	N/A	N/A	N/A	6.0E-05	mg/kg-day	3.0E-04	mg/kg-day	2.0E-01
				IRON	3E+04	mg/kg	1.2E-02	mg/kg-day	N/A	N/A	N/A	1.4E-01	mg/kg-day	7.0E-01	mg/kg-day	2.0E-01
				LEAD												
				MANGANESE	1E+03	mg/kg	3.5E-04	mg/kg-day	N/A	N/A	N/A	4.1E-03	mg/kg-day	2.4E-02	mg/kg-day	1.7E-01
				THALLIUM	8E-02	mg/kg	2.9E-08	mg/kg-day	N/A	N/A	N/A	3.4E-07	mg/kg-day	1.0E-05	mg/kg-day	3.4E-02
			Exp. Route Total								1E-04					1E+01

TABLE 7.11.CT

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
			Dermal													
				BENZO[A]ANTHRACENE	5E+00	mg/kg	2.1E-07	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	8.0E-07	2.4E-06	mg/kg-day	N/A	N/A	N/A
				BENZO[A]PYRENE	6E+00	mg/kg	2.5E-07	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	9.7E-06	2.9E-06	mg/kg-day	N/A	N/A	N/A
				BENZO[B]FLUORANTHENE	5E+00	mg/kg	2.3E-07	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	8.9E-07	2.7E-06	mg/kg-day	N/A	N/A	N/A
				BENZO[K]FLUORANTHENE	5E+00	mg/kg	2.2E-07	mg/kg-day	7.3E-02	(mg/kg-day) $^{-1}$	8.5E-08	2.6E-06	mg/kg-day	N/A	N/A	N/A
				CHRYSENE	6E+00	mg/kg	2.7E-07	mg/kg-day	7.3E-03	(mg/kg-day) $^{-1}$	1.0E-08	3.1E-06	mg/kg-day	N/A	N/A	N/A
				DIBENZ[A,H]ANTHRACENE	4E-01	mg/kg	1.9E-08	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	7.4E-07	2.2E-07	mg/kg-day	N/A	N/A	N/A
				INDENO[1,2,3-CD]PYRENE	3E+00	mg/kg	1.4E-07	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	5.4E-07	1.6E-06	mg/kg-day	N/A	N/A	N/A
				NITROGLYCERIN	6E-01	mg/kg	2.1E-08	mg/kg-day	1.7E-02	(mg/kg-day)	3.6E-10	2.5E-07	mg/kg-day	1.0E-04	mg/kg-day	2.5E-03
				4,4-DDT	4E+00	mg/kg	4.3E-08	mg/kg-day	3.4E-01	(mg/kg-day) $^{-1}$	1.4E-08	5.0E-07	mg/kg-day	5.0E-04	mg/kg-day	9.9E-04
				AROCLOR-1260	6E+01	mg/kg	2.8E-06	mg/kg-day	1.0E+00	(mg/kg-day) $^{-1}$	2.8E-06	3.3E-05	mg/kg-day	2.0E-05	mg/kg-day	1.6E+00
				ALUMINUM	9E+03	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.0E-02	mg/kg-day	N/A
				ANTIMONY	4E+01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A
				ARSENIC	2E+01	mg/kg	1.7E-07	mg/kg-day	1.5E+00	(mg/kg-day) $^{-1}$	2.6E-07	2.0E-06	mg/kg-day	3.0E-04	mg/kg-day	6.6E-03
				CHROMIUM, TOTAL	1E+01	mg/kg	N/A	N/A	1.3E-02	(mg/kg-day)	N/A	N/A	N/A	7.5E-05	mg/kg-day	N/A
				COBALT	1E+01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A
				IRON	3E+04	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
				LEAD												
				MANGANESE	1E+03	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.6E-04	mg/kg-day	N/A
				THALLIUM	8E-02	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.0E-05	mg/kg-day	N/A
			Exp. Route Total								2E-05					2E+00

TABLE 7.11.CT

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
			Inhalation of fugitive dust													
				BENZO[A]ANTHRACENE	5E+00	mg/kg	3.8E-08	ug/m3	1.1E-04	(ug/m3) $^{-1}$	2.3E-11	4.5E-07	ug/m3	N/A	N/A	N/A
				BENZO[A]PYRENE	6E+00	mg/kg	4.6E-08	ug/m3	1.1E-03	(ug/m3) $^{-1}$	2.7E-10	5.4E-07	ug/m3	N/A	N/A	N/A
				BENZO[B]FLUORANTHENE	5E+00	mg/kg	4.3E-08	ug/m3	1.1E-04	(ug/m3) $^{-1}$	2.5E-11	5.0E-07	ug/m3	N/A	N/A	N/A
				BENZO[K]FLUORANTHENE	5E+00	mg/kg	4.1E-08	ug/m3	1.1E-04	(ug/m3) $^{-1}$	2.4E-11	4.8E-07	ug/m3	N/A	N/A	N/A
				CHRYSENE	6E+00	mg/kg	5.0E-08	ug/m3	1.1E-05	(ug/m3) $^{-1}$	2.9E-12	5.8E-07	ug/m3	N/A	N/A	N/A
				DIBENZ[A,H]ANTHRACENE	4E-01	mg/kg	3.6E-09	ug/m3	1.2E-03	(ug/m3) $^{-1}$	2.3E-11	4.1E-08	ug/m3	N/A	N/A	N/A
				INDENO[1,2,3-CD]PYRENE	3E+00	mg/kg	2.6E-08	ug/m3	1.1E-04	(ug/m3) $^{-1}$	1.5E-11	3.0E-07	ug/m3	N/A	N/A	N/A
				NITROGLYCERIN	6E-01	mg/kg	5.1E-09	ug/m3	N/A	N/A	N/A	5.9E-08	ug/m3	N/A	N/A	N/A
				4,4-DDT	4E+00	mg/kg	3.4E-08	ug/m3	9.7E-05	(ug/m3) $^{-1}$	3.3E-12	4.0E-07	ug/m3	N/A	N/A	N/A
				AROCLOR-1260	6E+01	mg/kg	4.9E-07	ug/m3	5.7E-04	(ug/m3) $^{-1}$	2.8E-10	5.7E-06	ug/m3	N/A	N/A	N/A
				ALUMINUM	9E+03	mg/kg	7.9E-05	ug/m3	N/A	N/A	N/A	9.2E-04	ug/m3	5.0E+00	ug/m3	1.8E-04
				ANTIMONY	4E+01	mg/kg	3.5E-07	ug/m3	N/A	N/A	N/A	4.1E-06	ug/m3	N/A	N/A	N/A
				ARSENIC	2E+01	mg/kg	1.4E-07	ug/m3	4.3E-03	(ug/m3) $^{-1}$	5.9E-10	1.6E-06	ug/m3	1.5E-02	ug/m3	1.1E-04
				CHROMIUM, TOTAL	1E+01	mg/kg	1.1E-07	ug/m3	8.4E-02	(ug/m3) $^{-1}$	4.8E-08	1.3E-06	ug/m3	1.0E-01	ug/m3	1.3E-05
				COBALT	1E+01	mg/kg	1.2E-07	ug/m3	9.0E-03	(ug/m3) $^{-1}$	1.1E-09	1.4E-06	ug/m3	6.0E-03	ug/m3	2.3E-04
				IRON	3E+04	mg/kg	2.8E-04	ug/m3	N/A	N/A	N/A	3.2E-03	ug/m3	N/A	N/A	N/A
				LEAD												
				MANGANESE	1E+03	mg/kg	8.1E-06	ug/m3	N/A	N/A	N/A	9.5E-05	ug/m3	5.0E-02	ug/m3	1.9E-03
				THALLIUM	8E-02	mg/kg	6.7E-10	ug/m3	N/A	N/A	N/A	7.8E-09	ug/m3	N/A	N/A	N/A
			Exp. Route Total								5E-08					2E-03
		Exposure Point Total									2E-04					2E+01
	Exposure Medium Total										N/A					N/A
Medium Total											N/A					N/A

TABLE 7.11.CT

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Sediment	Sediment	MRP Site 1	Ingestion													
				BENZO[A]PYRENE	5E-01	mg/kg	1.9E-08	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	7.4E-07	2.2E-07	mg/kg-day	N/A	N/A	N/A
				BENZO[B]FLUORANTHENE	5E-01	mg/kg	1.9E-08	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	7.4E-08	2.2E-07	mg/kg-day	N/A	N/A	N/A
				DIBENZ[A,H]ANTHRACENE	1E-01	mg/kg	5.0E-09	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	2.0E-07	5.9E-08	mg/kg-day	N/A	N/A	N/A
				ANTIMONY	3E+01	mg/kg	1.0E-06	mg/kg-day	N/A	N/A	N/A	1.2E-05	mg/kg-day	4.0E-04	mg/kg-day	3.0E-02
				ARSENIC	2E+01	mg/kg	4.8E-07	mg/kg-day	1.5E+00	(mg/kg-day) $^{-1}$	7.2E-07	5.6E-06	mg/kg-day	3.0E-04	mg/kg-day	1.9E-02
				CHROMIUM, TOTAL	1E+01	mg/kg	5.7E-07	mg/kg-day	5.0E-01	(mg/kg-day)	1.5E-06	6.7E-06	mg/kg-day	3.0E-03	mg/kg-day	2.2E-03
				COBALT	1E+01	mg/kg	5.5E-07	mg/kg-day	N/A	N/A	N/A	6.4E-06	mg/kg-day	3.0E-04	mg/kg-day	2.1E-02
				IRON	4E+04	mg/kg	1.6E-03	mg/kg-day	N/A	N/A	N/A	1.8E-02	mg/kg-day	7.0E-01	mg/kg-day	2.6E-02
				LEAD												
				MANGANESE	1E+03	mg/kg	4.3E-05	mg/kg-day	N/A	N/A	N/A	5.0E-04	mg/kg-day	2.4E-02	mg/kg-day	2.1E-02
			Exp. Route Total								3E-06					1E-01
			Dermal													
				BENZO[A]PYRENE	5E-01	mg/kg	1.4E-08	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	5.3E-07	1.6E-07	mg/kg-day	N/A	N/A	N/A
				BENZO[B]FLUORANTHENE	5E-01	mg/kg	1.4E-08	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	5.3E-08	1.6E-07	mg/kg-day	N/A	N/A	N/A
				DIBENZ[A,H]ANTHRACENE	1E-01	mg/kg	3.6E-09	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	1.4E-07	4.2E-08	mg/kg-day	N/A	N/A	N/A
				ANTIMONY	3E+01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A
				ARSENIC	2E+01	mg/kg	1.3E-07	mg/kg-day	1.5E+00	(mg/kg-day) $^{-1}$	2.0E-07	1.5E-06	mg/kg-day	3.0E-04	mg/kg-day	5.1E-03
				CHROMIUM, TOTAL	1E+01	mg/kg	N/A	N/A	1.3E-02	(mg/kg-day)	N/A	N/A	N/A	7.5E-05	mg/kg-day	N/A
				COBALT	1E+01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A
				IRON	4E+04	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
				LEAD												
				MANGANESE	1E+03	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.6E-04	mg/kg-day	N/A
			Exp. Route Total								9E-07					5E-03
		Exposure Point Total									4E-06					1E-01
	Exposure Medium Total										N/A					N/A
Medium Total											N/A					N/A
										Total of Receptor Risks Across All Media	N/A				Total of Receptor Hazards Across All Media	N/A

Notes

Shading indicates early-life cancer risk calculations for carcinogenic PAHs and chromium (VI) calculated by multiplying the result by the default age-dependent adjustment factor (ADAF) of 10 for 2/6 of the result (ages 1-2) and an ADAF of 3 for 4/6 of the result (ages 3-6).

TABLE 7.12.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface/Subsurface Soil	MRP Site 1	Ingestion													
				BENZO[A]ANTHRACENE	5E+00	mg/kg	1.9E-07	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	4.2E-07	1.5E-06	mg/kg-day	N/A	N/A	N/A
				BENZO[A]PYRENE	6E+00	mg/kg	2.3E-07	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	5.0E-06	1.8E-06	mg/kg-day	N/A	N/A	N/A
				BENZO[B]FLUORANTHENE	5E+00	mg/kg	2.1E-07	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	4.6E-07	1.6E-06	mg/kg-day	N/A	N/A	N/A
				BENZO[K]FLUORANTHENE	5E+00	mg/kg	2.0E-07	mg/kg-day	7.3E-02	(mg/kg-day) $^{-1}$	4.4E-08	1.6E-06	mg/kg-day	N/A	N/A	N/A
				CHRYSENE	6E+00	mg/kg	2.5E-07	mg/kg-day	7.3E-03	(mg/kg-day) $^{-1}$	5.4E-09	1.9E-06	mg/kg-day	N/A	N/A	N/A
				DIBENZ[A,H]ANTHRACENE	4E-01	mg/kg	1.8E-08	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	3.8E-07	1.4E-07	mg/kg-day	N/A	N/A	N/A
				INDENO[1,2,3-CD]PYRENE	3E+00	mg/kg	1.3E-07	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	2.8E-07	9.9E-07	mg/kg-day	N/A	N/A	N/A
				NITROGLYCERIN	6E-01	mg/kg	2.5E-08	mg/kg-day	1.7E-02	(mg/kg-day) $^{-1}$	4.3E-10	2.0E-07	mg/kg-day	1.0E-04	mg/kg-day	2.0E-03
				4,4-DDT	2E+01	mg/kg	7.9E-07	mg/kg-day	3.4E-01	(mg/kg-day) $^{-1}$	2.7E-07	6.2E-06	mg/kg-day	5.0E-04	mg/kg-day	1.2E-02
				AROCLOR-1260	3E+02	mg/kg	1.1E-05	mg/kg-day	2.0E+00	(mg/kg-day) $^{-1}$	2.2E-05	8.7E-05	mg/kg-day	2.0E-05	mg/kg-day	4.4E+00
				ALUMINUM	9E+03	mg/kg	3.9E-04	mg/kg-day	N/A	N/A	N/A	3.0E-03	mg/kg-day	1.0E+00	mg/kg-day	3.0E-03
				ANTIMONY	4E+01	mg/kg	1.7E-06	mg/kg-day	N/A	N/A	N/A	1.4E-05	mg/kg-day	4.0E-04	mg/kg-day	3.4E-02
				ARSENIC	2E+01	mg/kg	4.1E-07	mg/kg-day	1.5E+00	(mg/kg-day) $^{-1}$	6.1E-07	3.2E-06	mg/kg-day	3.0E-04	mg/kg-day	1.1E-02
				CHROMIUM, TOTAL	1E+01	mg/kg	5.3E-07	mg/kg-day	5.0E-01	(mg/kg-day)	8.0E-07	4.1E-06	mg/kg-day	3.0E-03	mg/kg-day	1.4E-03
				COBALT	1E+01	mg/kg	5.8E-07	mg/kg-day	N/A	N/A	N/A	4.5E-06	mg/kg-day	3.0E-04	mg/kg-day	1.5E-02
				IRON	3E+04	mg/kg	1.4E-03	mg/kg-day	N/A	N/A	N/A	1.1E-02	mg/kg-day	7.0E-01	mg/kg-day	1.5E-02
				LEAD												
				MANGANESE	1E+03	mg/kg	4.0E-05	mg/kg-day	N/A	N/A	N/A	3.1E-04	mg/kg-day	2.4E-02	mg/kg-day	1.3E-02
				THALLIUM	8E-02	mg/kg	3.3E-09	mg/kg-day	N/A	N/A	N/A	2.6E-08	mg/kg-day	1.0E-05	mg/kg-day	2.6E-03
			Exp. Route Total								3E-05					4E+00

TABLE 7.12.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
			Dermal													
				BENZO[A]ANTHRACENE	5E+00	mg/kg	9.0E-08	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	2.0E-07	7.0E-07	mg/kg-day	N/A	N/A	N/A
				BENZO[A]PYRENE	6E+00	mg/kg	1.1E-07	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	2.4E-06	8.4E-07	mg/kg-day	N/A	N/A	N/A
				BENZO[B]FLUORANTHENE	5E+00	mg/kg	9.9E-08	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	2.2E-07	7.7E-07	mg/kg-day	N/A	N/A	N/A
				BENZO[K]FLUORANTHENE	5E+00	mg/kg	9.5E-08	mg/kg-day	7.3E-02	(mg/kg-day) $^{-1}$	2.1E-08	7.4E-07	mg/kg-day	N/A	N/A	N/A
				CHRYSENE	6E+00	mg/kg	1.2E-07	mg/kg-day	7.3E-03	(mg/kg-day) $^{-1}$	2.5E-09	9.0E-07	mg/kg-day	N/A	N/A	N/A
				DIBENZ[A,H]ANTHRACENE	4E-01	mg/kg	8.3E-09	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	1.8E-07	6.4E-08	mg/kg-day	N/A	N/A	N/A
				INDENO[1,2,3-CD]PYRENE	3E+00	mg/kg	6.0E-08	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	1.3E-07	4.7E-07	mg/kg-day	N/A	N/A	N/A
				NITROGLYCERIN	6E-01	mg/kg	9.1E-09	mg/kg-day	1.7E-02	(mg/kg-day)	1.6E-10	7.1E-08	mg/kg-day	1.0E-04	mg/kg-day	7.1E-04
				4,4-DDT	2E+01	mg/kg	8.6E-08	mg/kg-day	3.4E-01	(mg/kg-day) $^{-1}$	2.9E-08	6.7E-07	mg/kg-day	5.0E-04	mg/kg-day	1.3E-03
				AROCLOR-1260	3E+02	mg/kg	5.7E-06	mg/kg-day	2.0E+00	(mg/kg-day) $^{-1}$	1.1E-05	4.4E-05	mg/kg-day	2.0E-05	mg/kg-day	2.2E+00
				ALUMINUM	9E+03	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.0E-02	mg/kg-day	N/A
				ANTIMONY	4E+01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A
				ARSENIC	2E+01	mg/kg	7.4E-08	mg/kg-day	1.5E+00	(mg/kg-day) $^{-1}$	1.1E-07	5.8E-07	mg/kg-day	3.0E-04	mg/kg-day	1.9E-03
				CHROMIUM, TOTAL	1E+01	mg/kg	N/A	N/A	1.3E-02	(mg/kg-day)	N/A	N/A	N/A	7.5E-05	mg/kg-day	N/A
				COBALT	1E+01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A
				IRON	3E+04	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
				LEAD												
				MANGANESE	1E+03	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.6E-04	mg/kg-day	N/A
				THALLIUM	8E-02	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.0E-05	mg/kg-day	N/A
			Exp. Route Total								1E-05					2E+00

TABLE 7.12.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
			Inhalation of fugitive dust													
				BENZO[A]ANTHRACENE	5E+00	mg/kg	1.0E-08	ug/m3	1.1E-04	(ug/m3) $^{-1}$	3.4E-12	8.0E-08	ug/m3	N/A	N/A	N/A
				BENZO[A]PYRENE	6E+00	mg/kg	1.2E-08	ug/m3	1.1E-03	(ug/m3) $^{-1}$	4.1E-11	9.6E-08	ug/m3	N/A	N/A	N/A
				BENZO[B]FLUORANTHENE	5E+00	mg/kg	1.1E-08	ug/m3	1.1E-04	(ug/m3) $^{-1}$	3.8E-12	8.8E-08	ug/m3	N/A	N/A	N/A
				BENZO[K]FLUORANTHENE	5E+00	mg/kg	1.1E-08	ug/m3	1.1E-04	(ug/m3) $^{-1}$	3.6E-12	8.5E-08	ug/m3	N/A	N/A	N/A
				CHRYSENE	6E+00	mg/kg	1.3E-08	ug/m3	1.1E-05	(ug/m3) $^{-1}$	4.4E-13	1.0E-07	ug/m3	N/A	N/A	N/A
				DIBENZ[A,H]ANTHRACENE	4E-01	mg/kg	9.5E-10	ug/m3	1.2E-03	(ug/m3) $^{-1}$	3.4E-12	7.4E-09	ug/m3	N/A	N/A	N/A
				INDENO[1,2,3-CD]PYRENE	3E+00	mg/kg	6.9E-09	ug/m3	1.1E-04	(ug/m3) $^{-1}$	2.3E-12	5.4E-08	ug/m3	N/A	N/A	N/A
				NITROGLYCERIN	6E-01	mg/kg	1.4E-09	ug/m3	N/A	N/A	N/A	1.1E-08	ug/m3	N/A	N/A	N/A
				4,4-DDT	2E+01	mg/kg	4.3E-08	ug/m3	9.7E-05	(ug/m3) $^{-1}$	4.1E-12	3.3E-07	ug/m3	N/A	N/A	N/A
				AROCLOR-1260	3E+02	mg/kg	6.1E-07	ug/m3	5.7E-04	(ug/m3) $^{-1}$	3.5E-10	4.7E-06	ug/m3	N/A	N/A	N/A
				ALUMINUM	9E+03	mg/kg	2.1E-05	ug/m3	N/A	N/A	N/A	1.6E-04	ug/m3	5.0E+00	ug/m3	3.3E-05
				ANTIMONY	4E+01	mg/kg	9.4E-08	ug/m3	N/A	N/A	N/A	7.3E-07	ug/m3	N/A	N/A	N/A
				ARSENIC	2E+01	mg/kg	3.7E-08	ug/m3	4.3E-03	(ug/m3) $^{-1}$	1.6E-10	2.9E-07	ug/m3	1.5E-02	ug/m3	1.9E-05
				CHROMIUM, TOTAL	1E+01	mg/kg	2.9E-08	ug/m3	8.4E-02	(ug/m3) $^{-1}$	7.2E-09	2.2E-07	ug/m3	1.0E-01	ug/m3	2.2E-06
				COBALT	1E+01	mg/kg	3.2E-08	ug/m3	9.0E-03	(ug/m3) $^{-1}$	2.8E-10	2.5E-07	ug/m3	6.0E-03	ug/m3	4.1E-05
				IRON	3E+04	mg/kg	7.4E-05	ug/m3	N/A	N/A	N/A	5.7E-04	ug/m3	N/A	N/A	N/A
				LEAD												
				MANGANESE	1E+03	mg/kg	2.2E-06	ug/m3	N/A	N/A	N/A	1.7E-05	ug/m3	5.0E-02	ug/m3	3.4E-04
				THALLIUM	8E-02	mg/kg	1.8E-10	ug/m3	N/A	N/A	N/A	1.4E-09	ug/m3	N/A	N/A	N/A
			Exp. Route Total								8E-09					4E-04
		Exposure Point Total									5E-05					7E+00
	Exposure Medium Total										N/A					N/A
Medium Total											N/A					N/A

TABLE 7.12.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Sediment	Sediment	MRP Site 1	Ingestion													
				BENZO[A]PYRENE	5E-01	mg/kg	2.0E-08	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	4.3E-07	1.5E-07	mg/kg-day	N/A	N/A	N/A
				BENZO[B]FLUORANTHENE	5E-01	mg/kg	1.9E-08	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	4.3E-08	1.5E-07	mg/kg-day	N/A	N/A	N/A
				DIBENZ[A,H]ANTHRACENE	1E-01	mg/kg	5.2E-09	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	1.1E-07	4.0E-08	mg/kg-day	N/A	N/A	N/A
				ANTIMONY	3E+01	mg/kg	1.1E-06	mg/kg-day	N/A	N/A	N/A	8.2E-06	mg/kg-day	4.0E-04	mg/kg-day	2.0E-02
				ARSENIC	2E+01	mg/kg	4.9E-07	mg/kg-day	1.5E+00	(mg/kg-day) $^{-1}$	7.4E-07	3.8E-06	mg/kg-day	3.0E-04	mg/kg-day	1.3E-02
				CHROMIUM, TOTAL	1E+01	mg/kg	5.9E-07	mg/kg-day	5.0E-01	(mg/kg-day)	8.8E-07	4.6E-06	mg/kg-day	3.0E-03	mg/kg-day	1.5E-03
				COBALT	1E+01	mg/kg	5.6E-07	mg/kg-day	N/A	N/A	N/A	4.4E-06	mg/kg-day	3.0E-04	mg/kg-day	1.5E-02
				IRON	4E+04	mg/kg	1.6E-03	mg/kg-day	N/A	N/A	N/A	1.2E-02	mg/kg-day	7.0E-01	mg/kg-day	1.8E-02
				LEAD												
				MANGANESE	1E+03	mg/kg	4.4E-05	mg/kg-day	N/A	N/A	N/A	3.4E-04	mg/kg-day	2.4E-02	mg/kg-day	1.4E-02
			Exp. Route Total								2E-06					8E-02
			Dermal													
				BENZO[A]PYRENE	5E-01	mg/kg	2.4E-08	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	5.2E-07	1.8E-07	mg/kg-day	N/A	N/A	N/A
				BENZO[B]FLUORANTHENE	5E-01	mg/kg	2.4E-08	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	5.1E-08	1.8E-07	mg/kg-day	N/A	N/A	N/A
				DIBENZ[A,H]ANTHRACENE	1E-01	mg/kg	6.2E-09	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	1.4E-07	4.8E-08	mg/kg-day	N/A	N/A	N/A
				ANTIMONY	3E+01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A
				ARSENIC	2E+01	mg/kg	2.3E-07	mg/kg-day	1.5E+00	(mg/kg-day) $^{-1}$	3.4E-07	1.8E-06	mg/kg-day	3.0E-04	mg/kg-day	5.9E-03
				CHROMIUM, TOTAL	1E+01	mg/kg	N/A	N/A	1.3E-02	(mg/kg-day)	N/A	N/A	N/A	7.5E-05	mg/kg-day	N/A
				COBALT	1E+01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A
				IRON	4E+04	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
				LEAD												
				MANGANESE	1E+03	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.6E-04	mg/kg-day	N/A
			Exp. Route Total								1E-06					6E-03
		Exposure Point Total									3E-06					9E-02
	Exposure Medium Total										N/A					N/A
Medium Total											N/A					N/A
										Total of Receptor Risks Across All Media	N/A				Total of Receptor Hazards Across All Media	N/A

Notes

Shading indicates early-life cancer risk calculations for carcinogenic PAHs and chromium (VI) calculated by multiplying the result by the default age-dependent adjustment factor (ADAF) of 3 for an adolescent (ages 7-16).

TABLE 7.12.CT

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface/Subsurface Soil	MRP Site 1	Ingestion													
				BENZO[A]ANTHRACENE	5E+00	mg/kg	4.8E-08	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	1.0E-07	3.7E-07	mg/kg-day	N/A	N/A	N/A
				BENZO[A]PYRENE	6E+00	mg/kg	5.7E-08	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	1.3E-06	4.5E-07	mg/kg-day	N/A	N/A	N/A
				BENZO[B]FLUORANTHENE	5E+00	mg/kg	5.3E-08	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	1.2E-07	4.1E-07	mg/kg-day	N/A	N/A	N/A
				BENZO[K]FLUORANTHENE	5E+00	mg/kg	5.0E-08	mg/kg-day	7.3E-02	(mg/kg-day) $^{-1}$	1.1E-08	3.9E-07	mg/kg-day	N/A	N/A	N/A
				CHRYSENE	6E+00	mg/kg	6.1E-08	mg/kg-day	7.3E-03	(mg/kg-day) $^{-1}$	1.3E-09	4.8E-07	mg/kg-day	N/A	N/A	N/A
				DIBENZ[A,H]ANTHRACENE	4E-01	mg/kg	4.4E-09	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	9.6E-08	3.4E-08	mg/kg-day	N/A	N/A	N/A
				INDENO[1,2,3-CD]PYRENE	3E+00	mg/kg	3.2E-08	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	7.0E-08	2.5E-07	mg/kg-day	N/A	N/A	N/A
				NITROGLYCERIN	6E-01	mg/kg	6.3E-09	mg/kg-day	1.7E-02	(mg/kg-day) $^{-1}$	1.1E-10	4.9E-08	mg/kg-day	1.0E-04	mg/kg-day	4.9E-04
				4,4-DDT	4E+00	mg/kg	4.2E-08	mg/kg-day	3.4E-01	(mg/kg-day) $^{-1}$	1.4E-08	3.3E-07	mg/kg-day	5.0E-04	mg/kg-day	6.6E-04
				AROCLOR-1260	6E+01	mg/kg	6.0E-07	mg/kg-day	1.0E+00	(mg/kg-day) $^{-1}$	6.0E-07	4.7E-06	mg/kg-day	2.0E-05	mg/kg-day	2.3E-01
				ALUMINUM	9E+03	mg/kg	9.8E-05	mg/kg-day	N/A	N/A	N/A	7.6E-04	mg/kg-day	1.0E+00	mg/kg-day	7.6E-04
				ANTIMONY	4E+01	mg/kg	4.4E-07	mg/kg-day	N/A	N/A	N/A	3.4E-06	mg/kg-day	4.0E-04	mg/kg-day	8.5E-03
				ARSENIC	2E+01	mg/kg	1.0E-07	mg/kg-day	1.5E+00	(mg/kg-day) $^{-1}$	1.5E-07	8.0E-07	mg/kg-day	3.0E-04	mg/kg-day	2.7E-03
				CHROMIUM, TOTAL	1E+01	mg/kg	1.3E-07	mg/kg-day	5.0E-01	(mg/kg-day)	2.0E-07	1.0E-06	mg/kg-day	3.0E-03	mg/kg-day	3.5E-04
				COBALT	1E+01	mg/kg	1.5E-07	mg/kg-day	N/A	N/A	N/A	1.1E-06	mg/kg-day	3.0E-04	mg/kg-day	3.8E-03
				IRON	3E+04	mg/kg	3.4E-04	mg/kg-day	N/A	N/A	N/A	2.7E-03	mg/kg-day	7.0E-01	mg/kg-day	3.8E-03
				LEAD												
				MANGANESE	1E+03	mg/kg	1.0E-05	mg/kg-day	N/A	N/A	N/A	7.8E-05	mg/kg-day	2.4E-02	mg/kg-day	3.3E-03
				THALLIUM	8E-02	mg/kg	8.3E-10	mg/kg-day	N/A	N/A	N/A	6.4E-09	mg/kg-day	1.0E-05	mg/kg-day	6.4E-04
			Exp. Route Total								3E-06					3E-01

TABLE 7.12.CT

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
			Dermal													
				BENZO[A]ANTHRACENE	5E+00	mg/kg	4.5E-08	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	9.8E-08	3.5E-07	mg/kg-day	N/A	N/A	N/A
				BENZO[A]PYRENE	6E+00	mg/kg	5.4E-08	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	1.2E-06	4.2E-07	mg/kg-day	N/A	N/A	N/A
				BENZO[B]FLUORANTHENE	5E+00	mg/kg	5.0E-08	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	1.1E-07	3.9E-07	mg/kg-day	N/A	N/A	N/A
				BENZO[K]FLUORANTHENE	5E+00	mg/kg	4.8E-08	mg/kg-day	7.3E-02	(mg/kg-day) $^{-1}$	1.0E-08	3.7E-07	mg/kg-day	N/A	N/A	N/A
				CHRYSENE	6E+00	mg/kg	5.8E-08	mg/kg-day	7.3E-03	(mg/kg-day) $^{-1}$	1.3E-09	4.5E-07	mg/kg-day	N/A	N/A	N/A
				DIBENZ[A,H]ANTHRACENE	4E-01	mg/kg	4.1E-09	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	9.1E-08	3.2E-08	mg/kg-day	N/A	N/A	N/A
				INDENO[1,2,3-CD]PYRENE	3E+00	mg/kg	3.0E-08	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	6.6E-08	2.3E-07	mg/kg-day	N/A	N/A	N/A
				NITROGLYCERIN	6E-01	mg/kg	4.6E-09	mg/kg-day	1.7E-02	(mg/kg-day)	7.8E-11	3.5E-08	mg/kg-day	1.0E-04	mg/kg-day	3.5E-04
				4,4-DDT	4E+00	mg/kg	9.2E-09	mg/kg-day	3.4E-01	(mg/kg-day) $^{-1}$	3.1E-09	7.2E-08	mg/kg-day	5.0E-04	mg/kg-day	1.4E-04
				AROCLOR-1260	6E+01	mg/kg	6.1E-07	mg/kg-day	1.0E+00	(mg/kg-day) $^{-1}$	6.1E-07	4.7E-06	mg/kg-day	2.0E-05	mg/kg-day	2.4E-01
				ALUMINUM	9E+03	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.0E-02	mg/kg-day	N/A
				ANTIMONY	4E+01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A
				ARSENIC	2E+01	mg/kg	3.7E-08	mg/kg-day	1.5E+00	(mg/kg-day) $^{-1}$	5.6E-08	2.9E-07	mg/kg-day	3.0E-04	mg/kg-day	9.6E-04
				CHROMIUM, TOTAL	1E+01	mg/kg	N/A	N/A	1.3E-02	(mg/kg-day)	N/A	N/A	N/A	7.5E-05	mg/kg-day	N/A
				COBALT	1E+01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A
				IRON	3E+04	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
				LEAD												
				MANGANESE	1E+03	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.6E-04	mg/kg-day	N/A
				THALLIUM	8E-02	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.0E-05	mg/kg-day	N/A
			Exp. Route Total								2E-06					2E-01

TABLE 7.12.CT

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
			Inhalation of fugitive dust													
				BENZO[A]ANTHRACENE	5E+00	mg/kg	2.6E-09	ug/m3	1.1E-04	(ug/m3) $^{-1}$	8.5E-13	2.0E-08	ug/m3	N/A	N/A	N/A
				BENZO[A]PYRENE	6E+00	mg/kg	3.1E-09	ug/m3	1.1E-03	(ug/m3) $^{-1}$	1.0E-11	2.4E-08	ug/m3	N/A	N/A	N/A
				BENZO[B]FLUORANTHENE	5E+00	mg/kg	2.8E-09	ug/m3	1.1E-04	(ug/m3) $^{-1}$	9.4E-13	2.2E-08	ug/m3	N/A	N/A	N/A
				BENZO[K]FLUORANTHENE	5E+00	mg/kg	2.7E-09	ug/m3	1.1E-04	(ug/m3) $^{-1}$	9.0E-13	2.1E-08	ug/m3	N/A	N/A	N/A
				CHRYSENE	6E+00	mg/kg	3.3E-09	ug/m3	1.1E-05	(ug/m3) $^{-1}$	1.1E-13	2.6E-08	ug/m3	N/A	N/A	N/A
				DIBENZ[A,H]ANTHRACENE	4E-01	mg/kg	2.4E-10	ug/m3	1.2E-03	(ug/m3) $^{-1}$	8.5E-13	1.8E-09	ug/m3	N/A	N/A	N/A
				INDENO[1,2,3-CD]PYRENE	3E+00	mg/kg	1.7E-09	ug/m3	1.1E-04	(ug/m3) $^{-1}$	5.7E-13	1.3E-08	ug/m3	N/A	N/A	N/A
				NITROGLYCERIN	6E-01	mg/kg	3.4E-10	ug/m3	N/A	N/A	N/A	2.6E-09	ug/m3	N/A	N/A	N/A
				4,4-DDT	4E+00	mg/kg	2.3E-09	ug/m3	9.7E-05	(ug/m3) $^{-1}$	2.2E-13	1.8E-08	ug/m3	N/A	N/A	N/A
				AROCLOR-1260	6E+01	mg/kg	3.2E-08	ug/m3	5.7E-04	(ug/m3) $^{-1}$	1.8E-11	2.5E-07	ug/m3	N/A	N/A	N/A
				ALUMINUM	9E+03	mg/kg	5.3E-06	ug/m3	N/A	N/A	N/A	4.1E-05	ug/m3	5.0E+00	ug/m3	8.2E-06
				ANTIMONY	4E+01	mg/kg	2.4E-08	ug/m3	N/A	N/A	N/A	1.8E-07	ug/m3	N/A	N/A	N/A
				ARSENIC	2E+01	mg/kg	9.2E-09	ug/m3	4.3E-03	(ug/m3) $^{-1}$	4.0E-11	7.1E-08	ug/m3	1.5E-02	ug/m3	4.8E-06
				CHROMIUM, TOTAL	1E+01	mg/kg	7.2E-09	ug/m3	8.4E-02	(ug/m3) $^{-1}$	1.8E-09	5.6E-08	ug/m3	1.0E-01	ug/m3	5.6E-07
				COBALT	1E+01	mg/kg	7.9E-09	ug/m3	9.0E-03	(ug/m3) $^{-1}$	7.1E-11	6.1E-08	ug/m3	6.0E-03	ug/m3	1.0E-05
				IRON	3E+04	mg/kg	1.8E-05	ug/m3	N/A	N/A	N/A	1.4E-04	ug/m3	N/A	N/A	N/A
				LEAD												
				MANGANESE	1E+03	mg/kg	5.4E-07	ug/m3	N/A	N/A	N/A	4.2E-06	ug/m3	5.0E-02	ug/m3	8.4E-05
				THALLIUM	8E-02	mg/kg	4.5E-11	ug/m3	N/A	N/A	N/A	3.5E-10	ug/m3	N/A	N/A	N/A
			Exp. Route Total								2E-09					1E-04
		Exposure Point Total									5E-06					5E-01
	Exposure Medium Total										N/A					N/A
Medium Total											N/A					N/A

TABLE 7.12.CT

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Sediment	Sediment	MRP Site 1	Ingestion													
				BENZO[A]PYRENE	5E-01	mg/kg	4.9E-09	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	1.1E-07	3.8E-08	mg/kg-day	N/A	N/A	N/A
				BENZO[B]FLUORANTHENE	5E-01	mg/kg	4.9E-09	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	1.1E-08	3.8E-08	mg/kg-day	N/A	N/A	N/A
				DIBENZ[A,H]ANTHRACENE	1E-01	mg/kg	1.3E-09	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	2.8E-08	1.0E-08	mg/kg-day	N/A	N/A	N/A
				ANTIMONY	3E+01	mg/kg	2.6E-07	mg/kg-day	N/A	N/A	N/A	2.0E-06	mg/kg-day	4.0E-04	mg/kg-day	5.1E-03
				ARSENIC	2E+01	mg/kg	1.2E-07	mg/kg-day	1.5E+00	(mg/kg-day) $^{-1}$	1.8E-07	9.6E-07	mg/kg-day	3.0E-04	mg/kg-day	3.2E-03
				CHROMIUM, TOTAL	1E+01	mg/kg	1.5E-07	mg/kg-day	5.0E-01	(mg/kg-day)	2.2E-07	1.1E-06	mg/kg-day	3.0E-03	mg/kg-day	3.8E-04
				COBALT	1E+01	mg/kg	1.4E-07	mg/kg-day	N/A	N/A	N/A	1.1E-06	mg/kg-day	3.0E-04	mg/kg-day	3.6E-03
				IRON	4E+04	mg/kg	4.0E-04	mg/kg-day	N/A	N/A	N/A	3.1E-03	mg/kg-day	7.0E-01	mg/kg-day	4.5E-03
				LEAD												
				MANGANESE	1E+03	mg/kg	1.1E-05	mg/kg-day	N/A	N/A	N/A	8.6E-05	mg/kg-day	2.4E-02	mg/kg-day	3.6E-03
			Exp. Route Total								6E-07					2E-02
			Dermal													
				BENZO[A]PYRENE	5E-01	mg/kg	1.2E-08	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	2.6E-07	9.2E-08	mg/kg-day	N/A	N/A	N/A
				BENZO[B]FLUORANTHENE	5E-01	mg/kg	1.2E-08	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	2.6E-08	9.1E-08	mg/kg-day	N/A	N/A	N/A
				DIBENZ[A,H]ANTHRACENE	1E-01	mg/kg	3.1E-09	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	6.8E-08	2.4E-08	mg/kg-day	N/A	N/A	N/A
				ANTIMONY	3E+01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A
				ARSENIC	2E+01	mg/kg	1.1E-07	mg/kg-day	1.5E+00	(mg/kg-day) $^{-1}$	1.7E-07	8.9E-07	mg/kg-day	3.0E-04	mg/kg-day	3.0E-03
				CHROMIUM, TOTAL	1E+01	mg/kg	N/A	N/A	1.3E-02	(mg/kg-day)	N/A	N/A	N/A	7.5E-05	mg/kg-day	N/A
				COBALT	1E+01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A
				IRON	4E+04	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
				LEAD												
				MANGANESE	1E+03	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.6E-04	mg/kg-day	N/A
			Exp. Route Total								5E-07					3E-03
		Exposure Point Total									1E-06					2E-02
	Exposure Medium Total										N/A					N/A
Medium Total											N/A					N/A
										Total of Receptor Risks Across All Media	N/A				Total of Receptor Hazards Across All Media	N/A

Notes

Shading indicates early-life cancer risk calculations for carcinogenic PAHs and chromium (VI) calculated by multiplying the result by the default age-dependent adjustment factor (ADAF) of 3 for an adolescent (ages 7-16).

TABLE 7.13.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Onsite Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface/Subsurface Soil	MRP Site 1	Ingestion													
				BENZO[A]ANTHRACENE	5E+00	mg/kg	1.4E-06	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	1.0E-06	3.9E-06	mg/kg-day	N/A	N/A	N/A
				BENZO[A]PYRENE	6E+00	mg/kg	1.7E-06	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	1.2E-05	4.7E-06	mg/kg-day	N/A	N/A	N/A
				BENZO[B]FLUORANTHENE	5E+00	mg/kg	1.5E-06	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	1.1E-06	4.3E-06	mg/kg-day	N/A	N/A	N/A
				BENZO[K]FLUORANTHENE	5E+00	mg/kg	1.5E-06	mg/kg-day	7.3E-02	(mg/kg-day) $^{-1}$	1.1E-07	4.1E-06	mg/kg-day	N/A	N/A	N/A
				DIBENZ[A,H]ANTHRACENE	4E-01	mg/kg	1.3E-07	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	9.4E-07	3.6E-07	mg/kg-day	N/A	N/A	N/A
				INDENO[1,2,3-CD]PYRENE	3E+00	mg/kg	9.4E-07	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	6.8E-07	2.6E-06	mg/kg-day	N/A	N/A	N/A
				4,4-DDT	2E+01	mg/kg	5.8E-06	mg/kg-day	3.4E-01	(mg/kg-day) $^{-1}$	2.0E-06	1.6E-05	mg/kg-day	5.0E-04	mg/kg-day	3.3E-02
				AROCLOR-1260	3E+02	mg/kg	8.3E-05	mg/kg-day	2.0E+00	(mg/kg-day) $^{-1}$	1.7E-04	2.3E-04	mg/kg-day	2.0E-05	mg/kg-day	1.2E+01
				ANTIMONY	4E+01	mg/kg	1.3E-05	mg/kg-day	N/A	N/A	N/A	3.6E-05	mg/kg-day	4.0E-04	mg/kg-day	9.0E-02
				ARSENIC	2E+01	mg/kg	3.0E-06	mg/kg-day	1.5E+00	(mg/kg-day) $^{-1}$	4.5E-06	8.4E-06	mg/kg-day	3.0E-04	mg/kg-day	2.8E-02
				CHROMIUM, TOTAL	1E+01	mg/kg	3.9E-06	mg/kg-day	5.0E-01	(mg/kg-day)	2.0E-06	1.1E-05	mg/kg-day	3.0E-03	mg/kg-day	3.7E-03
				IRON	1E+01	mg/kg	4.3E-06	mg/kg-day	N/A	N/A	N/A	1.2E-05	mg/kg-day	7.0E-01	mg/kg-day	1.7E-05
				LEAD												
				MANGANESE	1E+03	mg/kg	4.5E-04	mg/kg-day	N/A	N/A	N/A	1.3E-03	mg/kg-day	2.4E-02	mg/kg-day	5.2E-02
			Exp. Route Total								2E-04					1E+01
			Dermal													
				BENZO[A]ANTHRACENE	5E+00	mg/kg	7.6E-07	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	5.5E-07	2.1E-06	mg/kg-day	N/A	N/A	N/A
				BENZO[A]PYRENE	6E+00	mg/kg	9.1E-07	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	6.7E-06	2.6E-06	mg/kg-day	N/A	N/A	N/A
				BENZO[B]FLUORANTHENE	5E+00	mg/kg	8.4E-07	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	6.1E-07	2.3E-06	mg/kg-day	N/A	N/A	N/A
				BENZO[K]FLUORANTHENE	5E+00	mg/kg	8.0E-07	mg/kg-day	7.3E-02	(mg/kg-day) $^{-1}$	5.9E-08	2.2E-06	mg/kg-day	N/A	N/A	N/A
				DIBENZ[A,H]ANTHRACENE	4E-01	mg/kg	7.0E-08	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	5.1E-07	2.0E-07	mg/kg-day	N/A	N/A	N/A
				INDENO[1,2,3-CD]PYRENE	3E+00	mg/kg	5.1E-07	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	3.7E-07	1.4E-06	mg/kg-day	N/A	N/A	N/A
				4,4-DDT	2E+01	mg/kg	7.3E-07	mg/kg-day	3.4E-01	(mg/kg-day) $^{-1}$	2.5E-07	2.0E-06	mg/kg-day	5.0E-04	mg/kg-day	4.1E-03
				AROCLOR-1260	3E+02	mg/kg	4.8E-05	mg/kg-day	2.0E+00	(mg/kg-day) $^{-1}$	9.6E-05	1.3E-04	mg/kg-day	2.0E-05	mg/kg-day	6.7E+00
				ANTIMONY	4E+01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A
				ARSENIC	2E+01	mg/kg	6.3E-07	mg/kg-day	1.5E+00	(mg/kg-day) $^{-1}$	9.4E-07	1.8E-06	mg/kg-day	3.0E-04	mg/kg-day	5.8E-03
				CHROMIUM, TOTAL	1E+01	mg/kg	N/A	N/A	1.3E-02	(mg/kg-day)	N/A	N/A	N/A	7.5E-05	mg/kg-day	N/A
				IRON	1E+01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
				LEAD												
				MANGANESE	1E+03	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.6E-04	mg/kg-day	N/A
			Exp. Route Total								1E-04					7E+00

TABLE 7.13.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Onsite Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
			Inhalation of fugitive dust													
				BENZO[A]ANTHRACENE	5E+00	mg/kg	1.4E-07	ug/m3	1.1E-04	(ug/m3) $^{-1}$	1.5E-11	3.8E-07	ug/m3	N/A	N/A	N/A
				BENZO[A]PYRENE	6E+00	mg/kg	1.7E-07	ug/m3	1.1E-03	(ug/m3) $^{-1}$	1.8E-10	4.6E-07	ug/m3	N/A	N/A	N/A
				BENZO[B]FLUORANTHENE	5E+00	mg/kg	1.5E-07	ug/m3	1.1E-04	(ug/m3) $^{-1}$	1.7E-11	4.3E-07	ug/m3	N/A	N/A	N/A
				BENZO[K]FLUORANTHENE	5E+00	mg/kg	1.5E-07	ug/m3	1.1E-04	(ug/m3) $^{-1}$	1.6E-11	4.1E-07	ug/m3	N/A	N/A	N/A
				DIBENZ[A,H]ANTHRACENE	4E-01	mg/kg	1.3E-08	ug/m3	1.2E-03	(ug/m3) $^{-1}$	1.5E-11	3.5E-08	ug/m3	N/A	N/A	N/A
				INDENO[1,2,3-CD]PYRENE	3E+00	mg/kg	9.2E-08	ug/m3	1.1E-04	(ug/m3) $^{-1}$	1.0E-11	2.6E-07	ug/m3	N/A	N/A	N/A
				4,4-DDT	2E+01	mg/kg	5.7E-07	ug/m3	9.7E-05	(ug/m3) $^{-1}$	5.5E-11	1.6E-06	ug/m3	N/A	N/A	N/A
				AROCLOR-1260	3E+02	mg/kg	8.1E-06	ug/m3	5.7E-04	(ug/m3) $^{-1}$	4.6E-09	2.3E-05	ug/m3	N/A	N/A	N/A
				ANTIMONY	4E+01	mg/kg	1.3E-06	ug/m3	N/A	N/A	N/A	3.5E-06	ug/m3	N/A	N/A	N/A
				ARSENIC	2E+01	mg/kg	4.9E-07	ug/m3	4.3E-03	(ug/m3) $^{-1}$	2.1E-09	1.4E-06	ug/m3	1.5E-02	ug/m3	9.2E-05
				CHROMIUM, TOTAL	1E+01	mg/kg	3.8E-07	ug/m3	8.4E-02	(ug/m3) $^{-1}$	3.2E-08	1.1E-06	ug/m3	1.0E-01	ug/m3	1.1E-05
				IRON	1E+01	mg/kg	4.2E-07	ug/m3	N/A	N/A	N/A	1.2E-06	ug/m3	N/A	N/A	N/A
				LEAD												
				MANGANESE	1E+03	mg/kg	4.4E-05	ug/m3	N/A	N/A	N/A	1.2E-04	ug/m3	5.0E-02	ug/m3	2.5E-03
			Exp. Route Total								4E-08					3E-03
		Exposure Point Total									3E-04					2E+01
	Exposure Medium Total										N/A					N/A
Medium Total											N/A					N/A
										Total of Receptor Risks Across All Media	N/A				Total of Receptor Hazards Across All Media	N/A

TABLE 7.13.CT

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Onsite Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface/Subsurface Soil	MRP Site 1	Ingestion													
				BENZO[A]ANTHRACENE	5E+00	mg/kg	1.7E-07	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	1.2E-07	1.7E-06	mg/kg-day	N/A	N/A	N/A
				BENZO[A]PYRENE	6E+00	mg/kg	2.1E-07	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	1.5E-06	2.1E-06	mg/kg-day	N/A	N/A	N/A
				BENZO[B]FLUORANTHENE	5E+00	mg/kg	1.9E-07	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	1.4E-07	1.9E-06	mg/kg-day	N/A	N/A	N/A
				BENZO[K]FLUORANTHENE	5E+00	mg/kg	1.8E-07	mg/kg-day	7.3E-02	(mg/kg-day) $^{-1}$	1.3E-08	1.8E-06	mg/kg-day	N/A	N/A	N/A
				DIBENZ[A,H]ANTHRACENE	4E-01	mg/kg	1.6E-08	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	1.2E-07	1.6E-07	mg/kg-day	N/A	N/A	N/A
				INDENO[1,2,3-CD]PYRENE	3E+00	mg/kg	1.1E-07	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	8.4E-08	1.1E-06	mg/kg-day	N/A	N/A	N/A
				4,4-DDT	4E+00	mg/kg	1.5E-07	mg/kg-day	3.4E-01	(mg/kg-day) $^{-1}$	5.2E-08	1.5E-06	mg/kg-day	5.0E-04	mg/kg-day	3.1E-03
				AROCLOR-1260	6E+01	mg/kg	2.2E-06	mg/kg-day	1.0E+00	(mg/kg-day) $^{-1}$	2.2E-06	2.2E-05	mg/kg-day	2.0E-05	mg/kg-day	1.1E+00
				ANTIMONY	4E+01	mg/kg	1.6E-06	mg/kg-day	N/A	N/A	N/A	1.6E-05	mg/kg-day	4.0E-04	mg/kg-day	3.9E-02
				ARSENIC	2E+01	mg/kg	3.7E-07	mg/kg-day	1.5E+00	(mg/kg-day) $^{-1}$	5.5E-07	3.7E-06	mg/kg-day	3.0E-04	mg/kg-day	1.2E-02
				CHROMIUM, TOTAL	1E+01	mg/kg	4.8E-07	mg/kg-day	5.0E-01	(mg/kg-day)	2.4E-07	4.8E-06	mg/kg-day	3.0E-03	mg/kg-day	1.6E-03
				IRON	1E+01	mg/kg	5.3E-07	mg/kg-day	N/A	N/A	N/A	5.3E-06	mg/kg-day	7.0E-01	mg/kg-day	7.5E-06
				LEAD												
				MANGANESE	1E+03	mg/kg	5.5E-05	mg/kg-day	N/A	N/A	N/A	5.5E-04	mg/kg-day	2.4E-02	mg/kg-day	2.3E-02
			Exp. Route Total								5E-06					1E+00
			Dermal													
				BENZO[A]ANTHRACENE	5E+00	mg/kg	3.1E-08	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	2.3E-08	3.1E-07	mg/kg-day	N/A	N/A	N/A
				BENZO[A]PYRENE	6E+00	mg/kg	3.7E-08	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	2.7E-07	3.7E-07	mg/kg-day	N/A	N/A	N/A
				BENZO[B]FLUORANTHENE	5E+00	mg/kg	3.4E-08	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	2.5E-08	3.4E-07	mg/kg-day	N/A	N/A	N/A
				BENZO[K]FLUORANTHENE	5E+00	mg/kg	3.3E-08	mg/kg-day	7.3E-02	(mg/kg-day) $^{-1}$	2.4E-09	3.3E-07	mg/kg-day	N/A	N/A	N/A
				DIBENZ[A,H]ANTHRACENE	4E-01	mg/kg	2.9E-09	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	2.1E-08	2.9E-08	mg/kg-day	N/A	N/A	N/A
				INDENO[1,2,3-CD]PYRENE	3E+00	mg/kg	2.1E-08	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	1.5E-08	2.1E-07	mg/kg-day	N/A	N/A	N/A
				4,4-DDT	4E+00	mg/kg	6.4E-09	mg/kg-day	3.4E-01	(mg/kg-day) $^{-1}$	2.2E-09	6.4E-08	mg/kg-day	5.0E-04	mg/kg-day	1.3E-04
				AROCLOR-1260	6E+01	mg/kg	4.2E-07	mg/kg-day	1.0E+00	(mg/kg-day) $^{-1}$	4.2E-07	4.2E-06	mg/kg-day	2.0E-05	mg/kg-day	2.1E-01
				ANTIMONY	4E+01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A
				ARSENIC	2E+01	mg/kg	2.6E-08	mg/kg-day	1.5E+00	(mg/kg-day) $^{-1}$	3.8E-08	2.6E-07	mg/kg-day	3.0E-04	mg/kg-day	8.5E-04
				CHROMIUM, TOTAL	1E+01	mg/kg	N/A	N/A	1.3E-02	(mg/kg-day)	N/A	N/A	N/A	7.5E-05	mg/kg-day	N/A
				IRON	1E+01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
				LEAD												
				MANGANESE	1E+03	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.6E-04	mg/kg-day	N/A
			Exp. Route Total								8E-07					2E-01

TABLE 7.13.CT

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Onsite Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
			Inhalation of fugitive dust													
				BENZO[A]ANTHRACENE	5E+00	mg/kg	3.4E-08	ug/m3	1.1E-04	(ug/m3) $^{-1}$	3.7E-12	3.4E-07	ug/m3	N/A	N/A	N/A
				BENZO[A]PYRENE	6E+00	mg/kg	4.1E-08	ug/m3	1.1E-03	(ug/m3) $^{-1}$	4.5E-11	4.1E-07	ug/m3	N/A	N/A	N/A
				BENZO[B]FLUORANTHENE	5E+00	mg/kg	3.7E-08	ug/m3	1.1E-04	(ug/m3) $^{-1}$	4.1E-12	3.7E-07	ug/m3	N/A	N/A	N/A
				BENZO[K]FLUORANTHENE	5E+00	mg/kg	3.6E-08	ug/m3	1.1E-04	(ug/m3) $^{-1}$	3.9E-12	3.6E-07	ug/m3	N/A	N/A	N/A
				DIBENZ[A,H]ANTHRACENE	4E-01	mg/kg	3.1E-09	ug/m3	1.2E-03	(ug/m3) $^{-1}$	3.7E-12	3.1E-08	ug/m3	N/A	N/A	N/A
				INDENO[1,2,3-CD]PYRENE	3E+00	mg/kg	2.3E-08	ug/m3	1.1E-04	(ug/m3) $^{-1}$	2.5E-12	2.3E-07	ug/m3	N/A	N/A	N/A
				4,4-DDT	4E+00	mg/kg	3.0E-08	ug/m3	9.7E-05	(ug/m3) $^{-1}$	2.9E-12	3.0E-07	ug/m3	N/A	N/A	N/A
				AROCLOR-1260	6E+01	mg/kg	4.2E-07	ug/m3	5.7E-04	(ug/m3) $^{-1}$	2.4E-10	4.2E-06	ug/m3	N/A	N/A	N/A
				ANTIMONY	4E+01	mg/kg	3.1E-07	ug/m3	N/A	N/A	N/A	3.1E-06	ug/m3	N/A	N/A	N/A
				ARSENIC	2E+01	mg/kg	1.2E-07	ug/m3	4.3E-03	(ug/m3) $^{-1}$	5.2E-10	1.2E-06	ug/m3	1.5E-02	ug/m3	8.0E-05
				CHROMIUM, TOTAL	1E+01	mg/kg	9.4E-08	ug/m3	8.4E-02	(ug/m3) $^{-1}$	7.9E-09	9.4E-07	ug/m3	1.0E-01	ug/m3	9.4E-06
				IRON	1E+01	mg/kg	1.0E-07	ug/m3	N/A	N/A	N/A	1.0E-06	ug/m3	N/A	N/A	N/A
				LEAD												
				MANGANESE	1E+03	mg/kg	1.1E-05	ug/m3	N/A	N/A	N/A	1.1E-04	ug/m3	5.0E-02	ug/m3	2.2E-03
			Exp. Route Total								9E-09					2E-03
		Exposure Point Total									6E-06					1E+00
	Exposure Medium Total										N/A					N/A
Medium Total											N/A					N/A
										Total of Receptor Risks Across All Media	N/A				Total of Receptor Hazards Across All Media	N/A

TABLE 7.14.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Shellfish Tissue	Shellfish Tissue	MRP Site 1	Ingestion													
				BENZO[A]ANTHRACENE	1E-02	mg/kg	2.1E-07	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	1.5E-07	7.3E-07	mg/kg-day	N/A	N/A	N/A
				BENZO[A]PYRENE	4E-02	mg/kg	6.9E-07	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	5.0E-06	2.4E-06	mg/kg-day	N/A	N/A	N/A
				BENZO[B]FLUORANTHENE	4E-02	mg/kg	7.5E-07	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	5.5E-07	2.6E-06	mg/kg-day	N/A	N/A	N/A
				DIBENZ[A,H]ANTHRACENE	8E-03	mg/kg	1.4E-07	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	1.0E-06	4.9E-07	mg/kg-day	N/A	N/A	N/A
				INDENO[1,2,3-CD]PYRENE	3E-02	mg/kg	4.5E-07	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	3.3E-07	1.6E-06	mg/kg-day	N/A	N/A	N/A
				ARSENIC	4E+00	mg/kg	6.0E-05	mg/kg-day	1.5E+00	(mg/kg-day) $^{-1}$	9.1E-05	2.1E-04	mg/kg-day	3.0E-04	mg/kg-day	7.1E-01
				CHROMIUM, TOTAL	4E-01	mg/kg	7.4E-06	mg/kg-day	5.0E-01	(mg/kg-day)	3.7E-06	2.6E-05	mg/kg-day	3.0E-03	mg/kg-day	8.6E-03
				COBALT	2E-01	mg/kg	2.9E-06	mg/kg-day	N/A	N/A	N/A	1.0E-05	mg/kg-day	3.0E-04	mg/kg-day	3.3E-02
				IRON	1E+02	mg/kg	1.7E-03	mg/kg-day	N/A	N/A	N/A	6.0E-03	mg/kg-day	7.0E-01	mg/kg-day	8.6E-03
				LEAD												
				MERCURY	2E-02	mg/kg	3.4E-07	mg/kg-day	N/A	N/A	N/A	1.2E-06	mg/kg-day	1.0E-04	mg/kg-day	1.2E-02
			Exp. Route Total								1E-04					8E-01
		Exposure Point Total									1E-04					8E-01
	Exposure Medium Total										N/A					N/A
Medium Total											N/A					N/A
										Total of Receptor Risks Across All Media	N/A				Total of Receptor Hazards Across All Media	N/A

TABLE 7.14.CT

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Shellfish Tissue	Shellfish Tissue	MRP Site 1	Ingestion													
				BENZO[A]ANTHRACENE	1E-02	mg/kg	9.9E-08	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	7.2E-08	3.6E-07	mg/kg-day	N/A	N/A	N/A
				BENZO[A]PYRENE	9E-03	mg/kg	7.7E-08	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	5.6E-07	2.8E-07	mg/kg-day	N/A	N/A	N/A
				BENZO[B]FLUORANTHENE	1E-02	mg/kg	9.0E-08	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	6.5E-08	3.3E-07	mg/kg-day	N/A	N/A	N/A
				DIBENZ[A,H]ANTHRACENE	5E-03	mg/kg	3.8E-08	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	2.8E-07	1.4E-07	mg/kg-day	N/A	N/A	N/A
				INDENO[1,2,3-CD]PYRENE	6E-03	mg/kg	5.3E-08	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	3.9E-08	1.9E-07	mg/kg-day	N/A	N/A	N/A
				ARSENIC	4E+00	mg/kg	2.9E-05	mg/kg-day	1.5E+00	(mg/kg-day) $^{-1}$	4.3E-05	1.1E-04	mg/kg-day	3.0E-04	mg/kg-day	3.5E-01
				CHROMIUM, TOTAL	4E-01	mg/kg	3.5E-06	mg/kg-day	5.0E-01	(mg/kg-day)	1.8E-06	1.3E-05	mg/kg-day	3.0E-03	mg/kg-day	4.3E-03
				COBALT	2E-01	mg/kg	1.4E-06	mg/kg-day	N/A	N/A	N/A	5.0E-06	mg/kg-day	3.0E-04	mg/kg-day	1.7E-02
				IRON	1E+02	mg/kg	8.1E-04	mg/kg-day	N/A	N/A	N/A	3.0E-03	mg/kg-day	7.0E-01	mg/kg-day	4.3E-03
				LEAD												
				MERCURY	2E-02	mg/kg	1.6E-07	mg/kg-day	N/A	N/A	N/A	6.0E-07	mg/kg-day	1.0E-04	mg/kg-day	6.0E-03
			Exp. Route Total								5E-05					4E-01
		Exposure Point Total									5E-05					4E-01
	Exposure Medium Total										N/A					N/A
Medium Total											N/A					N/A
										Total of Receptor Risks Across All Media	N/A				Total of Receptor Hazards Across All Media	N/A

TABLE 7.15.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Shellfish Tissue	Shellfish Tissue	MRP Site 1	Ingestion													
				BENZO[A]ANTHRACENE	1E-02	mg/kg	6.2E-08	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	2.4E-07	7.3E-07	mg/kg-day	N/A	N/A	N/A
				BENZO[A]PYRENE	4E-02	mg/kg	2.1E-07	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	8.0E-06	2.4E-06	mg/kg-day	N/A	N/A	N/A
				BENZO[B]FLUORANTHENE	4E-02	mg/kg	2.3E-07	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	8.8E-07	2.6E-06	mg/kg-day	N/A	N/A	N/A
				DIBENZ[A,H]ANTHRACENE	8E-03	mg/kg	4.2E-08	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	1.6E-06	4.9E-07	mg/kg-day	N/A	N/A	N/A
				INDENO[1,2,3-CD]PYRENE	3E-02	mg/kg	1.3E-07	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	5.2E-07	1.6E-06	mg/kg-day	N/A	N/A	N/A
				ARSENIC	4E+00	mg/kg	1.8E-05	mg/kg-day	1.5E+00	(mg/kg-day) $^{-1}$	2.7E-05	2.1E-04	mg/kg-day	3.0E-04	mg/kg-day	7.1E-01
				CHROMIUM, TOTAL	4E-01	mg/kg	2.2E-06	mg/kg-day	5.0E-01	(mg/kg-day)	5.9E-06	2.6E-05	mg/kg-day	3.0E-03	mg/kg-day	8.6E-03
				COBALT	2E-01	mg/kg	8.6E-07	mg/kg-day	N/A	N/A	N/A	1.0E-05	mg/kg-day	3.0E-04	mg/kg-day	3.3E-02
				IRON	1E+02	mg/kg	5.1E-04	mg/kg-day	N/A	N/A	N/A	6.0E-03	mg/kg-day	7.0E-01	mg/kg-day	8.6E-03
				LEAD												
				MERCURY	2E-02	mg/kg	1.0E-07	mg/kg-day	N/A	N/A	N/A	1.2E-06	mg/kg-day	1.0E-04	mg/kg-day	1.2E-02
			Exp. Route Total								4E-05					8E-01
		Exposure Point Total									4E-05					8E-01
	Exposure Medium Total										N/A					N/A
Medium Total											N/A					N/A
										Total of Receptor Risks Across All Media	N/A				Total of Receptor Hazards Across All Media	N/A

Notes

Shading indicates early-life cancer risk calculations for carcinogenic PAHs and chromium (VI) calculated by multiplying the result by the default age-dependent adjustment factor (ADAF) of 10 for 2/6 of the result (ages 1-2) and an ADAF of 3 for 4/6 of the result (ages 3-6).

TABLE 7.15.CT

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Shellfish Tissue	Shellfish Tissue	MRP Site 1	Ingestion													
				BENZO[A]ANTHRACENE	1E-02	mg/kg	3.1E-08	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	1.2E-07	3.6E-07	mg/kg-day	N/A	N/A	N/A
				BENZO[A]PYRENE	9E-03	mg/kg	2.4E-08	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	9.4E-07	2.8E-07	mg/kg-day	N/A	N/A	N/A
				BENZO[B]FLUORANTHENE	1E-02	mg/kg	2.8E-08	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	1.1E-07	3.3E-07	mg/kg-day	N/A	N/A	N/A
				DIBENZ[A,H]ANTHRACENE	5E-03	mg/kg	1.2E-08	mg/kg-day	7.3E+00	(mg/kg-day) $^{-1}$	4.6E-07	1.4E-07	mg/kg-day	N/A	N/A	N/A
				INDENO[1,2,3-CD]PYRENE	6E-03	mg/kg	1.7E-08	mg/kg-day	7.3E-01	(mg/kg-day) $^{-1}$	6.5E-08	1.9E-07	mg/kg-day	N/A	N/A	N/A
				ARSENIC	4E+00	mg/kg	9.1E-06	mg/kg-day	1.5E+00	(mg/kg-day) $^{-1}$	1.4E-05	1.1E-04	mg/kg-day	3.0E-04	mg/kg-day	3.5E-01
				CHROMIUM, TOTAL	4E-01	mg/kg	1.1E-06	mg/kg-day	5.0E-01	(mg/kg-day)	2.9E-06	1.3E-05	mg/kg-day	3.0E-03	mg/kg-day	4.3E-03
				COBALT	2E-01	mg/kg	4.3E-07	mg/kg-day	N/A	N/A	N/A	5.0E-06	mg/kg-day	3.0E-04	mg/kg-day	1.7E-02
				IRON	1E+02	mg/kg	2.6E-04	mg/kg-day	N/A	N/A	N/A	3.0E-03	mg/kg-day	7.0E-01	mg/kg-day	4.3E-03
				LEAD												
				MERCURY	2E-02	mg/kg	5.1E-08	mg/kg-day	N/A	N/A	N/A	6.0E-07	mg/kg-day	1.0E-04	mg/kg-day	6.0E-03
			Exp. Route Total								2E-05					4E-01
		Exposure Point Total									2E-05					4E-01
	Exposure Medium Total										N/A					N/A
Medium Total											N/A					N/A
										Total of Receptor Risks Across All Media	N/A				Total of Receptor Hazards Across All Media	N/A

Notes

Shading indicates early-life cancer risk calculations for carcinogenic PAHs and chromium (VI) calculated by multiplying the result by the default age-dependent adjustment factor (ADAF) of 10 for 2/6 of the result (ages 1-2) and an ADAF of 3 for 4/6 of the result (ages 3-6).

TABLE 9.1.RME

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe: Current
Receptor Population: Recreational User
Receptor Age: Young Child/Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk Young Child + Adult					Non-Carcinogenic Hazard Quotient Young Child				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	MRP Site 1											
			BENZO[A]ANTHRACENE	3E-06	3E-11	9E-07	- -	3E-06	N/A	N/A	N/A	N/A	N/A
			BENZO[A]PYRENE	3E-05	4E-10	1E-05	- -	4E-05	N/A	N/A	N/A	N/A	N/A
			BENZO[B]FLUORANTHENE	2E-06	2E-11	5E-07	- -	2E-06	N/A	N/A	N/A	N/A	N/A
			BENZO[K]FLUORANTHENE	3E-07	4E-11	9E-08	- -	4E-07	N/A	N/A	N/A	N/A	N/A
			CHRYSENE	3E-08	4E-12	1E-08	- -	4E-08	N/A	N/A	N/A	N/A	N/A
			DIBENZ[A,H]ANTHRACENE	2E-06	3E-11	8E-07	- -	3E-06	N/A	N/A	N/A	N/A	N/A
			INDENO[1,2,3-CD]PYRENE	2E-06	2E-11	6E-07	- -	2E-06	N/A	N/A	N/A	N/A	N/A
			NITROGLYCERIN	3E-09	N/A	7E-10	- -	3E-09	Vascular	1E-02	N/A	3E-03	2E-02
			4,4-DDT	4E-07	2E-11	3E-08	- -	4E-07	Liver	2E-02	N/A	1E-03	2E-02
			AROCLOR-1260	3E-05	2E-09	1E-05	- -	4E-05	Eye, Nails, Immune	7E+00	N/A	2E+00	9E+00
			ALUMINUM	N/A	N/A	N/A	- -	N/A	Nervous System	5E-03	6E-05	N/A	6E-03
			ANTIMONY	N/A	N/A	N/A	- -	N/A	Mortality, Blood	1E-01	N/A	N/A	1E-01
			ARSENIC	1E-06	1E-09	2E-07	- -	1E-06	Skin, Vascular	3E-02	5E-05	3E-03	3E-02
			CHROMIUM, TOTAL	2E-06	2E-08	N/A	- -	2E-06	None reported	2E-03	4E-06	N/A	2E-03
			COBALT	N/A	1E-09	N/A	- -	1E-09	Thyroid	2E-02	7E-05	N/A	2E-02
			IRON	N/A	N/A	N/A	- -	N/A	Gastrointestinal	3E-02	N/A	N/A	3E-02
			LEAD										
			MANGANESE	N/A	N/A	N/A	- -	N/A	Nervous System	1E-02	3E-04	N/A	1E-02
			THALLIUM	N/A	N/A	N/A	- -	N/A	Hair	3E-03	N/A	N/A	3E-03
			Chemical Total	8E-05	3E-08	3E-05	- -	1E-04		7E+00	5E-04	2E+00	9E+00
			Radionuclide Total										
		Exposure Point Total						1E-04					9E+00
	Exposure Medium Total							1E-04					9E+00
Medium Total								1E-04					9E+00

TABLE 9.1.RME

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe: Current
Receptor Population: Recreational User
Receptor Age: Young Child/Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk Young Child + Adult					Non-Carcinogenic Hazard Quotient Young Child				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Sediment	Sediment	MRP Site 1											
			BENZO[A]PYRENE	8E-07	- -	4E-07	- -	1E-06	N/A	N/A	- -	N/A	N/A
			BENZO[B]FLUORANTHENE	8E-08	- -	4E-08	- -	1E-07	N/A	N/A	- -	N/A	N/A
			DIBENZ[A,H]ANTHRACENE	2E-07	- -	1E-07	- -	3E-07	N/A	N/A	- -	N/A	N/A
			ANTIMONY	N/A	- -	N/A	- -	N/A	Mortality, Blood	3E-02	- -	N/A	3E-02
			ARSENIC	1E-06	- -	3E-07	- -	1E-06	Skin, Vascular	2E-02	- -	3E-03	2E-02
			CHROMIUM, TOTAL	2E-06	- -	N/A	- -	2E-06	None reported	2E-03	- -	N/A	2E-03
			COBALT	N/A	- -	N/A	- -	N/A	Thyroid	2E-02	- -	N/A	2E-02
			IRON	N/A	- -	N/A	- -	N/A	Gastrointestinal	3E-02	- -	N/A	3E-02
			LEAD										
			MANGANESE	N/A	- -	N/A	- -	N/A	Nervous System	2E-02	- -	N/A	2E-02
			Chemical Total	4E-06	- -	9E-07	- -	5E-06		1E-01	- -	3E-03	1E-01
			Radionuclide Total										
		Exposure Point Total						5E-06					1E-01
	Exposure Medium Total							5E-06					1E-01
Medium Total								5E-06					1E-01
Receptor Total								1E-04					1E+01

TABLE 9.1.RME

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe: Current
Receptor Population: Recreational User
Receptor Age: Young Child/Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk Young Child + Adult					Non-Carcinogenic Hazard Quotient Young Child				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total

- - = Not Evaluated
N/A = Not Applicable

Total Risk Across All Media: 1E-04

Total Hazard Across All Media: 1E+01

Total Blood HI =	2E-01
Total Vascular HI =	7E-02
Total Eye HI =	9E+00
Total Hair HI =	3E-03
Total Gastrointestinal HI =	6E-02
Total Immune HI =	9E+00
Total Mortality HI =	2E-01
Total Liver HI =	2E-02
Total Nervous System HI =	4E-02
Total Skin HI =	5E-02
Total Nails HI =	9E+00
Total Respiratory HI =	N/A
Total Developmental HI =	N/A
Total Thyroid HI =	5E-02

TABLE 9.1.CT

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY

CARR POINT - MRP SITE 1

Scenario Timeframe: Current
Receptor Population: Recreational User
Receptor Age: Young Child/Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk Young Child + Adult					Non-Carcinogenic Hazard Quotient Young Child				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	MRP Site 1											
			BENZO[A]ANTHRACENE	7E-07	2E-11	8E-08	- -	7E-07	N/A	N/A	N/A	N/A	N/A
			BENZO[A]PYRENE	8E-06	2E-10	1E-06	- -	9E-06	N/A	N/A	N/A	N/A	N/A
			BENZO[B]FLUORANTHENE	4E-07	1E-11	5E-08	- -	4E-07	N/A	N/A	N/A	N/A	N/A
			BENZO[K]FLUORANTHENE	7E-08	2E-11	9E-09	- -	8E-08	N/A	N/A	N/A	N/A	N/A
			CHRYSENE	8E-09	2E-12	1E-09	- -	1E-08	N/A	N/A	N/A	N/A	N/A
			DIBENZ[A,H]ANTHRACENE	6E-07	2E-11	8E-08	- -	7E-07	N/A	N/A	N/A	N/A	N/A
			INDENO[1,2,3-CD]PYRENE	4E-07	1E-11	6E-08	- -	5E-07	N/A	N/A	N/A	N/A	N/A
			NITROGLYCERIN	6E-10	N/A	6E-11	- -	7E-10	Vascular	3E-03	N/A	3E-04	4E-03
			4,4-DDT	3E-08	3E-12	9E-10	- -	3E-08	Liver	2E-03	N/A	5E-05	2E-03
			AROCLOR-1260	1E-06	3E-10	2E-07	- -	1E-06	Eye, Nails, Immune	6E-01	N/A	8E-02	7E-01
			ALUMINUM	N/A	N/A	N/A	- -	N/A	Nervous System	1E-03	3E-05	N/A	1E-03
			ANTIMONY	N/A	N/A	N/A	- -	N/A	Mortality, Blood	3E-02	N/A	N/A	3E-02
			ARSENIC	3E-07	5E-10	2E-08	- -	3E-07	Skin, Vascular	6E-03	2E-05	3E-04	7E-03
			CHROMIUM, TOTAL	4E-07	1E-08	N/A	- -	4E-07	None reported	6E-04	2E-06	N/A	6E-04
			COBALT	N/A	6E-10	N/A	- -	6E-10	Thyroid	6E-03	3E-05	N/A	6E-03
			IRON	N/A	N/A	N/A	- -	N/A	Gastrointestinal	7E-03	N/A	N/A	7E-03
			LEAD										
			MANGANESE	N/A	N/A	N/A	- -	N/A	Nervous System	3E-03	2E-04	N/A	3E-03
			THALLIUM	N/A	N/A	N/A	- -	N/A	Hair	9E-04	N/A	N/A	9E-04
			Chemical Total	1E-05	1E-08	1E-06	- -	1E-05		6E-01	2E-04	8E-02	7E-01
			Radionuclide Total										
		Exposure Point Total						1E-05					7E-01
	Exposure Medium Total							1E-05					7E-01
Medium Total								1E-05					7E-01

TABLE 9.1.CT

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY

CARR POINT - MRP SITE 1

Scenario Timeframe: Current
Receptor Population: Recreational User
Receptor Age: Young Child/Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk Young Child + Adult					Non-Carcinogenic Hazard Quotient Young Child				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Sediment	Sediment	MRP Site 1											
			BENZO[A]PYRENE	2E-07	- -	2E-07	- -	4E-07	N/A	N/A	- -	N/A	N/A
			BENZO[B]FLUORANTHENE	2E-08	- -	2E-08	- -	4E-08	N/A	N/A	- -	N/A	N/A
			DIBENZ[A,H]ANTHRACENE	6E-08	- -	5E-08	- -	1E-07	N/A	N/A	- -	N/A	N/A
			ANTIMONY	N/A	- -	N/A	- -	N/A	Mortality, Blood	8E-03	- -	N/A	8E-03
			ARSENIC	3E-07	- -	2E-07	- -	4E-07	Skin, Vascular	5E-03	- -	1E-03	6E-03
			CHROMIUM, TOTAL	4E-07	- -	N/A	- -	4E-07	None reported	6E-04	- -	N/A	6E-04
			COBALT	N/A	- -	N/A	- -	N/A	Thyroid	6E-03	- -	N/A	6E-03
			IRON	N/A	- -	N/A	- -	N/A	Gastrointestinal	7E-03	- -	N/A	7E-03
			LEAD										
			MANGANESE	N/A	- -	N/A	- -	N/A	Nervous System	6E-03	- -	N/A	6E-03
			Chemical Total	1E-06	- -	4E-07	- -	1E-06		3E-02	- -	1E-03	3E-02
			Radionuclide Total										
		Exposure Point Total						1E-06					3E-02
	Exposure Medium Total							1E-06					3E-02
Medium Total								1E-06					3E-02
Receptor Total								2E-05					7E-01

TABLE 9.1.CT

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY

CARR POINT - MRP SITE 1

Scenario Timeframe: Current
Receptor Population: Recreational User
Receptor Age: Young Child/Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk Young Child + Adult					Non-Carcinogenic Hazard Quotient Young Child				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total

- - = Not Evaluated
N/A = Not Applicable

Total Risk Across All Media: 2E-05

Total Hazard Across All Media: 7E-01

Total Blood HI =	4E-02
Total Vascular HI =	2E-02
Total Eye HI =	7E-01
Total Hair HI =	9E-04
Total Gastrointestinal HI =	1E-02
Total Immune HI =	7E-01
Total Mortality HI =	4E-02
Total Liver HI =	2E-03
Total Nervous System HI =	1E-02
Total Skin HI =	1E-02
Total Nails HI =	7E-01
Total Respiratory HI =	N/A
Total Developmental HI =	N/A
Total Thyroid HI =	1E-02

TABLE 9.2.RME

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe: Current
Receptor Population: Onsite Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	MRP Site 1											
			BENZO[A]ANTHRACENE	8E-08	2E-12	2E-07	- -	2E-07	N/A	N/A	N/A	N/A	N/A
			BENZO[A]PYRENE	9E-07	3E-11	2E-06	- -	3E-06	N/A	N/A	N/A	N/A	N/A
			BENZO[B]FLUORANTHENE	5E-08	1E-12	1E-07	- -	1E-07	N/A	N/A	N/A	N/A	N/A
			BENZO[K]FLUORANTHENE	8E-09	2E-12	2E-08	- -	3E-08	N/A	N/A	N/A	N/A	N/A
			DIBENZ[A,H]ANTHRACENE	7E-08	2E-12	2E-07	- -	2E-07	N/A	N/A	N/A	N/A	N/A
			INDENO[1,2,3-CD]PYRENE	5E-08	2E-12	1E-07	- -	2E-07	N/A	N/A	N/A	N/A	N/A
			4,4-DDT	5E-08	3E-12	2E-08	- -	7E-08	Liver	8E-04	N/A	4E-04	1E-03
			AROCLOR-1260	4E-06	2E-10	9E-06	- -	1E-05	Eye, Nails, Immune	3E-01	N/A	6E-01	9E-01
			ANTIMONY	N/A	N/A	N/A	- -	N/A	Mortality, Blood	5E-03	N/A	N/A	5E-03
			ARSENIC	2E-07	2E-10	1E-07	- -	3E-07	Skin, Vascular	1E-03	7E-06	9E-04	2E-03
			CHROMIUM, TOTAL	5E-08	2E-09	N/A	- -	5E-08	None reported	9E-05	6E-07	N/A	1E-04
			IRON	N/A	N/A	N/A	- -	N/A	Gastrointestinal	1E-03	N/A	N/A	1E-03
			LEAD										
			Chemical Total	5E-06	2E-09	1E-05	- -	2E-05		3E-01	7E-06	6E-01	9E-01
			Radionuclide Total										
		Exposure Point Total						2E-05					9E-01
	Exposure Medium Total							2E-05					9E-01
Medium Total								2E-05					9E-01
Receptor Total								2E-05					9E-01

TABLE 9.2.RME

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe: Current
Receptor Population: Onsite Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total

- - = Not Evaluated
N/A = Not Applicable

Total Risk Across All Media: 2E-05

Total Hazard Across All Media: 9E-01

Total Blood HI =	5E-03
Total Vascular HI =	2E-03
Total Eye HI =	9E-01
Total Hair HI =	N/A
Total Gastrointestinal HI =	1E-03
Total Immune HI =	9E-01
Total Mortality HI =	5E-03
Total Liver HI =	1E-03
Total Nervous System HI =	N/A
Total Skin HI =	2E-03
Total Nails HI =	9E-01
Total Respiratory HI =	N/A
Total Developmental HI =	N/A
Total Thyroid HI =	N/A

TABLE 9.2.CT

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY

CARR POINT - MRP SITE 1

Scenario Timeframe: Current
Receptor Population: Onsite Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	MRP Site 1											
			BENZO[A]ANTHRACENE	2E-09	1E-13	7E-10	- -	2E-09	N/A	N/A	N/A	N/A	N/A
			BENZO[A]PYRENE	2E-08	1E-12	8E-09	- -	3E-08	N/A	N/A	N/A	N/A	N/A
			BENZO[B]FLUORANTHENE	1E-09	6E-14	4E-10	- -	1E-09	N/A	N/A	N/A	N/A	N/A
			BENZO[K]FLUORANTHENE	2E-10	1E-13	7E-11	- -	3E-10	N/A	N/A	N/A	N/A	N/A
			DIBENZ[A,H]ANTHRACENE	2E-09	1E-13	6E-10	- -	2E-09	N/A	N/A	N/A	N/A	N/A
			INDENO[1,2,3-CD]PYRENE	1E-09	7E-14	4E-10	- -	2E-09	N/A	N/A	N/A	N/A	N/A
			4,4-DDT	4E-10	4E-14	3E-11	- -	4E-10	Liver	2E-05	N/A	2E-06	2E-05
			AROCLOR-1260	2E-08	3E-12	6E-09	- -	2E-08	Eye, Nails, Immune	8E-03	N/A	3E-03	1E-02
			ANTIMONY	N/A	N/A	N/A	- -	N/A	Mortality, Blood	4E-04	N/A	N/A	4E-04
			ARSENIC	4E-09	7E-12	5E-10	- -	4E-09	Skin, Vascular	9E-05	1E-06	1E-05	1E-04
			CHROMIUM, TOTAL	1E-09	8E-11	N/A	- -	1E-09	None reported	8E-06	9E-08	N/A	8E-06
			IRON	N/A	N/A	N/A	- -	N/A	Gastrointestinal	9E-05	N/A	N/A	9E-05
			LEAD										
			Chemical Total	5E-08	9E-11	2E-08	- -	7E-08		8E-03	1E-06	3E-03	1E-02
			Radionuclide Total										
		Exposure Point Total						7E-08					1E-02
	Exposure Medium Total							7E-08					1E-02
Medium Total								7E-08					1E-02
Receptor Total								7E-08					1E-02

TABLE 9.2.CT

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY

CARR POINT - MRP SITE 1

Scenario Timeframe: Current
Receptor Population: Onsite Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total

- - = Not Evaluated
N/A = Not Applicable

Total Risk Across All Media: 7E-08

Total Hazard Across All Media: 1E-02

Total Blood HI =	4E-04
Total Vascular HI =	1E-04
Total Eye HI =	1E-02
Total Hair HI =	N/A
Total Gastrointestinal HI =	9E-05
Total Immune HI =	1E-02
Total Mortality HI =	4E-04
Total Liver HI =	2E-05
Total Nervous System HI =	N/A
Total Skin HI =	1E-04
Total Nails HI =	1E-02
Total Respiratory HI =	N/A
Total Developmental HI =	N/A
Total Thyroid HI =	N/A

TABLE 9.3.RME

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe: Current
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	MRP Site 1											
			BENZO[A]ANTHRACENE	1E-06	1E-11	6E-07	- -	2E-06	N/A	N/A	N/A	N/A	N/A
			BENZO[A]PYRENE	2E-05	1E-10	8E-06	- -	2E-05	N/A	N/A	N/A	N/A	N/A
			BENZO[B]FLUORANTHENE	8E-07	6E-12	4E-07	- -	1E-06	N/A	N/A	N/A	N/A	N/A
			BENZO[K]FLUORANTHENE	1E-07	1E-11	7E-08	- -	2E-07	N/A	N/A	N/A	N/A	N/A
			CHRYSENE	2E-08	1E-12	8E-09	- -	3E-08	N/A	N/A	N/A	N/A	N/A
			DIBENZ[A,H]ANTHRACENE	1E-06	1E-11	6E-07	- -	2E-06	N/A	N/A	N/A	N/A	N/A
			INDENO[1,2,3-CD]PYRENE	9E-07	7E-12	4E-07	- -	1E-06	N/A	N/A	N/A	N/A	N/A
			NITROGLYCERIN	2E-09	N/A	7E-10	- -	3E-09	Vascular	9E-03	N/A	3E-03	1E-02
			4,4-DDT	3E-07	4E-12	3E-08	- -	3E-07	Liver	1E-02	N/A	1E-03	1E-02
			AROCLOR-1260	2E-05	3E-10	1E-05	- -	3E-05	Eye, Nails, Immune	4E+00	N/A	2E+00	7E+00
			ALUMINUM	N/A	N/A	N/A	- -	N/A	Nervous System	3E-03	4E-05	N/A	4E-03
			ANTIMONY	N/A	N/A	N/A	- -	N/A	Mortality, Blood	7E-02	N/A	N/A	7E-02
			ARSENIC	9E-07	2E-10	2E-07	- -	1E-06	Skin, Vascular	2E-02	3E-05	3E-03	2E-02
			CHROMIUM, TOTAL	9E-07	8E-09	N/A	- -	9E-07	None reported	1E-03	2E-06	N/A	1E-03
			COBALT	N/A	3E-10	N/A	- -	3E-10	Thyroid	2E-02	4E-05	N/A	2E-02
			IRON	N/A	N/A	N/A	- -	N/A	Gastrointestinal	2E-02	N/A	N/A	2E-02
			LEAD										
			MANGANESE	N/A	N/A	N/A	- -	N/A	Nervous System	7E-03	2E-04	N/A	7E-03
			THALLIUM	N/A	N/A	N/A	- -	N/A	Hair	2E-03	N/A	N/A	2E-03
			Chemical Total	5E-05	9E-09	2E-05	- -	7E-05		5E+00	3E-04	2E+00	7E+00
			Radionuclide Total										
		Exposure Point Total						7E-05					7E+00
	Exposure Medium Total							7E-05					7E+00
Medium Total								7E-05					7E+00

TABLE 9.3.RME

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe: Current
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Sediment	Sediment	MRP Site 1											
			BENZO[A]PYRENE	4E-07	- -	5E-07	- -	9E-07	N/A	N/A	- -	N/A	N/A
			BENZO[B]FLUORANTHENE	4E-08	- -	5E-08	- -	9E-08	N/A	N/A	- -	N/A	N/A
			DIBENZ[A,H]ANTHRACENE	1E-07	- -	1E-07	- -	2E-07	N/A	N/A	- -	N/A	N/A
			ANTIMONY	N/A	- -	N/A	- -	N/A	Mortality, Blood	2E-02	- -	N/A	2E-02
			ARSENIC	7E-07	- -	3E-07	- -	1E-06	Skin, Vascular	1E-02	- -	6E-03	2E-02
			CHROMIUM, TOTAL	9E-07	- -	N/A	- -	9E-07	None reported	2E-03	- -	N/A	2E-03
			COBALT	N/A	- -	N/A	- -	N/A	Thyroid	1E-02	- -	N/A	1E-02
			IRON	N/A	- -	N/A	- -	N/A	Gastrointestinal	2E-02	- -	N/A	2E-02
			LEAD										
			MANGANESE	N/A	- -	N/A	- -	N/A	Nervous System	1E-02	- -	N/A	1E-02
			Chemical Total	2E-06	- -	1E-06	- -	3E-06		8E-02	- -	6E-03	9E-02
			Radionuclide Total										
		Exposure Point Total						3E-06					9E-02
	Exposure Medium Total							3E-06					9E-02
Medium Total								3E-06					9E-02
Receptor Total								7E-05					7E+00

TABLE 9.3.RME

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe: Current
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total

- - = Not Evaluated
N/A = Not Applicable

Total Risk Across All Media: 7E-05

Total Hazard Across All Media: 7E+00

Total Blood HI =	1E-01
Total Vascular HI =	5E-02
Total Eye HI =	7E+00
Total Hair HI =	2E-03
Total Gastrointestinal HI =	4E-02
Total Immune HI =	7E+00
Total Mortality HI =	1E-01
Total Liver HI =	1E-02
Total Nervous System HI =	3E-02
Total Skin HI =	4E-02
Total Nails HI =	7E+00
Total Respiratory HI =	N/A
Total Developmental HI =	N/A
Total Thyroid HI =	3E-02

TABLE 9.3.CT

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY

CARR POINT - MRP SITE 1

Scenario Timeframe: Current
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	MRP Site 1											
			BENZO[A]ANTHRACENE	3E-07	3E-12	3E-07	- -	6E-07	N/A	N/A	N/A	N/A	N/A
			BENZO[A]PYRENE	4E-06	3E-11	4E-06	- -	8E-06	N/A	N/A	N/A	N/A	N/A
			BENZO[B]FLUORANTHENE	2E-07	2E-12	2E-07	- -	4E-07	N/A	N/A	N/A	N/A	N/A
			BENZO[K]FLUORANTHENE	4E-08	3E-12	3E-08	- -	7E-08	N/A	N/A	N/A	N/A	N/A
			CHRYSENE	4E-09	3E-13	4E-09	- -	8E-09	N/A	N/A	N/A	N/A	N/A
			DIBENZ[A,H]ANTHRACENE	3E-07	3E-12	3E-07	- -	6E-07	N/A	N/A	N/A	N/A	N/A
			INDENO[1,2,3-CD]PYRENE	2E-07	2E-12	2E-07	- -	4E-07	N/A	N/A	N/A	N/A	N/A
			NITROGLYCERIN	5E-10	N/A	3E-10	- -	8E-10	Vascular	2E-03	N/A	2E-03	4E-03
			4,4-DDT	2E-08	3E-13	5E-09	- -	3E-08	Liver	1E-03	N/A	2E-04	1E-03
			AROCLOR-1260	9E-07	3E-11	1E-06	- -	2E-06	Eye, Nails, Immune	4E-01	N/A	4E-01	7E-01
			ALUMINUM	N/A	N/A	N/A	- -	N/A	Nervous System	9E-04	9E-06	N/A	9E-04
			ANTIMONY	N/A	N/A	N/A	- -	N/A	Mortality, Blood	1E-02	N/A	N/A	1E-02
			ARSENIC	4E-07	6E-11	9E-08	- -	5E-07	Skin, Vascular	7E-03	7E-06	1E-03	8E-03
			CHROMIUM, TOTAL	2E-07	2E-09	N/A	- -	2E-07	None reported	4E-04	6E-07	N/A	4E-04
			COBALT	N/A	7E-11	N/A	- -	7E-11	Thyroid	4E-03	1E-05	N/A	4E-03
			IRON	N/A	N/A	N/A	- -	N/A	Gastrointestinal	4E-03	N/A	N/A	4E-03
			LEAD										
			MANGANESE	N/A	N/A	N/A	- -	N/A	Nervous System	2E-03	5E-05	N/A	2E-03
			THALLIUM	N/A	N/A	N/A	- -	N/A	Hair	5E-04	N/A	N/A	5E-04
			Chemical Total	7E-06	2E-09	6E-06	- -	1E-05		4E-01	7E-05	4E-01	8E-01
			Radionuclide Total										
		Exposure Point Total						1E-05					8E-01
	Exposure Medium Total							1E-05					8E-01
Medium Total								1E-05					8E-01

TABLE 9.3.CT

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY

CARR POINT - MRP SITE 1

Scenario Timeframe: Current
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Sediment	Sediment	MRP Site 1											
			BENZO[A]PYRENE	1E-07	- -	3E-07	- -	4E-07	N/A	N/A	- -	N/A	N/A
			BENZO[B]FLUORANTHENE	1E-08	- -	3E-08	- -	4E-08	N/A	N/A	- -	N/A	N/A
			DIBENZ[A,H]ANTHRACENE	3E-08	- -	7E-08	- -	1E-07	N/A	N/A	- -	N/A	N/A
			ANTIMONY	N/A	- -	N/A	- -	N/A	Mortality, Blood	5E-03	- -	N/A	5E-03
			ARSENIC	2E-07	- -	2E-07	- -	4E-07	Skin, Vascular	3E-03	- -	3E-03	6E-03
			CHROMIUM, TOTAL	2E-07	- -	N/A	- -	2E-07	None reported	4E-04	- -	N/A	4E-04
			COBALT	N/A	- -	N/A	- -	N/A	Thyroid	4E-03	- -	N/A	4E-03
			IRON	N/A	- -	N/A	- -	N/A	Gastrointestinal	4E-03	- -	N/A	4E-03
			LEAD										
			MANGANESE	N/A	- -	N/A	- -	N/A	Nervous System	4E-03	- -	N/A	4E-03
			Chemical Total	6E-07	- -	5E-07	- -	1E-06		2E-02	- -	3E-03	2E-02
			Radionuclide Total										
		Exposure Point Total						1E-06					2E-02
	Exposure Medium Total							1E-06					2E-02
Medium Total								1E-06					2E-02
Receptor Total								1E-05					8E-01

TABLE 9.3.CT

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY

CARR POINT - MRP SITE 1

Scenario Timeframe: Current
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total

- - = Not Evaluated
N/A = Not Applicable

Total Risk Across All Media: 1E-05

Total Hazard Across All Media: 8E-01

Total Blood HI =	2E-02
Total Vascular HI =	2E-02
Total Eye HI =	7E-01
Total Hair HI =	5E-04
Total Gastrointestinal HI =	9E-03
Total Immune HI =	7E-01
Total Mortality HI =	2E-02
Total Liver HI =	1E-03
Total Nervous System HI =	6E-03
Total Skin HI =	1E-02
Total Nails HI =	7E-01
Total Respiratory HI =	N/A
Total Developmental HI =	N/A
Total Thyroid HI =	7E-03

TABLE 9.4.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
CARR POINT - MRP SITE 1

Scenario Timeframe: Current/Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface/ Subsurface Soil	MRP Site 1											
			BENZO[A]ANTHRACENE	1E-07	1E-12	6E-08	- -	2E-07	N/A	N/A	N/A	N/A	N/A
			BENZO[A]PYRENE	2E-06	1E-11	7E-07	- -	2E-06	N/A	N/A	N/A	N/A	N/A
			BENZO[B]FLUORANTHENE	1E-07	1E-12	6E-08	- -	2E-07	N/A	N/A	N/A	N/A	N/A
			BENZO[K]FLUORANTHENE	1E-08	1E-12	6E-09	- -	2E-08	N/A	N/A	N/A	N/A	N/A
			DIBENZ[A,H]ANTHRACENE	1E-07	1E-12	5E-08	- -	2E-07	N/A	N/A	N/A	N/A	N/A
			INDENO[1,2,3-CD]PYRENE	9E-08	8E-13	4E-08	- -	1E-07	N/A	N/A	N/A	N/A	N/A
			4,4-DDT	3E-07	4E-12	2E-08	- -	3E-07	Liver	1E-01	N/A	1E-02	1E-01
			AROCLOR-1260	2E-05	4E-10	1E-05	- -	3E-05	Eye, Nails, Immune	1E+01	N/A	6E+00	2E+01
			ANTIMONY	N/A	N/A	N/A	- -	N/A	Mortality, Blood	3E-01	N/A	N/A	3E-01
			ARSENIC	6E-07	2E-10	9E-08	- -	7E-07	Skin, Vascular	9E-02	2E-04	1E-02	1E-01
			CHROMIUM, TOTAL	3E-07	3E-09	N/A	- -	3E-07	None reported	4E-03	7E-06	N/A	4E-03
			IRON	N/A	N/A	N/A	- -	N/A	Gastrointestinal	6E-05	N/A	N/A	6E-05
			LEAD										
			MANGANESE	N/A	N/A	N/A	- -	N/A	Nervous System	2E-01	5E-03	N/A	2E-01
			Chemical Total	3E-05	3E-09	1E-05	- -	4E-05		1E+01	5E-03	6E+00	2E+01
			Radionuclide Total										
		Exposure Point Total						4E-05					2E+01
	Exposure Medium Total							4E-05					2E+01
Medium Total								4E-05					2E+01
Groundwater	Shallow Groundwater	MRP Site 1											
			COBALT	N/A	- -	N/A	- -	N/A	Thyroid	1E-04	- -	N/A	1E-04
			IRON	N/A	- -	N/A	- -	N/A	Gastrointestinal	5E-04	- -	N/A	5E-04
			MANGANESE	N/A	- -	N/A	- -	N/A	Nervous System	2E-03	- -	N/A	2E-03
			Chemical Total	- -	- -	- -	- -	N/A		3E-03	- -	- -	3E-03
			Radionuclide Total										
		Exposure Point Total						N/A					3E-03
	Exposure Medium Total							N/A					3E-03
Medium Total								N/A					3E-03
Receptor Total								4E-05					2E+01

TABLE 9.4.RME

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe: Current/Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total

- - = Not Evaluated
N/A = Not Applicable

Total Risk Across All Media: 4E-05

Total Hazard Across All Media: 2E+01

Total Blood HI =	3E-01
Total Vascular HI =	1E-01
Total Eye HI =	2E+01
Total Hair HI =	N/A
Total Gastrointestinal HI =	6E-04
Total Immune HI =	2E+01
Total Mortality HI =	3E-01
Total Liver HI =	1E-01
Total Nervous System HI =	2E-01
Total Skin HI =	1E-01
Total Nails HI =	2E+01
Total Respiratory HI =	N/A
Total Developmental HI =	N/A
Total Thyroid HI =	1E-04

TABLE 9.4.CT

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY

CARR POINT - MRP SITE 1

Scenario Timeframe: Current/Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface/ Subsurface Soil	MRP Site 1											
			BENZO[A]ANTHRACENE	3E-08	3E-13	6E-09	- -	4E-08	N/A	N/A	N/A	N/A	N/A
			BENZO[A]PYRENE	4E-07	4E-12	7E-08	- -	5E-07	N/A	N/A	N/A	N/A	N/A
			BENZO[B]FLUORANTHENE	4E-08	3E-13	6E-09	- -	5E-08	N/A	N/A	N/A	N/A	N/A
			BENZO[K]FLUORANTHENE	4E-09	3E-13	6E-10	- -	4E-09	N/A	N/A	N/A	N/A	N/A
			DIBENZ[A,H]ANTHRACENE	3E-08	3E-13	5E-09	- -	4E-08	N/A	N/A	N/A	N/A	N/A
			INDENO[1,2,3-CD]PYRENE	2E-08	2E-13	4E-09	- -	3E-08	N/A	N/A	N/A	N/A	N/A
			4,4-DDT	1E-08	2E-13	6E-10	- -	2E-08	Liver	1E-02	N/A	5E-04	1E-02
			AROCLOR-1260	6E-07	2E-11	1E-07	- -	7E-07	Eye, Nails, Immune	1E+00	N/A	2E-01	2E+00
			ANTIMONY	N/A	N/A	N/A	- -	N/A	Mortality, Blood	2E-01	N/A	N/A	2E-01
			ARSENIC	2E-07	4E-11	1E-08	- -	2E-07	Skin, Vascular	5E-02	1E-04	3E-03	5E-02
			CHROMIUM, TOTAL	7E-08	7E-10	N/A	- -	7E-08	None reported	2E-03	4E-06	N/A	2E-03
			IRON	N/A	N/A	N/A	- -	N/A	Gastrointestinal	3E-05	N/A	N/A	3E-05
			LEAD										
			MANGANESE	N/A	N/A	N/A	- -	N/A	Nervous System	9E-02	3E-03	N/A	9E-02
			Chemical Total	1E-06	7E-10	2E-07	- -	2E-06		2E+00	3E-03	3E-01	2E+00
			Radionuclide Total										
		Exposure Point Total						2E-06					2E+00
	Exposure Medium Total							2E-06					2E+00
Medium Total								2E-06					2E+00
Groundwater	Shallow Groundwater	MRP Site 1											
			COBALT	N/A	- -	N/A	- -	N/A	Thyroid	0E+00	- -	N/A	N/A
			IRON	N/A	- -	N/A	- -	N/A	Gastrointestinal	0E+00	- -	N/A	N/A
			MANGANESE	N/A	- -	N/A	- -	N/A	Nervous System	0E+00	- -	N/A	N/A
			Chemical Total	- -	- -	- -	- -	N/A		- -	- -	- -	N/A
			Radionuclide Total										
		Exposure Point Total						N/A					N/A
	Exposure Medium Total							N/A					N/A
Medium Total								N/A					N/A
Receptor Total								2E-06					2E+00

TABLE 9.4.CT

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY

CARR POINT - MRP SITE 1

Scenario Timeframe: Current/Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total

- - = Not Evaluated
N/A = Not Applicable

Total Risk Across All Media: 2E-06

Total Hazard Across All Media: 2E+00

Total Blood HI =	2E-01
Total Vascular HI =	5E-02
Total Eye HI =	2E+00
Total Hair HI =	N/A
Total Gastrointestinal HI =	3E-05
Total Immune HI =	2E+00
Total Mortality HI =	2E-01
Total Liver HI =	1E-02
Total Nervous System HI =	9E-02
Total Skin HI =	5E-02
Total Nails HI =	2E+00
Total Respiratory HI =	N/A
Total Developmental HI =	N/A
Total Thyroid HI =	N/A

TABLE 9.5.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface/ Subsurface Soil	MRP Site 1											
			BENZO[A]ANTHRACENE	4E-07	3E-12	2E-07	- -	6E-07	N/A	N/A	N/A	N/A	N/A
			BENZO[A]PYRENE	5E-06	4E-11	2E-06	- -	7E-06	N/A	N/A	N/A	N/A	N/A
			BENZO[B]FLUORANTHENE	5E-07	4E-12	2E-07	- -	7E-07	N/A	N/A	N/A	N/A	N/A
			BENZO[K]FLUORANTHENE	4E-08	4E-12	2E-08	- -	6E-08	N/A	N/A	N/A	N/A	N/A
			CHRYSENE	5E-09	4E-13	3E-09	- -	8E-09	N/A	N/A	N/A	N/A	N/A
			DIBENZ[A,H]ANTHRACENE	4E-07	3E-12	2E-07	- -	6E-07	N/A	N/A	N/A	N/A	N/A
			INDENO[1,2,3-CD]PYRENE	3E-07	2E-12	1E-07	- -	4E-07	N/A	N/A	N/A	N/A	N/A
			NITROGLYCERIN	4E-10	N/A	2E-10	- -	6E-10	Vascular	2E-03	N/A	7E-04	3E-03
			4,4-DDT	3E-07	4E-12	3E-08	- -	3E-07	Liver	1E-02	N/A	1E-03	1E-02
			AROCLOR-1260	2E-05	3E-10	1E-05	- -	3E-05	Eye, Nails, Immune	4E+00	N/A	2E+00	7E+00
			ALUMINUM	N/A	N/A	N/A	- -	N/A	Nervous System	3E-03	3E-05	N/A	3E-03
			ANTIMONY	N/A	N/A	N/A	- -	N/A	Mortality, Blood	3E-02	N/A	N/A	3E-02
			ARSENIC	6E-07	2E-10	1E-07	- -	7E-07	Skin, Vascular	1E-02	2E-05	2E-03	1E-02
			CHROMIUM, TOTAL	8E-07	7E-09	N/A	- -	8E-07	None reported	1E-03	2E-06	N/A	1E-03
			COBALT	N/A	3E-10	N/A	- -	3E-10	Thyroid	2E-02	4E-05	N/A	2E-02
			IRON	N/A	N/A	N/A	- -	N/A	Gastrointestinal	2E-02	N/A	N/A	2E-02
			LEAD										
			MANGANESE	N/A	N/A	N/A	- -	N/A	Nervous System	1E-02	3E-04	N/A	1E-02
			THALLIUM	N/A	N/A	N/A	- -	N/A	Hair	3E-03	N/A	N/A	3E-03
			Chemical Total	3E-05	8E-09	1E-05	- -	5E-05		4E+00	4E-04	2E+00	7E+00
			Radionuclide Total										
		Exposure Point Total						5E-05					7E+00
	Exposure Medium Total							5E-05					7E+00
Medium Total								5E-05					7E+00

TABLE 9.5.RME

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Sediment	Sediment	MRP Site 1											
			BENZO[A]PYRENE	4E-07	- -	5E-07	- -	9E-07	N/A	N/A	- -	N/A	N/A
			BENZO[B]FLUORANTHENE	4E-08	- -	5E-08	- -	9E-08	N/A	N/A	- -	N/A	N/A
			DIBENZ[A,H]ANTHRACENE	1E-07	- -	1E-07	- -	2E-07	N/A	N/A	- -	N/A	N/A
			ANTIMONY	N/A	- -	N/A	- -	N/A	Mortality, Blood	2E-02	- -	N/A	2E-02
			ARSENIC	7E-07	- -	3E-07	- -	1E-06	Skin, Vascular	1E-02	- -	6E-03	2E-02
			CHROMIUM, TOTAL	9E-07	- -	N/A	- -	9E-07	None reported	2E-03	- -	N/A	2E-03
			COBALT	N/A	- -	N/A	- -	N/A	Thyroid	1E-02	- -	N/A	1E-02
			IRON	N/A	- -	N/A	- -	N/A	Gastrointestinal	2E-02	- -	N/A	2E-02
			LEAD										
			MANGANESE	N/A	- -	N/A	- -	N/A	Nervous System	1E-02	- -	N/A	1E-02
			Chemical Total	2E-06	- -	1E-06	- -	3E-06		8E-02	- -	6E-03	9E-02
			Radionuclide Total										
		Exposure Point Total						3E-06					9E-02
	Exposure Medium Total							3E-06					9E-02
Medium Total								3E-06					9E-02
Receptor Total								5E-05					7E+00

TABLE 9.5.RME

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total

- - = Not Evaluated
N/A = Not Applicable

Total Risk Across All Media: 5E-05

Total Hazard Across All Media: 7E+00

Total Blood HI =	5E-02
Total Vascular HI =	3E-02
Total Eye HI =	7E+00
Total Hair HI =	3E-03
Total Gastrointestinal HI =	3E-02
Total Immune HI =	7E+00
Total Mortality HI =	5E-02
Total Liver HI =	1E-02
Total Nervous System HI =	3E-02
Total Skin HI =	3E-02
Total Nails HI =	7E+00
Total Respiratory HI =	N/A
Total Developmental HI =	N/A
Total Thyroid HI =	3E-02

TABLE 9.5.CT

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface/ Subsurface Soil	MRP Site 1											
			BENZO[A]ANTHRACENE	1E-07	8E-13	1E-07	- -	2E-07	N/A	N/A	N/A	N/A	N/A
			BENZO[A]PYRENE	1E-06	1E-11	1E-06	- -	2E-06	N/A	N/A	N/A	N/A	N/A
			BENZO[B]FLUORANTHENE	1E-07	9E-13	1E-07	- -	2E-07	N/A	N/A	N/A	N/A	N/A
			BENZO[K]FLUORANTHENE	1E-08	9E-13	1E-08	- -	2E-08	N/A	N/A	N/A	N/A	N/A
			CHRYSENE	1E-09	1E-13	1E-09	- -	3E-09	N/A	N/A	N/A	N/A	N/A
			DIBENZ[A,H]ANTHRACENE	1E-07	9E-13	9E-08	- -	2E-07	N/A	N/A	N/A	N/A	N/A
			INDENO[1,2,3-CD]PYRENE	7E-08	6E-13	7E-08	- -	1E-07	N/A	N/A	N/A	N/A	N/A
			NITROGLYCERIN	1E-10	N/A	8E-11	- -	2E-10	Vascular	5E-04	N/A	4E-04	8E-04
			4,4-DDT	1E-08	2E-13	3E-09	- -	2E-08	Liver	7E-04	N/A	1E-04	8E-04
			AROCLOR-1260	6E-07	2E-11	6E-07	- -	1E-06	Eye, Nails, Immune	2E-01	N/A	2E-01	5E-01
			ALUMINUM	N/A	N/A	N/A	- -	N/A	Nervous System	8E-04	8E-06	N/A	8E-04
			ANTIMONY	N/A	N/A	N/A	- -	N/A	Mortality, Blood	8E-03	N/A	N/A	8E-03
			ARSENIC	2E-07	4E-11	6E-08	- -	2E-07	Skin, Vascular	3E-03	5E-06	1E-03	4E-03
			CHROMIUM, TOTAL	2E-07	2E-09	N/A	- -	2E-07	None reported	3E-04	6E-07	N/A	3E-04
			COBALT	N/A	7E-11	N/A	- -	7E-11	Thyroid	4E-03	1E-05	N/A	4E-03
			IRON	N/A	N/A	N/A	- -	N/A	Gastrointestinal	4E-03	N/A	N/A	4E-03
			LEAD										
			MANGANESE	N/A	N/A	N/A	- -	N/A	Nervous System	3E-03	8E-05	N/A	3E-03
			THALLIUM	N/A	N/A	N/A	- -	N/A	Hair	6E-04	N/A	N/A	6E-04
			Chemical Total	3E-06	2E-09	2E-06	- -	5E-06		3E-01	1E-04	2E-01	5E-01
			Radionuclide Total										
		Exposure Point Total						5E-06					5E-01
	Exposure Medium Total							5E-06					5E-01
Medium Total								5E-06					5E-01

TABLE 9.5.CT

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Sediment	Sediment	MRP Site 1											
			BENZO[A]PYRENE	1E-07	- -	3E-07	- -	4E-07	N/A	N/A	- -	N/A	N/A
			BENZO[B]FLUORANTHENE	1E-08	- -	3E-08	- -	4E-08	N/A	N/A	- -	N/A	N/A
			DIBENZ[A,H]ANTHRACENE	3E-08	- -	7E-08	- -	1E-07	N/A	N/A	- -	N/A	N/A
			ANTIMONY	N/A	- -	N/A	- -	N/A	Mortality, Blood	5E-03	- -	N/A	5E-03
			ARSENIC	2E-07	- -	2E-07	- -	4E-07	Skin, Vascular	3E-03	- -	3E-03	6E-03
			CHROMIUM, TOTAL	2E-07	- -	N/A	- -	2E-07	None reported	4E-04	- -	N/A	4E-04
			COBALT	N/A	- -	N/A	- -	N/A	Thyroid	4E-03	- -	N/A	4E-03
			IRON	N/A	- -	N/A	- -	N/A	Gastrointestinal	4E-03	- -	N/A	4E-03
			LEAD										
			MANGANESE	N/A	- -	N/A	- -	N/A	Nervous System	4E-03	- -	N/A	4E-03
			Chemical Total	6E-07	- -	5E-07	- -	1E-06		2E-02	- -	3E-03	2E-02
			Radionuclide Total										
		Exposure Point Total						1E-06					2E-02
	Exposure Medium Total							1E-06					2E-02
Medium Total								1E-06					2E-02
Receptor Total								6E-06					5E-01

TABLE 9.5.CT

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total

- - = Not Evaluated
N/A = Not Applicable

Total Risk Across All Media: 6E-06

Total Hazard Across All Media: 5E-01

Total Blood HI =	1E-02
Total Vascular HI =	1E-02
Total Eye HI =	5E-01
Total Hair HI =	6E-04
Total Gastrointestinal HI =	8E-03
Total Immune HI =	5E-01
Total Mortality HI =	1E-02
Total Liver HI =	8E-04
Total Nervous System HI =	8E-03
Total Skin HI =	1E-02
Total Nails HI =	5E-01
Total Respiratory HI =	N/A
Total Developmental HI =	N/A
Total Thyroid HI =	7E-03

TABLE 9.6.RME

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Onsite Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface/ Subsurface Soil	MRP Site 1											
			BENZO[A]ANTHRACENE	1E-06	2E-11	6E-07	- -	2E-06	N/A	N/A	N/A	N/A	N/A
			BENZO[A]PYRENE	1E-05	2E-10	7E-06	- -	2E-05	N/A	N/A	N/A	N/A	N/A
			BENZO[B]FLUORANTHENE	1E-06	2E-11	6E-07	- -	2E-06	N/A	N/A	N/A	N/A	N/A
			BENZO[K]FLUORANTHENE	1E-07	2E-11	6E-08	- -	2E-07	N/A	N/A	N/A	N/A	N/A
			DIBENZ[A,H]ANTHRACENE	9E-07	2E-11	5E-07	- -	1E-06	N/A	N/A	N/A	N/A	N/A
			INDENO[1,2,3-CD]PYRENE	7E-07	1E-11	4E-07	- -	1E-06	N/A	N/A	N/A	N/A	N/A
			4,4-DDT	2E-06	6E-11	2E-07	- -	2E-06	Liver	3E-02	N/A	4E-03	4E-02
			AROCLOR-1260	2E-04	5E-09	1E-04	- -	3E-04	Eye, Nails, Immune	1E+01	N/A	7E+00	2E+01
			ANTIMONY	N/A	N/A	N/A	- -	N/A	Mortality, Blood	9E-02	N/A	N/A	9E-02
			ARSENIC	5E-06	2E-09	9E-07	- -	5E-06	Skin, Vascular	3E-02	9E-05	6E-03	3E-02
			CHROMIUM, TOTAL	2E-06	3E-08	N/A	- -	2E-06	None reported	4E-03	1E-05	N/A	4E-03
			IRON	N/A	N/A	N/A	- -	N/A	Gastrointestinal	2E-05	N/A	N/A	2E-05
			LEAD										
			MANGANESE	N/A	N/A	N/A	- -	N/A	Nervous System	5E-02	2E-03	N/A	5E-02
			Chemical Total	2E-04	4E-08	1E-04	- -	3E-04		1E+01	3E-03	7E+00	2E+01
			Radionuclide Total										
		Exposure Point Total						3E-04					2E+01
	Exposure Medium Total							3E-04					2E+01
Medium Total								3E-04					2E+01
Receptor Total								3E-04					2E+01

TABLE 9.6.RME

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Onsite Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total

- - = Not Evaluated
N/A = Not Applicable

Total Risk Across All Media: 3E-04

Total Hazard Across All Media: 2E+01

Total Blood HI =	9E-02
Total Vascular HI =	3E-02
Total Eye HI =	2E+01
Total Hair HI =	N/A
Total Gastrointestinal HI =	2E-05
Total Immune HI =	2E+01
Total Mortality HI =	9E-02
Total Liver HI =	4E-02
Total Nervous System HI =	5E-02
Total Skin HI =	3E-02
Total Nails HI =	2E+01
Total Respiratory HI =	N/A
Total Developmental HI =	N/A
Total Thyroid HI =	N/A

TABLE 9.6.CT

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Onsite Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface/ Subsurface Soil	MRP Site 1											
			BENZO[A]ANTHRACENE	1E-07	4E-12	2E-08	- -	1E-07	N/A	N/A	N/A	N/A	N/A
			BENZO[A]PYRENE	2E-06	4E-11	3E-07	- -	2E-06	N/A	N/A	N/A	N/A	N/A
			BENZO[B]FLUORANTHEN	1E-07	4E-12	3E-08	- -	2E-07	N/A	N/A	N/A	N/A	N/A
			BENZO[K]FLUORANTHEN	1E-08	4E-12	2E-09	- -	2E-08	N/A	N/A	N/A	N/A	N/A
			DIBENZ[A,H]ANTHRACEN	1E-07	4E-12	2E-08	- -	1E-07	N/A	N/A	N/A	N/A	N/A
			INDENO[1,2,3-CD]PYRENE	8E-08	2E-12	2E-08	- -	1E-07	N/A	N/A	N/A	N/A	N/A
			4,4-DDT	5E-08	3E-12	2E-09	- -	5E-08	Liver	3E-03	N/A	1E-04	3E-03
			AROCLOR-1260	2E-06	2E-10	4E-07	- -	3E-06	Eye, Nails, Immune	1E+00	N/A	2E-01	1E+00
			ANTIMONY	N/A	N/A	N/A	- -	N/A	Mortality, Blood	4E-02	N/A	N/A	4E-02
			ARSENIC	6E-07	5E-10	4E-08	- -	6E-07	Skin, Vascular	1E-02	8E-05	9E-04	1E-02
			CHROMIUM, TOTAL	2E-07	8E-09	N/A	- -	2E-07	None reported	2E-03	9E-06	N/A	2E-03
			IRON	N/A	N/A	N/A	- -	N/A	Gastrointestinal	8E-06	N/A	N/A	8E-06
			LEAD										
			MANGANESE	N/A	N/A	N/A	- -	N/A	Nervous System	2E-02	2E-03	N/A	3E-02
			Chemical Total	5E-06	9E-09	8E-07	- -	6E-06		1E+00	2E-03	2E-01	1E+00
			Radionuclide Total										
		Exposure Point Total						6E-06					1E+00
	Exposure Medium Total							6E-06					1E+00
Medium Total								6E-06					1E+00
Receptor Total								6E-06					1E+00

TABLE 9.6.CT

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Onsite Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total

- - = Not Evaluated
N/A = Not Applicable

Total Risk Across All Media: 6E-06

Total Hazard Across All Media: 1E+00

Total Blood HI =	4E-02
Total Vascular HI =	1E-02
Total Eye HI =	1E+00
Total Hair HI =	N/A
Total Gastrointestinal HI =	8E-06
Total Immune HI =	1E+00
Total Mortality HI =	4E-02
Total Liver HI =	3E-03
Total Nervous System HI =	3E-02
Total Skin HI =	1E-02
Total Nails HI =	1E+00
Total Respiratory HI =	N/A
Total Developmental HI =	N/A
Total Thyroid HI =	N/A

TABLE 9.7.RME

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Young Child/Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk Young Child + Adult					Non-Carcinogenic Hazard Quotient Young Child				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface/ Subsurface Soil	MRP Site 1											
			BENZO[A]ANTHRACENE	2E-05	5E-11	7E-06	- -	3E-05	N/A	N/A	N/A	N/A	N/A
			BENZO[A]PYRENE	2E-04	7E-10	8E-05	- -	3E-04	N/A	N/A	N/A	N/A	N/A
			BENZO[B]FLUORANTHENE	2E-05	6E-11	7E-06	- -	3E-05	N/A	N/A	N/A	N/A	N/A
			BENZO[K]FLUORANTHENE	2E-06	6E-11	7E-07	- -	3E-06	N/A	N/A	N/A	N/A	N/A
			CHRYSENE	3E-07	7E-12	9E-08	- -	4E-07	N/A	N/A	N/A	N/A	N/A
			DIBENZ[A,H]ANTHRACENE	2E-05	6E-11	6E-06	- -	3E-05	N/A	N/A	N/A	N/A	N/A
			INDENO[1,2,3-CD]PYRENE	1E-05	4E-11	4E-06	- -	2E-05	N/A	N/A	N/A	N/A	N/A
			NITROGLYCERIN	1E-08	N/A	4E-09	- -	2E-08	Vascular	8E-02	N/A	2E-02	1E-01
			4,4-DDT	9E-06	1E-10	8E-07	- -	1E-05	Liver	5E-01	N/A	3E-02	5E-01
			AROCLOR-1260	8E-04	8E-09	3E-04	- -	1E-03	Eye, Nails, Immune	2E+02	N/A	6E+01	2E+02
			ALUMINUM	N/A	N/A	N/A	- -	N/A	Nervous System	1E-01	3E-04	N/A	1E-01
			ANTIMONY	N/A	N/A	N/A	- -	N/A	Mortality, Blood	1E+00	N/A	N/A	1E+00
			ARSENIC	2E-05	4E-09	3E-06	- -	2E-05	Skin, Vascular	4E-01	2E-04	5E-02	5E-01
			CHROMIUM, TOTAL	4E-05	1E-07	N/A	- -	4E-05	None reported	5E-02	2E-05	N/A	5E-02
			COBALT	N/A	7E-09	N/A	- -	7E-09	Thyroid	6E-01	3E-04	N/A	6E-01
			IRON	N/A	N/A	N/A	- -	N/A	Gastrointestinal	6E-01	N/A	N/A	6E-01
			LEAD										
			MANGANESE	N/A	N/A	N/A	- -	N/A	Nervous System	5E-01	3E-03	N/A	5E-01
			THALLIUM	N/A	N/A	N/A	- -	N/A	Hair	1E-01	N/A	N/A	1E-01
			Chemical Total	1E-03	1E-07	4E-04	- -	2E-03		2E+02	4E-03	6E+01	2E+02
			Radionuclide Total										
		Exposure Point Total						2E-03					2E+02
	Exposure Medium Total							2E-03					2E+02
Medium Total								2E-03					2E+02

TABLE 9.7.RME

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Young Child/Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk Young Child + Adult					Non-Carcinogenic Hazard Quotient Young Child				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Sediment	Sediment	MRP Site 1											
			BENZO[A]PYRENE	3E-06	- -	1E-06	- -	5E-06	N/A	N/A	- -	N/A	N/A
			BENZO[B]FLUORANTHENE	3E-07	- -	1E-07	- -	5E-07	N/A	N/A	- -	N/A	N/A
			DIBENZ[A,H]ANTHRACENE	8E-07	- -	4E-07	- -	1E-06	N/A	N/A	- -	N/A	N/A
			ANTIMONY	N/A	- -	N/A	- -	N/A	Mortality, Blood	1E-01	- -	N/A	1E-01
			ARSENIC	4E-06	- -	1E-06	- -	5E-06	Skin, Vascular	7E-02	- -	1E-02	9E-02
			CHROMIUM, TOTAL	6E-06	- -	N/A	- -	6E-06	None reported	9E-03	- -	N/A	9E-03
			COBALT	N/A	- -	N/A	- -	N/A	Thyroid	9E-02	- -	N/A	9E-02
			IRON	N/A	- -	N/A	- -	N/A	Gastrointestinal	1E-01	- -	N/A	1E-01
			LEAD										
			MANGANESE	N/A	- -	N/A	- -	N/A	Nervous System	8E-02	- -	N/A	8E-02
			Chemical Total	1E-05	- -	3E-06	- -	2E-05		5E-01	- -	1E-02	5E-01
			Radionuclide Total										
		Exposure Point Total						2E-05					5E-01
	Exposure Medium Total							2E-05					5E-01
Medium Total								2E-05					5E-01

TABLE 9.7.RME

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Young Child/Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk Young Child + Adult					Non-Carcinogenic Hazard Quotient Young Child				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Shellfish Tissue	Shellfish Tissue	MRP Site 1											
			BENZO[A]ANTHRACENE	4E-07	- -	- -	- -	4E-07	N/A	N/A	- -	- -	N/A
			BENZO[A]PYRENE	1E-05	- -	- -	- -	1E-05	N/A	N/A	- -	- -	N/A
			BENZO[B]FLUORANTHENE	1E-06	- -	- -	- -	1E-06	N/A	N/A	- -	- -	N/A
			DIBENZ[A,H]ANTHRACENE	3E-06	- -	- -	- -	3E-06	N/A	N/A	- -	- -	N/A
			INDENO[1,2,3-CD]PYRENE	8E-07	- -	- -	- -	8E-07	N/A	N/A	- -	- -	N/A
			ARSENIC	1E-04	- -	- -	- -	1E-04	Skin, Vascular	7E-01	- -	- -	7E-01
			CHROMIUM, TOTAL	1E-05	- -	- -	- -	1E-05	None reported	9E-03	- -	- -	9E-03
			COBALT	N/A	- -	- -	- -	N/A	Thyroid	3E-02	- -	- -	3E-02
			IRON	N/A	- -	- -	- -	N/A	Gastrointestinal	9E-03	- -	- -	9E-03
			LEAD										
			MERCURY	N/A	- -	- -	- -	N/A	Nervous System	1E-02	- -	- -	1E-02
			Chemical Total	1E-04	- -	- -	- -	1E-04		8E-01	- -	- -	8E-01
			Radionuclide Total										
		Exposure Point Total						1E-04					8E-01
	Exposure Medium Total							1E-04					8E-01
Medium Total								1E-04					8E-01
Receptor Total								2E-03					2E+02

TABLE 9.7.RME

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Young Child/Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk Young Child + Adult					Non-Carcinogenic Hazard Quotient Young Child				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total

- - = Not Evaluated
N/A = Not Applicable

Total Risk Across All Media: 2E-03

Total Hazard Across All Media: 2E+02

Total Blood HI =	1E+00
Total Vascular HI =	1E+00
Total Eye HI =	2E+02
Total Hair HI =	1E-01
Total Gastrointestinal HI =	7E-01
Total Immune HI =	2E+02
Total Mortality HI =	1E+00
Total Liver HI =	5E-01
Total Nervous System HI =	7E-01
Total Skin HI =	1E+00
Total Nails HI =	2E+02
Total Respiratory HI =	N/A
Total Developmental HI =	N/A
Total Thyroid HI =	7E-01

TABLE 9.7.CT

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Young Child/Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk Young Child + Adult					Non-Carcinogenic Hazard Quotient Young Child				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface/ Subsurface Soil	MRP Site 1											
			BENZO[A]ANTHRACENE	7E-06	4E-11	9E-07	- -	8E-06	N/A	N/A	N/A	N/A	N/A
			BENZO[A]PYRENE	8E-05	4E-10	1E-05	- -	9E-05	N/A	N/A	N/A	N/A	N/A
			BENZO[B]FLUORANTHEN	8E-06	4E-11	1E-06	- -	9E-06	N/A	N/A	N/A	N/A	N/A
			BENZO[K]FLUORANTHEN	7E-07	4E-11	9E-08	- -	8E-07	N/A	N/A	N/A	N/A	N/A
			CHRYSENE	9E-08	5E-12	1E-08	- -	1E-07	N/A	N/A	N/A	N/A	N/A
			DIBENZ[A,H]ANTHRACEN	6E-06	4E-11	8E-07	- -	7E-06	N/A	N/A	N/A	N/A	N/A
			INDENO[1,2,3-CD]PYRENE	5E-06	2E-11	6E-07	- -	5E-06	N/A	N/A	N/A	N/A	N/A
			NITROGLYCERIN	5E-09	N/A	5E-10	- -	5E-09	Vascular	3E-02	N/A	2E-03	3E-02
			4,4-DDT	7E-07	1E-11	2E-08	- -	7E-07	Liver	3E-02	N/A	1E-03	4E-02
			AROCLOR-1260	3E-05	1E-09	4E-06	- -	3E-05	Eye, Nails, Immune	1E+01	N/A	2E+00	1E+01
			ALUMINUM	N/A	N/A	N/A	- -	N/A	Nervous System	4E-02	2E-04	N/A	4E-02
			ANTIMONY	N/A	N/A	N/A	- -	N/A	Mortality, Blood	4E-01	N/A	N/A	4E-01
			ARSENIC	7E-06	2E-09	4E-07	- -	7E-06	Skin, Vascular	1E-01	1E-04	7E-03	1E-01
			CHROMIUM, TOTAL	1E-05	8E-08	N/A	- -	1E-05	None reported	2E-02	1E-05	N/A	2E-02
			COBALT	N/A	4E-09	N/A	- -	4E-09	Thyroid	2E-01	2E-04	N/A	2E-01
			IRON	N/A	N/A	N/A	- -	N/A	Gastrointestinal	2E-01	N/A	N/A	2E-01
			LEAD										
			MANGANESE	N/A	N/A	N/A	- -	N/A	Nervous System	2E-01	2E-03	N/A	2E-01
			THALLIUM	N/A	N/A	N/A	- -	N/A	Hair	3E-02	N/A	N/A	3E-02
			Chemical Total	2E-04	9E-08	2E-05	- -	2E-04		1E+01	2E-03	2E+00	2E+01
			Radionuclide Total										
		Exposure Point Total						2E-04					2E+01
	Exposure Medium Total							2E-04					2E+01
Medium Total								2E-04					2E+01

TABLE 9.7.CT

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Young Child/Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk Young Child + Adult					Non-Carcinogenic Hazard Quotient Young Child				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Sediment	Sediment	MRP Site 1											
			BENZO[A]PYRENE	8E-07	- -	7E-07	- -	2E-06	N/A	N/A	- -	N/A	N/A
			BENZO[B]FLUORANTHEN	8E-08	- -	7E-08	- -	2E-07	N/A	N/A	- -	N/A	N/A
			DIBENZ[A,H]ANTHRACEN	2E-07	- -	2E-07	- -	4E-07	N/A	N/A	- -	N/A	N/A
			ANTIMONY	N/A	- -	N/A	- -	N/A	Mortality, Blood	3E-02	- -	N/A	3E-02
			ARSENIC	9E-07	- -	6E-07	- -	2E-06	Skin, Vascular	2E-02	- -	5E-03	2E-02
			CHROMIUM, TOTAL	2E-06	- -	N/A	- -	2E-06	None reported	2E-03	- -	N/A	2E-03
			COBALT	N/A	- -	N/A	- -	N/A	Thyroid	2E-02	- -	N/A	2E-02
			IRON	N/A	- -	N/A	- -	N/A	Gastrointestinal	3E-02	- -	N/A	3E-02
			LEAD										
			MANGANESE	N/A	- -	N/A	- -	N/A	Nervous System	2E-02	- -	N/A	2E-02
			Chemical Total	4E-06	- -	2E-06	- -	5E-06		1E-01	- -	5E-03	1E-01
			Radionuclide Total										
		Exposure Point Total						5E-06					1E-01
	Exposure Medium Total							5E-06					1E-01
Medium Total								5E-06					1E-01

TABLE 9.7.CT

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Young Child/Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk Young Child + Adult					Non-Carcinogenic Hazard Quotient Young Child				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Shellfish Tissue	Shellfish Tissue	MRP Site 1											
			BENZO[A]ANTHRACENE	2E-07	- -	- -	- -	2E-07	N/A	N/A	- -	- -	N/A
			BENZO[A]PYRENE	1E-06	- -	- -	- -	1E-06	N/A	N/A	- -	- -	N/A
			BENZO[B]FLUORANTHEN	2E-07	- -	- -	- -	2E-07	N/A	N/A	- -	- -	N/A
			DIBENZ[A,H]ANTHRACEN	7E-07	- -	- -	- -	7E-07	N/A	N/A	- -	- -	N/A
			INDENO[1,2,3-CD]PYRENE	1E-07	- -	- -	- -	1E-07	N/A	N/A	- -	- -	N/A
			ARSENIC	6E-05	- -	- -	- -	6E-05	Skin, Vascular	4E-01	- -	- -	4E-01
			CHROMIUM, TOTAL	5E-06	- -	- -	- -	5E-06	None reported	4E-03	- -	- -	4E-03
			COBALT	N/A	- -	- -	- -	N/A	Thyroid	2E-02	- -	- -	2E-02
			IRON	N/A	- -	- -	- -	N/A	Gastrointestinal	4E-03	- -	- -	4E-03
			LEAD										
			MERCURY	N/A	- -	- -	- -	N/A	Nervous System	6E-03	- -	- -	6E-03
			Chemical Total	6E-05	- -	- -	- -	6E-05		4E-01	- -	- -	4E-01
			Radionuclide Total										
		Exposure Point Total						6E-05					4E-01
	Exposure Medium Total							6E-05					4E-01
Medium Total								6E-05					4E-01
Receptor Total								2E-04					2E+01

TABLE 9.7.CT

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Young Child/Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk Young Child + Adult					Non-Carcinogenic Hazard Quotient Young Child				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total

- - = Not Evaluated
N/A = Not Applicable

Total Risk Across All Media: 2E-04

Total Hazard Across All Media: 2E+01

Total Blood HI =	5E-01
Total Vascular HI =	6E-01
Total Eye HI =	1E+01
Total Hair HI =	3E-02
Total Gastrointestinal HI =	2E-01
Total Immune HI =	1E+01
Total Mortality HI =	5E-01
Total Liver HI =	4E-02
Total Nervous System HI =	2E-01
Total Skin HI =	5E-01
Total Nails HI =	1E+01
Total Respiratory HI =	N/A
Total Developmental HI =	N/A
Total Thyroid HI =	2E-01

TABLE 9.8.RME

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Onsite Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	MRP Site 1 - MW-01											
			ANTIMONY	N/A	- -	N/A	- -	N/A	Mortality, Blood	N/A	- -	N/A	N/A
			COBALT	N/A	- -	N/A	- -	N/A	Thyroid	2E-01	- -	N/A	2E-01
			IRON	N/A	- -	N/A	- -	N/A	Gastrointestinal	1E-01	- -	N/A	1E-01
			MANGANESE	N/A	- -	N/A	- -	N/A	Nervous System	1E-01	- -	N/A	1E-01
			Chemical Total	- -	- -	- -	- -	N/A		4E-01	- -	- -	4E-01
			Radionuclide Total										
		Exposure Point Total						N/A					4E-01
	Exposure Medium Total							N/A					4E-01
Medium Total								N/A					4E-01
Receptor Total								N/A					4E-01

- - = Not Evaluated
N/A = Not Applicable

Total Risk Across All Media: N/A

Total Hazard Across All Media: 4E-01

Total Blood HI =	N/A
Total Vascular HI =	N/A
Total Eye HI =	N/A
Total Hair HI =	N/A
Total Gastrointestinal HI =	1E-01
Total Immune HI =	N/A
Total Mortality HI =	N/A
Total Liver HI =	N/A
Total Nervous System HI =	1E-01
Total Skin HI =	N/A
Total Nails HI =	N/A
Total Respiratory HI =	N/A
Total Developmental HI =	N/A
Total Thyroid HI =	2E-01

TABLE 9.8.CT

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Onsite Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	MRP Site 1 - MW-01											
			ANTIMONY	N/A	- -	N/A	- -	N/A	Mortality, Blood	N/A	- -	N/A	N/A
			COBALT	N/A	- -	N/A	- -	N/A	Thyroid	1E-01	- -	N/A	1E-01
			IRON	N/A	- -	N/A	- -	N/A	Gastrointestinal	7E-02	- -	N/A	7E-02
			MANGANESE	N/A	- -	N/A	- -	N/A	Nervous System	9E-02	- -	N/A	9E-02
			Chemical Total	- -	- -	- -	- -	N/A		3E-01	- -	- -	3E-01
			Radionuclide Total										
		Exposure Point Total						N/A					3E-01
	Exposure Medium Total							N/A					3E-01
Medium Total								N/A					3E-01
Receptor Total								N/A					3E-01

- - = Not Evaluated
N/A = Not Applicable

Total Risk Across All Media: N/A

Total Hazard Across All Media: 3E-01

Total Blood HI =	N/A
Total Vascular HI =	N/A
Total Eye HI =	N/A
Total Hair HI =	N/A
Total Gastrointestinal HI =	7E-02
Total Immune HI =	N/A
Total Mortality HI =	N/A
Total Liver HI =	N/A
Total Nervous System HI =	9E-02
Total Skin HI =	N/A
Total Nails HI =	N/A
Total Respiratory HI =	N/A
Total Developmental HI =	N/A
Total Thyroid HI =	1E-01

TABLE 9.9.RME

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Onsite Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	MRP Site 1 - MW-01D											
			ANTIMONY	N/A	- -	N/A	- -	N/A	Mortality, Blood	2E-02	- -	N/A	2E-02
			COBALT	N/A	- -	N/A	- -	N/A	Thyroid	3E-01	- -	N/A	3E-01
			IRON	N/A	- -	N/A	- -	N/A	Gastrointestinal	1E-01	- -	N/A	1E-01
			MANGANESE	N/A	- -	N/A	- -	N/A	Nervous System	3E-01	- -	N/A	3E-01
			Chemical Total	- -	- -	- -	- -	N/A		7E-01	- -	- -	7E-01
			Radionuclide Total										
		Exposure Point Total						N/A					7E-01
	Exposure Medium Total							N/A					7E-01
Medium Total								N/A					7E-01
Receptor Total								N/A					7E-01

- - = Not Evaluated
N/A = Not Applicable

Total Risk Across All Media: N/A

Total Hazard Across All Media: 7E-01

Total Blood HI =	2E-02
Total Vascular HI =	N/A
Total Eye HI =	N/A
Total Hair HI =	N/A
Total Gastrointestinal HI =	1E-01
Total Immune HI =	N/A
Total Mortality HI =	2E-02
Total Liver HI =	N/A
Total Nervous System HI =	3E-01
Total Skin HI =	N/A
Total Nails HI =	N/A
Total Respiratory HI =	N/A
Total Developmental HI =	N/A
Total Thyroid HI =	3E-01

TABLE 9.9.CT

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Onsite Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	MRP Site 1 - MW-01D											
			ANTIMONY	N/A	- -	N/A	- -	N/A	Mortality, Blood	1E-02	- -	N/A	1E-02
			COBALT	N/A	- -	N/A	- -	N/A	Thyroid	2E-01	- -	N/A	2E-01
			IRON	N/A	- -	N/A	- -	N/A	Gastrointestinal	7E-02	- -	N/A	7E-02
			MANGANESE	N/A	- -	N/A	- -	N/A	Nervous System	2E-01	- -	N/A	2E-01
			Chemical Total	- -	- -	- -	- -	N/A		5E-01	- -	- -	5E-01
			Radionuclide Total										
		Exposure Point Total						N/A					5E-01
	Exposure Medium Total							N/A					5E-01
Medium Total								N/A					5E-01
Receptor Total								N/A					5E-01

- - = Not Evaluated
N/A = Not Applicable

Total Risk Across All Media: N/A

Total Hazard Across All Media: 5E-01

Total Blood HI =	1E-02
Total Vascular HI =	N/A
Total Eye HI =	N/A
Total Hair HI =	N/A
Total Gastrointestinal HI =	7E-02
Total Immune HI =	N/A
Total Mortality HI =	1E-02
Total Liver HI =	N/A
Total Nervous System HI =	2E-01
Total Skin HI =	N/A
Total Nails HI =	N/A
Total Respiratory HI =	N/A
Total Developmental HI =	N/A
Total Thyroid HI =	2E-01

TABLE 9.10.RME

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Onsite Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	MRP Site 1 - MW-11											
			ANTIMONY	N/A	- -	N/A	- -	N/A	Mortality, Blood	N/A	- -	N/A	N/A
			COBALT	N/A	- -	N/A	- -	N/A	Thyroid	1E-02	- -	N/A	1E-02
			IRON	N/A	- -	N/A	- -	N/A	Gastrointestinal	N/A	- -	N/A	N/A
			MANGANESE	N/A	- -	N/A	- -	N/A	Nervous System	2E-02	- -	N/A	2E-02
			Chemical Total	- -	- -	- -	- -	N/A		3E-02	- -	- -	3E-02
			Radionuclide Total										
		Exposure Point Total						N/A					3E-02
	Exposure Medium Total							N/A					3E-02
Medium Total								N/A					3E-02
Receptor Total								N/A					3E-02

- - = Not Evaluated
N/A = Not Applicable

Total Risk Across All Media: N/A

Total Hazard Across All Media: 3E-02

Total Blood HI =	N/A
Total Vascular HI =	N/A
Total Eye HI =	N/A
Total Hair HI =	N/A
Total Gastrointestinal HI =	N/A
Total Immune HI =	N/A
Total Mortality HI =	N/A
Total Liver HI =	N/A
Total Nervous System HI =	2E-02
Total Skin HI =	N/A
Total Nails HI =	N/A
Total Respiratory HI =	N/A
Total Developmental HI =	N/A
Total Thyroid HI =	1E-02

TABLE 9.10.CT

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Onsite Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	MRP Site 1 - MW-11											
			ANTIMONY	N/A	- -	N/A	- -	N/A	Mortality, Blood	N/A	- -	N/A	N/A
			COBALT	N/A	- -	N/A	- -	N/A	Thyroid	6E-03	- -	N/A	6E-03
			IRON	N/A	- -	N/A	- -	N/A	Gastrointestinal	N/A	- -	N/A	N/A
			MANGANESE	N/A	- -	N/A	- -	N/A	Nervous System	1E-02	- -	N/A	1E-02
			Chemical Total	- -	- -	- -	- -	N/A		2E-02	- -	- -	2E-02
			Radionuclide Total										
		Exposure Point Total						N/A					2E-02
	Exposure Medium Total							N/A					2E-02
Medium Total								N/A					2E-02
Receptor Total								N/A					2E-02

- - = Not Evaluated
N/A = Not Applicable

Total Risk Across All Media: N/A

Total Hazard Across All Media: 2E-02

Total Blood HI =	N/A
Total Vascular HI =	N/A
Total Eye HI =	N/A
Total Hair HI =	N/A
Total Gastrointestinal HI =	N/A
Total Immune HI =	N/A
Total Mortality HI =	N/A
Total Liver HI =	N/A
Total Nervous System HI =	1E-02
Total Skin HI =	N/A
Total Nails HI =	N/A
Total Respiratory HI =	N/A
Total Developmental HI =	N/A
Total Thyroid HI =	6E-03

TABLE 9.11.RME

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Onsite Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	MRP Site 1 - MW-12											
			ANTIMONY	N/A	- -	N/A	- -	N/A	Mortality, Blood	N/A	- -	N/A	N/A
			COBALT	N/A	- -	N/A	- -	N/A	Thyroid	5E-02	- -	N/A	5E-02
			IRON	N/A	- -	N/A	- -	N/A	Gastrointestinal	4E-02	- -	N/A	4E-02
			MANGANESE	N/A	- -	N/A	- -	N/A	Nervous System	4E-01	- -	N/A	4E-01
			Chemical Total	- -	- -	- -	- -	N/A		5E-01	- -	- -	5E-01
			Radionuclide Total										
		Exposure Point Total						N/A					5E-01
	Exposure Medium Total							N/A					5E-01
Medium Total								N/A					5E-01
Receptor Total								N/A					5E-01

- - = Not Evaluated
N/A = Not Applicable

Total Risk Across All Media: N/A

Total Hazard Across All Media: 5E-01

Total Blood HI =	N/A
Total Vascular HI =	N/A
Total Eye HI =	N/A
Total Hair HI =	N/A
Total Gastrointestinal HI =	4E-02
Total Immune HI =	N/A
Total Mortality HI =	N/A
Total Liver HI =	N/A
Total Nervous System HI =	4E-01
Total Skin HI =	N/A
Total Nails HI =	N/A
Total Respiratory HI =	N/A
Total Developmental HI =	N/A
Total Thyroid HI =	5E-02

TABLE 9.11.CT

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Onsite Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	MRP Site 1 - MW-12											
			ANTIMONY	N/A	- -	N/A	- -	N/A	Mortality, Blood	N/A	- -	N/A	N/A
			COBALT	N/A	- -	N/A	- -	N/A	Thyroid	3E-02	- -	N/A	3E-02
			IRON	N/A	- -	N/A	- -	N/A	Gastrointestinal	2E-02	- -	N/A	2E-02
			MANGANESE	N/A	- -	N/A	- -	N/A	Nervous System	3E-01	- -	N/A	3E-01
			Chemical Total	- -	- -	- -	- -	N/A		3E-01	- -	- -	3E-01
			Radionuclide Total										
		Exposure Point Total						N/A					3E-01
	Exposure Medium Total							N/A					3E-01
Medium Total								N/A					3E-01
Receptor Total								N/A					3E-01

- - = Not Evaluated
N/A = Not Applicable

Total Risk Across All Media: N/A

Total Hazard Across All Media: 3E-01

Total Blood HI =	N/A
Total Vascular HI =	N/A
Total Eye HI =	N/A
Total Hair HI =	N/A
Total Gastrointestinal HI =	2E-02
Total Immune HI =	N/A
Total Mortality HI =	N/A
Total Liver HI =	N/A
Total Nervous System HI =	3E-01
Total Skin HI =	N/A
Total Nails HI =	N/A
Total Respiratory HI =	N/A
Total Developmental HI =	N/A
Total Thyroid HI =	3E-02

TABLE 9.12.RME

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Onsite Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	MRP Site 1 - MW-12D											
			ANTIMONY	N/A	- -	N/A	- -	N/A	Mortality, Blood	N/A	- -	N/A	N/A
			COBALT	N/A	- -	N/A	- -	N/A	Thyroid	1E-01	- -	N/A	1E-01
			IRON	N/A	- -	N/A	- -	N/A	Gastrointestinal	8E-02	- -	N/A	8E-02
			MANGANESE	N/A	- -	N/A	- -	N/A	Nervous System	4E-01	- -	N/A	4E-01
			Chemical Total	- -	- -	- -	- -	N/A		5E-01	- -	- -	5E-01
			Radionuclide Total										
		Exposure Point Total						N/A					5E-01
	Exposure Medium Total							N/A					5E-01
Medium Total								N/A					5E-01
Receptor Total								N/A					5E-01

- - = Not Evaluated
N/A = Not Applicable

Total Risk Across All Media: N/A

Total Hazard Across All Media: 5E-01

Total Blood HI =	N/A
Total Vascular HI =	N/A
Total Eye HI =	N/A
Total Hair HI =	N/A
Total Gastrointestinal HI =	8E-02
Total Immune HI =	N/A
Total Mortality HI =	N/A
Total Liver HI =	N/A
Total Nervous System HI =	4E-01
Total Skin HI =	N/A
Total Nails HI =	N/A
Total Respiratory HI =	N/A
Total Developmental HI =	N/A
Total Thyroid HI =	1E-01

TABLE 9.12.CT

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Onsite Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	MRP Site 1 - MW-12D											
			ANTIMONY	N/A	- -	N/A	- -	N/A	Mortality, Blood	N/A	- -	N/A	N/A
			COBALT	N/A	- -	N/A	- -	N/A	Thyroid	6E-02	- -	N/A	6E-02
			IRON	N/A	- -	N/A	- -	N/A	Gastrointestinal	5E-02	- -	N/A	5E-02
			MANGANESE	N/A	- -	N/A	- -	N/A	Nervous System	2E-01	- -	N/A	2E-01
			Chemical Total	- -	- -	- -	- -	N/A		3E-01	- -	- -	3E-01
			Radionuclide Total										
		Exposure Point Total						N/A					3E-01
	Exposure Medium Total							N/A					3E-01
Medium Total								N/A					3E-01
Receptor Total								N/A					3E-01

- - = Not Evaluated
N/A = Not Applicable

Total Risk Across All Media: N/A

Total Hazard Across All Media: 3E-01

Total Blood HI =	N/A
Total Vascular HI =	N/A
Total Eye HI =	N/A
Total Hair HI =	N/A
Total Gastrointestinal HI =	5E-02
Total Immune HI =	N/A
Total Mortality HI =	N/A
Total Liver HI =	N/A
Total Nervous System HI =	2E-01
Total Skin HI =	N/A
Total Nails HI =	N/A
Total Respiratory HI =	N/A
Total Developmental HI =	N/A
Total Thyroid HI =	6E-02

TABLE 9.13.RME

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Onsite Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	MRP Site 1 - MW-13											
			ANTIMONY	N/A	- -	N/A	- -	N/A	Mortality, Blood	N/A	- -	N/A	N/A
			COBALT	N/A	- -	N/A	- -	N/A	Thyroid	9E-02	- -	N/A	9E-02
			IRON	N/A	- -	N/A	- -	N/A	Gastrointestinal	5E-03	- -	N/A	5E-03
			MANGANESE	N/A	- -	N/A	- -	N/A	Nervous System	9E-02	- -	N/A	9E-02
			Chemical Total	- -	- -	- -	- -	N/A		2E-01	- -	- -	2E-01
			Radionuclide Total										
		Exposure Point Total						N/A					2E-01
	Exposure Medium Total							N/A					2E-01
Medium Total								N/A					2E-01
Receptor Total								N/A					2E-01

- - = Not Evaluated
N/A = Not Applicable

Total Risk Across All Media: N/A

Total Hazard Across All Media: 2E-01

Total Blood HI =	N/A
Total Vascular HI =	N/A
Total Eye HI =	N/A
Total Hair HI =	N/A
Total Gastrointestinal HI =	5E-03
Total Immune HI =	N/A
Total Mortality HI =	N/A
Total Liver HI =	N/A
Total Nervous System HI =	9E-02
Total Skin HI =	N/A
Total Nails HI =	N/A
Total Respiratory HI =	N/A
Total Developmental HI =	N/A
Total Thyroid HI =	9E-02

TABLE 9.13.CT

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Onsite Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	MRP Site 1 - MW-13											
			ANTIMONY	N/A	- -	N/A	- -	N/A	Mortality, Blood	N/A	- -	N/A	N/A
			COBALT	N/A	- -	N/A	- -	N/A	Thyroid	6E-02	- -	N/A	6E-02
			IRON	N/A	- -	N/A	- -	N/A	Gastrointestinal	3E-03	- -	N/A	3E-03
			MANGANESE	N/A	- -	N/A	- -	N/A	Nervous System	5E-02	- -	N/A	5E-02
			Chemical Total	- -	- -	- -	- -	N/A		1E-01	- -	- -	1E-01
			Radionuclide Total										
		Exposure Point Total						N/A					1E-01
	Exposure Medium Total							N/A					1E-01
Medium Total								N/A					1E-01
Receptor Total								N/A					1E-01

- - = Not Evaluated
N/A = Not Applicable

Total Risk Across All Media: N/A

Total Hazard Across All Media: 1E-01

Total Blood HI =	N/A
Total Vascular HI =	N/A
Total Eye HI =	N/A
Total Hair HI =	N/A
Total Gastrointestinal HI =	3E-03
Total Immune HI =	N/A
Total Mortality HI =	N/A
Total Liver HI =	N/A
Total Nervous System HI =	5E-02
Total Skin HI =	N/A
Total Nails HI =	N/A
Total Respiratory HI =	N/A
Total Developmental HI =	N/A
Total Thyroid HI =	6E-02

TABLE 9.14.RME

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Young Child/Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk Young Child + Adult					Non-Carcinogenic Hazard Quotient Young Child				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	MRP Site 1 - MW-01											
			ANTIMONY	N/A	- -	N/A	- -	N/A	Mortality, Blood	N/A	- -	N/A	N/A
			COBALT	N/A	- -	N/A	- -	N/A	Thyroid	1E+00	- -	N/A	1E+00
			IRON	N/A	- -	N/A	- -	N/A	Gastrointestinal	6E-01	- -	N/A	6E-01
			MANGANESE	N/A	- -	N/A	- -	N/A	Nervous System	8E-01	- -	N/A	8E-01
			Chemical Total	- -	- -	- -	- -	N/A		3E+00	- -	- -	3E+00
			Radionuclide Total										
		Exposure Point Total						N/A					3E+00
	Exposure Medium Total							N/A					3E+00
Medium Total								N/A					3E+00
Receptor Total								N/A					3E+00

- - = Not Evaluated
N/A = Not Applicable

Total Risk Across All Media: N/A

Total Hazard Across All Media: 3E+00

Total Blood HI =	N/A
Total Vascular HI =	N/A
Total Eye HI =	N/A
Total Hair HI =	N/A
Total Gastrointestinal HI =	6E-01
Total Immune HI =	N/A
Total Mortality HI =	N/A
Total Liver HI =	N/A
Total Nervous System HI =	8E-01
Total Skin HI =	N/A
Total Nails HI =	N/A
Total Respiratory HI =	N/A
Total Developmental HI =	N/A
Total Thyroid HI =	1E+00

TABLE 9.14.CT

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Young Child/Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk Young Child + Adult					Non-Carcinogenic Hazard Quotient Young Child				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	MRP Site 1 - MW-01											
			ANTIMONY	N/A	- -	N/A	- -	N/A	Mortality, Blood	N/A	- -	N/A	N/A
			COBALT	N/A	- -	N/A	- -	N/A	Thyroid	6E-01	- -	N/A	6E-01
			IRON	N/A	- -	N/A	- -	N/A	Gastrointestinal	3E-01	- -	N/A	3E-01
			MANGANESE	N/A	- -	N/A	- -	N/A	Nervous System	4E-01	- -	N/A	4E-01
			Chemical Total	- -	- -	- -	- -	N/A		1E+00	- -	- -	1E+00
			Radionuclide Total										
		Exposure Point Total						N/A					1E+00
	Exposure Medium Total							N/A					1E+00
Medium Total								N/A					1E+00
Receptor Total								N/A					1E+00

- - = Not Evaluated
N/A = Not Applicable

Total Risk Across All Media: N/A

Total Hazard Across All Media: 1E+00

Total Blood HI =	N/A
Total Vascular HI =	N/A
Total Eye HI =	N/A
Total Hair HI =	N/A
Total Gastrointestinal HI =	3E-01
Total Immune HI =	N/A
Total Mortality HI =	N/A
Total Liver HI =	N/A
Total Nervous System HI =	4E-01
Total Skin HI =	N/A
Total Nails HI =	N/A
Total Respiratory HI =	N/A
Total Developmental HI =	N/A
Total Thyroid HI =	6E-01

TABLE 9.15.RME

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Young Child/Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk Young Child + Adult					Non-Carcinogenic Hazard Quotient Young Child				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	MRP Site 1 - MW-01D											
			ANTIMONY	N/A	- -	N/A	- -	N/A	Mortality, Blood	1E-01	- -	N/A	1E-01
			COBALT	N/A	- -	N/A	- -	N/A	Thyroid	2E+00	- -	N/A	2E+00
			IRON	N/A	- -	N/A	- -	N/A	Gastrointestinal	7E-01	- -	N/A	7E-01
			MANGANESE	N/A	- -	N/A	- -	N/A	Nervous System	2E+00	- -	N/A	2E+00
			Chemical Total	- -	- -	- -	- -	N/A		4E+00	- -	- -	4E+00
			Radionuclide Total										
		Exposure Point Total						N/A					4E+00
	Exposure Medium Total							N/A					4E+00
Medium Total								N/A					4E+00
Receptor Total								N/A					4E+00

- - = Not Evaluated
N/A = Not Applicable

Total Risk Across All Media: N/A

Total Hazard Across All Media: 4E+00

Total Blood HI =	1E-01
Total Vascular HI =	N/A
Total Eye HI =	N/A
Total Hair HI =	N/A
Total Gastrointestinal HI =	7E-01
Total Immune HI =	N/A
Total Mortality HI =	1E-01
Total Liver HI =	N/A
Total Nervous System HI =	2E+00
Total Skin HI =	N/A
Total Nails HI =	N/A
Total Respiratory HI =	N/A
Total Developmental HI =	N/A
Total Thyroid HI =	2E+00

TABLE 9.15.CT

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Young Child/Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk Young Child + Adult					Non-Carcinogenic Hazard Quotient Young Child				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	MRP Site 1 - MW-01D											
			ANTIMONY	N/A	- -	N/A	- -	N/A	Mortality, Blood	5E-02	- -	N/A	5E-02
			COBALT	N/A	- -	N/A	- -	N/A	Thyroid	8E-01	- -	N/A	8E-01
			IRON	N/A	- -	N/A	- -	N/A	Gastrointestinal	4E-01	- -	N/A	4E-01
			MANGANESE	N/A	- -	N/A	- -	N/A	Nervous System	1E+00	- -	N/A	1E+00
			Chemical Total	- -	- -	- -	- -	N/A		2E+00	- -	- -	2E+00
			Radionuclide Total										
		Exposure Point Total						N/A					2E+00
	Exposure Medium Total							N/A					2E+00
Medium Total								N/A					2E+00
Receptor Total								N/A					2E+00

- - = Not Evaluated
N/A = Not Applicable

Total Risk Across All Media: N/A

Total Hazard Across All Media: 2E+00

Total Blood HI =	5E-02
Total Vascular HI =	N/A
Total Eye HI =	N/A
Total Hair HI =	N/A
Total Gastrointestinal HI =	4E-01
Total Immune HI =	N/A
Total Mortality HI =	5E-02
Total Liver HI =	N/A
Total Nervous System HI =	1E+00
Total Skin HI =	N/A
Total Nails HI =	N/A
Total Respiratory HI =	N/A
Total Developmental HI =	N/A
Total Thyroid HI =	8E-01

TABLE 9.16.RME

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Young Child/Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk Young Child + Adult					Non-Carcinogenic Hazard Quotient Young Child				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	MRP Site 1 - MW-11											
			ANTIMONY	N/A	- -	N/A	- -	N/A	Mortality, Blood	N/A	- -	N/A	N/A
			COBALT	N/A	- -	N/A	- -	N/A	Thyroid	6E-02	- -	N/A	6E-02
			IRON	N/A	- -	N/A	- -	N/A	Gastrointestinal	N/A	- -	N/A	N/A
			MANGANESE	N/A	- -	N/A	- -	N/A	Nervous System	1E-01	- -	N/A	1E-01
			Chemical Total	- -	- -	- -	- -	N/A		2E-01	- -	- -	2E-01
			Radionuclide Total										
		Exposure Point Total						N/A					2E-01
	Exposure Medium Total							N/A					2E-01
Medium Total								N/A					2E-01
Receptor Total								N/A					2E-01

- - = Not Evaluated
N/A = Not Applicable

Total Risk Across All Media: N/A

Total Hazard Across All Media: 2E-01

Total Blood HI =	N/A
Total Vascular HI =	N/A
Total Eye HI =	N/A
Total Hair HI =	N/A
Total Gastrointestinal HI =	N/A
Total Immune HI =	N/A
Total Mortality HI =	N/A
Total Liver HI =	N/A
Total Nervous System HI =	1E-01
Total Skin HI =	N/A
Total Nails HI =	N/A
Total Respiratory HI =	N/A
Total Developmental HI =	N/A
Total Thyroid HI =	6E-02

TABLE 9.16.CT

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Young Child/Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk Young Child + Adult					Non-Carcinogenic Hazard Quotient Young Child				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	MRP Site 1 - MW-11											
			ANTIMONY	N/A	- -	N/A	- -	N/A	Mortality, Blood	N/A	- -	N/A	N/A
			COBALT	N/A	- -	N/A	- -	N/A	Thyroid	3E-02	- -	N/A	3E-02
			IRON	N/A	- -	N/A	- -	N/A	Gastrointestinal	N/A	- -	N/A	N/A
			MANGANESE	N/A	- -	N/A	- -	N/A	Nervous System	6E-02	- -	N/A	6E-02
			Chemical Total	- -	- -	- -	- -	N/A		9E-02	- -	- -	9E-02
			Radionuclide Total										
		Exposure Point Total						N/A					9E-02
	Exposure Medium Total							N/A					9E-02
Medium Total								N/A					9E-02
Receptor Total								N/A					9E-02

- - = Not Evaluated
N/A = Not Applicable

Total Risk Across All Media: N/A

Total Hazard Across All Media: 9E-02

Total Blood HI =	N/A
Total Vascular HI =	N/A
Total Eye HI =	N/A
Total Hair HI =	N/A
Total Gastrointestinal HI =	N/A
Total Immune HI =	N/A
Total Mortality HI =	N/A
Total Liver HI =	N/A
Total Nervous System HI =	6E-02
Total Skin HI =	N/A
Total Nails HI =	N/A
Total Respiratory HI =	N/A
Total Developmental HI =	N/A
Total Thyroid HI =	3E-02

TABLE 9.17.RME

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Young Child/Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk Young Child + Adult					Non-Carcinogenic Hazard Quotient Young Child				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	MRP Site 1 - MW-12											
			ANTIMONY	N/A	- -	N/A	- -	N/A	Mortality, Blood	N/A	- -	N/A	N/A
			COBALT	N/A	- -	N/A	- -	N/A	Thyroid	3E-01	- -	N/A	3E-01
			IRON	N/A	- -	N/A	- -	N/A	Gastrointestinal	2E-01	- -	N/A	2E-01
			MANGANESE	N/A	- -	N/A	- -	N/A	Nervous System	2E+00	- -	N/A	2E+00
			Chemical Total	- -	- -	- -	- -	N/A		3E+00	- -	- -	3E+00
			Radionuclide Total										
		Exposure Point Total						N/A					3E+00
	Exposure Medium Total							N/A					3E+00
Medium Total								N/A					3E+00
Receptor Total								N/A					3E+00

- - = Not Evaluated
N/A = Not Applicable

Total Risk Across All Media: N/A

Total Hazard Across All Media: 3E+00

Total Blood HI =	N/A
Total Vascular HI =	N/A
Total Eye HI =	N/A
Total Hair HI =	N/A
Total Gastrointestinal HI =	2E-01
Total Immune HI =	N/A
Total Mortality HI =	N/A
Total Liver HI =	N/A
Total Nervous System HI =	2E+00
Total Skin HI =	N/A
Total Nails HI =	N/A
Total Respiratory HI =	N/A
Total Developmental HI =	N/A
Total Thyroid HI =	3E-01

TABLE 9.17.CT

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Young Child/Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk Young Child + Adult					Non-Carcinogenic Hazard Quotient Young Child				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	MRP Site 1 - MW-12											
			ANTIMONY	N/A	- -	N/A	- -	N/A	Mortality, Blood	N/A	- -	N/A	N/A
			COBALT	N/A	- -	N/A	- -	N/A	Thyroid	1E-01	- -	N/A	1E-01
			IRON	N/A	- -	N/A	- -	N/A	Gastrointestinal	1E-01	- -	N/A	1E-01
			MANGANESE	N/A	- -	N/A	- -	N/A	Nervous System	1E+00	- -	N/A	1E+00
			Chemical Total	- -	- -	- -	- -	N/A		1E+00	- -	- -	1E+00
			Radionuclide Total										
		Exposure Point Total						N/A					1E+00
	Exposure Medium Total							N/A					1E+00
Medium Total								N/A					1E+00
Receptor Total								N/A					1E+00

- - = Not Evaluated
N/A = Not Applicable

Total Risk Across All Media: N/A

Total Hazard Across All Media: 1E+00

Total Blood HI =	N/A
Total Vascular HI =	N/A
Total Eye HI =	N/A
Total Hair HI =	N/A
Total Gastrointestinal HI =	1E-01
Total Immune HI =	N/A
Total Mortality HI =	N/A
Total Liver HI =	N/A
Total Nervous System HI =	1E+00
Total Skin HI =	N/A
Total Nails HI =	N/A
Total Respiratory HI =	N/A
Total Developmental HI =	N/A
Total Thyroid HI =	1E-01

TABLE 9.18.RME

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Young Child/Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk Young Child + Adult					Non-Carcinogenic Hazard Quotient Young Child				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	MRP Site 1 - MW-12D											
			ANTIMONY	N/A	- -	N/A	- -	N/A	Mortality, Blood	N/A	- -	N/A	N/A
			COBALT	N/A	- -	N/A	- -	N/A	Thyroid	6E-01	- -	N/A	6E-01
			IRON	N/A	- -	N/A	- -	N/A	Gastrointestinal	5E-01	- -	N/A	5E-01
			MANGANESE	N/A	- -	N/A	- -	N/A	Nervous System	2E+00	- -	N/A	2E+00
			Chemical Total	- -	- -	- -	- -	N/A		3E+00	- -	- -	3E+00
			Radionuclide Total										
		Exposure Point Total						N/A					3E+00
	Exposure Medium Total							N/A					3E+00
Medium Total								N/A					3E+00
Receptor Total								N/A					3E+00

- - = Not Evaluated
N/A = Not Applicable

Total Risk Across All Media: N/A

Total Hazard Across All Media: 3E+00

Total Blood HI =	N/A
Total Vascular HI =	N/A
Total Eye HI =	N/A
Total Hair HI =	N/A
Total Gastrointestinal HI =	5E-01
Total Immune HI =	N/A
Total Mortality HI =	N/A
Total Liver HI =	N/A
Total Nervous System HI =	2E+00
Total Skin HI =	N/A
Total Nails HI =	N/A
Total Respiratory HI =	N/A
Total Developmental HI =	N/A
Total Thyroid HI =	6E-01

TABLE 9.18.CT

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Young Child/Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk Young Child + Adult					Non-Carcinogenic Hazard Quotient Young Child				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	MRP Site 1 - MW-12D											
			ANTIMONY	N/A	- -	N/A	- -	N/A	Mortality, Blood	N/A	- -	N/A	N/A
			COBALT	N/A	- -	N/A	- -	N/A	Thyroid	3E-01	- -	N/A	3E-01
			IRON	N/A	- -	N/A	- -	N/A	Gastrointestinal	2E-01	- -	N/A	2E-01
			MANGANESE	N/A	- -	N/A	- -	N/A	Nervous System	1E+00	- -	N/A	1E+00
			Chemical Total	- -	- -	- -	- -	N/A		2E+00	- -	- -	2E+00
			Radionuclide Total										
		Exposure Point Total						N/A					2E+00
	Exposure Medium Total							N/A					2E+00
Medium Total								N/A					2E+00
Receptor Total								N/A					2E+00

- - = Not Evaluated
N/A = Not Applicable

Total Risk Across All Media: N/A

Total Hazard Across All Media: 2E+00

Total Blood HI =	N/A
Total Vascular HI =	N/A
Total Eye HI =	N/A
Total Hair HI =	N/A
Total Gastrointestinal HI =	2E-01
Total Immune HI =	N/A
Total Mortality HI =	N/A
Total Liver HI =	N/A
Total Nervous System HI =	1E+00
Total Skin HI =	N/A
Total Nails HI =	N/A
Total Respiratory HI =	N/A
Total Developmental HI =	N/A
Total Thyroid HI =	3E-01

TABLE 9.19.RME

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Young Child/Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk Young Child + Adult					Non-Carcinogenic Hazard Quotient Young Child				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	MRP Site 1 - MW-13											
			ANTIMONY	N/A	- -	N/A	- -	N/A	Mortality, Blood	N/A	- -	N/A	N/A
			COBALT	N/A	- -	N/A	- -	N/A	Thyroid	5E-01	- -	N/A	5E-01
			IRON	N/A	- -	N/A	- -	N/A	Gastrointestinal	3E-02	- -	N/A	3E-02
			MANGANESE	N/A	- -	N/A	- -	N/A	Nervous System	5E-01	- -	N/A	5E-01
			Chemical Total	- -	- -	- -	- -	N/A		1E+00	- -	- -	1E+00
			Radionuclide Total										
		Exposure Point Total						N/A					1E+00
	Exposure Medium Total							N/A					1E+00
Medium Total								N/A					1E+00
Receptor Total								N/A					1E+00

- - = Not Evaluated
N/A = Not Applicable

Total Risk Across All Media: N/A

Total Hazard Across All Media: 1E+00

Total Blood HI =	N/A
Total Vascular HI =	N/A
Total Eye HI =	N/A
Total Hair HI =	N/A
Total Gastrointestinal HI =	3E-02
Total Immune HI =	N/A
Total Mortality HI =	N/A
Total Liver HI =	N/A
Total Nervous System HI =	5E-01
Total Skin HI =	N/A
Total Nails HI =	N/A
Total Respiratory HI =	N/A
Total Developmental HI =	N/A
Total Thyroid HI =	5E-01

TABLE 9.19.CT

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Young Child/Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk Young Child + Adult					Non-Carcinogenic Hazard Quotient Young Child				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	MRP Site 1 - MW-13											
			ANTIMONY	N/A	- -	N/A	- -	N/A	Mortality, Blood	N/A	- -	N/A	N/A
			COBALT	N/A	- -	N/A	- -	N/A	Thyroid	3E-01	- -	N/A	3E-01
			IRON	N/A	- -	N/A	- -	N/A	Gastrointestinal	1E-02	- -	N/A	1E-02
			MANGANESE	N/A	- -	N/A	- -	N/A	Nervous System	3E-01	- -	N/A	3E-01
			Chemical Total	- -	- -	- -	- -	N/A		5E-01	- -	- -	5E-01
			Radionuclide Total										
		Exposure Point Total						N/A					5E-01
	Exposure Medium Total							N/A					5E-01
Medium Total								N/A					5E-01
Receptor Total								N/A					5E-01

- - = Not Evaluated
N/A = Not Applicable

Total Risk Across All Media: N/A

Total Hazard Across All Media: 5E-01

Total Blood HI =	N/A
Total Vascular HI =	N/A
Total Eye HI =	N/A
Total Hair HI =	N/A
Total Gastrointestinal HI =	1E-02
Total Immune HI =	N/A
Total Mortality HI =	N/A
Total Liver HI =	N/A
Total Nervous System HI =	3E-01
Total Skin HI =	N/A
Total Nails HI =	N/A
Total Respiratory HI =	N/A
Total Developmental HI =	N/A
Total Thyroid HI =	3E-01

TABLE 10.1.RME

RISK SUMMARY

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe: Current
Receptor Population: Recreational User
Receptor Age: Young Child/Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk Young Child + Adult					Non-Carcinogenic Hazard Quotient Young Child				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	MRP Site 1	AROCLOR-1260						Eye, Nails, Immune	7E+00	N/A	2E+00	9E+00
			Chemical Total	- -	- -	- -	- -	N/A		7E+00	- -	2E+00	9E+00
			Radionuclide Total										
		Exposure Point Total						N/A					9E+00
	Exposure Medium Total							N/A					9E+00
Medium Total								N/A					9E+00
Receptor Total								N/A					9E+00

- - = Not Evaluated
N/A = Not Applicable

Total Risk Across All Media: N/A

Total Hazard Across All Media: 9E+00

Total Blood HI =	N/A
Total Vascular HI =	N/A
Total Eye HI =	9E+00
Total Hair HI =	N/A
Total Gastrointestinal HI =	N/A
Total Immune HI =	9E+00
Total Mortality HI =	N/A
Total Liver HI =	N/A
Total Nervous System HI =	N/A
Total Skin HI =	N/A
Total Nails HI =	9E+00
Total Respiratory HI =	N/A
Total Developmental HI =	N/A
Total Thyroid HI =	N/A

TABLE 10.2.RME

RISK SUMMARY

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe: Current
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	MRP Site 1	AROCLOR-1260						Eye, Nails, Immune	4E+00	N/A	2E+00	7E+00
			Chemical Total	- -	- -	- -	- -	N/A		4E+00	- -	2E+00	7E+00
			Radionuclide Total										
		Exposure Point Total						N/A					7E+00
	Exposure Medium Total							N/A					7E+00
Medium Total								N/A					7E+00
Receptor Total								N/A					7E+00

- - = Not Evaluated
N/A = Not Applicable

Total Risk Across All Media: N/A

Total Hazard Across All Media: 7E+00

Total Blood HI =	N/A
Total Vascular HI =	N/A
Total Eye HI =	7E+00
Total Hair HI =	N/A
Total Gastrointestinal HI =	N/A
Total Immune HI =	7E+00
Total Mortality HI =	N/A
Total Liver HI =	N/A
Total Nervous System HI =	N/A
Total Skin HI =	N/A
Total Nails HI =	7E+00
Total Respiratory HI =	N/A
Total Developmental HI =	N/A
Total Thyroid HI =	N/A

TABLE 10.3.RME

RISK SUMMARY

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe: Current/Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface/ Subsurface Soil	MRP Site 1	AROCLOR-1260						Eye, Nails, Immune	1E+01	N/A	6E+00	2E+01
			Chemical Total	- -	- -	- -	- -	N/A		1E+01	- -	6E+00	2E+01
			Radionuclide Total										
		Exposure Point Total						N/A					2E+01
	Exposure Medium Total							N/A					2E+01
Medium Total								N/A					2E+01
Receptor Total								N/A					2E+01

- - = Not Evaluated
N/A = Not Applicable

Total Risk Across All Media: N/A

Total Hazard Across All Media: 2E+01

Total Blood HI =	N/A
Total Vascular HI =	N/A
Total Eye HI =	2E+01
Total Hair HI =	N/A
Total Gastrointestinal HI =	N/A
Total Immune HI =	2E+01
Total Mortality HI =	N/A
Total Liver HI =	N/A
Total Nervous System HI =	N/A
Total Skin HI =	N/A
Total Nails HI =	2E+01
Total Respiratory HI =	N/A
Total Developmental HI =	N/A
Total Thyroid HI =	N/A

TABLE 10.3.CT

RISK SUMMARY

CENTRAL TENDENCY

CARR POINT - MRP SITE 1

Scenario Timeframe: Current/Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface/ Subsurface Soil	MRP Site 1	AROCLOR-1260						Eye, Nails, Immune	1E+00	N/A	2E-01	2E+00
			Chemical Total	- -	- -	- -	- -	N/A		1E+00	- -	2E-01	2E+00
			Radionuclide Total										
		Exposure Point Total						N/A					2E+00
	Exposure Medium Total							N/A					2E+00
Medium Total								N/A					2E+00
Receptor Total								N/A					2E+00

- - = Not Evaluated
N/A = Not Applicable

Total Risk Across All Media: N/A

Total Hazard Across All Media: 2E+00

Total Blood HI =	N/A
Total Vascular HI =	N/A
Total Eye HI =	2E+00
Total Hair HI =	N/A
Total Gastrointestinal HI =	N/A
Total Immune HI =	2E+00
Total Mortality HI =	N/A
Total Liver HI =	N/A
Total Nervous System HI =	N/A
Total Skin HI =	N/A
Total Nails HI =	2E+00
Total Respiratory HI =	N/A
Total Developmental HI =	N/A
Total Thyroid HI =	N/A

TABLE 10.4.RME

RISK SUMMARY

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface/ Subsurface Soil	MRP Site 1	AROCLOR-1260						Eye, Nails, Immune	4E+00	N/A	2E+00	7E+00
			Chemical Total	- -	- -	- -	- -	N/A		4E+00	- -	2E+00	7E+00
			Radionuclide Total										
		Exposure Point Total						N/A					7E+00
	Exposure Medium Total							N/A					7E+00
Medium Total								N/A					7E+00
Receptor Total								N/A					7E+00

- - = Not Evaluated
N/A = Not Applicable

Total Risk Across All Media: N/A

Total Hazard Across All Media: 7E+00

Total Blood HI =	N/A
Total Vascular HI =	N/A
Total Eye HI =	7E+00
Total Hair HI =	N/A
Total Gastrointestinal HI =	N/A
Total Immune HI =	7E+00
Total Mortality HI =	N/A
Total Liver HI =	N/A
Total Nervous System HI =	N/A
Total Skin HI =	N/A
Total Nails HI =	7E+00
Total Respiratory HI =	N/A
Total Developmental HI =	N/A
Total Thyroid HI =	N/A

TABLE 10.5.RME

RISK SUMMARY

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Onsite Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface/ Subsurface Soil	MRP Site 1											
			BENZO[A]ANTHRACENE	1E-06	2E-11	6E-07	- -	2E-06					
			BENZO[A]PYRENE	1E-05	2E-10	7E-06	- -	2E-05					
			BENZO[B]FLUORANTHEN	1E-06	2E-11	6E-07	- -	2E-06					
			4,4-DDT	2E-06	6E-11	2E-07	- -	2E-06					
			AROCLOR-1260	2E-04	5E-09	1E-04	- -	3E-04	Eye, Nails, Immune	1E+01	N/A	7E+00	2E+01
			ARSENIC	5E-06	2E-09	9E-07	- -	5E-06					
			CHROMIUM, TOTAL	2E-06	3E-08	N/A	- -	2E-06					
			Chemical Total	2E-04	4E-08	1E-04	- -	3E-04		1E+01	- -	7E+00	2E+01
			Radionuclide Total										
		Exposure Point Total						3E-04					2E+01
	Exposure Medium Total							3E-04					2E+01
Medium Total								3E-04					2E+01
Receptor Total								3E-04					2E+01

- - = Not Evaluated
N/A = Not Applicable

Total Risk Across All Media: 3E-04

Total Hazard Across All Media: 2E+01

Total Blood HI =	N/A
Total Vascular HI =	N/A
Total Eye HI =	2E+01
Total Hair HI =	N/A
Total Gastrointestinal HI =	N/A
Total Immune HI =	2E+01
Total Mortality HI =	N/A
Total Liver HI =	N/A
Total Nervous System HI =	N/A
Total Skin HI =	N/A
Total Nails HI =	2E+01
Total Respiratory HI =	N/A
Total Developmental HI =	N/A
Total Thyroid HI =	N/A

TABLE 10.6.RME

RISK SUMMARY

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Young Child/Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk Young Child + Adult					Non-Carcinogenic Hazard Quotient Young Child				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface/ Subsurface Soil	MRP Site 1											
			BENZO[A]ANTHRACENE	2E-05	5E-11	7E-06	- -	3E-05					
			BENZO[A]PYRENE	2E-04	7E-10	8E-05	- -	3E-04					
			BENZO[B]FLUORANTHEN	2E-05	6E-11	7E-06	- -	3E-05					
			BENZO[K]FLUORANTHEN	2E-06	6E-11	7E-07	- -	3E-06					
			DIBENZ[A,H]ANTHRACEN	2E-05	6E-11	6E-06	- -	3E-05					
			INDENO[1,2,3-CD]PYRENE	1E-05	4E-11	4E-06	- -	2E-05					
			4,4-DDT	9E-06	1E-10	8E-07	- -	1E-05					
			AROCLOR-1260	8E-04	8E-09	3E-04	- -	1E-03	Eye, Nails, Immune	2E+02	N/A	6E+01	2E+02
			ARSENIC	2E-05	4E-09	3E-06	- -	2E-05					
			CHROMIUM, TOTAL	4E-05	1E-07	N/A	- -	4E-05					
			Chemical Total	1E-03	1E-07	4E-04	- -	2E-03		2E+02	- -	6E+01	2E+02
			Radionuclide Total										
		Exposure Point Total						2E-03					2E+02
	Exposure Medium Total							2E-03					2E+02
Medium Total								2E-03					2E+02
Receptor Total								2E-03					2E+02

TABLE 10.6.RME

RISK SUMMARY

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Young Child/Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk Young Child + Adult					Non-Carcinogenic Hazard Quotient Young Child				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total

- - = Not Evaluated
N/A = Not Applicable

Total Risk Across All Media: 2E-03

Total Hazard Across All Media: 2E+02

Total Blood HI =	N/A
Total Vascular HI =	N/A
Total Eye HI =	2E+02
Total Hair HI =	N/A
Total Gastrointestinal HI =	N/A
Total Immune HI =	2E+02
Total Mortality HI =	N/A
Total Liver HI =	N/A
Total Nervous System HI =	N/A
Total Skin HI =	N/A
Total Nails HI =	2E+02
Total Respiratory HI =	N/A
Total Developmental HI =	N/A
Total Thyroid HI =	N/A

TABLE 10.6.CT

RISK SUMMARY

CENTRAL TENDENCY

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Young Child/Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk Young Child + Adult					Non-Carcinogenic Hazard Quotient Young Child				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface/ Subsurface Soil	MRP Site 1											
			BENZO[A]ANTHRACENE	7E-06	4E-11	9E-07	- -	8E-06					
			BENZO[A]PYRENE	8E-05	4E-10	1E-05	- -	9E-05					
			BENZO[B]FLUORANTHEN	8E-06	4E-11	1E-06	- -	9E-06					
			DIBENZ[A,H]ANTHRACEN	6E-06	4E-11	8E-07	- -	7E-06					
			INDENO[1,2,3-CD]PYRENE	5E-06	2E-11	6E-07	- -	5E-06					
			AROCLOR-1260	3E-05	1E-09	4E-06	- -	3E-05	Eye, Nails, Immune	1E+01	N/A	2E+00	1E+01
			ARSENIC	7E-06	2E-09	4E-07	- -	7E-06					
			CHROMIUM, TOTAL	1E-05	8E-08	N/A	- -	1E-05					
			Chemical Total	2E-04	8E-08	2E-05	- -	2E-04		1E+01	- -	2E+00	1E+01
			Radionuclide Total										
		Exposure Point Total						2E-04					1E+01
	Exposure Medium Total							2E-04					1E+01
Medium Total								2E-04					1E+01
Receptor Total								2E-04					1E+01

TABLE 10.6.CT

RISK SUMMARY

CENTRAL TENDENCY

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Young Child/Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk Young Child + Adult					Non-Carcinogenic Hazard Quotient Young Child				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total

- - = Not Evaluated
N/A = Not Applicable

Total Risk Across All Media: 2E-04

Total Hazard Across All Media: 1E+01

Total Blood HI =	N/A
Total Vascular HI =	N/A
Total Eye HI =	1E+01
Total Hair HI =	N/A
Total Gastrointestinal HI =	N/A
Total Immune HI =	1E+01
Total Mortality HI =	N/A
Total Liver HI =	N/A
Total Nervous System HI =	N/A
Total Skin HI =	N/A
Total Nails HI =	1E+01
Total Respiratory HI =	N/A
Total Developmental HI =	N/A
Total Thyroid HI =	N/A

TABLE 10.7.RME

RISK SUMMARY

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Young Child/Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk Young Child + Adult					Non-Carcinogenic Hazard Quotient Young Child				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	MRP Site 1 - MW-01D											
			COBALT						Thyroid	2E+00	- -	N/A	2E+00
			MANGANESE						Nervous System	2E+00	- -	N/A	2E+00
			Chemical Total	- -	- -	- -	- -	N/A		4E+00	- -	- -	4E+00
			Radionuclide Total										
		Exposure Point Total						N/A					4E+00
	Exposure Medium Total							N/A					4E+00
Medium Total								N/A					4E+00
Receptor Total								N/A					4E+00

- - = Not Evaluated
N/A = Not Applicable

Total Risk Across All Media: N/A

Total Hazard Across All Media: 4E+00

Total Blood HI =	N/A
Total Vascular HI =	N/A
Total Eye HI =	N/A
Total Hair HI =	N/A
Total Gastrointestinal HI =	N/A
Total Immune HI =	N/A
Total Mortality HI =	N/A
Total Liver HI =	N/A
Total Nervous System HI =	2E+00
Total Skin HI =	N/A
Total Nails HI =	N/A
Total Respiratory HI =	N/A
Total Developmental HI =	N/A
Total Thyroid HI =	2E+00

TABLE 10.8.RME

RISK SUMMARY

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Young Child/Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk Young Child + Adult					Non-Carcinogenic Hazard Quotient Young Child				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	MRP Site 1 - MW-12	MANGANESE						Nervous System	2E+00	- -	N/A	2E+00
			Chemical Total	- -	- -	- -	- -	N/A		2E+00	- -	- -	2E+00
			Radionuclide Total										
		Exposure Point Total						N/A					2E+00
	Exposure Medium Total							N/A					2E+00
Medium Total								N/A					2E+00
Receptor Total								N/A					2E+00

- - = Not Evaluated
N/A = Not Applicable

Total Risk Across All Media: N/A

Total Hazard Across All Media: 2E+00

Total Blood HI =	N/A
Total Vascular HI =	N/A
Total Eye HI =	N/A
Total Hair HI =	N/A
Total Gastrointestinal HI =	N/A
Total Immune HI =	N/A
Total Mortality HI =	N/A
Total Liver HI =	N/A
Total Nervous System HI =	2E+00
Total Skin HI =	N/A
Total Nails HI =	N/A
Total Respiratory HI =	N/A
Total Developmental HI =	N/A
Total Thyroid HI =	N/A

TABLE 10.9.RME

RISK SUMMARY

REASONABLE MAXIMUM EXPOSURE

CARR POINT - MRP SITE 1

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Young Child/Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk Young Child + Adult					Non-Carcinogenic Hazard Quotient Young Child				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	MRP Site 1 - MW-12D	MANGANESE						Nervous System	2E+00	- -	N/A	2E+00
			Chemical Total	- -	- -	- -	- -	N/A		2E+00	- -	- -	2E+00
			Radionuclide Total										
		Exposure Point Total						N/A					2E+00
	Exposure Medium Total							N/A					2E+00
Medium Total								N/A					2E+00
Receptor Total								N/A					2E+00

- - = Not Evaluated
N/A = Not Applicable

Total Risk Across All Media: N/A

Total Hazard Across All Media: 2E+00

Total Blood HI =	N/A
Total Vascular HI =	N/A
Total Eye HI =	N/A
Total Hair HI =	N/A
Total Gastrointestinal HI =	N/A
Total Immune HI =	N/A
Total Mortality HI =	N/A
Total Liver HI =	N/A
Total Nervous System HI =	2E+00
Total Skin HI =	N/A
Total Nails HI =	N/A
Total Respiratory HI =	N/A
Total Developmental HI =	N/A
Total Thyroid HI =	N/A

Appendix B

Ecological Risk Assessment (ERA)

APPENDIX B
ECOLOGICAL RISK ASSESSMENT (ERA)

MRP SITE 1, CARR POINT SHOOTING RANGE
REMEDIAL INVESTIGATION REPORT
NAVAL STATION NEWPORT
RHODE ISLAND

April 28, 2015

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1.0 INTRODUCTION

This appendix presents an ecological risk assessment (ERA) conducted for the Former Carr Point Shooting Range, Munitions Response Program (MRP) Site 1, Operable Unit (OU) 9 located at the Naval Station (NAVSTA) Newport, Rhode Island. The regional location of MRP Site 1 is shown on Figure 1. Site description and information is presented in the Remedial Investigation (RI) report text.

MRP Site 1 is adjacent to the Former Carr Point Storage Area (IR Site 22), which is undergoing a separate investigation and will be the subject of a separate RI report. As indicated in Figure 2, MRP Site 1 encompasses approximately 4 acres of land along an estimated 500-foot bank of Narragansett Bay and an estimated 17 acres of the adjacent East Passage of Narragansett Bay to assess potential offshore site impacts.

This assessment of ecological risks includes data collected during the site investigation activities conducted between May 2009 and January 2010 (Tetra Tech, 2010), data collected during the non-time critical removal action (NTCRA), and data collected in 2013 and 2014 in support of this RI.

1.1 Objectives

The primary objective of the ERA for the site is to evaluate whether chemicals of potential concern (COPCs) attributable to past operations have the potential to cause unacceptable adverse risk to ecological receptors. The specific objectives of the ERA are as follows:

- Determine whether any complete exposure pathways associated with sediment or soil exist at MRP Site 1.
- For areas with complete exposure pathways, compare the concentrations of chemicals detected in surface soil and sediment to ecological risk-based screening criteria to determine the site COPCs for further evaluation.
- Evaluate chemicals found to exceed screening criteria for potential to cause unacceptable adverse risk to ecological receptors.

This ERA focuses on surface soil and sediment exposure pathways. Chemicals in surface soil may be contacted directly by plants and invertebrates living in the soil. Chemicals in sediment may be contacted directly by shellfish and other benthic invertebrates living in the sediment. Wildlife foraging within MRP site 1 could also be exposed directly to chemicals in soil and sediment through incidental ingestion of soil and sediment and indirectly by ingestion of contaminated prey items

living at the Site. Lead pellets present along the shoreline or in the sediment may pose a risk to birds and other wildlife that may ingest the material intentionally as grit or accidentally during foraging.

1.2 Approach for the ERA

The ERA was conducted in accordance with Navy Policy for Conducting Ecological Risk Assessments and Navy Guidance for Conducting Ecological Risk Assessments (DON, 1999a,b). This approach is consistent with the eight step tiered approach to ERA presented in Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments, Interim Final (USEPA, 1997c). Additional guidance documentation includes, but is not limited to, the following:

- Department of the Navy Environmental Restoration Program (NERP) Manual (DON, 2006)
- Navy Policy on the Use of Background Chemical Levels (DON, 2004)
- Navy Policy on Sediment Site Investigation and Response Action (DON, 2002)
- Guidelines for Ecological Risk Assessment (USEPA, 1998)
- The Role of Screening-Level Risk Assessments and Refining Contaminants of Concern in Baseline Ecological Risk Assessments (USEPA, 2001a)

As described in Navy guidance (DON, 1999a,b), a three tiered approach that incorporates different levels of assessment complexity is used to evaluate the potential for ecological risk. The tiered approach may be implemented in its entirety depending upon the level and magnitude of risk that is determined in prior tiers. This approach consists of the following tiers:

- Tier 1 – Ecological Screening Risk Assessment (SRA)
- Tier 2 – Baseline Ecological Risk Assessment (BERA)
- Tier 3 – Risk Evaluation of Remedial Alternatives

The ERA has been structured according to U.S. Navy policy (DON, 1999) so that it fulfills both the requirements of an eight step USEPA ERA (USEPA, 1997) and a U.S. Navy ERA. Section 3 of this document presents the Tier 1 SRA and Section 4 presents the Tier 2 BERA. The Tier 3 will be presented separately, if warranted.

2.0 DATA USED IN THE ECOLOGICAL RISK ASSESSMENT

The purpose of this section is to identify the data used to assess the type and amount of chemicals present at the site and to select the COPCs. In addition, this section summarizes the methodology used to determine EPCs for COPCs in each medium.

Environmental data used in this ERA include surface soil, sediment, and shellfish tissue collected by TetraTech, Terranear PMC, and Resolution Consultants on behalf of the Navy between 2009 and 2014. A detailed discussion of the TetraTech sampling can be found in the Site Investigation Report (TetraTech, 2010) and the Construction Completion Report for the Non-Time Critical Removal Action (Terranear PMC, 2013) summarizes the post-excavation sampling conducted following the soil removal effort conducted in 2013. A detailed discussion of the 2013 and 2014 sampling events conducted by Resolution Consultants can be found in the text of the RI report.

The following sections summarize the environmental data available for use for each of the media quantitatively evaluated in the ERA. Table 1 summarizes the samples by media and identifies the analyses performed for each sample considered in the ERA. Analytical results for samples used in the ERA are presented in Attachment A. Figure 3 identifies the soil sampling locations and Figure 4 identifies the sediment and shellfish sampling locations.

Soil. In 2009 TetraTech collected two surface soil samples (0 to 1 ft below ground surface [bgs]) for analysis of volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), including polycyclic aromatic hydrocarbons (PAHs), pesticides, polychlorinated biphenyls (PCBs), metals and total petroleum hydrocarbons (TPH) – diesel range organics (DRO) and gasoline range organics (GRO). Additional surface soil samples (ranging from 0 to 1 ft bgs) were collected by TetraTech from 24 locations across MRP Site 1 in 2010. The soil samples were submitted for laboratory analysis of PAHs and lead.

In May 2009, TetraTech used multi-incremental sampling techniques to collect surface soil samples (0 to 2 inches bgs) from the former firing arcs. The soil samples were submitted for analysis of propellants (2,4-dinitrotoluene, 2,6-dinitrotoluene, and nitroglycerin) and SVOCs, including PAHs. The results from the multi-incremental sampling were not considered to be appropriate for inclusion in the ERA and some locations were also removed during excavation efforts.

The NTCRA conducted in 2013 removed soil samples from 0 to 1 ft bgs and 0 to 2 ft bgs. Post excavation samples were collected from the sidewalls and from the floor of the excavation and

analyzed for arsenic, chromium, lead, and PAHs. Post-excavation samples collected within the top 1 ft bgs were considered in the ERA. In some cases, the initial 0 to 1 ft bgs results did not meet the clean up objectives and additional excavation was conducted down to 2 ft bgs. Excavated samples (either the TetraTech samples within the excavation or post-excavation samples that were later removed) were excluded from the ERA because they are no longer present. Backfill results were also reported (but not validated) by Terranear PMC (2013) for inorganics, SVOCs (including PAHs), VOCs, PCBs, and pesticides and all concentrations were below the USEPA Regional Screening Levels (RSLs).

In December 2013, Resolution Consultants collected soil samples from 27 surface locations within MRP Site 1. Samples collected from the 0 to 1 ft bgs horizon were considered in the ERA. All samples were analyzed for inorganics and PAHs, and a sub-set of samples were also analyzed for SVOCs, VOCs, PCBs, and pesticides. Seven soil samples collected along the shoreline were also analyzed for pellets.

Soil data are summarized in Table 2. The soil summary table provides the frequency of detection, range of detection limits, range of detected concentrations, mean of detected concentrations, and location of maximum detected result for each detected chemical. Backfill data were not included in the summary statistics (because they were not validated) but the presence of the clean backfill is discussed qualitatively in the ERA. TPH data were not evaluated in the ERA due to a lack of relevant screening levels. Potential impacts due to petroleum products are assessed using the relevant VOCs (i.e., benzene, toluene, ethylbenzene, xylene) and PAH data.

Sediment. In June 2009, TetraTech collected samples from 20 locations from Narragansett Bay in the area identified as the potential impact zone from the former firing arcs. The samples were collected from 0 to 0.5 and 0.5 to 1 ft bgs intervals, unless refusal was encountered before 1 foot bgs. Upon collection of the sediment samples, the samples were wet sieved (i.e., using a sea water rinse) to allow for the counting of lead pellets. The material passing through the sieve was retained for chemical analyses. Fifteen sediment samples were submitted for analysis of PAHs, while all 35 samples were submitted for analysis of metals. The surface sediments (0 to 1 ft bgs) from this event were considered in the ERA.

In December 2013 and April 2014, Resolution Consultants collected sediment samples from 32 locations within Narragansett Bay adjacent to MRP Site 1. Samples were also collected at an additional 12 background/reference locations located across the Bay in Potters Cove or laterally to the north and south of MRP Site 1 samples. Samples were collected from 0 to 1 ft bgs, 1 to 2 ft

bgs, and 2 to 3 ft bgs, if refusal was not encountered. The field sampling had planned to target a 0 to 0.5 ft bgs surface sediment horizon, but the field conditions (e.g., significant cobble, large rocks) did not allow for collection of samples or samples of sufficient volume from that horizon with either a power grab sampler or a vibracoring device. Therefore, the surface horizon was extended to 0 to 1 ft bgs. Surface sediments collected from the 0 to 1 ft bgs horizon were considered in the ERA. All MRP Site 1 surface sediment samples were analyzed for inorganics, PAHs, SEM, AVS, and pellets.

For a sub-set of samples collected during the December 2013 sampling event, samples were field-processed to remove pellets from analytical samples in two ways: dry sieved by pressing the sample through a 2 mm sieve (this method was used for all samples collected in 2013 and 2014) and wet sieved using seawater to wash material through the sieve with fine grained materials. The wet sieve process was used to approximate the approach used during the 2009 sampling to determine whether there was an appreciable difference in analytical chemistry results between the two methods. Attachment B presents an evaluation of the paired wet and dry sieved data available from the 2013 sampling. This evaluation identified minimal differences between the analytical results for the different processing methods. Differences were only observed for mercury with the dry sieved concentrations statistically higher than the wet sieved concentrations (mean of 0.051 mg/kg vs 0.033 mg/kg, respectively). Based on this evaluation, the 2009 analytical data (processed via wet sieving) were included with the 2013 and 2014 data (processed via dry sieving) in the ERA. The 2009 sampling event did not include wet sieved results for mercury, so the mercury dataset only includes the dry sieved data from 2013 and 2014. Based on the findings presented in Attachment B, the use of only dry sieved mercury data is unlikely to underestimate concentrations. The 2013 wet sieved results for PAHs and inorganics were only used for comparative purposes in the evaluation presented in Attachment B.

Sediment data are summarized in Table 3. The summary table provides the frequency of detection, range of detection limits, range of detected concentrations, mean of detected concentrations, and location of maximum detected result for each detected chemical.

Shellfish Tissue. In November 2013, Resolution Consultants SCUBA divers collected shellfish samples from within Narragansett Bay adjacent to MRP Site 1 and from background/reference locations located laterally to the north and south of MRP Site 1. For the quahogs (*Mercenaria mercenaria*), eight composite samples (and a field duplicate) were collected adjacent to MRP Site 1 and one composite sample was collected from a background/reference location. For the blue

mussels (*Mytilus edulis*), five composite samples were collected adjacent to MRP Site 1 and three composite samples were collected from background/reference locations.

Shellfish tissue data are summarized in Table 4. The summary table provides the frequency of detection, range of detection limits, range of detected concentrations, mean of detected concentrations, and location of maximum detected result for each detected chemical.

Groundwater and Surface Water. Ecological receptors are not exposed to groundwater so the pathway to this medium is not complete and was not evaluated in the ecological evaluation. Exposure to site-related chemicals in Narragansett Bay surface water is assumed to be negligible due to the tidal influence and was not evaluated in the ecological evaluation.

2.1 Available Background Data

A background dataset of metals in soil was generated in 2007 to define typical metals conditions in various soil types at NAVSTA Newport (Tetra Tech, 2007). The data collected from the Merrimac Sandy Loam (MmA) soil types (the dominant soil type) were used in the MRP Site 1 soil background evaluation. MmA is the dominant soil type at the Site. Site-specific sediment and shellfish were collected from background/reference locations by Resolution Consultants in 2013 and 2014.

While it is assumed that chemicals within background levels are not attributed to Navy activities, background levels have not been utilized for screening purposes, but are considered in the Tier 2 BERA. The site-specific background data collected for MRP Site 1 (i.e., shellfish and sediment) are presented in Attachment A.

2.2 Data Treatment

Analytical data were evaluated/validated and qualified prior to use in the risk assessment. Data evaluation/validation included a comparison of the site data to corresponding blank (laboratory, field, equipment, and trip) concentration data. Data rejected by the evaluation ("R" qualified) were not used. Estimated values (e.g., "J" qualified) were used in the risk assessment without modification. If the value was flagged with "U" or "UJ", the result was considered a nondetected (an undetected) value.

For each exposure area and medium, the data were compiled into summary statistics as discussed below. For some locations where the ERA considered an exposure horizon of 0 to 1 ft, data were available for both a 0 to 0.5 ft and 0.5 to 1 ft horizon (i.e., 2009 soil and sediment data). In these cases, the data from the 0 to 0.5 ft and 0.5 to 1 ft horizons were averaged together to represent a 0 to 1 ft result, prior to the calculation of summary statistics The following approach was used to

treat the results from these two horizons to generate a result representative of the 0 to 1 ft horizon (Tables 5 and 6 in Attachment A show the treated results for these samples).:

- When the analyte was detected in both horizons, the average of the detects was used.
- When the analyte was detected in one horizon but not the other, the detected concentration was used.
- When the analyte was not detected in either horizon, the maximum detection limit was used.

For each chemical detected at least once within an area/media, the summary statistics include frequency of detection, range of detection limits, range of detected concentrations, mean of detected concentrations, and location of maximum detected result. The following guidance documents were used to develop the summary statistics:

- Navy Human Health Risk Assessment Guidance (DON, 2008)
- Risk Assessment Guidance for Superfund: Volume I – Human Health Evaluation Manual, Parts A and D (USEPA, 1989 and 2001b)

Treatment of Duplicates: For sample locations in which a duplicate sample was also collected, the duplicate sample results for each chemical/medium/area combination were processed for use in the calculation of summary statistics. Duplicates were resolved as follows: 1) where both the sample and the duplicate were not detected, the resulting values was the higher of the limit of detection (LOD); 2) where both the sample and the duplicate were detected, the resulting values was the higher of the detected results; and 3) where one of the pair was reported as not detected and the other was detected, the detected concentration was used.

Detection Frequency: The detection frequency was reported as the number of detected samples out of the total number of samples analyzed for a specific chemical, after resolution of duplicates as described above. The number of samples that used to calculate the detection frequency reflects the treatment of non-detects described above.

Minimum Detected Concentration or Minimum Reporting Limit: This is the minimum detected concentration or the minimum detection limit (for analytes not detected) for each chemical/medium/depth interval/area combination, after resolution of duplicates as described above.

Maximum Detected Concentration or Maximum Reporting Limit: This is the maximum detected concentration or the maximum detection limit (for analytes not detected) for each chemical/medium/depth interval/area combination, after resolution of duplicates as described above.

Mean of Detected Concentrations: This is the average of the detected concentrations for each chemical/medium/depth interval/area combination, after resolution of duplicates as described above.

Location of Maximum Detected Concentration: This is the sample location associated with the maximum detected concentration, as defined above, for each chemical/medium/depth interval/area combination.

In addition to individual chemicals, summary statistics were calculated for several groups of chemicals including polycyclic aromatic hydrocarbons (PAHs), low molecular weight (LMW) PAHs, high molecular weight (HMW) PAHs, PCB Aroclors, and xylenes (i.e., o-, m-, and p-xylenes). Totals were calculated for these groups of chemicals as follows:

- For samples with at least one detect, only the detected results will be summed to calculate the total concentration.
- Where a sample does not have any detections of individual chemicals, then the total concentration will be considered a non-detect with an LOD equal to the maximum LOD of the individual chemicals.

Hexavalent chromium was analyzed in a sub-set of sediment and soil samples to determine whether the more toxic hexavalent form of chromium was present at the site. Hexavalent chromium was not detected in surface soil so chromium was evaluated as total chromium in soil in the SRA. In sediment, hexavalent chromium was analyzed and detected in two of 12 samples (locations SD101 and SD102). When compared to the total chromium results from those locations, hexavalent chromium composed 3.1% and 8.9% of the total chromium concentrations.

In the SRA, both total chromium and hexavalent chromium in sediments were evaluated. However, separate sediment screening values for hexavalent chromium are not available so there is some uncertainty associated with this evaluation. Sediment concentrations of hexavalent chromium were well below the wildlife screening value (maximum concentration of 1.2 mg/kg vs. screening level of 130 mg/kg) indicating that risks to higher trophic level receptors are unlikely. While the wildlife screening value is based on soil exposures, it is expected that the exposure pathways and risk

findings are generally applicable to sediment exposures (i.e., risks to birds and mammals associated with ingestion of invertebrates). Uncertainties associated with the hexavalent chromium evaluation are discussed further in Section 3.2.3.

3.0 TIER 1 ECOLOGICAL SCREENING RISK ASSESSMENT

The primary objective for a Tier 1 SRA is to determine which, if any, exposure pathways and COPCs warrant further evaluation in a more refined ERA. The Navy Tier 1 ecological SRA process can be described in two steps. Step 1 is equivalent to Step 1 of the USEPA (1997) ERA process and includes a site description, pathway identification/problem formulation, and toxicity evaluation. The goals of this step are to describe the ecological setting of the site and determine whether ecological exposure pathways are potentially complete. Step 2 of the Navy Tier 1 ecological SRA process is equivalent to Step 2 of the USEPA (1997) ERA process. First, potential exposure is evaluated based on conservative assumptions. Then, risk is estimated by comparing the chemical concentrations detected in each medium of concern to conservative, screening-level, medium-specific benchmark criteria.

After Step 2 in the risk assessment process, a Scientific/Management Decision Point (SMDP) is normally reached to determine whether exit criteria for Tier 1, Step 2 have been met. The potential outcomes of the SMDP are as follows:

- The site passes the ecological SRA based on an absence of complete exposure pathways and/or an absence of unacceptable risks (i.e., all maximum concentrations less than benchmarks). Under these conditions, the decision is made that the site poses no unacceptable risks to ecological resources, further ERA or site remediation is unwarranted, and the site may be closed out for ecological concerns.
- The site fails the ecological SRA on the basis that complete pathways and potential unacceptable risks are indicated for at least one chemical. Under these conditions, the decision is made to either initiate interim cleanup or proceed to Tier 2 of the ERA process. The Tier 1 process also identifies those chemicals that should be retained for further consideration and those chemicals that can be eliminated from the risk assessment.

The Tier 1 ecological SRA is being submitted with the draft RI report for regulatory review. Based on the results of the Tier 1 ecological SRA, the Navy has prepared a preliminary Tier 2, Step 3a Baseline Ecological Risk Assessment (BERA) to further assess the potential for adverse effects to ecological receptors at MRP Site 1. If necessary, a SMDP conference with the regulatory and Navy risk managers will be scheduled to discuss the Tier 1 results. The Preliminary Tier 2 assessment will be revised in response to regulatory comments.

3.1 Step 1 – Screening-Level Problem Formulation

Step 1 is divided into several sections that help define the problem at the screening level. Site history details and ecological setting characteristics specifically relevant to this ecological SRA are provided in Section 3.1.1. Assessment and measurement endpoints selected for this ecological SRA are presented in Sections 3.1.2 and 3.1.3, respectively. The selection of representative species for the ecological SRA is described in Section 3.1.4. Exposure pathways are presented in Section 3.1.5 and their incorporation into the conceptual site model (CSM) is described in Section 3.1.6. Section 3.1.7 discusses the selection of COPC, and a description of the toxicity evaluation is provided in Section 3.1.8.

3.1.1 Ecological Setting

The Former Carr Point Shooting Range (MRP Site 1) was a recreational skeet-shooting range where small arms (i.e., shotguns) were discharged at moving targets over the water. The range was used by Navy personnel from 1967 to 1973, and subsequently by the Aquidneck Island Military Rod and Gun Club from 1975 to 1989 (Malcolm Pirnie, 2005). During its use, clay pigeons were launched toward Narragansett Bay, and shot guns were fired at the targets as they flew over the water. As such, targets and ammunition dropped into the water or adjacent shoreline, with shells and casings released at the firing points (Malcolm Pirnie, 2005). Since 1995, MRP Site 1 has been used as an RV campground for Navy and DoD personnel and is open from Memorial Day weekend through October. There are no existing buildings on MRP Site 1.

Initially one firing arc and one firing fan were identified by Malcolm Pirnie (2005). Additional records reviewed by TetraTech (2010) identified a second arc and potentially a third arc. The “arc” refers to onshore areas where participants fired at the targets, and the “fan” refers to offshore landing areas that were impacted by the lead shot and targets. The firing fan extends over the water 20 degrees to the left of the southernmost range and 20 degrees to the right of the northernmost range. In addition, the area of potential target fragment accumulation (“target area”) was estimated to be 300 feet and a conservative estimate for potential lead shot accumulation (“overshoot area”) was estimated to be 900 feet (Malcolm Pirnie, 2005). The estimated firing fan, including the target and overshoot areas, are depicted on Figure 4. Sediment sampling conducted during 2013 and 2014 indicated that pellets were present beyond the extent of the firing fan.

The former clay pigeon launching area, portions of the former firing arcs and the area immediately downgradient of the former firing arcs are separated from the remaining portions of the MRP Site 1 by a secure chain-link fence, demarking an approximate 27,000 square foot area with the highest

estimated impacts from prior shooting range activities. A portion of this area was addressed by a NTCRA removal of surface soil in 2013.

Terrestrial portions of MRP Site 1, including areas of maintained lawn, may provide habitat for ecological receptors such as plants, soil invertebrates, and small birds and mammals. However, pavement and gravel areas are unlikely to provide suitable habitat or foraging areas for many ecological receptors.

An intertidal gravel and sand beach extends along the western edge the site. Sub-tidal depositional sand is present offshore. The shoreline associated with Carr Point, extending north to Melville-North, is mapped as an inter-tidal sand beach with limited area of back beach. Along the majority of the shoreline, sediment is covered by stones and cobbles and may provide habitat for benthic invertebrates.

A survey was conducted in November 2013 using topside underwater video and divers to assess habitat complexity and ecological functions within the areas potentially impacted from historical activity at the site. Divers were also used to collect shellfish tissue for chemical analyses. Attachment B provides the details of the approach and the findings of the habitat survey. The substrate within the site consisted of sand and gravel with larger cobble becoming prominent towards the beach. Large (>1 foot) boulders were noted in several locations and a boulder field was delineated along the southern boundary of the firing fan (Figure 4). Skeet fragments were not observed on the sea floor; however, fragments were seen on the beach above the water line during sampling at low tide. Shell hash was noted at every location during the habitat survey and the species of shellfish observed varied from location to location.

Dominant shellfish species included slipper shells (*Crepidula fornicata)*, quahogs, and blue mussels. Other species observed included razor clams *(Silqua patula)*, bay scallops *(Aquipecten irradians)*, knobbed whelks *(Busycon carica)* and periwinkles *(Littorina littorea)*. Numerous large spider crabs (*Libinia emarginata)* were also observed. Algal cover was mixed from location to location with transient tufts of algae as well as affixed algae such as rock weed *(Ascophyllum nodosum)* and eelgrass (*Zoestra marina*). Algae were noted more frequently than eelgrass with the eelgrass only observed in the vicinity of SD115 and SD20.

Benthic biology samples were also collected from two locations during the December 2013 sediment sampling event in order to provide an assessment of the macroinvertebrate community and assess the availability of biomass which may serve as prey for diving ducks. The field sampling had planned to collect biology samples at all sediment stations, but the field conditions (e.g.,

significant cobble, large rocks) did not allow for collection of samples as planned with the power grab sampler. As described in Attachment C, biology samples were collected from stations SD112 and SD121 using the power grab and were analyzed in the laboratory. It was noted that the surface of the sample collected at station SD112 was covered with *Crepidula* shells and snails. A total of 3,674 specimens were identified from 26 taxa in five phyla. Species of polychaete annelids in 19 families were the most abundant by count, accounting for 51.5% of all organisms identified. *Gastropoda* (mollusc) was also a common group, accounting for 29.2% of all organisms identified (primarily the *Crepidula* from station SD112).

The findings from the habitat survey, shellfish collection efforts, and benthic biology evaluation indicate the presence of a variety of invertebrates which may serve as prey items for diving ducks and other birds potentially feeding within the Bay. Blue mussels and periwinkles observed at stations located closest to the shoreline also represent potential prey items for shorebirds and mammals foraging along the beach area. However, the cobble and large rocks present closer to shore may limit foraging success for some receptors because access to true sediment and benthic invertebrates may be physically challenging.

3.1.2 Assessment Endpoints

Assessment endpoints describe the characteristics of an ecosystem that have an intrinsic environmental value that is to be protected (e.g., protection of warm-water fish community). Typically, assessment endpoints and receptors are selected for their potential exposure, ecological significance, economic importance, and/or societal relevance. Because the SRA represents a very conservative screening level assessment, the assessment endpoints are stated in generic terms. Assessment endpoints are critical to problem formulation, because they link the risk assessment to management concerns and are central to refining the CSM (USEPA, 1997).

Ecological receptors are defined as plant and animal populations, communities, habitats, or sensitive environments. More specifically, the assessment endpoints identified for this ecological SRA are as follows:

- Assessment Endpoint 1 - Protection and maintenance of indigenous terrestrial plant and soil invertebrate communities in upland habitat areas at levels similar to those of nearby populations not exposed to site-related chemicals.
- Assessment Endpoint 2 - Protection and maintenance of terrestrial wildlife receptors within upland habitat areas at levels similar to those of nearby populations not exposed to site-related chemicals.

- Assessment Endpoint 3 - Protection and maintenance of benthic and epi-benthic invertebrate communities in Narragansett Bay at levels similar to those of nearby populations not exposed to site-related chemicals.
- Assessment Endpoint 4 - Protection and maintenance of semi-aquatic wildlife receptors (i.e., wildlife receptors expected to forage within Narragansett Bay) at levels similar to those of nearby populations not exposed to site-related chemicals.
- Assessment Endpoint 5 - Protection and maintenance of diving birds and shoreline birds that may ingest lead pellets as grit.

3.1.3 Measures of Effect

Because assessment endpoints often cannot be measured directly, measures of effect are a set of surrogate endpoints used to provide a quantitative metric for evaluating potential effects of chemicals on the ecosystem components potentially at risk. Measurement endpoints provide the actual measurements used to evaluate ecological risk and are selected to represent mechanisms of toxicity and exposure pathways. The measurement endpoints identified for this ecological SRA are presented below:

- Comparison of on-site concentrations of chemicals in surface soil to soil screening values derived for the protection of plants and soil invertebrates.
- Comparison of calculated total daily dose (TDD) for avian and mammalian receptors from exposure to chemicals in surface soil and ingestion of contaminated prey items to chemical-specific toxicity reference values (TRVs).
- Comparison of Narragansett Bay sediment concentrations collected in the vicinity of the site to marine sediment screening values.
- Comparison of Narragansett Bay shellfish tissue concentrations collected in the vicinity of the site to tissue-based thresholds.
- Comparison of calculated TDD for avian and mammalian receptors from exposure to chemicals in sediments and ingestion of contaminated prey items to chemical-specific TRVs.
- Comparison of lead pellet counts against screening-level benchmarks identified to be protective of avian receptors.

Screening on the basis of toxicity due to direct exposure in the SRA was done by comparing the maximum detected site concentrations against appropriate risk-based screening levels. The risk-

based screening levels used to select COPCs for lower trophic level receptors are discussed in Section 3.1.8.

Food web models were used to assess risks to mammals and birds due to bioaccumulation. Bioaccumulation-based measures of effects corresponding to the survival, growth, and reproductive assessment endpoints for indirect exposure of wildlife (i.e., birds and mammals) were identified for the representative species or their surrogates and are discussed in Section 3.1.8. The expected exposure of the representative species was modeled from measured COPC concentrations in site media to estimate the measurement endpoint (ingestion/uptake) in the representative species. The expected exposure was compared to the TRVs to estimate the likelihood of adverse effects.

3.1.4 Selection of Representative Wildlife Species

As described in Section 3.1.1, the areas under evaluation for the food web model are the upland portion of the site which includes areas of maintained grass, parking areas, and the slope down toward the beach, and the beach extending from the edge of the grassy upland area out into Narragansett Bay to the extent of the Overshoot Area (approximately 900 ft from shore). Selection of representative receptors for the SRA was determined based on site-specific information (i.e., site presence/observations, local/regional occurrence records and/or likelihood of site presence) and relevant exposure pathways. The primary weight in selection of representative species was placed on selection of receptors that represent key feeding guilds and ecological communities known and/or expected to be present at the site, and for which adequate life history data are available (e.g., per USEPA [1993]).

Receptors were selected to represent species with limited home ranges (e.g., short-tailed shrew) that would be expected to make extensive use of the site, and more wide ranging species that might make more periodic use of the site (e.g., herring gull). Since chemicals may bioaccumulate through the food web, representative vertebrate wildlife species from two trophic levels were selected for evaluation. These trophic levels include Trophic Level 2 (TL2) herbivores and Trophic Level 3 (TL3) omnivores and insectivores. Herbivores (TL2) are primary consumers, ingesting primary producers (vegetation) and analytes from one trophic level. Omnivores (TL3) consume both primary producers and consumers and ingest analytes from two trophic levels. Insectivores (TL3) also consume primary consumers (invertebrates). Due to the relatively small size of the area under evaluation, Trophic Level 4 (TL4) carnivores were not selected. Carnivores represent the top of the food chain and are likely to feed over large areas such that any dietary contributions from the marine habitat and upland habitat associated with MRP Site 1 would be very small.

The following representative birds and mammals were selected for evaluation in the food web model:

- Herbivorous upland mammal - meadow vole
- Herbivorous upland bird - bobwhite quail
- Insectivorous upland mammal - short-tailed shrew
- Insectivorous upland bird - American robin
- Omnivorous semi-aquatic mammal - raccoon
- Piscivorous/insectivorous semi-aquatic bird - herring gull

The individual receptors are described briefly in Attachment D.

3.1.5 Exposure Pathway Analysis

Exposure pathways differ in importance from species to species and from site to site. For example, sites with minimum habitat value may be used by ecologically significant species that tolerate human disturbance of natural habitats.

It is anticipated that ecological receptors may come in contact with surface soil (0 to 1 ft bgs) and surface sediment (0 to 1 ft bgs) within MRP Site 1. In addition, as a result of historic skeet-shooting activities, birds may be exposed to lead pellet fragments ingested as a source of grit or incidentally during ingestion of prey items.

The following exposure pathways were evaluated for MRP Site 1:

- Soil invertebrates and plants directly exposed to site-related compounds in surface soil.
- Birds and mammals exposed to site-related compounds through incidental ingestion of surface soil and by ingestion of contaminated prey items impacted by surface soil.
- Benthic invertebrates directly exposed to site-related compounds in surface sediment in Narragansett Bay adjacent to MRP Site 1.
- Birds and mammals exposed to site-related compounds through incidental ingestion of sediment and by ingestion of contaminated prey items impacted by sediment in Narragansett Bay adjacent to MRP Site 1.
- Birds (e.g., diving ducks or shoreline birds) exposed to lead through ingestion of lead shot pellets found in sediment and along the shoreline adjacent to MRP Site 1.

3.1.6 Development of Ecological Conceptual Site Model

An ecological CSM was developed to provide a clear and concise description of how ecological receptors may come into contact with site-related COPCs via release mechanisms and exposure to soil and/or sediment. The ecological CSM provides a schematic representation of the potential site-related COPC release mechanisms, the exposure pathways, and potential ecological communities or wildlife receptors to be assessed. Figure 5 presents an ecological CSM figure for the site identifying potential source areas, migration pathways, and potentially exposed ecological receptors.

The primary sources of contamination at MRP Site 1 consist of painted clay pigeons, associated clay pigeon fragments, and lead shot. Clay pigeons can potentially contain "petroleum pitch," which is blended with the clay and can consist of PAHs. In addition, the clay pigeons were often painted and the paint potentially contained lead. The previous site investigation (Tetra Tech, 2010) identified elevated concentrations of PAHs, lead, and propellant residues in the surface soil, PAHs in the subsurface soil, and PAHs, metals (primarily lead), and lead shot in sediment. Secondary sources include a smaller study area suspected for material storage of possible PCBs and pesticides.

Primary release mechanisms consist of direct discharge of materials to the surface soil in the former shooting range areas, as well as direct impacts into Narragansett Bay from airborne clay pigeons and lead shot. Secondary release mechanisms could include volatilization of certain PAHs, generation of fugitive dust from soil, grinding and breakdown of clay pigeons and lead pellets due to wave action and scour, chemical leaching into groundwater, groundwater discharge into Narragansett Bay, and food-chain uptake.

Contact with surface water in Narragansett Bay is not considered to be a significant pathway of exposure to site-related chemicals due to the tidal influence; therefore, surface water is not considered to be a media of concern.

3.1.7 COPC Selection

Maximum concentrations in surface soil and sediment were compared to published screening ecotoxicity values (SEVs) to select COPCs. The literature was reviewed to identify tissue-based thresholds for the evaluation of the site-specific shellfish data. The approach for the selection of the SEVs and tissue-based thresholds is presented in Section 3.1.8 and values are presented in Attachment E and Attachment F.

Chemicals that were detected at concentrations greater than the SEVs were selected as COPCs. Chemicals that were detected but do not have associated SEVs were also maintained as COPCs. Essential nutrients (calcium, magnesium, potassium, and sodium) were not retained as COPCs.

As indicated in Table 5, in surface soil (0 to 1 ft bgs) 39 detected analytes or analyte groups were selected as COPCs because of benchmark exceedances. SEVs were available for all detected analytes.

As indicated in Table 6, in surface sediment (0 to 1 ft bgs) 23 detected analytes or analyte groups were selected as COPCs because of benchmark exceedances. Beryllium, hexavalent chromium, and thallium were added as COPCs because they were detected but lacked SEVs.

As indicated in Table 7, in shellfish tissue, four detected analytes were selected as COPCs because of benchmark exceedances. Nine analytes (aluminum, antimony, barium, beryllium, cobalt, iron, manganese, selenium, and vanadium) were added as COPCs because they were detected but lacked appropriate studies to derive CBRs.

3.1.8 Toxicity Evaluation

The toxicity evaluation consists of identification of SEVs for surface soil and sediment, tissue-based thresholds for shellfish tissue, and TRVs for the food web pathways. These values are expressed as concentrations (in milligram/kilogram [mg/kg] on a dry weight basis for soil and sediment or a wet weight basis for tissue) or dosage (in mg/kg of body weight per day [mg/kg-day] for wildlife) of a chemical believed to have little or no effect on the long-term health of the representative species of concern. Attachment F identifies the SEVs for soil and sediment as well as the TRVs for wildlife. Attachment G identifies the data used to provide CBRs for shellfish.

<u>Soil Screening Levels</u>

For the surface soil dataset, the maximum detected concentration of each chemical was compared to media-specific SEVs to assess the potential for risks to the plant and soil invertebrate communities. Chemicals detected above these SEVs were identified as COPCs for further evaluation in the Tier 2 BERA. Soil SEVs were selected, when available, from the following hierarchy of sources:

- USEPA Ecological Soil Screening Levels (Eco-SSLs) for plants and soil invertebrates derived according to USEPA guidance (2005a).

- Plant and invertebrate based soil screening values developed by the Oak Ridge National Laboratory (ORNL; Efroymson, et al., 1997a,b).

Soil SEVs from alternate sources (e.g., CCME, 2002, USEPA, 2003; USEPA, 2001c) were considered when values are not available from the sources listed above.

Sediment Screening Levels

For the surface sediment dataset, the maximum detected concentration of each chemical was compared to media-specific SEVs to assess the potential for risks to the benthic invertebrate community. For sediments collected from Narragansett Bay, marine screening values were selected preferentially; however, freshwater values were used when marine values are not available. Chemicals detected above these SEVs were identified as COPCs for further evaluation in the Tier 2 BERA.

The primary source for sediment SEVs were the Effects Range Low (ERL) values derived by Long, et al. (1995). Additional screening values from alternate sources (e.g., Buchman, 2008; USEPA, 2006a,b) were considered when ERL values are not available.

SEM, AVS, and TOC were also evaluated in order to account for the potential for divalent metals bioavailability to be limited in the surface sediments. Sediment data were evaluated on a sample-by-sample basis using the following scale (USEPA, 2005b) to evaluate whether or not the organic carbon binding phase (represented as fraction organic carbon or f_{oc}), in conjunction with the AVS, is affecting the bioavailability of divalent metals in sediment:

- If the $(\sum SEM\text{-}AVS)/f_{oc}$ exceeds 3,000 micromoles per gram organic carbon ($\mu mol/g_{oc}$), the soils are presumed to be “likely to be toxic”.
- If the $(\sum SEM\text{-}AVS)/f_{oc}$ is between 130 and 3,000 $\mu mol/g_{oc}$, predictions of effects are uncertain.
- If the $(\sum SEM\text{-}AVS)/f_{oc}$ is less than 130 $\mu mol/g_{oc}$, the soils are presumed to "not likely" be toxic.

Shellfish Screening Levels

For the shellfish dataset, the maximum detected concentration of each chemical was compared to effects-based critical body residue (CBR) data to identify COPCs and assess the potential for risks to shellfish. CBRs represent threshold tissue concentrations where concentrations in excess of the CBR value could potentially result in adverse biological effects to the exposed shellfish (not consumers of shellfish).

Rather than selecting one individual effects-based CBR for evaluating potential effects of residues, the tissue data were evaluated in the context of a number of different studies. Lowest Observed Effects Dose (LOED) and No Observed Effects Dose (NOED) values for shellfish (or similar species) were identified from a review of the U.S. Army Corps of Engineers' (USACE) Environmental Database (ERED) (http://www.wes.army.mil/el/ered/) and Jarvinen and Ankley (1999).

Data were preferentially identified for marine shellfish; however, freshwater data were also considered in an absence of marine data. Appropriate endpoints were considered to be survival, growth, and/or reproduction. In addition, the following steps were taken to identify relevant CBRs:

- Only whole body residues were selected in order to identify toxicity data that was comparable to the site-specific whole body data available.
- Studies presenting only NOEDs with no associated effects values (e.g., LOEDs) were excluded because they do not identify a level of toxic response and are based on the test concentrations considered in a study (e.g., if no effects are noted at the highest tested concentration that does not provide relevant information about where the toxic effect might begin to occur).
- A range of acceptable NOED and LOED results were identified for each endpoint.
- Alternative effects levels (e.g., median lethal doses [LD50]) are only presented if no acceptable NOEDs or LOEDs were identified.

Attachment G provides the supporting information for the identification of the CBRs.

Wildlife Screening Levels and Dose-based TRVs

Risks to mammals and birds from exposure to chemicals in surface soil and sediment were determined using food web models to estimate the TDD which was compared to chemical-specific TRVs representing acceptable daily doses in mg/kg-day. Chemicals were evaluated using a food web model if they exceeded the wildlife-based benchmarks identified from the Eco-SSLs for birds and mammals derived according to USEPA guidance (2005a) and alternate sources (USEPA, 2003; CCME, 2002; Buchman, 2008) when Eco-SSLs were not available.

TRVs used in the SRA were based on no observed adverse effect levels (NOAELs). TRVs were determined for each COPC for avian and mammalian receptors in order to evaluate potential risks to wildlife. The TRV relates the dose of a respective COPC from oral exposure with a potential adverse effect. If no toxicity information was available for a COPC, and it was not possible to identify TRVs, risks associated with the estimated exposure for the respective COPCs were not

quantitatively evaluated. TRVs were identified for nearly all COPCs retained for inclusion in the food web model.

TRVs incorporated into the quantitative evaluation of potential ecological risks to wildlife were obtained from the following sources: USEPA guidance for the development of Eco-SSLs (USEPA, 2005a) and Oak Ridge National Laboratory's (ORNL) publication Toxicological Benchmarks for Wildlife: 1996 Revision (Sample et al,. 1996). When TRVs were not derived in these documents, the literature was reviewed for relevant data and TRVs were derived using the methodology of ORNL (Sample et al., 1996).

No body weight scaling was used to scale No Observed Adverse Effect Levels (NOAELs) for surrogate test species to an equivalent NOAEL for receptor species. Therefore, $NOAEL_{receptor} = NOAEL_{test\ species}$.

<u>Screening Level Threshold for Lead Pellets</u>

To assess potential risks to birds due to ingestion of lead shot a pellet threshold derived to be protective of birds was identified. During previous investigations at the site, a benchmark of 10 pellets/square foot had been used (Tetra Tech, 2010). However, for the SRA a threshold of 7 pellets/square foot benchmark was selected in response to stakeholder concerns about selecting an appropriately conservative level.

The threshold of 7 pellets per square foot was identified based on a review of ERAs conducted for firing ranges. In an ERA for the Prime Hook National Wildlife Refuge (US Fish and Wildlife Service [USFWS], 2004), based on a model it was determined that a mallard and a dove had a 10% probability of ingesting shot at levels of approximately 7 and 9 shot pellets/square foot, respectively. Also, in an ERA for the Nahant Marsh (USFWS, 1998), a value of 10 pellets/square foot was used to screen for waterfowl. This value was based on previous work conducted by Irwin and Karstad (1972). An ERA for an upland trap and skeet range located on the Patuxent Research Refuge identified a remedial goal for the mourning dove of 3 pellets/square foot, not to exceed 13 pellets/square foot, based on a 10% probability of ingesting lead shot (USFWS and USEPA, 2004).

3.2 Step 2– Exposure Estimation and Risk Characterization

This section presents the methods and results of Step 2 of the ecological SRA process. This step comprises a semi-quantitative risk analysis, in which the potential for adverse effects to ecological receptors is estimated using conservative exposure assumptions. This section is divided into four subsections: exposure estimation (Section 3.2.1), risk calculations (Section 3.2.2), uncertainty analysis (Section 3.2.3), and risk characterization (Section 3.2.4).

3.2.1 Exposure Estimation

Mechanisms for exposure of a representative species to chemicals depend on the physical and behavioral characteristics of the organism. Most exposure for sediment invertebrates, soil invertebrates, and plants can be loosely termed "direct contact." Sediment and soil invertebrates have in common the ability to absorb chemicals from sediment or moist soil through external body surfaces or by intake of food, sediment, or soil.

Wildlife species may be exposed to chemicals in soil and sediment through direct incidental ingestion of soil or indirectly by ingestion of contaminated food organisms. Information used to calculate exposure includes EPCs, species-specific exposure factors, chemical-specific exposure factors, and exposure equations.

Exposure Point Concentrations

Exposure was estimated using analytical data for surface soil, sediment, and shellfish tissue presented in Attachment A. Maximum values were used as the EPCs in Tier 1, Step 2 of the ecological SRA.

Species-Specific Exposure Factors

Table 8 presents the exposure factors for the selected ecological receptors. Exposure assumptions (e.g., body weights, food and water ingestion rates, relative consumption of food items, foraging range, exposure duration, etc.) for wildlife species were generally obtained from the USEPA's Wildlife Exposure Factors Handbook (USEPA, 1993). Alternate sources (e.g., USEPA, 2007) were only used when the handbook did not provide sufficient information. Allometric equations (Nagy, 2001; USEPA, 1993) were used to estimate food ingestion rates.

This Tier 1 screening-level assessment included certain conservative species- and chemical-specific assumptions regarding exposure factors:

- Assumed soil, sediment, and shellfish COPC concentrations are represented by the maximum concentrations in the surface soil, sediment, and shellfish data sets.
- Assumed representative species weight is the low-end of the range and food intake is estimated at the high-end of the range.
- Assumed 100 percent bioavailability of COPCs.
- Assumed species is present year-round.
- Assumed that receptors obtain all of their daily dietary requirements from within the site.

- For the SRA, diets of receptors were modeled as exclusive diets (i.e., consisting of 100% shellfish, soil invertebrates, or plants).

The species-specific exposure factors discussed in this section are summarized in Table 8. This table also provides exposure factors to be used in the BERA, as warranted.

Chemical-Specific Exposure Factors

Exposure of representative species also depends, to some extent, on chemical-specific factors, such as solubility, or tendency to bioaccumulate. Site-specific shellfish tissue data were collected and were assumed to be representative of the SRA diets for the herring gull and the raccoon. However, since site-specific tissue data were not available for upland food items, tissue concentrations for COPCs identified in surface soil were estimated using the media concentrations and literature-derived uptake factors. Chemical concentrations in food items were calculated using bioaccumulation factors (BAFs) and other uptake factors from published sources or regression equations from the USEPA Eco-SSL Guidance (USEPA, 2007).

Plant tissue concentrations were estimated using soil concentrations and appropriate uptake factors or regression equations. The primary source of uptake factors was the soil to plant uptake factors and regression equations recommended by USEPA in development of Eco-SSLs (USEPA, 2007). In the absence of Eco-SSL-based values, other literature sources (e.g., Bechtel Jacobs Company LLC, 1998) were reviewed for relevant uptake factors.

Terrestrial invertebrate tissue concentrations were estimated using surface soil COPC concentrations and appropriate uptake factors. The primary source of uptake factors for terrestrial invertebrates was the uptake factors and regression equations recommended by USEPA in development of Eco-SSLs (USEPA, 2007). In the absence of Eco-SSL-based values, the on-line Risk Assessment Information System (http://rais.ornl.gov/) and other literature sources (e.g., Sample, et al., 1998a) were reviewed for relevant uptake factors.

Exposure Equations

To estimate potential dietary exposure, a TDD was estimated for each species. The TDD calculation considers the following factors: concentrations of the COPCs in the food items that the species would consume, estimated amounts of abiotic media (e.g., soil, sediment) that it would incidentally ingest, the relative amount of different food items in its diet, body weight, exposure duration (ED), species-specific area use factor (AUF), and food ingestion rates.

An AUF is defined as the ratio of the area of organisms' home range to the available habitat area on-site. In the screening level evaluation it was conservatively assumed that 100% of the receptor's diet comes from the given exposure area and there is no seasonal migration out of the exposure area (i.e., AUF of 1 and ED of 1 assumed). These assumptions are conservative for receptors which may migrate off-site during parts of the year.

The following generalized equation was used to evaluate the TDD from all sources (i.e., food or prey item, drinking water, incidental ingestion) for each COPC:

$$TDD = \frac{\Sigma([IR_f \times C_f] + [IR_s \times C_s] + [IR_w \times C_w]) \times ED \times AUF}{\text{Body Weight}}$$

Where:

IR_f = Ingestion rate of food (kg/day)

IR_s = Incidental ingestion rate of soil or sediment (kg/day)

IR_w = Ingestion rate of water (L/day)

C_f = Concentration of COPC in food (mg/kg)

C_s= Concentration of COPC in sediment or soil (mg/kg)

C_w = Concentration of COPC in water (mg/kg)

ED = Exposure duration (fraction of time receptor spends within exposure area)

AUF = Area use factor (ratio of the receptor's home range, etc,… relative to the size of exposure area)

The sum of the doses from the various sources represents the full TDD from each COPC that a receptor may be exposed through as a result of foraging within an exposure area. This generalized equation was modified for each representative species using the exposure parameters presented in Table 8. A source of drinking water is not available within MRP Site 1 so C_w is assumed to be zero in the TDD calculations (i.e., no site drinking water contribution to the TDD).

3.2.2 Risk Calculations

The integration of toxicity and exposure information is used to predict possible adverse effects to ecological receptors. The hazard quotient (HQ) method is used to screen sites when potential adverse effects to ecological receptors occur.

To estimate risks to plants, soil invertebrates, and benthic invertebrates in the SRA, screening level HQs were calculated by comparing the maximum detected concentration for each chemical in each medium (i.e., an estimate of exposure) to the appropriate SEV (i.e., an estimate of effects) using the following formula:

$$HQ = \text{Maximum detected concentration}/SEV$$

For higher trophic level wildlife receptors, the risk estimate is also based on the HQ, defined as the ingested dose divided by the species-specific TRV:

$$HQ = TDD/TRV$$

Due to the consistently applied conservative assumptions implicit in a Tier 1 SRA the presence of HQs above 1 does not necessarily constitute ecological risk; only that additional consideration is warranted.

Analytes which exceed their respective screening benchmarks (i.e., HQs > 1) and analytes without screening benchmarks were retained as COPCs. Essential nutrients (calcium, magnesium, potassium, and sodium) were not retained as COPCs.

<u>Comparison of Chemical Concentrations in Surface Soil to Soil SEVs</u>

The potential effects on plants and soil invertebrates were evaluated by comparing maximum detected soil concentrations with direct contact soil screening levels. Maximum soil concentrations were also compared against wildlife-based soil screening values in order to identify COPCs to evaluate further in the food web model.

Table 9 presents a summary of surface soil COPCs and associated HQs that are recommended for the Tier 2 evaluation. The COPCs in excess of the wildlife-based soil screening values were further evaluated in the SRA food web model discussed below.

<u>Comparison of Chemical Concentrations in Surface Sediment to Sediment SEVs</u>

The potential effects on benthic invertebrates were evaluated by comparing maximum detected surface sediment concentrations with direct contact sediment screening levels. Maximum sediment concentrations were also compared against wildlife-based soil screening values in order to identify COPCs to evaluate further in the food web model.

Table 10 presents a summary of sediment COPCs and associated HQs that are recommended for the Tier 2 evaluation. Table 11 identifies the COPCs in excess of the wildlife-based soil screening

values that were further evaluated in the SRA food web model discussed below. While the wildlife screening values considered in Table 11 are based on soil exposures, it is expected that the exposure pathways and risk findings are generally applicable to sediment exposures (i.e., risks to birds and mammals associated with ingestion of invertebrates). Uncertainties associated with this approach are discussed in Section 3.2.3.

Comparison of Chemical Concentrations in Shellfish Tissues to CBRs

The potential effects on shellfish were evaluated by comparing maximum detected shellfish concentrations with body burden toxicity data (i.e., CBRs presented in Attachment F).

Table 12 presents a summary of shellfish COPCs and associated HQs that are recommended for the Tier 2 evaluation. These comparisons are conservatively based on the maximum shellfish concentration and the lowest acceptable NOED identified in Attachment G for each COPC.

Evaluation of SEM, AVS, and TOC Data

All surface sediment samples collected were analyzed for SEM, AVS, and TOC and evaluated on a sample-by-sample basis to evaluate whether or not the organic carbon binding phase (represented as fraction organic carbon or f_{oc}), in conjunction with the AVS, is affecting the bioavailability of divalent metals in sediments (see Section 3.1.8 for threshold limits).

Table 13 presents the sample-by-sample SEM, AVS, and TOC data and evaluation. Uncertainties associated with the SEM, AVS, and TOC evaluation are discussed in Section 3.2.3.

Comparison of Wildlife Total Daily Doses to NOAEL-based TRVs

Maximum media concentrations were used with the conservative exposure assumptions described in Section 3.1.4 to calculate TDD values for each detected COPC for each wildlife receptor. COPCs for the food web model were identified by comparing maximum concentrations in soil and sediment against wildlife-based soil SEVs. COPCs in excess of these SEVs were further evaluated in the food web model.

Attachment G provides the supporting information for the food web model including the equations for calculating the TDD and HQs for both the mammal and the bird wildlife receptors.

Table 14 presents a summary of COPCs with food web HQs greater than 1. Table 15 identifies the pellet count data for the shoreline soil and surface sediment samples and compares the data against the threshold of 7 pellets per square foot.

3.2.3 Uncertainty Analysis

ERA results depend primarily on the use of multiple lines of evidence supporting particular conclusions, and each line of evidence is subject to varying degrees of uncertainty. Because of the complexity of ecosystems and the associated mechanisms that cause ecological stress, uncertainty in environmental risk characterization is inevitable. Uncertainty could be attributable to a number of sources, including but not limited to the following:

- Sampling and statistical variability
- Difficulty of extrapolating from laboratory data to field data
- Problems in evaluating environmental responses to mixtures of contaminants
- Range of conditions for which models or HQs are applicable

Additional sources of uncertainty associated with this ecological risk characterization are described below. In general, the assumptions made in multiple points in the SRA tend to err on the side of over-estimating risks. The cumulative impact of multiple conservative assumptions is more likely to over-estimate, than under-estimate, potential risks to ecological receptors.

<u>Comparison of Chemical Limits of Detection with Media-Specific Screening Levels</u>

It is possible that some chemicals are present in environmental media at concentrations below analytical reporting limits, potentially resulting in an under-estimate of risks. To address this uncertainty, the reporting limits for chemicals that were not detected in at least one sample in a surface soil and surface sediment were compared to the associated screening level SEVs in Attachment I. An evaluation of reporting limits was not conducted for shellfish because most chemicals were detected in all samples and the availability of CBRs is limited.

In the surface soil analytical data set, several chemicals had at least one sample that reported a "non detect" at a limit of detection that exceeded the available SEVs (the lowest of the plant, invertebrate, and wildlife values). In these cases, a chemical could be present in the soil at a concentration that exceeded the screening value but its true concentration was unknown. This means that risk may be under-estimated for such chemicals. In some cases (e.g., mercury, selenium, some pesticides), the chemical was detected in some samples which were evaluated in the SRA. In other cases, only some of the reporting limits exceed the SEVs. For these chemicals there is less uncertainty because the detected concentrations were evaluated or the uncertainties are limited to a sub-set of samples. However, for a number of chemicals, all of the reporting limits

exceeded the lowest SEV. These chemicals include some pesticides, a number of SVOCs, some VOCs, and the energetic 2,4-dinotrotoluene.

With the exception of 2,4-dinotrotoluene, the organics with detection limits above the SEVs were all from three samples located at the southern boundary of MRP Site 1 near the shoreline. These samples had elevated concentrations of pesticides and PCBs so it is likely that any risks related to these locations would be dominated by the detected levels. The SEVs for many of these chemicals are either Dutch Target Values, USEPA Region 4 values for unspecified endpoints, or USEPA Region 5 values based on risks to the shrew or vole. There is less confidence in these benchmarks than in other benchmarks such as the Eco-SSLs which are not available for these chemicals. The 2,4-dinotrotoluene reporting limits were above the lowest SEV (a USEPA Region 4 value using toluene as a surrogate) but were below the SEVs identified for plants and wildlife. These results indicate that although there are some uncertainties associated with the reporting limits for some soil samples, it is unlikely that concentrations below the reporting limit represent a significant source of risk relative to the detected concentrations evaluated in the SRA.

For surface sediment, the reporting limits for selenium and some individual PAHs were above the SEVs in some samples. All of the PAHs were also detected and evaluated in the SRA and only a sub-set of the reporting limits exceeded the SEVs. There may be some uncertainty associated with the potential for risks due to individual PAHs present below the detection limit in sediment, but it is anticipated that the evaluation of the total PAHs within the SRA address any significant risks from PAHs.

<u>Detected Chemicals that Lack Screening Levels</u>

Sediment SEVs were not available for beryllium, hexavalent chromium, and thallium which were detected in sediment. Avian TRVs were not available for antimony or thallium so these chemicals could not be evaluated in the food web models. These chemicals were selected as COPCs because, with no SEV or TRV, it cannot be stated with certainty that those COPCs do not pose an ecological risk.

As discussed in Section 2.2, hexavalent chromium was detected in sediment but a sediment SEV is not available for hexavalent chromium. The maximum total chromium concentration in sediment (16.2 mg/kg) was well below the chromium SEV (81 mg/kg) so chromium itself was not identified as a COPC. Hexavalent chromium was only detected in two of the 12 sediment samples analyzed for hexavalent chromium and sediment concentrations of hexavalent chromium were well below the wildlife SEV for hexavalent chromium (maximum concentration of 1.2 mg/kg vs. screening level of

130 mg/kg). While the lack of a benthic invertebrate-based sediment SEV and the use of a soil-based wildlife SEV represent sources of uncertainty, the low number of hexavalent chromium detections and the low total chromium concentrations indicate that significant hexavalent chromium risks are unlikely.

Uncertainties in Ecological Exposure Estimation

In general, the sampling targeted areas with the potential to have been impacted by historic site activities. However, these areas may not represent ecological habitats or areas likely to be frequented by ecological receptors. This is particularly true for the upland area where many of the samples were collected portions of the RV park which may be frequented by humans during portions of the year. Therefore, ecological exposures to some samples may be limited or receptors may forage in other portions of the site. This type of sampling is expected to bias results high.

Uncertainties in Ecological Toxicity Assessment

A variety of sources of uncertainty were not included above. For example, toxicological studies reported in the literature used for generating screening or protective criteria may not have been obtained under conditions that accurately represent the complexities of potential exposures in the field.

The community-level screening benchmarks and wildlife TRVs used do not generally account for possible synergistic, antagonistic, or additive effects of COPC mixtures in environmental media. These factors may result in an under-estimate or over-estimate of potential risk. Assessing potential risks due to exposures to chemical mixtures is challenging since chemicals within the mixture may not be equally bioavailable and may not act on the receptor with the same toxic mechanism.

Wildlife-based SEVs were used in order to identify COPCs for evaluation in the aquatic and terrestrial food web models. Wildlife-based sediment screening values were not identified in the literature so soil-based wildlife SEVs were used to identify COPCs for further evaluation in both the aquatic and terrestrial food web models. It is expected that the exposure pathways and risk findings used to derive the soil-based wildlife SEVs are generally applicable to sediment exposures (i.e., risks to birds and mammals associated with ingestion of invertebrates). The rates of bioaccumulation from sediment to benthic invertebrates may be different from the rates used to derive the wildlife-based soil screening values. Therefore, there is some uncertainty associated with this approach. It is unknown whether this approach would over- or under-estimate risks to wildlife associated with sediment exposures.

There are a number of uncertainties associated with the tissue CBRs which may over- or under-estimate risks. These values were identified through a review of studies identified in the literature and are presumed to represent tissue concentrations resulting from actual exposures that could potentially result in adverse impacts to shellfish. Based on the outcome of this review, it is apparent that tissue residue thresholds can vary widely across studies and species (alternate invertebrate species were considered when shellfish data were lacking). The studies reviewed were conducted under a variety of different test conditions with different species and life stages. Due to data limitations, tissue residue thresholds were not available for several COPCs resulting in uncertainties for several constituents. The range of toxicity thresholds may vary widely across studies and species for a COPC and exposure will vary among test organisms (e.g., brine shrimp, sea urchin, molluscs) due to differences in exposure routes, rates of uptake and metabolism, and ability to detoxify contaminants (Adams et al., 2010). In addition, effects observed in a laboratory environment do not necessarily imply that ecologically significant effects on wild populations will occur at similar exposure levels. This observation has been made in several field studies of fish (e.g., Barnthouse et al., 2003; Friedmann et al., 2002) and is likely true of shellfish as well.

Uncertainties Associated with SEM, AVS, TOC Evaluation

There are a number of uncertainties associated with the use of the SEM and AVS data which may over or under estimate risks. AVS formation is affected by a number of abiotic and biotic factors, including temperature, redox conditions, sediment resuspension, seasonal changes, and sulfate concentrations. Sediments were collected under cold weather conditions when sulfide levels were expected to be low so that the binding capacity of the sulfides would not be over-estimated.

The SEM/AVS methodology is based on equilibrium partitioning theory, which assumes a steady-state system (USEPA, 2000). This assumption may or may not be as valid in field conditions as it is in laboratory tests of the method. In addition, the SEM/AVS methodology does not take into account possible toxicity from any other inorganic constituents detected in the sediment, and does not explicitly consider bioaccumulation or ingestion of contaminated sediment.

There are also uncertainties associated with the evaluation of $(\sum SEM\text{-}AVS)/f_{oc}$. Normalization of SEM-AVS to fraction organic carbon reduces the variability in exposure assessments, especially in laboratory experiments. There is some uncertainty in extrapolating these relationships into field conditions. In particular, there is evidence that the effect of organic carbon on bioavailability depends on the nature of the organic carbon (such as when the organic carbon is present as biological complexes that would tend to increase bioavailability; USEPA, 2000).

Under conditions of low AVS concentrations, as were observed for several samples, other binding phases may also play a role in moderating bioavailability. In the samples where AVS was not detected, the (∑SEM-AVS)/f_{oc} conclusions indicate that binding by TOC plays a large role.

3.2.4 Risk Characterization

The COPCs and receptors with HQs greater than 1 in the Tier 1 ecological SRA risk assessment are summarized below and shown in Table 16.

Risk to Plants and Soil Invertebrates

The surface soil COPCs identified in Table 5 were compared against direct contact soil SEVs identified for both soil invertebrates and terrestrial plants and the resulting HQs are presented in Table 9.

Thirty one COPCs (representing analytes and analyte groups) had HQs above 1 when maximum detected soil concentrations were compared against the soil invertebrate SEVs. These HQs ranged from 1.2 for cobalt to 1,200,000 for endosulfan sulfate (based on a Dutch Target Value). Thirty three COPCs (representing analytes and analyte groups) had HQs above 1 when maximum detected soil concentrations were compared against the terrestrial plant SEVs. These HQs ranged from 1.1 for anthracene to 1,200,000 for endosulfan sulfate (based on a Dutch Target Value). SEVs were available for all COPCs. The list of COPCs with HQs above 1 overlap considerably between the receptor groups and include several inorganic chemicals, four pesticides, and PAHs.

Risk to Benthic Invertebrates

The maximum detected concentrations for sediment COPCs identified in Table 6 were compared against direct contact sediment SEVs identified for marine benthic invertebrates and the resulting HQs are presented in Table 10.

Twenty three COPCs (representing analytes and analyte groups) had HQs above 1 when maximum detected sediment concentrations were compared against the benthic invertebrate SEVs. These HQs ranged from 1.3 for pyrene to 91.9 for lead. Three COPCs lacked benthic invertebrate SEVs (beryllium, hexavalent chromium, and thallium).

A review of the SEM, AVS, and TOC data presented in Table 13 indicates that, for the majority of the samples, divalent metals (cadmium, copper, lead, nickel, and zinc) are not expected to be bioavailable and toxic (i.e., (∑SEM-AVS)/f_{oc} is less than 130 µmol/g_{oc}). At two shoreline locations, SD101 and SD122, the (∑SEM-AVS)/f_{oc} is between 130 and 3,000 µmol/g_{oc} where the prediction of effects are uncertain. These results indicate that, although some divalent metals may be present

above the SEV and sulfides were not detected in all samples, the available sulfides and organic carbon are expected to limit potential toxicity to benthic invertebrates in most locations (i.e., $(\sum SEM\text{-}AVS)/f_{oc}$ is less than 130 $\mu mol/g_{oc}$).

Shellfish CBRs were identified as an additional line of evidence for evaluating potential impacts to benthic invertebrates such as the blue mussels and quahog present in the Bay. Data was not available to develop CBRs for several of the detected analytes. The four COPCs with CBRs had HQs above 1 (Table 12). These HQs ranged from 1.1 for arsenic to 12.9 for Total PAHs.

Risk to Birds and Mammals

Risks to mammals and birds were assessed using food web models which estimated a TDD for each COPC and compared the dose to a chemical-specific NOAEL-based TRV. Attachment H provides the supporting calculations for the food web model and Table 14 summarizes the HQs. Wildlife COPCs for inclusion in the food web model were identified for soil and sediment in Tables 9 and 11, respectively. Based on the additive nature of the chemical toxicity and the availability of uptake factors and TRVs, PAHs were evaluated as Total HMW PAHs and Total LMW PAHs and PCBs were evaluated as Total PCBs.

For the upland receptors, the bobwhite quail and meadow vole were assumed to feed exclusively on plants and the American robin and short-tailed shrew were assumed to feed exclusively on soil invertebrates. For receptors in the Bay, the herring gull and the raccoon were assumed to feed exclusively on shellfish.

For the upland food web, the following COPCs resulted in HQs above 1 for at least one receptor: antimony, arsenic, cadmium, copper, lead, mercury, selenium, thallium, zinc, Total LMW PAHs, Total HMW PAHs, Total PCBs, 4,4'-DDT, and endosulfan sulfate. For wildlife exposed to COPCs in the Bay, antimony, copper, lead, mercury, and vanadium resulted in HQs above 1 for the herring gull or the raccoon. For the herbivores (bobwhite quail and meadow vole), the majority of the dose for the COPCs with HQs above 1 is based on inadvertent soil consumption. For the remaining receptors, the majority of the dose for most COPCs comes from prey items (soil invertebrates or shellfish).

To assess the potential for risks to birds due to ingestion of lead pellets, the lead pellet data for surface soil and surface sediment samples were compared against the screening-level threshold of 7 pellets per square ft. Table 15 presents the sample-by-sample evaluation of the pellet data and Figure 6 displays the findings for surface soil and sediment. For samples with two depth horizons sampled within the surface sediment (0 to 1 ft), Figure 6 presents the average count for the two horizons and Table 15 presents the individual sample results.

For the shoreline soil samples, pellets were found at three of the seven sampling locations and in all cases the counts were above the threshold. These three locations are situated at the southern end of the beach near the boundary with Site IR 22 and extend outside the firing fan boundary.

Pellets were above the pellet threshold at the majority of the sediment sampling locations within the firing fan and the presence of pellets extends beyond the firing fan to the north and south. Beyond approximately 500 ft from the shoreline the pellets counts are below or approaching the pellet threshold. As indicated in Figure 6, the highest concentration of pellets is found in the central portion of the firing fan within approximately 200 to 500 ft from the shoreline. Pellet counts decrease close to the shoreline but typically remain above the threshold.

Samples were collected during three separate field events conducted in 2009, 2013 and 2014 using different sampling equipment but similar approaches (i.e., pellets were consistently separated from the soil or sediment sample with a 2 mm sieve). The 2009 samples were collected from depths of 0 to 0.5 ft and 0.5 ft to 1 ft bgs or refusal. In some cases the deeper sample from a location may represent a depth of less than 0.5 ft and thus a smaller sample volume than the more surficial sample (i.e., if refusal was encountered at less than 1 ft). The samples collected in 2013 and 2014 were collected from a 0 to 1 ft horizon. The results from all samples were considered relevant for comparisons against the screening-level pellet threshold.

3.3 Tier 1 Conclusions/Recommendations

In this Tier 1 ecological SRA, it was determined that complete exposure pathways exist from the surface soil and sediment at MRP Site 1 to plants, soil invertebrates, sediment invertebrates, and wildlife receptors. This assessment illustrated that there is a concern for ecological receptors from exposure to surface soil, sediment, and pellets at MRP Site 1 that warrants further attention. Table 16 summarizes the COPCs and receptors with HQs above 1 in the Tier 1 ecological SRA.

3.4 Tier 1, Step 2 Exit Criteria

One of three outcomes is possible at this point in the ecological SRA:

- There is adequate information to conclude that the ecological risks are negligible and, therefore, there is no need for remediation based on ecological risk.
- The information is not adequate to make a decision at this point, and the ERA process will continue to the Tier 2, Step 3a BERA.
- The information indicates a potential for adverse ecological effects, and a more thorough assessment is warranted.

Maximum concentrations of certain metals and PAHs at MRP Site 1 pose potential risk to plants, invertebrates, and/or wildlife, with Tier 1 HQs greater than 1. PCBs and some pesticides were also detected in soil at levels resulting in HQs above 1 for plants, invertebrates, and wildlife. In addition, lead pellets are present in the sediment and shoreline soil at levels above the screening level threshold identified for the protection of birds. Therefore, MRP Site 1 fails the ecological SRA and soil and sediment pathways, including ingestion of lead pellets, require further evaluation in a Tier 2 assessment.

3.5 Scientific/Management Decision Point

The Tier 1 ecological SRA is being submitted with the draft RI report for regulatory review. If necessary, an SMDP conference with the regulatory and Navy risk managers will be scheduled to discuss the Tier 1 results. Based on the results of the Tier 1 ecological SRA, the Navy has prepared a Tier 2, Step 3a BERA to further assess the potential for adverse effects to ecological receptors associated with MRP Site 1. If necessary, an SMDP conference with the regulatory and Navy risk managers will be scheduled to discuss the Tier 1 results. The Preliminary Tier 2 assessment will be revised in response to regulatory comments.

4.0 TIER 2 BASELINE ECOLOGICAL RISK ASSESSMENT

4.1 Introduction

The ecological SRA for MRP Site 1 covered Tier 1, Steps 1 and 2, conducted in accordance with USEPA (1997) guidance. In this section, preliminary Tier 2, Step 3a evaluation is presented, based on the data reviewed for the Tier 1 SRA but with site-specific adjustments to exposure and toxicity assumptions. The BERA Tier 2, Step 3a evaluates the same assessment endpoints as the Tier 1 SRA, but only for pathways and COPCs that failed to be eliminated in the Tier 1 SRA.

4.2 Overview of Tier 2, Step 3a BERA Process

The Tier 2 ERA is the BERA for a site. Per USEPA (1997) guidance, it applies a five step process to evaluate ecological risks and determine whether site remediation is warranted from an ecological perspective. The five steps that make up Tier 2 are consistent with Steps 3 through 7 of the USEPA Superfund process for ERA (USEPA, 1997). Under Navy protocol, the Tier 2 BERA includes two sets of decision criteria (Step 3a and Step 7) for exiting from, or proceeding with, the ERA process.

In recognition of the fact that a complete BERA encompassing Steps 3 through 7 of the risk assessment process is a lengthy and complex process, and that the Step 1 and 2 SRA yields very conservative results, USEPA recognized the possibility of an intermediate decision point based on a refinement of the COPCs following completion of the SRA (USEPA, 2001a). This decision point is called under Navy protocol Tier 2, Step 3a. This evaluation is conducted using the same data set as used for the SRA, and does not require additional site-specific data collection. However, for MRP Site 1 the Step 3a evaluation considered background data and the results of sediment toxicity tests on sediments collected during the December 2013 field effort, that were not discussed in the SRA.

The Tier 2, Step 3a evaluation is frequently a free-standing evaluation conducted following agency review of the Tier 1 SRA SMDP. However, in this instance, the MRP Site 1 Sampling and Analysis Plan (Resolution, 2013) developed by the Navy and regulatory agencies included the collection of site-specific toxicity and background data, which are often components of a Tier 2 evaluation. The Tier 2, Step 3a evaluation provides additional information and context for the potential for adverse effects to ecological receptors associated with MRP Site 1.

The purpose of Tier 2, Step 3a is to reevaluate COPCs that were retained from Tier 1 for further evaluation in a Tier 2 BERA, and to identify and eliminate from further consideration those COPCs that were retained because of the use of very conservative exposure scenarios. Using less conservative Tier 2, Step 3a assumptions, the Tier 1 ecological SRA risk estimates were recalculated for the pathways and COPCs retained at the end of the Tier 1 SRA. These recalculated risk

estimates were used to refine the list of COPCs identified in the Tier 1 ecological SRA. Step 3a of Tier 2 refines the Tier 1 ecological SRA by asking:

- Do site concentrations exceed background levels?
- Are high concentrations and risks widespread across the site or limited to discrete locations (magnitude and extent of contamination and risk)?
- Could the COPC be in a chemical form that is less hazardous (bioavailability of the COPC)?
- Are the conservative exposure assumptions used in Tier 1 representative of site-specific exposure?

The adjusted exposure assumptions for Tier 2, Step 3a were refined from the Tier 1 exposure assumptions in Section 3.2.1 and are discussed further in the following sections. The Navy Step 3a re-evaluation/refinement process follows these steps:

- Revise exposure assumptions and calculate Tier 2, Step 3a doses and HQ risk estimates.
- Apply both no effect and low effect SEVs and TRVs (as available) to provide a risk range for risk managers to consider.
- Identify COPCs with HQ less than 1 and eliminate from further evaluation.
- For COPCs with an HQ greater than 1, compare concentrations of inorganics to soil background levels. Identify COPCs present at concentrations below background and propose these for elimination from further evaluation.
- For COPCs with an HQ greater than 1, consider bioavailability, identify COPCs likely to be biologically unavailable, and propose these for elimination from further evaluation.
- Review detection frequency to identify COPCs with low detection frequencies (and sufficient data for acceptable site characterization [i.e., 20 or more samples]). If a COPC was detected in only a very small percentage of the samples collected (5% or less), the risk identified in the SRA may be over-estimated and further evaluation of the COPC is not warranted.

After the re-evaluation/refinement, the decision criteria for Tier 2 Step 3a include:

- If the re-evaluation of the conservative exposure assumptions used in the SRA supports an acceptable risk determination for all COPCs, then a no further action (NFA) designation is warranted, and the site exits the ERA process.

- If the re-evaluation of the conservative exposure assumptions does not support an acceptable risk for all chemicals, the BERA process continues to Step 3b and subsequent steps, or to remedial decisions.

Tier 2, Step 3a evaluation employs the same dose models and risk characterization methods as those described in Section 3.2 for the Tier 1 SRA, with appropriate adjustments to the values of some input parameters.

4.3 Tier 2, Step 3a Refinement Approach

4.3.1 Refinement of the EPC

The EPCs (referred to as the refined maximum EPCs) used in the Tier 2, Step 3a evaluation are represented by the upper confidence limit (UCL) on the arithmetic mean concentration or the maximum detected concentration, whichever is lower (USEPA, 2002). USEPA's ProUCL Version 5.0 software (USEPA, 2013) was used to calculate UCLs on the arithmetic mean and the ProUCL recommended UCL (i.e., 95%, 97.5%, 99%) was used as the selected UCL. Based on information presented in the ProUCL guidance (USEPA, 2013) regarding minimum sample size and frequency of detection, UCLs were calculated where at least 10 samples and at least 6 detects are available. ProUCL Version 5.0 recommends 10 to 15 or more distinct results for the most accurate and reliable UCL calculation. When the minimum sample size and number of detects were not met for a dataset the maximum detected concentration was used as the EPC.

Attachment J presents the EPCs used in the Tier 2, Step 3a evaluation and the ProUCL exports presenting the calculation of the UCLs for surface soil, surface sediment, and shellfish tissue. For the Tier 2, Step 3a soil evaluation PAHs were evaluated as Total HMW PAHs and Total LMW PAHs and PCBs were evaluated as Total PCBs. Total PAHs were also evaluated in sediment based on the availability of a Total PAH screening level.

4.3.2 Refinement of Wildlife Exposure Factors

The most conservative species-specific exposure factors were used to estimate Tier 1, Step 2 exposure. In Tier 2, Step 3a, alternate exposure factors (BERA values identified in Table 8) were substituted in the bird and mammal exposure equations, and the resulting TDD was divided by the NOAEL- and LOAEL-based TRVs to estimate the potential for adverse effects to ecological receptors over the range of toxicity levels.

The refinement of exposure assumptions applied in the Tier 2, Step 3a evaluation includes the following:

- Assumed representative species weight and food intake rate represent the average of the range. This assumption is less conservative but may be more realistic than the SRA assumption that representative species weights are at the low-end of the range and food intake is at the high-end of the range.
- Assumed some species may migrate out of the area for a portion of the year or that winter conditions limit ground foraging (ED < 1 for American robin). This assumption is less conservative but may be more realistic than the SRA assumption that representative species are present year-round.
- Assumed that receptors may only obtain a portion of their diets from within the site (AUF < 1 for bobwhite quail, herring gull, and raccoon). This assumption is less conservative but may be more realistic than the SRA assumption that representative species obtain all of their daily dietary requirements from within the site.
- Diets of receptors were modified to reflect alternate distributions of food items and a less conservative incidental ingestion of soil or sediment. It is expected that the mixed distribution of food items considered in Step 3a is more realistic than the exclusive diets assumed in the SRA.

4.3.3 Refinement of Chemical-Specific Exposure Factors

As described in Section 3.2.1, tissue concentrations for most food items considered in the food web model were estimated using uptake factors and regression equations. For the Tier 2, Step 3a evaluation, the sources for the values were the same as in the SRA, but less conservative uptake factors were used (e.g., median values instead of 90th percentile values). Small mammals and fish were also included a prey items in the refined food web model.

Small mammal tissue concentrations were estimated from surface soil concentrations using uptake factors and regression models used during the derivation of the Eco-SSLs (USEPA, 2007) and other sources (Sample, et al., 1996b).

Fish tissue concentrations were estimated from sediment concentrations assuming a default uptake factor of 1 due to a lack of information for sediment to fish uptake factors for inorganics. Due to the tidal influence and the movement of fish in and out of the exposure area, estimates of fish tissue concentrations from sediment may over-estimate actual fish tissues levels. For example, within the refined food web model estimated fish tissue concentrations for inorganics are much higher than the site-specific shellfish tissue concentrations. Therefore, risks due to fish consumption may be over-estimated in the model.

4.3.4 Refinement of Plant and Soil Invertebrate SEVs

In Tier 1 terrestrial plants and soil invertebrate endpoints were evaluated against conservative screening levels intended to be protective under most or all situations. These screening levels were primarily derived from two sources; the Eco-SSL guidance (USEPA, 2007) and ORNL values (Efroymson et al, 1997a,b). These screening levels were derived through literature surveys and selection of the lowest level that met QA criteria for the study. In some cases, as for example chromium, the screening levels (1 mg/kg for plants and 0.4 mg/kg for soil invertebrates) are lower than natural concentrations in most if not all soils. It is apparent these levels are exceedingly low.

An appropriate Tier 2, Step 3a risk range would be based on identifying LOAEL level screening levels applicable to the species at the site. For this ERA no specific evaluation of likely LOAEL levels has been undertaken, and therefore additional evaluation in Tier 2, Step 3a is limited to comparison to background values and a discussion of factors that can affect bioavailability and toxicity. Unlike for surface water and sediment, LOAEL-based plant and invertebrate benchmarks are not provided in the sources used to identify the SEVs (e.g., Eco-SSL and ORNL documents) and are not available in other sources typically used to support ecological risk assessments. Test LOAELs are discussed in the uncertainty discussion in Section 4.5.

4.3.5 Refinement of Sediment Invertebrate SEVs

Alternate marine sediment effects-based SEVs were identified when available. The primary source for the refined sediment SEVs was the Effects Range Median (ERM) values derived by Long, et al. (1995). Additional effects-based screening values from alternate sources (e.g., Buchman, 2008; USEPA, 2006a,b) were considered when ERM values were not available. In the absence of effect-based values, alternate threshold effect values may be considered in the refinement of sediment invertebrate SEVs. Attachment E presents the SEVs used in the Tier 2, Step 3a evaluation.

4.3.6 Refinement of Shellfish CBRs

To evaluate shellfish tissue, CBRs based on both NOEDs and LOED were identified for survival, growth, and reproduction in Attachment F. Shellfish tissue were considered in the context of the range of available CBRs.

4.3.7 Refinement of Terrestrial Wildlife TRVs

In the Tier 2 evaluation, LOAEL-based TRVs can be used to further evaluate the potential for adverse effects to representative species. NOAEL-based TRVs represent a no-effect level of exposure, corresponding to the highest tested level showing no adverse effects. The LOAEL identifies the lowest level tested at which an adverse effect has been noted. The difference

between the NOAEL and LOAEL response provides a natural range of response that can be used to estimate a risk range. The true toxicity threshold is likely to exist between these values for the test species, subject also to uncertainties when extrapolating from the test species to the representative species.

Some TRVs are based on either a LOAEL or a NOAEL endpoint, without measurement of the corresponding value. In cases where the TRV was based on a NOAEL value, LOAEL was estimated from the NOAEL by using an uncertainty factor of 10 (USEPA, 1997). Conversely, if the TRV is based on LOAEL, the NOAEL was estimated at 0.1 times the LOAEL value.

The Tier 2, Step 3a calculation of wildlife HQs presents both NOAEL- and LOAEL-based TRVs to provide risk managers a risk range to consider in making risk management decisions for the site.

4.3.8 Refinement of Sediment Bioavailability

In order to further evaluate the potential for risks to benthic invertebrate receptors exposed to COPCs in the sediments in Narragansett Bay adjacent to MRP Site 1, sediment toxicity tests were conducted on ten Site samples and three background/reference samples. These toxicity tests provide a direct measure of COPC bioavailability and toxicity to invertebrate test organisms under laboratory conditions. During the December 2013 field effort, ten site stations expected to represent range of lead and PAH concentrations were selected for toxicity testing. Samples were collected from four background/reference stations selected to represent similar substrate and water depth conditions to the site and three background/reference samples were included in the toxicity testing program (the sample from SD307 was not selected for testing because it represented similar conditions to SD302).

Samples collected for sediment toxicity testing were co-located with sediment samples analyzed for chemistry. Sediment toxicity testing was conducted with an estuarine crustacean, the amphipod *Leptocheirus plumulosus*, according to the method described in USEPA's Method for Assessing the Chronic Toxicity of Marine and Estuarine Sediment-associated Contaminants with the Amphipod *Leptocheirus plumulosus* (USEPA, 2001d). Tests were conducted for 28 days and measured survival, growth, and reproduction at test termination. Attachment J presents tables summarizing the sediment toxicity testing results as well as the report provided by the testing laboratory.

4.4 Tier 2, Step 3a Risk Calculations

4.4.1 Soil Invertebrates and Terrestrial Plants

Table 17 presents a refined evaluation of the terrestrial plant and soil invertebrate endpoints using the refined maximum EPC. As indicated in Section 4.3.4, LOAEL-based SEVs were not identified and the SEVs considered in this evaluation are the same as in the SRA. Background conditions for soil are discussed in Section 4.4.4 to provide further context for these results.

For soil invertebrates, HQs for 14 COPCs are above 1. This includes six inorganics, six pesticides, Total PCBs, and Total HMW PAHs.

For plants, HQs for 17 COPCs are above 1. This includes eight inorganics, six pesticides, Total PCBs, Total HMW PAHs, and Total LMW PAHs.

The EPCs for the pesticides and Total PCBs are based on the maximum detected concentrations due to the small sample size (n=4 and 5, respectively). The detections of pesticides and PCBs in the MRP Site 1 data set are limited to a portion of the site near IR 22 and the shoreline (i.e., SB301, SB302, and SB223). An additional PCB detection is located in the vicinity of a utility pole just to the south of the firing arcs (SB325). The EPCs for PAHs are driven by elevated levels in a sub-set of locations between the fenceline and the bank leading to the shore (i.e., SB209, SB211, SB212, and SB228). These findings indicate that any potential risks due to these COPCs would likely only occur within a limited portion of the site.

4.4.2 Sediment Invertebrates

Table 18 presents a refined evaluation of the sediment invertebrate SEV comparison using the refined maximum EPC and effect-based SEVs. Background conditions for sediment are discussed in Section 4.4.4 to provide further context for these results. Only the lead HQ is above 1 in the refined evaluation.

Table 19 presents a refined evaluation of the shellfish tissue comparison against the range of CBRs identified in Attachment G. As described previously, sufficient studies were only identified to derive CBRs for arsenic, lead, zinc, and Total PAHs. For each of these COPCs, the refined maximum tissue EPC is compared against a range of no-effect and low-effect CBRs. While the refined maximum EPCs for lead and zinc result in HQs above 1 when compared against the lowest NOED, they are within the range of NOED values and are below the LOED values.

Table 20 summarizes the results of 28 day sediment toxicity tests conducted with the amphipod *L. plumulosus*. Testing was conducted using a laboratory control (negative control), three background/reference samples, five samples collected within the Target Area, and five samples collected within the Overshoot Area between 300 and 600 ft from shore (Figure 4). Attachment K provides the laboratory report from the testing laboratory (EnviroSystems, Inc. in North Hampton, NH) as well as additional tables and figures summarizing the test results and associated sediment chemistry.

Test results were statistically different from the laboratory control for at least some test endpoints for all site and background/reference samples, with the exception of site sample SD121 and background/reference sample SD303 (Table 20). Comparison of the site data against the background/reference data provides a more site-specific evaluation by placing the site results into the context of conditions within Narragansett Bay that are not expected to be impacted by MRP Site 1. In the comparison of site results against background/reference results, seven of the ten samples show no statistical differences from any of the three background/reference samples. Three samples from within the Target Area (SD102, SD122, and SD124) show statistical differences from the background/reference samples for some or all of the test endpoints. Survival and growth (measured as mean dry weight and biomass) were the endpoints most frequently different from the background/reference samples. Reproduction (measured as the number of juveniles produced per adult and per female) was also statistically different in some, but not all, background/reference comparisons for these three samples.

A review of the grain size data for SD102 and SD122 (Attachment K) indicates that these samples contained more gravel than the other site samples (available for SD112, SD118, SD120, SD121) which were dominated by sand. However, the background/reference samples also contained a mix of sand and gravel so grain size differences do not necessarily explain the toxicity observed in some samples.

Figure 7 summarizes the results for lead, copper, lead pellets and Total PAHs for the sediment toxicity testing samples. Lead and copper in sediment each follow a similar trend with the highest concentrations detected in the three samples showing some level of impact (relative to the background/reference samples) in the toxicity tests. The lead pellet counts do not follow the same trend and locations with high lead concentrations in the sediment (SD122) do not have similarly high pellet counts. Most samples with high pellet counts (SD114, SD115, SD120) do not show adverse impacts in the toxicity tests. Total PAHs are elevated above the ERL in one sample which showed toxicity (SD124) but higher PAH levels were measured in background/reference sample

SD303 which had the best performance of the background/reference samples so PAHs may not be contributing significantly to any observed toxicity in the site samples.

The SEM, AVS, and TOC evaluation presented in Table 13 indicated that for the sediment toxicity testing samples, with the exception of SD122, the divalent metals, which include copper and lead, were expected to be bound by the available sulfides and organic carbon and toxicity from these divalent metals was not expected. For SD122, the SEM, AVS, and TOC results fell into a range where prediction of toxic effects was uncertain. In most cases, sulfides levels in these samples were very low, but the low levels of organic carbon were sufficient to bind the divalent metals. It is noted that the SEM and AVS samples were taken from the very surface layer of the sediment samples prior to homogenizing for the remaining chemical analyses so the SEM results don't reflect the metals concentrations present below the top few centimeters.

The toxicity testing results, taken in context with the metals concentration data (concentrations often above the ERL and infrequently above the ERM), the grain size data, and the SEM, AVS, and TOC data indicate that some sediments along the shoreline (i.e., in the vicinity of SD102, SD122, and SD124) may adversely impact benthic invertebrates and that impacts are likely related to elevated concentrations of metals associated with firing range activities (e.g., copper and lead). The gravel substrate along the shoreline may have also served as an additional stressor on the test organisms in these three samples (grain size results are not available for SD124 but conditions were similar to SD102 and SD122). Based on the relatively low levels of PAHs in the tested site samples (below the ERL for all samples except SD124) and the more elevated level of PAHs in a background/reference sample, it is unlikely that PAHs contribute substantially to the observed impacts in the toxicity tests. As noted previously, the presence of lead pellets themselves does not appear to relate to increased sediment toxicity.

4.4.3 Wildlife Endpoints

A refined food web model was used to assess the potential for risks to mammals and birds. Attachment L provides the supporting calculations for the food web model and Table 21 summarizes the refined food web HQs. In the refined food web model, exposure assumptions were modified to reflect average body weights and ingestion rates. AUFs and EDs were also adjusted to reflect more site-specific conditions (e.g., based on the size of available habitat or seasonal conditions). The results of the refined evaluation are presented below for each of the wildlife receptors. Refined maximum EPCs representing the lower of the selected UCL or the maximum detected concentration were used as the basis for the food web model.

Bobwhite quail – The quail was assumed to feed primarily on plants with some soil invertebrates within the upland portion of MRP Site 1. An AUF of less than 1 was used to reflect that the quail may forage outside of the MRP Site 1 upland (AUF of 0.16 was based on average quail home range of 24.7 acres and 4 acres of potential terrestrial habitat). Risks due to antimony and thallium could not be evaluated due to a lack of TRVs. HQs were above 1 for lead and Total PCBs using NOAEL-based TRVs and for Total PCBs using LOAEL-based TRVs.

For lead, the majority of the TDD for the quail is from inadvertent soil ingestion (assumed to be 6.1% based on the mourning dove). The surface soil lead UCL of 3,241 mg/kg is driven by two samples with concentrations above 10,000 mg/kg (SB224 and SB302) and a third sample with a concentration of 1,830 mg/kg (SB223). These samples are located at the southern boundary of MRP Site 1 along the shore line and in a grassy area next to the IR 22 fenceline (note that SB223 is also the sample that drives most of the potential pesticide and PCB risks for plants and soil invertebrates). Excluding these samples, the maximum surface soil concentration is 496 mg/kg and bobwhite quail HQs are less than 1 at this level. This indicates that quail on the majority of MRP Site 1 would not be at risk.

Similarly, PCB risks are driven by a single elevated detection (270 mg/kg at SD223) in a total of five samples (the refined maximum EPC is the maximum detect due to the low sample numbers). Total PCBs in the other four samples are low (0.043 mg/kg, 0.031 mg/kg, and 0.016 mg/kg) or not detected and would not show risk to the quail.

American robin – The robin was assumed to feed primarily on soil invertebrates and some plants within the upland portion of MRP Site 1. An ED of 0.67 was used to reflect that the robin may migrate outside the area for the winter months (or that winter conditions would limit access to the soil for four months of the year). HQs were above 1 for lead, mercury, LMW PAHs, HMW PAHs, Total PCBs, and 4,4'-DDT using NOAEL-based TRVs and for Total PCBs and 4,4'-DDT using LOAEL-based TRVs. As was described above for the quail, lead and Total PCB risks in the upland may be over-estimated based on elevated concentrations in a small number of samples at the southern end of the exposure area.

Meadow vole – The vole was assumed to consume a diet primarily of terrestrial plants in the upland portion of MRP Site 1. An AUF of 1 and an ED of 1 were used to indicate that the vole obtains all food items from the site and is present year-round. HQs were above 1 for antimony, lead, thallium, HMW PAHs, Total PCBs, 4,4'-DDT, and endosulfan sulfate using NOAEL-based TRVs and for Total PCBs using LOAEL-based TRVs. The pesticide data set consists of four samples (from

the four of the same locations as the PCBs) so the maximum detected concentrations are used in the refined food web model. Site-wide risks to the meadow vole due to lead, PCBs, and pesticides may be over-estimated based on elevated concentrations in a small number of samples at the southern end of the exposure area.

Short-tailed shrew – The shrew was assumed to consume a diet primarily of soil invertebrates with some plants, and small mammals in the upland portion of MRP Site 1. An AUF of 1 and an ED of 1 were used to indicate that the shrew obtains all food items from the site and is present year-round. HQs were above 1 for antimony, lead, mercury, thallium, HMW PAHs, Total PCBs, 4,4'-DDT, and endosulfan sulfate using NOAEL-based TRVs and for antimony, Total PCBs, and 4,4'-DDT using LOAEL-based TRVs. As described previously for lead, PCBs, and pesticides, site-wide risks are likely over-estimated.

Herring gull – The gull was assumed to feed primarily on shellfish and some fish within Narragansett Bay adjacent to MRP Site 1. An AUF of less than 1 was used to reflect that the gull may forage outside of this exposure area. An AUF of 0.00022 was calculated based on an average gull home range of 77,000 acres and 17 acres of potential aquatic habitat (see Attachment L-2). However, based on the presence of shellfish within the firing fan, the relatively shallow water for foraging, and the potential presence of diving ducks in the winter it was assumed that the herring gull would obtain 5% of its diet from the site (AUF = 0.05). All HQs were less than 1 for the herring gull in the refined food web evaluation.

Raccoon – The raccoon was assumed to feed on a mix of food items from within Narragansett Bay adjacent to MRP Site 1 (shellfish and fish) and the upland portion of the site (plants, soil invertebrates, and small mammals). An AUF of less than 1 was used to reflect that the raccoon may forage outside of this exposure area. An AUF of 0.013 was calculated based on an average raccoon home range of 1,558 acres and 21 acres of potential terrestrial and aquatic habitat (see Attachment L-2). However, based on the presence of shellfish within the firing fan and the relatively shallow water for foraging it was assumed that the raccoon would obtain 5% of its diet from the site (AUF = 0.05). All HQs were less than 1 for the raccoon in the refined food web evaluation.

Birds Potentially Ingesting Pellets – The evaluation of the potential for risks to birds due to ingestion of lead pellets in surface soil and sediment was evaluated in the SRA using a threshold of 7 pellets per square foot (Table 15 and Figure 6). A refined evaluation of the potential risks to birds due to lead pellets is presented in Attachment M and the results are summarized in Table 22

and Figure 8. This approach uses a probability model presented in USEPA guidance (2011) to determine the probability of a bird ingesting a set number of pellets over a specified exposure period.

The model requires species-specific inputs for the number of grit particles in the gizzard and the amount of time grit is retained in the gizzard. These values were obtained through a review of the literature. The proportion of time foraging on site (equivalent to the AUF in the food web model) and the exposure period were also identified. The exposure period was selected to represent a single day. It is recognized that the birds are likely to feed over a longer period, but this period allows useful comparisons among the birds and exposure areas and fits within the acceptable parameters for the model. The model also uses the site-specific proportion of the 2 to 4 millimeter (mm) particles in a exposure area that is represented by lead pellets. This value helps to establish the probability of a bird selecting a lead pellet instead of a non-lead pellet of a similar size. These counts were available for the 2013 and 2014 sediment data but not for samples collected in 2009.

As indicated in Table 22, the lead pellet evaluation was conducted for four exposure areas: the shoreline soil where upland birds may forage, and the Target Area, Overshoot Area 300 – 600 ft from shore, and the Overshoot Area more than 600 ft from shore where diving ducks may forage. No pellets were identified within the Overshoot Area more than 600 ft from shore so ducks within this area would not be at risk.

The mourning dove and bobwhite quail were modeled for exposure to the pellets within the shoreline soil. These bird could be present on-site, are known to retain grit particles, and have been studied such that information needed for the model is readily available. The model indicates that in a single day, the mourning dove has a 0.0011% probability of consuming a single pellet and the bobwhite quail has a 0.040% probability of consuming a single pellet. The increased probability for the quail is due to a greater number of grit sized particles in the gizzard.

The lesser scaup was modeled for exposure to pellets within the Target Area and the Overshoot Area 300 – 600 ft from shore. The lesser scaup, along with greater scaup, common goldeneye, and other diving ducks are known to be present within Narragansett Bay during the winter (Narragansett Bay Research Reserve, 2013). As indicated in Table 22, in a single day, the scaup has a 1.5% probability of consuming a single pellet within the Target Area and a 7.2% probability within the Overshoot Area 300 – 600 ft from shore.

It should be noted that this model, and other similar models (i.e., Peddicord and LaKind, 2000), were derived for use at upland firing ranges and pesticide applications in fields. While a reasonable

data set is available for evaluating grit ingestion by upland birds (e.g., sparrows, doves, etc.) far fewer data are available for waterfowl and particularly for the marine ducks that may be present in the Bay. For the main species-specific model parameters, number of grit particles in the gizzard and grit retention time, data for the scaup or other resident waterfowl was not identified so information from studies with mallard and Canada geese were used. Therefore, there are some uncertainties associated with applying this model to conditions within the Bay.

The model also calculates probabilities for ingesting more than one pellet during the exposure period. In the Peddicord and LaKind model (2000), which has previously been used at several upland lead pellet ERAs (USFWS, 2004; USFWS and USEPA, 2004), it is assumed that exposure to a single pellet is a toxic event. However, recent work by Tannenbaum (2013) indicates that in some species, multiple pellets did not result in significant mortality or other adverse effects and that concerns about bird exposures in upland ranges may be over-estimated.

While the USEPA (2011) model was built in Microsoft Excel® and provides an estimate of the probability of a bird ingesting lead pellets within MRP Site 1, there are uncertainties associated with the accuracy of these findings due to limitations in Excel's factorial analysis, and further uncertainty with how applicable they are to the birds that may be present at the site. At a minimum, the results presented in Table 22 may be used to identify portions of the site or species that may or may not warrant further investigation.

4.4.4 Background Evaluation

Tier 2, Step 3a evaluation allows consideration of background concentrations when evaluating ecological risk. This step eliminates COPCs with an HQ greater than 1 if the COPC is consistent with background. During the 2013 and 2014 sampling events, shellfish tissue and sediment samples were collected from background locations within Narragansett Bay (Attachment A). For soil, base-wide NAVSTA background data sets of six different soil types are available (Tetra Tech, 2007). These data for soil type MmA were used in the evaluation of background at MRP Site 1, where the dominant soil type is MmA. The MRP Site 1 data were evaluated against the background data sets in Appendix E of the RI Report. The results of the background evaluation are summarized below. Greater detail on the evaluation is provided in Appendix E of the RI Report.

Due to the small size of the shellfish background data set (n=4) a robust statistical population comparison against the site data could not be conducted. Table 23 presents the summary statistic for shellfish in the site and background data sets. With the exception of antimony, the metals and PAHs were detected in all of the site and background samples. The maximum concentrations of

cadmium, manganese, silver, and zinc in site samples were slightly lower than in the background samples. For the remaining metals and PAHs, with the exception of lead, the site maxima were less than a factor of 2 higher than the background maxima. For lead, the site maximum was 17 times higher than the highest background concentrations. When averages were considered, site averages were less than a factor of 1.4 higher than the background average, with the exception of lead which was 5.2 times higher than the background average.

These results indicate that for the HQs identified in Table 19, a portion of the risks for metals and PAHs is due to background levels of these chemicals in the Bay, either naturally occurring or anthropogenic. The availability of background data for shellfish helps to reduce the uncertainties in the evaluation due to a lack of CBRs, and indicates that on average, most COPCs are within the range of local background conditions.

Table 24 presents a summary of the background evaluation conducted for the site and site-specific background sediment samples (see Appendix E of the RI Report for details). Background sediment samples were collected from ten locations in the vicinity of MRP Site 1 and two samples were collected across the Bay in Potter's Cove (Figure 4). Inorganic chemicals and PAHs were detected in nearly all sediment samples from site and background locations. Arsenic, cobalt, copper, manganese, mercury, nickel, vanadium, and HMW and LMW PAH level in site sediment were statistically consistent with background sediments. Antimony and lead levels were not consistent with background.

Table 25 presents a summary of the background evaluation conducted for the site and NAVSTA background surface soils (see Appendix E of the RI Report for details). In general, inorganic chemicals were detected in most soil samples; however, vanadium was the only site COPC that was statistically consistent with background levels. Background comparisons for pesticides, PCBs, and PAHs could not be conducted due to a lack of background data.

4.5 Tier 2 Uncertainty Analysis

The uncertainties described in Section 3.2.3 for the Tier 1 SRA apply also to the Tier 2, Step 3a analysis. In general, the use of more site-specific exposure assumptions and less conservative toxicity ranges reduce the deliberate over-estimation of risk inherent in Step 1 SRA. Nonetheless, the same type of uncertainties are also applicable to this level of analysis.

The general uncertainties associated with the CBR evaluation are discussed in Section 3.2.3 and are also applicable to the Tier 2, Step 3a evaluation.

Assumptions regarding chemical bioavailability and mobility add uncertainty to the risk assessment. Extraction methods used to determine chemical concentrations in soil and sediment are rigorous and destructive; chemicals are often sorbed to soil or sediment particles such that they may not be available to ecological receptors under normal environmental conditions. The evaluation of SEM, AVS, and TOC data in sediment helps to identify cases where metals detected in sediment may not be bioavailable and toxic. The results in Table 13 indicated that for most of the samples, the divalent metals were not expected to be bioavailable and toxic. Therefore, the assumption of 100% bioavailability in the SEV comparisons is likely an overestimate. The general uncertainties associated with the evaluation of SEM, AVS, and TOC data are discussed in Section 3.2.3 and are also applicable to the Tier 2, Step 3a evaluation.

In soil, it is more difficult to assess bioavailability (i.e., SEM and AVS evaluation don't apply to dry upland soils). Organic carbon present in the soil can bind to non-ionic organic molecules, and some inorganics, making them unavailable for absorption by plants or invertebrate organisms. TOC content in the surface soils averaged 2.5% which may serve to bind some of the COPCs.

Bioavailability in prey items is likely over-estimated because the food web models assumed that the COPCs consumed by wildlife receptors were present in a form that was 100% bioavailable (100% of the COPC is assimilated by the organism after ingestion); however, this is unlikely.

The estimate of uptake and/or bioaccumulation from environmental media into plants, invertebrates, fish and wildlife is a source of uncertainty in the ERA. Ideally, site-specific tissue data are available to incorporate into the food web model and shellfish data were specifically collected to help reduce uncertainties in the food web model for Bay exposures. In the absence of site-specific tissue data in the upland, uptake factors or regression models were used to estimate plant, invertebrate and mammalian tissue concentrations. These uptake factors, like the SEVs and TRVs, were generally obtained from laboratory studies which are more likely to overestimate bioavailability rather than underestimate it because of the test conditions selected for laboratory studies (e.g., low pH and TOC).

While several metals had plant and invertebrate HQs greater than 1, risk is probably over-estimated due to uncertainties in the SEVs and the likelihood that studies conducted in the laboratory with bioavailable chemicals and typically low TOC soils are likely to overestimate risks under field conditions. The TOC levels for tests used to derive the soil SEVs were typically less than approximately 2% and the site data averaged 2.5% and ranged to just above 3%. While it is recognized that these TOC levels are not significantly different, the toxicity tests are typically

conducted under conditions designed to increase bioavailability (e.g., low TOC, sandy soils, bioavailable forms of chemicals) more than might be found under field conditions (e.g., weathered chemicals, higher TOC) so laboratory tests may over-estimate actual field condition risks.

As stated in Section 4.3.4, LOAEL-based plant and invertebrate benchmarks are not provided in the sources used to identify the SEVs (e.g., Eco-SSL and ORNL documents) and are not available in other sources typically used to support ecological risk assessments. Therefore, the SEVs used to evaluate plants and invertebrates in the refined evaluation are the same as were used in the SRA. This represents a layer of conservatism in this portion of the Tier 2 Step 3a evaluation. While the sources used to generate the soil SEVs don't necessarily include LOAEL data, a review of the available data does highlight the conservatism of some of these SEVs. For example, the Eco-SSL documentation for lead does not identify any acceptable plant LOAELs, but does indicate that Maximum Acceptable Toxicant Concentrations (MATCs; geometric mean of the LOAEL and NOAEL from a test) ranged nearly three times above the Eco-SSL (316 mg/kg vs. 115 mg/kg). USEPA did not identify a sufficient amount of data to derive a plant Eco-SSL for vanadium, but the available data did identify a growth LOAEL of 100 mg/kg; well above the ORNL SEV of 2 mg/kg. These results highlight the conservative nature of the soil SEVs used in the Tier 2 Step 3a evaluation.

Plant and invertebrate SEVs for COPCs with HQs above 1 in soil were from two main sources and associated uncertainties are identified below.

One soil invertebrate SEV (chromium) and three plant SEVs (antimony, chromium, and zinc) were based on screening values derived by ORNL (Efroymson, et al., 1997a,). As indicated in the documentation (Efroymson, et al., 1997a,b), these values are based on small datasets so confidence in the values is low and potential risks to plants may be over-estimated or under-estimated. Eco-SSLs were not derived for these chemicals due to a lack of sufficient data.

A USEPA Region 4 soil value was used as invertebrate SEVs for iron. This value is based on impacts to the microbial community (Efroymson, et al., 1997a) and may not be truly applicable to earthworms and other invertebrates. As with several other ORNL screening values, this value is based on the lowest value available from a limited data set.

Five soil invertebrate SEVs (antimony, copper, lead, manganese, and zinc) and six plant SEVs (arsenic, cobalt, copper, lead, manganese, and zinc) were Eco-SSLs derived by USEPA based on a review and evaluation of the available literature. There is more confidence in these values, relative to the ORNL and USEPA Region 4 values, since they are based on a more recent and comprehensive review of the literature. However, nearly all of the studies used to derive these

Eco-SSLs were conducted with agricultural plants such as alfalfa, soybean, cotton, and barley that may not be representative of the species found within MRP Site 1. Adverse responses under laboratory conditions may not occur in the field.

The plant and soil invertebrate SEVs for endosulfan and endosulfan sulfate are Dutch Target Values and the SEV for endrin ketone is a USEPA Region 4 value based on a Dutch soil screening level. These Dutch values are typically assumed to be 1% of the Maximal Permissible Risk (MPR) level for ecosystems, where the MPR is the concentration expected to be hazardous for 5% of the species in the ecosystem, or the 95% protection level. Therefore, these SEVs may be overly protective for use in a refined evaluation. There is less confidence in these benchmarks than in other benchmarks such as the Eco-SSLs which are not available for these chemicals.

There are several uncertainties associated with evaluating the potential for risks to birds due to ingestion of lead pellets. Based on the presence of prey items (e.g., shellfish and other invertebrates) in Narragansett Bay adjacent to MRP Site 1, it was assumed that diving ducks, such as scaup, might forage within the area and ingest lead pellets during foraging activities. Similarly, upland birds may forage along the upper shoreline area (e.g., the un-maintained area between the upland and the beach).

The probability model used in this evaluation (and other similar models [i.e., Peddicord and LaKind, 2000]), was derived for use at upland firing ranges and pesticide applications in fields and it is uncertain whether the approach is also applicable to underwater exposures by diving ducks. Since most grit and pellet ingestion models have been derived for upland birds, there is much more information available for the model input parameters for these species than for the diving ducks that may be present within Narragansett Bay. For example, data on the number of grit particles in the gizzard and grit retention time for the scaup or other resident waterfowl are not readily available, so data from surrogate species (i.e., mallard and Canada goose) were used. It is unknown whether these assumptions over- or under-estimate the probability of the scaup ingesting a pellet.

It is also uncertain what daily probability of ingesting a single pellet is acceptable. In previous evaluations (USFWS, 2004; USFWS and USEPA, 2004) using the Peddicord and LaKind model (2000) a 10% lifetime probability of ingesting a single pellet was used as a threshold. However, this assumes that ingestion of a single pellet is a toxic event. Investigations conducted by Tannenbaum (2013) indicate that in some upland species, multiple pellets did not result in significant mortality or other adverse effects.

4.6 Tier 2, Step 3a Risk Characterization

For terrestrial plants and soil invertebrates in the upland portion of MRP Site 1, risk cannot be excluded if an HQ is greater than 1. The HQs are greater than 1 for antimony, arsenic, chromium, cobalt, copper, iron, lead, manganese, vanadium, and zinc, 4,4'-DDT, endosulfan I, endosulfan II, endosulfan sulfate, endrin, endrin ketone, Total PCBs, as well as HMW and LMW PAHs (Table 17). However, vanadium is consistent with background conditions so no further investigation is warranted for this COPC. The elevated HQs for the inorganics may overestimate risk to plants and invertebrates based on the very conservative nature of the benchmarks, the low confidence in most benchmarks, and the fact that these metals are probably less bioavailable and toxic in MRP Site 1 soils (surface soil pH of 5.9 SU, average of 2.5% TOC), relative to the soils used in the toxicity tests on which the benchmarks are based.

The samples resulting in risks due to pesticides and PCBs are found within a limited portion of the site near the shoreline and the southern boundary with IR 22 (i.e., SB223 and SB302) Therefore, site-wide risks due to these COPCs are over-estimated by the elevated HQs. Similarly, PAH concentrations in most samples are well below the plant and invertebrate benchmarks but four samples have Total PAH results over 170 mg/kg (SB209, SB211, SB212, and SB228). These samples are located along the western fenceline along the edge of the upland area as it transitions down to the shoreline.

In addition, within the upland portion of MRP Site 1, following the 2013 removal effort clean fill was brought in and has replaced the native soil within a large portion of the open portion of the site. While the area is not yet completely vegetated, it is anticipated that it will become an open grassy area in the future. The clean fill data were not used quantitatively in the ERA, but this clean material now covers at least 25% of the area of the site and is not expected to pose a risk to ecological receptors (see Figure 3 for extent of the excavation for the NTCRA). As discussed by Terranear PMC (2013), the excavation was filled with 1 to 2 ft of clean backfill. Therefore, potential upland risks to plants and soil invertebrates identified in Table 17 are expected to be over-estimated.

In the sediment SEV comparisons (Table 18), only lead results in an HQ above 1 in the Tier 2, Step 3a risk evaluation. Sediment lead levels within the site data set are also inconsistent with the site-specific background data set. The sediment toxicity testing results identified three shoreline locations (SD102, SD122, and SD124) which resulted in adverse impacts to the test organisms. These impacts are likely related to elevated concentrations of metals associated with firing range activities (e.g., lead) and the gravel substrate along the shoreline may have also served as an

additional stressor for the test organisms. Levels of inorganics, other than lead, and PAHs in site sediment are consistent with background levels. The shellfish tissue evaluation identified concentrations within the range of available no effect and low effect CBRs; however, with the exception of lead, the shellfish concentrations in most samples are within the range observed for background tissue samples.

For the wildlife assessment endpoints evaluated using the food web model, the following conclusions can be drawn using these three categories to describe potential ecological risk:

1. If the NOAEL HQ<1, then no unacceptable risk exists.
2. If the NOAEL HQ>1 but LOAEL HQ <1, risk is unlikely but cannot be confidently excluded. This situation is described as posing indeterminate risk.
3. If the LOAEL HQ > 1, there is potential risk.

HQs for the refined food web model are presented in Table 21 and Tables 24 and 25 summarize the results of the background evaluations which may influence the risk conclusions.

Bobwhite quail – COPCs pose a potential risk to upland herbivorous birds (represented by the quail) in the above three categories as follows:

1. There is no unacceptable risk (NOAEL HQs less than 1) to herbivorous birds from exposure to mercury or Total HMW PAHs.
2. There is indeterminate risk (Tier 2 NOAEL-HQs greater than 1 but LOAEL-HQs less than 1) from exposure to lead.
3. There is potential risk (Tier 2, Step 3a LOAEL-HQs greater than 1) from exposure to Total PCBs.

American robin – COPCs pose a potential risk to insectivorous small birds (represented by the American robin) in the above three categories as follows:

1. There is no unacceptable risk (NOAEL HQs less than 1) to insectivorous small birds from exposure to copper or zinc.
2. There is indeterminate risk (Tier 2 NOAEL-HQs greater than 1 but LOAEL-HQs less than 1) from exposure to lead, mercury, LMW PAHs and HMW PAHs.

3. There is potential risk (Tier 2, Step 3a LOAEL-HQs greater than 1) from exposure to Total PCBs and 4,4'-DDT.

Meadow vole – COPCs pose a potential risk to herbivorous small mammals (represented by the meadow vole) in the above three categories as follows:

1. There is no unacceptable risk (NOAEL HQs less than 1) to herbivorous small mammals from exposure to arsenic, copper, mercury, selenium, and zinc.

2. There is indeterminate risk (Tier 2 NOAEL-HQs greater than 1 but LOAEL-HQs less than 1) from exposure to antimony, lead, thallium, HMW PAHs, 4,4'-DDT, and endosulfan sulfate.

3. There is potential risk (Tier 2, Step 3a LOAEL-HQs greater than 1) from exposure to Total PCBs.

Short-tailed shrew – COPCs pose a potential risk to insectivorous small mammals (represented by the short-tailed shrew) in the above three categories as follows:

1. There is no unacceptable risk (NOAEL HQs less than 1) to insectivorous small mammals from exposure to arsenic, cadmium, copper, and zinc.

2. There is indeterminate risk (Tier 2 NOAEL-HQs greater than 1 but LOAEL-HQs less than 1) from exposure to lead, mercury, thallium, HMW PAHs, and endosulfan sulfate.

3. There is potential risk (Tier 2, Step 3a LOAEL-HQs greater than 1) from exposure to antimony, Total PCBs, and 4,4'-DDT.

As stated above in the discussion of upland risks to plants and invertebrates, site-wide risks to upland wildlife are expected to be over-estimated by these HQs. The sample with risks for PCBs and pesticides are found in limited areas (e.g., along the shoreline near IR 22) and the presence of clean backfill in a large portion of the open upland area reduces overall risks to COPCs. The extent of the NTCRA is identified in Figure 3 and the backfill data is presented and discussed by Terranear PMC (2013). The excavation was filled with 1 to 2 ft of clean backfill throughout the area shown on Figure 3. This open area likely represents usable ecological habitat that may be more attractive to birds and mammals than the areas associated with the RVs and greater human activity. Although the area is not yet completely vegetated, it is anticipated that it will become an open grassy area in the future.

Herring gull – Of the COPCs that were evaluated for the herring gull, no Tier 2, Step 3a NOAEL-HQs or LOAEL-HQs were greater than 1. Therefore, there is no unacceptable risk to the herring gull foraging on fish and shellfish within Narragansett Bay adjacent to MRP Site 1.

Raccoon – Of the COPCs that were evaluated for the raccoon, no Tier 2, Step 3a NOAEL-HQs or LOAEL-HQs were greater than 1. Therefore, there is no unacceptable risk to the raccoon due to foraging within Narragansett Bay adjacent to MRP Site 1 or within upland portions of MRP Site 1.

Birds Potentially Ingesting Pellets – For birds exposed to pellets along the shoreline and within Narragansett Bay adjacent to MRP Site 1, the potential for ingestion of pellets exists. Pellets were present in three of the four exposure areas (no pellets were measured in the Overshoot Area beyond 600 ft from the shoreline). While an acceptable daily probability of ingesting a pellet may be challenging to determine, the refined pellet evaluation model indicates that the potential for ingesting lead pellets is highest for diving ducks foraging within the Overshoot Area 300 - 600 ft from shore and lowest for the mourning dove foraging within the shoreline soil. Over the course of a lifetime or a season, the daily probabilities of ingesting a lead pellet may rise to a level that could result in adverse impacts; however, there are a number of uncertainties associated with this evaluation (e.g., modeling assumptions, applicability of the model to open water exposures, assumption that a single pellet is a toxic event).

4.7 ERA Summary and Conclusions

As described previously, the Tier 1 ecological SRA is being submitted with the draft RI report for regulatory review. The Tier I SRA concluded that certain metals and PAHs at MRP Site 1 pose potential risk to plants, invertebrates, and/or wildlife. PCBs and some pesticides were also detected in soil at levels that may pose a risk to plants, invertebrates, and wildlife. In addition, lead pellets are present in the sediment and shoreline soil at levels above the screening level threshold identified for the protection of birds.

Based on the results of the Tier 1 ecological SRA, the Navy has prepared a preliminary Tier 2, Step 3a BERA to further assess the potential for adverse effects to ecological receptors at MRP Site 1. The Navy has opted to include the preliminary Tier 2, Step 3a analysis in this submittal to provide additional information and context for the potential for adverse effects to ecological receptors associated with MRP Site 1.

The Tier 2, Step 3a risk evaluation for MRP Site 1 evaluated COPCs that failed the Tier 1 SRA and the results are summarized below and in Table 26.

For terrestrial plants and soil invertebrates, HQs are greater than 1 for several inorganic and organic COPCs, but with significant uncertainties about the true bioavailability and toxicity of the inorganics to plants and invertebrates. The presence of clean backfill material over a large portion of the site (see Figure 3 for extent of clean fill) also serves to lower overall site risks. The surface soil results from within the excavation footprint that were used in the ERA were collected from the bottom of the 1 ft excavation. These concentrations are still present, but have been covered with a foot of clean fill. The clean fill results were not evaluated quantitatively in the ERA, but concentrations are lower than the results from within the excavation. Therefore, the surface soils currently present in the top foot within the excavation area have lower concentrations than the bottom of excavation samples that were considered in the ERA, thus actual current site risks are lower than predicted by the ERA. Therefore, potential risks to plants and invertebrates are not expected due to exposure to inorganics.

For the organic COPCs, there are potential risks to plants and invertebrates due to 4,4-DDT, endosulfan I, endosulfan II, endosulfan sulfate, endrin, endrin ketone, Total PCBs, as well as HMW and LMW PAHs, but these risks are only expected to occur within a limited area (i.e., PCBs and pesticides are elevated near the shoreline and the boundary with IR 22 and PAHs are elevated along the western fenceline along the shore).

For sediment invertebrates, there are potential risks due to lead exposure, particularly along the shoreline. Although the SEM, AVS, and TOC evaluation indicated that divalent metals were generally not expected to be bioavailable and toxic, the sediment toxicity tests identified toxicity in three nearshore samples (SD102, SD122, and SD124). These three samples are identified in Figure 8. Based on the results of the toxicity testing and the elevated lead levels in sediment and shellfish collected from the shore, the nearshore area poses a higher risk than more offshore locations.

For wildlife exposed to COPCs in the upland portions of MRP Site 1, there are potential risks (based on the LOAEL-based TRV) due to antimony, 4,4-DDT, and Total PCBs. However, the risks due to 4,4-DDT and Total PCBs are only expected to occur within a limited area (i.e., along the shoreline near IR 22) and antimony risks are likely over-estimated. For inorganics, consistent with the conclusions for plants and soil invertebrates the uncertainties associated with bioavailability and the presence of clean backfill material over a large portion of the site indicate that the food web model HQs may over-estimate actual site risks due to inorganics such as antimony. As stated previously, the clean fill concentrations are lower than the results from within the excavation which were collected from the bottom of the 1 foot excavation footprint. The excavation area also represents an open area that is likely to be attractive to birds and mammals once it is fully vegetated. The

quail is the only terrestrial wildlife receptor with an AUF of less than 1 (assumed to feed outside of MRP Site 1). The robin, vole, and shrew were all assumed to obtain all of their diet from within MRP Site 1 so the presence of a 'clean' area serves to reduce site risks. Therefore, unacceptable risks to birds and mammals are not expected due to exposure to inorganics.

For wildlife exposed to prey items from Narragansett Bay adjacent to MRP Site 1, no potential risks were identified in the Tier 2, Step 3a evaluation.

For birds exposed to lead pellets within the shoreline soil and the sediments of Narragansett Bay adjacent to MRP Site 1, there are a number of uncertainties associated with the evaluation. However, the results indicate that diving ducks, if foraging within approximately 600 ft of the shoreline adjacent to MRP Site 1 over multiple days in a wintering season, have a relatively high probability of ingesting a lead pellet. Birds exposed along the shoreline have a lower probability than the ducks, but over the course of a year, a pellet could be ingested. The results of the pellet evaluation are displayed in Figure 8. There are uncertainties about how many pellets need to be ingested to cause harm and uncertainties related to what level of risk is acceptable, but this evaluation indicates the potential for ingestion of pellets by birds exists along the shoreline and within Narragansett Bay adjacent to MRP Site 1.

5.0 REFERENCES

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Tables

TABLE 1
SUMMARY OF SAMPLES CONSIDERED IN THE ERA
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

SURFACE SOIL (0 - 1 ft)

Sample Location	Sample Date	Depth Interval	Analyses
MRP SITE 1			
CRP-SS107	1/19/2010	0 - 0.5 ft	Lead, PAHs
CRP-SS111	1/19/2010	0 - 0.5 ft	Lead, PAHs
CRP-SS114	1/19/2010	0 - 0.5 ft	Lead, PAHs
CRP-SS114	1/19/2010	0.5 - 1 ft	Lead, PAHs
CRP-SS115 (plus duplicate)	1/19/2010	0 - 0.5 ft	Lead, PAHs
CRP-SS116	1/19/2010	0 - 0.5 ft	Lead, PAHs
CRP-SS116	1/19/2010	0.5 - 1 ft	Lead, PAHs
CRP-SS117	1/19/2010	0 - 0.5 ft	Lead, PAHs
CRP-SS118	1/19/2010	0 - 0.5 ft	Lead, PAHs
CRP-SS118	1/19/2010	0.5 - 1 ft	Lead, PAHs
CRP-SS119	1/19/2010	0 - 0.5 ft	Lead, PAHs
CRP-SS120	1/19/2010	0 - 0.5 ft	Lead, PAHs
CRP-SS120	1/19/2010	0.5 - 1 ft	Lead, PAHs
CRP-SS121	1/19/2010	0 - 0.5 ft	Lead, PAHs
CRP-SS122	1/19/2010	0.5 - 1 ft	Lead, PAHs
CRP-SS122 (plus duplicate)	1/19/2010	0 - 0.5 ft	Lead, PAHs
CRP-SS123	1/19/2010	0 - 0.5 ft	Lead, PAHs
CRP-SB201	12/9/2013	0 - 1 ft	Inorganics, PAHs
CRP-SB202	12/10/2013	0 - 1 ft	Inorganics, PAHs
CRP-SB203	12/10/2013	0 - 1 ft	Inorganics, PAHs
CRP-SB204	12/11/2013	0 - 1 ft	Inorganics, PAHs
CRP-SB205	12/11/2013	0 - 1 ft	Inorganics, PAHs, energetics, grain size
CRP-SB206	12/10/2013	0 - 1 ft	Inorganics, PAHs, energetics
CRP-SB208	12/9/2013	0 - 1 ft	Inorganics, PAHs
CRP-SB209	12/9/2013	0 - 1 ft	Inorganics, PAHs, energetics
CRP-SB210	12/6/2013	0 - 1 ft	Inorganics, PAHs
CRP-SB211 (plus duplicate)	12/11/2013	0 - 1 ft	Inorganics, PAHs, energetics
CRP-SB212	12/9/2013	0 - 1 ft	Inorganics, PAHs, energetics
CRP-SB213	12/9/2013	0 - 1 ft	Inorganics, PAHs, energetics
CRP-SB217	12/10/2013	0 - 1 ft	Inorganics, PAHs, energetics
CRP-SB218 (plus duplicate)	12/11/2013	0 - 1 ft	Inorganics, PAHs, energetics
CRP-SB219	12/11/2013	0 - 1 ft	Inorganics, PAHs, energetics
CRP-SB220 (plus duplicate)	12/11/2013	0 - 1 ft	Inorganics, PAHs, energetics
CRP-SB222	12/12/2013	0 - 1 ft	Inorganics, PAHs
CRP-SB223	12/12/2013	0 - 1 ft	Inorganics, SVOCs, VOCs, pesticides, PCBs
CRP-SB224 (plus duplicate)	12/6/2013	0 - 1 ft	Inorganics, PAHs
CRP-SB225	12/6/2013	0 - 1 ft	Inorganics, PAHs
CRP-SB226	12/5/2013	0 - 1 ft	Inorganics, PAHs
CRP-SB227	12/5/2013	0 - 1 ft	Inorganics, PAHs
CRP-SB228	12/9/2013	0 - 1 ft	Inorganics, PAHs, energetics
CRP-SB229 (plus duplicate)	12/10/2013	0 - 1 ft	Inorganics, PAHs, energetics, pesticides, PCBs, grain size
CRP-SB301	12/6/2013	0 - 1 ft	Inorganics, SVOCs, VOCs, pesticides, PCBs
CRP-SB302 (plus duplicate)	12/10/2013	0 - 1 ft	Inorganics, SVOCs, VOCs, pesticides, PCBs
CRP-SB325	6/3/2014	0 - 1 ft	PCBs
MW-13	12/4/2013	0 - 1 ft	Inorganics, PAHs
MRP1-PES-1A-01	4/17/2013	1 ft	Arsenic, chromium, lead, PAHs
MRP1-PES-1B-01 (plus duplicate)	4/17/2013	1 ft	Arsenic, chromium, lead, PAHs
MRP1-PES-3B-01	4/20/2013	1 ft	Arsenic, chromium, lead, PAHs
MRP1-PES-3C-01	4/20/2013	1 ft	Arsenic, chromium, lead, PAHs
MRP1-PES-3D-01	4/20/2013	1 ft	Arsenic, chromium, lead, PAHs
MRP1-PES-4A-01	4/19/2013	1 ft	Arsenic, chromium, lead, PAHs
MRP1-PES-4B-01	4/19/2013	1 ft	Arsenic, chromium, lead, PAHs

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CARR POINT - MRP SITE 1

SURFACE SOIL (0 - 1 ft)

Sample Location	Sample Date	Depth Interval	Analyses
MRP1-PES-4C-01	4/20/2013	1 ft	Arsenic, chromium, lead, PAHs
MRP1-PES-4D-01	4/20/2013	1 ft	Arsenic, chromium, lead, PAHs
MRP1-PES-4E-01 (plus duplicate)	4/19/2013	1 ft	Arsenic, chromium, lead, PAHs
MRP1-PES-5A-01	4/26/2013	1 ft	Arsenic, chromium, lead, PAHs
MRP1-PES-5B-01	4/26/2013	1 ft	Arsenic, chromium, lead, PAHs
MRP1-PES-SW1-01	4/24/2013	1 ft	Arsenic, chromium, lead, PAHs
MRP1-PES-SW4-01	4/25/2013	1 ft	Arsenic, chromium, lead, PAHs
MRP1-PES-SW5-01	4/25/2013	1 ft	Arsenic, chromium, lead, PAHs
MRP1-PES-SW6-01	4/25/2013	1 ft	Arsenic, chromium, lead, PAHs
MRP1-PES-S12-01	5/1/2013	1 ft	Arsenic, chromium, lead, PAHs
MRP1-PES-SW13-01 (plus duplicate)	5/1/2013	1 ft	Arsenic, chromium, lead, PAHs

SURFACE SEDIMENT (0 - 1 ft)

Sample Location	Sample Date	Depth Interval	Analyses
MRP SITE 1			
CRP-SD01	6/19/2009	0 - 0.5 ft	Inorganics, PAHs, pellets
CRP-SD01	6/19/2009	0.5 - 1 ft	Inorganics, PAHs, pellets
CRP-SD02	6/19/2009	0 - 0.5 ft	Inorganics, PAHs, pellets
CRP-SD02	6/19/2009	0.5 - 1 ft	Inorganics, PAHs, pellets
CRP-SD03 (plus duplicate)	6/18/2009	0 - 0.5 ft	Inorganics, PAHs, pellets
CRP-SD04	6/18/2009	0 - 0.5 ft	Inorganics, PAHs, pellets
CRP-SD05	6/15/2009	0 - 0.5 ft	Inorganics, PAHs, pellets
CRP-SD06 (plus duplicate)	6/15/2009	0 - 0.5 ft	Inorganics, PAHs, pellets
CRP-SD06	6/15/2009	0.5 - 1 ft	Inorganics, PAHs, pellets
CRP-SD07	6/15/2009	0 - 0.5 ft	Inorganics, PAHs, pellets
CRP-SD07	6/15/2009	0.5 - 1 ft	Inorganics, PAHs, pellets
CRP-SD08	6/19/2009	0 - 0.5 ft	Inorganics, PAHs, pellets
CRP-SD08	6/19/2009	0.5 - 1 ft	Inorganics, PAHs, pellets
CRP-SD09	6/19/2009	0 - 0.5 ft	Inorganics, PAHs, pellets
CRP-SD09	6/19/2009	0.5 - 1 ft	Inorganics, PAHs, pellets
CRP-SD10 (plus duplicate)	6/17/2009	0 - 0.5 ft	Inorganics, PAHs, pellets
CRP-SD10	6/17/2009	0.5 - 1 ft	Inorganics, PAHs, pellets
CRP-SD11	6/16/2009	0 - 0.5 ft	Inorganics, PAHs, pellets
CRP-SD11	6/16/2009	0.5 - 1 ft	Inorganics, PAHs, pellets
CRP-SD12	6/18/2009	0 - 0.5 ft	Inorganics, PAHs, pellets
CRP-SD13	6/17/2009	0 - 0.5 ft	Inorganics, PAHs, pellets
CRP-SD13	6/17/2009	0.5 - 1 ft	Inorganics, PAHs, pellets
CRP-SD14	6/18/2009	0 - 0.5 ft	Inorganics, PAHs, pellets
CRP-SD14	6/18/2009	0.5 - 1 ft	Inorganics, PAHs, pellets
CRP-SD15 (plus duplicate)	6/16/2009	0 - 0.5 ft	Inorganics, PAHs, pellets
CRP-SD15	6/16/2009	0.5 - 1 ft	Inorganics, PAHs, pellets
CRP-SD16	6/17/2009	0 - 0.5 ft	Inorganics, PAHs, pellets
CRP-SD16	6/17/2009	0.5 - 1 ft	Inorganics, PAHs, pellets

TABLE 1
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ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

SURFACE SEDIMENT (0 - 1 ft)

Sample Location	Sample Date	Depth Interval	Analyses
CRP-SD17	6/16/2009	0 - 0.5 ft	Inorganics, PAHs, pellets
CRP-SD18	6/16/2009	0 - 0.5 ft	Inorganics, PAHs, pellets
CRP-SD18	6/16/2009	0.5 - 1 ft	Inorganics, PAHs, pellets
CRP-SD19	6/16/2009	0 - 0.5 ft	Inorganics, PAHs, pellets
CRP-SD19	6/16/2009	0.5 - 1 ft	Inorganics, PAHs, pellets
CRP-SD20	6/17/2009	0 - 0.5 ft	Inorganics, PAHs, pellets
CRP-SD20	6/17/2009	0.5 - 1 ft	Inorganics, PAHs, pellets
CRP-SD101 (plus duplicate)	12/13/2013	0 - 1 ft	Inorganics, PAHs, SEM, AVS, TOC, pellets
CRP-SD102	12/13/2013	0 - 1 ft	Inorganics, PAHs, SEM, AVS, TOC, pellets, grain size, sediment toxicity testing, wet sieved inorganics & PAHs
CRP-SD103	12/13/2013	0 - 1 ft	Inorganics, PAHs, SEM, AVS, TOC, pellets
CRP-SD104	4/2/2014	0 - 1 ft	Inorganics, PAHs, SEM, AVS, TOC, pellets, grain size
CRP-SD105	12/6/2013	0 - 1 ft	Inorganics, PAHs, SEM, AVS, TOC, pellets, grain size, wet sieved inorganics & PAHs
CRP-SD106	12/10/2013	0 - 1 ft	Inorganics, PAHs, SEM, AVS, TOC, pellets, sediment toxicity testing, wet sieved inorganics & PAHs
CRP-SD107	12/10/2013	0 - 1 ft	Inorganics, PAHs, SEM, AVS, TOC, pellets
CRP-SD107	12/2/2013	0.5 - 1 ft	Inorganics, PAHs
CRP-SD108	12/10/2013	0 - 1 ft	Inorganics, PAHs, SEM, AVS, TOC, pellets
CRP-SD108 (plus duplicate)	12/3/2013	0.5 - 1 ft	Inorganics
CRP-SD109	12/3/2013	0 - 1 ft	Inorganics, PAHs, SEM, AVS, TOC, pellets, grain size, wet sieved inorganics & PAHs
CRP-SD110	12/3/2013	0 - 1 ft	Inorganics, PAHs, SEM, AVS, TOC, pellets, grain size, wet sieved inorganics & PAHs
CRP-SD111	12/4/2013	0 - 1 ft	Inorganics, PAHs, SEM, AVS, TOC, pellets, grain size, wet sieved inorganics & PAHs
CRP-SD112	12/5/2013	0 - 1 ft	Inorganics, PAHs, SEM, AVS, TOC, pellets, grain size, sediment toxicity testing, wet sieved inorganics & PAHs
CRP-SD113	12/5/2013	0 - 1 ft	Inorganics, PAHs, SEM, AVS, TOC, pellets, wet sieved inorganics & PAHs
CRP-SD114	12/17/2013	0 - 1 ft	Inorganics, PAHs, SEM, AVS, TOC, pellets, sediment toxicity testing
CRP-SD115	12/17/2013	0 - 1 ft	Inorganics, PAHs, SEM, AVS, TOC, pellets, sediment toxicity testing
CRP-SD116	4/2/2014	0 - 1 ft	Inorganics, PAHs, SEM, AVS, TOC, pellets, grain size
CRP-SD117	12/10/2013	0 - 1 ft	Inorganics, PAHs, SEM, AVS, TOC, pellets, grain size
CRP-SD117	12/3/2013	0.5 - 1 ft	Inorganics
CRP-SD118	12/10/2013	0 - 1 ft	Inorganics, PAHs, SEM, AVS, TOC, pellets, grain size, sediment toxicity testing, wet sieved inorganics & PAHs
CRP-SD119	12/6/2013	0 - 1 ft	Inorganics, PAHs, SEM, AVS, TOC, pellets, grain size, wet sieved inorganics & PAHs
CRP-SD120	12/5/2013	0 - 1 ft	Inorganics, PAHs, SEM, AVS, TOC, pellets, grain size, sediment toxicity testing, wet sieved inorganics & PAHs
CRP-SD121	12/4/2013	0 - 1 ft	Inorganics, PAHs, SEM, AVS, TOC, pellets, grain size, sediment toxicity testing, wet sieved inorganics & PAHs
CRP-SD122	12/12/2013	0 - 1 ft	Inorganics, PAHs, SEM, AVS, TOC, pellets, grain size, sediment toxicity testing, wet sieved inorganics & PAHs
CRP-SD123	12/12/2013	0 - 1 ft	Inorganics, PAHs, SEM, AVS, TOC, pellets
CRP-SD124	12/12/2013	0 - 1 ft	Inorganics, PAHs, SEM, AVS, TOC, pellets, sediment toxicity testing
CRP-SD125	12/11/2013	0 - 1 ft	Inorganics, PAHs, SEM, AVS, TOC, pellets
CRP-SD126	12/12/2013	0 - 1 ft	Inorganics, PAHs, SEM, AVS, TOC, pellets
CRP-SD128	4/1/2014	0 - 1 ft	Inorganics, PAHs, SEM, AVS, TOC, pellets, grain size
CRP-SD129	4/1/2014	0 - 1 ft	Inorganics, PAHs, SEM, AVS, TOC, pellets, grain size
CRP-SD130 (plus duplicate)	4/1/2014	0 - 1 ft	Inorganics, PAHs, SEM, AVS, TOC, pellets, grain size
CRP-SD131	4/1/2014	0 - 1 ft	Inorganics, PAHs, SEM, AVS, TOC, pellets, grain size
CRP-SD132	4/2/2014	0 - 1 ft	Inorganics, PAHs, SEM, AVS, TOC, pellets, grain size
CRP-SD133	4/2/2014	0 - 1 ft	Inorganics, PAHs, SEM, AVS, TOC, pellets, grain size
BACKGROUND/REFERENCE			
CRP-SD301	4/2/2014	0 - 1 ft	Inorganics, PAHs, pesticides, SEM, AVS, TOC, grain size
CRP-SD302	12/11/2013	0 - 1 ft	Inorganics, SVOCs, VOCs, pesticides, PCBs, SEM, AVS, TOC,sediment toxicity testing, grain size
CRP-SD303 (plus duplicate)	12/13/2013	0 - 1 ft	Inorganics, SVOCs, VOCs, pesticides, PCBs, SEM, AVS, TOC,sediment toxicity testing, grain size
CRP-SD304 (plus duplicate)	12/13/2013	0 - 1 ft	Inorganics, SVOCs, VOCs, pesticides, PCBs, SEM, AVS, TOC,sediment toxicity testing, grain size
CRP-SD305 (plus duplicate)	12/12/2013	0 - 1 ft	Inorganics, SVOCs, VOCs, pesticides, PCBs, SEM, AVS, TOC, grain size
CRP-SD306	12/12/2013	0 - 1 ft	Inorganics, SVOCs, VOCs, pesticides, PCBs, SEM, AVS, TOC, grain size
CRP-SD307	12/17/2013	0 - 1 ft	Inorganics, SVOCs, VOCs, pesticides, PCBs, SEM, AVS, TOC, grain size
CRP-SD308	12/17/2013	0 - 1 ft	Inorganics, SVOCs, VOCs, pesticides, PCBs, SEM, AVS, TOC, grain size
CRP-SD309	4/2/2014	0 - 1 ft	Inorganics, PAHs, pesticides, SEM, AVS, TOC, grain size
CRP-SD310	4/2/2014	0 - 1 ft	Inorganics, PAHs, pesticides, SEM, AVS, TOC, grain size
CRP-SD312	4/3/2014	0 - 1 ft	Inorganics, PAHs, pesticides, SEM, AVS, TOC, grain size
CRP-SD313	4/3/2014	0 - 1 ft	Inorganics, PAHs, pesticides, SEM, AVS, TOC, grain size

TABLE 1
SUMMARY OF SAMPLES CONSIDERED IN THE ERA
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

SHELLFISH TISSUE

Sample Location	Sample Date	Tissue Type	Analyses
MRP SITE 1			
CRP-SD101	11/19/2013	Blue mussel (composite)	Inorganics, PAHs, lipids
CRP-SD102	11/19/2013	Blue mussel (composite)	Inorganics, PAHs, lipids
CRP-SD104	11/6/2013	Quahog (composite)	Inorganics, PAHs, lipids
CRP-SD106	11/6/2013	Quahog (composite)	Inorganics, PAHs, lipids
CRP-SD109	11/5/2013	Quahog (composite)	Inorganics, PAHs, lipids
CRP-SD110	11/5/2013	Quahog (composite)	Inorganics, PAHs, lipids
CRP-SD112 (plus duplicate)	11/5/2013	Quahog (composite)	Inorganics, PAHs, lipids
CRP-SD115	11/6/2013	Quahog (composite)	Inorganics, PAHs, lipids
CRP-SD118	11/6/2013	Quahog (composite)	Inorganics, PAHs, lipids
CRP-SD121	11/6/2013	Quahog (composite)	Inorganics, PAHs, lipids
CRP-SD122	11/19/2013	Quahog (composite)	Inorganics, PAHs, lipids
CRP-SD123	11/19/2013	Blue mussel (composite)	Inorganics, PAHs, lipids
CRP-SD124	11/19/2013	Blue mussel (composite)	Inorganics, PAHs, lipids
BACKGROUND/REFERENCE			
CRP-SD301	11/6/2013	Quahog (composite)	Inorganics, PAHs, lipids
CRP-SD302	11/6/2013	Quahog (composite)	Inorganics, PAHs, lipids
CRP-SD303	11/19/2013	Quahog (composite)	Inorganics, PAHs, lipids
CRP-SD304	11/19/2013	Quahog (composite)	Inorganics, PAHs, lipids

Notes:
AVS - Acid Volatile Sulfides.
ERA - Ecological Risk Assessment.
PAHs - Polycyclic Aromatic Hydrocarbons.
PCBs - Polychlorinated Biphenyls.
SEM - Simultaneously Extracted Metals.
SVOCs - Semi-Volatile Organic Compounds.
TOC - Total Organic Carbon.
VOCs - Volatile Organic Compounds.

TABLE 2
SUMMARY STATISTICS - SURFACE SOIL (0-1 ft)
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

Analyte	Unit	FOD	Reporting Limits		Detected Concentrations				Location of Maximum Detect
			Minimum	Maximum	Minimum	Mean	Maximum		
Energetics									
2,4-DINITROTOLUENE	mg/kg	0 : 12	0.26	0.28	ND	ND	ND		ND
NITROGLYCERIN	mg/kg	7 : 12	0.34	0.39	0.15	0.90	4.0		CRP-SB217_0_1
Inorganics									
ALUMINUM	mg/kg	27 : 27	--	--	3380	9670	18600		MW-13_0_1
ANTIMONY	mg/kg	27 : 27	--	--	0.050	23.0	396	J	CRP-SB302_0_1
ARSENIC	mg/kg	45 : 45	--	--	1.2	12.5	130	J	CRP-SB302_0_1
BARIUM	mg/kg	27 : 27	--	--	6.7	21.4	49.6		CRP-SB223_0_1
BERYLLIUM	mg/kg	27 : 27	--	--	0.20	0.32	0.56	J-	CRP-SB205_0_1
CADMIUM	mg/kg	23 : 27	0.08	0.14	0.030	0.22	0.84	J	CRP-SB223_0_1
CALCIUM	mg/kg	27 : 27	--	--	342	5070	39500		CRP-SB228_0_1
CHROMIUM VI	mg/kg	0 : 2	0.86	1.8	ND	ND	ND		ND
CHROMIUM, TOTAL	mg/kg	45 : 45	--	--	5.0	12.6	30.1	J	CRP-SB223_0_1
COBALT	mg/kg	27 : 27	--	--	6.4	12.4	24.5		MW-13_0_1
COPPER	mg/kg	27 : 27	--	--	9.2	38.1	256	J	CRP-SB205_0_1
IRON	mg/kg	27 : 27	--	--	16100	32600	88500		CRP-SB219_0_1
LEAD	mg/kg	57 : 57	--	--	6.5	828	29900	J	CRP-SB302_0_1
MAGNESIUM	mg/kg	27 : 27	--	--	1250	4440	25200	J	CRP-SB228_0_1
MANGANESE	mg/kg	27 : 27	--	--	242	482	929		CRP-SB222_0_1
MERCURY	mg/kg	21 : 27	0.012	0.032	0.006	0.066	0.21	J-	CRP-SB212_0_1
NICKEL	mg/kg	27 : 27	--	--	13.2	25.6	56.6	J-	CRP-SB223_0_1
POTASSIUM	mg/kg	27 : 27	--	--	196	383	650	J-	CRP-SB210_0_1
SELENIUM	mg/kg	11 : 27	0.37	0.56	0.18	0.42	0.66		CRP-SB201_0_1
SILVER	mg/kg	27 : 27	--	--	0.020	0.19	0.90	J	CRP-SB212_0_1
SODIUM	mg/kg	5 : 27	48.0	143	316	802	1860	J-	CRP-SB225_0_1
THALLIUM	mg/kg	27 : 27	--	--	0.020	0.058	0.15		CRP-SB212_0_1
VANADIUM	mg/kg	27 : 27	--	--	12.0	18.5	26.6		CRP-SB202_0_1
ZINC	mg/kg	27 : 27	--	--	33.6	103	433	J	CRP-SB223_0_1
Pesticides									
4,4-DDD	mg/kg	0 : 4	0.00032	0.037	ND	ND	ND		ND
4,4-DDE	mg/kg	2 : 4	0.0017	0.037	0.00064	0.03132	0.06200	J	CRP-SB302_0_1
4,4-DDT	mg/kg	3 : 4	0.0017	0.0017	0.0061	6.3	19.0	J	CRP-SB223_0_1
ALDRIN	mg/kg	0 : 4	0.00016	0.019	ND	ND	ND		ND
ALPHA-BHC	mg/kg	0 : 4	0.00016	0.019	ND	ND	ND		ND
ALPHA-CHLORDANE	mg/kg	0 : 4	0.00016	0.019	ND	ND	ND		ND
BETA-BHC	mg/kg	0 : 4	0.00016	0.019	ND	ND	ND		ND
DELTA-BHC	mg/kg	0 : 4	0.00016	0.019	ND	ND	ND		ND
DIELDRIN	mg/kg	0 : 4	0.0017	0.037	ND	ND	ND		ND
ENDOSULFAN I	mg/kg	1 : 4	0.00019	0.019	0.0015	0.0015	0.0015		CRP-SB229_0_1
ENDOSULFAN II	mg/kg	1 : 4	0.00032	0.037	0.00032	0.00032	0.00032	J	CRP-SB302_0_1
ENDOSULFAN SULFATE	mg/kg	2 : 4	0.00032	0.0017	0.0021	6.0	12.0	J	CRP-SB223_0_1
ENDRIN	mg/kg	1 : 4	0.00038	0.037	0.0018	0.0018	0.0018		CRP-SB229_0_1
ENDRIN ALDEHYDE	mg/kg	0 : 4	0.00032	0.037	ND	ND	ND		ND
ENDRIN KETONE	mg/kg	1 : 4	0.00032	0.037	0.0016	0.0016	0.0016	J	CRP-SB302_0_1

TABLE 2
SUMMARY STATISTICS - SURFACE SOIL (0-1 ft)
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

Analyte	Unit	FOD	Reporting Limits		Detected Concentrations				Location of Maximum Detect
			Minimum	Maximum	Minimum	Mean	Maximum		
GAMMA-CHLORDANE	mg/kg	0 : 4	0.00016	0.019	ND	ND	ND		ND
HEPTACHLOR	mg/kg	1 : 4	0.00019	0.019	0.0015	0.0015	0.0015		CRP-SB229_0_1
HEPTACHLOR EPOXIDE	mg/kg	0 : 4	0.00016	0.019	ND	ND	ND		ND
LINDANE	mg/kg	0 : 4	0.00016	0.019	ND	ND	ND		ND
METHOXYCHLOR	mg/kg	1 : 4	0.0019	0.19	0.0088	0.0088	0.0088		CRP-SB229_0_1
TOXAPHENE	mg/kg	0 : 4	0.0032	0.37	ND	ND	ND		ND
Polychlorinated Biphenyls (PCBs)									
AROCLOR-1016	mg/kg	0 : 5	0.0016	1.9	ND	ND	ND		ND
AROCLOR-1221	mg/kg	0 : 5	0.0016	1.9	ND	ND	ND		ND
AROCLOR-1232	mg/kg	0 : 5	0.0019	2.2	ND	ND	ND		ND
AROCLOR-1242	mg/kg	0 : 5	0.0016	1.9	ND	ND	ND		ND
AROCLOR-1248	mg/kg	0 : 5	0.0016	1.9	ND	ND	ND		ND
AROCLOR-1254	mg/kg	1 : 5	0.0016	1.9	0.043	0.043	0.043	J	CRP-SB301_0_1
AROCLOR-1260	mg/kg	3 : 5	0.0016	0.0089	0.016	90	270	J	CRP-SB223_0_1
AROCLOR-1262	mg/kg	0 : 5	0.0016	1.9	ND	ND	ND		ND
AROCLOR-1268	mg/kg	0 : 5	0.0016	1.9	ND	ND	ND		ND
PCB, TOTAL	mg/kg	4 : 5	--	--	0.016	67.5	270	J	CRP-SB223_0_1
Semi-Volatile Organic Compounds (SVOCs)									
1-METHYLNAPHTHALENE	mg/kg	9 : 18	0.022	0.047	0.0026	0.0050	0.010		MRP1-PES-SW4-01
1,1-BIPHENYL	mg/kg	0 : 3	0.26	0.28	ND	ND	ND		ND
1,2,4-TRICHLOROBENZENE	mg/kg	0 : 3	0.26	0.28	ND	ND	ND		ND
1,2-DICHLOROBENZENE	mg/kg	0 : 3	0.26	0.28	ND	ND	ND		ND
1,2-DIPHENYLHYDRAZINE	mg/kg	0 : 3	0.51	0.56	ND	ND	ND		ND
1,3-DICHLOROBENZENE	mg/kg	0 : 3	0.26	0.28	ND	ND	ND		ND
1,4-DICHLOROBENZENE	mg/kg	0 : 3	0.26	0.28	ND	ND	ND		ND
2,2'-OXYBIS(1-CHLOROPROPANE)	mg/kg	0 : 3	0.26	0.28	ND	ND	ND		ND
2,4,5-TRICHLOROPHENOL	mg/kg	0 : 3	0.64	0.70	ND	ND	ND		ND
2,4,6-TRICHLOROPHENOL	mg/kg	0 : 3	0.26	0.28	ND	ND	ND		ND
2,4-DICHLOROPHENOL	mg/kg	0 : 3	0.26	0.28	ND	ND	ND		ND
2,4-DIMETHYLPHENOL	mg/kg	0 : 3	0.26	0.28	ND	ND	ND		ND
2,4-DINITROPHENOL	mg/kg	0 : 3	0.64	0.70	ND	ND	ND		ND
2,4-DINITROTOLUENE	mg/kg	0 : 3	0.26	0.28	ND	ND	ND		ND
2,6-DICHLOROPHENOL	mg/kg	0 : 3	0.26	0.28	ND	ND	ND		ND
2,6-DINITROTOLUENE	mg/kg	0 : 3	0.26	0.28	ND	ND	ND		ND
2-CHLORONAPHTHALENE	mg/kg	0 : 22	0.022	0.047	ND	ND	ND	ND	0
2-CHLOROPHENOL	mg/kg	0 : 3	0.26	0.28	ND	ND	ND		ND
2-METHYLNAPHTHALENE	mg/kg	10 : 33	0.022	0.47	0.0026	0.0078	0.016		MRP1-PES-5B-01_1_1
2-METHYLPHENOL	mg/kg	0 : 3	0.26	0.28	ND	ND	ND		ND
2-NITROANILINE	mg/kg	0 : 3	0.64	0.70	ND	ND	ND		ND
2-NITROPHENOL	mg/kg	0 : 3	0.26	0.28	ND	ND	ND		ND
3- AND 4-METHYLPHENOL	mg/kg	0 : 3	0.26	0.28	ND	ND	ND		ND
3,3-DICHLOROBENZIDINE	mg/kg	0 : 3	0.26	0.28	ND	ND	ND		ND
3-NITROANILINE	mg/kg	0 : 3	0.64	0.70	ND	ND	ND		ND
4,6-DINITRO-2-METHYLPHENOL	mg/kg	0 : 3	0.64	0.70	ND	ND	ND		ND
4-BROMOPHENYL-PHENYLETHER	mg/kg	0 : 3	0.26	0.28	ND	ND	ND		ND

TABLE 2
SUMMARY STATISTICS - SURFACE SOIL (0-1 ft)
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

Analyte	Unit	FOD	Reporting Limits		Detected Concentrations				Location of Maximum Detect
			Minimum	Maximum	Minimum	Mean	Maximum		
4-CHLORO-3-METHYLPHENOL	mg/kg	0 : 3	0.26	0.28	ND	ND	ND		ND
4-CHLOROANILINE	mg/kg	0 : 3	0.26	0.28	ND	ND	ND		ND
4-CHLOROPHENYL-PHENYLETHER	mg/kg	0 : 3	0.26	0.28	ND	ND	ND		ND
4-NITROANILINE	mg/kg	0 : 3	0.64	0.70	ND	ND	ND		ND
4-NITROPHENOL	mg/kg	0 : 3	0.64	0.70	ND	ND	ND		ND
ACENAPHTHENE	mg/kg	38 : 57	0.0067	0.44	0.00082	0.74	18.0	J	CRP-SB228_0_1
ACENAPHTHYLENE	mg/kg	23 : 57	0.0067	0.44	0.0012	0.060	0.37		CRP-SS115_0_0.5
ANTHRACENE	mg/kg	49 : 57	0.0069	0.44	0.00092	0.73	21.0	J	CRP-SB228_0_1
BENZIDINE	mg/kg	0 : 0	--	--	ND	ND	ND		ND
BENZO[A]ANTHRACENE	mg/kg	55 : 57	0.021	0.025	0.00089	2.5	65.0	J	CRP-SB228_0_1
BENZO[A]PYRENE	mg/kg	56 : 57	0.021	0.021	0.00077	2.9	80.0	J	CRP-SB228_0_1
BENZO[B]FLUORANTHENE	mg/kg	57 : 57	--	--	0.00077	2.6	75.0	J	CRP-SB228_0_1
BENZO[G,H,I]PERYLENE	mg/kg	53 : 57	0.0072	0.025	0.0018	1.4	32.0	J	CRP-SB228_0_1
BENZO[K]FLUORANTHENE	mg/kg	55 : 57	0.0072	0.14	0.0011	2.4	74.0	J	CRP-SB228_0_1
BENZOIC ACID	mg/kg	0 : 3	0.64	0.70	ND	ND	ND		ND
BENZYL ALCOHOL	mg/kg	0 : 3	0.51	0.56	ND	ND	ND		ND
BIS(2-CHLOROETHOXY)METHANE	mg/kg	0 : 3	0.26	0.28	ND	ND	ND		ND
BIS(2-CHLOROETHYL)ETHER	mg/kg	0 : 3	0.26	0.28	ND	ND	ND		ND
BIS(2-ETHYLHEXYL)PHTHALATE	mg/kg	0 : 3	0.26	0.28	ND	ND	ND		ND
BUTYLBENZYLPHTHALATE	mg/kg	0 : 3	0.26	0.28	ND	ND	ND		ND
CAPROLACTAM	mg/kg	0 : 3	0.26	0.28	ND	ND	ND		ND
CARBAZOLE	mg/kg	0 : 3	0.26	0.28	ND	ND	ND		ND
CHRYSENE	mg/kg	56 : 57	0.0072	0.0072	0.0023	3.3	81.0	J	CRP-SB228_0_1
DIBENZ[A,H]ANTHRACENE	mg/kg	47 : 57	0.0069	15.0	0.00073	0.28	5.5		CRP-SB212_0_1
DIBENZOFURAN	mg/kg	0 : 3	0.26	0.28	ND	ND	ND		ND
DIETHYLPHTHALATE	mg/kg	0 : 3	0.26	0.28	ND	ND	ND		ND
DIMETHYL PHTHALATE	mg/kg	0 : 3	0.26	0.28	ND	ND	ND		ND
DI-N-BUTYLPHTHALATE	mg/kg	0 : 3	0.26	0.28	ND	ND	ND		ND
DI-N-OCTYLPHTHALATE	mg/kg	0 : 3	0.26	0.28	ND	ND	ND		ND
FLUORANTHENE	mg/kg	57 : 57	--	--	0.0008	2.6	100.0	J	CRP-SB228_0_1
FLUORENE	mg/kg	36 : 57	0.0067	0.44	0.0009	0.42	9.2	J	CRP-SB228_0_1
HEXACHLOROBENZENE	mg/kg	0 : 3	0.26	0.28	ND	ND	ND		ND
HEXACHLOROBUTADIENE	mg/kg	0 : 3	0.26	0.28	ND	ND	ND		ND
HEXACHLOROETHANE	mg/kg	0 : 3	0.26	0.28	ND	ND	ND		ND
INDENO[1,2,3-CD]PYRENE	mg/kg	53 : 57	0.0072	0.14	0.0013	1.7	44.0	J	CRP-SB228_0_1
ISOPHORONE	mg/kg	0 : 3	0.26	0.28	ND	ND	ND		ND
NAPHTHALENE	mg/kg	24 : 57	0.010	2.8	0.0026	0.16	3.0	J	CRP-SB228_0_1
NITROBENZENE	mg/kg	0 : 3	0.26	0.28	ND	ND	ND		ND
N-NITROSODIMETHYLAMINE	mg/kg	0 : 3	0.26	0.28	ND	ND	ND		ND
N-NITROSODINPROPYLAMINE	mg/kg	0 : 3	0.26	0.28	ND	ND	ND		ND
N-NITROSODIPHENYLAMINE	mg/kg	0 : 3	0.26	0.28	ND	ND	ND		ND
N-NITROSOPYRROLIDINE	mg/kg	0 : 1	0.28	0.28	ND	ND	ND		ND
PENTACHLOROPHENOL	mg/kg	0 : 3	0.64	0.70	ND	ND	ND		ND
PHENANTHRENE	mg/kg	56 : 57	0.0072	0.0072	0.0032	2.7	86.0	J	CRP-SB228_0_1

TABLE 2
SUMMARY STATISTICS - SURFACE SOIL (0-1 ft)
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

Analyte	Unit	FOD	Reporting Limits		Detected Concentrations				Location of Maximum Detect
			Minimum	Maximum	Minimum	Mean	Maximum		
PHENOL	mg/kg	0 : 3	0.26	0.28	ND	ND	ND		ND
PYRENE	mg/kg	57 : 57	--	--	0.00086	3.9	100	J	CRP-SB228_0_1
TOTAL HMW PAHs	mg/kg	57 : 57	--	--	0.0043	23.6	650		CRP-SB228_0_1
TOTAL LMW PAHs	mg/kg	56 : 57	0.024	0.024	0.0051	4.2	140		CRP-SB228_0_1
TOTAL PAHs	mg/kg	57 : 57	--	--	0.0043	27.6	790		CRP-SB228_0_1
Volatile Organic Compounds (VOCs)									
1,1,1,2-TETRACHLOROETHANE	mg/kg	0 : 3	0.0028	0.0042	ND	ND	ND		ND
1,1,1-TRICHLOROETHANE	mg/kg	0 : 3	0.0028	0.0042	ND	ND	ND		ND
1,1,2,2-TETRACHLOROETHANE	mg/kg	0 : 3	0.0028	0.0042	ND	ND	ND		ND
1,1,2-TRICHLOROETHANE	mg/kg	0 : 3	0.0028	0.0042	ND	ND	ND		ND
1,1-DICHLOROETHANE	mg/kg	0 : 3	0.0028	0.0042	ND	ND	ND		ND
1,1-DICHLOROETHENE	mg/kg	0 : 3	0.0028	0.0042	ND	ND	ND		ND
1,1-DICHLOROPROPENE	mg/kg	0 : 3	0.0028	0.0042	ND	ND	ND		ND
1,2,3-TRICHLOROBENZENE	mg/kg	0 : 3	0.0028	0.0042	ND	ND	ND		ND
1,2,3-TRICHLOROPROPANE	mg/kg	0 : 3	0.0028	0.0042	ND	ND	ND		ND
1,2,4-TRICHLOROBENZENE	mg/kg	0 : 3	0.26	0.28	ND	ND	ND		ND
1,2,4-TRIMETHYLBENZENE	mg/kg	0 : 3	0.0028	0.0042	ND	ND	ND		ND
1,2-DIBROMO-3-CHLOROPROPANE	mg/kg	0 : 3	0.0028	0.0042	ND	ND	ND		ND
1,2-DIBROMOETHANE	mg/kg	0 : 3	0.0028	0.0042	ND	ND	ND		ND
1,2-DICHLOROBENZENE	mg/kg	0 : 3	0.26	0.28	ND	ND	ND		ND
1,2-DICHLOROETHANE	mg/kg	0 : 3	0.0028	0.0042	ND	ND	ND		ND
1,2-DICHLOROETHENE, TOTAL	mg/kg	0 : 3	0.0055	0.0085	ND	ND	ND		ND
1,2-DICHLOROPROPANE	mg/kg	0 : 3	0.0028	0.0042	ND	ND	ND		ND
1,3,5-TRIMETHYLBENZENE	mg/kg	0 : 3	0.0028	0.0042	ND	ND	ND		ND
1,3-DICHLOROBENZENE	mg/kg	0 : 3	0.26	0.28	ND	ND	ND		ND
1,3-DICHLOROPROPANE	mg/kg	0 : 3	0.0028	0.0042	ND	ND	ND		ND
1,4-DICHLOROBENZENE	mg/kg	0 : 3	0.26	0.28	ND	ND	ND		ND
2,2-DICHLOROPROPANE	mg/kg	0 : 3	0.0028	0.0042	ND	ND	ND		ND
2-BUTANONE	mg/kg	0 : 3	0.014	0.021	ND	ND	ND		ND
2-CHLOROTOLUENE	mg/kg	0 : 3	0.0028	0.0042	ND	ND	ND		ND
2-HEXANONE	mg/kg	0 : 3	0.014	0.021	ND	ND	ND		ND
4-CHLOROTOLUENE	mg/kg	0 : 3	0.0028	0.0042	ND	ND	ND		ND
4-ISOPROPYLTOLUENE	mg/kg	0 : 3	0.0028	0.0042	ND	ND	ND		ND
4-METHYL-2-PENTANONE	mg/kg	0 : 3	0.014	0.021	ND	ND	ND		ND
ACETONE	mg/kg	0 : 3	0.014	0.021	ND	ND	ND		ND
BENZENE	mg/kg	0 : 3	0.0028	0.0042	ND	ND	ND		ND
BROMOBENZENE	mg/kg	0 : 3	0.0028	0.0042	ND	ND	ND		ND
BROMOCHLOROMETHANE	mg/kg	0 : 3	0.0028	0.0042	ND	ND	ND		ND
BROMODICHLOROMETHANE	mg/kg	0 : 3	0.0028	0.0042	ND	ND	ND		ND

TABLE 2
SUMMARY STATISTICS - SURFACE SOIL (0-1 ft)
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

Analyte	Unit	FOD	Reporting Limits		Detected Concentrations			Location of Maximum Detect
			Minimum	Maximum	Minimum	Mean	Maximum	
BROMOFORM	mg/kg	0 : 3	0.0028	0.0042	ND	ND	ND	ND
BROMOMETHANE	mg/kg	0 : 3	0.0055	0.0085	ND	ND	ND	ND
CARBON DISULFIDE	mg/kg	0 : 3	0.0028	0.0042	ND	ND	ND	ND
CARBON TETRACHLORIDE	mg/kg	0 : 3	0.0028	0.0042	ND	ND	ND	ND
CHLOROBENZENE	mg/kg	0 : 3	0.0028	0.0042	ND	ND	ND	ND
CHLOROETHANE	mg/kg	0 : 3	0.0055	0.0085	ND	ND	ND	ND
CHLOROFORM	mg/kg	0 : 3	0.0028	0.0042	ND	ND	ND	ND
CHLOROMETHANE	mg/kg	0 : 3	0.0055	0.0085	ND	ND	ND	ND
CIS-1,2-DICHLOROETHENE	mg/kg	0 : 3	0.0028	0.0042	ND	ND	ND	ND
CIS-1,3-DICHLOROPROPENE	mg/kg	0 : 3	0.0028	0.0042	ND	ND	ND	ND
DIBROMOCHLOROMETHANE	mg/kg	0 : 3	0.0028	0.0042	ND	ND	ND	ND
DIBROMOMETHANE	mg/kg	0 : 3	0.0028	0.0042	ND	ND	ND	ND
DICHLORODIFLUOROMETHANE	mg/kg	0 : 3	0.0055	0.0085	ND	ND	ND	ND
ETHYLBENZENE	mg/kg	0 : 3	0.0028	0.0042	ND	ND	ND	ND
HEXACHLOROBUTADIENE	mg/kg	0 : 3	0.26	0.28	ND	ND	ND	ND
ISOPROPYLBENZENE	mg/kg	0 : 3	0.0028	0.0042	ND	ND	ND	ND
M- AND P-XYLENE	mg/kg	0 : 3	0.0055	0.0085	ND	ND	ND	ND
METHYL CYCLOHEXANE	mg/kg	0 : 3	0.0028	0.0042	ND	ND	ND	ND
METHYL TERT-BUTYL ETHER	mg/kg	0 : 3	0.0028	0.0042	ND	ND	ND	ND
METHYLENE CHLORIDE	mg/kg	0 : 3	0.014	0.021	ND	ND	ND	ND
N-BUTYLBENZENE	mg/kg	0 : 3	0.0028	0.0042	ND	ND	ND	ND
O-XYLENE	mg/kg	0 : 3	0.0028	0.0042	ND	ND	ND	ND
PROPYLBENZENE	mg/kg	0 : 3	0.0028	0.0042	ND	ND	ND	ND
SEC-BUTYLBENZENE	mg/kg	0 : 3	0.0028	0.0042	ND	ND	ND	ND
STYRENE	mg/kg	0 : 3	0.0028	0.0042	ND	ND	ND	ND
TERT-BUTANOL	mg/kg	0 : 3	0.014	0.021	ND	ND	ND	ND
TERT-BUTYLBENZENE	mg/kg	0 : 3	0.0028	0.0042	ND	ND	ND	ND
TETRACHLOROETHENE	mg/kg	0 : 3	0.0028	0.0042	ND	ND	ND	ND
TOLUENE	mg/kg	0 : 3	0.0028	0.0042	ND	ND	ND	ND
TRANS-1,2-DICHLOROETHENE	mg/kg	0 : 3	0.0028	0.0042	ND	ND	ND	ND
TRANS-1,3-DICHLOROPROPENE	mg/kg	0 : 3	0.0028	0.0042	ND	ND	ND	ND
TRICHLOROETHENE	mg/kg	0 : 3	0.0028	0.0042	ND	ND	ND	ND
TRICHLOROFLUOROMETHANE	mg/kg	0 : 3	0.0055	0.0085	ND	ND	ND	ND
VINYL CHLORIDE	mg/kg	0 : 3	0.0055	0.0085	ND	ND	ND	ND
XYLENES, TOTAL	mg/kg	0 : 3	0.0082	0.013	ND	ND	ND	ND

Notes:
The calculation of the summary statistics is based on detected concentrations only. The minimum and maximum detection limits are presented for chemicals that were not detected.
Refer to Attachment A for samples included in data set. Where two sample depths (e.g., 0-0.5 ft and 0.5-1 ft) were available for one location, samples combined to form one composite result for the location.

FOD - Frequency of Detection.
HMW - High Molecular Weight.
J - The compound was positively identified; however, the associated numerical value is an estimated concentration only (+ and - indicate bias).
LMW - Low Molecular Weight.
PAHs - Polycyclic Aromatic Hydrocarbons.
ND - Not Detected.

TABLE 3
SUMMARY STATISTICS - SURFACE SEDIMENT (0-1 ft)
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

Analyte	Unit	FOD	Reporting Limits		Detected Concentrations				Location of Maximum Detect
			Minimum	Maximum	Minimum	Mean	Maximum		
Inorganics									
ALUMINUM	mg/kg	55 : 55	--	--	2850	4110	7990		CRP-SD101_0_1
ANTIMONY	mg/kg	44 : 55	0.067	0.93	0.050	1.9	36.7		CRP-SD122_0_1
ARSENIC	mg/kg	55 : 55	--	--	1.3	4.5	38.1		CRP-SD102_0_1
BARIUM	mg/kg	55 : 55	--	--	4.5	8.3	29.6		CRP-SD103_0_1
BERYLLIUM	mg/kg	55 : 55	--	--	0.12	0.20	0.44	J	CRP-SD101_0_1
CADMIUM	mg/kg	53 : 55	0.082	0.10	0.027	0.11	0.21	J	CRP-SD16_0_1
CALCIUM	mg/kg	55 : 55	--	--	615	5097	36100		CRP-SD17_0_0.5
CHROMIUM VI	mg/kg	2 : 12	0.34	0.50	0.42	0.81	1.2		CRP-SD101_0_1
CHROMIUM, TOTAL	mg/kg	55 : 55	--	--	7.1	10.9	16.2	J	CRP-SD101_0_1
COBALT	mg/kg	55 : 55	--	--	1.9	4.7	16.4		CRP-SD101_0_1
COPPER	mg/kg	55 : 55	--	--	4.1	25.1	565	J	CRP-SD101_0_1
IRON	mg/kg	55 : 55	--	--	7050	14650	43800		CRP-SD101_0_1
LEAD	mg/kg	55 : 55	--	--	5.2	210	4290	J	CRP-SD122_0_1
MAGNESIUM	mg/kg	55 : 55	--	--	1495	2072	4120		CRP-SD103_0_1
MANGANESE	mg/kg	55 : 55	--	--	69.8	208	1510	B	CRP-SD129_0_1
MERCURY	mg/kg	33 : 35	0.013	0.014	0.0040	0.031	0.090		CRP-SD105_0_1
NICKEL	mg/kg	55 : 55	--	--	5.6	11.9	35.3		CRP-SD01_0_1
POTASSIUM	mg/kg	55 : 55	--	--	346	564	1090		CRP-SD132_0_1
SELENIUM	mg/kg	12 : 55	0.25	2.00	0.11	0.23	0.43		CRP-SD132_0_1
SILVER	mg/kg	38 : 55	0.12	0.36	0.020	0.077	0.30	J	CRP-SD101_0_1
SODIUM	mg/kg	55 : 55	--	--	645	2546	4910		CRP-SD17_0_0.5
THALLIUM	mg/kg	27 : 55	0.059	0.97	0.020	0.050	0.10		CRP-SD102_0_1
VANADIUM	mg/kg	55 : 55	--	--	8.0	12.9	27.1	J	CRP-SD101_0_1
ZINC	mg/kg	55 : 55	--	--	21.8	48.1	139	J	CRP-SD104_0_1
Semi-Volatile Organic Compounds (SVOCs)									
2-METHYLNAPHTHALENE	mg/kg	0 : 9	0.24	0.25	ND	ND	ND		ND
ACENAPHTHENE	mg/kg	18 : 41	0.011	0.25	0.0024	0.021	0.088		CRP-SD01_0_1
ACENAPHTHYLENE	mg/kg	5 : 41	0.010	0.25	0.0017	0.0023	0.0040	J	CRP-SD130_0_1
ANTHRACENE	mg/kg	25 : 41	0.011	0.25	0.0018	0.023	0.13		CRP-SD01_0_1
BENZO[A]ANTHRACENE	mg/kg	31 : 41	0.012	0.25	0.0033	0.12	0.66		CRP-SD01_0_1
BENZO[A]PYRENE	mg/kg	31 : 41	0.011	0.25	0.0044	0.13	0.88		CRP-SD01_0_1
BENZO[B]FLUORANTHENE	mg/kg	34 : 41	0.012	0.25	0.005	0.12	0.92		CRP-SD01_0_1
BENZO[G,H,I]PERYLENE	mg/kg	32 : 41	0.011	0.25	0.0029	0.085	0.68		CRP-SD01_0_1
BENZO[K]FLUORANTHENE	mg/kg	27 : 41	0.011	0.25	0.0038	0.058	0.33		CRP-SD01_0_1
CHRYSENE	mg/kg	34 : 41	0.012	0.25	0.0028	0.14	0.79		CRP-SD01_0_1
DIBENZ[A,H]ANTHRACENE	mg/kg	26 : 41	0.012	0.25	0.0026	0.034	0.28		CRP-SD01_0_1
FLUORANTHENE	mg/kg	35 : 41	0.022	0.25	0.0031	0.13	0.89		CRP-SD01_0_1
FLUORENE	mg/kg	12 : 41	0.011	0.25	0.0041	0.020	0.060		CRP-SD01_0_1
INDENO[1,2,3-CD]PYRENE	mg/kg	32 : 41	0.012	0.25	0.0029	0.086	0.75		CRP-SD01_0_1
NAPHTHALENE	mg/kg	6 : 41	0.011	0.25	0.0042	0.011	0.030	J	CRP-SD101_0_1
PHENANTHRENE	mg/kg	35 : 41	0.011	0.25	0.0023	0.083	0.59		CRP-SD01_0_1

TABLE 3
SUMMARY STATISTICS - SURFACE SEDIMENT (0-1 ft)
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

Analyte	Unit	FOD	Reporting Limits		Detected Concentrations			Location of Maximum Detect
			Minimum	Maximum	Minimum	Mean	Maximum	
PYRENE	mg/kg	38 : 41	0.25	0.25	0.0035	0.14	0.88	CRP-SD01_0_1
TOTAL HMW PAHs	mg/kg	41 : 41	0.25	0.25	0.012	0.85	7.0	CRP-SD01_0_1
TOTAL LMW PAHs	mg/kg	38 : 41	0.011	0.25	0.0023	0.12	0.87	CRP-SD01_0_1
TOTAL PAHs	mg/kg	41 : 41	0.25	0.25	0.012	0.95	7.9	CRP-SD01_0_1
Other								
TOTAL ORGANIC CARBON	mg/kg	32 : 32	--	--	4900	10000	36000	CRP-SD109_0_1

Notes:
The calculation of the summary statistics is based on detected concentrations only. The minimum and maximum detection limits are presented for chemicals that were not detected.
Refer to Attachment A for samples included in data set. Where two sample depths (e.g., 0-0.5 ft and 0.5-1 ft) were available for one location, samples combined to form one composite result for the location.

B - The reported value was obtained from a reading less than the contract required detection limit (CRDL) but greater than or equal to the instrument detection limit (IDL).
FOD - Frequency of Detection.
HMW - High Molecular Weight.
J - The compound was positively identified; however, the associated numerical value is an estimated concentration only (+ and - indicate bias).
LMW - Low Molecular Weight.
PAHs - Polycyclic Aromatic Hydrocarbons.
ND - Not Detected.

TABLE 4
SUMMARY STATISTICS - SHELLFISH TISSUE
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

Analyte	Unit	FOD	Reporting Limits		Detected Concentrations				Location of Maximum Detect
			Minimum	Maximum	Minimum	Mean	Maximum		
Inorganics									
MERCURY	mg/kg	13 : 13	--	--	0.0070	0.016	0.030		CRP-SD110
ALUMINUM	mg/kg	13 : 13	--	--	2.2	12.8	31.5		CRP-SD123
CALCIUM	mg/kg	13 : 13	--	--	327	783	3980	J	CRP-SD123
IRON	mg/kg	13 : 13	--	--	7.8	43.8	148		CRP-SD123
MAGNESIUM	mg/kg	13 : 13	--	--	748	836	941		CRP-SD118
POTASSIUM	mg/kg	13 : 13	--	--	940	1290	1700	J+	CRP-SD123
SODIUM	mg/kg	13 : 13	--	--	6200	6770	7540		CRP-SD104
ANTIMONY	mg/kg	5 : 13	0.0041	0.0057	0.011	0.017	0.029	J+	CRP-SD102
ARSENIC	mg/kg	13 : 13	--	--	2.2	3.2	4.4	J+	CRP-SD110
BARIUM	mg/kg	13 : 13	--	--	0.12	0.21	0.30	J+	CRP-SD110
BERYLLIUM	mg/kg	13 : 13	--	--	0.0017	0.0034	0.0068		CRP-SD112
CADMIUM	mg/kg	13 : 13	--	--	0.059	0.10	0.15	J+	CRP-SD101
CHROMIUM, TOTAL	mg/kg	13 : 13	--	--	0.074	0.32	0.77	J+	CRP-SD123
COBALT	mg/kg	13 : 13	--	--	0.063	0.14	0.28	J+	CRP-SD109
COPPER	mg/kg	13 : 13	--	--	0.58	1.1	1.6	J+	CRP-SD102
LEAD	mg/kg	13 : 13	--	--	0.060	1.4	7.3	J	CRP-SD102
MANGANESE	mg/kg	13 : 13	--	--	1.4	4.1	7.4	J+	CRP-SD110
NICKEL	mg/kg	13 : 13	--	--	0.29	0.53	0.89	J+	CRP-SD112
SELENIUM	mg/kg	13 : 13	--	--	0.18	0.37	0.52		CRP-SD124
SILVER	mg/kg	13 : 13	--	--	0.0047	0.12	0.27	J-	CRP-SD110
THALLIUM	mg/kg	0 : 13	0.00033	0.0028	ND	ND	ND		ND
VANADIUM	mg/kg	13 : 13	--	--	0.057	0.18	0.35	J+	CRP-SD112
ZINC	mg/kg	13 : 13	--	--	5.4	11.1	15.2	J+	CRP-SD106
Polycyclic Aromatic Hydrocarbons (PAHs)									
ACENAPHTHENE	mg/kg	9 : 13	0.0013	0.0040	0.000084	0.00041	0.0026		CRP-SD124
ACENAPHTHYLENE	mg/kg	13 : 13	--	--	0.000094	0.00025	0.0013		CRP-SD124
ANTHRACENE	mg/kg	13 : 13	--	--	0.00013	0.0017	0.0080		CRP-SD124
BENZO[A]ANTHRACENE	mg/kg	8 : 13	0.00020	0.00048	0.00037	0.011	0.032		CRP-SD122
BENZO[A]PYRENE	mg/kg	13 : 13	--	--	0.00012	0.0094	0.040		CRP-SD122
BENZO[B]FLUORANTHENE	mg/kg	13 : 13	--	--	0.00023	0.011	0.044		CRP-SD122
BENZO[G,H,I]PERYLENE	mg/kg	13 : 13	--	--	0.00015	0.0073	0.031		CRP-SD122
BENZO[K]FLUORANTHENE	mg/kg	13 : 13	--	--	0.00012	0.0038	0.015		CRP-SD122
CHRYSENE	mg/kg	13 : 13	--	--	0.00020	0.014	0.050		CRP-SD122/CRP-SD124
DIBENZ[A,H]ANTHRACENE	mg/kg	5 : 13	0.00010	0.00010	0.0018	0.0046	0.0081		CRP-SD122
FLUORANTHENE	mg/kg	13 : 13	--	--	0.00047	0.010	0.040		CRP-SD122
FLUORENE	mg/kg	13 : 13	--	--	0.00025	0.00091	0.0032		CRP-SD123/CRP-SD124
INDENO[1,2,3-CD]PYRENE	mg/kg	12 : 13	0.00010	0.00010	0.00011	0.0065	0.026		CRP-SD122
NAPHTHALENE	mg/kg	0 : 13	0.0010	0.0061	ND	ND	ND		ND
PHENANTHRENE	mg/kg	11 : 13	0.00049	0.00050	0.00054	0.0069	0.023		CRP-SD122
PYRENE	mg/kg	13 : 13	--	--	0.00052	0.011	0.040		CRP-SD122
TOTAL PAHs	mg/kg	13 : 13	--	--	0.0027	0.090	0.36		CRP-SD122
TOTAL HMW PAHs	mg/kg	13 : 13	--	--	0.0019	0.081	0.33		CRP-SD122
TOTAL LMW PAHs	mg/kg	13 : 13	--	--	0.00060	0.0090	0.035		CRP-SD124
Other									
TOTAL SOLIDS	%	13 : 13	--	--	8.2	10.5	14.0		CRP-SD123
LIPIDS	%	13 : 13	--	--	0.13	0.32	0.61		CRP-SD101/CRP-SD123

Notes:
Refer to Attachment A for samples included in data set. Data set includes both quahog and blue mussel results.
The calculation of the summary statistics is based on detected concentrations only. The minimum and maximum detection limits are presented for chemicals that were not detected.

FOD - Frequency of Detection.
HMW - High Molecular Weight.
J - The compound was positively identified; however, the associated numerical value is an estimated concentration only (+ and - indicate bias).
LMW - Low Molecular Weight.
ND - Not Detected.
PAHs - Polycyclic Aromatic Hydrocarbons.

TABLE 5
SELECTION OF SURFACE SOIL COPCs
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

Detected Analyte	Maximum Detected Surface Soil Concentration	Selected Soil SEV [a]	SEV Source	COPC Determination and Rationale	
ENERGETICS					
NITROGLYCERIN	4.0	19.2	Calculated (USACHPPM wildlife)	NO	Max Detect < SEV
INORGANICS					
ALUMINUM	18600	pH<5.5	Eco-SSL	NO	pH > 5.5 [b]
ANTIMONY	396	0.270	Eco-SSL (mammals)	YES	Max Detect > SEV
ARSENIC	130	18	Eco-SSL (plants)	YES	Max Detect > SEV
BARIUM	49.6	330	Eco-SSL (inverts)	NO	Max Detect < SEV
BERYLLIUM	0.56	10	ORNL (plants)	NO	Max Detect < SEV
CADMIUM	0.84	0.36	Eco-SSL (mammals)	YES	Max Detect > SEV
CALCIUM	39500	NV		NO	EN
CHROMIUM, TOTAL	30.1	0.40	ORNL (inverts)	YES	Max Detect > SEV
COBALT	24.5	13.00	Eco-SSL (plants)	YES	Max Detect > SEV
COPPER	256	28	Eco-SSL (birds)	YES	Max Detect > SEV
IRON	88500	200	USEPA R4 (microbes)	YES	Max Detect > SEV
LEAD	29900	11	Eco-SSL (birds)	YES	Max Detect > SEV
MAGNESIUM	25200	NV		NO	EN
MANGANESE	929	220	Eco-SSL (plants)	YES	Max Detect > SEV
MERCURY	0.21	0.00158	USEPA R5 (shrew/vole)	YES	Max Detect > SEV
NICKEL	56.6	38	Eco-SSL (plants)	YES	Max Detect > SEV
POTASSIUM	650	NV		NO	EN
SELENIUM	0.66	0.5	Eco-SSL (plants)	YES	Max Detect > SEV
SILVER	0.90	2.0	USEPA R4 (unspecified)	NO	Max Detect < SEV
SODIUM	1860	NV		NO	EN
THALLIUM	0.15	0.1	USEPA R5 (shrew/vole)	YES	Max Detect > SEV
VANADIUM	26.6	2.0	ORNL (plants)	YES	Max Detect > SEV
ZINC	433	46.0	Eco-SSL (birds)	YES	Max Detect > SEV
PESTICIDES					
4,4-DDE	0.062	0.021	Eco-SSL (mammals)	YES	Max Detect > SEV
4,4-DDT	19.0	0.021	Eco-SSL (mammals)	YES	Max Detect > SEV
ENDOSULFAN I	0.0015	0.00001	TV (unspecified)	YES	Max Detect > SEV
ENDOSULFAN II	0.00032	0.00001	TV (unspecified)	YES	Max Detect > SEV
ENDOSULFAN SULFATE	12.0	0.00001	TV (unspecified)	YES	Max Detect > SEV
ENDRIN	0.0018	0.001	USEPA R4 (unspecified)	YES	Max Detect > SEV
ENDRIN KETONE	0.0016	0.001	USEPA R4 (unspecified)	YES	Max Detect > SEV
HEPTACHLOR	0.0015	0.00598	USEPA R5 (shrew/vole)	NO	Max Detect < SEV
METHOXYCHLOR	0.0088	0.0199	USEPA R5 (shrew/vole)	NO	Max Detect < SEV
POLYCHLORINATED BIPHENYLS (PCBs)					
AROCLOR-1254	0.043	1.3	CCME (residential/parkland)	NO	Max Detect < SEV
AROCLOR-1260	270	1.3	CCME (residential/parkland)	YES	Max Detect > SEV
PCB, TOTAL	270	1.3	CCME (residential/parkland)	YES	Max Detect > SEV

TABLE 5
SELECTION OF SURFACE SOIL COPCs
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

Detected Analyte	Maximum Detected Surface Soil Concentration	Selected Soil SEV [a]	SEV Source	COPC Determination and Rationale	
SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs)					
1-METHYLNAPHTHALENE	0.010	3.24	USEPA R5 (shrew/vole)	NO	Max Detect < SEV
2-METHYLNAPHTHALENE	0.016	3.24	USEPA R5 (shrew/vole)	NO	Max Detect < SEV
ACENAPHTHENE	18	20	ORNL (plants)	NO	Max Detect < SEV
ACENAPHTHYLENE	0.369	20	ORNL (plants)	NO	Max Detect < SEV
ANTHRACENE	21	20	ORNL (plants)	YES	Max Detect > SEV
BENZO[A]ANTHRACENE	65	1.1	Eco-SSL (mammals)	YES	Max Detect > SEV
BENZO[A]PYRENE	80	1.1	Eco-SSL (mammals)	YES	Max Detect > SEV
BENZO[B]FLUORANTHENE	75	1.1	Eco-SSL (mammals)	YES	Max Detect > SEV
BENZO[G,H,I]PERYLENE	32	1.1	Eco-SSL (mammals)	YES	Max Detect > SEV
BENZO[K]FLUORANTHENE	74	1.1	Eco-SSL (mammals)	YES	Max Detect > SEV
CHRYSENE	81	1.1	Eco-SSL (mammals)	YES	Max Detect > SEV
DIBENZ[A,H]ANTHRACENE	5.5	1.1	Eco-SSL (mammals)	YES	Max Detect > SEV
FLUORANTHENE	100	20	ORNL (plants)	YES	Max Detect > SEV
FLUORENE	9.2	20	ORNL (plants)	NO	Max Detect < SEV
INDENO[1,2,3-CD]PYRENE	44	1.1	Eco-SSL (mammals)	YES	Max Detect > SEV
NAPHTHALENE	3	20	ORNL (plants)	NO	Max Detect < SEV
PHENANTHRENE	86	20	ORNL (plants)	YES	Max Detect > SEV
PYRENE	100	1.1	Eco-SSL (mammals)	YES	Max Detect > SEV
TOTAL HMW PAHs	650	1.1	Eco-SSL (mammals)	YES	Max Detect > SEV
TOTAL LMW PAHs	140	20	ORNL (plants)	YES	Max Detect > SEV
TOTAL PAHs	790	1.1	Eco-SSL (mammals)	YES	Max Detect > SEV

Notes:
All concentrations reported in milligrams per kilogram (mg/kg).
CCME - Canadian Council of Ministers of the Environment (2002). Commercial value based on direct contact. Residential/parkland value based on soil and food ingestion.
COPC - Chemical of Potential Concern.
DDE - Dichlorodiphenyldichloroethylene.
DDT - Dichlorodiphenyltrichloroethane.
Eco-SSL - Ecological Soil Screening Level. Derived by USEPA according to USEPA guidance (2005a).
EN - Essential Nutrient.
HMW - High Molecular Weight.
LMW - Low Molecular Weight.
NV - No value identified.
ORNL - Oak Ridge National Laboratory (Efroymson, et al., 1997a and b).
PAH - Polycyclic Aromatic Hydrocarbon.
SEV - Screening Ecotoxicity Value.
TV - Target Value (Dutch standards presented in Buchman, 2008).
USACHPPM - United States Army Center for Promotion and Preventive Medicine (USACHPPM, 2007).
USEPA - United States Environmental Protection Agency.
USEPA R4 - USEPA Region 4 recommended ecological screening values for soil (USEPA, 2001c).
USEPA R5 - USEPA Region 5 ecological screening levels for soil (USEPA, 2003).
[a] - Lowest of the SEVs for terrestrial plants, soil invertebrates, birds, and mammals. See Attachment F for details.
[b] - pH reported in surface soil at 5.9 SU. pH in deeper samples ranged from 5.1 to 5.4 SU.

TABLE 6
SELECTION OF SURFACE SEDIMENT COPCs
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

Detected Analyte	Maximum Detected Surface Sediment	Selected Sediment SEV [a]	SEV Source	COPC Determination and Rationale	
INORGANICS					
ALUMINUM	7990	18000	NOAA SQuiRT (Marine; AET)	NO	Max Detect < SEV
ANTIMONY	36.7	2.0	NOAA ERL (Freshwater/Marine)	YES	Max Detect > SEV
ARSENIC	38.1	8.2	NOAA ERL (Marine)	YES	Max Detect > SEV
BARIUM	29.6	48.0	NOAA SQuiRT (Marine; AET)	NO	Max Detect < SEV
BERYLLIUM	0.44	NV		YES	No SEV
CADMIUM	0.21	1.2	NOAA ERL (Marine)	NO	Max Detect < SEV
CALCIUM	36100	NV		NO	EN
CHROMIUM VI	1.2	NV		YES	No SEV
CHROMIUM, TOTAL	16.2	81.0	NOAA ERL (Marine)	NO	Max Detect < SEV
COBALT	16.4	10.0	NOAA SQuiRT (Marine; AET)	YES	Max Detect > SEV
COPPER	565	34.0	NOAA ERL (Marine)	YES	Max Detect > SEV
IRON	43800	220000	NOAA SQuiRT (Marine; AET)	NO	Max Detect < SEV
LEAD	4290	46.7	NOAA ERL (Marine)	YES	Max Detect > SEV
MAGNESIUM	4120	NV		NO	EN
MANGANESE	1510	260	NOAA SQuiRT (Marine; AET)	YES	Max Detect > SEV
MERCURY	0.090	0.15	NOAA ERL (Marine)	NO	Max Detect < SEV
NICKEL	35.3	20.900	NOAA ERL (Marine)	YES	Max Detect > SEV
POTASSIUM	1090	NV		NO	EN
SELENIUM	0.43	1.0	NOAA SQuiRT (Marine; AET)	NO	Max Detect < SEV
SILVER	0.30	1.0	NOAA ERL (Marine)	NO	Max Detect < SEV
SODIUM	4910	NV		NO	EN
THALLIUM	0.10	NV		YES	No SEV
VANADIUM	27.1	57.0	NOAA SQuiRT (Marine; AET)	NO	Max Detect < SEV
ZINC	139	150.0	NOAA ERL (Marine)	NO	Max Detect < SEV

TABLE 6
SELECTION OF SURFACE SEDIMENT COPCs
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

Detected Analyte	Maximum Detected Surface Sediment	Selected Sediment SEV [a]	SEV Source	COPC Determination and Rationale	
SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs)					
ACENAPHTHENE	0.088	0.016	NOAA ERL (Marine)	YES	Max Detect > SEV
ACENAPHTHYLENE	0.0040	0.044	NOAA ERL (Marine)	NO	Max Detect < SEV
ANTHRACENE	0.13	0.085	NOAA ERL (Marine)	YES	Max Detect > SEV
BENZO[A]ANTHRACENE	0.66	0.26	NOAA ERL (Marine)	YES	Max Detect > SEV
BENZO[A]PYRENE	0.88	0.43	NOAA ERL (Marine)	YES	Max Detect > SEV
BENZO[B]FLUORANTHENE	0.92	0.60	NOAA ERL (Marine)	YES	Max Detect > SEV
BENZO[G,H,I]PERYLENE	0.68	0.06	NOAA ERL (Marine)	YES	Max Detect > SEV
BENZO[K]FLUORANTHENE	0.33	0.60	NOAA ERL (Marine)	NO	Max Detect < SEV
CHRYSENE	0.79	0.38	NOAA ERL (Marine)	YES	Max Detect > SEV
DIBENZ[A,H]ANTHRACENE	0.28	0.063	NOAA ERL (Marine)	YES	Max Detect > SEV
FLUORANTHENE	0.89	0.60	NOAA ERL (Marine)	YES	Max Detect > SEV
FLUORENE	0.060	0.019	NOAA ERL (Marine)	YES	Max Detect > SEV
INDENO[1,2,3-CD]PYRENE	0.75	0.063	NOAA ERL (Marine)	YES	Max Detect > SEV
NAPHTHALENE	0.030	0.16	NOAA ERL (Marine)	NO	Max Detect < SEV
PHENANTHRENE	0.59	0.24	NOAA ERL (Marine)	YES	Max Detect > SEV
PYRENE	0.88	0.67	NOAA ERL (Marine)	YES	Max Detect > SEV
TOTAL HMW PAHs	7.0	2	NOAA ERL (Marine)	YES	Max Detect > SEV
TOTAL LMW PAHs	0.87	0.55	NOAA ERL (Marine)	YES	Max Detect > SEV
TOTAL PAHs	7.9	4.022	NOAA ERL (Marine)	YES	Max Detect > SEV

Notes:
All concentrations reported in milligrams per kilogram (mg/kg).
AET - Apparent Effect Threshold.
COPC - Chemical of Potential Concern.
EN - Essential Nutrient.
ERL - Effects Range Low (Marine - Long, et al., 1995; Freshwater - Long and Morgan, 1991).
HMW - High Molecular Weight.
LMW - Low Molecular Weight.
NOAA - National Oceanic and Atmospheric Administration.
NV - No value identified.
PAHs - Polycyclic Aromatic Hydrocarbons.
SEV - Screening Ecotoxicity Value.
SQuiRT - Screening Quick Reference Tables (Buchman, 2008).
[a] - Lowest of the SEVs identified for sediment. See Attachment F for details.

TABLE 7
SELECTION OF SHELLFISH TISSUE COPCs
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

Detected Analyte	Maximum Detected Concentration (mg/kg_{ww})	Lowest Shellfish Critical Body Residue [a] (mg/kg_{ww})	COPC Determination and Rationale	
INORGANICS				
ALUMINUM	31.5	NV	YES	Lack of CBR
ANTIMONY	0.0287	NV	YES	Lack of CBR
ARSENIC	4.4	4	YES	Max detect > CBR
BARIUM	0.30	NV	YES	Lack of CBR
BERYLLIUM	0.0068	NV	YES	Lack of CBR
CADMIUM	0.15	0.36	NO	Max detect < CBR
CALCIUM	3980	NV	NO	Essential nutrient
CHROMIUM, TOTAL	0.77	1	NO	Max detect < CBR
COBALT	0.279	NV	YES	Lack of CBR
COPPER	1.6	5	NO	Max detect < CBR
IRON	148	NV	YES	Lack of CBR
LEAD	7.26	0.58	YES	Max detect > CBR
MAGNESIUM	941	NV	NO	Essential nutrient
MANGANESE	7.4	NV	YES	Lack of CBR
MERCURY	0.030	4	NO	Max detect < CBR
NICKEL	0.89	79	NO	Max detect < CBR
POTASSIUM	1700	NV	NO	Essential nutrient
SELENIUM	0.52	NV	YES	Lack of CBR
SILVER	0.27	4.47	NO	Max detect < CBR
SODIUM	7540	NV	NO	Essential nutrient
VANADIUM	0.35	NV	YES	Lack of CBR
ZINC	15.2	5	YES	Max detect > CBR
SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs)				
TOTAL PAHs	0.36	0.028	YES	Max detect > CBR

Notes:
All concentrations reported in milligrams per kilograms wet weight (mg/kg_{ww}).
CBR - Critical Body Residue.
COPC - Chemical of Potential Concern.
NV - No Value Identified.
PAHs - Polycyclic Aromatic Hydrocarbons.

[a] See Attachment G for selection of shellfish CBRs.

TABLE 8
WILDLIFE EXPOSURE FACTORS
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

Receptor Species	Value for Use in SRA Minimum Body Weight (kg)	Value for Use in SRA [b] Maximum Body Weight (kg)	Value for Use in BERA Average Body Weight (kg)	Value for Use in SRA Food Ingestion Rate (kg_{dw}/day)	Value for Use in BERA Food Ingestion Rate (kg_{dw}/day)	Value for Use in SRA Incidental Soil/Sediment Ingestion (%)	Value for Use in BERA Incidental Soil/Sediment Ingestion (%)	Value for Use in BERA Average Home Range (acres)	Dietary Assumptions for Use in SRA	Dietary Assumptions for Use in BERA
BIRDS										
Bobwhite quail *(Colinus virginianus)*	0.154 [a]	0.194 [a]	0.170 [a]	0.0096 [c]	0.0085 [d]	13.9% [e]	6.1% [f]	24.7 [g]	100% vegetation [h]	86% vegetation [i] 14% soil invertebrates
American robin *(Turdus migratorius)*	0.0773 [a]	0.0862 [a]	0.081 [a]	0.0125 [c]	0.0120 [d]	3.0% [e]	0.9% [f]	1.2 [g]	100% soil invertebrates [h]	63% vegetation [i] 37% soil invertebrates
Herring gull *(Larus argentatus)*	0.951 [a]	1.232 [a]	1.092 [a]	0.1243 [c]	0.1132 [d]	8.2% [e]	8.2% [f]	10 km [g] radius	100% fish or benthic invertebrates [h] [more contaminated item selected]	68% benthic invertebrates [i] 32% fish
MAMMALS										
Meadow vole *(Microtus pennsylvanicus)*	0.0170 [a]	0.0524 [a]	0.033 [a]	0.0103 [c]	0.0077 [d]	3.2% [e]	1.2% [f]	0.0659 [g]	100% vegetation [h]	99% vegetation [i] 1% soil invertebrates
Short-tailed shrew *(Blarina brevicauda)*	0.0150 [a]	0.0192 [a]	0.0168 [a]	0.0023 [c]	0.0022 [d]	3.0% [e]	0.9% [f]	0.9637 [g]	100% soil invertebrates [h]	5% vegetation [i] 87% soil invertebrates 8% small mammals
Raccoon *(Procyon lotor)*	3.67 [a]	7.60 [a]	5.78 [a]	0.1848 [c]	0.1535 [d]	9.4% [e]	9.4% [f]	1558 [g]	100% fish or benthic invertebrates [h] [more contaminated item selected]	59% vegetation [i] 15% soil invertebrates 17% small mammals 7% fish 2% benthic invertebrates

General Notes:

BERA - Baseline Ecological Risk Assessment
BW - Body Weight
DW - Dry Weight
FIR - Food Ingestion Rate
g - grams
kg - kilograms
L - liters
SRA - Screening Risk Assessment

Notes for Bobwhite quail
[a] Range and average of adult body weights listed by USEPA (1993b).
[b] Maximum body weight is only used to determine conservative ingestion rates for the SRA.
[c] Food ingestion rate calculated using algorithm for quail developed by Nagy, 2001 [FIR (g_{dw}/day) = $0.088*BW^{0.891}$] using maximum body weight.
[d] Food ingestion rate calculated using algorithm for quail developed by Nagy, 2001 [FIR (g_{dw}/day) = $0.088*BW^{0.891}$] using average body weight.
[e] In the absence of data for quail, the incidental soil ingestion rate is based on 90th percentile value for mourning dove (USEPA, 2007).
[f] In the absence of data for quail, the incidental soil ingestion rate is based on 50th percentile value for mourning dove (USEPA, 2007).
[g] Home range listed by USEPA (1993b) ranges from 8.9 to 41.3 acres with an average of 24.7 acres.
[h] An exclusive diet was selected for the SRA.
[i] Average diet over the course of a year for adult quail in the southeastern United States (USEPA, 1993b).

TABLE 8
WILDLIFE EXPOSURE FACTORS
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

Notes for American robin
[a] Range and average of adult body weights listed by USEPA (1993b).
[b] Maximum body weight is only used to determine conservative ingestion rates for the SRA.
[c] Food ingestion rate calculated using algorithm for insectivorous birds developed by Nagy, 2001 [FIR (g_{dw}/day) = $0.540*BW^{0.705}$] using maximum body weight.
[d] Food ingestion rate calculated using algorithm for insectivorous birds developed by Nagy, 2001 [FIR (g_{dw}/day) = $0.540*BW^{0.705}$] using average body weight.
[e] In the absence of data for the robin, the incidental soil ingestion rate is based on 90th percentile value for shrew (consuming 100% earthworms; USEPA, 2007).
[f] In the absence of data for the robin, the incidental soil ingestion rate is based on 50th percentile value for shrew (consuming 100% earthworms; USEPA, 2007).
[g] Home range listed by USEPA (1993) ranges from 0.37 to 2 acres with an average of 1.2 acres.
[h] An exclusive diet was selected for the SRA.
[i] Average diet over the course of a year for adult robin in the eastern United States (USEPA, 1993b).

Notes for Herring gull
[a] Range and average of adult body weights listed by USEPA (1993b).
[b] Maximum body weight is only used to determine conservative ingestion rates for the SRA.
[c] Food ingestion rate calculated using algorithm for gulls developed by Nagy, 2001 [FIR (g_{dw}/day) = $0.522*BW^{0.769}$] using maximum body weight.
[d] Food ingestion rate calculated using algorithm for gulls developed by Nagy, 2001 [FIR (g_{dw}/day) = $0.522*BW^{0.769}$] using average body weight.
[e] The incidental sediment ingestion rate is based on the value identified by Beyer (1994) for the Canada goose.
[f] The incidental sediment ingestion rate is based on the value identified by Beyer (1994) for the Canada goose.
[g] Foraging range listed by USEPA (1993b) ranges from 3 to 50 km with an average of 10 km.
[h] An exclusive diet was selected for the SRA.
[i] Dietary composition for adult herring gulls in coastal regions of the United States (USEPA, 1993b). The percent allotted to 'small mammals' and 'garbage' were assigned to fish.

Notes for Meadow vole
[a] Range and average of adult body weights listed by USEPA (1993b).
[b] Maximum body weight is only used to determine conservative ingestion rates for the SRA.
[c] Food ingestion rate calculated using algorithm for herbivorous mammals developed by Nagy, 2001 [FIR (g_{dw}/day) = $0.859*BW^{0.628}$] using maximum body weight.
[d] Food ingestion rate calculated using algorithm for herbivorous mammals developed by Nagy, 2001 [FIR (g_{dw}/day) = $0.859*BW^{0.628}$] using average body weight.
[e] The incidental soil ingestion rate is based on 90th percentile value for vole (USEPA, 2007).
[f] The incidental soil ingestion rate is based on 50th percentile value for vole (USEPA, 2007).
[g] Home range listed by USEPA (1993b) ranges from 0.000494 to 0.2051 acres with an average of 0.0659 acres.
[h] An exclusive diet was selected for the SRA.
[i] Average diet over the course of a year for meadow vole based on bluegrass habitat in Illinois (USEPA, 1993b).

Notes for Short-tailed shrew
[a] Range and average of adult body weights listed by USEPA (1993b).
[b] Maximum body weight is only used to determine conservative ingestion rates for the SRA.
[c] Food ingestion rate calculated using algorithm for insectivorous mammals developed by Nagy, 2001 [FIR (g_{dw}/day) = $0.373*BW^{0.622}$] using maximum body weight.
[d] Food ingestion rate calculated using algorithm for insectivorous mammals developed by Nagy, 2001 [FIR (g_{dw}/day) = $0.373*BW^{0.622}$] using average body weight.
[e] The incidental soil ingestion rate is based on 90th percentile value for shrew (USEPA, 2007).
[f] The incidental soil ingestion rate is based on 50th percentile value for shrew (USEPA, 2007).
[g] Single home range value was listed by USEPA (1993b).
[h] An exclusive diet was selected for the SRA.
[i] Dietary composition for shrew in New York (June to October; USEPA, 1993b). The percent allotted to 'other' was assigned to soil invertebrates.

Notes for Raccoon
[a] Range and average of adult body weights listed by USEPA (1993b).
[b] Maximum body weight is only used to determine conservative ingestion rates for the SRA.
[c] Food ingestion rate calculated using algorithm for omnivorous mammals developed by Nagy, 2001 [FIR (g_{dw}/day) = $0.432*BW^{0.678}$] using maximum body weight.
[d] Food ingestion rate calculated using algorithm for omnivorous mammals developed by Nagy, 2001 [FIR (g_{dw}/day) = $0.432*BW^{0.678}$] using average body weight.
[e] The incidental soil ingestion rate is based on the value identified by Beyer (1994) for raccoons.
[f] The incidental soil ingestion rate is based on the value identified by Beyer (1994) for raccoons.
[g] Home range listed by USEPA (1993b) ranges from 96 to 6325 acres with an average of 1558 acres.
[h] An exclusive diet was selected for the SRA.
[i] Dietary composition for raccoon in New York (June to October; USEPA, 1993b). The percent allotted to small mammals includes birds and carrion. The percent allotted to fish includes amphibians and reptiles.

TABLE 9

SCREENING-LEVEL RISK ESTIMATES FOR SURFACE SOIL
COPCs
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

		Soil Invertebrates			Terrestrial Plants		
COPC	**Maximum Detected Concentration**	**Soil Invertebrate SEV[a]**	**SEV Source**	**HQ**	**Plant SEVs[a]**	**SEV Source**	**HQ**
INORGANICS							
ANTIMONY	396	78	Eco-SSL (inverts)	5.1	5.0	ORNL (plants)	79.2
ARSENIC	130	60	ORNL (inverts)	2.2	18.0	Eco-SSL (plants)	7.2
CADMIUM	0.84	140	Eco-SSL (inverts)	0.0060	32.0	Eco-SSL (plants)	0.026
CHROMIUM, TOTAL	30.1	0.4	ORNL (inverts)	75.3	1.0	ORNL (plants)	30.1
COBALT	24.5	20	USEPA R4 (unspecified)	1.2	13.0	Eco-SSL (plants)	1.9
COPPER	256	80	Eco-SSL (inverts)	3.2	70.0	Eco-SSL (plants)	3.7
IRON	88500	200	USEPA R4 (microbes)	443	pH<5, pH>8	Eco-SSL	Average pH >5 and <8 [b]
LEAD	29900	1700	Eco-SSL (inverts)	17.6	120.0	Eco-SSL (plants)	249
MANGANESE	929	450	Eco-SSL (inverts)	2.1	220	Eco-SSL (plants)	4.2
MERCURY	0.21	0.1	ORNL (inverts)	2.1	0.3	ORNL (plants)	0.70
NICKEL	56.6	280	Eco-SSL (inverts)	0.20	38.0	Eco-SSL (plants)	1.5
SELENIUM	0.66	4.1	Eco-SSL (inverts)	0.16	0.52	Eco-SSL (plants)	1.3
THALLIUM	0.15	1	USEPA R4 (unspecified)	0.15	1.0	ORNL (plants)	0.15
VANADIUM	26.6	NV		No SEV	2.0	ORNL (plants)	13.30
ZINC	433	120	Eco-SSL (inverts)	3.6	160	Eco-SSL (plants)	2.71
PESTICIDES							
4,4-DDE	0.062	12	CCME (commercial)	0.0052	12	CCME (industrial)	0.0052
4,4-DDT	19.0	12	CCME (commercial)	1.6	12	CCME (industrial)	1.6
ENDOSULFAN I	0.0015	0.000010	TV (unspecified)	150	0.00001	TV (unspecified)	150
ENDOSULFAN II	0.00032	0.000010	TV (unspecified)	32.0	0.00001	TV (unspecified)	32.0
ENDOSULFAN SULFATE	12.0	0.000010	TV (unspecified)	1200000	0.00001	TV (unspecified)	1200000
ENDRIN	0.0018	0.0010	USEPA R4 (unspecified)	1.8	0.0010	USEPA R4 (unspecified)	1.8
ENDRIN KETONE	0.0016	0.0010	USEPA R4 (unspecified)	1.6	0.0010	USEPA R4 (unspecified)	1.6
POLYCHLORINATED BIPHENYLS (PCBs)							
AROCLOR-1260	270	33	CCME (commercial)	8.2	40	ORNL (plants)	6.8
PCB, TOTAL	270	33	CCME (commercial)	8.2	40	ORNL (plants)	6.8
SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs)							
ANTHRACENE	21.0	29	Eco-SSL (inverts)	0.72	20	ORNL (plants)	1.1
BENZO[A]ANTHRACENE	65.0	18	Eco-SSL (inverts)	3.6	20	ORNL (plants)	3.3
BENZO[A]PYRENE	80.0	18	Eco-SSL (inverts)	4.4	20	ORNL (plants)	4.0
BENZO[B]FLUORANTHENE	75.0	18	Eco-SSL (inverts)	4.2	20	ORNL (plants)	3.8
BENZO[G,H,I]PERYLENE	32.0	18	Eco-SSL (inverts)	1.8	20	ORNL (plants)	1.6
BENZO[K]FLUORANTHENE	74.0	18	Eco-SSL (inverts)	4.1	20	ORNL (plants)	3.7
CHRYSENE	81.0	18	Eco-SSL (inverts)	4.5	20	ORNL (plants)	4.1
DIBENZ[A,H]ANTHRACENE	5.5	18	Eco-SSL (inverts)	0.31	20	ORNL (plants)	0.28
FLUORANTHENE	100	29	Eco-SSL (inverts)	3.4	20	ORNL (plants)	5.0
INDENO[1,2,3-CD]PYRENE	44	18	Eco-SSL (inverts)	2.4	20	ORNL (plants)	2.2
PHENANTHRENE	86.0	29	Eco-SSL (inverts)	3.0	20	ORNL (plants)	4.3
PYRENE	100	18	Eco-SSL (inverts)	5.6	20	ORNL (plants)	5.0
TOTAL HMW PAHs	650	18	Eco-SSL (inverts)	36.1	20	ORNL (plants)	32.5
TOTAL LMW PAHs	140	29	Eco-SSL (inverts)	4.8	20	ORNL (plants)	7
TOTAL PAHs	790	18	Eco-SSL (inverts)	43.9	20	ORNL (plants)	39.5

TABLE 9

SCREENING-LEVEL RISK ESTIMATES FOR SURFACE SOIL
COPCs
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

		Wildlife		
COPC	**Maximum Detected Concentration**	**Wildlife SEVs[a]**	**SEV Source**	**HQ**
INORGANICS				
ANTIMONY	396	0.27	Eco-SSL (mammals)	1467
ARSENIC	130	43	Eco-SSL (birds)	3.0
CADMIUM	0.84	0.36	Eco-SSL (mammals)	2.3
CHROMIUM, TOTAL	30.1	26	Eco-SSL (birds)	1.2
COBALT	24.5	120	Eco-SSL (birds)	0.204
COPPER	256	28	Eco-SSL (birds)	9.1
IRON	88500	NV		No SEV [c]
LEAD	29900	11	Eco-SSL (birds)	2718
MANGANESE	929	4000	Eco-SSL (mammals)	0.23
MERCURY	0.21	0.00158	USEPA R5 (shrew/vole)	133
NICKEL	56.6	130	Eco-SSL (mammals)	0.44
SELENIUM	0.66	0.63	Eco-SSL (mammals)	1.05
THALLIUM	0.15	0.0569	USEPA R5 (shrew/vole)	2.6
VANADIUM	26.6	7.8	Eco-SSL (birds)	3.4
ZINC	433	46	Eco-SSL (birds)	9.4
PESTICIDES				
4,4-DDE	0.062	0.021	Eco-SSL (mammals)	3.0
4,4-DDT	19.0	0.021	Eco-SSL (mammals)	905
ENDOSULFAN I	0.0015	0.119	USEPA R5 (shrew/vole)	0.0126
ENDOSULFAN II	0.00032	0.119	USEPA R5 (shrew/vole)	0.0027
ENDOSULFAN SULFATE	12.0	0.03580	USEPA R5 (shrew/vole)	335
ENDRIN	0.0018	0.0101	USEPA R5 (shrew/vole)	0.18
ENDRIN KETONE	0.0016	0.0101	USEPA R5 (shrew/vole)	0.16
POLYCHLORINATED BIPHENYLS (PCBs)				
AROCLOR-1260	270	1.3	CCME (residential/parkland)	208
PCB, TOTAL	270	1.300	CCME (residential/parkland)	208
SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs)				
ANTHRACENE	21.0	100	Eco-SSL (mammals)	0.21
BENZO[A]ANTHRACENE	65.0	1.1	Eco-SSL (mammals)	59.1
BENZO[A]PYRENE	80.0	1.1	Eco-SSL (mammals)	72.7
BENZO[B]FLUORANTHENE	75.0	1.1	Eco-SSL (mammals)	68.2
BENZO[G,H,I]PERYLENE	32.0	1.1	Eco-SSL (mammals)	29.1
BENZO[K]FLUORANTHENE	74.0	1.1	Eco-SSL (mammals)	67.3
CHRYSENE	81.0	1.1	Eco-SSL (mammals)	73.6
DIBENZ[A,H]ANTHRACENE	5.5	1.1	Eco-SSL (mammals)	5.0
FLUORANTHENE	100	100	Eco-SSL (mammals)	1.0
INDENO[1,2,3-CD]PYRENE	44	1.1	Eco-SSL (mammals)	40.0
PHENANTHRENE	86.0	100	Eco-SSL (mammals)	0.86
PYRENE	100	1.1	Eco-SSL (mammals)	90.9
TOTAL HMW PAHs	650	1.1	Eco-SSL (mammals)	591
TOTAL LMW PAHs	140	100	Eco-SSL (mammals)	1.4
TOTAL PAHs	790	1.1	Eco-SSL (mammals)	718

TABLE 9

SCREENING-LEVEL RISK ESTIMATES FOR SURFACE SOIL
COPCs
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

Notes:
All concentrations reported in milligrams per kilogram (mg/kg).
HQ values greater than 1 are highlighted.
CCME - Canadian Council of Ministers of the Environment (2002). Commercial value based on direct contact. Residential/parkland value based on soil and food ingestion.
COPC - Chemical of Potential Concern.
DDE - Dichlorodiphenyldichloroethylene.
DDT - Dichlorodiphenyltrichloroethane.
Eco-SSL - Ecological Soil Screening Level. Derived by USEPA according to USEPA guidance (2005a).
HMW - High Molecular Weight.
HQ - Hazard Quotient (Maximum detected concentration/SEV).
LMW - Low Molecular Weight.
No SEV - Analyte was detected but SEV was not identified (analyte is retained as a COPC).
NV - No value identified.
ORNL - Oak Ridge National Laboratory (Efroymson, et al., 1997a and b).
PAHs - Polycyclic Aromatic Hydrocarbons.
PCB - Polychlorinated Biphenyl.
SEV - Screening Ecotoxicity Value.
TV - Target Value (Dutch standards presented in Buchman, 2008).
USEPA - United States Environmental Protection Agency.
USEPA R4 - USEPA Region 4 recommended ecological screening values for soil (USEPA, 2001c).
USEPA R5 - USEPA Region 5 ecological screening levels for soil (USEPA, 2003).
[a] - SEVs identified for terrestrial plants, soil invertebrates, birds, and mammals. See Attachment F for details.
[b] - pH reported in surface soil at 5.9 SU. pH in deeper samples ranged from 5.1 to 5.4 SU.
[c] - Iron is expected to be an essential nutrient for wildlife and is not evaluated in the food web model.

TABLE 10
SCREENING-LEVEL RISK ESTIMATES FOR SEDIMENT COPCs
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

COPC	Maximum Detected Surface Sediment Concentration	Selected Sediment SEV [a]	SEV Source	HQ
INORGANICS				
ANTIMONY	36.7	2.0	NOAA ERL (Freshwater/Marine)	18.4
ARSENIC	38.1	8.2	NOAA ERL (Marine)	4.6
BERYLLIUM	0.44	NV		No SEV
CHROMIUM VI	1.2	NV		No SEV
COBALT	16.4	10.0	NOAA SQuiRT (Marine; AET)	1.6
COPPER	565	34.0	NOAA ERL (Marine)	16.6
LEAD	4290	46.7	NOAA ERL (Marine)	91.9
MANGANESE	1510	260	NOAA SQuiRT (Marine; AET)	5.8
NICKEL	35.3	20.9	NOAA ERL (Marine)	1.7
THALLIUM	0.10	NV		No SEV
SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs)				
ACENAPHTHENE	0.088	0.016	NOAA ERL (Marine)	5.5
ANTHRACENE	0.13	0.085	NOAA ERL (Marine)	1.5
BENZO[A]ANTHRACENE	0.66	0.26	NOAA ERL (Marine)	2.5
BENZO[A]PYRENE	0.88	0.43	NOAA ERL (Marine)	2.0
BENZO[B]FLUORANTHENE	0.92	0.60	NOAA ERL (Marine)	1.5
BENZO[G,H,I]PERYLENE	0.68	0.063	NOAA ERL (Marine)	10.7
CHRYSENE	0.79	0.38	NOAA ERL (Marine)	2.1
DIBENZ[A,H]ANTHRACENE	0.28	0.063	NOAA ERL (Marine)	4.4
FLUORANTHENE	0.89	0.60	NOAA ERL (Marine)	1.5
FLUORENE	0.060	0.019	NOAA ERL (Marine)	3.2
INDENO[1,2,3-CD]PYRENE	0.745	0.063	NOAA ERL (Marine)	11.8
PHENANTHRENE	0.59	0.24	NOAA ERL (Marine)	2.5
PYRENE	0.88	0.67	NOAA ERL (Marine)	1.3
TOTAL HMW PAHs	7.0	1.7	NOAA ERL (Marine)	4.1
TOTAL LMW PAHs	0.87	0.55	NOAA ERL (Marine)	1.6
TOTAL PAHs	7.9	4.0	NOAA ERL (Marine)	2.0

Notes:
All concentrations reported in milligrams per kilogram (mg/kg).
HQ values greater than 1 are highlighted.
AET - Apparent Effect Threshold.
COPC - Chemical of Potential Concern.
ERL - Effects Range Low (Marine - Long, et al., 1995; Freshwater - Long and Morgan, 1991).
HMW - High Molecular Weight.
HQ - Hazard Quotient (Maximum detected concentration/SEV).
LMW - Low Molecular Weight.
NOAA - National Oceanic and Atmospheric Administration.
NV - No value identified.
PAHs - Polycyclic Aromatic Hydrocarbons.
SEV - Screening Ecotoxicity Value.
SQuiRT - Screening Quick Reference Tables (Buchman, 2008).
[a] - Lowest of the SEVs identified for sediment. See Attachment F for details.

TABLE 11
SELECTION OF SURFACE SEDIMENT COPCs FOR WILDLIFE EVALUATION
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

Detected Analyte	Maximum Detected Surface Sediment Concentration	Wildlife SEV [a]	SEV Source	Wildlife COPC Determination and Rationale	
INORGANICS					
ALUMINUM	7990	pH<5.5	Eco-SSL	NO	pH likely > 5.5; not expected to bioaccumulate
ANTIMONY	36.7	0.27	Eco-SSL (mammals)	YES	Max Detect > SEV
ARSENIC	38.1	43	Eco-SSL (birds)	NO	Max Detect < SEV
BARIUM	29.6	2000	Eco-SSL (mammals)	NO	Max Detect < SEV
BERYLLIUM	0.44	21	Eco-SSL (mammals)	NO	Max Detect < SEV
CADMIUM	0.21	0.36	Eco-SSL (mammals)	NO	Max Detect < SEV
CALCIUM	36100	NV		NO	EN
CHROMIUM VI	1.2	130	Eco-SSL (mammals)	NO	Max Detect < SEV
CHROMIUM, TOTAL	16.2	26.0	Eco-SSL (birds)	NO	Max Detect < SEV
COBALT	16.4	120	Eco-SSL (birds)	NO	Max Detect < SEV
COPPER	565	28.0	Eco-SSL (birds)	YES	Max Detect > SEV
IRON	43800	NV		NO	EN [b]
LEAD	4290	11	Eco-SSL (birds)	YES	Max Detect > SEV
MAGNESIUM	4120	NV		NO	EN
MANGANESE	1510	4000	Eco-SSL (mammals)	NO	Max Detect < SEV
MERCURY	0.090	0.00158	USEPA R5 (shrew/vole)	YES	Max Detect > SEV
NICKEL	35.3	130	Eco-SSL (mammals)	NO	Max Detect < SEV
POTASSIUM	1090	NV		NO	EN
SELENIUM	0.43	0.6	Eco-SSL (mammals)	NO	Max Detect < SEV
SILVER	0.30	4.2	Eco-SSL (birds)	NO	Max Detect < SEV
SODIUM	4910	NV		NO	EN
THALLIUM	0.10	0.1	USEPA R5 (shrew/vole)	YES	Max Detect > SEV
VANADIUM	27.1	7.8	Eco-SSL (birds)	YES	Max Detect > SEV
ZINC	139	46.0	Eco-SSL (birds)	YES	Max Detect > SEV

TABLE 11
SELECTION OF SURFACE SEDIMENT COPCs FOR WILDLIFE EVALUATION
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

Detected Analyte	Maximum Detected Surface Sediment Concentration	Wildlife SEV [a]	SEV Source	Wildlife COPC Determination and Rationale	
SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs)					
ACENAPHTHENE	0.088	100	Eco-SSL (mammals; LMW PAHs)	NO	Max Detect < SEV
ACENAPHTHYLENE	0.0040	100	Eco-SSL (mammals; LMW PAHs)	NO	Max Detect < SEV
ANTHRACENE	0.127	100	Eco-SSL (mammals; LMW PAHs)	NO	Max Detect < SEV
BENZO[A]ANTHRACENE	0.66	1.1	Eco-SSL (mammals; HMW PAHs)	NO	Max Detect < SEV
BENZO[A]PYRENE	0.875	1.1	Eco-SSL (mammals; HMW PAHs)	NO	Max Detect < SEV
BENZO[B]FLUORANTHENE	0.92	1.1	Eco-SSL (mammals; HMW PAHs)	NO	Max Detect < SEV
BENZO[G,H,I]PERYLENE	0.68	1.1	Eco-SSL (mammals; HMW PAHs)	NO	Max Detect < SEV
BENZO[K]FLUORANTHENE	0.33	1.1	Eco-SSL (mammals; HMW PAHs)	NO	Max Detect < SEV
CHRYSENE	0.79	1.1	Eco-SSL (mammals; HMW PAHs)	NO	Max Detect < SEV
DIBENZ[A,H]ANTHRACENE	0.28	1.1	Eco-SSL (mammals; HMW PAHs)	NO	Max Detect < SEV
FLUORANTHENE	0.89	100	Eco-SSL (mammals; LMW PAHs)	NO	Max Detect < SEV
FLUORENE	0.060	100	Eco-SSL (mammals; LMW PAHs)	NO	Max Detect < SEV
INDENO[1,2,3-CD]PYRENE	0.745	1.1	Eco-SSL (mammals; HMW PAHs)	NO	Max Detect < SEV
NAPHTHALENE	0.030	100	Eco-SSL (mammals; LMW PAHs)	NO	Max Detect < SEV
PHENANTHRENE	0.59	100	Eco-SSL (mammals; LMW PAHs)	NO	Max Detect < SEV
PYRENE	0.88	1.1	Eco-SSL (mammals; HMW PAHs)	NO	Max Detect < SEV
TOTAL HMW PAHs	7.0	1.1	Eco-SSL (mammals; HMW PAHs)	YES	Max Detect > SEV
TOTAL LMW PAHs	0.87	100	Eco-SSL (mammals; LMW PAHs)	YES	Evaluate with HMW PAHs
TOTAL PAHs	7.9	1.1	Eco-SSL (mammals; HMW PAHs)	NO	Evaluate as HMW and LMW PAHs

Notes:
All concentrations reported in milligrams per kilogram (mg/kg).
COPC - Chemical of Potential Concern.
Eco-SSL - Ecological Soil Screening Level. Derived by USEPA according to USEPA guidance (2005a).
EN - Essential Nutrient.
HMW - High Molecular Weight.
LMW - Low Molecular Weight.
NV - No value identified.
PAHs - Polycyclic Aromatic Hydrocarbons.
SEV - Screening Ecotoxicity Value.
USEPA - United States Environmental Protection Agency.
USEPA R5 - USEPA Region 5 ecological screening levels for soil (USEPA, 2003).
[a] - Wildlife SEVs identified for soil. See Attachment F for details.
[b] - Iron, in addition to calcium, magnesium, potassium, sodium, is expected to be an essential nutrient for wildlife and is not evaluated in the food web model.

TABLE 12
SCREENING-LEVEL RISK ESTIMATES FOR SHELLFISH TISSUE COPCs
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

COPC	Lowest NOED [a] (mg/kg_{ww})	NOED Basis	Maximum Detected Tissue Concentration (mg/kg_{ww})	HQ
INORGANICS				
ALUMINUM	NV		31.5	No CBR
ANTIMONY	NV		0.0287	No CBR
ARSENIC	4	*Hc* ; mortality	4.4	**1.1**
BARIUM	NV		0.30	No CBR
BERYLLIUM	NV		0.0068	No CBR
COBALT	NV		0.28	No CBR
IRON	NV		148	No CBR
LEAD	0.58	*Pl* ; mortality	7.3	**12.5**
MANGANESE	NV		7.4	No CBR
SELENIUM	NV		0.52	No CBR
VANADIUM	NV		0.35	No CBR
ZINC	5	*Ma* ; mortality	15.2	**3.0**
SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs)				
TOTAL PAHs	0.028	*Pb* ; reproduction	0.36	**12.9**

Notes:
All concentrations reported in milligrams per kilograms wet weight (mg/kg_{ww}).
CBRs are whole body concentrations for the adult life stage, unless otherwise noted.
The following COPCs were retained because appropriate tissue residue studies were not identified: aluminum, antimony, barium, beryllium, cobalt, iron, manganese, selenium, and vanadium.
HQ values greater than 1 are highlighted.
CBR - Critical Body Residue.
COPC - Chemicals of potential concern.
HQ - Hazard Quotient (EPC/Lowest NOED).
NOED - No observed effect dose.
NV - No value identified.
PAH - Polycyclic Aromatic Hydrocarbon.
Species codes:

Hc -	*Helisoma campanulata*	mollusc (Freshwater)
Ma -	*Mysella anomala*	mollusc (Saltwater)
Pb -	*Pandalus Borealis*	Northern shrimp (Saltwater)
Pl -	*Paracentrotus lividus*	Sea urchin (Saltwater)

[a] See Attachment G for selection of shellfish CBRs.

TABLE 13

EVALUATION OF SEM, AVS, AND TOC DATA
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

		Site Locations								
Sample Location		CRP-SD101	CRP-SD102	CRP-SD103	CRP-SD104	CRP-SD105	CRP-SD106	CRP-SD107	CRP-SD108	CRP-SD109
Sample Date		12/13/2013	12/13/2013	12/13/2013	4/2/2014	12/6/2013	12/10/2013	12/10/2013	12/10/2013	12/3/2013
Sample ID		OU09 SD101 0012	OU09 SD102 0012	OU09 SD103 0012	OU09 SD104 0012	OU09 SD105 0012	OU09 SD106 0012	OU09 SD107 0012	OU09 SD108 0012	OU09 SD109 0012
	Unit									
TOTAL ORGANIC CARBON	mg/kg	9300	16000	16000	7800	6300	12000	11000	7200	36000
TOTAL ORGANIC CARBON	%	0.93	1.6	1.6	0.78	0.63	1.2	1.1	0.72	3.6
TOTAL ORGANIC CARBON	fraction	0.0093	0.016	0.016	0.0078	0.0063	0.012	0.011	0.0072	0.036
ACID VOLATILE SULFIDES	umol/g	< 0.10 U	< 0.098 U	6.7	< 0.091 UJ	0.17	0.8 J	< 0.094 UJ	0.54 J	< 0.076 U
CADMIUM	umol/g	0.00022 J	0.000027 J	0.00034 J	0.00012	< 0.011 U	0.00014 J	0.000056 J	0.00011 J	< 0.00102 U
COPPER	umol/g	0.253 J	0.057 J	1.8 J	0.0319	0.014	0.028 J	0.016 J	0.011 J	0.013
LEAD	umol/g	1.48	0.131	0.213	0.0332	0.01 J+	0.024 J	0.012 J	0.01 J	0.00825
NICKEL	umol/g	0.099	0.0075	0.688	0.0413	< 0.0046 U	0.014 J	0.0065 J	0.011 J	0.0083
ZINC	umol/g	0.209 J-	0.0244 J-	0.272 J-	0.295	< 0.0076 U	0.11 J	0.06 J	0.077 J	< 0.0621 U
Sum SEM	umol/g	2.0	0.22	3.0	0.40	0.024	0.18	0.095	0.11	0.030
Sum SEM / AVS	unitless	NC	NC	0.44	NC	0.14	0.22	NC	0.20	NC
Sum SEM - AVS	umol/g	**2.0**	**0.22**	-3.7	**0.40**	-0.15	-0.62	**0.095**	-0.43	**0.030**
[Sum SEM - AVS]/goc	umol/g_{oc}	219	13.7	-233	51.5	-23.2	-52.0	8.6	-59.8	0.82

Notes:
Non-detect data treated as a zero in calculations.
J - Estimated concentration (-/+ biased).
mg/kg - milligram/kilogram.
NC - Not calculated due to non-detect AVS value.
U - Not detected.
umol/g - micromole per gram
umol/g_{oc} - micromole per gram organic carbon
Bold text indicates Sum SEM / AVS is greater than 1 or Sum SEM - AVS is greater than 0.

USEPA (2005) guidance on metals bioavailability evaluates possible binding of metals by both AVS and organic matter and provides the following scale to evaluate whether or not the organic carbon binding phase (represented as fraction organic carbon or f_{oc}), in conjunction with the AVS, is affecting the bioavailability of divalent metals in sediments:

If the $(\sum SEM\text{-}AVS)/f_{oc}$ exceeds 3000 µmol/g_{oc}, the sediments are presumed to be "likely to be toxic";
If the $(\sum SEM\text{-}AVS)/f_{oc}$ is between 130 and 3,000 µmol/g_{oc}, predictions of effects are uncertain; and
If the $(\sum SEM\text{-}AVS)/f_{oc}$ is less than 130 µmol/g_{oc}, the sediments are presumed to "not likely" be toxic.

TABLE 13

EVALUATION OF SEM, AVS, AND TOC DATA
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

		Site Locations							
Sample Location		CRP-SD110	CRP-SD111	CRP-SD112	CRP-SD113	CRP-SD114	CRP-SD115	CRP-SD116	CRP-SD117
Sample Date		12/3/2013	12/4/2013	12/5/2013	12/5/2013	12/17/2013	12/17/2013	4/2/2014	12/10/2013
Sample ID		OU09 SD110 0012	OU09 SD111 0012	OU09 SD112 0012	OU09 SD113 0012	OU09 SD114 0012	OU09 SD115 0012	OU09 SD116 0012	OU09 SD117 0012
	Unit								
TOTAL ORGANIC CARBON	mg/kg	12000	7000	5500	5000	6700	9100	7600	5300
TOTAL ORGANIC CARBON	%	1.2	0.7	0.55	0.5	0.67	0.91	0.76	0.53
TOTAL ORGANIC CARBON	fraction	0.012	0.007	0.0055	0.005	0.0067	0.0091	0.0076	0.0053
ACID VOLATILE SULFIDES	umol/g	37	2.1 J-	< 0.092 U	0.25	< 0.098 U	< 0.092 U	< 0.091 UJ	< 0.098 UJ
CADMIUM	umol/g	< 0.0024 U	< 0.00103 U	< 0.0010 U	< 0.0011 U	0.00013 J	0.00015 J	0.00014 J	0.00013 J
COPPER	umol/g	0.102	0.0123	0.0153	< 0.0094 U	0.00958	0.0044 J	0.0087 J	0.0074 J
LEAD	umol/g	0.11	0.0126	0.012 J+	0.02 J+	0.0361	0.022 J	0.0423	0.028 J
NICKEL	umol/g	0.0581	< 0.0069 U	< 0.0082 U	< 0.0064 U	0.00486	0.0057	0.00458 J	0.0077 J
ZINC	umol/g	0.728	0.1	0.11	< 0.064 U	0.0558	0.034 J	0.0263 J	0.047 J
Sum SEM	umol/g	1.00	0.12	0.14	0.020	0.11	0.066	0.082	0.090
Sum SEM / AVS	unitless	0.027	0.059	NC	0.080	NC	NC	NC	NC
Sum SEM - AVS	umol/g	-36.0	-2.0	**0.14**	-0.23	**0.11**	**0.066**	**0.082**	**0.090**
[Sum SEM - AVS]/goc	umol/g_{oc}	-3000	-282	25.0	-46.0	15.9	7.3	10.8	17.0

Notes:
Non-detect data treated as a zero in calculations.
J - Estimated concentration (-/+ biased).
mg/kg - milligram/kilogram.
NC - Not calculated due to non-detect AVS value.
U - Not detected.
umol/g - micromole per gram
umol/goc - micromole per gram organic carbon
Bold text indicates Sum SEM / AVS is greater than 1 or Sum SEM - AVS is greater than 0.

USEPA (2005) guidance on metals bioavailability evaluates possible binding of metals by both AVS and organic matter and provides the following scale to evaluate whether or not the organic carbon binding phase (represented as fraction organic carbon or foc), in conjunction with the AVS, is affecting the bioavailability of divalent metals in sediments:

If the (∑SEM-AVS)/foc exceeds 3000 µmol/goc, the sediments are presumed to be "likely to be toxic";
If the (∑SEM-AVS)/foc is between 130 and 3,000 µmol/goc, predictions of effects are uncertain; and
If the (∑SEM-AVS)/foc is less than 130 µmol/goc, the sediments are presumed to "not likely" be toxic.

TABLE 13

EVALUATION OF SEM, AVS, AND TOC DATA
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

		Site Locations							
Sample Location		CRP-SD118	CRP-SD119	CRP-SD120	CRP-SD121	CRP-SD122	CRP-SD123	CRP-SD124	CRP-SD125
Sample Date		12/10/2013	12/6/2013	12/5/2013	12/4/2013	12/12/2013	12/12/2013	12/12/2013	12/11/2013
Sample ID		OU09 SD118 0012	OU09 SD119 0012	OU09 SD120 0012	OU09 SD121 0012	OU09 SD122 0012	OU09 SD123 0012	OU09 SD124 0012	OU09 SD125 0012
	Unit								
TOTAL ORGANIC CARBON	mg/kg	8200	9000	12000	8800	16000	10000	9100	4900
TOTAL ORGANIC CARBON	%	0.82	0.9	1.2	0.88	1.6	1	0.91	0.49
TOTAL ORGANIC CARBON	fraction	0.0082	0.009	0.012	0.0088	0.016	0.01	0.0091	0.0049
ACID VOLATILE SULFIDES	umol/g	1.8	1.2	1.7 J-	< 0.091 UJ	< 0.098 U	< 0.080 U	< 0.086 U	0.058 J
CADMIUM	umol/g	0.00027 J	< 0.0011 U	< 0.00100 U	< 0.00098 U	0.00015 J	0.000066 J	0.000072 J	0.00027 J
COPPER	umol/g	0.018 J	0.018	0.0209	0.0102	5.2 J	0.13 J	0.25 J	0.014 J
LEAD	umol/g	0.18 J	0.24 J+	0.0848	0.00946	0.74 J	0.53 J	0.22 J	0.027 J
NICKEL	umol/g	0.014	0.011	< 0.0083 U	< 0.00615 U	0.081	0.04	0.016	0.0085
ZINC	umol/g	0.11	0.1	0.138	< 0.0582 U	0.26	0.14	0.091	0.12
Sum SEM	umol/g	0.32	0.37	0.24	0.020	6.3	0.84	0.58	0.17
Sum SEM / AVS	unitless	0.18	0.31	0.14	NC	NC	NC	NC	**2.9**
Sum SEM - AVS	umol/g	-1.5	-0.83	-1.5	**0.020**	**6.3**	**0.84**	**0.58**	**0.11**
[Sum SEM - AVS]/goc	umol/g_{oc}	-180	-92.3	-121	2.2	393	84.0	63.4	22.8

Notes:
Non-detect data treated as a zero in calculations.
J - Estimated concentration (-/+ biased).
mg/kg - milligram/kilogram.
NC - Not calculated due to non-detect AVS value.
U - Not detected.
umol/g - micromole per gram
umol/goc - micromole per gram organic carbon
Bold text indicates Sum SEM / AVS is greater than 1 or Sum SEM - AVS is greater than 0.

USEPA (2005) guidance on metals bioavailability evaluates possible binding of metals by both AVS and organic matter and provides the following scale to evaluate whether or not the organic carbon binding phase (represented as fraction organic carbon or foc), in conjunction with the AVS, is affecting the bioavailability of divalent metals in sediments:

If the (∑SEM-AVS)/foc exceeds 3000 µmol/goc, the sediments are presumed to be "likely to be toxic";
If the (∑SEM-AVS)/foc is between 130 and 3,000 µmol/goc, predictions of effects are uncertain; and
If the (∑SEM-AVS)/foc is less than 130 µmol/goc, the sediments are presumed to "not likely" be toxic.

TABLE 13

EVALUATION OF SEM, AVS, AND TOC DATA
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

		Site Locations															
Sample Location		CRP-SD126		CRP-SD128		CRP-SD129		CRP-SD130		CRP-SD130 [field dup]		CRP-SD131		CRP-SD132		CRP-SD133	
Sample Date		12/12/2013		4/1/2014		4/1/2014		4/1/2014		4/1/2014		4/1/2014		4/2/2014		4/2/2014	
Sample ID		OU09 SD126 0012		OU09 SD128 0012		OU09 SD129 0012		OU09 SD130 0012		FDSD040114		OU09 SD131 0012		OU09 SD132 0012		OU09 SD133 0012	
	Unit																
TOTAL ORGANIC CARBON	mg/kg	11000		5700		14000		5900		6400		11000		14000		6300	
TOTAL ORGANIC CARBON	%	1.1		0.57		1.4		0.59		0.64		1.1		1.4		0.63	
TOTAL ORGANIC CARBON	fraction	0.011		0.0057		0.014		0.0059		0.0064		0.011		0.014		0.0063	
ACID VOLATILE SULFIDES	umol/g	7.7		0.078	J-	< 0.091	UJ	0.098	J-	0.11	J-	1.8	J-	< 0.11	UJ	< 0.091	UJ
CADMIUM	umol/g	0.000041	J	0.000062	J	< 0.00060	U	0.00009	J	0.000041	J	0.00036	J	0.0001	J	0.000026	J
COPPER	umol/g	0.057	J	0.0064	J	0.014	J	0.106	J	0.125	J	0.0211	J	0.0176	J	0.0096	J
LEAD	umol/g	0.041	J	0.0448		0.122		0.0982		0.109		0.0179		0.0862		0.045	
NICKEL	umol/g	0.025		0.0035	J	0.0223	J	0.0723	J	0.0434	J	0.00965	J	0.00823	J	0.0023	J
ZINC	umol/g	0.22		0.0292	J	0.0322	J	0.348	J	0.212	J	0.135	J	0.0623	J	0.0288	J
Sum SEM	umol/g	0.34		0.084		0.19		0.62		0.49		0.18		0.17		0.086	
Sum SEM / AVS	unitless	0.045		**1.1**		NC		**6.4**		**4.4**		0.10		NC		NC	
Sum SEM - AVS	umol/g	-7.4		**0.0060**		**0.19**		**0.53**		**0.38**		-1.6		**0.17**		**0.086**	
[Sum SEM - AVS]/goc	$umol/g_{oc}$	-669		1.05		13.6		89.3		59.3		-147		12.5		13.6	

Notes:
Non-detect data treated as a zero in calculations.
J - Estimated concentration (-/+ biased).
mg/kg - milligram/kilogram.
NC - Not calculated due to non-detect AVS value.
U - Not detected.
umol/g - micromole per gram
umol/goc - micromole per gram organic carbon
Bold text indicates Sum SEM / AVS is greater than 1 or Sum SEM - AVS is greater than 0.

USEPA (2005) guidance on metals bioavailability evaluates possible binding of metals by both AVS and organic matter and provides the following scale to evaluate whether or not the organic carbon binding phase (represented as fraction organic carbon or foc), in conjunction with the AVS, is affecting the bioavailability of divalent metals in sediments:

If the (∑SEM-AVS)/foc exceeds 3000 µmol/goc, the sediments are presumed to be "likely to be toxic";
If the (∑SEM-AVS)/foc is between 130 and 3,000 µmol/goc, predictions of effects are uncertain; and
If the (∑SEM-AVS)/foc is less than 130 µmol/goc, the sediments are presumed to "not likely" be toxic.

TABLE 13

EVALUATION OF SEM, AVS, AND TOC DATA
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

		Background/Reference Locations															
Sample Location		CRP-SD301		CRP-SD302		CRP-SD303		CRP-SD303		CRP-SD304		CRP-SD305		CRP-SD305		CRP-SD306	
Sample Date		4/2/2014		12/11/2013		12/13/2013		12/13/2013		12/13/2013		12/12/2013		12/12/2013		12/12/2013	
Sample ID		BSBG SD301 0012		BSBG SD302 0012		BSBG SD303 0012		FDSD12131302		BSBG SD304 0012		BSBG SD305 0012		FDSD12121302		BSBG SD306 0012	
	Unit																
TOTAL ORGANIC CARBON	mg/kg	9700		21000		7600		17000		17000		34000		31000		5400	
TOTAL ORGANIC CARBON	%	0.97		2.1		0.76		1.7		1.7		3.4		3.1		0.54	
TOTAL ORGANIC CARBON	fraction	0.0097		0.021		0.0076		0.017		0.017		0.034		0.031		0.0054	
ACID VOLATILE SULFIDES	umol/g	< 0.091	U	34	J	< 0.088	U	< 0.088	U	< 0.084	U	36		40		< 0.096	U
CADMIUM	umol/g	0.00027	J	0.00072	J	< 0.00060	U	0.00014	J	0.000069	J	0.00087		0.00164		0.00018	
COPPER	umol/g	0.0129		0.11	J	0.0405	J	0.0344	J	0.0602	J	0.112	J	0.219	J	0.0093	J
LEAD	umol/g	0.00498		0.071	J	0.0268		0.0236		0.027		0.0896		0.136		0.00793	
NICKEL	umol/g	0.0118		0.035	J	0.00546		0.0139		0.0188		0.0417	J	0.0834	J	< 0.0040	UJ
ZINC	umol/g	0.0554		0.41	J	0.0464	J-	0.0579	J-	0.132	J-	0.523	J-	0.807	J-	0.0556	J-
Sum SEM	umol/g	0.085		0.63		0.12		0.13		0.24		0.77		1.2		0.073	
Sum SEM / AVS	unitless	NC		0.018		NC		NC		NC		0.021		0.031		NC	
Sum SEM - AVS	umol/g	**0.085**		-33.37		**0.12**		**0.13**		**0.24**		-35.2		-38.8		**0.073**	
[Sum SEM - AVS]/goc	umol/g_{oc}	8.8		-1589.2		15.7		7.6		14.0		-1036		-1250		13.5	

Notes:
Non-detect data treated as a zero in calculations.
J - Estimated concentration (-/+ biased).
mg/kg - milligram/kilogram.
NC - Not calculated due to non-detect AVS value.
U - Not detected.
umol/g - micromole per gram
umol/goc - micromole per gram organic carbon
Bold text indicates Sum SEM / AVS is greater than 1 or Sum SEM - AVS is greater than 0.

USEPA (2005) guidance on metals bioavailability evaluates possible binding of metals by both AVS and organic matter and provides the following scale to evaluate whether or not the organic carbon binding phase (represented as fraction organic carbon or foc), in conjunction with the AVS, is affecting the bioavailability of divalent metals in sediments:

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If the (∑SEM-AVS)/foc is between 130 and 3,000 µmol/goc, predictions of effects are uncertain; and
If the (∑SEM-AVS)/foc is less than 130 µmol/goc, the sediments are presumed to "not likely" be toxic.

TABLE 13

EVALUATION OF SEM, AVS, AND TOC DATA
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

		Background/Reference Locations											
Sample Location		CRP-SD307		CRP-SD308		CRP-SD309		CRP-SD310		CRP-SD312		CRP-SD313	
Sample Date		12/17/2013		12/17/2013		4/2/2014		4/2/2014		4/3/2014		4/3/2014	
Sample ID		BSBG SD307 0012		BSBG SD308 0012		BSBG SD309 0012		BSBG SD310 0012		BSBG SD312 0012		BSBG SD313 0012	
	Unit												
TOTAL ORGANIC CARBON	mg/kg	16000		23000		6800		8800		12000		13000	
TOTAL ORGANIC CARBON	%	1.6		2.3		0.68		0.88		1.2		1.3	
TOTAL ORGANIC CARBON	fraction	0.016		0.023		0.0068		0.0088		0.012		0.013	
ACID VOLATILE SULFIDES	umol/g	3.8	J	35		0.067	J	0.67		0.26		0.53	
CADMIUM	umol/g	0.00035	J	0.0013	J	0.00018	J	0.00023	J	0.0001	J	0.00027	J
COPPER	umol/g	0.0653		0.151		0.0109		0.0183		0.0086	J	0.0182	
LEAD	umol/g	0.0493		0.0787		0.00525		0.0126		0.00717		0.0152	
NICKEL	umol/g	0.0226		0.072		0.00877		0.0118		0.00422		0.00772	
ZINC	umol/g	0.325		0.516		0.0603		0.125		0.0618		0.116	
Sum SEM	umol/g	0.46		0.82		0.085		0.17		0.082		0.16	
Sum SEM / AVS	unitless	0.12		0.0234		**1.3**		0.25		0.31		0.30	
Sum SEM - AVS	umol/g	-3.3		-34.2		**0.018**		-0.50		-0.18		-0.37	
[Sum SEM - AVS]/goc	umol/g_{oc}	-209		-1486		2.7		-57.1		-14.8		-28.7	

Notes:
Non-detect data treated as a zero in calculations.
J - Estimated concentration (-/+ biased).
mg/kg - milligram/kilogram.
NC - Not calculated due to non-detect AVS value.
U - Not detected.
umol/g - micromole per gram
umol/goc - micromole per gram organic carbon
Bold text indicates Sum SEM / AVS is greater than 1 or Sum SEM - AVS is greater than 0.

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to evaluate whether or not the organic carbon binding phase (represented as fraction organic carbon or foc), in conjunction with the AVS,
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If the (∑SEM-AVS)/foc is between 130 and 3,000 µmol/goc, predictions of effects are uncertain; and
If the (∑SEM-AVS)/foc is less than 130 µmol/goc, the sediments are presumed to "not likely" be toxic.

TABLE 14
SUMMARY OF SCREENING-LEVEL FOOD WEB RISK ESTIMATES
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

	NOAEL-based HQ - Maximum Detected Concentrations					
	Upland Habitat				Narragansett Bay Habitat	
COPC	**Bobwhite Quail**	**American Robin**	**Meadow Vole**	**Short-tailed Shrew**	**Herring Gull**	**Raccoon**
INORGANICS						
ANTIMONY	NC	NC	**241**	**1081**	NC	**3.1**
ARSENIC	0.64	0.82	**5.3**	**1.7**	nCOPC	nCOPC
CADMIUM	0.029	0.80	0.47	**1.5**	nCOPC	nCOPC
CHROMIUM, TOTAL	0.13	0.61	0.56	0.66	nCOPC	nCOPC
COPPER	0.82	**5.6**	**2.8**	**3.9**	**1.8**	0.56
LEAD	**162**	**415**	**135**	**139**	**31.4**	**4.8**
MERCURY	**10.5**	**16.3**	**20.0**	**3.2**	**3.6**	0.28
SELENIUM	0.089	0.39	**1.5**	0.77	nCOPC	nCOPC
THALLIUM	NC	NC	**12.7**	**3.3**	NC	0.064
VANADIUM	0.70	0.91	0.14	0.072	**1.6**	0.055
ZINC	0.19	**1.6**	**1.2**	**1.3**	0.19	0.065
ORGANIC						
TOTAL LMW PAHs	0.69	**34.8**	0.065	1.0	0.017	0.00021
TOTAL HMW PAHs	**5.4**	**138**	**103**	**434**	0.16	0.20
TOTAL PCBs	**13.8**	**3866**	**98.0**	**9892**	nCOPC	nCOPC
4,4-DDT	0.75	**77.4**	**2.8**	**116**	nCOPC	nCOPC
ENDOSULFAN SULFATE	0.028	0.20	**12.8**	**12.9**	nCOPC	nCOPC

Notes:
Potential risk is calculated using the maximum detected concentrations and NOAEL-based TRVs.
HQs above 1 are bolded and highlighted. COPCs with HQs above 1 in the screening level evaluation were retained for the COPC refinement stage. See Attachment L.
COPC - Chemical of Potential Concern.
DDT - Dichlorodiphenyltrichloroethane.
HMW - High Molecular Weight.
HQ - Hazard Quotient.
LMW - Low Molecular Weight.
NC - Not Calculated. Avian TRV not available.
nCOPC - Not a wildlife COPC in this medium.
NOAEL - No Observed Adverse Effect Level.
PAHs- Polycyclic Aromatic Hydrocarbons.
PCBs - Polychlorinated Biphenyls.
TRV - Toxicity Reference Value.

TABLE 15
SUMMARY OF PELLET COUNTS IN SHORELINE SOIL AND SURFACE SEDIMENT
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

Location ID	Depth Interval (ft)	Pellet Count [a]	Pellet/ square ft [b]	
SHORELINE SOIL				
SB210	0 - 1	0	no pellets	[c]
SB222	0 - 1	120	558	[c]
SB224	0 - 1	52	242	[c]
SB225	0 - 1	0	no pellets	[c]
SB226	0 - 1	0	no pellets	[c]
SB227	0 - 1	0	no pellets	[c]
SB301	0 - 1	29	135	[c]
TARGET AREA				
SD01	0 - 0.5	6	39	[d]
SD01	0.5 - 1	2	13	[d]
SD02	0 - 0.5	5	32.4	[d]
SD02	0.5 - 1	0	no pellets	[d]
SD03	0 - 0.5	51	331	[d]
SD04	0 - 0.5	8	52	[d]
SD05	0 - 0.5	34	220	[d]
SD06	0 - 0.5	65	421	[d]
SD06	0.5 - 1	48	311	[d]
SD07	0 - 0.5	336	2179	[d]
SD07	0.5 - 1	12	78	[d]
SD08	0 - 0.5	586	3799	[d]
SD08	0.5 - 1	38	246	[d]
SD09	0 - 0.5	63	408	[d]
SD09	0.5 - 1	48	311	[d]
SD101	0 - 1	50	233	[c]
SD102	0 - 1	127	591	[c]
SD103	0 - 1	268	1246	[c]
SD115	0 - 1	119	553	[c]
SD116	0 - 1	30	140	[c]
SD117	0 - 1	0	no pellets	[c]
SD118	0 - 1	7	33	[c]
SD122	0 - 1	2	9	[c]
SD123	0 - 1	2	9	[c]
SD124	0 - 1	0	no pellets	[c]
SD128	0 - 1	25	116	[c]
SD129	0 - 1	6	28	[c]
SD130	0 - 1	37	172	[c]
SD133	0 - 1	0	no pellets	[c]

TABLE 15
SUMMARY OF PELLET COUNTS IN SHORELINE SOIL AND SURFACE SEDIMENT
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

Location ID	Depth Interval (ft)	Pellet Count [a]	Pellet/ square ft [b]	
OVERSHOOT AREA [300-600 ft]				
SD10	0 - 0.5	295	1913	[d]
SD10	0.5 - 1	288	1867	[d]
SD11	0 - 0.5	945	6127	[d]
SD11	0.5 - 1	506	3281	[d]
SD12	0 - 0.5	138	895	[d]
SD13	0 - 0.5	99	642	[d]
SD13	0.5 - 1	132	856	[d]
SD14	0 - 0.5	151	979	[d]
SD14	0.5 - 1	181	1174	[d]
SD15	0 - 0.5	312	2023	[d]
SD15	0.5 - 1	297	1926	[d]
SD16	0 - 0.5	114	739	[d]
SD16	0.5 - 1	350	2269	[d]
SD17	0 - 0.5	44	285	[d]
SD18	0 - 0.5	0	no pellets	[d]
SD18	0.5 - 1	1	6.5	[d]
SD19	0 - 0.5	5	32.4	[d]
SD19	0.5 - 1	1	6.5	[d]
SD20	0 - 0.5	0	no pellets	[d]
SD20	0.5 - 1	1	6.5	[d]
SD104	0 - 1	5	23	[c]
SD106	0 - 1	0	no pellets	[c]
SD111	0 - 1	0	no pellets	[c]
SD112	0 - 1	12	56	[c]
SD113	0 - 1	139	646	[c]
SD114	0 - 1	84	391	[c]
SD119	0 - 1	183	851	[c]
SD120	0 - 1	504	2344	[c]
SD121	0 - 1	17	79	[c]
SD125	0 - 1	108	502	[c]
SD126	0 - 1	0	no pellets	[c]
SD131	0 - 1	0	no pellets	[c]
SD132	0 - 1	184	856	[c]
OVERSHOOT AREA [beyond 600 ft]				
SD105	0 - 1	0	no pellets	[c]
SD107	0 - 1	0	no pellets	[c]
SD108	0 - 1	0	no pellets	[c]
SD109	0 - 1	0	no pellets	[c]
SD110	0 - 1	0	no pellets	[c]

Shading indicates pellet counts above threshold of 7 per square foot.
[a] Number of pellets counted in a sample.
[b] Pellets per square foot is calculated based on the pellet count and surface area sampled.
[c] Calculated pellets per square foot = (pellet count)*(144 sq.in/(3 cores * 10.32 sq.in))
[d] Calculated pellets per square foot = (pellet count)*(144 sq.in/(8 cores * 2.7762 sq.in))

TABLE 16
SUMMARY OF COPCS AND RECEPTORS WITH SCREENING-LEVEL HQs > 1
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

	SOIL							SEDIMENT				SHELLFISH TISSUE	
ANALYTE	COPC	Soil Invertebrates	Terrestrial Plants	Bobwhite Quail	American Robin	Meadow Vole	Short-tailed Shrew	COPC	Benthic/Wetland Invertebrates	Herring Gull	Raccoon	COPC	Shellfish Community
Inorganics													
ALUMINUM	--	--	--	--	--	--	--	--	--	--	--	X	No CBR
ANTIMONY	X	HQ > 1	HQ > 1	No TRV	No TRV	HQ > 1	HQ > 1	X	HQ > 1	No TRV	HQ > 1	X	No CBR
ARSENIC	X	HQ > 1	HQ > 1	--	--	HQ > 1	HQ > 1	X	HQ > 1	--	--	X	HQ > 1
BARIUM	--	--	--	--	--	--	--	--	--	--	--	X	No CBR
BERYLLIUM	--	--	--	--	--	--	--	X	No SEV	--	--	X	No CBR
CADMIUM	X	--	--	--	--	--	HQ > 1	--	--	--	--	--	--
CHROMIUM VI	--	--	--	--	--	--	--	X	No SEV	--	--	--	--
CHROMIUM, TOTAL	X	HQ > 1	HQ > 1	--	--	--	--	--	--	--	--	--	--
COBALT	X	HQ > 1	HQ > 1	--	--	--	--	X	HQ > 1	--	--	X	No CBR
COPPER	X	HQ > 1	HQ > 1	--	HQ > 1	HQ > 1	HQ > 1	X	HQ > 1	HQ > 1	--	--	--
IRON	X	HQ > 1	HQ > 1	--	--	--	--	X	--	--	--	X	No CBR
LEAD	X	HQ > 1	HQ > 1	HQ > 1	HQ > 1	HQ > 1	HQ > 1	X	HQ > 1	HQ > 1	HQ > 1	X	HQ > 1
MANGANESE	X	HQ > 1	HQ > 1	--	--	--	--	X	HQ > 1	--	--	X	No CBR
MERCURY	X	HQ > 1	--	HQ > 1	HQ > 1	HQ > 1	HQ > 1	X	--	HQ > 1	--	--	--
NICKEL	X	--	HQ > 1	--	--	--	--	X	HQ > 1	--	--	--	--
SELENIUM	X	--	HQ > 1	--	--	HQ > 1	--	--	--	--	--	X	No CBR
THALLIUM	X	--	--	No TRV	No TRV	HQ > 1	HQ > 1	X	No SEV	No TRV	--	--	--
VANADIUM	X	HQ > 1	HQ > 1	--	--	--	--	X	--	HQ > 1	--	X	No CBR
ZINC	X	HQ > 1	HQ > 1	--	HQ > 1	HQ > 1	HQ > 1	--	--	--	--	X	HQ > 1
Pesticides/ PCBs													
4,4-DDT	X	HQ > 1	HQ > 1	--	HQ > 1	HQ > 1	HQ > 1	--	--	--	--	--	--
ENDOSULFAN I	X	HQ > 1	HQ > 1	--	--	--	--	--	--	--	--	--	--
ENDOSULFAN II	X	HQ > 1	HQ > 1	--	--	--	--	--	--	--	--	--	--
ENDOSULFAN SULFATE	X	HQ > 1	HQ > 1	--	--	HQ > 1	HQ > 1	--	--	--	--	--	--
ENDRIN	X	HQ > 1	HQ > 1	--	--	--	--	--	--	--	--	--	--
ENDRIN KETONE	X	HQ > 1	HQ > 1	--	--	--	--	--	--	--	--	--	--
AROCLOR-1260	X	HQ > 1	HQ > 1	--	--	--	--	--	--	--	--	--	--
PCB, TOTAL	X	HQ > 1	HQ > 1	HQ > 1	HQ > 1	HQ > 1	HQ > 1	--	--	--	--	--	--
Semi-Volatile Organic Compunds (SVOCs)													
ACENAPHTHENE	--	--	--	--	--	--	--	X	HQ > 1	--	--	--	--
ANTHRACENE	X	--	HQ > 1	--	--	--	--	X	HQ > 1	--	--	--	--
BENZO[A]ANTHRACENE	X	HQ > 1	HQ > 1	--	--	--	--	X	HQ > 1	--	--	--	--
BENZO[A]PYRENE	X	HQ > 1	HQ > 1	--	--	--	--	X	HQ > 1	--	--	--	--
BENZO[B]FLUORANTHENE	X	HQ > 1	HQ > 1	--	--	--	--	X	HQ > 1	--	--	--	--
BENZO[G,H,I]PERYLENE	X	HQ > 1	HQ > 1	--	--	--	--	X	HQ > 1	--	--	--	--
BENZO[K]FLUORANTHENE	X	HQ > 1	HQ > 1	--	--	--	--	--	--	--	--	--	--
CHRYSENE	X	HQ > 1	HQ > 1	--	--	--	--	X	HQ > 1	--	--	--	--
DIBENZ[A,H]ANTHRACENE	X	--	--	--	--	--	--	X	HQ > 1	--	--	--	--
FLUORANTHENE	X	HQ > 1	HQ > 1	--	--	--	--	X	HQ > 1	--	--	--	--
FLUORENE	--	--	--	--	--	--	--	X	HQ > 1	--	--	--	--
INDENO[1,2,3-CD]PYRENE	X	HQ > 1	HQ > 1	--	--	--	--	X	HQ > 1	--	--	--	--
PHENANTHRENE	X	HQ > 1	HQ > 1	--	--	--	--	X	HQ > 1	--	--	--	--
PYRENE	X	HQ > 1	HQ > 1	--	--	--	--	X	HQ > 1	--	--	--	--
TOTAL HMW PAHs	X	HQ > 1	HQ > 1	HQ > 1	HQ > 1	HQ > 1	HQ > 1	X	HQ > 1	--	--	--	--
TOTAL PAHs	X	HQ > 1	HQ > 1	--	--	--	--	X	HQ > 1	--	--	X	HQ > 1
TOTAL LMW PAHs	X	HQ > 1	HQ > 1	--	HQ > 1	--	--	X	HQ > 1	--	--	--	--

Notes:

X - COPC.
-- - not detected and/or not retained as a COPC.
COPC - Chemical of Potential Concern.
DDT - Dichlorodiphenyltrichloroethane.
HMW - High Molecular Weight.
HQ - Hazard Quotient.
LMW - Low Molecular Weight.
PAHs - Polycyclic Aromatic Hydrocarbons.
PCBs - Polychlorinated Biphenyls.

Food web model evaluated PAHs as Total LMW PAHs & Total HMW PAHs. Risks for individual PAHs were not evaluated.
Food web model evaluated PCBs as Total PCBs. Risks for individual Aroclors were not evaluated.
Shellfish tissue screening evaluated PAHs as Total PAHs. Risks for individual PAHs were not evaluated.

No CBR - Analyte was detected but shellfish critical body residue (CBR) was not identified (analyte is retained as a COPC).
No SEV - Analyte was detected but screening ecotoxicity value (SEV) was not identified (analyte is retained as a COPC).
No TRV - Analyte was detected but avian toxicity reference value (TRV) was not identified (analyte is retained as a COPC).

TABLE 17
REFINED RISK ESTIMATES FOR SURFACE SOIL COPCs
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

			Soil Invertebrates			Terrestrial Plants		
COPC	**FOD**	**Refined Maximum Surface Soil EPC**	**Soil Invertebrate SEV [a]**	**SEV Source**	**HQ**	**Plant SEVs[a]**	**SEV Source**	**HQ**
INORGANICS								
ANTIMONY	27:27	92.5	78	Eco-SSL (inverts)	1.2	5.0	ORNL (plants)	18.5
ARSENIC	45:45	25.2	60	ORNL (inverts)	0.42	18.0	Eco-SSL (plants)	1.4
CADMIUM	23:27	0.33	140	Eco-SSL (inverts)	0.0024	32.0	Eco-SSL (plants)	0.010
CHROMIUM, TOTAL	45:45	13.8	0.4	ORNL (inverts)	34.6	1.0	ORNL (plants)	13.8
COBALT	27:27	14.2	20	USEPA R4 (unspecified)	0.71	13.0	Eco-SSL (plants)	1.1
COPPER	27:27	81.4	80	Eco-SSL (inverts)	1.0	70.0	Eco-SSL (plants)	1.2
IRON	27:27	37470	200	USEPA R4 (microbes)	187	pH<5, pH>8	Eco-SSL	Average pH >5 and <8 [b]
LEAD	57:57	3241	1700	Eco-SSL (inverts)	1.9	120	Eco-SSL (plants)	27
MANGANESE	27:27	535	450	Eco-SSL (inverts)	1.2	220	Eco-SSL (plants)	2.4
MERCURY	21:27	0.075	0.1	ORNL (inverts)	0.75	0.3	ORNL (plants)	0.25
NICKEL	27:27	29.1	280	Eco-SSL (inverts)	0.10	38.0	Eco-SSL (plants)	0.76
SELENIUM	11:27	0.414	4.1	Eco-SSL (inverts)	0.10	0.52	Eco-SSL (plants)	0.80
THALLIUM	27:27	0.068	1	USEPA R4 (unspecified)	0.068	1.0	ORNL (plants)	0.068
VANADIUM	27:27	19.8	NV		No SEV	2.0	ORNL (plants)	9.9
ZINC	27:27	166	120	Eco-SSL (inverts)	1.4	160	Eco-SSL (plants)	1.0
PESTICIDES								
4,4-DDE	2:4	0.062	12	CCME (commercial)	0.0052	12	CCME (industrial)	0.0052
4,4-DDT	3:4	19.0	12	CCME (commercial)	1.6	12	CCME (industrial)	1.6
ENDOSULFAN I	1:4	0.0015	0.000010	TV (unspecified)	150	0.00001	TV (unspecified)	150
ENDOSULFAN II	1:4	0.0003	0.000010	TV (unspecified)	32	0.00001	TV (unspecified)	32.0
ENDOSULFAN SULFATE	2:4	12.0	0.000010	TV (unspecified)	1200000	0.00001	TV (unspecified)	1200000
ENDRIN	1:4	0.0018	0.0010	USEPA R4 (unspecified)	1.8	0.0010	USEPA R4 (unspecified)	1.8
ENDRIN KETONE	1:4	0.0016	0.0010	USEPA R4 (unspecified)	1.6	0.0010	USEPA R4 (unspecified)	1.6
POLYCHLORINATED BIPHENYLS (PCBs)								
PCB, TOTAL	4:5	270	33	CCME (commercial)	8.2	40	ORNL (plants)	6.8
SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs)								
TOTAL HMW PAHs	57:57	76.7	18	Eco-SSL (inverts)	4.3	20	ORNL (plants)	3.8
TOTAL LMW PAHs	56:57	29.4	29	Eco-SSL (inverts)	1.0	20	ORNL (plants)	1.5

Notes:
All concentrations reported in milligrams per kilogram (mg/kg).
Refined maximum EPCs represent UCLs or maximum detected concentrations if UCLs could not be calculated.
HQ values greater than 1 are highlighted.
CCME - Canadian Council of Ministers of the Environment (2002). Commercial value based on direct contact. Residential/parkland value based on soil and food ingestion.
COPC - Chemical of Potential Concern.
DDT - Dichlorodiphenyltrichloroethane.
Eco-SSL - Ecological Soil Screening Level. Derived by USEPA according to USEPA guidance (2005a).
EPC - Exposure Point Concentration.
FOD - Frequency of Detection.
HMW - High Molecular Weight.
HQ - Hazard Quotient (EPC/SEV).
ORNL - Oak Ridge National Laboratory (Efroymson, et al., 1997a and b).
PAHs - Polycyclic Aromatic Hydrocarbons.
SEV - Screening Ecotoxicity Value.
TV - Target Value (Dutch standards presented in Buchman, 2008).
UCL - Upper Confidence Limit.
USEPA - United States Environmental Protection Agency.
USEPA R4 - USEPA Region 4 recommended ecological screening values for soil (USEPA, 2001c).
[a] - SEVs identified for terrestrial plants and soil invertebrates. See Attachment F for details.
[b] - pH reported in surface soil at 5.9 SU. pH in deeper samples ranged from 5.1 to 5.4 SU.

TABLE 18
REFINED RISK ESTIMATES FOR SURFACE SEDIMENT COPCs
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

COPC	FOD	Refined Maximum Surface Sediment EPC	Selected Sediment SEV [a]	SEV Source	HQ
INORGANICS					
ANTIMONY	44:55	6.3	25.0	NOAA ERM (Freshwater/Marine)	0.25
ARSENIC	55:55	8.1	70.0	NOAA ERM (Marine)	0.12
BERYLLIUM	55:55	0.22	NV		No SEV
CHROMIUM VI	2:12	1.2	NV		No SEV
COBALT	55:55	6.9	50.0	NOAA SQuiRT (Freshwater; LEL)	0.14
COPPER	55:55	70.5	270	NOAA ERM (Marine)	0.26
LEAD	55:55	595	218	NOAA ERM (Marine)	2.7
MANGANESE	55:55	375	1100	NOAA SQuiRT (Freshwater; UET)	0.34
NICKEL	55:55	16.8	51.6	NOAA ERM (Marine)	0.33
THALLIUM	27:55	0.052	NV		No SEV
SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs)					
TOTAL HMW PAHs	41:41	1.8	9.6	NOAA ERM (Marine)	0.19
TOTAL LMW PAHs	38:41	0.24	3.2	NOAA ERM (Marine)	0.077
TOTAL PAHs	41:41	1.4	44.8	NOAA ERM (Marine)	0.032

Notes:
All concentrations reported in milligrams per kilogram (mg/kg).
Refined maximum EPCs represent UCLs or maximum detected concentrations if UCLs could not be calculated.
HQ values greater than 1 are highlighted.
COPC - Chemical of Potential Concern.
EPC - Exposure Point Concentration.
ERM - Effects Range Median ((Marine - Long, et al., 1995; Freshwater - Long and Morgan, 1991).
FOD - Frequency of Detection.
HMW - High Molecular Weight.
HQ - Hazard Quotient (EPC/SEV).
LEL - Lowest Effect Level.
LMW - Low Molecular Weight.
NOAA - National Oceanic and Atmospheric Administration.
NV - No value identified.
PAHs - Polycyclic Aromatic Hydrocarbons.
SEV - Screening Ecotoxicity Value.
SQuiRT - Screening Quick Reference Tables (Buchman, 2008).
UET - Upper Effects Threshold.
[a] - SEVs identified in Attachment F.

TABLE 19
REFINED RISK ESTIMATES FOR SHELLFISH TISSUE COPCs
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

COPC		Range of Literature Tissue Concentrations (mg/kg_{ww}) Measured Effect [a]			Lowest NOED (mg/kg_{ww})	Lowest LOED (mg/kg_{ww})	Refined Maximum EPC - All Shellfish (mg/kg_{ww})	Refined Maximum HQ - All Shellfish and Lowest NOED	Refined Maximum HQ - All Shellfish and Lowest LOED
		Mortality	Growth	Reproduction					
INORGANICS									
ALUMINUM	NOEDs LOEDs	NS NS	NS NS	NS NS	NV	NV	28.1	No CBR	No CBR
ANTIMONY	NOEDs LOEDs	NS NS	NS NS	NS NS	NV	NV	0.0131	No CBR	No CBR
ARSENIC	NOEDs LOEDs	4 *[Hc]* - 16 *[Hc]* 4.2 [*Hc* ; ED16]	NS NS	NS NS	4	4.2	3.5	0.88	0.84
BARIUM	NOEDs LOEDs	NS NS	NS NS	NS NS	NV	NV	0.24	No CBR	No CBR
BERYLLIUM	NOEDs LOEDs	NS NS	NS NS	NS NS	NV	NV	0.00426	No CBR	No CBR
COBALT	NOEDs LOEDs	NS NS	NS NS	NS NS	NV	NV	0.17	No CBR	No CBR
IRON	NOEDs LOEDs	NS NS	NS NS	NS NS	NV	NV	100	No CBR	No CBR
LEAD	NOEDs LOEDs	0.58 *[Pl]* - 35 *[Dp]* 31.36 *[Pl]* - 200 *[Dp]*	35 *[Dp]* 200 *[Dp]*	NS NS	0.58	31	3.7	**6.4**	0.12
MANGANESE	NOEDs LOEDs	NS NS	NS NS	NS NS	NV	NV	4.8	No CBR	No CBR
SELENIUM	NOEDs LOEDs	NS NS	NS NS	NS NS	NV	NV	0.44	No CBR	No CBR
VANADIUM	NOEDs LOEDs	NS NS	NS NS	NS NS	NV	NV	0.23	No CBR	No CBR
ZINC	NOEDs LOEDs	5 *[Ma]* - 78 *[Me]* 26 *[Me]* - 194 *[Me]*	NS 25 *[Me]*	NS NS	5	26	12.5	**2.5**	0.48
SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs)									
TOTAL PAHs	NOEDs LOEDs	NS NS	NS NS	0.028 *[Pb]* 0.052 [*Pb* ; ED12] - 1.592 [*Pb* ; ED26]	0.028	0.052	0.024	0.85	0.46

Notes:
All concentrations reported in milligrams per kilograms wet weight (mg/kg_{ww}).
Refined maximum EPCs represent UCLs or maximum detected concentrations if UCL could not be calculated.
HQ values greater than 1 are highlighted.
CBRs are whole body concentrations for the adult life stage, unless otherwise noted.
The following COPCs were retained because appropriate tissue residue studies were not identified: aluminum, antimony, barium, beryllium, cobalt, iron, manganese, selenium, and vanadium.

CBR - Critical Body Residue.
COPC - Chemicals of Potential Concern.
EDx - Effective dose to x% of the population.
EPC - Exposure Point Concentration.
HQ - Hazard Quotient (EPC/Lowest NOED).
LOED - Lowest observed effect dose.
NOED - No observed effect dose.
NS - No acceptable studies identified.
NV - No value identified.
PAHs - Polycyclic Aromatic Hydrocarbons.
[a] The range in values presented is based on the minimum and maximum NOED and LOED values per effect for a particular species (initials of scientific name in brackets). Alternative values (e.g., LDx or EDx) are only presented if no LOED or NOED is identified. See Attachment G for selection of shellfish CBRs.
Species codes:

Dp -	*Dreissena polymorpha*	Zebra mussel (Freshwater)
Hc -	*Helisoma campanulata*	mollusc (Freshwater)
Ma -	*Mysella anomala*	mollusc (Saltwater)
Me -	*Mytilus edulis*	Mussel (Saltwater)
Pb -	*Pandalus Borealis*	Northern shrimp (Saltwater)
Pl -	*Paracentrotus lividus*	Sea urchin (Saltwater)

TABLE 20
SUMMARY OF SEDIMENT TOXICITY TESTING RESULTS
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

		Laboratory Control					Background/Reference SD302					Background/Reference SD303					Background/Reference SD304				
			Growth		Juveniles Produced Per			Growth		Juveniles Produced Per			Growth		Juveniles Produced Per			Growth		Juveniles Produced Per	
		Survival	Dry Wt	Biomass	Surviving Amphipod	Female	Survival	Dry Wt	Biomass	Surviving Amphipod	Female	Survival	Dry Wt	Biomass	Surviving Amphipod	Female	Survival	Dry Wt	Biomass	Surviving Amphipod	Female
Laboratory Control		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SD302	Background/ Reference	X	X	X	X	X	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SD303							--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SD304		X	X	X	X	X	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SD102	Target Area	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X		
SD115			X	X	X	X															
SD118		X	X	X	X	X															
SD122		X	X	X	X	X	X	X	X			X	X	X	X	X	X	X	X	X	X
SD124		X	X	X	X	X		X					X	X	X	X		X	X		
SD106	Overshoot Area 300 - 600 ft	X		X																	
SD112		X		X	X	X															
SD114				X	X	X															
SD120		X		X																	
SD121																					

Note:
28 day tests were conducted with the amphipod *Leptocheirus plumulosus*. See Attachment K for laboratory report and supporting tables and figures.
Data were analyzed to determine significant differences between test sediments, reference sediments, and the laboratory control. Statistical difference was evaluated at α=0.05.
"X" Indicates that a statistical difference was found.
"-" Indicates that statistical analysis was not conducted.
" " An empty cell indicates that a statistical difference was not found.

TABLE 21
SUMMARY OF REFINED FOOD WEB RISK ESTIMATES
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

	NOAEL-based HQ - Refined Maximum EPC						LOAEL-based HQ - Refined Maximum EPC					
	Upland Habitat				Narragansett Bay Habitat		Upland Habitat				Narragansett Bay Habitat	
COPC	**Bobwhite Quail**	**American Robin**	**Meadow Vole**	**Short-tailed Shrew**	**Herring Gull**	**Raccoon**	**Bobwhite Quail**	**American Robin**	**Meadow Vole**	**Short-tailed Shrew**	**Herring Gull**	**Raccoon**
INORGANICS												
ANTIMONY	NC	NC	**18.9**	**177**	NC	0.37	NC	NC	0.40	**3.8**	NC	0.0080
ARSENIC	nCOPC	nCOPC	0.28	0.29	nCOPC	nCOPC	nCOPC	nCOPC	0.065	0.066	nCOPC	nCOPC
CADMIUM	nCOPC	nCOPC	nCOPC	0.50	nCOPC	nCOPC	nCOPC	nCOPC	nCOPC	0.056	nCOPC	nCOPC
COPPER	nCOPC	0.56	0.51	0.89	0.042	nCOPC	nCOPC	0.065	0.035	0.060	0.0049	nCOPC
LEAD	**1.5**	**14.9**	**3.4**	**13.9**	0.81	0.057	0.054	0.55	0.086	0.35	0.029	0.0014
MERCURY	0.14	**3.1**	0.40	**1.6**	0.077	nCOPC	0.014	0.31	0.08	0.3	0.0077	nCOPC
THALLIUM	NC	NC	**2.2**	**1.1**	NC	nCOPC	NC	NC	0.22	0.11	NC	nCOPC
VANADIUM	nCOPC	nCOPC	nCOPC	nCOPC	0.098	nCOPC	nCOPC	nCOPC	nCOPC	nCOPC	0.020	nCOPC
ZINC	nCOPC	0.33	0.27	0.70	nCOPC	nCOPC	nCOPC	0.13	0.07	0.18	nCOPC	nCOPC
ORGANICS												
TOTAL HMW PAHs	0.17	**4.0**	**5.29**	**36.49**	nCOPC	nCOPC	0.017	0.40	0.085	0.584	nCOPC	nCOPC
TOTAL PCBs	**12.2**	**366**	**81**	**3003**	nCOPC	nCOPC	**1.2**	**36.6**	**8.1**	**300**	nCOPC	nCOPC
4,4-DDT	nCOPC	**17.4**	**2.2**	**84.1**	nCOPC	nCOPC	nCOPC	**1.5**	0.058	**2.2**	nCOPC	nCOPC
ENDOSULFAN SULFATE	nCOPC	nCOPC	**4.7**	**10.0**	nCOPC	nCOPC	nCOPC	nCOPC	0.47	1.0	nCOPC	nCOPC

Notes:
Refined maximum EPCs for BERA are the 95% upper confidence limit (UCL) on the arithmetic mean (or the maximum detected concentration of a UCL could not be calculated).
Potential risk is calculated using the refined maximum EPC and both NOAEL- and LOAEL-based TRVs.
HQs above 1 are bolded and highlighted.
COPC - Chemical of Potential Concern.
DDT - Dichlorodiphenyltrichloroethane.
HMW - High Molecular Weight.
HQ - Hazard Quotient.
LOAEL - Low Observed Adverse Effect Level.
NC - Not Calculated. Avian TRV not available.
nCOPC - Not retained as a refined wildlife COPC in this medium.
NOAEL - No Observed Adverse Effect Level.
PAHs - Polycyclic Aromatic Hydrocarbons.
PCBs - Polychlorinated Biphenyls.
TRV - Toxicity Reference Value.

TABLE 22
SUMMARY OF REFINED PELLET EVALUATION
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

Exposure Area	Sum of Lead Pellets (2-4 mm)	Sum of Grit-Sized (2-4 mm) Material	Percent Lead Pellet by Count	Receptor	Probability of Ingesting 1 Pellet in a Day
Shoreline Soil	201	82082	0.24%	Mourning Dove	0.0011%
				Bobwhite Quail	0.040%
Target Area	673	154072	0.44%	Lesser Scaup	1.5%
Overshoot Area [300-600 ft]	1236	73971	1.7%	Lesser Scaup	7.2%
Overshoot Area [beyond 600 ft]	0	0	0%	NA	NA

Notes:
See Attachment M for details.
Calculations completed using model presented in USEPA. 2011. Assessment of Methods for Estimating Risk to Birds from Ingestion of Contaminated Grit Particles. EPA/600/R-11/023.
NA - Not Applicable.

TABLE 23
COMPARISON OF SITE AND BACKGROUND DATA FOR SHELLFISH
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

	MRP Site 1				Background Locations				Ratio of MRP Site 1 Maximum to Background Maximum	Ratio of MRP Site 1 Mean to Background Mean
COPC	**FOD (a)**	**Minimum Detect**	**Mean of Detects**	**Maximum Detect**	**FOD (a)**	**Minimum Detect**	**Mean of Detects**	**Maximum Detect**		
INORGANICS										
ALUMINUM	13:13	2.2	12.8	31.5	4:4	6.8	18.7	29.4	1.1	0.68
ANTIMONY	5:13	0.011	0.017	0.029	0:4	ND	ND	ND	NC	NC
ARSENIC	13:13	2.2	3.2	4.4	4:4	2.5	3.3	3.6	1.2	0.98
BARIUM	13:13	0.12	0.213	0.30	4:4	0.097	0.19	0.28	1.1	1.1
BERYLLIUM	13:13	0.0017	0.0034	0.0068	4:4	0.0018	0.0025	0.0035	1.9	1.4
CADMIUM	13:13	0.059	0.10	0.15	4:4	0.072	0.11	0.15	0.98	0.94
CHROMIUM, TOTAL	13:13	0.074	0.32	0.77	4:4	0.16	0.39	0.63	1.2	0.83
COBALT	13:13	0.063	0.14	0.28	4:4	0.065	0.12	0.20	1.4	1.2
COPPER	13:13	0.58	1.1	1.6	4:4	0.92	1.0	1.3	1.3	1.0
LEAD	13:13	0.060	1.4	7.3	4:4	0.15	0.27	0.43	17.0	5.2
IRON	13:13	7.8	43.8	148	4:4	19.7	54.8	72.3	2.0	0.80
MANGANESE	13:13	1.4	4.1	7.4	4:4	2.6	4.8	7.7	0.96	0.86
MERCURY	13:13	0.00701	0.0164	0.030	4:4	0.012	0.016	0.020	1.5	1.0
NICKEL	13:13	0.29	0.528	0.89	4:4	0.17	0.40	0.71	1.3	1.3
SELENIUM	13:13	0.18	0.37	0.52	4:4	0.25	0.40	0.50	1.0	0.93
SILVER	13:13	0.0047	0.12	0.27	4:4	0.0064	0.084	0.31	0.90	1.4
VANADIUM	13:13	0.057	0.183	0.35	4:4	0.12	0.15	0.18	2.0	1.2
ZINC	13:13	5.4	11.1	15.2	4:4	8.7	12.0	15.6	0.97	0.93
SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs)										
TOTAL HMW PAHs	13:13	0.0019	0.081	0.33	4:4	0.0041	0.056	0.17	1.9	1.4
TOTAL LMW PAHs	13:13	0.00060	0.0090	0.035	4:4	0.0016	0.0092	0.023	1.5	0.98
TOTAL PAHs	13:13	0.0027	0.090	0.36	4:4	0.0056	0.065	0.19	1.9	1.4

Notes:
Data set includes both quahog and blue mussel tissue.
All concentrations are reported in milligrams per kilogram (mg/kg).
COPC - Chemical of Potential Concern.
FOD - Frequency of Detection.
HMW - High Molecular Weight.
LMW - Low Molecular Weight.
NC - Not Calculated
ND - Not Detected.
PAHs - Polycyclic Aromatic Hydrocarbons.

(a) Number of samples detected: Total number of samples.

TABLE 24
SUMMARY OF BACKGROUND EVALUATION FOR SEDIMENT
ECOLOGICAL RISK ASSESSMENT
CARR POINT, MRP SITE 1

	Site Sediment			Background Sediment			Distribution [a]		Two-Sample Hypothesis Test [b]				
COPC	Number of Detects	Total Number of Samples	FOD (%)	Number of Detects	Total Number of Samples	FOD (%)	Site	Background	Test	S value[c]	p-value	Reject Null Hypothesis?	Is Site >= Background Sediment?
INORGANICS													
ANTIMONY	44	55	80	12	12	100	Not Normal	Normal	Gehan	0.025	0.98	**NO**	**YES**
ARSENIC	55	55	100	12	12	100	Not Normal	Normal	WMW	1.5	0.0013	Yes	No
COBALT	55	55	100	12	12	100	Not Normal	Normal	WMW	1.5	0.00099	Yes	No
COPPER	55	55	100	12	12	100	Not Normal	Normal	WMW	7.0	0.0012	Yes	No
LEAD	55	55	100	12	12	100	Not Normal	Not Normal	WMW	11.6	0.85	**NO**	**YES**
MANGANESE	55	55	100	12	12	100	Not Normal	Approximate Normal	WMW	66.6	0.00052	Yes	No
MERCURY	33	35	94	12	12	100	Not Normal	Approximate Normal	Gehan	0.047	0.0000052	Yes	No
NICKEL	55	55	100	12	12	100	Not Normal	Normal	WMW	3.3	0.0019	Yes	No
VANADIUM	55	55	100	12	12	100	Not Normal	Normal	WMW	6.5	0.0000036	Yes	No
ORGANICS													
TOTAL HMW PAHs	41	41	100	12	12	100	Not Normal	Not Normal	WMW	1.7	0.000026	Yes	No
TOTAL LMW PAHs	38	41	93	11	12	92	Not Normal	Not Normal	Gehan	0.26	0.000089	Yes	No

Notes:
COPC - Chemical of Potential Concern.
FOD - Frequency of Detection.
HMW - High Molecular Weight.
LMW - Low Molecular Weight.
PAHs - Polycyclic Aromatic Hydrocarbons.
S - Substantial Difference.
WMW - Wilcoxon-Mann-Whitney test.

[a] The distribution of the Site and Background datasets were determined using Goodness of Fit Statistics (significance level 0.05) in ProUCL 5.0. A minimum of five detected samples is required for determining the distribution in ProUCL.
[b] A two-sample hypothesis test was conducted. A t-test was used when both Site and Background datasets are normally distributed. If either datasets were not normally distributed, then the WMW test or the Gehan test was used depending on if detection limits were equal for all non-detected samples (WMW) or if they were not equal (Gehan).
The null hypothesis is "Mean/Median of Site Sediment > Background Sediment + S". The alternative hypothesis is "Mean/Median of Site Sediment <= Background Sediment + S".
If the p-value of the two-sample hypothesis test is < alpha (0.05), then the null hypothesis is rejected.
[c] The value of S is the standard deviation of the Background data set. This value was added to the value of each Background sediment sample.

TABLE 25
SUMMARY OF BACKGROUND EVALUATION FOR SOIL
ECOLOGICAL RISK ASSESSMENT
CARR POINT, MRP SITE 1

	Site Surface Soil			Background Surface Soil			Distribution [a]		Two-Sample Hypothesis Test [b]				
COPC	Number of Detects	Total Number of Samples	FOD	Number of Detects	Total Number of Samples	FOD	Site	Background	Test	S value[c]	p-value	Reject Null Hypothesis?	Is Site >= Background Soil?
INORGANICS													
ANTIMONY	27	27	100	0	20	0	Not Normal	NC	NC	--	--	--	--
ARSENIC	45	45	100	20	20	100	Not Normal	Normal	WMW	1.1	1.0	**NO**	**YES**
CADMIUM	23	27	85	0	20	0	Not Normal	NC	--	--	--	--	--
CHROMIUM, TOTAL	45	45	100	20	20	100	Not Normal	Normal	WMW	2.6	0.24	**NO**	**YES**
COBALT	27	27	100	20	20	100	Not Normal	Normal	WMW	1.1	1.0	**NO**	**YES**
COPPER	27	27	100	20	20	100	Not Normal	Normal	WMW	2.3	1.0	**NO**	**YES**
IRON	27	27	100	20	20	100	Not Normal	Normal	WMW	3332	1.0	**NO**	**YES**
LEAD	57	57	100	20	20	100	Not Normal	Normal	WMW	3.4	1.0	**NO**	**YES**
MANGANESE	27	27	100	20	20	100	Normal	Normal	t-test	36.3	1.0	**NO**	**YES**
MERCURY	21	27	78	18	20	90	Not Normal	Normal	Gehan	0.010	0.83	**NO**	**YES**
NICKEL	27	27	100	20	20	100	Approximate Normal	Normal	t-test	2.1	1.0	**NO**	**YES**
SELENIUM	11	27	41	13	20	65	Normal	Normal	t-test	0.11	0.51	**NO**	**YES**
THALLIUM	27	27	100	0	20	0	Approximate Normal	NC	NC	--	--	--	--
VANADIUM	27	27	100	20	20	100	Normal	Normal	t-test	4.0	0.017	YES	NO
ZINC	27	27	100	20	20	100	Not Normal	Normal	WMW	4.7	1.0	**NO**	**YES**
ORGANICS													
4,4-DDT	3	4	75	ND	ND	ND	NC	NC	NC	--	--	--	--
ENDOSULFAN I	1	4	25	ND	ND	ND	NC	NC	NC	--	--	--	--
ENDOSULFAN II	1	4	25	ND	ND	ND	NC	NC	NC	--	--	--	--
ENDOSULFAN SULFATE	2	4	50	ND	ND	ND	NC	NC	NC	--	--	--	--
ENDRIN	1	4	25	ND	ND	ND	NC	NC	NC	--	--	--	--
ENDRIN KETONE	1	4	25	ND	ND	ND	NC	NC	NC	--	--	--	--
PCB, TOTAL	4	5	80	ND	ND	ND	NC	NC	NC	--	--	--	--
TOTAL HMW PAHs	57	57	100	ND	ND	ND	Not Normal	NC	NC	--	--	--	--
TOTAL LMW PAHs	56	57	98	ND	ND	ND	Not Normal	NC	NC	--	--	--	--
TOTAL PAHs	57	57	100	ND	ND	ND	Not Normal	NC	NC	--	--	--	--

Notes:
COPC - Chemical of Potential Concern.
FOD - Frequency of Detection.
NC - Not Calculated.
ND - No Data.
PAHs - Polycyclic Aromatic Hydrocarbons.
S - Substantial Difference.
WMW - Wilcoxon-Mann-Whitney test.

[a] The distribution of the Site and Background datasets were determined using Goodness of Fit Statistics (significance level 0.05) in ProUCL 5.0. A minimum of five detected samples is required for determining the distribution in ProUCL.
[b] A two-sample hypothesis test was conducted. A t-test was used when both Site and Background datasets are normally distributed. If either datasets were not normally distributed, then the WMW test or the Gehan test was used depending on if detection limits were equal for all non-detected samples (WMW) or if they were not equal (Gehan).
The null hypothesis is "Mean/Median of Site Soil > = Background Soil + S". The alternative hypothesis is "Mean/Median of Site Soil < Background Soil + S".
If the p-value of the two-sample hypothesis test is < alpha (0.05), then the null hypothesis is rejected.
[c] The value of S is the standard deviation of the Background data set. This value was added to the value of each Background soil sample.

TABLE 26
SUMMARY OF COPCS AND RECEPTORS WITH TIER 2, STEP 3A HQs > 1
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

		SOIL										SEDIMENT		SHELLFISH TISSUE		
				Bobwhite Quail		American Robin		Meadow Vole		Short-tailed Shrew					Shellfish Community	
COPC	FOD	Soil Invertebrates	Terrestrial Plants	NOAEL TRV	LOAEL TRV	NOAEL TRV	LOAEL TRV	NOAEL TRV	LOAEL TRV	NOAEL TRV	LOAEL TRV	FOD	Benthic Invertebrates	FOD	Lowest NOED	Lowest LOED
Inorganics																
ANTIMONY	27 : 27	**HQ > 1**	**HQ > 1**	--	--	--	--	**HQ > 1**	--	**HQ > 1**	**HQ > 1**	44 : 55	--	5 : 13	--	--
ARSENIC	45 : 45	--	**HQ > 1**	--	--	--	--	--	--	--	--	55 : 55	--	13 : 13	--	--
CHROMIUM, TOTAL	45 : 45	**HQ > 1**	**HQ > 1**	--	--	--	--	--	--	--	--	55 : 55	--	13 : 13	--	--
COBALT	27 : 27	--	**HQ > 1**	--	--	--	--	--	--	--	--	55 : 55	--	13 : 13	--	--
COPPER	27 : 27	--	**HQ > 1**	--	--	--	--	--	--	--	--	55 : 55	--	13 : 13	--	--
IRON	27 : 27	**HQ > 1**	**HQ > 1**	--	--	--	--	--	--	--	--	55 : 55	--	13 : 13	--	--
LEAD	57 : 57	**HQ > 1**	**HQ > 1**	**HQ > 1**	--	**HQ > 1**	--	**HQ > 1**	--	**HQ > 1**	--	55 : 55	**HQ > 1**	13 : 13	**HQ > 1**	--
MANGANESE	27 : 27	**HQ > 1**	**HQ > 1**	--	--	--	--	--	--		--	55 : 55	--	13 : 13	--	--
MERCURY	21 : 27	--	--	--	--	**HQ > 1**	--	--	--	**HQ > 1**	--	33 : 35	--	13 : 13	--	--
THALLIUM	27 : 27	--	--	--	--	--	--	**HQ > 1**	--	**HQ > 1**	--	27 : 55	--	0 : 13	--	--
VANADIUM	27 : 27	--	HQ > 1 [a]	--	--	--	--	--	--	--	--	55 : 55	--	13 : 13	--	--
ZINC	27 : 27	**HQ > 1**	**HQ > 1**	--	--	--	--	--	--	--	--	55 : 55	--	13 : 13	**HQ > 1**	--
Pesticides/ PCBs																
4,4-DDT	3 : 4	**HQ > 1**	**HQ > 1**	--	--	**HQ > 1**	**HQ > 1**	**HQ > 1**	--	**HQ > 1**	**HQ > 1**	--	--	--	--	--
ENDOSULFAN I	1 : 4	**HQ > 1**	**HQ > 1**	--	--	--	--	--	--	--	--	--	--	--	--	--
ENDOSULFAN II	1 : 4	**HQ > 1**	**HQ > 1**	--	--	--	--	--	--	--	--	--	--	--	--	--
ENDOSULFAN SULFATE	2 : 4	**HQ > 1**	**HQ > 1**	--	--	--	--	**HQ > 1**	--	**HQ > 1**	--	--	--	--	--	--
ENDRIN	1 : 4	**HQ > 1**	**HQ > 1**	--	--	--	--	--	--	--	--	--	--	--	--	--
ENDRIN KETONE	1 : 4	**HQ > 1**	**HQ > 1**	--	--	--	--	--	--	--	--	--	--	--	--	--
PCB, TOTAL	4 : 5	**HQ > 1**	**HQ > 1**	**HQ > 1**	**HQ > 1**	**HQ > 1**	**HQ > 1**	**HQ > 1**	**HQ > 1**	**HQ > 1**	**HQ > 1**	--	--	--	--	--
Semi-Volatile Organic Compounds (SVOCs)																
TOTAL HMW PAHs	57 : 57	**HQ > 1**	**HQ > 1**	--	--	**HQ > 1**	--	**HQ > 1**	--	**HQ > 1**	--	41 : 41	--	13 : 13	--	--
TOTAL LMW PAHs	56 : 57	--	**HQ > 1**	--	--	**HQ > 1**	--	--	--	--	--	38 : 41	--	13 : 13	--	--

Notes:
[a] - Background comparison indicates site concentrations in soil are similar to background (see Appendix E of the Remedial Investigation Report). Background findings only presented for COPCs with HQs >1.
COPCs and receptors only presented if an HQ > 1 was generated during Tier 2, Step 3A. All HQs for raccoon and herring gull were less than 1 in Tier 2, Step 3A.
-- - HQ < 1 in Tier 2, Step 3A or no screening value available.
COPC - Chemical of Potential Concern.
DDT - Dichlorodiphenyltrichloroethane.
FOD - Frequency of Detection.
HMW - High Molecular Weight.
HQ - Hazard Quotient.
LMW - Low Molecular Weight.
LOAEL - Low Observed Adverse Effect Level.
LOED - Lowest Observed Effect Dose.
NOAEL - No Observed Adverse Effect Level.
NOED - No Observed Effect Dose.
PAHs - Polycyclic Aromatic Hydrocarbons.
PCBs - Polychlorinated Biphenyls.
TRV - Toxicity Reference Value.

Figures

RESOLUTION CONSULTANTS

Drawn:	JB	08/21/2014
Approved:	MC	08/21/2014
Project #:	60250336	

Map Location

N

0 2,000 4,000 8,000

Scale in Feet

FIGURE 1
REGIONAL LOCATION

FORMER CARR POINT SHOOTING RANGE
NAVSTA NEWPORT, RHODE ISLAND

Path: W:\Govt\Projects\Navy CLEAN AECOM-EnSafe JV\Newport\GIS\Projects\Carr Point\RI\Map\Main_Report\Figure_1_1_Regional_Location.mxd

RESOLUTION CONSULTANTS

Drawn:	JB	08/21/2014
Approved:	MC	08/21/2014
Project #:	60250336	

Map Location

N

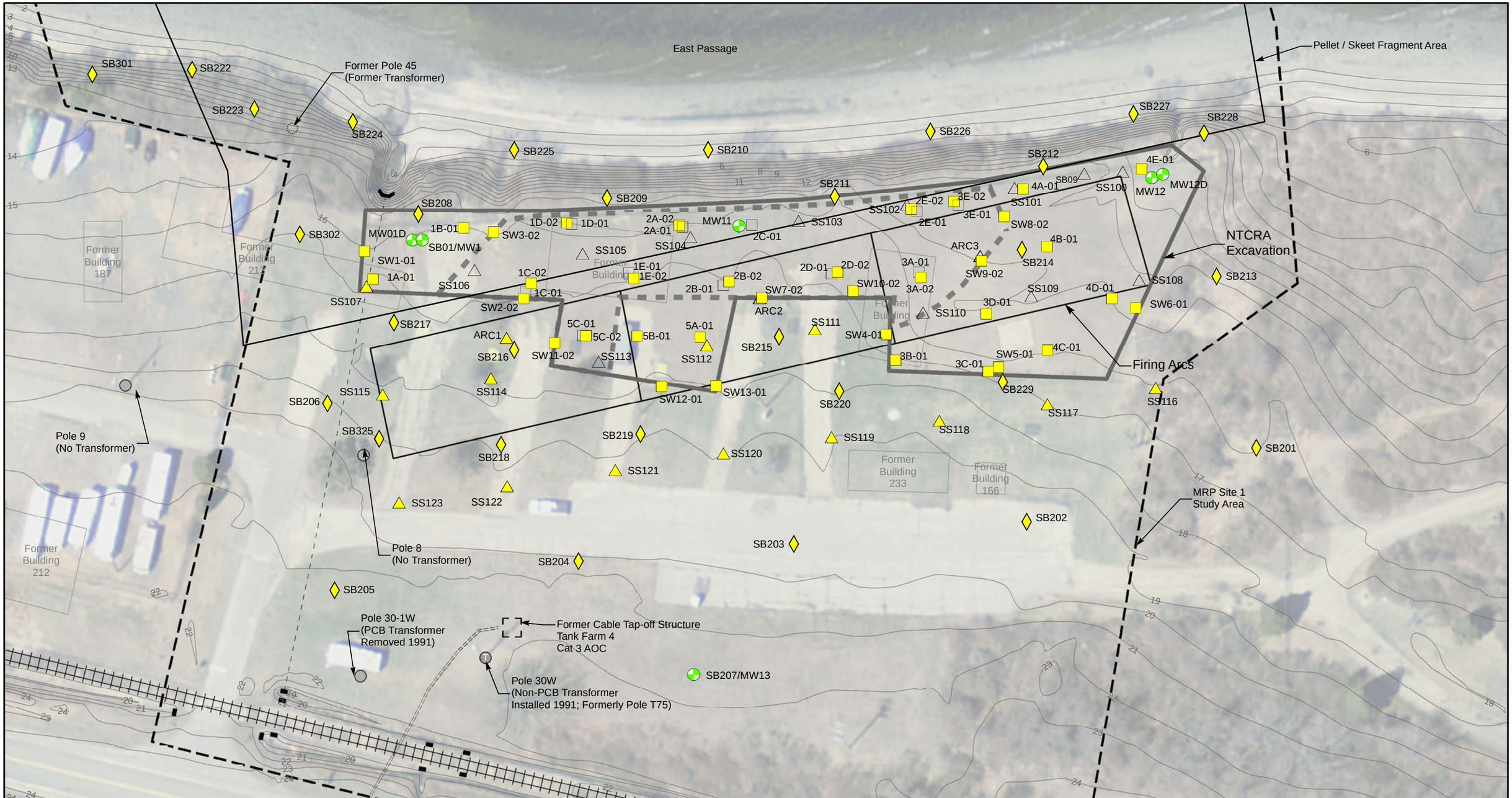
0 75 150

Scale in Feet

FIGURE 2
STUDY AREA

MRP SITE 1, CARR POINT
NAVSTA NEWPORT, RHODE ISLAND

Path: W:\Govt\Projects\Navy CLEAN AECOM-EnSafe JV\Newport\GIS\Projects\Carr Point\RI\Map\Main_Report\Figure_1_2_Study_Area.mxd



RESOLUTION CONSULTANTS

Drawn:	JB	04/28/2015
Approved:	NT	04/28/2015
Project #:	60250336	

Legend

- 2009/2010 SI Representative Samples
- 2009/2010 SI excavated Samples (Not Used)
- 2013 NTCRA Post-Excavation Samples
- 2013 NTCRA Post-Excavation Samples (Not Used)
- 2013/2014 RI Samples
- Monitoring Well Location
- MRP Site 1 Boundary
- 1 Ft Excavation
- 2 Ft Excavation
- Former Cable Tap-off Structure
- Utility Pole
- Utility Pole with Transformer
- Former Pole with Transformer
- Stormwater Culvert
- Outfall
- Stormwater Pipeline
- Topographic Contour Line (NAVD 88)

N

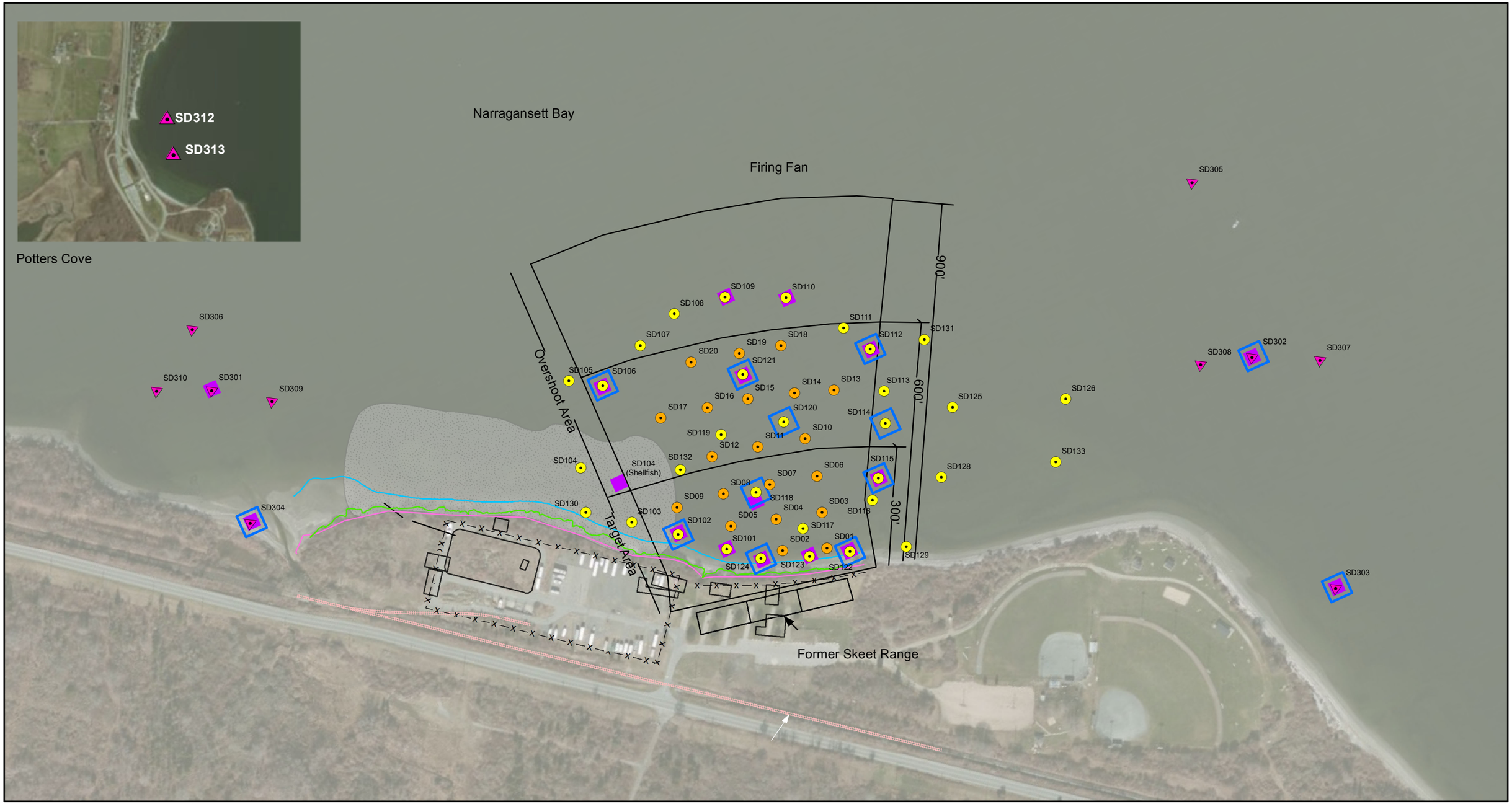
0 25 50

Scale in Feet

FIGURE 3
SOIL SAMPLE LOCATIONS

MRP SITE 1, CARR POINT
NAVSTA NEWPORT, RHODE ISLAND

Path: W:\Govt\Projects\Navy CLEAN AECOM-EnSafe JV\Newport\GIS\Projects\Carr_Point\Site_1\RI\MXD\Appendix_B\Fig_3_Soil_Sample_Locations.mxd



RESOLUTION CONSULTANTS

Drawn: KNS

Approved:

Project #: 60250336

Map Location

Legend

- 2013/2014 Sediment Location
- 2009/2010 Sediment Location
- 2013/2014 Reference Sediment Location
- 2013/2014 Shellfish Location
- 2013/2014 Leptocheirus Toxicity Test
- Area of Rock/Consolidated Sediment
- Approximate High Water Line Estimated by Surveyor
- Approximate High Water Line Marked Via GPS June 2009
- Approximate Low Water Line

0 75 150 300
Scale in Feet

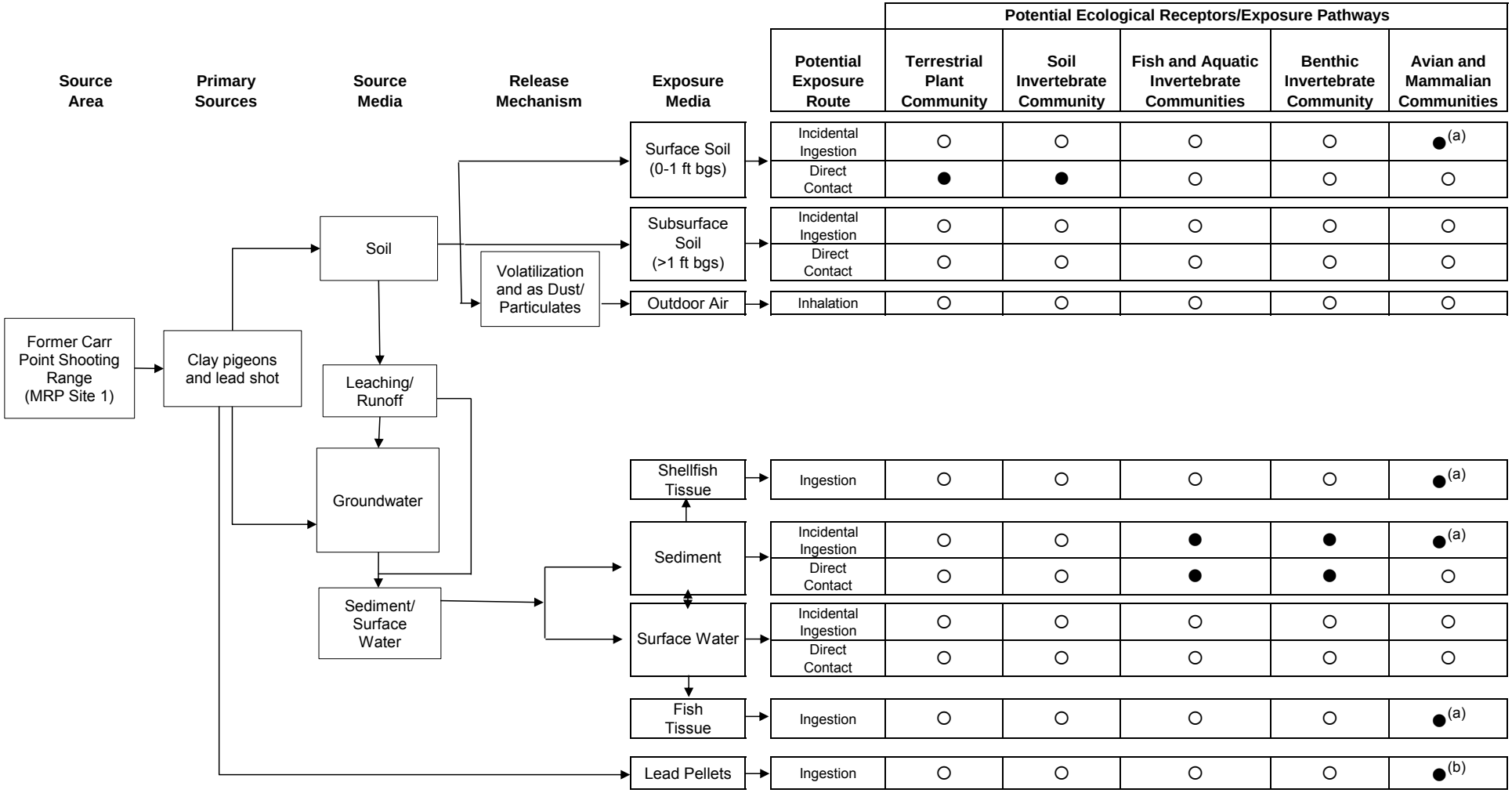
N

FIGURE 4
SEDIMENT SAMPLING LOCATIONS

MRP SITE 1, CARR POINT
NAVSTA NEWPORT, RHODE ISLAND

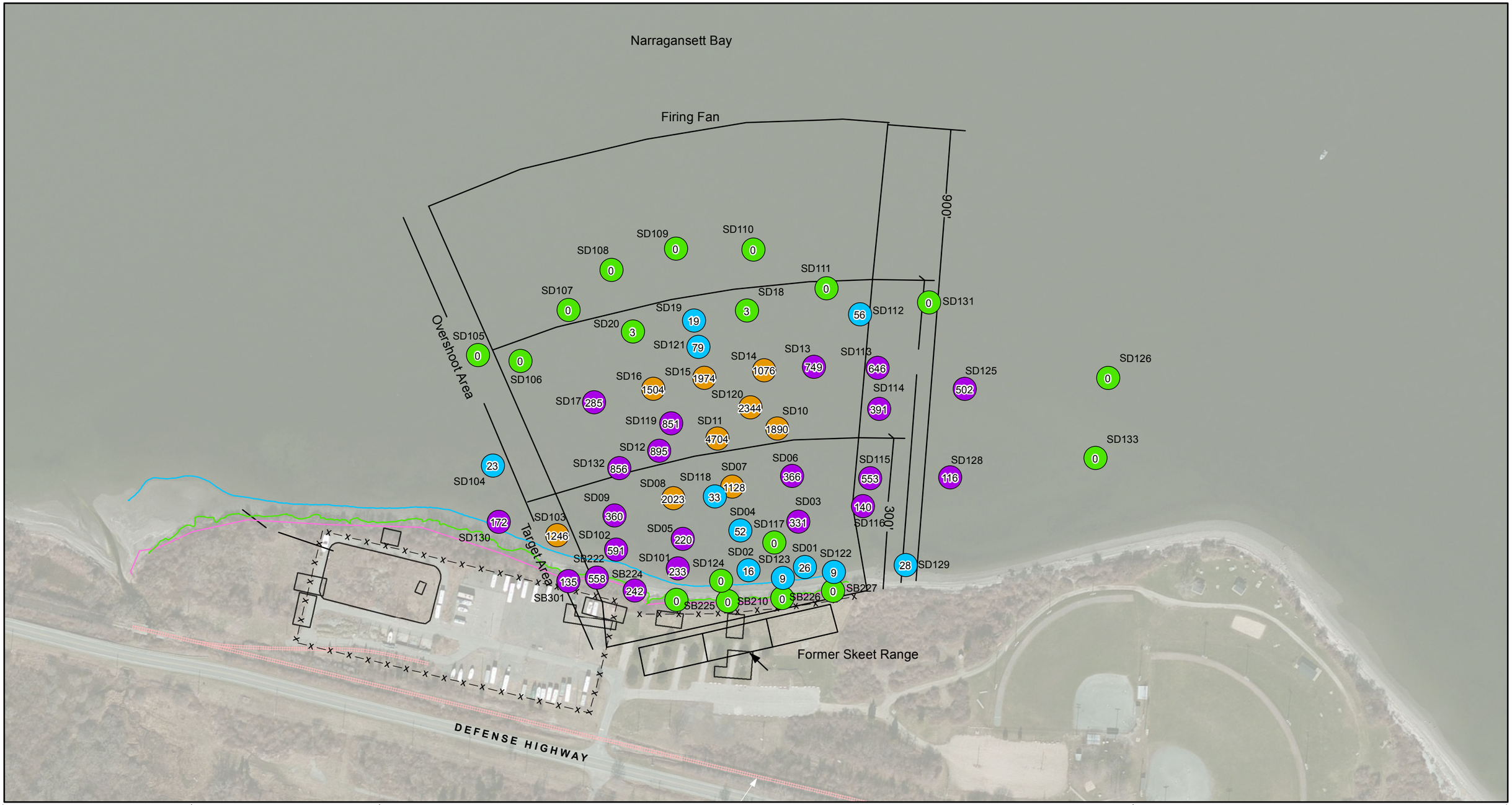
W:\Govt\Projects\Navy CLEAN AECOM-EnSafe JV\Newport\GIS\Projects\Carr Point\RI\Map\Main_Report\Figure_2_2_Sediment_Sample_Locations.mxd

FIGURE 5
ECOLOGICAL CONCEPTUAL SITE MODEL
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1



Notes:
● Potentially complete pathway.
○ Pathway considered to be incomplete or insignificant.
ft bgs - feet below ground surface.

(a) Bioaccumulation pathway also expected to be potentially complete.
(b) Ingestion of lead shot is a potential exposure pathway for birds exposed to sediment and along the slope leading from the upland to the beach.



Map Location

Legend

Pellet Count Per Square Foot

- 0 <7
- 50 7 - 100
- 500 101 - 1000
- 5000 >1000

- Approximate High Water Line Estimated by Surveyor
- Approximate High Water Line Marked Via GPS June 2009
- Approximate Low Water Line

N

0 75 150 300

Scale in Feet

RESOLUTION CONSULTANTS

Drawn: KNS

Approved:

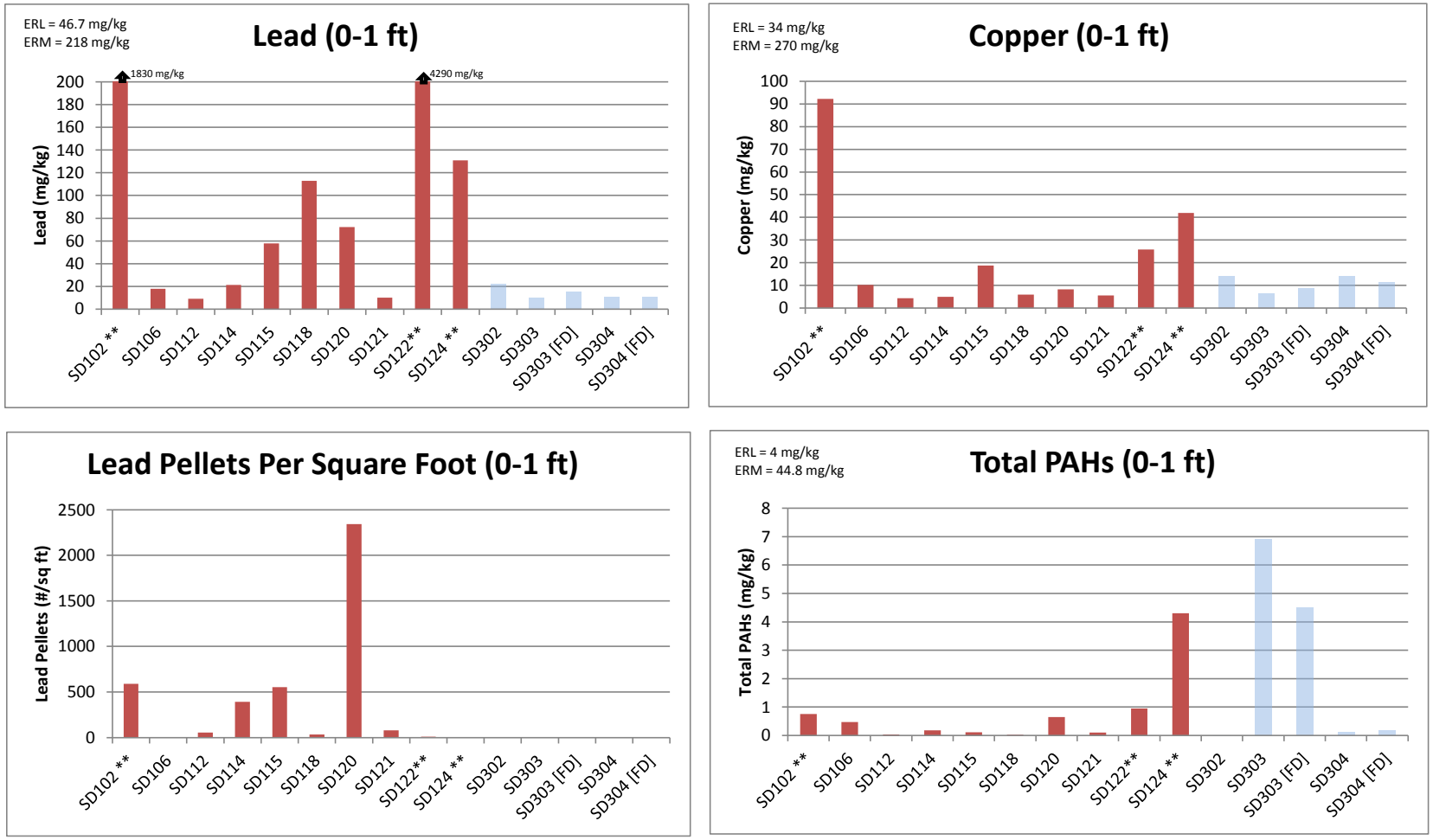
Project #: 60250336

FIGURE 6
PELLET COUNTS IN SOIL AND SEDIMENT

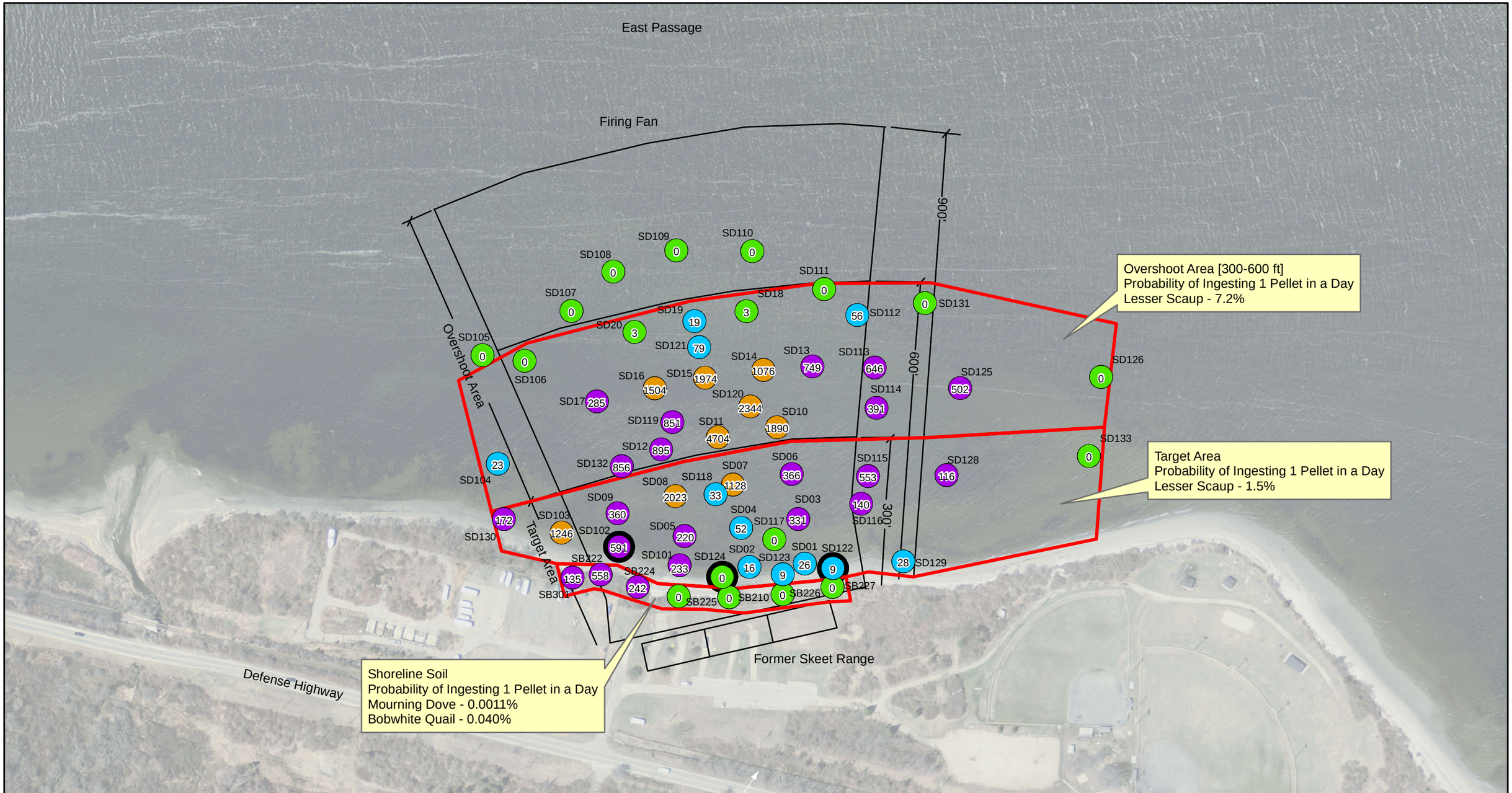
MRP SITE 1, CARR POINT
NAVSTA NEWPORT, RHODE ISLAND

W:\Govt\Projects\Navy CLEAN AECOM-EnSafe JV\Newport\GIS\Projects\Carr Point\RI\Map\Main_Report\Figure_4_7_Pellet_Counts_in_Soil_and_Sediment.mxd

FIGURE 7
LEAD, COPPER, PAH and LEAD PELLET RESULTS FOR SEDIMENT TOXICITY TESTING SAMPLES
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1



** Toxicity results for this sample were statistically different (α=0.05) from reference locations for multiple test endpoints. See Attachment K for details.
SD302, SD303, and SD304 are background/reference samples. All others are site samples.
ERL - Effects Range Low (Long, et al., 1995).
ERM - Effects Range Median (Long, et al., 1995).
FD - Field duplicate for analytical chemistry.



RESOLUTION CONSULTANTS

Drawn:	KS	05/01/2015
Approved:	NT	05/01/2015
Project #:	60250336	

Legend

Pellet Count Per Square Foot

- 0 <7
- 50 7 - 100
- 500 101 - 1000
- 5000 >1000

Sample Identified as Toxic Based on 28 Day Sediment Toxicity Test

N

0 100 200

Scale in Feet

FIGURE 8
POTENTIAL FOR ECOLOGICAL RISKS ALONG SHORELINE AND OFF-SHORE

MRP SITE 1, CARR POINT
NAVSTA NEWPORT, RHODE ISLAND

W:\Govt\Projects\Navy CLEAN AECOM-EnSafe JV\Newport\GIS\Projects\Carr_Point\Site_1\RI\MXD\ERA\Fig_8_Potential_for_Ecological_Risks_Along_Shoreline.mxd

ATTACHMENT A

ANALYTICAL DATA CONSIDERED IN THE ECOLOGICAL RISK ASSESSMENT

ATTACHMENT A TABLE 1
SUMMARY OF ANALYTICAL RESULTS - SURFACE
SOIL (0 - 1 FT)
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

	Location ID	CRP-SB201		CRP-SB202		CRP-SB203		CRP-SB204		CRP-SB205		CRP-SB206		CRP-SB208		CRP-SB209		CRP-SB210		CRP-SB211	
	Sample Date	12/9/2013		12/10/2013		12/10/2013		12/11/2013		12/11/2013		12/10/2013		12/9/2013		12/9/2013		12/6/2013		12/11/2013	
	Sample ID	OU09 SS201 0001		OU09 SS202 0001		OU09 SS203 0001		OU09 SB204 0001		OU09 SS205 0001		OU09 SS206 0001		OU09 SS208 0001		OU09 SS209 0001		OU09 SS210 0012		FDSS12111307	
	Sample Type	N		N		N		N		N		N		N		N		N		FD	
	Depth Interval	0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft	
Chemical	Unit	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
ENERGETICS																					
2,4-DINITROTOLUENE	mg/kg									< 0.049	U	< 0.047	U			< 0.043	U				
NITROGLYCERIN	mg/kg									< 0.39	U	< 0.38	U			< 0.34	U				
INORGANICS																					
ALUMINUM	mg/kg	11700		11900		7640		13800		9950		9800		12200		11900		6300			
ANTIMONY	mg/kg	0.18	J	0.99	J	0.05	J	0.22	J-	0.62	J-	0.54	J	0.79	J	10.8	J	0.70	J		
ARSENIC	mg/kg	7.5	J	8.5	J	7.2	J	22.5	J	13.3	J	8.9	J	13.1	J	10.8	J	10	J		
BARIUM	mg/kg	34.5		36.2		10.2		9.8		22.1		26.6		13.9		15.2		15.0	J-		
BERYLLIUM	mg/kg	0.45		0.39		0.24		0.22		0.56	J-	0.33		0.28		0.25		0.38	J-		
CADMIUM	mg/kg	0.07	J	0.35		0.03	J	0.11	J	0.20	J	0.16		0.12		0.14		0.11			
CALCIUM	mg/kg	344		1970	J+	851	J+	2540	J	1420	J	1420	J+	2120		2360		4500			
CHROMIUM VI	mg/kg									< 0.86	UJ									< 1.8	UJ
CHROMIUM, TOTAL	mg/kg	11.9	J	14.5	J	10.0	J	17.6	J-	13.2	J	11.2	J	18.3	J	18.1	J	12.8	J-		
COBALT	mg/kg	9.4	J	8.7	J	8.5	J	23.6		17.0	J-	9.1	J	19.4	J	13.3	J	15.0	J-		
COPPER	mg/kg	11.1		30.3		9.2		24.4	J+	256	J	22.0		18.6		32.8		25.3	J		
IRON	mg/kg	20800	J	23600	J	16700	J	44800		51200		25000	J	33500	J	31100	J	34400			
IRON, FERROUS	mg/kg									3.7											
LEAD	mg/kg	19.8	J	132	J	7.5	J	21.3	J+	39.3	J	170	J	259	J	153	J	99.2	J		
MAGNESIUM	mg/kg	1500	J	2720	J	2980	J	5160		2800		3100	J	4420	J	4430	J	1910			
MANGANESE	mg/kg	606	J	340	J	242	J	555		705		394	J	594	J	410	J	574			
MERCURY	mg/kg	0.06	J-	0.11		< 0.016	U	0.006	J	< 0.032	UJ	0.03	J	< 0.029	UJ	0.05	J-	0.08			
NICKEL	mg/kg	15.1	J	19.6	J	14.5	J	39.4	J-	30.3	J-	18.7	J	36.0	J	28.9	J	26.9	J-		
POTASSIUM	mg/kg	355	J	442	J	454	J	279	J+	311	J+	393	J	294	J	288	J	650	J-		
SELENIUM	mg/kg	0.66		0.46		0.18	J	< 0.39	U	0.62	J-	< 0.37	U	< 0.48	U	< 0.48	U	< 0.50	UJ		
SILVER	mg/kg	0.10	J	0.42	J	0.02	J	0.04	J	0.38		0.08	J	0.06	J	0.14	J	0.04	J		
SODIUM	mg/kg	< 92	U	< 80	U	< 54	U	< 78	U	< 48	U	< 74	U	< 96	U	< 95	U	< 143	UJ		
THALLIUM	mg/kg	0.11		0.08		0.03	J	0.02	J	0.07		0.06	J	0.03	J	0.05	J	0.06	J		
VANADIUM	mg/kg	22.5		26.6		12.6		16.4		21.8	J	18.3		18.1		20.5		17.3	J-		
ZINC	mg/kg	39.5		123	J+	33.6	J+	80.9	J-	75.2	J	64.8	J+	72.8		134		91.3			
POLYCHLORINATED BIPHENYLS (PCBs)																					
AROCLOR-1016	mg/kg																				
AROCLOR-1221	mg/kg																				
AROCLOR-1232	mg/kg																				
AROCLOR-1242	mg/kg																				
AROCLOR-1248	mg/kg																				
AROCLOR-1254	mg/kg																				
AROCLOR-1260	mg/kg																				
AROCLOR-1262	mg/kg																				
AROCLOR-1268	mg/kg																				
PCB, TOTAL	mg/kg																				
PESTICIDES																					
4,4-DDD	mg/kg																				
4,4-DDE	mg/kg																				
4,4-DDT	mg/kg																				
ALDRIN	mg/kg																				
ALPHA-BHC	mg/kg																				
ALPHA-CHLORDANE	mg/kg																				
BETA-BHC	mg/kg																				
DELTA-BHC	mg/kg																				
DIELDRIN	mg/kg																				
ENDOSULFAN I	mg/kg																				
ENDOSULFAN II	mg/kg																				
ENDOSULFAN SULFATE	mg/kg																				
ENDRIN	mg/kg																				
ENDRIN ALDEHYDE	mg/kg																				
ENDRIN KETONE	mg/kg																				
GAMMA-CHLORDANE	mg/kg																				
HEPTACHLOR	mg/kg																				
HEPTACHLOR EPOXIDE	mg/kg																				
LINDANE	mg/kg																				
METHOXYCHLOR	mg/kg																				
TOXAPHENE	mg/kg																				

ATTACHMENT A TABLE 1
SUMMARY OF ANALYTICAL RESULTS - SURFACE
SOIL (0 - 1 FT)
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

	Location ID	CRP-SB201		CRP-SB202		CRP-SB203		CRP-SB204		CRP-SB205		CRP-SB206		CRP-SB208		CRP-SB209		CRP-SB210		CRP-SB211	
	Sample Date	12/9/2013		12/10/2013		12/10/2013		12/11/2013		12/11/2013		12/10/2013		12/9/2013		12/9/2013		12/6/2013		12/11/2013	
	Sample ID	OU09 SS201 0001		OU09 SS202 0001		OU09 SS203 0001		OU09 SB204 0001		OU09 SS205 0001		OU09 SS206 0001		OU09 SS208 0001		OU09 SS209 0001		OU09 SS210 0012		FDSS12111307	
	Sample Type	N		N		N		N		N		N		N		N		N		FD	
	Depth Interval	0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft	
Chemical	Unit	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs)																					
1,1-BIPHENYL	mg/kg																				
1,2,4-TRICHLOROBENZENE	mg/kg																				
1,2-DICHLOROBENZENE	mg/kg																				
1,2-DIPHENYLHYDRAZINE	mg/kg																				
1,3-DICHLOROBENZENE	mg/kg																				
1,4-DICHLOROBENZENE	mg/kg																				
2,2'-OXYBIS(1-CHLOROPROPANE)	mg/kg																				
2,4,5-TRICHLOROPHENOL	mg/kg																				
2,4,6-TRICHLOROPHENOL	mg/kg																				
2,4-DICHLOROPHENOL	mg/kg																				
2,4-DIMETHYLPHENOL	mg/kg																				
2,4-DINITROPHENOL	mg/kg																				
2,4-DINITROTOLUENE	mg/kg																				
2,6-DICHLOROPHENOL	mg/kg																				
2,6-DINITROTOLUENE	mg/kg																				
2-CHLORONAPHTHALENE	mg/kg																				
2-CHLOROPHENOL	mg/kg																				
2-METHYLNAPHTHALENE	mg/kg																				
2-METHYLPHENOL	mg/kg																				
2-NITROANILINE	mg/kg																				
2-NITROPHENOL	mg/kg																				
3- AND 4-METHYLPHENOL	mg/kg																				
3,3-DICHLOROBENZIDINE	mg/kg																				
3-NITROANILINE	mg/kg																				
4,6-DINITRO-2-METHYLPHENOL	mg/kg																				
4-BROMOPHENYL-PHENYLETHER	mg/kg																				
4-CHLORO-3-METHYLPHENOL	mg/kg																				
4-CHLOROANILINE	mg/kg																				
4-CHLOROPHENYL-PHENYLETHER	mg/kg																				
4-NITROANILINE	mg/kg																				
4-NITROPHENOL	mg/kg																				
ACENAPHTHENE	mg/kg	0.0022	J	0.036		0.0087	J	0.0042	J	0.0049	J	0.021	J	0.015	J	3.9		0.059			
ACENAPHTHYLENE	mg/kg	< 0.012	U	0.01	J	0.0012	J	< 0.011	U	0.015	J	0.18		0.0035	J	< 0.011	U	< 0.012	U		
ANTHRACENE	mg/kg	0.0041	J	0.073		0.0091	J	0.0056	J	0.014	J	0.083		0.022	J	4.7		0.063			
BENZIDINE	mg/kg																				
BENZO[A]ANTHRACENE	mg/kg	< 0.025	U	0.58		0.055	J	0.042	J	0.18		0.77		0.21	J	20		0.53			
BENZO[A]PYRENE	mg/kg	0.025	J	0.71	J	0.04		0.05	J	0.18	J	0.94	J	0.21	J	22	J	0.67			
BENZO[B]FLUORANTHENE	mg/kg	0.031		0.75	J	0.036		0.072	J	0.29	J	0.96	J	0.27	J	17	J	0.6			
BENZO[G,H,I]PERYLENE	mg/kg	< 0.025	UJ	0.24	J	0.025	J	0.025	J	0.063	J	0.35	J	0.07	J	11	J	0.21	J		
BENZO[K]FLUORANTHENE	mg/kg	0.024	J	0.29	J	0.014	J	0.025	J	0.11		1.1	J	0.091		18	J	0.57			
BENZOIC ACID	mg/kg																				
BENZYL ALCOHOL	mg/kg																				
BIS(2-CHLOROETHOXY)METHANE	mg/kg																				
BIS(2-CHLOROETHYL)ETHER	mg/kg																				
BIS(2-ETHYLHEXYL)PHTHALATE	mg/kg																				
BUTYLBENZYLPHTHALATE	mg/kg																				
CAPROLACTAM	mg/kg																				
CARBAZOLE	mg/kg																				
CHRYSENE	mg/kg	0.024	J	0.75		0.14		0.059	J	0.26	J	1.4		0.3		27		0.8			
DIBENZ[A,H]ANTHRACENE	mg/kg	< 0.025	U	0.084	J	0.028		0.012	J	0.042		0.23	J	0.043		2.8	J	0.12			
DIBENZOFURAN	mg/kg																				
DIETHYLPHTHALATE	mg/kg																				
DIMETHYL PHTHALATE	mg/kg																				
DI-N-BUTYLPHTHALATE	mg/kg																				
DI-N-OCTYLPHTHALATE	mg/kg																				
FLUORANTHENE	mg/kg	0.029		0.82		0.027	J	0.068	J	0.34		1.4		0.27		20		0.52			
FLUORENE	mg/kg	< 0.012	U	0.025	J	0.0059	J	< 0.011	U	0.0080	J	0.05		0.011	J	2.2	J	0.029			
HEXACHLOROBENZENE	mg/kg																				
HEXACHLOROBUTADIENE	mg/kg																				
HEXACHLOROETHANE	mg/kg																				
HPAH, TOTAL	mg/kg	0.17		6.1		0.52		0.45		2.1		11		1.9		190		5			
INDENO[1,2,3-CD]PYRENE	mg/kg	< 0.025	U	0.36	J	0.02	J	0.032	J	0.12		0.61	J	0.12		12	J	0.22			
ISOPHORONE	mg/kg																				

ATTACHMENT A TABLE 1
SUMMARY OF ANALYTICAL RESULTS - SURFACE
SOIL (0 - 1 FT)
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

	Location ID	CRP-SB201		CRP-SB202		CRP-SB203		CRP-SB204		CRP-SB205		CRP-SB206		CRP-SB208		CRP-SB209		CRP-SB210		CRP-SB211	
	Sample Date	12/9/2013		12/10/2013		12/10/2013		12/11/2013		12/11/2013		12/10/2013		12/9/2013		12/9/2013		12/6/2013		12/11/2013	
	Sample ID	OU09 SS201 0001		OU09 SS202 0001		OU09 SS203 0001		OU09 SB204 0001		OU09 SS205 0001		OU09 SS206 0001		OU09 SS208 0001		OU09 SS209 0001		OU09 SS210 0012		FDSS12111307	
	Sample Type	N		N		N		N		N		N		N		N		N		FD	
	Depth Interval	0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft	
Chemical	Unit	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
LPAH, TOTAL	mg/kg	0.025		0.48		0.2		0.048		0.22		1.3		0.28		29		0.45			
NAPHTHALENE	mg/kg	< 0.012	U	0.0088	J	< 0.0096	U	< 0.011	U	0.0026	J	0.0086	J	0.0042	J	< 2.7	U	0.021	J		
NITROBENZENE	mg/kg																				
N-NITROSODIMETHYLAMINE	mg/kg																				
N-NITROSODINPROPYLAMINE	mg/kg																				
N-NITROSODIPHENYLAMINE	mg/kg																				
N-NITROSOPYRROLIDINE	mg/kg																				
PAH, TOTAL	mg/kg	0.19		6.6		0.72		0.5		2.3		12		2.2		210		5.5			
PENTACHLOROPHENOL	mg/kg																				
PHENANTHRENE	mg/kg	0.019	J	0.33		0.18		0.038	J	0.18		1		0.22		18		0.28			
PHENOL	mg/kg																				
PYRENE	mg/kg	0.035		1.5		0.13		0.067	J	0.53		2.8		0.32		36		0.77			
VOLATILE ORGANIC COMPOUNDS (VOCs)																					
1,1,1,2-TETRACHLOROETHANE	mg/kg																				
1,1,1-TRICHLOROETHANE	mg/kg																				
1,1,2,2-TETRACHLOROETHANE	mg/kg																				
1,1,2-TRICHLOROETHANE	mg/kg																				
1,1-DICHLOROETHANE	mg/kg																				
1,1-DICHLOROETHENE	mg/kg																				
1,1-DICHLOROPROPENE	mg/kg																				
1,2,3-TRICHLOROBENZENE	mg/kg																				
1,2,3-TRICHLOROPROPANE	mg/kg																				
1,2,4-TRICHLOROBENZENE	mg/kg																				
1,2,4-TRIMETHYLBENZENE	mg/kg																				
1,2-DIBROMO-3-CHLOROPROPANE	mg/kg																				
1,2-DIBROMOETHANE	mg/kg																				
1,2-DICHLOROBENZENE	mg/kg																				
1,2-DICHLOROETHANE	mg/kg																				
1,2-DICHLOROETHENE, TOTAL	mg/kg																				
1,2-DICHLOROPROPANE	mg/kg																				
1,3,5-TRIMETHYLBENZENE	mg/kg																				
1,3-DICHLOROBENZENE	mg/kg																				
1,3-DICHLOROPROPANE	mg/kg																				
1,4-DICHLOROBENZENE	mg/kg																				
2,2-DICHLOROPROPANE	mg/kg																				
2-BUTANONE	mg/kg																				
2-CHLOROTOLUENE	mg/kg																				
2-HEXANONE	mg/kg																				
4-CHLOROTOLUENE	mg/kg																				
4-ISOPROPYLTOLUENE	mg/kg																				
4-METHYL-2-PENTANONE	mg/kg																				
ACETONE	mg/kg																				
BENZENE	mg/kg																				
BROMOBENZENE	mg/kg																				
BROMOCHLOROMETHANE	mg/kg																				
BROMODICHLOROMETHANE	mg/kg																				
BROMOFORM	mg/kg																				
BROMOMETHANE	mg/kg																				
CARBON DISULFIDE	mg/kg																				
CARBON TETRACHLORIDE	mg/kg																				
CHLOROBENZENE	mg/kg																				
CHLOROETHANE	mg/kg																				
CHLOROFORM	mg/kg																				
CHLOROMETHANE	mg/kg																				
CIS-1,2-DICHLOROETHENE	mg/kg																				
CIS-1,3-DICHLOROPROPENE	mg/kg																				
DIBROMOCHLOROMETHANE	mg/kg																				
DIBROMOMETHANE	mg/kg																				
DICHLORODIFLUOROMETHANE	mg/kg																				
ETHYLBENZENE	mg/kg																				
HEXACHLOROBUTADIENE	mg/kg																				
ISOPROPYLBENZENE	mg/kg																				
M- AND P-XYLENE	mg/kg																				
METHYL CYCLOHEXANE	mg/kg																				

ATTACHMENT A TABLE 1
SUMMARY OF ANALYTICAL RESULTS - SURFACE
SOIL (0 - 1 FT)
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

	Location ID	CRP-SB201		CRP-SB202		CRP-SB203		CRP-SB204		CRP-SB205		CRP-SB206		CRP-SB208		CRP-SB209		CRP-SB210		CRP-SB211	
	Sample Date	12/9/2013		12/10/2013		12/10/2013		12/11/2013		12/11/2013		12/10/2013		12/9/2013		12/9/2013		12/6/2013		12/11/2013	
	Sample ID	OU09 SS201 0001		OU09 SS202 0001		OU09 SS203 0001		OU09 SB204 0001		OU09 SS205 0001		OU09 SS206 0001		OU09 SS208 0001		OU09 SS209 0001		OU09 SS210 0012		FDSS12111307	
	Sample Type	N		N		N		N		N		N		N		N		N		FD	
	Depth Interval	0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft	
Chemical	Unit	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
METHYL TERT-BUTYL ETHER	mg/kg																				
METHYLENE CHLORIDE	mg/kg																				
N-BUTYLBENZENE	mg/kg																				
O-XYLENE	mg/kg																				
PROPYLBENZENE	mg/kg																				
SEC-BUTYLBENZENE	mg/kg																				
STYRENE	mg/kg																				
TERT-BUTANOL	mg/kg																				
TERT-BUTYLBENZENE	mg/kg																				
TETRACHLOROETHENE	mg/kg																				
TOLUENE	mg/kg																				
TRANS-1,2-DICHLOROETHENE	mg/kg																				
TRANS-1,3-DICHLOROPROPENE	mg/kg																				
TRICHLOROETHENE	mg/kg																				
TRICHLOROFLUOROMETHANE	mg/kg																				
VINYL CHLORIDE	mg/kg																				
XYLENES, TOTAL	mg/kg																				
OTHER																					
PH	pH																				
TOTAL ORGANIC CARBON	mg/kg									28000											
GRAIN SIZE																					
PERCENT FINES	%									28.2											
PERCENT GRAVEL	%									17.4											
PERCENT SAND	%									54.4											
PERCENT SAND, COARSE	%									12.3											
PERCENT SAND, FINE	%									22.5											
PERCENT SAND, MEDIUM	%									19.6											
SIEVE 1 INCH (25.4-MM)	%									0											
SIEVE 1-1/2 INCH (37.5-MM)	%									0											
SIEVE 2 INCH (50-MM)	%									0											
SIEVE 3 INCH (75-MM)	%									0											
SIEVE 3/4 INCH (19-MM)	%									0											
SIEVE 3/8 INCH (9.5-MM)	%									9.1											
SIEVE NO. 004 (4.75-MM)	%									8.3											
SIEVE NO. 010 (2-MM)	%									12.3											
SIEVE NO. 020 (850-UM)	%									10.3											
SIEVE NO. 040 (425-UM)	%									9.3											
SIEVE NO. 060 (250-UM)	%									8.9											
SIEVE NO. 080 (180-UM)	%									4.6											
SIEVE NO. 100 (150-UM)	%									2.4											
SIEVE NO. 200 (75-UM)	%									6.6											

Notes:
U or < - Non-detect at laboratory detection limit.
J - The compound was positively identified; however, the associated numerical value is an estimated concentration only (+ and - indicate bias).
R - Rejected result.
Sample Type - N = normal sample, FD = duplicate sample.
mg/kg - milligram per kilogram

ATTACHMENT A TABLE 1
SUMMARY OF ANALYTICAL RESULTS - SURFACE
SOIL (0 - 1 FT)
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

	Location ID	CRP-SB211		CRP-SB211		CRP-SB211		CRP-SB211		CRP-SB212		CRP-SB213		CRP-SB217		CRP-SB218		CRP-SB218		CRP-SB219	
	Sample Date	12/11/2013		12/11/2013		12/11/2013		12/11/2013		12/9/2013		12/9/2013		12/10/2013		12/11/2013		12/11/2013		12/11/2013	
	Sample ID	OU09 SS211 0001		FDSS12111311		FDSS12111310		FDSS12111308		OU09 SS212 0001		OU09 SS213 0001		OU09 SS217 0001		FDSB12111305		OU09 SS218 0001		OU09 SS219 0001	
	Sample Type	N		FD		FD		FD		N		N		N		FD		N		N	
	Depth Interval	0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft	
Chemical	Unit	Result	Qualifier			Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
ENERGETICS																					
2,4-DINITROTOLUENE	mg/kg	< 0.05	U							< 0.05	U	< 0.049	U	< 0.05	U	< 0.049	U	< 0.048	U	< 0.049	U
NITROGLYCERIN	mg/kg	0.44	J							0.27	J	0.15	J	4		< 0.39	U	< 0.38	U	< 0.39	U
INORGANICS																					
ALUMINUM	mg/kg	11800								10600		9450		10400				9610		11900	
ANTIMONY	mg/kg	0.62	J							1.5	J	0.81	J	0.36	J			0.34	J-	0.43	J-
ARSENIC	mg/kg	12.7	J							13.5	J	8.5	J	9.2	J			9.7	J	13.3	J
BARIUM	mg/kg	23.6								21.4		46.9		28.0				19.7		18.9	
BERYLLIUM	mg/kg	0.35								0.26		0.40		0.35				0.27	J-	0.27	J-
CADMIUM	mg/kg	0.22								0.32		0.21		0.16				0.16	J	0.18	J
CALCIUM	mg/kg	3320								29600		1790		1370	J+			2910	J	4520	J
CHROMIUM VI	mg/kg	< 1.5	UJ																		
CHROMIUM, TOTAL	mg/kg	17.1	J							15.6	J	12.8	J	13.0	J			12.8	J	15.6	J
COBALT	mg/kg	13.7	J							9.7	J	10.1	J	10.4	J			10.7	J-	13.9	J-
COPPER	mg/kg	31.0								26.4		21.4		18.1				16.9	J	42.6	J
IRON	mg/kg	31400	J							30400	J	50000	J	26500	J			24200		88500	
IRON, FERROUS	mg/kg	0.88																			
LEAD	mg/kg	88.6	J							99.5	J	114	J	133	J			114	J	63.3	J
MAGNESIUM	mg/kg	4350	J							5810	J	2040	J	2870	J			3340		10100	
MANGANESE	mg/kg	438	J							305	J	627	J	473	J			378		462	
MERCURY	mg/kg	0.04	J-							0.21	J-	0.07	J-	0.05				< 0.032	UJ	0.02	J
NICKEL	mg/kg	28.3	J							21.5	J	17.3	J	20.2	J			20.0	J-	27.5	J-
POTASSIUM	mg/kg	406	J							390	J	502	J	484	J			379	J+	296	J+
SELENIUM	mg/kg	< 0.54	U							0.43		< 0.56	U	0.41				< 0.42	UJ	< 0.40	UJ
SILVER	mg/kg	0.23	J							0.90	J	0.23	J	0.06	J			0.06	J	0.09	
SODIUM	mg/kg	< 110	U							< 84	U	< 110	U	< 76	U			< 84	U	< 81	U
THALLIUM	mg/kg	0.05	J							0.15		0.08	J	0.08				0.04	J	0.04	J
VANADIUM	mg/kg	21.2								19.4		23.6		19.7				19.4	J	21.2	J
ZINC	mg/kg	159								186		84.7		72.4	J+			67.2	J	82.6	J
POLYCHLORINATED BIPHENYLS (PCBs)																					
AROCLOR-1016	mg/kg																				
AROCLOR-1221	mg/kg																				
AROCLOR-1232	mg/kg																				
AROCLOR-1242	mg/kg																				
AROCLOR-1248	mg/kg																				
AROCLOR-1254	mg/kg																				
AROCLOR-1260	mg/kg																				
AROCLOR-1262	mg/kg																				
AROCLOR-1268	mg/kg																				
PCB, TOTAL	mg/kg																				
PESTICIDES																					
4,4-DDD	mg/kg																				
4,4-DDE	mg/kg																				
4,4-DDT	mg/kg																				
ALDRIN	mg/kg																				
ALPHA-BHC	mg/kg																				
ALPHA-CHLORDANE	mg/kg																				
BETA-BHC	mg/kg																				
DELTA-BHC	mg/kg																				
DIELDRIN	mg/kg																				
ENDOSULFAN I	mg/kg																				
ENDOSULFAN II	mg/kg																				
ENDOSULFAN SULFATE	mg/kg																				
ENDRIN	mg/kg																				
ENDRIN ALDEHYDE	mg/kg																				
ENDRIN KETONE	mg/kg																				
GAMMA-CHLORDANE	mg/kg																				
HEPTACHLOR	mg/kg																				
HEPTACHLOR EPOXIDE	mg/kg																				
LINDANE	mg/kg																				
METHOXYCHLOR	mg/kg																				
TOXAPHENE	mg/kg																				

ATTACHMENT A TABLE 1
SUMMARY OF ANALYTICAL RESULTS - SURFACE
SOIL (0 - 1 FT)
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

	Location ID	CRP-SB211		CRP-SB211		CRP-SB211		CRP-SB211		CRP-SB212		CRP-SB213		CRP-SB217		CRP-SB218		CRP-SB218		CRP-SB219	
	Sample Date	12/11/2013		12/11/2013		12/11/2013		12/11/2013		12/9/2013		12/9/2013		12/10/2013		12/11/2013		12/11/2013		12/11/2013	
	Sample ID	OU09 SS211 0001		FDSS12111311		FDSS12111310		FDSS12111308		OU09 SS212 0001		OU09 SS213 0001		OU09 SS217 0001		FDSB12111305		OU09 SS218 0001		OU09 SS219 0001	
	Sample Type	N		FD		FD		FD		N		N		N		FD		N		N	
	Depth Interval	0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft	
Chemical	Unit	Result	Qualifier			Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs)																					
1,1-BIPHENYL	mg/kg																				
1,2,4-TRICHLOROBENZENE	mg/kg																				
1,2-DICHLOROBENZENE	mg/kg																				
1,2-DIPHENYLHYDRAZINE	mg/kg																				
1,3-DICHLOROBENZENE	mg/kg																				
1,4-DICHLOROBENZENE	mg/kg																				
2,2'-OXYBIS(1-CHLOROPROPANE)	mg/kg																				
2,4,5-TRICHLOROPHENOL	mg/kg																				
2,4,6-TRICHLOROPHENOL	mg/kg																				
2,4-DICHLOROPHENOL	mg/kg																				
2,4-DIMETHYLPHENOL	mg/kg																				
2,4-DINITROPHENOL	mg/kg																				
2,4-DINITROTOLUENE	mg/kg																				
2,6-DICHLOROPHENOL	mg/kg																				
2,6-DINITROTOLUENE	mg/kg																				
2-CHLORONAPHTHALENE	mg/kg																				
2-CHLOROPHENOL	mg/kg																				
2-METHYLNAPHTHALENE	mg/kg																				
2-METHYLPHENOL	mg/kg																				
2-NITROANILINE	mg/kg																				
2-NITROPHENOL	mg/kg																				
3- AND 4-METHYLPHENOL	mg/kg																				
3,3-DICHLOROBENZIDINE	mg/kg																				
3-NITROANILINE	mg/kg																				
4,6-DINITRO-2-METHYLPHENOL	mg/kg																				
4-BROMOPHENYL-PHENYLETHER	mg/kg																				
4-CHLORO-3-METHYLPHENOL	mg/kg																				
4-CHLOROANILINE	mg/kg																				
4-CHLOROPHENYL-PHENYLETHER	mg/kg																				
4-NITROANILINE	mg/kg																				
4-NITROPHENOL	mg/kg																				
ACENAPHTHENE	mg/kg	2.8								2.6		0.067		0.024				0.011	J	0.0096	J
ACENAPHTHYLENE	mg/kg	< 0.011	U							< 0.056	U	< 0.014	U	0.086				0.03		0.0018	J
ANTHRACENE	mg/kg	3.8								3.4		0.09		0.092				0.026		0.017	J
BENZIDINE	mg/kg																				
BENZO[A]ANTHRACENE	mg/kg	16								14		0.62	J	1.2				0.29		0.12	
BENZO[A]PYRENE	mg/kg	19	J							17		0.8	J	1.1	J			0.26	J	0.14	
BENZO[B]FLUORANTHENE	mg/kg	18	J							15		0.86	J	1	J			0.47	J	0.2	
BENZO[G,H,I]PERYLENE	mg/kg	7.9	J							12		0.29	J	0.25	J			0.12	J	0.067	J
BENZO[K]FLUORANTHENE	mg/kg	16	J							11		0.83	J	0.31	J			0.14		0.08	J
BENZOIC ACID	mg/kg																				
BENZYL ALCOHOL	mg/kg																				
BIS(2-CHLOROETHOXY)METHANE	mg/kg																				
BIS(2-CHLOROETHYL)ETHER	mg/kg																				
BIS(2-ETHYLHEXYL)PHTHALATE	mg/kg																				
BUTYLBENZYLPHTHALATE	mg/kg																				
CAPROLACTAM	mg/kg																				
CARBAZOLE	mg/kg																				
CHRYSENE	mg/kg	22								19		1	J	1.6				0.57		0.17	
DIBENZ[A,H]ANTHRACENE	mg/kg	0.35								5.5		0.13	J	0.21	J			0.08		0.034	
DIBENZOFURAN	mg/kg																				
DIETHYLPHTHALATE	mg/kg																				
DIMETHYL PHTHALATE	mg/kg																				
DI-N-BUTYLPHTHALATE	mg/kg																				
DI-N-OCTYLPHTHALATE	mg/kg																				
FLUORANTHENE	mg/kg	18								17		0.62	J	1.4				0.58		0.19	
FLUORENE	mg/kg	1.7								1		0.039		0.035				0.017	J	0.0059	J
HEXACHLOROBENZENE	mg/kg																				
HEXACHLOROBUTADIENE	mg/kg																				
HEXACHLOROETHANE	mg/kg																				
HPAH, TOTAL	mg/kg	150								150		7		11				3.7		1.3	
INDENO[1,2,3-CD]PYRENE	mg/kg	10	J							13		0.27	J	0.34	J			0.19		0.09	J
ISOPHORONE	mg/kg																				

ATTACHMENT A TABLE 1
SUMMARY OF ANALYTICAL RESULTS - SURFACE
SOIL (0 - 1 FT)
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

	Location ID	CRP-SB211		CRP-SB211		CRP-SB211		CRP-SB211		CRP-SB212		CRP-SB213		CRP-SB217		CRP-SB218		CRP-SB218		CRP-SB219	
	Sample Date	12/11/2013		12/11/2013		12/11/2013		12/11/2013		12/9/2013		12/9/2013		12/10/2013		12/11/2013		12/11/2013		12/11/2013	
	Sample ID	OU09 SS211 0001		FDSS12111311		FDSS12111310		FDSS12111308		OU09 SS212 0001		OU09 SS213 0001		OU09 SS217 0001		FDSB12111305		OU09 SS218 0001		OU09 SS219 0001	
	Sample Type	N		FD		FD		FD		N		N		N		FD		N		N	
	Depth Interval	0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft	
Chemical	Unit	Result	Qualifier			Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
LPAH, TOTAL	mg/kg	24								22		0.75		1.2				0.44		0.13	
NAPHTHALENE	mg/kg	< 2.8	U							0.53		0.019		0.0097	J			0.0049	J	< 0.01	U
NITROBENZENE	mg/kg																				
N-NITROSODIMETHYLAMINE	mg/kg																				
N-NITROSODINPROPYLAMINE	mg/kg																				
N-NITROSODIPHENYLAMINE	mg/kg																				
N-NITROSOPYRROLIDINE	mg/kg																				
PAH, TOTAL	mg/kg	180								170		7.8		12				4.1		1.4	
PENTACHLOROPHENOL	mg/kg																				
PHENANTHRENE	mg/kg	16								14		0.53	J	0.99				0.35		0.093	
PHENOL	mg/kg																				
PYRENE	mg/kg	26								26		1.6	J	3.3				0.96		0.16	
VOLATILE ORGANIC COMPOUNDS (VOCs)																					
1,1,1,2-TETRACHLOROETHANE	mg/kg																				
1,1,1-TRICHLOROETHANE	mg/kg																				
1,1,2,2-TETRACHLOROETHANE	mg/kg																				
1,1,2-TRICHLOROETHANE	mg/kg																				
1,1-DICHLOROETHANE	mg/kg																				
1,1-DICHLOROETHENE	mg/kg																				
1,1-DICHLOROPROPENE	mg/kg																				
1,2,3-TRICHLOROBENZENE	mg/kg																				
1,2,3-TRICHLOROPROPANE	mg/kg																				
1,2,4-TRICHLOROBENZENE	mg/kg																				
1,2,4-TRIMETHYLBENZENE	mg/kg																				
1,2-DIBROMO-3-CHLOROPROPANE	mg/kg																				
1,2-DIBROMOETHANE	mg/kg																				
1,2-DICHLOROBENZENE	mg/kg																				
1,2-DICHLOROETHANE	mg/kg																				
1,2-DICHLOROETHENE, TOTAL	mg/kg																				
1,2-DICHLOROPROPANE	mg/kg																				
1,3,5-TRIMETHYLBENZENE	mg/kg																				
1,3-DICHLOROBENZENE	mg/kg																				
1,3-DICHLOROPROPANE	mg/kg																				
1,4-DICHLOROBENZENE	mg/kg																				
2,2-DICHLOROPROPANE	mg/kg																				
2-BUTANONE	mg/kg																				
2-CHLOROTOLUENE	mg/kg																				
2-HEXANONE	mg/kg																				
4-CHLOROTOLUENE	mg/kg																				
4-ISOPROPYLTOLUENE	mg/kg																				
4-METHYL-2-PENTANONE	mg/kg																				
ACETONE	mg/kg																				
BENZENE	mg/kg																				
BROMOBENZENE	mg/kg																				
BROMOCHLOROMETHANE	mg/kg																				
BROMODICHLOROMETHANE	mg/kg																				
BROMOFORM	mg/kg																				
BROMOMETHANE	mg/kg																				
CARBON DISULFIDE	mg/kg																				
CARBON TETRACHLORIDE	mg/kg																				
CHLOROBENZENE	mg/kg																				
CHLOROETHANE	mg/kg																				
CHLOROFORM	mg/kg																				
CHLOROMETHANE	mg/kg																				
CIS-1,2-DICHLOROETHENE	mg/kg																				
CIS-1,3-DICHLOROPROPENE	mg/kg																				
DIBROMOCHLOROMETHANE	mg/kg																				
DIBROMOMETHANE	mg/kg																				
DICHLORODIFLUOROMETHANE	mg/kg																				
ETHYLBENZENE	mg/kg																				
HEXACHLOROBUTADIENE	mg/kg																				
ISOPROPYLBENZENE	mg/kg																				
M- AND P-XYLENE	mg/kg																				
METHYL CYCLOHEXANE	mg/kg																				

ATTACHMENT A TABLE 1
SUMMARY OF ANALYTICAL RESULTS - SURFACE
SOIL (0 - 1 FT)
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

	Location ID	CRP-SB211		CRP-SB211		CRP-SB211		CRP-SB211		CRP-SB212		CRP-SB213		CRP-SB217		CRP-SB218		CRP-SB218		CRP-SB219	
	Sample Date	12/11/2013		12/11/2013		12/11/2013		12/11/2013		12/9/2013		12/9/2013		12/10/2013		12/11/2013		12/11/2013		12/11/2013	
	Sample ID	OU09 SS211 0001		FDSS12111311		FDSS12111310		FDSS12111308		OU09 SS212 0001		OU09 SS213 0001		OU09 SS217 0001		FDSB12111305		OU09 SS218 0001		OU09 SS219 0001	
	Sample Type	N		FD		FD		FD		N		N		N		FD		N		N	
	Depth Interval	0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft	
Chemical	Unit	Result	Qualifier			Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
METHYL TERT-BUTYL ETHER	mg/kg																				
METHYLENE CHLORIDE	mg/kg																				
N-BUTYLBENZENE	mg/kg																				
O-XYLENE	mg/kg																				
PROPYLBENZENE	mg/kg																				
SEC-BUTYLBENZENE	mg/kg																				
STYRENE	mg/kg																				
TERT-BUTANOL	mg/kg																				
TERT-BUTYLBENZENE	mg/kg																				
TETRACHLOROETHENE	mg/kg																				
TOLUENE	mg/kg																				
TRANS-1,2-DICHLOROETHENE	mg/kg																				
TRANS-1,3-DICHLOROPROPENE	mg/kg																				
TRICHLOROETHENE	mg/kg																				
TRICHLOROFLUOROMETHANE	mg/kg																				
VINYL CHLORIDE	mg/kg																				
XYLENES, TOTAL	mg/kg																				
OTHER																					
PH	pH																				
TOTAL ORGANIC CARBON	mg/kg	21000 26000		33000																	
GRAIN SIZE																					
PERCENT FINES	%	30.1				29.4															
PERCENT GRAVEL	%	19.5				29.7															
PERCENT SAND	%	50.4				40.9															
PERCENT SAND, COARSE	%	15.2				11.2															
PERCENT SAND, FINE	%	17.0				15.4															
PERCENT SAND, MEDIUM	%	18.2				14.3															
SIEVE 1 INCH (25.4-MM)	%	0				0															
SIEVE 1-1/2 INCH (37.5-MM)	%	0				0															
SIEVE 2 INCH (50-MM)	%	0				0															
SIEVE 3 INCH (75-MM)	%	0				0															
SIEVE 3/4 INCH (19-MM)	%	0				0															
SIEVE 3/8 INCH (9.5-MM)	%	7.0				17.5															
SIEVE NO. 004 (4.75-MM)	%	12.5				12.2															
SIEVE NO. 010 (2-MM)	%	15.2				11.2															
SIEVE NO. 020 (850-UM)	%	11.1				7.7															
SIEVE NO. 040 (425-UM)	%	7.1				6.6															
SIEVE NO. 060 (250-UM)	%	6.0				5.7															
SIEVE NO. 080 (180-UM)	%	3.1				3.0															
SIEVE NO. 100 (150-UM)	%	2.1				1.7															
SIEVE NO. 200 (75-UM)	%	5.8				5.0															

Notes:
U or < - Non-detect at laboratory detection limit.
J - The compound was positively identified; however, the associated numerical value is an estimated concentration only (+ and - indicate bias).
R - Rejected result.
Sample Type - N = normal sample, FD = duplicate sample.
mg/kg - milligram per kilogram

ATTACHMENT A TABLE 1
SUMMARY OF ANALYTICAL RESULTS - SURFACE
SOIL (0 - 1 FT)
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

	Location ID	CRP-SB220		CRP-SB220		CRP-SB222		CRP-SB223		CRP-SB224		CRP-SB224		CRP-SB225		CRP-SB226		CRP-SB227		CRP-SB228	
	Sample Date	12/11/2013		12/11/2013		12/12/2013		12/12/2013		12/6/2013		12/6/2013		12/6/2013		12/5/2013		12/5/2013		12/9/2013	
	Sample ID	OU09 SB220 0001		FDSS12111312		OU09 SB222 0001		OU09 SB223 0001		FDSS12061301		OU09 SS224 0001		OU09 SS225 0001		OU09 SS226 0001		OU09 SS227 0001		OU09 SS228 0001	
	Sample Type	N		FD		N		N		FD		N		N		N		N		N	
	Depth Interval	0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft	
Chemical	Unit	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
ENERGETICS																					
2,4-DINITROTOLUENE	mg/kg	< 0.049	U																	< 0.05	U
NITROGLYCERIN	mg/kg	0.55	J																	0.31	J
INORGANICS																					
ALUMINUM	mg/kg	8700		9780		8640		7450		5230		6080		5010		3380		4190			
ANTIMONY	mg/kg	0.32	J-	0.33	J-	4.1	J-	6.5	J-	189	J	2.4	J	0.63	J	0.33	J	0.26	J		
ARSENIC	mg/kg	19.3	J	23.6	J	15.9	J	5.9	J	48.9	J	8.3	J	7.6	J	3.9	J	5.2	J		
BARIUM	mg/kg	22.8		23.5		12.5		49.6		9.5	J-	13.6	J-	8.5	J-	6.7	J-	7.4	J-		
BERYLLIUM	mg/kg	0.39	J-	0.40	J-	0.32	J-	0.35	J-	0.24	J-	0.27	J-	0.24	J-	0.23	J-	0.36	J-		
CADMIUM	mg/kg	0.15	J	0.17	J	0.19	J	0.84	JJ	< 0.14	U	< 0.12	U	< 0.13	U	< 0.084	U	< 0.076	U		
CALCIUM	mg/kg	2330	J	1980	J	1350	J	2280	J	7700		4880		10000		342		8130			
CHROMIUM VI	mg/kg																				
CHROMIUM, TOTAL	mg/kg	11.6	J	12.0	J	12.4	J	30.1	J	18.0	J-	12.4	J-	12.7	J-	9.0	J-	8.7	J-		
COBALT	mg/kg	10.3	J-	11.5	J-	21.2	J-	10.8	J-	12.3	J-	11.2	J-	9.3	J-	6.6	J-	7.5	J-		
COPPER	mg/kg	17.4	J	20.4	J	30.8	J	22.8	J	159	J	58.5	J	51.1	J	9.9	J	21.6	J		
IRON	mg/kg	22200		25700		35500		23500		39600		34200		31700		21500		28800			
IRON, FERROUS	mg/kg																				
LEAD	mg/kg	43.4	J	51.0	J	496	J	1830	J	10900	J	417	J	177	J	8.2	J	32.3	J		
MAGNESIUM	mg/kg	2230	J	2540	J	3660	J	7180	J	2960		2840		2610		1250		1790			
MANGANESE	mg/kg	387		448		929		518		570		592		373		249		273			
MERCURY	mg/kg	0.03	J	0.04	J	< 0.012	UJ	0.19	J	0.07		0.07		0.04		0.05		0.03		0.04	J-
NICKEL	mg/kg	20.5	J-	21.4	J-	33.7	J-	56.6	J-	27.2	J-	26.1	J-	24.9	J-	14.0	J-	16.9	J-		
POTASSIUM	mg/kg	343	J+	372	J+	494	J+	459	J+	340	J-	376	J-	379	J-	258	J-	302	J-		
SELENIUM	mg/kg	0.37	J-	0.39	J-	0.30	J-	< 0.43	UJ	< 0.40	UJ	< 0.42	UJ	< 0.41	UJ	< 0.42	UJ	< 0.38	UJ		
SILVER	mg/kg	0.09		0.1		0.04	J	0.10		0.62	J	0.04	J	0.03	J	0.02	J	0.03	J		
SODIUM	mg/kg	< 64	U	< 71	U	625		< 86.2	U	612	J-	585	J-	1860	J-	316	J-	598	J-		
THALLIUM	mg/kg	0.06	J	0.06	J	0.09		0.05	J	0.05	J	0.03	J	0.02	J	0.02	J	0.02	J		
VANADIUM	mg/kg	16.4	J	17.7	J	13.4	J	19.7	J	15.3	J-	15.1	J-	15.2	J-	12.0	J-	15.6	J-		
ZINC	mg/kg	86.5	J	90.4	J	71.3	J	433	J	153		101		116		54.7		81.0			
POLYCHLORINATED BIPHENYLS (PCBs)																					
AROCLOR-1016	mg/kg							< 1.9	U												
AROCLOR-1221	mg/kg							< 1.9	U												
AROCLOR-1232	mg/kg							< 2.2	U												
AROCLOR-1242	mg/kg							< 1.9	U												
AROCLOR-1248	mg/kg							< 1.9	U												
AROCLOR-1254	mg/kg							< 1.9	U												
AROCLOR-1260	mg/kg							270	J												
AROCLOR-1262	mg/kg							< 1.9	U												
AROCLOR-1268	mg/kg							< 1.9	U												
PCB, TOTAL	mg/kg							270													
PESTICIDES																					
4,4-DDD	mg/kg							< 0.037	U												
4,4-DDE	mg/kg							< 0.037	U												
4,4-DDT	mg/kg							19	J												
ALDRIN	mg/kg							< 0.019	U												
ALPHA-BHC	mg/kg							< 0.019	U												
ALPHA-CHLORDANE	mg/kg							< 0.019	U												
BETA-BHC	mg/kg							< 0.019	U												
DELTA-BHC	mg/kg							< 0.019	U												
DIELDRIN	mg/kg							< 0.037	U												
ENDOSULFAN I	mg/kg							< 0.019	U												
ENDOSULFAN II	mg/kg							< 0.037	U												
ENDOSULFAN SULFATE	mg/kg							12	J												
ENDRIN	mg/kg							< 0.037	U												
ENDRIN ALDEHYDE	mg/kg							< 0.037	U												
ENDRIN KETONE	mg/kg							< 0.037	U												
GAMMA-CHLORDANE	mg/kg							< 0.019	U												
HEPTACHLOR	mg/kg							< 0.019	U												
HEPTACHLOR EPOXIDE	mg/kg							< 0.019	U												
LINDANE	mg/kg							< 0.019	U												
METHOXYCHLOR	mg/kg							< 0.19	U												
TOXAPHENE	mg/kg							< 0.37	UJ												

ATTACHMENT A TABLE 1
SUMMARY OF ANALYTICAL RESULTS - SURFACE
SOIL (0 - 1 FT)
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

	Location ID	CRP-SB220		CRP-SB220		CRP-SB222		CRP-SB223		CRP-SB224		CRP-SB224		CRP-SB225		CRP-SB226		CRP-SB227		CRP-SB228	
	Sample Date	12/11/2013		12/11/2013		12/12/2013		12/12/2013		12/6/2013		12/6/2013		12/6/2013		12/5/2013		12/5/2013		12/9/2013	
	Sample ID	OU09 SB220 0001		FDSS12111312		OU09 SB222 0001		OU09 SB223 0001		FDSS12061301		OU09 SS224 0001		OU09 SS225 0001		OU09 SS226 0001		OU09 SS227 0001		OU09 SS228 0001	
	Sample Type	N		FD		N		N		FD		N		N		N		N		N	
	Depth Interval	0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft	
Chemical	Unit	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs)																					
1,1-BIPHENYL	mg/kg							< 0.28	U												
1,2,4-TRICHLOROBENZENE	mg/kg							< 0.28	U												
1,2-DICHLOROBENZENE	mg/kg							< 0.28	U												
1,2-DIPHENYLHYDRAZINE	mg/kg							< 0.56	U												
1,3-DICHLOROBENZENE	mg/kg							< 0.28	U												
1,4-DICHLOROBENZENE	mg/kg							< 0.28	U												
2,2'-OXYBIS(1-CHLOROPROPANE)	mg/kg							< 0.28	U												
2,4,5-TRICHLOROPHENOL	mg/kg							< 0.7	U												
2,4,6-TRICHLOROPHENOL	mg/kg							< 0.28	U												
2,4-DICHLOROPHENOL	mg/kg							< 0.28	U												
2,4-DIMETHYLPHENOL	mg/kg							< 0.28	U												
2,4-DINITROPHENOL	mg/kg							< 0.7	U												
2,4-DINITROTOLUENE	mg/kg							< 0.28	U												
2,6-DICHLOROPHENOL	mg/kg							< 0.28	U												
2,6-DINITROTOLUENE	mg/kg							< 0.28	U												
2-CHLORONAPHTHALENE	mg/kg							< 0.28	UJ												
2-CHLOROPHENOL	mg/kg							< 0.28	U												
2-METHYLNAPHTHALENE	mg/kg							< 0.28	U												
2-METHYLPHENOL	mg/kg							< 0.28	U												
2-NITROANILINE	mg/kg							< 0.7	U												
2-NITROPHENOL	mg/kg							< 0.28	U												
3- AND 4-METHYLPHENOL	mg/kg							< 0.28	U												
3,3-DICHLOROBENZIDINE	mg/kg							< 0.28	U												
3-NITROANILINE	mg/kg							< 0.7	U												
4,6-DINITRO-2-METHYLPHENOL	mg/kg							< 0.7	U												
4-BROMOPHENYL-PHENYLETHER	mg/kg							< 0.28	U												
4-CHLORO-3-METHYLPHENOL	mg/kg							< 0.28	U												
4-CHLOROANILINE	mg/kg							< 0.28	U												
4-CHLOROPHENYL-PHENYLETHER	mg/kg							< 0.28	U												
4-NITROANILINE	mg/kg							< 0.7	U												
4-NITROPHENOL	mg/kg							< 0.7	U												
ACENAPHTHENE	mg/kg	0.031	J	0.07	J	0.0056	J	0.0037	J	0.072	J	0.022	J	0.14		0.0028	J	0.019	J		
ACENAPHTHYLENE	mg/kg	< 0.012	U	< 0.01	U	< 0.0096	U	0.0030	J	< 0.0098	U	< 0.011	U	< 0.012	U	< 0.01	U	< 0.01	U		
ANTHRACENE	mg/kg	0.058	J	0.1	J	0.0081	J	0.011	J	0.084	J	0.033	J	0.2		0.0041	J	0.03			
BENZIDINE	mg/kg								R												
BENZO[A]ANTHRACENE	mg/kg	0.36	J	1.1	J	0.068		0.094		0.41	J	0.18	J	1.3		0.029		0.15			
BENZO[A]PYRENE	mg/kg	0.35	J	1.1	J	0.073	J	0.092	J	0.48	J	0.23	J	1.5	J	0.039		0.18			
BENZO[B]FLUORANTHENE	mg/kg	0.52	J	0.81	J	0.094	J	0.15	J	0.51	J	0.2	J	1.3	J	0.046		0.16			
BENZO[G,H,I]PERYLENE	mg/kg	0.13	J	0.29	J	0.031	J	0.055	J	0.12	J	0.087	J	0.68	J	< 0.02	UJ	0.076	J		
BENZO[K]FLUORANTHENE	mg/kg	0.16	J	0.31	J	0.028	J	0.11	J	0.45	J	0.18	J	1.3	J	0.024		0.11			
BENZOIC ACID	mg/kg							< 0.7	UJ												
BENZYL ALCOHOL	mg/kg							< 0.56	U												
BIS(2-CHLOROETHOXY)METHANE	mg/kg							< 0.28	UJ												
BIS(2-CHLOROETHYL)ETHER	mg/kg							< 0.28	U												
BIS(2-ETHYLHEXYL)PHTHALATE	mg/kg							< 0.28	U												
BUTYLBENZYLPHTHALATE	mg/kg							< 0.28	U												
CAPROLACTAM	mg/kg							< 0.28	U												
CARBAZOLE	mg/kg							< 0.28	U												
CHRYSENE	mg/kg	0.5	J	1.6	J	0.097	J	0.068		0.56	J	0.24	J	1.8		0.036		0.2			
DIBENZ[A,H]ANTHRACENE	mg/kg	0.085	J	0.21	J	0.01	J	0.032	J	0.081		0.049		0.23		< 0.02	U	0.041			
DIBENZOFURAN	mg/kg							< 0.28	U												
DIETHYLPHTHALATE	mg/kg							< 0.28	UJ												
DIMETHYL PHTHALATE	mg/kg							< 0.28	U												
DI-N-BUTYLPHTHALATE	mg/kg							< 0.28	U												
DI-N-OCTYLPHTHALATE	mg/kg							< 0.28	U												
FLUORANTHENE	mg/kg	0.49		0.7		0.074		0.16		0.58	J	0.21	J	1.3		0.038		0.16			
FLUORENE	mg/kg	0.019	J	0.035	J	0.0035	J	0.0038	J	0.039	J	0.013	J	0.09		< 0.01	U	0.012	J		
HEXACHLOROBENZENE	mg/kg							< 0.28	U												
HEXACHLOROBUTADIENE	mg/kg							< 0.28	U												
HEXACHLOROETHANE	mg/kg							< 0.28	U												
HPAH, TOTAL	mg/kg	3.5		9		0.59		1.1		4.1		1.7		12		0.27		1.4			
INDENO[1,2,3-CD]PYRENE	mg/kg	0.24	J	0.56	J	0.04		0.06	J	0.16		0.1		0.82	J	0.021		0.074			
ISOPHORONE	mg/kg							< 0.28	U												

ATTACHMENT A TABLE 1
SUMMARY OF ANALYTICAL RESULTS - SURFACE
SOIL (0 - 1 FT)
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

	Location ID	CRP-SB220		CRP-SB220		CRP-SB222		CRP-SB223		CRP-SB224		CRP-SB224		CRP-SB225		CRP-SB226		CRP-SB227		CRP-SB228	
	Sample Date	12/11/2013		12/11/2013		12/12/2013		12/12/2013		12/6/2013		12/6/2013		12/6/2013		12/5/2013		12/5/2013		12/9/2013	
	Sample ID	OU09 SB220 0001		FDSS12111312		OU09 SB222 0001		OU09 SB223 0001		FDSS12061301		OU09 SS224 0001		OU09 SS225 0001		OU09 SS226 0001		OU09 SS227 0001		OU09 SS228 0001	
	Sample Type	N		FD		N		N		FD		N		N		N		N		N	
	Depth Interval	0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft	
Chemical	Unit	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
LPAH, TOTAL	mg/kg	0.35		0.79		0.063		0.095		0.64		0.23		1.5		0.027		0.19			
NAPHTHALENE	mg/kg	0.0066	J	0.031	J	< 0.0096	U	0.0037	J	0.026	J	0.0081	J	0.039		< 0.01	U	0.0032	J		
NITROBENZENE	mg/kg							< 0.28	U												
N-NITROSODIMETHYLAMINE	mg/kg							< 0.28	U												
N-NITROSODINPROPYLAMINE	mg/kg							< 0.28	U												
N-NITROSODIPHENYLAMINE	mg/kg							< 0.28	U												
N-NITROSOPYRROLIDINE	mg/kg								R												
PAH, TOTAL	mg/kg	3.8		9.8		0.65		1.2		4.7		1.9		14		0.3		1.5			
PENTACHLOROPHENOL	mg/kg							< 0.7	U												
PHENANTHRENE	mg/kg	0.24	J	0.55	J	0.046		0.07		0.42	J	0.15	J	1		0.02	J	0.13			
PHENOL	mg/kg							< 0.28	U												
PYRENE	mg/kg	0.62	J	2.3	J	0.073		0.24		0.72	J	0.23	J	2.2		0.036		0.2			
VOLATILE ORGANIC COMPOUNDS (VOCs)																					
1,1,1,2-TETRACHLOROETHANE	mg/kg							< 0.0042	UJ												
1,1,1-TRICHLOROETHANE	mg/kg							< 0.0042	UJ												
1,1,2,2-TETRACHLOROETHANE	mg/kg							< 0.0042	UJ												
1,1,2-TRICHLOROETHANE	mg/kg							< 0.0042	UJ												
1,1-DICHLOROETHANE	mg/kg							< 0.0042	UJ												
1,1-DICHLOROETHENE	mg/kg							< 0.0042	UJ												
1,1-DICHLOROPROPENE	mg/kg							< 0.0042	UJ												
1,2,3-TRICHLOROBENZENE	mg/kg							< 0.0042	UJ												
1,2,3-TRICHLOROPROPANE	mg/kg							< 0.0042	UJ												
1,2,4-TRICHLOROBENZENE	mg/kg							< 0.0042	UJ												
1,2,4-TRIMETHYLBENZENE	mg/kg							< 0.0042	UJ												
1,2-DIBROMO-3-CHLOROPROPANE	mg/kg							< 0.0042	UJ												
1,2-DIBROMOETHANE	mg/kg							< 0.0042	UJ												
1,2-DICHLOROBENZENE	mg/kg							< 0.0042	UJ												
1,2-DICHLOROETHANE	mg/kg							< 0.0042	UJ												
1,2-DICHLOROETHENE, TOTAL	mg/kg							< 0.0085	UJ												
1,2-DICHLOROPROPANE	mg/kg							< 0.0042	UJ												
1,3,5-TRIMETHYLBENZENE	mg/kg							< 0.0042	UJ												
1,3-DICHLOROBENZENE	mg/kg							< 0.0042	UJ												
1,3-DICHLOROPROPANE	mg/kg							< 0.0042	UJ												
1,4-DICHLOROBENZENE	mg/kg							< 0.0042	UJ												
2,2-DICHLOROPROPANE	mg/kg							< 0.0042	UJ												
2-BUTANONE	mg/kg							< 0.021	UJ												
2-CHLOROTOLUENE	mg/kg							< 0.0042	UJ												
2-HEXANONE	mg/kg							< 0.021	UJ												
4-CHLOROTOLUENE	mg/kg							< 0.0042	UJ												
4-ISOPROPYLTOLUENE	mg/kg							< 0.0042	UJ												
4-METHYL-2-PENTANONE	mg/kg							< 0.021	UJ												
ACETONE	mg/kg							< 0.021	UJ												
BENZENE	mg/kg							< 0.0042	UJ												
BROMOBENZENE	mg/kg							< 0.0042	UJ												
BROMOCHLOROMETHANE	mg/kg							< 0.0042	UJ												
BROMODICHLOROMETHANE	mg/kg							< 0.0042	UJ												
BROMOFORM	mg/kg							< 0.0042	UJ												
BROMOMETHANE	mg/kg							< 0.0085	UJ												
CARBON DISULFIDE	mg/kg							< 0.0042	UJ												
CARBON TETRACHLORIDE	mg/kg							< 0.0042	UJ												
CHLOROBENZENE	mg/kg							< 0.0042	UJ												
CHLOROETHANE	mg/kg							< 0.0085	UJ												
CHLOROFORM	mg/kg							< 0.0042	UJ												
CHLOROMETHANE	mg/kg							< 0.0085	UJ												
CIS-1,2-DICHLOROETHENE	mg/kg							< 0.0042	UJ												
CIS-1,3-DICHLOROPROPENE	mg/kg							< 0.0042	UJ												
DIBROMOCHLOROMETHANE	mg/kg							< 0.0042	UJ												
DIBROMOMETHANE	mg/kg							< 0.0042	UJ												
DICHLORODIFLUOROMETHANE	mg/kg							< 0.0085	UJ												
ETHYLBENZENE	mg/kg							< 0.0042	UJ												
HEXACHLOROBUTADIENE	mg/kg							< 0.0042	UJ												
ISOPROPYLBENZENE	mg/kg							< 0.0042	UJ												
M- AND P-XYLENE	mg/kg							< 0.0085	UJ												
METHYL CYCLOHEXANE	mg/kg							< 0.0042	UJ												

ATTACHMENT A TABLE 1
SUMMARY OF ANALYTICAL RESULTS - SURFACE
SOIL (0 - 1 FT)
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

	Location ID	CRP-SB220		CRP-SB220		CRP-SB222		CRP-SB223		CRP-SB224		CRP-SB224		CRP-SB225		CRP-SB226		CRP-SB227		CRP-SB228	
	Sample Date	12/11/2013		12/11/2013		12/12/2013		12/12/2013		12/6/2013		12/6/2013		12/6/2013		12/5/2013		12/5/2013		12/9/2013	
	Sample ID	OU09 SB220 0001		FDSS12111312		OU09 SB222 0001		OU09 SB223 0001		FDSS12061301		OU09 SS224 0001		OU09 SS225 0001		OU09 SS226 0001		OU09 SS227 0001		OU09 SS228 0001	
	Sample Type	N		FD		N		N		FD		N		N		N		N		N	
	Depth Interval	0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft	
Chemical	Unit	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
METHYL TERT-BUTYL ETHER	mg/kg							< 0.0042	UJ												
METHYLENE CHLORIDE	mg/kg							< 0.021	UJ												
N-BUTYLBENZENE	mg/kg							< 0.0042	UJ												
O-XYLENE	mg/kg							< 0.0042	UJ												
PROPYLBENZENE	mg/kg							< 0.0042	UJ												
SEC-BUTYLBENZENE	mg/kg							< 0.0042	UJ												
STYRENE	mg/kg							< 0.0042	UJ												
TERT-BUTANOL	mg/kg							< 0.021	UJ												
TERT-BUTYLBENZENE	mg/kg							< 0.0042	UJ												
TETRACHLOROETHENE	mg/kg							< 0.0042	UJ												
TOLUENE	mg/kg							< 0.0042	UJ												
TRANS-1,2-DICHLOROETHENE	mg/kg							< 0.0042	UJ												
TRANS-1,3-DICHLOROPROPENE	mg/kg							< 0.0042	UJ												
TRICHLOROETHENE	mg/kg							< 0.0042	UJ												
TRICHLOROFLUOROMETHANE	mg/kg							< 0.0085	UJ												
VINYL CHLORIDE	mg/kg							< 0.0085	UJ												
XYLENES, TOTAL	mg/kg							< 0.013	UJ												
OTHER																					
PH	pH																				
TOTAL ORGANIC CARBON	mg/kg																				
GRAIN SIZE																					
PERCENT FINES	%																				
PERCENT GRAVEL	%																				
PERCENT SAND	%																				
PERCENT SAND, COARSE	%																				
PERCENT SAND, FINE	%																				
PERCENT SAND, MEDIUM	%																				
SIEVE 1 INCH (25.4-MM)	%																				
SIEVE 1-1/2 INCH (37.5-MM)	%																				
SIEVE 2 INCH (50-MM)	%																				
SIEVE 3 INCH (75-MM)	%																				
SIEVE 3/4 INCH (19-MM)	%																				
SIEVE 3/8 INCH (9.5-MM)	%																				
SIEVE NO. 004 (4.75-MM)	%																				
SIEVE NO. 010 (2-MM)	%																				
SIEVE NO. 020 (850-UM)	%																				
SIEVE NO. 040 (425-UM)	%																				
SIEVE NO. 060 (250-UM)	%																				
SIEVE NO. 080 (180-UM)	%																				
SIEVE NO. 100 (150-UM)	%																				
SIEVE NO. 200 (75-UM)	%																				

Notes:
U or < - Non-detect at laboratory detection limit.
J - The compound was positively identified; however, the associated numerical value is an estimated concentration only (+ and - indicate bias).
R - Rejected result.
Sample Type - N = normal sample, FD = duplicate sample.
mg/kg - milligram per kilogram

ATTACHMENT A TABLE 1
SUMMARY OF ANALYTICAL RESULTS - SURFACE
SOIL (0 - 1 FT)
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

	Location ID	CRP-SB228		CRP-SB229		CRP-SB229		CRP-SB301		CRP-SB302		CRP-SB302		CRP-SB325		MW-13	
	Sample Date	12/9/2013		12/10/2013		12/10/2013		12/6/2013		12/10/2013		12/10/2013		6/6/2014		12/4/2013	
	Sample ID	OU09 SS228 0001SL		OU09 SS229 0001-01		OU09 SS229 0001-02		OU09 SS301 0001		FDSB12101302		OU09 SS302 0001		SB325-0001		OU09 SB207 0001	
	Sample Type	N		N		FD		N		FD		N		N		N	
	Depth Interval	0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft	
Chemical	Unit	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
ENERGETICS																	
2,4-DINITROTOLUENE	mg/kg			< 0.049	U	< 0.042	U										
NITROGLYCERIN	mg/kg			< 0.4	U	0.58	J										
INORGANICS																	
ALUMINUM	mg/kg	8400		10900		9360		8070		9330		11600				18600	
ANTIMONY	mg/kg	2.3	J	1.1	J-	0.98	J-	0.79	J	396	J	0.34	J			0.36	J
ARSENIC	mg/kg	10.3	J	7.3		7.5		8.3	J	130	J	5.1	J			19.8	J
BARIUM	mg/kg	25.5		33.4		30.8		11.5	J-	28.6		34.9				9.3	
BERYLLIUM	mg/kg	0.20		0.35		0.31		0.33	J-	0.36		0.38				0.26	
CADMIUM	mg/kg	0.18		0.30		0.28		0.44		0.15		0.10				0.14	
CALCIUM	mg/kg	39500		1510	J+	1400	J+	494		578	J+	590	J+			1700	
CHROMIUM VI	mg/kg					< 0.31	U										
CHROMIUM, TOTAL	mg/kg	14.1	J	13.9		11.3		11.5	J-	7.8	J	9.2	J			27.6	
COBALT	mg/kg	10.8	J	8.3		7.4		13.2	J-	5.4	J	6.4	J			24.5	
COPPER	mg/kg	18.3		28.6		26.3		32.1	J	14.0		12.6				34.7	J
IRON	mg/kg	24900	J	21300		19500		29900		14600	J	16100	J			48300	J-
IRON, FERROUS	mg/kg																
LEAD	mg/kg	216	J	125		113		48.2	J	29900	J	295	J			25.9	J
MAGNESIUM	mg/kg	25200	J	2580		2250		3220		1500	J	1750	J			7650	
MANGANESE	mg/kg	438	J	326		293		756		391	J	502	J			510	
MERCURY	mg/kg			0.10		0.1		0.04		0.06		0.06				< 0.017	U
NICKEL	mg/kg	20.6	J	18.5		17.0		29.0	J-	11.8	J	13.2	J			50.5	
POTASSIUM	mg/kg	328	J	415		319		484	J-	256	J	363	J			196	
SELENIUM	mg/kg	< 0.39	U	0.37		< 0.39	U	< 0.44	UJ	0.45		0.40	J			0.35	J
SILVER	mg/kg	0.07	J	0.38		0.35		0.04	J	0.86	J	0.09	J			0.06	J
SODIUM	mg/kg	< 79	U	< 73	U	< 79	U	< 87	UJ	< 73	U	< 96	U			< 110	U
THALLIUM	mg/kg	0.04	J	0.07	J	0.06	J	0.07	J	0.09		0.08	J			0.03	J
VANADIUM	mg/kg	14.8		25.1		22.1		14.4	J-	14.4		15.9				22.1	
ZINC	mg/kg	66.0		113	J+	106	J+	78.2		54.4	J+	55.5	J+			106	
POLYCHLORINATED BIPHENYLS (PCBs)																	
AROCLOR-1016	mg/kg					< 0.0016	UJ	< 0.0089	UJ	< 0.0018	U	< 0.0019	U	< 0.0017	U		
AROCLOR-1221	mg/kg					< 0.0016	U	< 0.0089	UJ	< 0.0018	U	< 0.0019	U	< 0.0017	U		
AROCLOR-1232	mg/kg					< 0.0019	U	< 0.01	UJ	< 0.0022	U	< 0.0023	U	< 0.0020	U		
AROCLOR-1242	mg/kg					< 0.0016	U	< 0.0089	UJ	< 0.0018	U	< 0.0019	U	< 0.0017	U		
AROCLOR-1248	mg/kg					< 0.0016	U	< 0.0089	UJ	< 0.0018	U	< 0.0019	U	< 0.0017	U		
AROCLOR-1254	mg/kg					< 0.0016	U	0.043	J	< 0.0018	U	< 0.0019	U	< 0.0017	U		
AROCLOR-1260	mg/kg					< 0.0016	UJ	< 0.0089	UJ	0.05		0.031		0.016	J		
AROCLOR-1262	mg/kg					< 0.0016	U	< 0.0089	UJ	< 0.0018	U	< 0.0019	U	< 0.0017	U		
AROCLOR-1268	mg/kg					< 0.0016	U	< 0.0089	UJ	< 0.0018	U	< 0.0019	U	< 0.0017	U		
PCB, TOTAL	mg/kg					< 0.0019	U	0.043		0.05		0.031		0.016	J		
PESTICIDES																	
4,4-DDD	mg/kg					< 0.00032	U	< 0.0017	UJ	< 0.00036	U	< 0.00038	U				
4,4-DDE	mg/kg					0.062		< 0.0017	UJ	0.00064	J	0.00059	J				
4,4-DDT	mg/kg					0.0094	J	< 0.0017	UJ	0.0061	J	0.0042	J				
ALDRIN	mg/kg					< 0.00016	UJ	< 0.00089	UJ	< 0.00018	U	< 0.00019	U				
ALPHA-BHC	mg/kg					< 0.00016	UJ	< 0.00089	UJ	< 0.00018	U	< 0.00019	U				
ALPHA-CHLORDANE	mg/kg					< 0.00016	UJ	< 0.00089	UJ	< 0.00018	U	< 0.00019	U				
BETA-BHC	mg/kg					< 0.00016	UJ	< 0.00089	UJ	< 0.00018	U	< 0.00019	U				
DELTA-BHC	mg/kg					< 0.00016	UJ	< 0.00089	UJ	< 0.00018	U	< 0.00019	U				
DIELDRIN	mg/kg					< 0.00032	UJ	< 0.0017	UJ	< 0.00036	U	< 0.00038	U				
ENDOSULFAN I	mg/kg					0.0015	J	< 0.00089	UJ	< 0.00018	U	< 0.00019	U				
ENDOSULFAN II	mg/kg					< 0.00032	U	< 0.0017	UJ	0.00032	J	0.00028	J				
ENDOSULFAN SULFATE	mg/kg					< 0.00032	UJ	< 0.0017	UJ	0.0021	J	< 0.00038	UJ				
ENDRIN	mg/kg					0.0018		< 0.0017	UJ	< 0.00036	U	< 0.00038	U				
ENDRIN ALDEHYDE	mg/kg					< 0.00032	U	< 0.0017	UJ	< 0.00036	U	< 0.00038	U				
ENDRIN KETONE	mg/kg					< 0.00032	U	< 0.0017	UJ	0.0016	J	< 0.00038	UJ				
GAMMA-CHLORDANE	mg/kg					< 0.00016	UJ	< 0.00089	UJ	< 0.00018	U	< 0.00019	U				
HEPTACHLOR	mg/kg					0.0015	J	< 0.00089	UJ	< 0.00018	U	< 0.00019	U				
HEPTACHLOR EPOXIDE	mg/kg					< 0.00016	U	< 0.00089	UJ	< 0.00018	U	< 0.00019	U				
LINDANE	mg/kg					< 0.00016	U	< 0.00089	UJ	< 0.00018	U	< 0.00019	U				
METHOXYCHLOR	mg/kg					0.0088	J	< 0.0089	UJ	< 0.0018	U	< 0.0019	U				
TOXAPHENE	mg/kg					< 0.0032	U	< 0.017	UJ	< 0.0036	U	< 0.0038	U				

ATTACHMENT A TABLE 1
SUMMARY OF ANALYTICAL RESULTS - SURFACE
SOIL (0 - 1 FT)
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

	Location ID	CRP-SB228		CRP-SB229		CRP-SB229		CRP-SB301		CRP-SB302		CRP-SB302		CRP-SB325		MW-13	
	Sample Date	12/9/2013		12/10/2013		12/10/2013		12/6/2013		12/10/2013		12/10/2013		6/6/2014		12/4/2013	
	Sample ID	OU09 SS228 0001SL		OU09 SS229 0001-01		OU09 SS229 0001-02		OU09 SS301 0001		FDSB12101302		OU09 SS302 0001		SB325-0001		OU09 SB207 0001	
	Sample Type	N		N		FD		N		FD		N		N		N	
	Depth Interval	0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft	
Chemical	Unit	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs)																	
1,1-BIPHENYL	mg/kg							< 0.26	U	< 0.27	U	< 0.28	U				
1,2,4-TRICHLOROBENZENE	mg/kg							< 0.26	U	< 0.27	U	< 0.28	U				
1,2-DICHLOROBENZENE	mg/kg							< 0.26	U	< 0.27	U	< 0.28	U				
1,2-DIPHENYLHYDRAZINE	mg/kg							< 0.51	U	< 0.54	U	< 0.56	U				
1,3-DICHLOROBENZENE	mg/kg							< 0.26	U	< 0.27	U	< 0.28	U				
1,4-DICHLOROBENZENE	mg/kg							< 0.26	U	< 0.27	U	< 0.28	U				
2,2'-OXYBIS(1-CHLOROPROPANE)	mg/kg							< 0.26	U	< 0.27	U	< 0.28	U				
2,4,5-TRICHLOROPHENOL	mg/kg							< 0.64	U	< 0.67	U	< 0.69	U				
2,4,6-TRICHLOROPHENOL	mg/kg							< 0.26	U	< 0.27	U	< 0.28	U				
2,4-DICHLOROPHENOL	mg/kg							< 0.26	U	< 0.27	U	< 0.28	U				
2,4-DIMETHYLPHENOL	mg/kg							< 0.26	U	< 0.27	U	< 0.28	U				
2,4-DINITROPHENOL	mg/kg							< 0.64	U	< 0.67	U	< 0.69	U				
2,4-DINITROTOLUENE	mg/kg							< 0.26	U	< 0.27	U	< 0.28	U				
2,6-DICHLOROPHENOL	mg/kg							< 0.26	U	< 0.27	U	< 0.28	U				
2,6-DINITROTOLUENE	mg/kg							< 0.26	U	< 0.27	U	< 0.28	U				
2-CHLORONAPHTHALENE	mg/kg							< 0.26	UJ	< 0.27	UJ	< 0.28	UJ				
2-CHLOROPHENOL	mg/kg							< 0.26	U	< 0.27	U	< 0.28	U				
2-METHYLNAPHTHALENE	mg/kg							< 0.26	U	< 0.27	U	< 0.28	U				
2-METHYLPHENOL	mg/kg							< 0.26	U	< 0.27	U	< 0.28	U				
2-NITROANILINE	mg/kg							< 0.64	U	< 0.67	U	< 0.69	U				
2-NITROPHENOL	mg/kg							< 0.26	U	< 0.27	U	< 0.28	U				
3- AND 4-METHYLPHENOL	mg/kg							< 0.26	U	< 0.27	U	< 0.28	U				
3,3-DICHLOROBENZIDINE	mg/kg							< 0.26	U	< 0.27	U	< 0.28	U				
3-NITROANILINE	mg/kg							< 0.64	U	< 0.67	U	< 0.69	U				
4,6-DINITRO-2-METHYLPHENOL	mg/kg							< 0.64	U	< 0.67	U	< 0.69	U				
4-BROMOPHENYL-PHENYLETHER	mg/kg							< 0.26	U	< 0.27	U	< 0.28	U				
4-CHLORO-3-METHYLPHENOL	mg/kg							< 0.26	U	< 0.27	U	< 0.28	U				
4-CHLOROANILINE	mg/kg							< 0.26	U	< 0.27	U	< 0.28	U				
4-CHLOROPHENYL-PHENYLETHER	mg/kg							< 0.26	U	< 0.27	U	< 0.28	U				
4-NITROANILINE	mg/kg							< 0.64	U	< 0.67	U	< 0.69	U				
4-NITROPHENOL	mg/kg							< 0.64	U	< 0.67	U	< 0.69	U				
ACENAPHTHENE	mg/kg	18	J	0.095	J	0.0050	J	0.0026	J	0.0099	J	0.0054	J			0.0022	J
ACENAPHTHYLENE	mg/kg	< 0.12	U	0.017	J	< 0.01	U	< 0.01	U	0.0037	J	0.0027	J			< 0.011	U
ANTHRACENE	mg/kg	21	J	0.15	J	< 0.01	UJ	0.0040	J	0.017	J	0.0088	J			0.0034	J
BENZIDINE	mg/kg								R		R		R				
BENZO[A]ANTHRACENE	mg/kg	65	J	0.86	J	0.043	J	< 0.021	U	0.16	J	0.092	J			0.028	
BENZO[A]PYRENE	mg/kg	80	J	1.1	J	0.043	J	< 0.021	U	0.13	J	0.081	J			0.029	
BENZO[B]FLUORANTHENE	mg/kg	75	J	1.1	J	0.056	J	0.016	J	0.18	J	0.1	J			0.063	
BENZO[G,H,I]PERYLENE	mg/kg	32	J	0.75	J	0.041	J	< 0.021	UJ	0.045	J	0.026	J			0.019	J
BENZO[K]FLUORANTHENE	mg/kg	74	J	0.96	J	< 0.021	UJ	0.014	J	0.08	J	0.078				0.015	J
BENZOIC ACID	mg/kg							< 0.64	UJ	< 0.67	UJ	< 0.69	UJ				
BENZYL ALCOHOL	mg/kg							< 0.51	U	< 0.54	U	< 0.56	U				
BIS(2-CHLOROETHOXY)METHANE	mg/kg							< 0.26	UJ	< 0.27	U	< 0.28	U				
BIS(2-CHLOROETHYL)ETHER	mg/kg							< 0.26	U	< 0.27	U	< 0.28	U				
BIS(2-ETHYLHEXYL)PHTHALATE	mg/kg							< 0.26	U	< 0.27	U	< 0.28	U				
BUTYLBENZYLPHTHALATE	mg/kg							< 0.26	U	< 0.27	U	< 0.28	U				
CAPROLACTAM	mg/kg							< 0.26	U	< 0.27	U	< 0.28	U				
CARBAZOLE	mg/kg							< 0.26	U	< 0.27	U	< 0.28	U				
CHRYSENE	mg/kg	81	J	1.1	J	0.08	J	0.015	J	0.21	J	0.1	J			0.035	
DIBENZ[A,H]ANTHRACENE	mg/kg	< 15	UJ	0.34	J	0.024	J	< 0.021	U	0.028	J	< 0.022	UJ			0.0052	J
DIBENZOFURAN	mg/kg							< 0.26	U	< 0.27	U	< 0.28	U				
DIETHYLPHTHALATE	mg/kg							< 0.26	UJ	< 0.27	UJ	< 0.28	UJ				
DIMETHYL PHTHALATE	mg/kg							< 0.26	U	< 0.27	U	< 0.28	U				
DI-N-BUTYLPHTHALATE	mg/kg							< 0.26	U	< 0.27	U	< 0.28	U				
DI-N-OCTYLPHTHALATE	mg/kg							< 0.26	U	< 0.27	U	< 0.28	U				
FLUORANTHENE	mg/kg	100	J	1.1	J	< 0.021	UJ	0.024		0.2		0.15				0.046	
FLUORENE	mg/kg	9.2	J	0.058	J	0.0039	J	< 0.01	U	0.012	J	0.01	J			< 0.011	U
HEXACHLOROBENZENE	mg/kg							< 0.26	U	< 0.27	U	< 0.28	U				
HEXACHLOROBUTADIENE	mg/kg							< 0.26	U	< 0.27	U	< 0.28	U				
HEXACHLOROETHANE	mg/kg							< 0.26	U	< 0.27	U	< 0.28	U				
HPAH, TOTAL	mg/kg	650		10		0.56		0.094		1.1		0.84				0.31	
INDENO[1,2,3-CD]PYRENE	mg/kg	44	J	0.82	J	0.027	J	< 0.021	U	0.052	J	0.036				0.022	J
ISOPHORONE	mg/kg							< 0.26	U	< 0.27	U	< 0.28	U				

ATTACHMENT A TABLE 1
SUMMARY OF ANALYTICAL RESULTS - SURFACE
SOIL (0 - 1 FT)
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

	Location ID	CRP-SB228		CRP-SB229		CRP-SB229		CRP-SB301		CRP-SB302		CRP-SB302		CRP-SB325		MW-13	
	Sample Date	12/9/2013		12/10/2013		12/10/2013		12/6/2013		12/10/2013		12/10/2013		6/6/2014		12/4/2013	
	Sample ID	OU09 SS228 0001SL		OU09 SS229 0001-01		OU09 SS229 0001-02		OU09 SS301 0001		FDSB12101302		OU09 SS302 0001		SB325-0001		OU09 SB207 0001	
	Sample Type	N		N		FD		N		FD		N		N		N	
	Depth Interval	0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft	
Chemical	Unit	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
LPAH, TOTAL	mg/kg	140		1.1		0.16		0.028		0.2		0.14				0.033	
NAPHTHALENE	mg/kg	3	J	0.02	J	< 0.01	U	< 0.01	U	0.0037	J	0.0037	J			< 0.011	U
NITROBENZENE	mg/kg							< 0.26	U	< 0.27	U	< 0.28	U				
N-NITROSODIMETHYLAMINE	mg/kg							< 0.26	U	< 0.27	U	< 0.28	U				
N-NITROSODINPROPYLAMINE	mg/kg							< 0.26	U	< 0.27	U	< 0.28	U				
N-NITROSODIPHENYLAMINE	mg/kg							< 0.26	U	< 0.27	U	< 0.28	U				
N-NITROSOPYRROLIDINE	mg/kg								R	< 0.27	U	< 0.28	U				
PAH, TOTAL	mg/kg	790		11		0.72		0.12		1.3		0.98				0.35	
PENTACHLOROPHENOL	mg/kg							< 0.64	UJ	< 0.67	U	< 0.69	U				
PHENANTHRENE	mg/kg	86	J	0.76	J	0.15	J	0.021	J	0.15		0.11				0.027	
PHENOL	mg/kg							< 0.26	U	< 0.27	U	< 0.28	U				
PYRENE	mg/kg	100	J	2.2	J	0.25	J	0.025				0.18				0.052	
VOLATILE ORGANIC COMPOUNDS (VOCs)																	
1,1,1,2-TETRACHLOROETHANE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
1,1,1-TRICHLOROETHANE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
1,1,2,2-TETRACHLOROETHANE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
1,1,2-TRICHLOROETHANE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
1,1-DICHLOROETHANE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
1,1-DICHLOROETHENE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
1,1-DICHLOROPROPENE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
1,2,3-TRICHLOROBENZENE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
1,2,3-TRICHLOROPROPANE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
1,2,4-TRICHLOROBENZENE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
1,2,4-TRIMETHYLBENZENE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
1,2-DIBROMO-3-CHLOROPROPANE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
1,2-DIBROMOETHANE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
1,2-DICHLOROBENZENE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
1,2-DICHLOROETHANE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
1,2-DICHLOROETHENE, TOTAL	mg/kg							< 0.0055	UJ	< 0.0060	UJ	< 0.0050	UJ				
1,2-DICHLOROPROPANE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
1,3,5-TRIMETHYLBENZENE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
1,3-DICHLOROBENZENE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
1,3-DICHLOROPROPANE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
1,4-DICHLOROBENZENE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
2,2-DICHLOROPROPANE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
2-BUTANONE	mg/kg							< 0.014	UJ	< 0.015	UJ	< 0.012	UJ				
2-CHLOROTOLUENE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
2-HEXANONE	mg/kg							< 0.014	UJ	< 0.015	UJ	< 0.012	UJ				
4-CHLOROTOLUENE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
4-ISOPROPYLTOLUENE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
4-METHYL-2-PENTANONE	mg/kg							< 0.014	UJ	< 0.015	UJ	< 0.012	UJ				
ACETONE	mg/kg							< 0.014	UJ	< 0.015	UJ	< 0.012	UJ				
BENZENE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
BROMOBENZENE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
BROMOCHLOROMETHANE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
BROMODICHLOROMETHANE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
BROMOFORM	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
BROMOMETHANE	mg/kg							< 0.0055	UJ	< 0.0060	UJ	< 0.0050	UJ				
CARBON DISULFIDE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
CARBON TETRACHLORIDE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
CHLOROBENZENE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
CHLOROETHANE	mg/kg							< 0.0055	UJ	< 0.0060	UJ	< 0.0050	UJ				
CHLOROFORM	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
CHLOROMETHANE	mg/kg							< 0.0055	UJ	< 0.0060	UJ	< 0.0050	UJ				
CIS-1,2-DICHLOROETHENE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
CIS-1,3-DICHLOROPROPENE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
DIBROMOCHLOROMETHANE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
DIBROMOMETHANE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
DICHLORODIFLUOROMETHANE	mg/kg							< 0.0055	UJ	< 0.0060	UJ	< 0.0050	UJ				
ETHYLBENZENE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
HEXACHLOROBUTADIENE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
ISOPROPYLBENZENE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
M- AND P-XYLENE	mg/kg							< 0.0055	UJ	< 0.0060	UJ	< 0.0050	UJ				
METHYL CYCLOHEXANE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				

ATTACHMENT A TABLE 1
SUMMARY OF ANALYTICAL RESULTS - SURFACE
SOIL (0 - 1 FT)
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

	Location ID	CRP-SB228		CRP-SB229		CRP-SB229		CRP-SB301		CRP-SB302		CRP-SB302		CRP-SB325		MW-13	
	Sample Date	12/9/2013		12/10/2013		12/10/2013		12/6/2013		12/10/2013		12/10/2013		6/6/2014		12/4/2013	
	Sample ID	OU09 SS228 0001SL		OU09 SS229 0001-01		OU09 SS229 0001-02		OU09 SS301 0001		FDSB12101302		OU09 SS302 0001		SB325-0001		OU09 SB207 0001	
	Sample Type	N		N		FD		N		FD		N		N		N	
	Depth Interval	0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft		0 - 1 ft	
Chemical	Unit	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
METHYL TERT-BUTYL ETHER	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
METHYLENE CHLORIDE	mg/kg							< 0.014	UJ	< 0.015	UJ	< 0.012	UJ				
N-BUTYLBENZENE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
O-XYLENE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
PROPYLBENZENE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
SEC-BUTYLBENZENE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
STYRENE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
TERT-BUTANOL	mg/kg							< 0.014	UJ	< 0.015	UJ	< 0.012	UJ				
TERT-BUTYLBENZENE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
TETRACHLOROETHENE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
TOLUENE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
TRANS-1,2-DICHLOROETHENE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
TRANS-1,3-DICHLOROPROPENE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
TRICHLOROETHENE	mg/kg							< 0.0028	UJ	< 0.0030	UJ	< 0.0025	UJ				
TRICHLOROFLUOROMETHANE	mg/kg							< 0.0055	UJ	< 0.0060	UJ	< 0.0050	UJ				
VINYL CHLORIDE	mg/kg							< 0.0055	UJ	< 0.0060	UJ	< 0.0050	UJ				
XYLENES, TOTAL	mg/kg							< 0.0082	UJ	< 0.0090	UJ	< 0.0075	UJ				
OTHER																	
PH	pH					5.9											
TOTAL ORGANIC CARBON	mg/kg					19000											
GRAIN SIZE																	
PERCENT FINES	%					44.3											
PERCENT GRAVEL	%					5.4											
PERCENT SAND	%					50.3											
PERCENT SAND, COARSE	%					4.5											
PERCENT SAND, FINE	%					29.8											
PERCENT SAND, MEDIUM	%					16.0											
SIEVE 1 INCH (25.4-MM)	%					0											
SIEVE 1-1/2 INCH (37.5-MM)	%					0											
SIEVE 2 INCH (50-MM)	%					0											
SIEVE 3 INCH (75-MM)	%					0											
SIEVE 3/4 INCH (19-MM)	%					0											
SIEVE 3/8 INCH (9.5-MM)	%					0.6											
SIEVE NO. 004 (4.75-MM)	%					4.8											
SIEVE NO. 010 (2-MM)	%					4.5											
SIEVE NO. 020 (850-UM)	%					6.7											
SIEVE NO. 040 (425-UM)	%					9.3											
SIEVE NO. 060 (250-UM)	%					10.6											
SIEVE NO. 080 (180-UM)	%					6.0											
SIEVE NO. 100 (150-UM)	%					3.4											
SIEVE NO. 200 (75-UM)	%					9.8											

Notes:
U or < - Non-detect at laboratory detection limit.
J - The compound was positively identified; however, the associated numerical value is an estimated concentration only (+ and - indicate bias).
R - Rejected result.
Sample Type - N = normal sample, FD = duplicate sample.
mg/kg - milligram per kilogram

ATTACHMENT A TABLE 1
SUMMARY OF ANALYTICAL RESULTS - SURFACE
SOIL (0 - 1 FT)
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

	Location ID	CRP-SS107		CRP-SS111		CRP-SS114		CRP-SS114		CRP-SS115		CRP-SS115		CRP-SS116		CRP-SS116		CRP-SS117		CRP-SS118	
	Sample Date	1/19/2010		1/19/2010		1/19/2010		1/19/2010		1/19/2010		1/19/2010		1/19/2010		1/19/2010		1/19/2010		1/19/2010	
	Sample ID	CRP-SS107-0006		CRP-SS111-0006		CRP-SS114-0006		CRP-SS114-0612		CRP-SS115-0006-D		CRP-SS115-0006		CRP-SS116-0006		CRP-SS116-0612		CRP-SS117-0006		CRP-SS118-0006	
	Sample Type	N		N		N		N		FD		N		N		N		N		N	
	Depth Interval	0 - 0.5 ft		0 - 0.5 ft		0 - 0.5 ft		0.5 - 1 ft		0 - 0.5 ft		0 - 0.5 ft		0 - 0.5 ft		0.5 - 1 ft		0 - 0.5 ft		0 - 0.5 ft	
Chemical	Unit	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
INORGANICS																					
ARSENIC	mg/kg																				
CHROMIUM, TOTAL	mg/kg																				
LEAD	mg/kg	63.4		60.4		75.7		25.7		72.7		64.2		48.5		28.5		96.6		118	
SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs)																					
2-CHLORONAPHTHALENE	mg/kg																				
1-METHYLNAPHTHALENE	mg/kg																				
2-METHYLNAPHTHALENE	mg/kg	< 0.348	U	< 0.369	U	< 0.33	U	< 0.296	U	< 0.389	U	< 0.328	U	< 0.383	U	< 0.344	U	< 0.442	U	< 0.347	U
ACENAPHTHENE	mg/kg	< 0.348	U	< 0.369	U	< 0.33	U	< 0.296	U	< 0.389	U	< 0.328	U	< 0.383	U	< 0.344	U	< 0.442	U	< 0.347	U
ACENAPHTHYLENE	mg/kg	0.071	J	< 0.369	U	0.059	J	< 0.296	U	0.118	J	0.369	D	< 0.383	U	< 0.344	U	< 0.442	U	< 0.347	U
ANTHRACENE	mg/kg	0.15	J	< 0.369	U	< 0.33	U	< 0.296	U	0.0676	J	0.194	J	< 0.383	U	< 0.344	U	< 0.442	U	0.09	J
BENZO[A]ANTHRACENE	mg/kg	0.441		0.202	J	0.264	J	0.0592	J	0.251	J	0.823	J	0.14	J	0.137	J	0.318	J	0.45	J
BENZO[A]PYRENE	mg/kg	0.342	J	0.25	J	0.287	J	0.0592	J	0.277	J	0.785	J	0.141	J	0.121	J	0.324	J	0.504	
BENZO[B]FLUORANTHENE	mg/kg	0.364		0.245	J	0.282	J	0.0697	J	0.341	J	0.92	J	0.159	J	0.14	J	0.353	J	0.582	
BENZO[G,H,I]PERYLENE	mg/kg	0.224	J	0.254	J	0.203	J	0.0632	J	0.216	J	0.553		0.105	J	0.0887	J	0.219	J	0.361	
BENZO[K]FLUORANTHENE	mg/kg	0.154	J	0.0818	J	0.114	J	< 0.296	U	0.112	J	0.36		0.0654	J	0.0603	J	0.15	J	0.225	J
CHRYSENE	mg/kg	0.632		0.345	J	0.396	J	0.106	J	0.51	J	1.53	J	0.2	J	0.206	J	0.439	J	0.622	J
DIBENZ[A,H]ANTHRACENE	mg/kg	0.0672	J	0.0557	J	0.0518	J	< 0.296	U	< 0.389	U	0.154	J	< 0.383	U	< 0.344	U	< 0.442	U	0.0788	J
FLUORANTHENE	mg/kg	0.761		0.291	J	0.365		0.0904	J	0.534	J	1.85	J	0.241		0.284	J	0.481		0.678	
FLUORENE	mg/kg	0.0526	J	< 0.369	U	< 0.33	U	< 0.296	U	< 0.389	U	0.078	J	< 0.383	U	< 0.344	U	< 0.442	U	< 0.347	U
HPAH, TOTAL	mg/kg	4.02		2.25		2.61		0.595		3.08		9.80		1.38		1.39		3.01		4.51	
INDENO[1,2,3-CD]PYRENE	mg/kg	0.222	J	0.215	J	0.201	J	0.0476	J	0.191	J	0.569		0.106	J	0.0917	J	0.223	J	0.373	
LPAH, TOTAL	mg/kg	0.886		0.153		0.229		< 0.296	U	0.476		2.06		0.113		0.150		0.202		0.428	
NAPHTHALENE	mg/kg	< 0.348	U	< 0.369	U	< 0.33	U	< 0.296	U	< 0.389	U	< 0.328	U	< 0.383	U	< 0.344	U	< 0.442	U	< 0.347	U
PAH, TOTAL	mg/kg	4.90		2.40		2.83		0.595		3.56		11.9		1.49		1.54		3.21		4.93	
PHENANTHRENE	mg/kg	0.612		0.153	J	0.17	J	< 0.296	U	0.29	J	1.42	J	0.113	J	0.15	J	0.202	J	0.338	J
PYRENE	mg/kg	0.81		0.306	J	0.442		0.0996	J	0.651	J	2.26	J	0.218	J	0.259	J	0.502		0.633	

Notes:
U or < - Non-detect at laboratory detection limit.
J - The compound was positively identified; however, the associated numerical value is an estimated concentration only.
Sample Type - N = normal sample, FD = duplicate sample.
mg/kg - milligram per kilogram

ATTACHMENT A TABLE 1
SUMMARY OF ANALYTICAL RESULTS - SURFACE
SOIL (0 - 1 FT)
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

	Location ID	CRP-SS118		CRP-SS119		CRP-SS120		CRP-SS120		CRP-SS121		CRP-SS122		CRP-SS122		CRP-SS122		CRP-SS123		MRP1-PES-1A-01	
	Sample Date	1/19/2010		1/19/2010		1/19/2010		1/19/2010		1/19/2010		1/19/2010		1/19/2010		1/19/2010		1/19/2010		4/17/2013	
	Sample ID	CRP-SS118-0612		CRP-SS119-0006		CRP-SS120-0006		CRP-SS120-0612		CRP-SS121-0006		CRP-SS122-0006-D		CRP-SS122-0006		CRP-SS122-0612		CRP-SS123-0006		MRP1-PES-1A-01	
	Sample Type	N		N		N		N		N		FD		N		N		N		N	
	Depth Interval	0.5 - 1 ft		0 - 0.5 ft		0 - 0.5 ft		0.5 - 1 ft		0 - 0.5 ft		0 - 0.5 ft		0 - 0.5 ft		0.5 - 1 ft		0 - 0.5 ft		1 - 1 ft	
Chemical	Unit	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
INORGANICS																					
ARSENIC	mg/kg																			5.2	
CHROMIUM, TOTAL	mg/kg																			9.6	
LEAD	mg/kg	82.5		61.9		59.5		45.2		23.2		157		100		22.7		36		22	
SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs)																					
2-CHLORONAPHTHALENE	mg/kg																			< 0.023	U
1-METHYLNAPHTHALENE	mg/kg																			< 0.023	U
2-METHYLNAPHTHALENE	mg/kg	< 0.376	U	< 0.337	U	< 0.353	U	< 0.305	U	< 0.298	U	< 0.345	U	< 0.331	U	< 0.323	U	< 0.298	U	< 0.023	U
ACENAPHTHENE	mg/kg	< 0.376	U	< 0.337	U	< 0.353	U	< 0.305	U	< 0.298	U	< 0.345	U	< 0.331	U	< 0.323	U	< 0.298	U	0.0012	J
ACENAPHTHYLENE	mg/kg	< 0.376	U	< 0.337	U	< 0.353	U	< 0.305	U	0.0499	J	0.201	J	0.314	J	< 0.323	U	0.0733	J	0.0021	J
ANTHRACENE	mg/kg	0.0676	J	< 0.337	U	0.0762	J	< 0.305	U	0.0522	J	0.128	J	0.218	J	< 0.323	U	0.0958	J	0.003	J
BENZO[A]ANTHRACENE	mg/kg	0.349	J	0.25	J	0.361	J	0.118	J	0.559	J	0.423	J	0.878	J	0.0828	J	0.507	J	0.024	
BENZO[A]PYRENE	mg/kg	0.333	J	0.249	J	0.412		0.109	J	0.528		0.439		0.713		0.0923	J	0.521		0.031	
BENZO[B]FLUORANTHENE	mg/kg	0.377		0.301	J	0.476		0.129	J	0.58		0.596		0.885		0.11	J	0.568		0.02	
BENZO[G,H,I]PERYLENE	mg/kg	0.235	J	0.184	J	0.305	J	0.0909	J	0.382		0.341	J	0.52		0.0715	J	0.353		0.021	
BENZO[K]FLUORANTHENE	mg/kg	0.148	J	0.12	J	0.176	J	0.0608	J	0.255	J	0.208	J	0.326	J	0.0499	J	0.233	J	0.0061	J
CHRYSENE	mg/kg	0.507	J	0.362	J	0.575	J	0.168	J	0.731	J	0.725	J	1.3	J	0.151	J	0.686	J	0.036	
DIBENZ[A,H]ANTHRACENE	mg/kg	0.0596	J	< 0.337	U	0.0714	J	< 0.305	U	0.0737	J	0.0913	J	0.115	J	< 0.323	U	0.0758	J	0.0048	J
FLUORANTHENE	mg/kg	0.52		0.384		0.582		0.221	J	0.857		0.889		1.47		0.156	J	0.81		0.017	
FLUORENE	mg/kg	< 0.376	U	< 0.337	U	< 0.353	U	< 0.305	U	< 0.298	U	< 0.345	U	0.0602	J	< 0.323	U	< 0.298	U	0.00095	J
HPAH, TOTAL	mg/kg	3.28		2.42		3.81		1.18		5.24		5.10		8.55		0.972		5.05		0.20	
INDENO[1,2,3-CD]PYRENE	mg/kg	0.223	J	0.191	J	0.308	J	0.084	J	0.381		0.33	J	0.528		0.0681	J	0.338		0.01	
LPAH, TOTAL	mg/kg	0.308		0.183		0.367		0.0778		0.401		0.796		1.43		0.0758		0.464		0.020	
NAPHTHALENE	mg/kg	< 0.376	U	< 0.337	U	< 0.353	U	< 0.305	U	< 0.298	U	< 0.345	U	< 0.331	U	< 0.323	U	< 0.298	U	< 0.023	U
PAH, TOTAL	mg/kg	3.58		2.60		4.18		1.26		5.64		5.90		9.98		1.05		5.51		0.23	
PHENANTHRENE	mg/kg	0.24	J	0.183	J	0.291	J	0.0778	J	0.299		0.467	J	0.84	J	0.0758	J	0.295	J	0.013	
PYRENE	mg/kg	0.524		0.375		0.548		0.197	J	0.891		1.06	J	1.81	J	0.19	J	0.955		0.035	

Notes:
U or < - Non-detect at laboratory detection limit.
J - The compound was positively identified; however, the associated numerical value is an estimated concentration only.
Sample Type - N = normal sample, FD = duplicate sample.
mg/kg - milligram per kilogram

ATTACHMENT A TABLE 1
SUMMARY OF ANALYTICAL RESULTS - SURFACE
SOIL (0 - 1 FT)
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

	Location ID	MRP1-PES-1B-01		MRP1-PES-1B-01		MRP1-PES-3B-01		MRP1-PES-3C-01		MRP1-PES-3D-01		MRP1-PES-4A-01		MRP1-PES-4B-01		MRP1-PES-4C-01		MRP1-PES-4D-01	
	Sample Date	4/17/2013		4/17/2013		4/20/2013		4/20/2013		4/20/2013		4/19/2013		4/19/2013		4/20/2013		4/20/2013	
	Sample ID	MRP1-PES-1B-01		MRP1-PES-1B-01 DUP		MRP1-PES-3B-01		MRP1-PES-3C-01		MRP1-PES-3D-01		MRP1-PES-4A-01		MRP1-PES-4B-01		MRP1-PES-4C-01		MRP1-PES-4D-01	
	Sample Type	N		FD		N		N		N		N		N		N		N	
	Depth Interval	1 - 1 ft		1 - 1 ft		1 - 1 ft		1 - 1 ft		1 - 1 ft		1 - 1 ft		1 - 1 ft		1 - 1 ft		1 - 1 ft	
Chemical	Unit	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
INORGANICS																			
ARSENIC	mg/kg	13		14		5.7		2.2		3.2		4.9		3.6		2.9		1.2	J
CHROMIUM, TOTAL	mg/kg	12		12		10		9.2		8.4		9.3		8.7		8.3		12	J
LEAD	mg/kg	42		34		34		29		20		14		11		16		29	
SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs)																			
2-CHLORONAPHTHALENE	mg/kg	< 0.022	U	< 0.023	U	< 0.024	U	< 0.026	U	< 0.026	U	< 0.12	U	< 0.47	U	< 0.024	U	< 0.024	U
1-METHYLNAPHTHALENE	mg/kg	0.0024	J	0.0031	J	< 0.024	U	< 0.026	U	0.0029	J	< 0.12	U	< 0.47	U	< 0.024	U	< 0.024	U
2-METHYLNAPHTHALENE	mg/kg	0.006	J	0.0065	J	< 0.024	U	< 0.026	U	0.0026	J	0.013	J	< 0.47	U	< 0.024	U	< 0.024	U
ACENAPHTHENE	mg/kg	0.0031	J	0.0027	J	< 0.0073	U	0.0018	J	0.0013	J	0.056		< 0.14	U	< 0.0073	U	< 0.0072	U
ACENAPHTHYLENE	mg/kg	0.036		0.038		< 0.0073	U	< 0.0078	U	< 0.0079	U	< 0.036	U	< 0.14	U	< 0.0073	U	< 0.0072	U
ANTHRACENE	mg/kg	0.022		0.024		0.0013	J	0.0033	J	0.0026	J	0.12		< 0.14	U	0.00092	J	< 0.0072	U
BENZO[A]ANTHRACENE	mg/kg	0.067		0.068		0.005	J	0.011		0.013		0.5		0.034	J	0.0049	J	0.00089	J
BENZO[A]PYRENE	mg/kg	0.082		0.079		0.0052	J	0.014		0.014		0.69		0.025	J	0.0049	J	0.00077	J
BENZO[B]FLUORANTHENE	mg/kg	0.093		0.092		0.0062	J	0.014		0.017		0.77		0.029	J	0.0059	J	0.00077	J
BENZO[G,H,I]PERYLENE	mg/kg	0.069		0.067		0.0036	J	0.012		0.01		0.55		0.022	J	0.0033	J	< 0.0072	U
BENZO[K]FLUORANTHENE	mg/kg	0.036		0.037		0.0035	J	0.0068	J	0.0072	J	0.26		< 0.14	U	0.0022	J	< 0.0072	U
CHRYSENE	mg/kg	0.09		0.09		0.0051	J	0.011		0.013		0.92		0.13	J	0.0054	J	< 0.0072	U
DIBENZ[A,H]ANTHRACENE	mg/kg	0.018		0.017		0.00076	J	0.0018	J	0.0021	J	0.14		< 0.14	U	0.00073	J	< 0.0072	U
FLUORANTHENE	mg/kg	0.13		0.14		0.0095		0.021		0.021		0.93		0.042	J	0.0096		0.001	J
FLUORENE	mg/kg	0.0051	J	0.0058	J	< 0.0073	U	0.00085	J	< 0.0079	U	0.033	J	< 0.14	U	< 0.0073	U	< 0.0072	U
HPAH, TOTAL	mg/kg	0.77		0.79		0.049		0.12		0.12		6.0		0.35		0.047		0.0043	
INDENO[1,2,3-CD]PYRENE	mg/kg	0.05		0.05		0.0029	J	0.0088		0.0083		0.37		< 0.14	U	0.0026	J	< 0.0072	U
LPAH, TOTAL	mg/kg	0.13		0.15		0.0056		0.018		0.019		0.60		0.033		0.0060		< 0.024	U
NAPHTHALENE	mg/kg	< 0.022	U	< 0.023	U	< 0.024	U	< 0.026	U	0.0033	J	< 0.12	U	< 0.47	U	< 0.024	U	< 0.024	U
PAH, TOTAL	mg/kg	0.90		0.93		0.055		0.14		0.14		6.6		0.38		0.053		0.0043	
PHENANTHRENE	mg/kg	0.06		0.066		0.0043	J	0.012		0.0099		0.38		0.033	J	0.0051	J	< 0.0072	U
PYRENE	mg/kg	0.13		0.15		0.0072	J	0.017		0.017		0.82		0.066	J	0.0076		0.00086	J

Notes:
U or < - Non-detect at laboratory detection limit.
J - The compound was positively identified; however, the associated numerical value is an estimated concentration only.
Sample Type - N = normal sample, FD = duplicate sample.
mg/kg - milligram per kilogram

ATTACHMENT A TABLE 1
SUMMARY OF ANALYTICAL RESULTS - SURFACE
SOIL (0 - 1 FT)
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

	Location ID	MRP1-PES-4E-01		MRP1-PES-4E-01		MRP1-PES-5A-01		MRP1-PES-5B-01		MRP1-PES-S12-01		MRP1-PES-SW1-01		MRP1-PES-SW13-01		MRP1-PES-SW13-01		MRP1-PES-SW4-01		MRP1-PES-SW5-01		MRP1-PES-SW6-01	
	Sample Date	4/19/2013		4/19/2013		4/26/2013		4/26/2013		5/1/2013		4/24/2013		5/1/2013		5/1/2013		4/25/2013		4/25/2013		4/25/2013	
	Sample ID	MRP1-PES-4E-01		MRP1-PES-4E-01DUP		MRP1-PES-5A-01		MRP1-PES-5B-01		MRP1-PES-S12-01 1 FT		MRP1-PES-SW1-01		MRP1-PES-SW13-01 1 FT		P1-PES-SW13-01 DUP 1		MRP1-PES-SW4-01		MRP1-PES-SW5-01		MRP1-PES-SW6-01	
	Sample Type	N		FD		N		N		N		N		N		FD		N		N		N	
	Depth Interval	1 - 1 ft		1 - 1 ft		1 - 1 ft		1 - 1 ft		1 - 1 ft		1 - 1 ft		1 - 1 ft		1 - 1 ft		1 - 1 ft		1 - 1 ft		1 - 1 ft	
Chemical	Unit	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
INORGANICS																							
ARSENIC	mg/kg	6		5.5		7.2		6.2		8.7		4		14		15		7.6		6.8		2.4	
CHROMIUM, TOTAL	mg/kg	8.9		10		9.9		12		11		5.1		14		14		9.8		9.5		5	
LEAD	mg/kg	6.4		6.5		12		26		14		350		55		69		120		300		30	
SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs)																							
2-CHLORONAPHTHALENE	mg/kg	< 0.023	U	< 0.023	U	< 0.022	U	< 0.029	U	< 0.023	U	< 0.22	U	< 0.47	U	< 0.023	U	< 0.024	U	< 0.023	U	< 0.023	U
1-METHYLNAPHTHALENE	mg/kg	0.0026	J	< 0.023	U	< 0.022	U	0.0094	J	0.0036	J	< 0.22	U	< 0.47	U	0.0032	J	0.01	J	0.0072	J	0.0028	J
2-METHYLNAPHTHALENE	mg/kg	0.0026	J	0.0025	J	< 0.022	U	0.016	J	0.0044	J	< 0.22	U	< 0.47	U	0.0055	J	0.013	J	0.011	J	0.0031	J
ACENAPHTHENE	mg/kg	< 0.0069	U	0.00082	J	< 0.0067	U	< 0.0088	U	< 0.0069	U	0.012	J	0.063	J	0.027	J	0.1	J-	0.027		0.025	
ACENAPHTHYLENE	mg/kg	< 0.0069	U	< 0.0069	U	< 0.0067	U	< 0.0088	U	< 0.0069	U	< 0.068	U	0.02	J	0.0094	J	0.012	J-	0.0089		0.01	
ANTHRACENE	mg/kg	0.00088	J	0.0037	J	0.0013	J	0.0012	J	< 0.0069	U	0.088		0.27	J	0.05	J	0.14	J-	0.054		0.053	
BENZO[A]ANTHRACENE	mg/kg	0.0034	J	0.002	J	0.0046	J	0.0041	J	0.0018	J	0.27		7.2	J	0.28	J	0.79		0.27		0.24	
BENZO[A]PYRENE	mg/kg	0.0047	J	0.0022	J	0.0054	J	0.0041	J	0.0022	J	0.29		7.3	J	0.36	J	1		0.35		0.28	
BENZO[B]FLUORANTHENE	mg/kg	0.0053	J	0.0047	J	0.0083		0.006	J	0.0024	J	0.29		3.5	J	0.34	J	1.1		0.36		0.38	
BENZO[G,H,I]PERYLENE	mg/kg	0.004	J	0.0073	J	0.0044	J	0.0032	J	0.0018	J	0.22		2.7	J	0.23	J	0.7		0.23		0.21	
BENZO[K]FLUORANTHENE	mg/kg	0.0019	J	0.0026	J	0.0034	J	0.0028	J	0.0011	J	0.12		0.59	J	0.12	J	0.3	J-	0.12		0.12	
CHRYSENE	mg/kg	0.0049	J	0.0054	J	0.0073		0.0052	J	0.0023	J	0.26		14	J	0.32	J	0.72		0.3		0.25	
DIBENZ[A,H]ANTHRACENE	mg/kg	0.00086	J	< 0.0069	U	0.0011	J	0.0009	J	< 0.0069	U	0.061	J	1.4	J	0.062	J	0.17	J-	0.054		0.045	
FLUORANTHENE	mg/kg	0.0049	J	0.0068	J	0.0083		0.0088		0.0032	J	0.51		1.2	J	0.4	J	1.2		0.48		0.44	
FLUORENE	mg/kg	< 0.0069	U	0.002	J	< 0.0067	U	0.0011	J	< 0.0069	U	0.014	J	0.049	J	0.014	J	0.068	J-	0.02		0.016	
HPAH, TOTAL	mg/kg	0.038		0.051		0.054		0.045		0.019		2.7		43		2.7		7.5		2.7		2.6	
INDENO[1,2,3-CD]PYRENE	mg/kg	0.0029	J	0.0017	J	0.0035	J	0.0028	J	0.0013	J	0.16		0.94	J	0.18	J	0.56		0.18		0.17	
LPAH, TOTAL	mg/kg	0.011		0.014		0.0051		0.036		0.011		0.37		1.5		0.30		1.0		0.38		0.29	
NAPHTHALENE	mg/kg	< 0.023	U	< 0.023	U	< 0.022	U	0.0069	J	0.006	J	< 0.22	U	< 0.47	U	0.011	J	0.018	J	0.012	J	0.0064	J
PAH, TOTAL	mg/kg	0.046		0.065		0.060		0.071		0.027		3.1		45		3.0		8.6		3.1		2.9	
PHENANTHRENE	mg/kg	0.0045	J	0.0053	J	0.0038	J	0.0082	J	0.0032	J	0.26		1.1	J	0.19	J	0.7		0.25		0.18	
PYRENE	mg/kg	0.005	J	0.018	J	0.0081		0.0071	J	0.003	J	0.54		4.5	J	0.41	J	1		0.4		0.43	

Notes:
U or < - Non-detect at laboratory detection limit.
J - The compound was positively identified; however, the associated numerical value is an estimated concentration only.
Sample Type - N = normal sample, FD = duplicate sample.
mg/kg - milligram per kilogram

ATTACHMENT A TABLE 2
SUMMARY OF ANALYTICAL RESULTS - SURFACE
SEDIMENT (0 - 1 FT)
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

	Area	Site		Site		Site		Site		Site		Site		Site	
	Location ID	CRP-SD01		CRP-SD01		CRP-SD02		CRP-SD02		CRP-SD03		CRP-SD03		CRP-SD04	
	Sample Date	6/19/2009		6/19/2009		6/19/2009		6/19/2009		6/18/2009		6/18/2009		6/18/2009	
	Sample ID	CRP-SD01-0006		CRP-SD01-0612		CRP-SD02-0006		CRP-SD02-0612		CRP-SD03-0006-D		CRP-SD03-0006		CRP-SD04-0006	
	Sample Type	N		N		N		N		FD		N		N	
	Depth Interval	0 - 0.5 ft		0.5 - 1 ft		0 - 0.5 ft		0.5 - 1 ft		0 - 0.5 ft		0 - 0.5 ft		0 - 0.5 ft	
Chemical	Unit	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
INORGANICS															
ALUMINUM	mg/kg	3680	J	5070	J	4330		3380	J	2740		2850		3160	
ANTIMONY	mg/kg	1.3	J	3.3	J	1.6	J	< 1.8	UJ	< 0.62	UJ	0.29	J	< 0.62	UJ
ARSENIC	mg/kg	8.8		8.7		8.9		19.4		1.9		2		2.9	
BARIUM	mg/kg	6.1		8.3		13.9		19.1		5.6		6.4		8	
BERYLLIUM	mg/kg	0.28	J	0.33		0.26	J	0.32		0.13	J	0.13	J	0.19	J
CADMIUM	mg/kg	0.15	J	< 0.6	UJ	0.17	J	< 0.61	UJ	0.15	J	0.15	J	0.14	J
CALCIUM	mg/kg	7130		6380		11400		4910		1130		1240		1780	
CHROMIUM, TOTAL	mg/kg	13.7		17.1		13.8		11.4		8.9		9.3		9.9	
COBALT	mg/kg	7.6		10.4		9.3		18.8		3.3		3.3		4	
COPPER	mg/kg	207		47.9		50.7		36.9		5.8		6.9		8.5	
IRON	mg/kg	35200		35100		29600	J	44200		10500	J	10800		13600	J
LEAD	mg/kg	215	J	223	J	424		71.2	J	37.6		33.2		43.3	
MAGNESIUM	mg/kg	2400		2860		2570		3260		1470		1530		1890	
MANGANESE	mg/kg	299		411		437	J	2190		118	J	124	J	143	J
NICKEL	mg/kg	23.2		47.4		23.6		44.8		8		8.4		10.1	
POTASSIUM	mg/kg	452	J	633	J	527	J	596	J	363	J	354	J	459	J
SELENIUM	mg/kg	< 0.78	UJ	< 0.78	UJ	< 0.41	UJ	< 2	U	< 0.27	UJ	< 0.27	U	< 0.27	U
SILVER	mg/kg	< 0.36	U	< 0.36	U	< 0.19	U	< 0.36	U	< 0.12	U	< 0.12	U	< 0.12	U
SODIUM	mg/kg	2670		2390		2550		1770		2770		2560		2880	
THALLIUM	mg/kg	< 0.96	U	< 0.96	U	< 0.5	U	< 0.97	U	< 0.33	U	< 0.33	U	< 0.33	U
VANADIUM	mg/kg	16		17.2		18		13.1		11.8		13.5		12.7	
ZINC	mg/kg	89.3	J	72.4	J	99.7		65.1	J	39.9		40.3		43.3	
SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs)															
2-METHYLNAPHTHALENE	mg/kg	< 0.25	U	< 0.24	U	< 0.25	U	< 0.24	U	< 0.25	U	< 0.25	U	< 0.25	U
ACENAPHTHENE	mg/kg	0.11	J	0.066	J	< 0.25	U	0.063	J	< 0.25	U	< 0.25	U	< 0.25	U
ACENAPHTHYLENE	mg/kg	< 0.25	U	< 0.24	U	< 0.25	U	< 0.24	U	< 0.25	U	< 0.25	U	< 0.25	U
ANTHRACENE	mg/kg	0.16	J	0.094	J	0.045	J	0.091	J	< 0.25	U	< 0.25	U	< 0.25	U
BENZO[A]ANTHRACENE	mg/kg	0.82		0.5		0.34		0.4		< 0.25	U	< 0.25	U	< 0.25	U
BENZO[A]PYRENE	mg/kg	1.1	J	0.65		0.46		0.59		< 0.25	U	< 0.25	U	< 0.25	U
BENZO[B]FLUORANTHENE	mg/kg	1.2	J	0.64		0.41		0.64		< 0.25	U	< 0.25	U	< 0.25	U
BENZO[G,H,I]PERYLENE	mg/kg	0.83	J	0.53		0.35		0.51		< 0.25	U	< 0.25	U	0.15	J
BENZO[K]FLUORANTHENE	mg/kg	0.44	J	0.22	J	0.14	J	0.24	J	< 0.25	U	< 0.25	U	< 0.25	U
CHRYSENE	mg/kg	0.93		0.65		0.45		0.46		< 0.25	U	< 0.25	U	< 0.25	U
DIBENZ[A,H]ANTHRACENE	mg/kg	< 0.25	UJ	0.28		< 0.25	U	< 0.24	U	< 0.25	U	< 0.25	U	< 0.25	U
FLUORANTHENE	mg/kg	1.1		0.68		0.38		0.62		< 0.25	U	< 0.25	U	< 0.25	U
FLUORENE	mg/kg	0.081	J	0.039	J	< 0.25	U	0.039	J	< 0.25	U	< 0.25	U	< 0.25	U
HPAH, TOTAL	mg/kg	8.4		5.4		3.4		4.7		< 0.25	U	< 0.25	U	0.15	
INDENO[1,2,3-CD]PYRENE	mg/kg	0.91	J	0.58		0.42		0.59		< 0.25	U	< 0.25	U	< 0.25	U
LPAH, TOTAL	mg/kg	1.1		0.63		0.3		0.57		< 0.25	U	< 0.25	U	0.03	
NAPHTHALENE	mg/kg	< 0.25	U	< 0.24	U	< 0.25	U	< 0.24	U	< 0.25	U	< 0.25	U	< 0.25	U
PAH, TOTAL	mg/kg	9.5		6		3.7		5.2		< 0.25	U	< 0.25	U	0.18	
PHENANTHRENE	mg/kg	0.75		0.43		0.25	J	0.38		< 0.25	U	< 0.25	U	0.03	J
PYRENE	mg/kg	1.1		0.65		0.47		0.61		< 0.25	U	< 0.25	U	< 0.25	U

Notes:
U or < - Non-detect at laboratory detection limit.
J - The compound was positively identified; however, the associated numerical value is an estimated concentration only.
R - Rejected result.
Sample Type - N = normal sample, FD = duplicate sample.
mg/kg - milligram per kilogram

ATTACHMENT A TABLE 2
SUMMARY OF ANALYTICAL RESULTS - SURFACE
SEDIMENT (0 - 1 FT)
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

	Area	Site		Site		Site		Site		Site		Site		Site	
	Location ID	CRP-SD05		CRP-SD06		CRP-SD06		CRP-SD06		CRP-SD07		CRP-SD07		CRP-SD08	
	Sample Date	6/15/2009		6/15/2009		6/15/2009		6/15/2009		6/15/2009		6/15/2009		6/19/2009	
	Sample ID	CRP-SD05-0006		CRP-SD06-0006-D		CRP-SD06-0006		CRP-SD06-0612		CRP-SD07-0006		CRP-SD07-0612		CRP-SD08-0006	
	Sample Type	N		FD		N		N		N		N		N	
	Depth Interval	0 - 0.5 ft		0 - 0.5 ft		0 - 0.5 ft		0.5 - 1 ft		0 - 0.5 ft		0.5 - 1 ft		0 - 0.5 ft	
Chemical	Unit	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
INORGANICS															
ALUMINUM	mg/kg	3560		4240		4020		4080		3850		4090		3460	
ANTIMONY	mg/kg	< 0.92	U	< 0.9	U	< 0.92	U	< 0.9	U	0.42	J	< 0.9	U	0.87	J
ARSENIC	mg/kg	3		2.6		2.6		2.4		3.5	J	3.2		2.4	
BARIUM	mg/kg	10.1		8.8		8.5		7.8		8.7		8.3		6.5	
BERYLLIUM	mg/kg	0.21	J	0.21	J	0.2	J	0.19	J	0.25	J	0.22	J	0.14	J
CADMIUM	mg/kg	0.15	J	0.18	J	0.19	J	0.15	J	0.15	J	0.1	J	0.19	J
CALCIUM	mg/kg	3460	J	3160	J	3530	J	1320	J	3820	J	943	J	7050	
CHROMIUM, TOTAL	mg/kg	10.3		10.4		10.3		9.1		10		10.3		10.1	
COBALT	mg/kg	3.8		3.2		3.2		3.4		3.3		3.6		3.1	
COPPER	mg/kg	10.7		7.8		7.6		6.5		7		8		6.3	
IRON	mg/kg	13500	J	10900	J	10500	J	10100	J	11900	J	11900	J	10100	J
LEAD	mg/kg	58.3	J	44.3	J	46.1	J	50.1	J	136	J	29.5	J	230	
MAGNESIUM	mg/kg	1880		2040		1950		1930		1760		1980		1700	
MANGANESE	mg/kg	148	J	121	J	116	J	117	J	117	J	123	J	105	J
NICKEL	mg/kg	10.7		8.8		8.4		8.7		9.1		9.5		8	
POTASSIUM	mg/kg	594	J	661	J	660	J	546	J	527	J	622	J	437	J
SELENIUM	mg/kg	< 0.4	UJ	< 0.39	UJ	< 0.4	U	< 0.39	U	< 0.39	U	< 0.39	UJ	< 0.4	UJ
SILVER	mg/kg	< 0.18	U	< 0.18	U	< 0.18	U	< 0.18	U	< 0.18	U	< 0.18	U	< 0.19	U
SODIUM	mg/kg	2820		2530		2570		1770		2150		2440		2170	
THALLIUM	mg/kg	< 0.49	U	< 0.48	U	< 0.49	U	< 0.48	U	< 0.48	U	< 0.48	U	< 0.49	U
VANADIUM	mg/kg	15.3	J	13.4	J	12.9	J	13.1	J	16.8	J	16.1	J	11.7	
ZINC	mg/kg	48.7		41.4		40.5		34.9		40.4		39.7		38.4	
SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs)															
2-METHYLNAPHTHALENE	mg/kg	< 0.25	U	< 0.24	U	< 0.24	U	< 0.24	U	< 0.24	U	< 0.24	U	< 0.25	U
ACENAPHTHENE	mg/kg	< 0.25	U	< 0.24	U	< 0.24	U	< 0.24	U	< 0.24	U	< 0.24	U	< 0.25	U
ACENAPHTHYLENE	mg/kg	< 0.25	U	< 0.24	U	< 0.24	U	< 0.24	U	< 0.24	U	< 0.24	U	< 0.25	U
ANTHRACENE	mg/kg	< 0.25	U	< 0.24	U	< 0.24	U	< 0.24	U	< 0.24	U	< 0.24	U	< 0.25	U
BENZO[A]ANTHRACENE	mg/kg	< 0.25	U	0.06	J	0.068	J	< 0.24	U	0.064	J	< 0.24	U	< 0.25	U
BENZO[A]PYRENE	mg/kg	< 0.25	U	< 0.24	U	< 0.24	U	< 0.24	U	< 0.24	U	< 0.24	U	< 0.25	U
BENZO[B]FLUORANTHENE	mg/kg	< 0.25	U	< 0.24	U	0.1	J	< 0.24	U	< 0.24	U	< 0.24	U	< 0.25	U
BENZO[G,H,I]PERYLENE	mg/kg	< 0.25	U	0.16	J	0.18	J	< 0.24	U	< 0.24	U	< 0.24	U	< 0.25	U
BENZO[K]FLUORANTHENE	mg/kg	< 0.25	U	< 0.24	U	< 0.24	U	< 0.24	U	< 0.24	U	< 0.24	U	< 0.25	U
CHRYSENE	mg/kg	< 0.25	U	0.065	J	0.076	J	< 0.24	U	0.062	J	< 0.24	U	< 0.25	U
DIBENZ[A,H]ANTHRACENE	mg/kg	< 0.25	U	< 0.24	U	< 0.24	U	< 0.24	U	< 0.24	U	< 0.24	U	< 0.25	U
FLUORANTHENE	mg/kg	< 0.25	U	0.085	J	0.087	J	< 0.24	U	0.13	J	< 0.24	U	< 0.25	U
FLUORENE	mg/kg	< 0.25	U	< 0.24	U	< 0.24	U	< 0.24	U	< 0.24	U	< 0.24	U	< 0.25	U
HPAH, TOTAL	mg/kg	0.057		0.46		0.62		< 0.24	U	0.39		< 0.24	U	< 0.25	U
INDENO[1,2,3-CD]PYRENE	mg/kg	< 0.25	U	< 0.24	U	< 0.24	U	< 0.24	U	< 0.24	U	< 0.24	U	< 0.25	U
LPAH, TOTAL	mg/kg	< 0.25	U	0.054		0.052		0.035		0.11		< 0.24	U	< 0.25	U
NAPHTHALENE	mg/kg	< 0.25	U	< 0.24	U	< 0.24	U	< 0.24	U	< 0.24	U	< 0.24	U	< 0.25	U
PAH, TOTAL	mg/kg	0.057		0.52		0.67		0.035		0.5		< 0.24	U	< 0.25	U
PHENANTHRENE	mg/kg	< 0.25	U	0.054	J	0.052	J	0.035	J	0.11	J	< 0.24	U	< 0.25	U
PYRENE	mg/kg	0.057	J	0.092	J	0.11	J	< 0.24	U	0.13	J	< 0.24	U	< 0.25	U

Notes:
U or < - Non-detect at laboratory detection limit.
J - The compound was positively identified; however, the associated numerical value is an estimated concentration only.
R - Rejected result.
Sample Type - N = normal sample, FD = duplicate sample.
mg/kg - milligram per kilogram

ATTACHMENT A TABLE 2
SUMMARY OF ANALYTICAL RESULTS - SURFACE
SEDIMENT (0 - 1 FT)
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

	Area	Site		Site		Site		Site		Site		Site		Site	
	Location ID	CRP-SD08		CRP-SD09		CRP-SD09		CRP-SD10		CRP-SD10		CRP-SD10		CRP-SD11	
	Sample Date	6/19/2009		6/19/2009		6/19/2009		6/17/2009		6/17/2009		6/17/2009		6/16/2009	
	Sample ID	CRP-SD08-0612		CRP-SD09-0006		CRP-SD09-0612		CRP-SD10-0006-D		CRP-SD10-0006		CRP-SD10-0612		CRP-SD11-0006	
	Sample Type	N		N		N		FD		N		N		N	
	Depth Interval	0.5 - 1 ft		0 - 0.5 ft		0.5 - 1 ft		0 - 0.5 ft		0 - 0.5 ft		0.5 - 1 ft		0 - 0.5 ft	
Chemical	Unit	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
INORGANICS															
ALUMINUM	mg/kg	3820		2920		2860		3840		3640		3530		4020	
ANTIMONY	mg/kg	0.32	J	< 0.91	UJ	0.33	J	< 0.91	UJ	< 0.91	UJ	0.34	J	0.29	J
ARSENIC	mg/kg	3.8		2.3		2.1		2.2		2.2		1.9		3	
BARIUM	mg/kg	8.5		6.2		6.1		8		7.5		7		8.2	
BERYLLIUM	mg/kg	0.17	J	0.16	J	0.14	J	0.16	J	0.17	J	0.15	J	0.21	J
CADMIUM	mg/kg	0.22	J	0.19	J	0.2	J	0.21	J	0.17	J	0.16	J	0.16	J
CALCIUM	mg/kg	1690		3540		2450		4930		2990	J	1370	J	6610	J
CHROMIUM, TOTAL	mg/kg	11.3		9.2		9.9		10.8		10		8.6		11.6	
COBALT	mg/kg	3.7		3.5		3.2		2.6		2.4		2.2		2.7	
COPPER	mg/kg	7.9		6.3		6.2		7.1		6.5		5.5		9.3	
IRON	mg/kg	11700	J	11800	J	10600	J	8770		8540	J	7830	J	9940	J
LEAD	mg/kg	54.4		43.1		70.5		73.3		61.3	J	109	J	152	J
MAGNESIUM	mg/kg	1810		1530		1460		1900		1810		1670		2070	
MANGANESE	mg/kg	109	J	127	J	115	J	92.2	J	94.9	J	89.8	J	107	J
NICKEL	mg/kg	9.1		8.8		8.1		7.2		7.2		6.7		8.6	
POTASSIUM	mg/kg	507	J	430	J	401	J	603	J	617	J	500	J	768	J
SELENIUM	mg/kg	< 0.38	U	< 0.39	U	< 0.4	U	< 0.39	UJ	0.4	J	< 0.39	UJ	< 0.28	UJ
SILVER	mg/kg	< 0.18	U	< 0.18	U	< 0.18	U	< 0.18	U	< 0.18	U	< 0.18	U	0.11	J
SODIUM	mg/kg	2050		2150		1900		2630		2750		2120		3910	
THALLIUM	mg/kg	< 0.47	U	< 0.49	U	< 0.49	U	< 0.48	U	< 0.49	U	< 0.49	U	< 0.35	U
VANADIUM	mg/kg	13.6		12.1		11.1		10.4		10.3	J	9.5	J	13.3	J
ZINC	mg/kg	44.3		43.5		41.1		35.4		34.4		29.8		44.4	
SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs)															
2-METHYLNAPHTHALENE	mg/kg	< 0.24	U	< 0.25	U	< 0.25	U								
ACENAPHTHENE	mg/kg	< 0.24	U	< 0.25	U	< 0.25	U								
ACENAPHTHYLENE	mg/kg	< 0.24	U	< 0.25	U	< 0.25	U								
ANTHRACENE	mg/kg	< 0.24	U	< 0.25	U	< 0.25	U								
BENZO[A]ANTHRACENE	mg/kg	< 0.24	U	< 0.25	U	0.11	J								
BENZO[A]PYRENE	mg/kg	< 0.24	U	< 0.25	U	< 0.25	UJ								
BENZO[B]FLUORANTHENE	mg/kg	< 0.24	U	< 0.25	U	< 0.25	UJ								
BENZO[G,H,I]PERYLENE	mg/kg	< 0.24	U	< 0.25	U	0.23	J								
BENZO[K]FLUORANTHENE	mg/kg	< 0.24	U	< 0.25	U	< 0.25	UJ								
CHRYSENE	mg/kg	< 0.24	U	< 0.25	U	0.12	J								
DIBENZ[A,H]ANTHRACENE	mg/kg	< 0.24	U	< 0.25	U	< 0.25	UJ								
FLUORANTHENE	mg/kg	< 0.24	U	< 0.25	U	0.17	J								
FLUORENE	mg/kg	< 0.24	U	< 0.25	U	< 0.25	U								
HPAH, TOTAL	mg/kg	< 0.24	U	< 0.25	U	0.81									
INDENO[1,2,3-CD]PYRENE	mg/kg	< 0.24	U	< 0.25	U	< 0.25	UJ								
LPAH, TOTAL	mg/kg	< 0.24	U	< 0.25	U	0.11									
NAPHTHALENE	mg/kg	< 0.24	U	< 0.25	U	< 0.25	U								
PAH, TOTAL	mg/kg	< 0.24	U	< 0.25	U	0.92									
PHENANTHRENE	mg/kg	< 0.24	U	< 0.25	U	0.11	J								
PYRENE	mg/kg	< 0.24	U	< 0.25	U	0.18	J								

Notes:
U or < - Non-detect at laboratory detection limit.
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R - Rejected result.
Sample Type - N = normal sample, FD = duplicate sample.
mg/kg - milligram per kilogram

ATTACHMENT A TABLE 2
SUMMARY OF ANALYTICAL RESULTS - SURFACE
SEDIMENT (0 - 1 FT)
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

	Area	Site		Site		Site		Site		Site		Site		Site	
	Location ID	CRP-SD11		CRP-SD12		CRP-SD13		CRP-SD13		CRP-SD14		CRP-SD14		CRP-SD15	
	Sample Date	6/16/2009		6/18/2009		6/17/2009		6/17/2009		6/18/2009		6/18/2009		6/16/2009	
	Sample ID	CRP-SD11-0612		CRP-SD12-0006		CRP-SD13-0006		CRP-SD13-0612		CRP-SD14-0006		CRP-SD14-0612		CRP-SD15-0006-D	
	Sample Type	N		N		N		N		N		N		FD	
	Depth Interval	0.5 - 1 ft		0 - 0.5 ft		0 - 0.5 ft		0.5 - 1 ft		0 - 0.5 ft		0.5 - 1 ft		0 - 0.5 ft	
Chemical	Unit	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
INORGANICS															
ALUMINUM	mg/kg	3860		4720		3270		3210		3210		3210		3110	
ANTIMONY	mg/kg	0.51	J	0.41	J	< 0.63	UJ	< 0.62	UJ	< 0.62	UJ	< 0.93	UJ	< 0.93	U
ARSENIC	mg/kg	2.1		3.5		1.9		1.8		1.7		1.8		1.9	
BARIUM	mg/kg	6.4		9.4		6.2		5.7		5.7		5.9		6.5	
BERYLLIUM	mg/kg	0.18	J	0.22	J	0.14	J	0.13	J	0.12	J	0.14	J	0.14	J
CADMIUM	mg/kg	0.095	J	0.18	J	0.11	J	0.14	J	0.12	J	0.16	J	0.13	J
CALCIUM	mg/kg	1030	J	7220		924	J	3480	J	835		672		1730	J
CHROMIUM, TOTAL	mg/kg	9.3		12.5		9.3		8.7		9.1		9.2		8.5	
COBALT	mg/kg	2.6		3.3		2.4		2.4		2.4		2.4		2.2	
COPPER	mg/kg	6.2		10.4		5		5.4		5		5.1		4.8	
IRON	mg/kg	10100	J	11500		8490	J	7800	J	7780		7880		7680	J
LEAD	mg/kg	169	J	99.7		20.9	J	23.5	J	27		39.4		49.1	J
MAGNESIUM	mg/kg	1840		2380		1640		1600		1650		1660		1550	
MANGANESE	mg/kg	112	J	120	J	92.5	J	86.6	J	81.5	J	84	J	86	J
NICKEL	mg/kg	8.2		8.9		6.7		6.6		6.2		6.9		7.2	
POTASSIUM	mg/kg	476	J	773	J	481	J	429	J	443	J	438	J	506	J
SELENIUM	mg/kg	< 0.39	UJ	< 0.28	UJ	< 0.27	UJ	< 0.27	UJ	< 0.27	UJ	< 0.4	UJ	< 0.4	UJ
SILVER	mg/kg	< 0.18	U	< 0.13	U	< 0.13	U	< 0.12	U	< 0.12	U	< 0.19	U	< 0.19	U
SODIUM	mg/kg	2030		3890		2670		2530		2690		2420		2520	
THALLIUM	mg/kg	< 0.48	U	< 0.35	U	< 0.34	U	< 0.33	U	< 0.33	U	< 0.49	U	< 0.49	U
VANADIUM	mg/kg	12	J	12.2		10.2	J	9.1	J	8.7		8.9		9.1	J
ZINC	mg/kg	34.5		43.6		31.6		31.8		29.4		30.7		29.6	
SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs)															
2-METHYLNAPHTHALENE	mg/kg														
ACENAPHTHENE	mg/kg														
ACENAPHTHYLENE	mg/kg														
ANTHRACENE	mg/kg														
BENZO[A]ANTHRACENE	mg/kg														
BENZO[A]PYRENE	mg/kg														
BENZO[B]FLUORANTHENE	mg/kg														
BENZO[G,H,I]PERYLENE	mg/kg														
BENZO[K]FLUORANTHENE	mg/kg														
CHRYSENE	mg/kg														
DIBENZ[A,H]ANTHRACENE	mg/kg														
FLUORANTHENE	mg/kg														
FLUORENE	mg/kg														
HPAH, TOTAL	mg/kg														
INDENO[1,2,3-CD]PYRENE	mg/kg														
LPAH, TOTAL	mg/kg														
NAPHTHALENE	mg/kg														
PAH, TOTAL	mg/kg														
PHENANTHRENE	mg/kg														
PYRENE	mg/kg														

Notes:
U or < - Non-detect at laboratory detection limit.
J - The compound was positively identified; however, the associated numerical value is an estimated concentration only.
R - Rejected result.
Sample Type - N = normal sample, FD = duplicate sample.
mg/kg - milligram per kilogram

ATTACHMENT A TABLE 2
SUMMARY OF ANALYTICAL RESULTS - SURFACE
SEDIMENT (0 - 1 FT)
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

	Area	Site		Site		Site		Site		Site		Site		Site	
	Location ID	CRP-SD15		CRP-SD15		CRP-SD16		CRP-SD16		CRP-SD17		CRP-SD18		CRP-SD18	
	Sample Date	6/16/2009		6/16/2009		6/17/2009		6/17/2009		6/16/2009		6/16/2009		6/16/2009	
	Sample ID	CRP-SD15-0006		CRP-SD15-0612		CRP-SD16-0006		CRP-SD16-0612		CRP-SD17-0006		CRP-SD18-0006		CRP-SD18-0612	
	Sample Type	N		N		N		N		N		N		N	
	Depth Interval	0 - 0.5 ft		0.5 - 1 ft		0 - 0.5 ft		0.5 - 1 ft		0 - 0.5 ft		0 - 0.5 ft		0.5 - 1 ft	
Chemical	Unit	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
INORGANICS															
ALUMINUM	mg/kg	3170		3600		3850		3540		4050	J	2910		2800	
ANTIMONY	mg/kg	< 0.63	U	0.35	J	< 0.64	UJ	0.68	J	< 0.68	U	< 0.64	U	< 0.64	U
ARSENIC	mg/kg	1.9		3		2.6		2.8		3.9		1.7		1.7	
BARIUM	mg/kg	6.1		7.2		8.3		7.4		11.1		5.4		5.5	
BERYLLIUM	mg/kg	0.15	J	0.18	J	0.16	J	0.15	J	0.23	J	0.14	J	0.14	J
CADMIUM	mg/kg	0.11	J	0.15	J	0.21	J	0.21	J	0.2	J	0.068	J	0.08	J
CALCIUM	mg/kg	1660	J	1480	J	12400		5790		36100	J	626	J	604	J
CHROMIUM, TOTAL	mg/kg	8.5		9		10.5		10.3		11.9		7.9		8.2	
COBALT	mg/kg	2.2		2.2		2.7		2.5		3.1		1.9		1.9	
COPPER	mg/kg	4.8		5.7		8.3		7.8		10.5		3.9		4.6	
IRON	mg/kg	7840	J	10100	J	8380		7540		10800	J	7760	J	7660	J
LEAD	mg/kg	48.5	J	83.6	J	37.9		158		27.9	J	7.2	J	7.8	J
MAGNESIUM	mg/kg	1650		2010		1940		1640		2540		1570		1530	
MANGANESE	mg/kg	89.5	J	92.5	J	89.8	J	79.5	J	134	J	92.5	J	86.9	J
NICKEL	mg/kg	7.8		9.4		8.3		8.6		8.5		5.8		5.9	
POTASSIUM	mg/kg	512	J	646	J	663	J	542	J	922	J	460	J	451	J
SELENIUM	mg/kg	< 0.27	U	< 0.3	UJ	< 0.28	UJ	0.33	J	< 0.29	UJ	< 0.28	UJ	< 0.28	U
SILVER	mg/kg	< 0.13	U	< 0.14	U	< 0.13	U	0.058	J	0.086	J	< 0.13	U	< 0.13	U
SODIUM	mg/kg	2790		4530		3390		2190		4910		2800		2850	
THALLIUM	mg/kg	< 0.34	U	< 0.36	U	< 0.34	U	< 0.34	U	< 0.36	U	< 0.34	U	< 0.34	U
VANADIUM	mg/kg	9.5	J	11.7	J	10		9.9		13.7	J	9.7	J	9.9	J
ZINC	mg/kg	30.8		32.5		38.4		35.1		41.8	J	26.5		29.6	
SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs)															
2-METHYLNAPHTHALENE	mg/kg														
ACENAPHTHENE	mg/kg														
ACENAPHTHYLENE	mg/kg														
ANTHRACENE	mg/kg														
BENZO[A]ANTHRACENE	mg/kg														
BENZO[A]PYRENE	mg/kg														
BENZO[B]FLUORANTHENE	mg/kg														
BENZO[G,H,I]PERYLENE	mg/kg														
BENZO[K]FLUORANTHENE	mg/kg														
CHRYSENE	mg/kg														
DIBENZ[A,H]ANTHRACENE	mg/kg														
FLUORANTHENE	mg/kg														
FLUORENE	mg/kg														
HPAH, TOTAL	mg/kg														
INDENO[1,2,3-CD]PYRENE	mg/kg														
LPAH, TOTAL	mg/kg														
NAPHTHALENE	mg/kg														
PAH, TOTAL	mg/kg														
PHENANTHRENE	mg/kg														
PYRENE	mg/kg														

Notes:
U or < - Non-detect at laboratory detection limit.
J - The compound was positively identified; however, the associated numerical value is an estimated concentration only.
R - Rejected result.
Sample Type - N = normal sample, FD = duplicate sample.
mg/kg - milligram per kilogram

ATTACHMENT A TABLE 2
SUMMARY OF ANALYTICAL RESULTS - SURFACE
SEDIMENT (0 - 1 FT)
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

	Area	Site		Site		Site		Site	
	Location ID	CRP-SD19		CRP-SD19		CRP-SD20		CRP-SD20	
	Sample Date	6/16/2009		6/16/2009		6/17/2009		6/17/2009	
	Sample ID	CRP-SD19-0006		CRP-SD19-0612		CRP-SD20-0006		CRP-SD20-0612	
	Sample Type	N		N		N		N	
	Depth Interval	0 - 0.5 ft		0.5 - 1 ft		0 - 0.5 ft		0.5 - 1 ft	
Chemical	Unit	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
INORGANICS									
ALUMINUM	mg/kg	3150		3060		3340		3480	
ANTIMONY	mg/kg	< 0.64	U	< 0.62	U	< 0.63	UJ	< 0.62	UJ
ARSENIC	mg/kg	2		1.8		1.9		1.9	
BARIUM	mg/kg	5.8		5.6		6.6		6.6	
BERYLLIUM	mg/kg	0.15	J	0.14	J	0.13	J	0.13	J
CADMIUM	mg/kg	0.095	J	0.094	J	0.15	J	0.17	J
CALCIUM	mg/kg	894	J	1200	J	3120		2410	
CHROMIUM, TOTAL	mg/kg	8.7		8.5		10		9.8	
COBALT	mg/kg	2.1		2		2.5		2.5	
COPPER	mg/kg	4.5		4.9		5.1		6.3	
IRON	mg/kg	8260	J	7640	J	7940		7890	
LEAD	mg/kg	8.6	J	8.1	J	11		11.4	
MAGNESIUM	mg/kg	1670		1620		1700		1670	
MANGANESE	mg/kg	93.6	J	90	J	83.9	J	82.4	J
NICKEL	mg/kg	6.3		6.2		6.5		7	
POTASSIUM	mg/kg	514	J	465	J	488	J	477	J
SELENIUM	mg/kg	< 0.28	U	< 0.27	UJ	< 0.27	U	< 0.27	UJ
SILVER	mg/kg	< 0.13	U	< 0.12	U	< 0.13	U	< 0.12	U
SODIUM	mg/kg	2940		2720		2590		2170	
THALLIUM	mg/kg	< 0.34	U	< 0.33	U	< 0.33	U	< 0.33	U
VANADIUM	mg/kg	10.2	J	10	J	9.2		9.9	
ZINC	mg/kg	29.5		31.1		31.8		33.4	
SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs)									
2-METHYLNAPHTHALENE	mg/kg								
ACENAPHTHENE	mg/kg								
ACENAPHTHYLENE	mg/kg								
ANTHRACENE	mg/kg								
BENZO[A]ANTHRACENE	mg/kg								
BENZO[A]PYRENE	mg/kg								
BENZO[B]FLUORANTHENE	mg/kg								
BENZO[G,H,I]PERYLENE	mg/kg								
BENZO[K]FLUORANTHENE	mg/kg								
CHRYSENE	mg/kg								
DIBENZ[A,H]ANTHRACENE	mg/kg								
FLUORANTHENE	mg/kg								
FLUORENE	mg/kg								
HPAH, TOTAL	mg/kg								
INDENO[1,2,3-CD]PYRENE	mg/kg								
LPAH, TOTAL	mg/kg								
NAPHTHALENE	mg/kg								
PAH, TOTAL	mg/kg								
PHENANTHRENE	mg/kg								
PYRENE	mg/kg								

Notes:
U or < - Non-detect at laboratory detection limit.
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Sample Type - N = normal sample, FD = duplicate sample.
mg/kg - milligram per kilogram

ATTACHMENT A TABLE 2
SUMMARY OF ANALYTICAL RESULTS - SURFACE
SEDIMENT (0 - 1 FT)
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

	Area	Site		Site		Site		Site		Site		Site		Site	
	Location ID	CRP-SD101		CRP-SD102		CRP-SD103		CRP-SD104		CRP-SD105		CRP-SD106		CRP-SD107	
	Sample Date	12/13/2013		12/13/2013		12/13/2013		4/2/2014		12/6/2013		12/10/2013		12/2/2013	
	Sample ID	OU09 SD101 0012		OU09 SD102 0012		OU09 SD103 0012		OU09 SD104 0012		OU09 SD105 0012		OU09 SD106 0012		OU09 SD107 0612	
	Sample Type	N		N		N		N		N		N		N	
	Depth Interval	0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in		6 - 12 in	
Chemical	Unit	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
ACID VOLATILE SULFIDES AND SIMULTANEOUSLY EXTRACTED METALS															
ACID VOLATILE SULFIDES	umol/g	< 0.10	U	< 0.098	U	6.7		< 0.091	UJ	0.17		0.80	J		
ANTIMONY	umol/g	0.0153	J-	0.00350	J-	0.00220	J-			< 0.0010	U	< 0.00099	UJ		
CADMIUM	umol/g	0.00022	J	0.000027	J	0.00034	J	0.00012	J	< 0.011	U	0.00014	J		
COPPER	umol/g	0.253	J	0.0570	J	1.80	J	0.0319	J	0.014		0.028	J		
LEAD	umol/g	1.48		0.131		0.213		0.0332		0.010	J+	0.024	J		
MERCURY	umol/g	< 0.000030	UJ		R		R				R		R		
NICKEL	umol/g	0.0990		0.0075		0.688		0.0413	J	< 0.0046	U	0.014	J		
ZINC	umol/g	0.209	J-	0.0244	J-	0.272	J-	0.295	J	< 0.0076	U	0.11	J		
INORGANICS															
ALUMINUM	mg/kg	7990		6480		4800		3000		4450		5850		5060	
ANTIMONY	mg/kg	1.1	J	17.5	J	0.68	J	0.072	J-	< 0.067	U	0.07	J-	0.05	J
ARSENIC	mg/kg	11.5		38.1		11.3		5.44	J-	1.4		2.4		2.5	
BARIUM	mg/kg	11.0		10.6		29.6		5.79		8.0		9.5	J	7.6	
BERYLLIUM	mg/kg	0.44	J-	0.33	J-	0.29	J-	0.238		0.17		0.24		0.25	
CADMIUM	mg/kg	0.19	J	0.14	J	0.12	J	0.111		0.06	J	0.09	J	0.03	J
CALCIUM	mg/kg	1990		2560		4820		4060		2720		25600	J	897	
CHROMIUM VI	mg/kg	1.2		0.42	J			< 0.44	U						
CHROMIUM, TOTAL	mg/kg	13.5	J-	13.5	J-	12.4	J-	15.1		11.5		14.3	J	8.8	
COBALT	mg/kg	16.4		9.3		15.6		10.3		2.9		4.2		4.4	
COPPER	mg/kg	39.1	J	92.2	J	43.5	J	9.24	J+	7.1		10.2	J	33.5	
IRON	mg/kg	42600		36300		38200		24300		8710		12400		9040	
LEAD	mg/kg	180	J	1830	J	128	J	10.6		12.8		18.0	J	5.2	
MAGNESIUM	mg/kg	3640		3040		4120		1500		2130		3010		1890	
MANGANESE	mg/kg	964		224		454		463		92.4		167	J+	105	
MERCURY	mg/kg	0.01	J	0.02	J	0.01	J	0.012	J	0.09		0.03	J	0.02	J
NICKEL	mg/kg	32.6	J	23.6	J	33.7	J	22.4		7.2		9.4		8.8	
POTASSIUM	mg/kg	556	J	967	J	824	J	427		659		997	J+	537	
SELENIUM	mg/kg	< 0.35	UJ	< 0.43	UJ	< 0.32	UJ	0.23	J	< 0.34	U	0.14	J	0.14	J
SILVER	mg/kg	0.02	J	0.10	J	0.16	J	0.045	J	0.1		0.14	J	0.02	J
SODIUM	mg/kg	1670		1540		2990		2190		2840		3560		1760	
THALLIUM	mg/kg	0.05	J	0.1		0.05	J	< 0.068	U	0.05	J	0.06	J	0.04	J
VANADIUM	mg/kg	19.0	J-	22.0	J-	23.5	J-	14.8		10.2		15.3		13.1	
ZINC	mg/kg	98.2	J-	90.6	J-	117	J-	139	J	32.4		46.0	J	26.0	
SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs)															
2-METHYLNAPHTHALENE	mg/kg														
ACENAPHTHENE	mg/kg	0.047	J	0.0070	J	0.01	J	< 0.012	U	< 0.012	U	0.0043	J		
ACENAPHTHYLENE	mg/kg	< 0.012	U	< 0.011	U	< 0.012	U	< 0.012	U	< 0.012	U	< 0.012	U		
ANTHRACENE	mg/kg	0.062		0.011	J	0.015	J	< 0.012	U	0.0030	J	0.0073	J		
BENZO[A]ANTHRACENE	mg/kg	0.38	J	0.074	J	0.098	J	0.0055	J	0.018	J	0.042	J		
BENZO[A]PYRENE	mg/kg	0.37	J	0.08	J	0.094	J	0.0065	J	0.02	J	0.051	J		
BENZO[B]FLUORANTHENE	mg/kg	0.47	J	0.1	J	0.13	J	0.0080	J	0.03		0.066	J		
BENZO[G,H,I]PERYLENE	mg/kg	0.13	J	0.036	J	0.036	J	0.0029	J	0.0090	J	0.024	J		
BENZO[K]FLUORANTHENE	mg/kg	0.16	J	0.034		0.044	J	< 0.012	U	0.012	J	0.022	J		
CHRYSENE	mg/kg	0.68		0.093		0.11	J	0.0070	J	0.016	J	0.052			
DIBENZ[A,H]ANTHRACENE	mg/kg	0.087	J	0.019	J	0.019	J	0.0026	J	0.0028	J	0.014	J		
FLUORANTHENE	mg/kg	0.55		0.1		0.14	J	0.0097	J	0.028		0.062			
FLUORENE	mg/kg	0.026		0.0047	J	0.0072	J	< 0.012	U	< 0.012	U	< 0.012	U		
HPAH, TOTAL	mg/kg	3.7		0.68		0.85		0.049		0.18		0.43			
INDENO[1,2,3-CD]PYRENE	mg/kg	0.22	J	0.051		0.049	J	< 0.024	UJ	0.012	J	0.037			
LPAH, TOTAL	mg/kg	0.44		0.083		0.11		0.0034		0.017		0.044			
NAPHTHALENE	mg/kg	0.03	J	< 0.011	U	< 0.012	U	< 0.012	U	< 0.012	U	< 0.012	U		
PAH, TOTAL	mg/kg	4.1		0.76		0.96		0.052		0.19		0.47			
PHENANTHRENE	mg/kg	0.27		0.06		0.077	J	0.0034	J	0.014	J	0.032			
PYRENE	mg/kg	0.67	J	0.09	J	0.13	J	0.0066	J	0.03		0.061			

ATTACHMENT A TABLE 2
SUMMARY OF ANALYTICAL RESULTS - SURFACE
SEDIMENT (0 - 1 FT)
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

	Area	Site		Site		Site		Site		Site		Site		Site	
	Location ID	CRP-SD101		CRP-SD102		CRP-SD103		CRP-SD104		CRP-SD105		CRP-SD106		CRP-SD107	
	Sample Date	12/13/2013		12/13/2013		12/13/2013		4/2/2014		12/6/2013		12/10/2013		12/2/2013	
	Sample ID	OU09 SD101 0012		OU09 SD102 0012		OU09 SD103 0012		OU09 SD104 0012		OU09 SD105 0012		OU09 SD106 0012		OU09 SD107 0612	
	Sample Type	N		N		N		N		N		N		N	
	Depth Interval	0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in		6 - 12 in	
Chemical	Unit	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
OTHER															
PERCENT GRAVEL	%			46.7				45.1		0.8					
PERCENT SAND	%			36.6				49.3		90.7					
PERCENT SAND, COARSE	%			11.0				6.9		2.4					
PERCENT SAND, FINE	%			11.3				35.5		59.2					
PERCENT SAND, MEDIUM	%			14.3				6.9		29.1					
SIEVE 1 INCH (25.4-MM)	%			11.2				12.7		0					
SIEVE 1-1/2 INCH (37.5-MM)	%			0				0		0					
SIEVE 2 INCH (50-MM)	%			0				0		0					
SIEVE 3 INCH (75-MM)	%			0				0		0					
SIEVE 3/4 INCH (19-MM)	%			8.0				11.6		0					
SIEVE 3/8 INCH (9.5-MM)	%			15.8				11.9		0					
SIEVE NO. 004 (4.75-MM)	%			11.7				8.9		0.8					
SIEVE NO. 010 (2-MM)	%			11.0				6.9		2.4					
SIEVE NO. 020 (850-UM)	%			7.1				4.2		7.5					
SIEVE NO. 040 (425-UM)	%			7.2				2.7		21.6					
SIEVE NO. 060 (250-UM)	%			6.2				22.4		28.5					
SIEVE NO. 080 (180-UM)	%			2.2				8.9		13.2					
SIEVE NO. 100 (150-UM)	%			0.8				2.1		7.2					
SIEVE NO. 200 (75-UM)	%			2.1				2.1		10.3					
TOTAL ORGANIC CARBON	mg/kg	9300		16000		16000		7800		6300		12000			

Notes:
U or < - Non-detect at laboratory detection limit.
J - The compound was positively identified; however, the associated numerical value is an estimated concentration only (+ and - indicate bias).
R - Rejected result.
Sample Type - N = normal sample, FD = duplicate sample.
mg/kg - milligram per kilogram
umol/g - micromole per gram.

ATTACHMENT A TABLE 2
SUMMARY OF ANALYTICAL RESULTS - SURFACE
SEDIMENT (0 - 1 FT)
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

	Area	Site		Site		Site		Site		Site		Site		Site	
	Location ID	CRP-SD107		CRP-SD108		CRP-SD108		CRP-SD108		CRP-SD109		CRP-SD110		CRP-SD111	
	Sample Date	12/10/2013		12/3/2013		12/3/2013		12/10/2013		12/3/2013		12/3/2013		12/4/2013	
	Sample ID	OU09 SD107 0012		FD-01_SE_120313		OU09 SD108 0612		OU09 SD108 0012		OU09 SD109 0012		OU09 SD110 0012		OU09 SD111 0012	
	Sample Type	N		FD		N		N		N		N		N	
	Depth Interval	0 - 12 in		6 - 12 in		6 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in	
Chemical	Unit	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
ACID VOLATILE SULFIDES AND SIMULTANEOUSLY EXTRACTED METALS															
ACID VOLATILE SULFIDES	umol/g	< 0.094	UJ					0.54	J	< 0.076	U	37		2.1	J-
ANTIMONY	umol/g	< 0.00085	UJ					< 0.00099	UJ	0.00021	J	0.0032		< 0.00095	U
CADMIUM	umol/g	0.000056	J					0.00011	J	< 0.00102	U	< 0.0024	U	< 0.00103	U
COPPER	umol/g	0.016	J					0.011	J	0.0130		0.102		0.0123	
LEAD	umol/g	0.012	J					0.010	J	0.00825		0.110		0.0126	
MERCURY	umol/g	< 0.000030	UJ						R	0.000074		< 0.000024	U		R
NICKEL	umol/g	0.0065	J					0.011	J	0.0083		0.0581		< 0.0069	U
ZINC	umol/g	0.060	J					0.077	J	< 0.0621	U	0.728		0.100	
INORGANICS															
ALUMINUM	mg/kg	4230		2930		3220		3550		3470		4950		3430	
ANTIMONY	mg/kg	0.10	J-	0.05	J	0.05	J	0.08	J-	0.05	J	0.05	J	0.06	J
ARSENIC	mg/kg	2.5		1.3		1.4		1.5		1.4		2.0		1.6	
BARIUM	mg/kg	4.8	J	5.1		5.8		5.4	J	6.2		8.8		5.5	
BERYLLIUM	mg/kg	0.17		0.12		0.12		0.14		0.14		0.23		0.15	
CADMIUM	mg/kg	0.06	J	< 0.095	U	< 0.10	U	0.04	J	< 0.082	U	0.08		0.05	J
CALCIUM	mg/kg	8010	J	1680		1530		940	J	2050		19700		4750	
CHROMIUM VI	mg/kg											< 0.40	UJ		
CHROMIUM, TOTAL	mg/kg	10.4	J	8.2		9.1		10.5	J	9.5		13.0		7.9	
COBALT	mg/kg	3.4		2.0		2.2		2.5		2.2		2.8		2.3	
COPPER	mg/kg	6.2	J	3.9		4.2		4.9	J	4.3		7.9		4.1	
IRON	mg/kg	10900		6570		7050		7630		7180		8950		7420	
LEAD	mg/kg	9.9	J	8.1		8.8		8.8	J	7.6		13.2		7.6	
MAGNESIUM	mg/kg	2150		1500		1670		1890		1670		2370		1690	
MANGANESE	mg/kg	91.4	J+	65.9		72.8		79.9	J+	78.0		98.1		77.4	
MERCURY	mg/kg	0.03	J	0.02	J	0.03	J	0.02	J	0.02	J	0.06		0.05	
NICKEL	mg/kg	7.5		5.6		5.8		7.6		6.8		7.9		5.6	
POTASSIUM	mg/kg	514	J+	422		490		520	J+	492		869		465	
SELENIUM	mg/kg	0.22	J	< 0.48	U	< 0.51	U	0.18	J	< 0.41	U	< 0.36	U	0.15	J
SILVER	mg/kg	0.06	J	0.05	J	0.06	J	0.05	J	0.04	J	0.12		0.04	J
SODIUM	mg/kg	2730		1960	J-	2200	J-	2560		2100	J-	3870	J-	2440	
THALLIUM	mg/kg	0.05	J	0.04	J	0.05	J	0.04	J	0.04	J	0.06	J	0.04	J
VANADIUM	mg/kg	9.9		7.6		8.4		9.5		8.7		12.4		8.6	
ZINC	mg/kg	30.1	J	25.2		26.6		25.3	J	29.0		39.6		27.8	
SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs)															
2-METHYLNAPHTHALENE	mg/kg														
ACENAPHTHENE	mg/kg	0.0033	J					< 0.011	U	< 0.012	U	< 0.011	U	< 0.012	U
ACENAPHTHYLENE	mg/kg	< 0.011	U					< 0.011	U	< 0.012	U	< 0.011	U	< 0.012	U
ANTHRACENE	mg/kg	0.0049	J					< 0.011	U	< 0.012	U	0.0018	J	< 0.012	U
BENZO[A]ANTHRACENE	mg/kg	0.028						< 0.022	U	< 0.012	U	0.0094	J	0.0046	J
BENZO[A]PYRENE	mg/kg	0.035						< 0.011	U	< 0.012	U	0.015	J	0.0062	J
BENZO[B]FLUORANTHENE	mg/kg	0.031						0.0050	J	< 0.012	U	0.02	J	0.0070	J
BENZO[G,H,I]PERYLENE	mg/kg	0.022	J					< 0.011	UJ	< 0.012	U	0.0091	J	0.0037	J
BENZO[K]FLUORANTHENE	mg/kg	0.022						< 0.011	U	< 0.012	U	0.0089	J	0.0044	J
CHRYSENE	mg/kg	0.033	J					0.0034	J	0.0028	J	0.013	J	0.0064	J
DIBENZ[A,H]ANTHRACENE	mg/kg	0.011	J					0.0058	J	< 0.012	U	0.0035	J	< 0.012	U
FLUORANTHENE	mg/kg	0.031						< 0.022	U	0.0031	J	0.016	J	0.0070	J
FLUORENE	mg/kg	< 0.011	U					< 0.011	U	< 0.012	U	< 0.011	U	< 0.012	U
HPAH, TOTAL	mg/kg	0.27						0.022		0.012		0.13		0.053	
INDENO[1,2,3-CD]PYRENE	mg/kg	0.023	J					0.0046	J	0.0029	J	0.013	J	0.0059	J
LPAH, TOTAL	mg/kg	0.026						< 0.011	U	< 0.012	U	0.0092		0.0033	
NAPHTHALENE	mg/kg	< 0.011	U					< 0.011	U	< 0.012	U	< 0.011	U	< 0.012	U
PAH, TOTAL	mg/kg	0.29						0.022		0.012		0.14		0.056	
PHENANTHRENE	mg/kg	0.018	J					< 0.011	U	< 0.012	U	0.0074	J	0.0033	J
PYRENE	mg/kg	0.032						0.0036	J	0.0035	J	0.018	J	0.0073	J

ATTACHMENT A TABLE 2
SUMMARY OF ANALYTICAL RESULTS - SURFACE
SEDIMENT (0 - 1 FT)
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

	Area	Site		Site		Site		Site		Site		Site		Site	
	Location ID	CRP-SD107		CRP-SD108		CRP-SD108		CRP-SD108		CRP-SD109		CRP-SD110		CRP-SD111	
	Sample Date	12/10/2013		12/3/2013		12/3/2013		12/10/2013		12/3/2013		12/3/2013		12/4/2013	
	Sample ID	OU09 SD107 0012		FD-01_SE_120313		OU09 SD108 0612		OU09 SD108 0012		OU09 SD109 0012		OU09 SD110 0012		OU09 SD111 0012	
	Sample Type	N		FD		N		N		N		N		N	
	Depth Interval	0 - 12 in		6 - 12 in		6 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in	
Chemical	Unit	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
OTHER															
PERCENT GRAVEL	%									1.3		8.0		16.6	
PERCENT SAND	%									95.0		84.5		69.7	
PERCENT SAND, COARSE	%									5.2		6.7		6.2	
PERCENT SAND, FINE	%									67.3		41.6		45.4	
PERCENT SAND, MEDIUM	%									22.5		36.2		18.1	
SIEVE 1 INCH (25.4-MM)	%									0		0		0	
SIEVE 1-1/2 INCH (37.5-MM)	%									0		0		0	
SIEVE 2 INCH (50-MM)	%									0		0		0	
SIEVE 3 INCH (75-MM)	%									0		0		0	
SIEVE 3/4 INCH (19-MM)	%									0		0		8.3	
SIEVE 3/8 INCH (9.5-MM)	%									0		6.1		6.0	
SIEVE NO. 004 (4.75-MM)	%									1.3		1.9		2.3	
SIEVE NO. 010 (2-MM)	%									5.2		6.7		6.2	
SIEVE NO. 020 (850-UM)	%									6.4		10.5		5.2	
SIEVE NO. 040 (425-UM)	%									16.1		25.7		12.9	
SIEVE NO. 060 (250-UM)	%									53.6		33.7		35.2	
SIEVE NO. 080 (180-UM)	%									10.0		4.6		6.8	
SIEVE NO. 100 (150-UM)	%									2.1		1.5		1.7	
SIEVE NO. 200 (75-UM)	%									1.6		1.8		1.7	
TOTAL ORGANIC CARBON	mg/kg	11000						7200		36000		12000		7000	

Notes:
U or < - Non-detect at laboratory detection limit.
J - The compound was positively identified; however, the associated numerical value is an estimated concentration only (+ and - indicate bias).
R - Rejected result.
Sample Type - N = normal sample, FD = duplicate sample.
mg/kg - milligram per kilogram
umol/g - micromole per gram.

ATTACHMENT A TABLE 2
SUMMARY OF ANALYTICAL RESULTS - SURFACE
SEDIMENT (0 - 1 FT)
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

	Area	Site		Site		Site		Site		Site		Site		Site	
	Location ID	CRP-SD112		CRP-SD113		CRP-SD114		CRP-SD115		CRP-SD116		CRP-SD117		CRP-SD117	
	Sample Date	12/5/2013		12/5/2013		12/17/2013		12/17/2013		4/2/2014		12/3/2013		12/10/2013	
	Sample ID	OU09 SD112 0012		OU09 SD113 0012		OU09 SD114 0012		OU09 SD115 0012		OU09 SD116 0012		OU09 SD117 0612		OU09 SD117 0012	
	Sample Type	N		N		N		N		N		N		N	
	Depth Interval	0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in		6 - 12 in		0 - 12 in	
Chemical	Unit	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
ACID VOLATILE SULFIDES AND SIMULTANEOUSLY EXTRACTED METALS															
ACID VOLATILE SULFIDES	umol/g	< 0.092	U	0.25		< 0.098	U	< 0.092	U	< 0.091	UJ			< 0.098	UJ
ANTIMONY	umol/g	< 0.00095	U	< 0.00098	U	0.000040	J	0.00033	J					< 0.0010	UJ
CADMIUM	umol/g	< 0.0010	U	< 0.0011	U	0.00013	J	0.00015	J	0.00014	J			0.00013	J
COPPER	umol/g	0.0153		< 0.0094	U	0.00958		0.0044	J	0.0087	J			0.0074	J
LEAD	umol/g	0.012	J+	0.020	J+	0.0361		0.022	J	0.0423				0.028	J
MERCURY	umol/g		R	< 0.000024	UJ	< 0.000023	UJ	< 0.000023	UJ						R
NICKEL	umol/g	< 0.0082	U	< 0.0064	U	0.00486		0.0057		0.00458	J			0.0077	J
ZINC	umol/g	0.11		< 0.064	U	0.0558		0.034	J	0.0263	J			0.047	J
INORGANICS															
ALUMINUM	mg/kg	3200		3370		3340		3910		3310		2930		3140	
ANTIMONY	mg/kg	< 0.081	U	0.10		0.10	J	0.25	J-	0.184	J-	0.75		0.58	J-
ARSENIC	mg/kg	1.4		1.5		1.3		2.0		2.67	J-	2.1		2.1	
BARIUM	mg/kg	5.1		7.0		5.8		7.9		4.54		5.4		5.4	J
BERYLLIUM	mg/kg	0.12		0.14		0.15		0.16		0.149		0.16		0.14	
CADMIUM	mg/kg	0.05	J	0.06	J	0.07	J	0.11		0.056	J	0.10		0.08	J
CALCIUM	mg/kg	3570		821		857		970		931		1590		977	J
CHROMIUM VI	mg/kg														
CHROMIUM, TOTAL	mg/kg	8.2		9.4		9.9		8.4		7.09	B	11.1		11.5	J
COBALT	mg/kg	2.2		2.3		2.7		2.6		3.03		3.7		3.8	
COPPER	mg/kg	4.3		4.7		5.0		18.8	J-	4.56	J+	20.0		7.0	J
IRON	mg/kg	7240		7270		7470		7500		9760		11500		11200	
LEAD	mg/kg	9.2		23.6		21.2	J+	57.9	J	36.7		27.3		25.5	J
MAGNESIUM	mg/kg	1650		1750		1550		1690		1630		1500		1810	
MANGANESE	mg/kg	69.8		79.0		86.4	J+	87.2		86.4	B	122		119	J+
MERCURY	mg/kg	0.06		0.07		0.02	J	0.01	J	0.0057	J	0.03		0.01	J
NICKEL	mg/kg	6.0		6.7		7.4		6.8		7.60		9.9		8.9	
POTASSIUM	mg/kg	430		523		490	J	643		405		354		452	J+
SELENIUM	mg/kg	< 0.40	U	< 0.28	U	< 0.41	U	< 0.35	U	< 0.39	U	0.11	J	0.15	J
SILVER	mg/kg	0.04	J	0.06	J	0.06	J	0.05	J	0.049	J	0.07	J	0.05	J
SODIUM	mg/kg	2480		3240		2450		2280		2170		1890		3170	
THALLIUM	mg/kg	0.03	J	0.05	J	0.05	J	0.07		< 0.077	U	0.04	J	0.04	J
VANADIUM	mg/kg	8.0		9.2		9.8		11.0		10.4		15.9		15.7	
ZINC	mg/kg	25.7		27.7		28.6		55.6	J-	25.2	J	47.1		36.3	J
SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs)															
2-METHYLNAPHTHALENE	mg/kg														
ACENAPHTHENE	mg/kg	< 0.012	U	< 0.012	U	< 0.012	U	< 0.011	U	< 0.012	U			0.0026	J
ACENAPHTHYLENE	mg/kg	< 0.012	U	< 0.012	U	< 0.012	U	< 0.011	U	< 0.012	U			< 0.011	U
ANTHRACENE	mg/kg	< 0.012	U	0.0020	J	0.0042	J	0.0018	J	< 0.012	U			0.0032	J
BENZO[A]ANTHRACENE	mg/kg	0.0033	J	0.01	J	0.02	J	0.011	J	< 0.024	U			< 0.022	U
BENZO[A]PYRENE	mg/kg	< 0.012	U	0.012	J	0.021	J	0.014	J	0.012	J			0.025	
BENZO[B]FLUORANTHENE	mg/kg	0.0090	J	0.021	J	0.014	J	0.018	J	0.013	J			0.024	
BENZO[G,H,I]PERYLENE	mg/kg	< 0.012	UJ	0.0056	J	0.01	J	0.0056	J	0.0072	J			0.015	J
BENZO[K]FLUORANTHENE	mg/kg	0.0043	J	0.0065	J	0.016	J	< 0.011	U	< 0.012	UJ			0.018	J
CHRYSENE	mg/kg	< 0.012	U	0.0055	J	0.024	J	0.011	J	< 0.024	U			0.024	J
DIBENZ[A,H]ANTHRACENE	mg/kg	< 0.012	U	0.0027	J	< 0.012	U	0.0028	J	0.0055	J			0.0092	J
FLUORANTHENE	mg/kg	0.0037	J	0.012	J	0.023	J	0.014	J	0.012	J			0.024	
FLUORENE	mg/kg	< 0.012	U	< 0.012	U	< 0.012	U	< 0.011	U	< 0.012	U			< 0.011	U
HPAH, TOTAL	mg/kg	0.028		0.098		0.16		0.097		0.074				0.18	
INDENO[1,2,3-CD]PYRENE	mg/kg	0.0031	J	0.0077	J	0.013	J	0.0076	J	0.014	J			0.018	J
LPAH, TOTAL	mg/kg	0.0023		0.0094		0.02		0.0096		0.0059				0.022	
NAPHTHALENE	mg/kg	< 0.012	U	< 0.012	U	< 0.012	U	< 0.011	U	< 0.012	U			< 0.011	U
PAH, TOTAL	mg/kg	0.031		0.11		0.18		0.11		0.08				0.2	
PHENANTHRENE	mg/kg	0.0023	J	0.0074	J	0.016	J	0.0078	J	0.0059	J			0.016	J
PYRENE	mg/kg	0.0049	J	0.015	J	0.018	J	0.013	J	0.01	J			0.025	

ATTACHMENT A TABLE 2
SUMMARY OF ANALYTICAL RESULTS - SURFACE
SEDIMENT (0 - 1 FT)
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

	Area	Site		Site		Site		Site		Site		Site		Site	
	Location ID	CRP-SD112		CRP-SD113		CRP-SD114		CRP-SD115		CRP-SD116		CRP-SD117		CRP-SD117	
	Sample Date	12/5/2013		12/5/2013		12/17/2013		12/17/2013		4/2/2014		12/3/2013		12/10/2013	
	Sample ID	OU09 SD112 0012		OU09 SD113 0012		OU09 SD114 0012		OU09 SD115 0012		OU09 SD116 0012		OU09 SD117 0612		OU09 SD117 0012	
	Sample Type	N		N		N		N		N		N		N	
	Depth Interval	0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in		6 - 12 in		0 - 12 in	
Chemical	Unit	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
OTHER															
PERCENT GRAVEL	%	3.6								3.8				0	
PERCENT SAND	%	92.1								94.2				91.9	
PERCENT SAND, COARSE	%	1.4								4.9				0.1	
PERCENT SAND, FINE	%	82.4								77.3				90.6	
PERCENT SAND, MEDIUM	%	8.3								12.0				1.2	
SIEVE 1 INCH (25.4-MM)	%	0								0				0	
SIEVE 1-1/2 INCH (37.5-MM)	%	0								0				0	
SIEVE 2 INCH (50-MM)	%	0								0				0	
SIEVE 3 INCH (75-MM)	%	0								0				0	
SIEVE 3/4 INCH (19-MM)	%	1.5								0				0	
SIEVE 3/8 INCH (9.5-MM)	%	1.2								0.4				0	
SIEVE NO. 004 (4.75-MM)	%	0.9								3.4				0	
SIEVE NO. 010 (2-MM)	%	1.4								4.9				0.1	
SIEVE NO. 020 (850-UM)	%	1.9								5.4				0.2	
SIEVE NO. 040 (425-UM)	%	6.4								6.6				1.0	
SIEVE NO. 060 (250-UM)	%	64.4								38.5				26.6	
SIEVE NO. 080 (180-UM)	%	14.9								23.6				39.0	
SIEVE NO. 100 (150-UM)	%	2.0								8.1				13.7	
SIEVE NO. 200 (75-UM)	%	1.0								7.1				11.3	
TOTAL ORGANIC CARBON	mg/kg	5500		5000		6700		9100		7600				5300	

Notes:
U or < - Non-detect at laboratory detection limit.
J - The compound was positively identified; however, the associated numerical value is an estimated concentration only (+ and - indicate bias).
R - Rejected result.
Sample Type - N = normal sample, FD = duplicate sample.
mg/kg - milligram per kilogram
umol/g - micromole per gram.

ATTACHMENT A TABLE 2
SUMMARY OF ANALYTICAL RESULTS - SURFACE
SEDIMENT (0 - 1 FT)
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

	Area	Site		Site		Site		Site		Site		Site		Site	
	Location ID	CRP-SD118		CRP-SD119		CRP-SD120		CRP-SD121		CRP-SD122		CRP-SD123		CRP-SD124	
	Sample Date	12/10/2013		12/6/2013		12/5/2013		12/4/2013		12/12/2013		12/12/2013		12/12/2013	
	Sample ID	OU09 SD118 0012		OU09 SD119 0012		OU09 SD120 0012		OU09 SD121 0012		OU09 SD122 0012		OU09 SD123 0012		OU09 SD124 0012	
	Sample Type	N		N		N		N		N		N		N	
	Depth Interval	0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in	
Chemical	Unit	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
ACID VOLATILE SULFIDES AND SIMULTANEOUSLY EXTRACTED METALS															
ACID VOLATILE SULFIDES	umol/g	1.8		1.2		1.7	J-	< 0.091	UJ	< 0.098	U	< 0.080	U	< 0.086	U
ANTIMONY	umol/g	< 0.00098	U	0.0026		< 0.00092	U	< 0.00090	U	0.024		0.0016		0.00068	J
CADMIUM	umol/g	0.00027	J	< 0.0011	U	< 0.00100	U	< 0.00098	U	0.00015	J	0.000066	J	0.000072	J
COPPER	umol/g	0.018	J	0.018		0.0209		0.0102		5.2	J	0.13	J	0.25	J
LEAD	umol/g	0.18	J	0.24	J+	0.0848		0.00946		0.74	J	0.53	J	0.22	J
MERCURY	umol/g		R		R		R	0.000018	J	< 0.000024	UJ		R	< 0.000022	UJ
NICKEL	umol/g	0.014		0.011		< 0.0083	U	< 0.00615	U	0.081		0.040		0.016	
ZINC	umol/g	0.11		0.10		0.138		< 0.0582	U	0.26		0.14		0.091	
INORGANICS															
ALUMINUM	mg/kg	3290		6830		4470		3650		4740		5510		5160	
ANTIMONY	mg/kg	0.41	J-	0.71		0.21		0.07	J	36.7		0.23		0.58	
ARSENIC	mg/kg	1.3		3.6		2.1		1.8		19.0		8.1		9.9	
BARIUM	mg/kg	6.8	J	9.5		8.8		6.4		26.6	J	15.2	J	7.8	J
BERYLLIUM	mg/kg	0.15		0.32		0.20		0.15		0.30		0.22		0.31	
CADMIUM	mg/kg	0.03	J	0.06	J	0.12		0.08		0.07		0.05	J	0.16	
CALCIUM	mg/kg	936	J	18900		2960		886		1520	J	4840	J	2300	J
CHROMIUM VI	mg/kg	< 0.36	UJ					< 0.34	UJ	< 0.39	UJ	< 0.38	U	< 0.34	UJ
CHROMIUM, TOTAL	mg/kg	9.5	J	13.3		11.9		10.4		11.1	J	10.2	J	12.0	J
COBALT	mg/kg	3.3		5.3		2.9		2.4		14.1		8.7		10.4	
COPPER	mg/kg	5.9	J	7.7		8.2		5.6		25.8	J	31.6	J	42.0	J
IRON	mg/kg	11000		13800		8560		7690		34700		28600		39100	
LEAD	mg/kg	113	J	191		72.3		10.2		4290	J	98.9	J	131	J
MAGNESIUM	mg/kg	1830		2900		2020		1710		2270		2880		2280	
MANGANESE	mg/kg	105	J+	113		87.8		78.4		543		273		481	
MERCURY	mg/kg	0.01	J	0.07		0.08		0.05		< 0.014	U	< 0.013	U	0.004	J
NICKEL	mg/kg	8.2		15.3		8.2		6.9		23.5		20.6		23.4	
POTASSIUM	mg/kg	456	J+	554		713		519		359		356		402	
SELENIUM	mg/kg	< 0.25	U	< 0.35	U	< 0.39	U	0.24	J	< 0.35	U	< 0.31	U	< 0.30	U
SILVER	mg/kg	0.03	J	0.07	J	0.13		0.07	J	0.15	J	0.02	J	0.02	J
SODIUM	mg/kg	2520		2860		2560		1960		1940		757		1210	
THALLIUM	mg/kg	0.04	J	0.04	J	0.06	J	0.06	J	0.03	J	0.02	J	0.03	J
VANADIUM	mg/kg	11.1		13.7		11.4		9.7		17.7		13.5		18.7	
ZINC	mg/kg	29.7	J	43.8		37.6		31.9		91.6	J	83.4	J	110	J
SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs)															
2-METHYLNAPHTHALENE	mg/kg														
ACENAPHTHENE	mg/kg	< 0.012	U	0.0048	J	0.0062	J	< 0.012	U	0.0097	J	0.032		0.044	
ACENAPHTHYLENE	mg/kg	< 0.012	U	< 0.013	U	< 0.011	U	< 0.012	U	0.0018	J	0.0022	J	< 0.01	U
ANTHRACENE	mg/kg	< 0.012	U	0.0069	J	0.01	J	< 0.012	U	0.015	J	0.06		0.056	
BENZO[A]ANTHRACENE	mg/kg	< 0.024	U	0.039		0.055		0.0087	J	0.11		0.42	J	0.4	J
BENZO[A]PYRENE	mg/kg	0.0044	J	0.052		0.074		0.011	J	0.11	J	0.31	J	0.48	J
BENZO[B]FLUORANTHENE	mg/kg	0.0062	J	0.077		0.086		0.012	J	0.081		0.26		0.32	
BENZO[G,H,I]PERYLENE	mg/kg	< 0.012	UJ	0.024	J	0.043		0.0067	J	0.043	J	0.13	J	0.16	J
BENZO[K]FLUORANTHENE	mg/kg	< 0.012	U	0.019	J	0.031	J	0.0081	J	0.068		0.14		0.21	
CHRYSENE	mg/kg	0.0058	J	0.043		0.069		0.012	J	0.12	J	0.69	J	0.63	J
DIBENZ[A,H]ANTHRACENE	mg/kg	< 0.012	U	0.0073	J	0.015	J	0.0032	J	0.029		0.099		0.1	
FLUORANTHENE	mg/kg	< 0.024	U	0.047		0.074		0.013	J	0.12		0.28		0.52	J
FLUORENE	mg/kg	< 0.012	U	< 0.013	U	0.0041	J	< 0.012	U	0.0076	J	0.024		0.026	
HPAH, TOTAL	mg/kg	0.025		0.39		0.58		0.098		0.83		3		3.9	
INDENO[1,2,3-CD]PYRENE	mg/kg	0.0044	J	0.031		0.059	J	0.0095	J	0.048		0.13		0.19	
LPAH, TOTAL	mg/kg	< 0.012	U	0.043		0.064		0.0067		0.12		0.36		0.44	
NAPHTHALENE	mg/kg	< 0.012	U	< 0.013	U	< 0.011	U	< 0.012	U	0.0046	J	0.0056	J	0.017	J
PAH, TOTAL	mg/kg	0.025		0.44		0.65		0.1		0.94		3.4		4.3	
PHENANTHRENE	mg/kg	< 0.012	U	0.031		0.044		0.0067	J	0.079		0.24		0.3	
PYRENE	mg/kg	0.0046	J	0.053		0.076		0.014	J	0.1	J	0.56	J	0.84	J

ATTACHMENT A TABLE 2
SUMMARY OF ANALYTICAL RESULTS - SURFACE
SEDIMENT (0 - 1 FT)
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

	Area	Site		Site		Site		Site		Site		Site		Site	
	Location ID	CRP-SD118		CRP-SD119		CRP-SD120		CRP-SD121		CRP-SD122		CRP-SD123		CRP-SD124	
	Sample Date	12/10/2013		12/6/2013		12/5/2013		12/4/2013		12/12/2013		12/12/2013		12/12/2013	
	Sample ID	OU09 SD118 0012		OU09 SD119 0012		OU09 SD120 0012		OU09 SD121 0012		OU09 SD122 0012		OU09 SD123 0012		OU09 SD124 0012	
	Sample Type	N		N		N		N		N		N		N	
	Depth Interval	0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in	
Chemical	Unit	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
OTHER															
PERCENT GRAVEL	%	39.0		4.5		3.2		0.7		54.2					
PERCENT SAND	%	50.7		74.6		87.1		93.8		43.2					
PERCENT SAND, COARSE	%	15.6		7.2		5.7		2.7		11.6					
PERCENT SAND, FINE	%	21.5		50.6		62.1		68.9		7.7					
PERCENT SAND, MEDIUM	%	13.6		16.8		19.3		22.2		23.9					
SIEVE 1 INCH (25.4-MM)	%	12.6		0		0		0		13.4					
SIEVE 1-1/2 INCH (37.5-MM)	%	0		0		0		0		0					
SIEVE 2 INCH (50-MM)	%	0		0		0		0		0					
SIEVE 3 INCH (75-MM)	%	0		0		0		0		0					
SIEVE 3/4 INCH (19-MM)	%	2.7		0		0		0		14.3					
SIEVE 3/8 INCH (9.5-MM)	%	10.3		0		0.2		0		16.9					
SIEVE NO. 004 (4.75-MM)	%	13.4		4.5		3.0		0.7		9.6					
SIEVE NO. 010 (2-MM)	%	15.6		7.2		5.7		2.7		11.6					
SIEVE NO. 020 (850-UM)	%	7.2		6.5		6.5		5.8		10.7					
SIEVE NO. 040 (425-UM)	%	6.4		10.3		12.8		16.4		13.2					
SIEVE NO. 060 (250-UM)	%	7.4		17.6		18.4		29.1		6.1					
SIEVE NO. 080 (180-UM)	%	3.6		11.5		19.8		26.2		0.9					
SIEVE NO. 100 (150-UM)	%	3.4		9.3		11.8		8.9		0.4					
SIEVE NO. 200 (75-UM)	%	7.1		12.2		12.1		4.7		0.2					
TOTAL ORGANIC CARBON	mg/kg	8200		9000		12000		8800		16000		10000		9100	

Notes:
U or < - Non-detect at laboratory detection limit.
J - The compound was positively identified; however, the associated numerical value is an estimated concentration only (+ and - indicate bias).
R - Rejected result.
Sample Type - N = normal sample, FD = duplicate sample.
mg/kg - milligram per kilogram
umol/g - micromole per gram.

ATTACHMENT A TABLE 2
SUMMARY OF ANALYTICAL RESULTS - SURFACE
SEDIMENT (0 - 1 FT)
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

	Area	Site		Site		Site		Site		Site		Site		Site	
	Location ID	CRP-SD125		CRP-SD126		CRP-SD128		CRP-SD129		CRP-SD130		CRP-SD130		CRP-SD131	
	Sample Date	12/11/2013		12/12/2013		4/1/2014		4/1/2014		4/1/2014		4/1/2014		4/1/2014	
	Sample ID	OU09 SD125 0012		OU09 SD126 0012		OU09 SD128 0012		OU09 SD129 0012		OU09 SD130 0012		FDSD040114		OU09 SD131 0012	
	Sample Type	N		N		N		N		N		FD		N	
	Depth Interval	0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in	
Chemical	Unit	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
ACID VOLATILE SULFIDES AND SIMULTANEOUSLY EXTRACTED METALS															
ACID VOLATILE SULFIDES	umol/g	0.058	J	7.7		0.078	J-	< 0.091	UJ	0.098	J-	0.11	J-	1.8	J-
ANTIMONY	umol/g	< 0.00093	U	0.0021											
CADMIUM	umol/g	0.00027	J	0.000041	J	0.000062	J	< 0.00060	U	0.000090	J	0.000041	J	0.00036	J
COPPER	umol/g	0.014	J	0.057	J	0.0064	J	0.0140	J	0.106	J	0.125	J	0.0211	J
LEAD	umol/g	0.027	J	0.041	J	0.0448		0.122		0.0982		0.109		0.0179	
MERCURY	umol/g		R		R										
NICKEL	umol/g	0.0085		0.025		0.0035	J	0.0223	J	0.0723	J	0.0434	J	0.00965	J
ZINC	umol/g	0.12		0.22		0.0292	J	0.0322	J	0.348	J	0.212	J	0.135	J
INORGANICS															
ALUMINUM	mg/kg	3380		4050		4180		7950		3720		3630		5040	
ANTIMONY	mg/kg	0.10		0.05	J	0.13	J-	2.40	J-	0.430	J-	0.604	J-	0.079	J-
ARSENIC	mg/kg	1.8		2.0		1.73	J-	11.9	J-	5.67	J-	5.92	J-	3.04	J-
BARIUM	mg/kg	5.9	J	6.2	J	5.45		8.87		5.78		6.04		8.78	
BERYLLIUM	mg/kg	0.13		0.17		0.193		0.342		0.268		0.276		0.227	
CADMIUM	mg/kg	0.06	J	0.05	J	0.037	J	0.067	J	0.0971		0.101		0.127	
CALCIUM	mg/kg	1120	J	15500	J	782		1400		7790		8360		24100	
CHROMIUM VI	mg/kg					< 0.44	U	< 0.46	U	< 0.48	U	< 0.50	U		
CHROMIUM, TOTAL	mg/kg	8.3	J	11.4	J	14.8	B	13.2	B	12.6	B	13.5	B	13.4	B
COBALT	mg/kg	2.5		3.3		2.49		10.3		9.54		9.08		3.08	
COPPER	mg/kg	4.4	J	6.7	J	5.88	J+	21.9	J+	33.4	J+	22.3	J+	8.62	J+
IRON	mg/kg	7830		9510		9100		37000		31100		32400		9850	
LEAD	mg/kg	17.9	J	11.0	J	52.8		774		57.7		59.4		15.1	
MAGNESIUM	mg/kg	1650		2090		1880		2980		2110		2110		2500	
MANGANESE	mg/kg	85.6		106		84.8	B	1510	B	382	B	388	B	111	B
MERCURY	mg/kg	0.02	J	0.03	J	0.015	J	0.012	J	0.011	J	0.014	J	0.0574	
NICKEL	mg/kg	6.5		8.3		11.3		26.8		23.6		20.7		8.17	
POTASSIUM	mg/kg	461		602		543		468		334		346		1020	
SELENIUM	mg/kg	< 0.41	U	< 0.36	U	< 0.42	U	< 0.46	U	< 0.26	U	< 0.29	U	< 0.47	U
SILVER	mg/kg	0.04	J	0.06	J	0.036	J	0.035	J	0.0706		0.051	J	0.129	
SODIUM	mg/kg	2290		3500		1870		645		1100		1110		4040	
THALLIUM	mg/kg	0.04	J	0.04	J	< 0.084	U	< 0.091	U	< 0.053	U	< 0.059	U	< 0.094	U
VANADIUM	mg/kg	9.1		9.8		10.1		16.9		20.9		22.9		12.9	
ZINC	mg/kg	28.7	J	30.8	J	21.8	J	82.8	J	84.1	J	94.1	J	40.4	J
SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs)															
2-METHYLNAPHTHALENE	mg/kg														
ACENAPHTHENE	mg/kg	< 0.012	U	< 0.012	U	< 0.012	U	0.019	J	0.0085	J	0.012	J	0.0042	J
ACENAPHTHYLENE	mg/kg	< 0.012	U	< 0.012	U	< 0.012	U	< 0.012	UJ	< 0.013	U	0.0040	J	0.0017	J
ANTHRACENE	mg/kg	< 0.012	U	0.0030	J	0.0025	J	0.038	J	0.014	J	0.021	J	0.0089	J
BENZO[A]ANTHRACENE	mg/kg	0.0053	J	0.012	J	< 0.024	U	0.24	J	0.088	J	0.15	J	0.034	J
BENZO[A]PYRENE	mg/kg	0.0051	J	0.015	J	0.017	J	0.24	J	0.1	J	0.15	J	0.039	J
BENZO[B]FLUORANTHENE	mg/kg	0.0076	J	0.015	J	0.018	J	0.2	J	0.11	J	0.17	J	0.056	J
BENZO[G,H,I]PERYLENE	mg/kg	< 0.012	UJ	0.0049	J	0.0095	J	0.095	J	0.064	J	0.082	J	0.023	J
BENZO[K]FLUORANTHENE	mg/kg	< 0.012	U	0.012	J	0.0038	J	0.048	J	0.044	J	0.042	J	0.014	J
CHRYSENE	mg/kg	0.0098	J	0.016	J	< 0.024	U	0.28	J	0.11	J	0.18	J	0.039	J
DIBENZ[A,H]ANTHRACENE	mg/kg	< 0.012	U	< 0.012	U	0.0057	J	0.053	J	0.026	J	0.038	J	0.0080	J
FLUORANTHENE	mg/kg	0.0056	J	0.015	J	0.02	J	0.22	J	0.12		0.18		0.063	
FLUORENE	mg/kg	< 0.012	U	< 0.012	U	< 0.012	U	0.014	J	0.0063	J	0.011	J	< 0.013	U
HPAH, TOTAL	mg/kg	0.039		0.11		0.11		1.7		0.85		1.3		0.36	
INDENO[1,2,3-CD]PYRENE	mg/kg	< 0.012	U	0.0093	J	0.017	J	0.12	J	0.1	J	0.14	J	0.042	J
LPAH, TOTAL	mg/kg	0.0035		0.013		0.013		0.23		0.097		0.16		0.047	
NAPHTHALENE	mg/kg	< 0.012	U	< 0.012	U	< 0.012	U	0.0044	J	< 0.013	U	< 0.013	U	< 0.013	U
PAH, TOTAL	mg/kg	0.042		0.12		0.12		1.9		0.95		1.4		0.41	
PHENANTHRENE	mg/kg	0.0035	J	0.0095	J	0.01	J	0.16	J	0.068		0.11		0.032	
PYRENE	mg/kg	0.0055	J	0.013	J	0.017	J	0.21	J	0.088	J	0.14	J	0.043	J

ATTACHMENT A TABLE 2
SUMMARY OF ANALYTICAL RESULTS - SURFACE
SEDIMENT (0 - 1 FT)
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

	Area	Site		Site		Site		Site		Site		Site		Site	
	Location ID	CRP-SD125		CRP-SD126		CRP-SD128		CRP-SD129		CRP-SD130		CRP-SD130		CRP-SD131	
	Sample Date	12/11/2013		12/12/2013		4/1/2014		4/1/2014		4/1/2014		4/1/2014		4/1/2014	
	Sample ID	OU09 SD125 0012		OU09 SD126 0012		OU09 SD128 0012		OU09 SD129 0012		OU09 SD130 0012		FDSD040114		OU09 SD131 0012	
	Sample Type	N		N		N		N		N		FD		N	
	Depth Interval	0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in	
Chemical	Unit	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
OTHER															
PERCENT GRAVEL	%					1.8		50.9		56.5		68.7		9.6	
PERCENT SAND	%					91.8		46.2		43.3		30.7		73.4	
PERCENT SAND, COARSE	%					3.4		10.3		10.9		6.4		7.6	
PERCENT SAND, FINE	%					72.0		10.9		15.9		12.7		38.0	
PERCENT SAND, MEDIUM	%					16.4		25.0		16.5		11.6		27.8	
SIEVE 1 INCH (25.4-MM)	%					0		0		7.9		41.4		0	
SIEVE 1-1/2 INCH (37.5-MM)	%					0		0		23.4		0		0	
SIEVE 2 INCH (50-MM)	%					0		0		0		0		0	
SIEVE 3 INCH (75-MM)	%					0		0		0		0		0	
SIEVE 3/4 INCH (19-MM)	%					0		21.7		1.9		0		4.4	
SIEVE 3/8 INCH (9.5-MM)	%					0		18.7		12.0		18.3		2.9	
SIEVE NO. 004 (4.75-MM)	%					1.8		10.5		11.3		9.0		2.3	
SIEVE NO. 010 (2-MM)	%					3.4		10.3		10.9		6.4		7.6	
SIEVE NO. 020 (850-UM)	%					6.1		11.2		7.8		5.2		10.9	
SIEVE NO. 040 (425-UM)	%					10.3		13.8		8.7		6.4		16.9	
SIEVE NO. 060 (250-UM)	%					20.4		7.3		11.2		8.8		23.3	
SIEVE NO. 080 (180-UM)	%					27.5		1.9		2.9		2.4		8.2	
SIEVE NO. 100 (150-UM)	%					11.6		0.7		0.9		0.7		2.9	
SIEVE NO. 200 (75-UM)	%					12.5		1.1		0.9		0.7		3.6	
TOTAL ORGANIC CARBON	mg/kg	4900		11000		5700		14000		5900		6400		11000	

Notes:
U or < - Non-detect at laboratory detection limit.
J - The compound was positively identified; however, the associated numerical value is an estimated concentration only (+ and - indicate bias).
R - Rejected result.
Sample Type - N = normal sample, FD = duplicate sample.
mg/kg - milligram per kilogram
umol/g - micromole per gram.

ATTACHMENT A TABLE 2
SUMMARY OF ANALYTICAL RESULTS - SURFACE
SEDIMENT (0 - 1 FT)
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

	Area	Site		Site	
	Location ID	CRP-SD132		CRP-SD133	
	Sample Date	4/2/2014		4/2/2014	
	Sample ID	OU09 SD132 0012		OU09 SD133 0012	
	Sample Type	N		N	
	Depth Interval	0 - 12 in		0 - 12 in	
Chemical	Unit	Result	Qualifier	Result	Qualifier
ACID VOLATILE SULFIDES AND SIMULTANEOUSLY EXTRACTED METALS					
ACID VOLATILE SULFIDES	umol/g	< 0.11	UJ	< 0.091	UJ
ANTIMONY	umol/g				
CADMIUM	umol/g	0.00010	J	0.000026	J
COPPER	umol/g	0.0176	J	0.0096	J
LEAD	umol/g	0.0862		0.0450	
MERCURY	umol/g				
NICKEL	umol/g	0.00823	J	0.0023	J
ZINC	umol/g	0.0623	J	0.0288	J
INORGANICS					
ALUMINUM	mg/kg	5550		3120	
ANTIMONY	mg/kg	0.449	J-	0.077	J-
ARSENIC	mg/kg	3.69	J-	1.49	J-
BARIUM	mg/kg	11.1		5.02	
BERYLLIUM	mg/kg	0.264		0.138	
CADMIUM	mg/kg	0.153		0.027	J
CALCIUM	mg/kg	4440		858	
CHROMIUM VI	mg/kg				
CHROMIUM, TOTAL	mg/kg	15.8		8.34	B
COBALT	mg/kg	4.30		2.68	
COPPER	mg/kg	12.9	J+	5.23	J+
IRON	mg/kg	13500		7970	
LEAD	mg/kg	135		29.6	
MAGNESIUM	mg/kg	2610		1530	
MANGANESE	mg/kg	127		98.8	B
MERCURY	mg/kg	0.0519		0.012	J
NICKEL	mg/kg	11.4		6.93	
POTASSIUM	mg/kg	1090		465	
SELENIUM	mg/kg	0.434		< 0.45	U
SILVER	mg/kg	0.169		0.037	J
SODIUM	mg/kg	3980		2260	
THALLIUM	mg/kg	< 0.084	U	< 0.090	U
VANADIUM	mg/kg	16.5		8.50	
ZINC	mg/kg	50.6	J	26.7	J
SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs)					
2-METHYLNAPHTHALENE	mg/kg				
ACENAPHTHENE	mg/kg	0.016	J	0.0024	J
ACENAPHTHYLENE	mg/kg	0.0020	J	< 0.012	U
ANTHRACENE	mg/kg	0.028		0.0042	J
BENZO[A]ANTHRACENE	mg/kg	0.14	J	0.033	J
BENZO[A]PYRENE	mg/kg	0.16	J	0.035	J
BENZO[B]FLUORANTHENE	mg/kg	0.19	J	0.035	J
BENZO[G,H,I]PERYLENE	mg/kg	0.11	J	0.018	J
BENZO[K]FLUORANTHENE	mg/kg	0.075	J	0.0080	J
CHRYSENE	mg/kg	0.16	J	0.043	J
DIBENZ[A,H]ANTHRACENE	mg/kg	0.042	J	0.01	J
FLUORANTHENE	mg/kg	0.23		0.044	
FLUORENE	mg/kg	0.012	J	< 0.012	U
HPAH, TOTAL	mg/kg	1.4		0.29	
INDENO[1,2,3-CD]PYRENE	mg/kg	0.19	J	0.033	J
LPAH, TOTAL	mg/kg	0.18		0.031	
NAPHTHALENE	mg/kg	0.0042	J	< 0.012	U
PAH, TOTAL	mg/kg	1.6		0.32	
PHENANTHRENE	mg/kg	0.12		0.024	J
PYRENE	mg/kg	0.15	J	0.032	J

ATTACHMENT A TABLE 2
SUMMARY OF ANALYTICAL RESULTS - SURFACE
SEDIMENT (0 - 1 FT)
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

	Area	Site		Site	
	Location ID	CRP-SD132		CRP-SD133	
	Sample Date	4/2/2014		4/2/2014	
	Sample ID	OU09 SD132 0012		OU09 SD133 0012	
	Sample Type	N		N	
	Depth Interval	0 - 12 in		0 - 12 in	
Chemical	Unit	Result	Qualifier	Result	Qualifier
OTHER					
PERCENT GRAVEL	%	6.7		0	
PERCENT SAND	%	80.3		96.8	
PERCENT SAND, COARSE	%	5.6		0	
PERCENT SAND, FINE	%	47.3		95.5	
PERCENT SAND, MEDIUM	%	27.4		1.3	
SIEVE 1 INCH (25.4-MM)	%	0		0	
SIEVE 1-1/2 INCH (37.5-MM)	%	0		0	
SIEVE 2 INCH (50-MM)	%	0		0	
SIEVE 3 INCH (75-MM)	%	0		0	
SIEVE 3/4 INCH (19-MM)	%	1.8		0	
SIEVE 3/8 INCH (9.5-MM)	%	1.2		0	
SIEVE NO. 004 (4.75-MM)	%	3.7		0	
SIEVE NO. 010 (2-MM)	%	5.6		0	
SIEVE NO. 020 (850-UM)	%	11.6		0	
SIEVE NO. 040 (425-UM)	%	15.8		1.3	
SIEVE NO. 060 (250-UM)	%	20.3		29.0	
SIEVE NO. 080 (180-UM)	%	11.1		49.5	
SIEVE NO. 100 (150-UM)	%	6.6		10.1	
SIEVE NO. 200 (75-UM)	%	9.3		6.9	
TOTAL ORGANIC CARBON	mg/kg	14000		6300	

Notes:
U or < - Non-detect at laboratory detection limit.
J - The compound was positively identified; however, the associated numerical value is an estimated concentration only (+ and - indicate bias).
R - Rejected result.
Sample Type - N = normal sample, FD = duplicate sample.
mg/kg - milligram per kilogram
umol/g - micromole per gram.

ATTACHMENT A TABLE 2
SUMMARY OF ANALYTICAL RESULTS - SURFACE
SEDIMENT (0 - 1 FT)
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

	Area	Background		Background		Background		Background		Background		Background		Background		Background	
	Location ID	CRP-SD301		CRP-SD302		CRP-SD303		CRP-SD303		CRP-SD304		CRP-SD304		CRP-SD305		CRP-SD305	
	Sample Date	4/2/2014		12/11/2013		12/13/2013		12/13/2013		12/13/2013		12/13/2013		12/12/2013		12/12/2013	
	Sample ID	BSBG SD301 0012		BSBG SD302 0012		BSBG SD303 0012		FDSD12131302		BSBG SD304 0012		FDSD12131301		BSBG SD305 0012		FDSD12121302	
	Sample Type	N		N		N		FD		N		FD		N		FD	
	Depth Interval	0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in	
Chemical	Unit	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
ACID VOLATILE SULFIDES AND SIMULTANEOUSLY EXTRACTED METALS																	
ACID VOLATILE SULFIDES	umol/g	< 0.091	U	34	J	< 0.088	U	< 0.088	U	< 0.084	U			36		40	
ANTIMONY	umol/g			0.00074	J-	0.00168	J-	0.00060	J-	0.00077	J-			0.00401	J-	0.00544	J-
CADMIUM	umol/g	0.00027	J	0.00072	J	< 0.00060	U	0.00014	J	0.000069	J			0.00087		0.00164	
COPPER	umol/g	0.0129		0.11	J	0.0405	J	0.0344	J	0.0602	J			0.112	J	0.219	J
LEAD	umol/g	0.00498		0.071	J	0.0268		0.0236		0.0270				0.0896		0.136	
MERCURY	umol/g				R	< 0.000026	UJ	< 0.000029	UJ	< 0.000028	UJ				R		R
NICKEL	umol/g	0.0118		0.035	J	0.00546		0.0139		0.0188				0.0417	J	0.0834	J
ZINC	umol/g	0.0554		0.41	J	0.0464	J-	0.0579	J-	0.132	J-			0.523	J-	0.807	J-
INORGANICS																	
ALUMINUM	mg/kg	3230		5350		3680		4420		3840		3550		8970		13800	
ANTIMONY	mg/kg	0.068	J-	0.08	J-	0.06	J	0.04	J	0.07	J	0.1	J	0.07	J	0.11	J
ARSENIC	mg/kg	2.07	J	3.4		2.2		1.7		5.7		5.7		5.5		8.1	
BARIUM	mg/kg	5.65		10.7	J	4.1		5.2		7.6		6.5		25.3	J	44.8	J
BERYLLIUM	mg/kg	0.199		0.27		0.17	J-	0.18	J-	0.24	J-	0.23	J-	0.53	J-	0.77	J-
CADMIUM	mg/kg	0.072	J	0.14		0.02	J	0.02	J	0.04	J	0.04	J	0.23		0.49	
CALCIUM	mg/kg	590		31200	J	792		1250		8480		10100		154000	J	79000	J
CHROMIUM VI	mg/kg	< 0.42	U	< 0.33	UJ	0.62	J	0.53	J								
CHROMIUM, TOTAL	mg/kg	7.53		19.0	J	7.7	J-	9.0	J-	9.1	J-	8.8	J-	31.0	J	72.2	J
COBALT	mg/kg	2.92		3.6		2.9		3.0		8.0		6.8		4.8		6.8	
COPPER	mg/kg	4.65	B	14.3	J	6.6	J	9.0	J	14.1	J	11.3	J	25.4	J	73.3	J
IRON	mg/kg	9090		11100		13700		11400		27200		28300		15300		22500	
IRON, FERROUS	mg/kg			1.0													
LEAD	mg/kg	6.00		22.2	J	10.1	J	15.1	J	11.1	J	10.9	J	38.0	J	84.5	J
MAGNESIUM	mg/kg	1540		2950		1700		2030		1740		1680		4650		6450	
MANGANESE	mg/kg	86.8	J-	127	J+	99.9		105		282		247		236		287	
MERCURY	mg/kg	0.0043	J	0.08	J	0.02	J	0.01	J	0.006	J	0.01	J	0.17	J	0.62	J
NICKEL	mg/kg	7.11		9.0		8.4	J	8.9	J	17.7	J	15.0	J	12.4	J	18.2	J
POTASSIUM	mg/kg	499	J+	1210	J+	322	J	472	J	328	J	316	J	2720	J	3940	J
SELENIUM	mg/kg	0.17	J	0.33	J	< 0.28	UJ	< 0.37	UJ	< 0.33	UJ	< 0.31	UJ	0.76	J-	0.88	J-
SILVER	mg/kg	0.039	J	0.27	J	0.03	J	0.04	J	0.03	J	0.03	J	0.44	J	0.90	J
SODIUM	mg/kg	2200	J+	4660		1750		2270		1420		1240		11600		12900	
THALLIUM	mg/kg	< 0.080	U	0.07	J	0.02	J	0.02	J	0.02	J	0.02	J	0.14		0.20	
VANADIUM	mg/kg	11.6		15.8		9.0	J-	9.6	J-	18.9	J-	18.1	J-	27.2	J-	38.7	J-
ZINC	mg/kg	23.6		54.7	J	38.2	J-	36.1	J-	67.0	J-	59.0	J-	75.1	J	142	J
POLYCHLORINATED BIPHENYLS (PCBs)																	
AROCLOR-1016	mg/kg			< 0.0017	U	< 0.0019	U	< 0.0020	U	< 0.0018	U			< 0.0030	U	< 0.0032	U
AROCLOR-1221	mg/kg			< 0.0017	U	< 0.0019	U	< 0.0020	U	< 0.0018	U			< 0.0030	U	< 0.0032	U
AROCLOR-1232	mg/kg			< 0.0020	U	< 0.0022	U	< 0.0023	U	< 0.0022	U			< 0.0035	U	< 0.0038	U
AROCLOR-1242	mg/kg			< 0.0017	U	< 0.0019	U	< 0.0020	U	< 0.0018	U			< 0.0030	U	< 0.0032	U
AROCLOR-1248	mg/kg			< 0.0017	U	< 0.0019	U	< 0.0020	U	< 0.0018	U			< 0.0030	U	< 0.0032	U
AROCLOR-1254	mg/kg			< 0.0017	U	< 0.0019	U	< 0.0020	U	< 0.0018	U			< 0.0030	U	< 0.0032	U
AROCLOR-1260	mg/kg			< 0.0017	U	0.18	J	0.096	J	< 0.0018	U			< 0.0030	U	< 0.0032	U
AROCLOR-1262	mg/kg			< 0.0017	U	< 0.0019	U	< 0.0020	U	< 0.0018	U			< 0.0030	U	< 0.0032	U
AROCLOR-1268	mg/kg			< 0.0017	U	< 0.0019	U	< 0.0020	U	< 0.0018	U			< 0.0030	U	< 0.0032	U
PCB, TOTAL	mg/kg			< 0.0020	U	0.18		0.096		< 0.0022	U			< 0.0035	U	< 0.0038	U
PESTICIDES																	
4,4-DDD	mg/kg	< 0.00069	UJ	< 0.00033	UJ	0.018	J	< 0.0038	U	< 0.0018	U			< 0.0029	U	< 0.0031	U
4,4-DDE	mg/kg	0.000067	J	0.00017	J	< 0.0037	U	< 0.0038	U	< 0.0018	U			0.00049	J	< 0.0031	U
4,4-DDT	mg/kg	< 0.00068	UJ	< 0.00033	UJ	0.021	J	< 0.0038	U	< 0.0018	U			< 0.0029	U	< 0.0031	U
ALDRIN	mg/kg	< 0.00017	UJ	< 0.00017	UJ	< 0.0019	U	< 0.0020	U	< 0.00092	U			< 0.0015	U	< 0.0016	U
ALPHA-BHC	mg/kg	< 0.00017	UJ	< 0.00017	UJ	< 0.0019	U	< 0.0020	U	< 0.00092	U			< 0.0015	U	< 0.0016	U
ALPHA-CHLORDANE	mg/kg	< 0.00017	UJ	< 0.00017	UJ	< 0.0019	U	< 0.0020	U	< 0.00092	U			< 0.0015	U	< 0.0016	U
BETA-BHC	mg/kg	< 0.00017	UJ	< 0.00017	UJ	< 0.0019	U	< 0.0020	U	< 0.00092	U			< 0.0015	U	< 0.0016	U
DELTA-BHC	mg/kg	< 0.00017	UJ	< 0.00017	UJ	< 0.0019	U	< 0.0020	U	< 0.00092	U			< 0.0015	U	< 0.0016	U

ATTACHMENT A TABLE 2
SUMMARY OF ANALYTICAL RESULTS - SURFACE
SEDIMENT (0 - 1 FT)
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

	Area	Background		Background		Background		Background		Background		Background		Background		Background	
	Location ID	CRP-SD301		CRP-SD302		CRP-SD303		CRP-SD303		CRP-SD304		CRP-SD304		CRP-SD305		CRP-SD305	
	Sample Date	4/2/2014		12/11/2013		12/13/2013		12/13/2013		12/13/2013		12/13/2013		12/12/2013		12/12/2013	
	Sample ID	BSBG SD301 0012		BSBG SD302 0012		BSBG SD303 0012		FDSD12131302		BSBG SD304 0012		FDSD12131301		BSBG SD305 0012		FDSD12121302	
	Sample Type	N		N		N		FD		N		FD		N		FD	
	Depth Interval	0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in	
Chemical	Unit	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
DIELDRIN	mg/kg	< 0.00034	UJ	< 0.00033	UJ	< 0.0037	U	< 0.0038	U	< 0.0018	U			< 0.0029	U	< 0.0031	U
ENDOSULFAN I	mg/kg	< 0.00017	UJ	< 0.00017	UJ	< 0.0019	U	< 0.0020	U	< 0.00092	U			< 0.0015	U	< 0.0016	U
ENDOSULFAN II	mg/kg	< 0.00034	UJ	< 0.00033	UJ	0.0018	J	0.0010	J	< 0.0018	U			< 0.0029	U	< 0.0031	U
ENDOSULFAN SULFATE	mg/kg	< 0.00034	UJ	< 0.00033	UJ	0.0095	J	0.0049	J	< 0.0018	U			< 0.0029	U	< 0.0031	U
ENDRIN	mg/kg	< 0.00034	UJ	< 0.00033	UJ	< 0.0037	U	< 0.0038	U	< 0.0018	U			< 0.0029	U	< 0.0031	U
ENDRIN ALDEHYDE	mg/kg	< 0.00034	UJ	< 0.00033	UJ	< 0.0037	U	< 0.0038	U	< 0.0018	U			< 0.0029	U	< 0.0031	U
ENDRIN KETONE	mg/kg	< 0.00034	UJ	< 0.00033	UJ	0.03	J	0.014	J	< 0.0018	U			< 0.0029	U	< 0.0031	U
GAMMA-CHLORDANE	mg/kg	< 0.00017	UJ	< 0.00017	UJ	< 0.0019	U	< 0.0020	U	< 0.00092	U			< 0.0015	U	< 0.0016	U
HEPTACHLOR	mg/kg	< 0.00017	UJ	< 0.00017	UJ	< 0.0019	U	< 0.0020	U	< 0.00092	U			< 0.0015	U	< 0.0016	U
HEPTACHLOR EPOXIDE	mg/kg	< 0.00017	UJ	< 0.00017	UJ	< 0.0019	U	< 0.0020	U	< 0.00092	U			< 0.0015	U	< 0.0016	U
LINDANE	mg/kg	< 0.00017	UJ	< 0.00017	UJ	< 0.0019	U	< 0.0020	U	< 0.00092	U			< 0.0015	U	< 0.0016	U
METHOXYCHLOR	mg/kg	< 0.0017	UJ	< 0.0017	UJ	< 0.019	U	< 0.02	U	< 0.0092	U			< 0.015	U	< 0.016	U
TOXAPHENE	mg/kg	< 0.0034	UJ	< 0.0033	UJ	< 0.037	U	< 0.038	U	< 0.018	U			< 0.029	U	< 0.031	U
SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs)																	
1,1-BIPHENYL	mg/kg			< 0.28	U	< 0.27	U	< 0.27	UJ	< 0.26	U			< 0.43	U	< 0.48	U
1,2,4-TRICHLOROBENZENE	mg/kg			< 0.28	UJ	< 0.27	U	< 0.27	UJ	< 0.26	U			< 0.43	U	< 0.48	U
1,2-DICHLOROBENZENE	mg/kg			< 0.28	UJ	< 0.27	U	< 0.27	UJ	< 0.26	U			< 0.43	U	< 0.48	U
1,2-DIPHENYLHYDRAZINE	mg/kg			< 0.56	UJ	< 0.53	U	< 0.53	UJ	< 0.52	U			< 0.85	U	< 0.97	U
1,3-DICHLOROBENZENE	mg/kg			< 0.28	UJ	< 0.27	U	< 0.27	UJ	< 0.26	U			< 0.43	U	< 0.48	U
1,4-DICHLOROBENZENE	mg/kg			< 0.28	U	< 0.27	U	< 0.27	UJ	< 0.26	U			< 0.43	U	< 0.48	U
2,2'-OXYBIS(1-CHLOROPROPANE)	mg/kg			< 0.28	U	< 0.27	U	< 0.27	UJ	< 0.26	U			< 0.43	U	< 0.48	U
2,4,5-TRICHLOROPHENOL	mg/kg			< 0.7	U	< 0.66	U	< 0.66	UJ	< 0.65	U			< 1.1	U	< 1.2	U
2,4,6-TRICHLOROPHENOL	mg/kg			< 0.28	U	< 0.27	U	< 0.27	UJ	< 0.26	U			< 0.43	U	< 0.48	U
2,4-DICHLOROPHENOL	mg/kg			< 0.28	UJ	< 0.27	U	< 0.27	UJ	< 0.26	U			< 0.43	U	< 0.48	U
2,4-DIMETHYLPHENOL	mg/kg			< 0.28	U	< 0.27	U	< 0.27	UJ	< 0.26	U			< 0.43	U	< 0.48	U
2,4-DINITROPHENOL	mg/kg			< 0.7	U	< 0.66	U	< 0.66	UJ	< 0.65	U			< 1.1	U	< 1.2	U
2,4-DINITROTOLUENE	mg/kg			< 0.28	U	< 0.27	U	< 0.27	UJ	< 0.26	U			< 0.43	U	< 0.48	U
2,6-DICHLOROPHENOL	mg/kg			< 0.28	U	< 0.27	U	< 0.27	UJ	< 0.26	U			< 0.43	U	< 0.48	U
2,6-DINITROTOLUENE	mg/kg			< 0.28	UJ	< 0.27	U	< 0.27	UJ	< 0.26	U			< 0.43	U	< 0.48	U
2-CHLORONAPHTHALENE	mg/kg			< 0.28	UJ	< 0.27	UJ	< 0.27	UJ	< 0.26	UJ			< 0.43	UJ	< 0.48	UJ
2-CHLOROPHENOL	mg/kg			< 0.28	UJ	< 0.27	U	< 0.27	UJ	< 0.26	U			< 0.43	U	< 0.48	U
2-METHYLNAPHTHALENE	mg/kg			< 0.28	UJ	< 0.27	U	< 0.27	UJ	< 0.26	U			< 0.43	U	< 0.48	U
2-METHYLPHENOL	mg/kg			< 0.28	UJ	< 0.27	U	< 0.27	UJ	< 0.26	U			< 0.43	U	< 0.48	U
2-NITROANILINE	mg/kg			< 0.7	U	< 0.66	U	< 0.66	UJ	< 0.65	U			< 1.1	U	< 1.2	U
2-NITROPHENOL	mg/kg			< 0.28	U	< 0.27	U	< 0.27	UJ	< 0.26	U			< 0.43	U	< 0.48	U
3- AND 4-METHYLPHENOL	mg/kg			< 0.28	U	< 0.27	U	< 0.27	UJ	< 0.26	U			< 0.43	U	< 0.48	U
3,3-DICHLOROBENZIDINE	mg/kg			< 0.28	U	< 0.27	U	< 0.27	UJ	< 0.26	U			< 0.43	U	< 0.48	U
3-NITROANILINE	mg/kg			< 0.7	U	< 0.66	U	< 0.66	UJ	< 0.65	U			< 1.1	U	< 1.2	U
4,6-DINITRO-2-METHYLPHENOL	mg/kg			< 0.7	U	< 0.66	U	< 0.66	UJ	< 0.65	U			< 1.1	UJ	< 1.2	U
4-BROMOPHENYL-PHENYLETHER	mg/kg			< 0.28	U	< 0.27	U	< 0.27	UJ	< 0.26	U			< 0.43	U	< 0.48	U
4-CHLORO-3-METHYLPHENOL	mg/kg			< 0.28	U	< 0.27	U	< 0.27	UJ	< 0.26	U			< 0.43	U	< 0.48	U
4-CHLOROANILINE	mg/kg			< 0.28	U	< 0.27	U	< 0.27	UJ	< 0.26	U			< 0.43	U	< 0.48	U
4-CHLOROPHENYL-PHENYLETHER	mg/kg			< 0.28	U	< 0.27	U	< 0.27	UJ	< 0.26	U			< 0.43	U	< 0.48	U
4-NITROANILINE	mg/kg			< 0.7	U	< 0.66	U	< 0.66	UJ	< 0.65	U			< 1.1	UJ	< 1.2	U
4-NITROPHENOL	mg/kg			< 0.7	U	< 0.66	U	< 0.66	UJ	< 0.65	U			< 1.1	UJ	< 1.2	U
ACENAPHTHENE	mg/kg	< 0.012	U	< 0.011	U	0.081		0.05		0.0020	J	< 0.011	U	0.0041	J	< 0.02	U
ACENAPHTHYLENE	mg/kg	< 0.012	U	< 0.011	U	< 0.011	U	< 0.011	U	< 0.011	U	< 0.011	U	0.0036	J	0.0030	J
ANTHRACENE	mg/kg	< 0.012	U	0.0022	J	0.12		0.078		0.0037	J	0.0028	J	0.011	J	0.0082	J
BENZIDINE	mg/kg				R	< 1.2	UJ	< 1.2	UJ	< 1.2	UJ			< 1.9	UJ	< 2.2	UJ
BENZO[A]ANTHRACENE	mg/kg	0.0063	J	< 0.023	UJ	0.64		0.35	J	< 0.021	UJ	0.019	J	0.053	J	0.045	J
BENZO[A]PYRENE	mg/kg	0.0071	JL	< 0.023	UJ	0.86		0.56	J	< 0.021	UJ	0.019	J	0.066	J	0.056	J
BENZO[B]FLUORANTHENE	mg/kg	0.0080	J	< 0.023	UJ	0.72		0.56	J	< 0.029	UJ	0.026	J	0.12	J	0.098	J
BENZO[G,H,I]PERYLENE	mg/kg	0.0038	J	0.0035	J	0.28	J	0.18	J	0.012	J	0.0092	J	0.035	J	0.03	J
BENZO[K]FLUORANTHENE	mg/kg	< 0.012	UJ	< 0.023	U	0.32	J	0.18	J	0.0064	J	0.0049	J	0.027	J	0.023	J
BENZOIC ACID	mg/kg			< 0.7	UJ	< 0.66	UJ	< 0.66	UJ	< 0.65	UJ			< 1.1	UJ	< 1.2	UJ
BENZYL ALCOHOL	mg/kg			< 0.56	U	< 0.53	U	< 0.53	UJ	< 0.52	U			< 0.85	U	< 0.97	U
BIS(2-CHLOROETHOXY)METHANE	mg/kg			< 0.28	UJ	< 0.27	UJ	< 0.27	UJ	< 0.26	UJ			< 0.43	UJ	< 0.48	UJ

ATTACHMENT A TABLE 2
SUMMARY OF ANALYTICAL RESULTS - SURFACE
SEDIMENT (0 - 1 FT)
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

	Area	Background		Background		Background		Background		Background		Background		Background		Background	
	Location ID	CRP-SD301		CRP-SD302		CRP-SD303		CRP-SD303		CRP-SD304		CRP-SD304		CRP-SD305		CRP-SD305	
	Sample Date	4/2/2014		12/11/2013		12/13/2013		12/13/2013		12/13/2013		12/13/2013		12/12/2013		12/12/2013	
	Sample ID	BSBG SD301 0012		BSBG SD302 0012		BSBG SD303 0012		FDSD12131302		BSBG SD304 0012		FDSD12131301		BSBG SD305 0012		FDSD12121302	
	Sample Type	N		N		N		FD		N		FD		N		FD	
	Depth Interval	0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in	
Chemical	Unit	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
BIS(2-CHLOROETHYL)ETHER	mg/kg			< 0.28	UJ	< 0.27	U	< 0.27	UJ	< 0.26	U			< 0.43	U	< 0.48	UJ
BIS(2-ETHYLHEXYL)PHTHALATE	mg/kg			< 0.28	U	< 0.27	U	< 0.27	UJ	< 0.26	U			< 0.43	U	< 0.48	U
BUTYLBENZYLPHTHALATE	mg/kg			< 0.28	U	< 0.27	U	< 0.27	UJ	< 0.26	U			< 0.43	U	< 0.48	U
CAPROLACTAM	mg/kg			< 0.28	U	< 0.27	U	< 0.27	UJ	< 0.26	U			< 0.43	UJ	< 0.48	U
CARBAZOLE	mg/kg			< 0.28	U	< 0.27	U	< 0.27	UJ	< 0.26	U			< 0.43	U	< 0.48	U
CHRYSENE	mg/kg	0.0084	J	< 0.023	U	0.9	J	0.53	J	0.019	J	0.018	J	0.062		0.046	
DIBENZ[A,H]ANTHRACENE	mg/kg	0.0037	J	< 0.023	UJ	0.14		0.084		0.0056	J	0.0053	J	0.016	J	0.014	J
DIBENZOFURAN	mg/kg			< 0.28	UJ	< 0.27	U	< 0.27	UJ	< 0.26	U			< 0.43	U	< 0.48	U
DIETHYLPHTHALATE	mg/kg			< 0.28	UJ	< 0.27	UJ	< 0.27	UJ	< 0.26	UJ			< 0.43	UJ	< 0.48	UJ
DIMETHYL PHTHALATE	mg/kg			< 0.28	U	< 0.27	U	< 0.27	UJ	< 0.26	U			< 0.43	U	< 0.48	U
DI-N-BUTYLPHTHALATE	mg/kg			< 0.28	U	< 0.27	U	< 0.27	UJ	< 0.26	U			< 0.43	U	< 0.48	U
DI-N-OCTYLPHTHALATE	mg/kg			< 0.28	U	< 0.27	U	< 0.27	UJ	< 0.26	U			< 0.43	UJ	< 0.48	UJ
FLUORANTHENE	mg/kg	0.01	J	< 0.023	U	0.69		0.6	J	0.028		0.026		0.099		0.075	
FLUORENE	mg/kg	< 0.012	U	< 0.011	U	0.051		0.034		< 0.011	U	< 0.011	U	< 0.017	U	< 0.02	U
HEXACHLOROBENZENE	mg/kg			< 0.28	U	< 0.27	U	< 0.27	UJ	< 0.26	U			< 0.43	U	< 0.48	U
HEXACHLOROBUTADIENE	mg/kg			< 0.28	UJ	< 0.27	U	< 0.27	UJ	< 0.26	U			< 0.43	U	< 0.48	U
HEXACHLOROETHANE	mg/kg			< 0.28	UJ	< 0.27	U	< 0.27	UJ	< 0.26	U			< 0.43	U	< 0.48	U
HPAH, TOTAL	mg/kg	0.056		0.0035		6		3.9		0.11		0.16		0.63		0.51	
INDENO[1,2,3-CD]PYRENE	mg/kg	< 0.024	U	< 0.023	UJ	0.45		0.25		0.015	J	0.013	J	0.056		0.048	
ISOPHORONE	mg/kg			< 0.28	UJ	< 0.27	U	< 0.27	UJ	< 0.26	U			< 0.43	U	< 0.48	U
LPAH, TOTAL	mg/kg	0.0053		0.0022		0.87		0.51		0.022		0.018		0.066		0.044	
NAPHTHALENE	mg/kg	< 0.012	U	< 0.011	U	0.018	J	0.011	J	< 0.011	U	< 0.011	U	< 0.017	U	< 0.02	U
NITROBENZENE	mg/kg			< 0.28	U	< 0.27	U	< 0.27	UJ	< 0.26	U			< 0.43	U	< 0.48	U
N-NITROSODIMETHYLAMINE	mg/kg			< 0.28	U	< 0.27	UJ	< 0.27	UJ	< 0.26	UJ			< 0.43	U	< 0.48	U
N-NITROSODINPROPYLAMINE	mg/kg			< 0.28	U	< 0.27	U	< 0.27	UJ	< 0.26	U			< 0.43	U	< 0.48	U
N-NITROSODIPHENYLAMINE	mg/kg			< 0.28	UJ	< 0.27	U	< 0.27	UJ	< 0.26	U			< 0.43	U	< 0.48	U
N-NITROSOPYRROLIDINE	mg/kg				R	< 0.27	U	< 0.27	UJ	< 0.26	U			< 0.43	U	< 0.48	U
PAH, TOTAL	mg/kg	0.062		0.0057		6.9		4.4		0.13		0.18		0.69		0.55	
PENTACHLOROPHENOL	mg/kg			< 0.7	UJ	< 0.66	UJ	< 0.66	UJ	< 0.65	UJ			< 1.1	UJ	< 1.2	UJ
PHENANTHRENE	mg/kg	0.0053	J	< 0.023	U	0.6		0.34		0.016	J	0.015	J	0.047		0.033	J
PHENOL	mg/kg			< 0.28	U	< 0.27	U	< 0.27	UJ	< 0.26	U			< 0.43	U	< 0.48	U
PYRENE	mg/kg	0.0090	J	< 0.023	U	1		0.65	J	0.022	J	0.023	J	0.092	J	0.074	J
VOLATILE ORGANIC COMPOUNDS (VOCs)																	
1,1,1,2-TETRACHLOROETHANE	mg/kg			< 0.0030	UJ	< 0.0023	UJ	< 0.0022	UJ	< 0.0024	U			< 0.0045	UJ	< 0.0055	UJ
1,1,1-TRICHLOROETHANE	mg/kg			< 0.0030	U	< 0.0023	UJ	< 0.0022	UJ	< 0.0024	U			< 0.0045	UJ	< 0.0055	UJ
1,1,2,2-TETRACHLOROETHANE	mg/kg			< 0.0030	UJ	< 0.0023	UJ	< 0.0022	UJ	< 0.0024	U			< 0.0045	UJ	< 0.0055	UJ
1,1,2-TRICHLOROETHANE	mg/kg			< 0.0030	U	< 0.0023	UJ	< 0.0022	UJ	< 0.0024	U			< 0.0045	UJ	< 0.0055	UJ
1,1-DICHLOROETHANE	mg/kg			< 0.0030	U	< 0.0023	UJ	< 0.0022	UJ	< 0.0024	U			< 0.0045	UJ	< 0.0055	UJ
1,1-DICHLOROETHENE	mg/kg			< 0.0030	U	< 0.0023	UJ	< 0.0022	UJ	< 0.0024	U			< 0.0045	UJ	< 0.0055	UJ
1,1-DICHLOROPROPENE	mg/kg			< 0.0030	U	< 0.0023	UJ	< 0.0022	UJ	< 0.0024	U			< 0.0045	UJ	< 0.0055	UJ
1,2,3-TRICHLOROBENZENE	mg/kg			< 0.0030	UJ	< 0.0023	UJ	< 0.0022	UJ	< 0.0024	U			< 0.0045	UJ	< 0.0055	UJ
1,2,3-TRICHLOROPROPANE	mg/kg			< 0.0030	UJ	< 0.0023	UJ	< 0.0022	UJ	< 0.0024	U			< 0.0045	UJ	< 0.0055	UJ
1,2,4-TRICHLOROBENZENE	mg/kg			< 0.0030	UJ	< 0.0023	UJ	< 0.0022	UJ	< 0.0024	U			< 0.0045	UJ	< 0.0055	UJ
1,2,4-TRIMETHYLBENZENE	mg/kg			< 0.0030	UJ	< 0.0023	UJ	< 0.0022	UJ	< 0.0024	U			< 0.0045	UJ	< 0.0055	UJ
1,2-DIBROMO-3-CHLOROPROPANE	mg/kg			< 0.0030	UJ	< 0.0023	UJ	< 0.0022	UJ	< 0.0024	UJ			< 0.0045	UJ	< 0.0055	UJ
1,2-DIBROMOETHANE	mg/kg			< 0.0030	U	< 0.0023	UJ	< 0.0022	UJ	< 0.0024	UJ			< 0.0045	UJ	< 0.0055	UJ
1,2-DICHLOROBENZENE	mg/kg			< 0.0030	UJ	< 0.0023	UJ	< 0.0022	UJ	< 0.0024	U			< 0.0045	UJ	< 0.0055	UJ
1,2-DICHLOROETHANE	mg/kg			< 0.0030	U	< 0.0023	UJ	< 0.0022	UJ	< 0.0024	U			< 0.0045	UJ	< 0.0055	UJ
1,2-DICHLOROETHENE, TOTAL	mg/kg			< 0.0060	U	< 0.0046	UJ	< 0.0045	UJ	< 0.0048	U			< 0.0090	UJ	< 0.011	UJ
1,2-DICHLOROPROPANE	mg/kg			< 0.0030	U	< 0.0023	UJ	< 0.0022	UJ	< 0.0024	U			< 0.0045	UJ	< 0.0055	UJ
1,3,5-TRIMETHYLBENZENE	mg/kg			< 0.0030	UJ	< 0.0023	UJ	< 0.0022	UJ	< 0.0024	U			< 0.0045	UJ	< 0.0055	UJ
1,3-DICHLOROBENZENE	mg/kg			< 0.0030	UJ	< 0.0023	UJ	< 0.0022	UJ	< 0.0024	U			< 0.0045	UJ	< 0.0055	UJ
1,3-DICHLOROPROPANE	mg/kg			< 0.0030	U	< 0.0023	UJ	< 0.0022	UJ	< 0.0024	U			< 0.0045	UJ	< 0.0055	UJ
1,4-DICHLOROBENZENE	mg/kg			< 0.0030	UJ	< 0.0023	UJ	< 0.0022	UJ	< 0.0024	U			< 0.0045	UJ	< 0.0055	UJ
2,2-DICHLOROPROPANE	mg/kg			< 0.0030	U	< 0.0023	UJ	< 0.0022	UJ	< 0.0024	U			< 0.0045	UJ	< 0.0055	UJ
2-BUTANONE	mg/kg			0.02	J	< 0.011	UJ	< 0.011	UJ	< 0.012	U			< 0.022	UJ	< 0.028	UJ
2-CHLOROTOLUENE	mg/kg			< 0.0030	UJ	< 0.0023	UJ	< 0.0022	UJ	< 0.0024	U			< 0.0045	UJ	< 0.0055	UJ

ATTACHMENT A TABLE 2
SUMMARY OF ANALYTICAL RESULTS - SURFACE
SEDIMENT (0 - 1 FT)
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

	Area	Background		Background		Background		Background		Background		Background		Background		Background	
	Location ID	CRP-SD301		CRP-SD302		CRP-SD303		CRP-SD303		CRP-SD304		CRP-SD304		CRP-SD305		CRP-SD305	
	Sample Date	4/2/2014		12/11/2013		12/13/2013		12/13/2013		12/13/2013		12/13/2013		12/12/2013		12/12/2013	
	Sample ID	BSBG SD301 0012		BSBG SD302 0012		BSBG SD303 0012		FDSD12131302		BSBG SD304 0012		FDSD12131301		BSBG SD305 0012		FDSD12121302	
	Sample Type	N		N		N		FD		N		FD		N		FD	
	Depth Interval	0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in	
Chemical	Unit	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
2-HEXANONE	mg/kg			< 0.015	U	< 0.011	UJ	< 0.011	UJ	< 0.012	U			< 0.022	UJ	< 0.028	UJ
4-CHLOROTOLUENE	mg/kg			< 0.0030	UJ	< 0.0023	UJ	< 0.0022	UJ	< 0.0024	U			< 0.0045	UJ	< 0.0055	UJ
4-ISOPROPYLTOLUENE	mg/kg			< 0.0030	U	< 0.0023	UJ	< 0.0022	UJ	< 0.0024	U			< 0.0045	UJ	< 0.0055	UJ
4-METHYL-2-PENTANONE	mg/kg			< 0.015	U	< 0.011	UJ	< 0.011	UJ	< 0.012	U			< 0.022	UJ	< 0.028	UJ
ACETONE	mg/kg			0.12	J	< 0.011	UJ	< 0.011	UJ	< 0.012	UJ			0.12	J	0.17	J
BENZENE	mg/kg			< 0.0030	U	< 0.0023	UJ	< 0.0022	UJ	< 0.0024	U			< 0.0045	UJ	< 0.0055	UJ
BROMOBENZENE	mg/kg			< 0.0030	UJ	< 0.0023	UJ	< 0.0022	UJ	< 0.0024	U			< 0.0045	UJ	< 0.0055	UJ
BROMOCHLOROMETHANE	mg/kg			< 0.0030	U	< 0.0023	UJ	< 0.0022	UJ	< 0.0024	U			< 0.0045	UJ	< 0.0055	UJ
BROMODICHLOROMETHANE	mg/kg			< 0.0030	U	< 0.0023	UJ	< 0.0022	UJ	< 0.0024	U			< 0.0045	UJ	< 0.0055	UJ
BROMOFORM	mg/kg			< 0.0030	UJ	< 0.0023	UJ	< 0.0022	UJ	< 0.0024	U			< 0.0045	UJ	< 0.0055	UJ
BROMOMETHANE	mg/kg			< 0.0060	U	< 0.0046	UJ	< 0.0045	UJ	< 0.0048	U			< 0.0090	UJ	< 0.011	UJ
CARBON DISULFIDE	mg/kg			0.015	J	< 0.00025	UJ	< 0.00025	U	< 0.00025	UJ			0.016	J	0.012	J
CARBON TETRACHLORIDE	mg/kg			< 0.0030	U	< 0.0023	UJ	< 0.0022	UJ	< 0.0024	U			< 0.0045	UJ	< 0.0055	UJ
CHLOROBENZENE	mg/kg			< 0.0030	U	< 0.0023	UJ	< 0.0022	UJ	< 0.0024	U			< 0.0045	UJ	< 0.0055	UJ
CHLOROETHANE	mg/kg			< 0.0060	UJ	< 0.0046	UJ	< 0.0045	UJ	< 0.0048	U			< 0.0090	UJ	< 0.011	UJ
CHLOROFORM	mg/kg			< 0.0030	U	< 0.0023	UJ	< 0.0022	UJ	< 0.0024	U			< 0.0045	UJ	< 0.0055	UJ
CHLOROMETHANE	mg/kg			< 0.0060	U	< 0.0046	UJ	< 0.0045	UJ	< 0.0048	U			< 0.0090	UJ	< 0.011	UJ
CIS-1,2-DICHLOROETHENE	mg/kg			< 0.0030	U	< 0.0023	UJ	< 0.0022	UJ	< 0.0024	U			< 0.0045	UJ	< 0.0055	UJ
CIS-1,3-DICHLOROPROPENE	mg/kg			< 0.0030	UJ	< 0.0023	UJ	< 0.0022	UJ	< 0.0024	U			< 0.0045	UJ	< 0.0055	UJ
DIBROMOCHLOROMETHANE	mg/kg			< 0.0030	U	< 0.0023	UJ	< 0.0022	UJ	< 0.0024	U			< 0.0045	UJ	< 0.0055	UJ
DIBROMOMETHANE	mg/kg			< 0.0030	U	< 0.0023	UJ	< 0.0022	UJ	< 0.0024	U			< 0.0045	UJ	< 0.0055	UJ
DICHLORODIFLUOROMETHANE	mg/kg			< 0.0060	U	< 0.0046	UJ	< 0.0045	UJ	< 0.0048	UJ			< 0.0090	UJ	< 0.011	UJ
ETHYLBENZENE	mg/kg			< 0.0030	U	< 0.00025	UJ	< 0.00025	U	< 0.00025	U			< 0.00025	U	< 0.00025	U
HEXACHLOROBUTADIENE	mg/kg			< 0.0030	UJ	< 0.0023	UJ	< 0.0022	UJ	< 0.0024	U			< 0.0045	UJ	< 0.0055	UJ
ISOPROPYLBENZENE	mg/kg			< 0.0030	UJ	< 0.0023	UJ	< 0.0022	UJ	< 0.0024	U			< 0.0045	UJ	< 0.0055	UJ
M- AND P-XYLENE	mg/kg			< 0.0060	U	< 0.00050	UJ	< 0.00050	U	< 0.00050	U			< 0.00050	U	< 0.00050	U
METHYL CYCLOHEXANE	mg/kg			< 0.0030	U	< 0.0023	UJ	< 0.0022	UJ	< 0.0024	U			< 0.0045	UJ	< 0.0055	UJ
METHYL TERT-BUTYL ETHER	mg/kg			< 0.0030	U	< 0.0023	UJ	< 0.0022	UJ	< 0.0024	UJ			< 0.0045	UJ	< 0.0055	UJ
METHYLENE CHLORIDE	mg/kg			< 0.015	U	< 0.011	UJ	< 0.011	UJ	< 0.012	U			< 0.022	UJ	< 0.028	UJ
N-BUTYLBENZENE	mg/kg			< 0.0030	UJ	< 0.0023	UJ	< 0.0022	UJ	< 0.0024	U			< 0.0045	UJ	< 0.0055	UJ
O-XYLENE	mg/kg			< 0.0030	U	< 0.00025	UJ	< 0.00025	U	< 0.00025	U			< 0.00025	U	< 0.00025	U
PROPYLBENZENE	mg/kg			< 0.0030	UJ	< 0.0023	UJ	< 0.0022	UJ	< 0.0024	U			< 0.0045	UJ	< 0.0055	UJ
SEC-BUTYLBENZENE	mg/kg			< 0.0030	UJ	< 0.0023	UJ	< 0.0022	UJ	< 0.0024	U			< 0.0045	UJ	< 0.0055	UJ
STYRENE	mg/kg			< 0.0030	U	< 0.0023	UJ	< 0.0022	UJ	< 0.0024	U			< 0.0045	UJ	< 0.0055	UJ
TERT-BUTANOL	mg/kg			< 0.015	UJ	< 0.011	UJ	< 0.011	UJ	< 0.012	U			< 0.022	UJ	< 0.028	UJ
TERT-BUTYLBENZENE	mg/kg			< 0.0030	UJ	< 0.0023	UJ	< 0.0022	UJ	< 0.0024	U			< 0.0045	UJ	< 0.0055	UJ
TETRACHLOROETHENE	mg/kg			< 0.0030	U	< 0.0023	UJ	< 0.0022	UJ	< 0.0024	U			< 0.0045	UJ	< 0.0055	UJ
TOLUENE	mg/kg			< 0.0030	U	< 0.0023	UJ	< 0.0022	UJ	< 0.0024	U			< 0.0045	UJ	< 0.0055	UJ
TRANS-1,2-DICHLOROETHENE	mg/kg			< 0.0030	U	< 0.0023	UJ	< 0.0022	UJ	< 0.0024	U			< 0.0045	UJ	< 0.0055	UJ
TRANS-1,3-DICHLOROPROPENE	mg/kg			< 0.0030	UJ	< 0.0023	UJ	< 0.0022	UJ	< 0.0024	U			< 0.0045	UJ	< 0.0055	UJ
TRICHLOROETHENE	mg/kg			< 0.0030	U	< 0.0023	UJ	< 0.0022	UJ	< 0.0024	U			< 0.0045	UJ	< 0.0055	UJ
TRICHLOROFLUOROMETHANE	mg/kg			< 0.0060	U	< 0.0046	UJ	< 0.0045	UJ	< 0.0048	U			< 0.0090	UJ	< 0.011	UJ
VINYL CHLORIDE	mg/kg			< 0.0060	U	< 0.0046	UJ	< 0.0045	UJ	< 0.0048	U			< 0.0090	UJ	< 0.011	UJ
XYLENES, TOTAL	mg/kg			< 0.0090	U	< 0.00075	UJ	< 0.00075	U	< 0.00075	U			< 0.00075	U	< 0.00075	U

ATTACHMENT A TABLE 2
SUMMARY OF ANALYTICAL RESULTS - SURFACE
SEDIMENT (0 - 1 FT)
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

	Area	Background		Background		Background		Background		Background		Background		Background		Background	
	Location ID	CRP-SD301		CRP-SD302		CRP-SD303		CRP-SD303		CRP-SD304		CRP-SD304		CRP-SD305		CRP-SD305	
	Sample Date	4/2/2014		12/11/2013		12/13/2013		12/13/2013		12/13/2013		12/13/2013		12/12/2013		12/12/2013	
	Sample ID	BSBG SD301 0012		BSBG SD302 0012		BSBG SD303 0012		FDSD12131302		BSBG SD304 0012		FDSD12131301		BSBG SD305 0012		FDSD12121302	
	Sample Type	N		N		N		FD		N		FD		N		FD	
	Depth Interval	0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in	
Chemical	Unit	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
OTHER																	
PERCENT FINES	%	3.2		15.0		0.7				2.6				52.7			
PERCENT GRAVEL	%	13.5		10.6		67.3				45.9				20.0			
PERCENT SAND	%	83.3		74.4		32.0				51.5				27.3			
PERCENT SAND, COARSE	%	10.2		16.1		4.7				10.3				8.8			
PERCENT SAND, FINE	%	61.5		32.5		19.9				14.4				8.0			
PERCENT SAND, MEDIUM	%	11.6		25.8		7.4				26.8				10.5			
SIEVE 1 INCH (25.4-MM)	%	0		0		7.4				0				0			
SIEVE 1-1/2 INCH (37.5-MM)	%	0		0		46.4				0				0			
SIEVE 2 INCH (50-MM)	%	0		0		0				0				0			
SIEVE 3 INCH (75-MM)	%	0		0		0				0				0			
SIEVE 3/4 INCH (19-MM)	%	5.8		0		0				18.4				3.6			
SIEVE 3/8 INCH (9.5-MM)	%	0.3		0.9		5.3				16.5				9.5			
SIEVE NO. 004 (4.75-MM)	%	7.4		9.7		8.2				11.0				6.9			
SIEVE NO. 010 (2-MM)	%	10.2		16.1		4.7				10.3				8.8			
SIEVE NO. 020 (850-UM)	%	5.1		10.4		2.2				8.2				6.0			
SIEVE NO. 040 (425-UM)	%	6.5		15.4		5.2				18.6				4.5			
SIEVE NO. 060 (250-UM)	%	34.3		11.8		13.3				12.8				2.8			
SIEVE NO. 080 (180-UM)	%	16.6		8.0		4.3				1				1.7			
SIEVE NO. 100 (150-UM)	%	5.1		5.2		1.3				0.2				0.9			
SIEVE NO. 200 (75-UM)	%	5.5		7.5		1				0.4				2.6			
SULFIDE	mg/kg			310													
TOTAL ORGANIC CARBON	mg/kg	9700		21000		7600		17000		17000				34000		31000	

Notes:
U or < - Non-detect at laboratory detection limit.
J - The compound was positively identified; however, the associated numerical value is an estimated concentration only (+ and - indicate bias).
R - Rejected result.
Sample Type - N = normal sample, FD = duplicate sample.
mg/kg - milligram per kilogram
umol/g - micromole per gram.

ATTACHMENT A TABLE 2
SUMMARY OF ANALYTICAL RESULTS - SURFACE
SEDIMENT (0 - 1 FT)
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

	Area	Background		Background		Background		Background		Background		Background		Background	
	Location ID	CRP-SD306		CRP-SD307		CRP-SD308		CRP-SD309		CRP-SD310		CRP-SD312		CRP-SD313	
	Sample Date	12/12/2013		12/17/2013		12/17/2013		4/2/2014		4/2/2014		4/3/2014		4/3/2014	
	Sample ID	BSBG SD306 0012		BSBG SD307 0012		BSBG SD308 0012		BSBG SD309 0012		BSBG SD310 0012		BSBG SD312 0012		BSBG SD313 0012	
	Sample Type	N		N		N		N		N		N		N	
	Depth Interval	0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in	
Chemical	Unit	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
ACID VOLATILE SULFIDES AND SIMULTANEOUSLY EXTRACTED METALS															
ACID VOLATILE SULFIDES	umol/g	< 0.096	U	3.8	J	35		0.067	J	0.67		0.26		0.53	
ANTIMONY	umol/g	< 0.00096	UJ	0.00045	J	0.00380									
CADMIUM	umol/g	0.00018		0.00035	J	0.0013	J	0.00018	J	0.00023	J	0.00010	J	0.00027	J
COPPER	umol/g	0.00930	J	0.0653		0.151		0.0109		0.0183		0.0086	J	0.0182	
LEAD	umol/g	0.00793		0.0493		0.0787		0.00525		0.0126		0.00717		0.0152	
MERCURY	umol/g		R	< 0.000024	UJ	< 0.000034	UJ								
NICKEL	umol/g	< 0.0040	UJ	0.0226		0.0720		0.00877		0.0118		0.00422		0.00772	
ZINC	umol/g	0.0556	J-	0.325		0.516		0.0603		0.125		0.0618		0.116	
INORGANICS															
ALUMINUM	mg/kg	2740		6420		9470		3330		3720		7290		6260	
ANTIMONY	mg/kg	0.03	J	0.08	J	0.09	J	0.13	J-	0.060	J-	0.048	J-	0.057	J-
ARSENIC	mg/kg	1.2		3.4		5.0		2.87	J	2.54	J	2.03	J	2.56	J
BARIUM	mg/kg	5.2	J	13.0		24.6		6.94		6.62		11.7		12.5	
BERYLLIUM	mg/kg	0.12	J-	0.34		0.53		0.181		0.187		0.243		0.296	
CADMIUM	mg/kg	0.08	J	0.08	J	0.20		0.0936		0.0907		0.0773		0.172	
CALCIUM	mg/kg	950	J	16600		74200		570		2890		1210		6750	
CHROMIUM VI	mg/kg														
CHROMIUM, TOTAL	mg/kg	6.8	J	16.6		29.1		8.68		10.5		15.0		16.1	
COBALT	mg/kg	2.2		4.1		5.4		3.32		3.13		4.53		3.69	
COPPER	mg/kg	3.7	J	14.6		22.0		5.08	B	6.84	B	7.92	B	11.0	B
IRON	mg/kg	6500		12500		16300		10600		11000		13000		10800	
IRON, FERROUS	mg/kg														
LEAD	mg/kg	7.0	J	20.0	J+	39.4	J+	6.36		9.66		11.3		19.8	
MAGNESIUM	mg/kg	1380		2670		4250		1600		1760		3620		3050	
MANGANESE	mg/kg	77.4		146	J+	227	J+	101	J-	103	J-	130	J-	116	J-
MERCURY	mg/kg	0.02	J	0.06		0.08		0.013	J	0.030	J	0.040		0.0477	
NICKEL	mg/kg	5.6	J	10.3		13.4		8.29		8.08		11.1		9.57	
POTASSIUM	mg/kg	467	J	1050	J	2500	J	532	J+	636	J+	1080	J+	1350	J+
SELENIUM	mg/kg	< 0.41	UJ	< 0.40	U	0.68		0.24	J	0.23	J	0.19	J	0.31	J
SILVER	mg/kg	0.05	J	0.11		0.41		0.031	J	0.081	J	0.0848		0.178	
SODIUM	mg/kg	2710		3000		9630		2670	J+	2210	J+	2530	J+	3830	J+
THALLIUM	mg/kg	0.05	J	0.05	J	0.12		< 0.068	U	< 0.087	U	0.0755		0.100	
VANADIUM	mg/kg	7.6	J-	15.2		29.0		14.5		12.8		14.3		16.9	
ZINC	mg/kg	24.6	J	56.0		86.3		31.8		39.2		39.2		53.6	
POLYCHLORINATED BIPHENYLS (PCBs)															
AROCLOR-1016	mg/kg	< 0.0020	U	< 0.0019	U	< 0.0027	U								
AROCLOR-1221	mg/kg	< 0.0020	U	< 0.0019	U	< 0.0027	U								
AROCLOR-1232	mg/kg	< 0.0023	U	< 0.0023	U	< 0.0032	U								
AROCLOR-1242	mg/kg	< 0.0020	U	< 0.0019	U	< 0.0027	U								
AROCLOR-1248	mg/kg	< 0.0020	U	< 0.0019	U	< 0.0027	U								
AROCLOR-1254	mg/kg	< 0.0020	U	< 0.0019	U	< 0.0027	U								
AROCLOR-1260	mg/kg	< 0.0020	U	< 0.0019	U	< 0.0027	U								
AROCLOR-1262	mg/kg	< 0.0020	U	< 0.0019	U	< 0.0027	U								
AROCLOR-1268	mg/kg	< 0.0020	U	< 0.0019	U	< 0.0027	U								
PCB, TOTAL	mg/kg	< 0.0023	U	< 0.0023	U	< 0.0032	U								
PESTICIDES															
4,4-DDD	mg/kg	< 0.00038	U	< 0.0019	UJ	< 0.0026	U	< 0.00082	UJ	< 0.00080	UJ	< 0.00076	UJ	< 0.00088	UJ
4,4-DDE	mg/kg	< 0.00038	U	< 0.0019	UJ	0.00062	J	< 0.00041	UJ	0.00011	J	0.000098	J	0.00023	J
4,4-DDT	mg/kg	< 0.00038	UJ	< 0.0019	UJ	< 0.0026	U	< 0.00082	UJ	< 0.00080	UJ	< 0.00076	UJ	< 0.00084	UJ
ALDRIN	mg/kg	< 0.00020	U	< 0.00096	UJ	< 0.0014	U	< 0.00021	UJ	< 0.00021	UJ	< 0.00019	UJ	< 0.00022	UJ
ALPHA-BHC	mg/kg	< 0.00020	U	< 0.00096	UJ	< 0.0014	U	< 0.00021	UJ	< 0.00021	UJ	< 0.00019	UJ	< 0.00022	UJ
ALPHA-CHLORDANE	mg/kg	< 0.00020	U	< 0.00096	UJ	< 0.0014	U	< 0.00021	UJ	< 0.00021	UJ	< 0.00019	UJ	< 0.00022	UJ
BETA-BHC	mg/kg	< 0.00020	U	< 0.00096	UJ	< 0.0014	U	< 0.00021	UJ	< 0.00021	UJ	< 0.00019	UJ	< 0.00022	UJ
DELTA-BHC	mg/kg	< 0.00020	U	< 0.00096	UJ	< 0.0014	UJ	< 0.00021	UJ	< 0.00021	UJ	< 0.00019	UJ	< 0.00022	UJ

ATTACHMENT A TABLE 2
SUMMARY OF ANALYTICAL RESULTS - SURFACE
SEDIMENT (0 - 1 FT)
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

	Area	Background		Background		Background		Background		Background		Background		Background	
	Location ID	CRP-SD306		CRP-SD307		CRP-SD308		CRP-SD309		CRP-SD310		CRP-SD312		CRP-SD313	
	Sample Date	12/12/2013		12/17/2013		12/17/2013		4/2/2014		4/2/2014		4/3/2014		4/3/2014	
	Sample ID	BSBG SD306 0012		BSBG SD307 0012		BSBG SD308 0012		BSBG SD309 0012		BSBG SD310 0012		BSBG SD312 0012		BSBG SD313 0012	
	Sample Type	N		N		N		N		N		N		N	
	Depth Interval	0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in	
Chemical	Unit	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
DIELDRIN	mg/kg	< 0.00038	U	< 0.0019	UJ	< 0.0026	U	< 0.00041	UJ	< 0.00040	UJ	< 0.00038	UJ	< 0.00042	UJ
ENDOSULFAN I	mg/kg	< 0.00020	U	< 0.00096	UJ	< 0.0014	U	< 0.00021	UJ	< 0.00021	UJ	< 0.00019	UJ	< 0.00022	UJ
ENDOSULFAN II	mg/kg	< 0.00038	U	< 0.0019	UJ	< 0.0026	U	< 0.00041	UJ	< 0.00040	UJ	< 0.00038	UJ	< 0.00042	UJ
ENDOSULFAN SULFATE	mg/kg	< 0.00038	U	< 0.0019	UJ	< 0.0026	U	< 0.00041	UJ	< 0.00040	UJ	< 0.00038	UJ	< 0.00042	UJ
ENDRIN	mg/kg	< 0.00038	U	< 0.0019	UJ	< 0.0026	UJ	< 0.00041	UJ	< 0.00040	UJ	< 0.00038	UJ	< 0.00042	UJ
ENDRIN ALDEHYDE	mg/kg	< 0.00038	U	< 0.0019	UJ	< 0.0026	U	< 0.00041	UJ	< 0.00040	UJ	< 0.00038	UJ	< 0.00042	UJ
ENDRIN KETONE	mg/kg	< 0.00038	UJ	< 0.0019	UJ	< 0.0026	U	< 0.00041	UJ	< 0.00040	UJ	< 0.00038	UJ	< 0.00042	UJ
GAMMA-CHLORDANE	mg/kg	< 0.00020	U	< 0.00096	UJ	< 0.0014	U	< 0.00021	UJ	< 0.00021	UJ	< 0.00019	UJ	< 0.00022	UJ
HEPTACHLOR	mg/kg	< 0.00020	U	< 0.00096	UJ	< 0.0014	U	< 0.00021	UJ	< 0.00021	UJ	< 0.00019	UJ	< 0.00022	UJ
HEPTACHLOR EPOXIDE	mg/kg	< 0.00020	U	< 0.00096	UJ	< 0.0014	U	< 0.00021	UJ	< 0.00021	UJ	< 0.00019	UJ	< 0.00022	UJ
LINDANE	mg/kg	< 0.00020	U	< 0.00096	UJ	< 0.0014	U	< 0.00021	UJ	< 0.00021	UJ	< 0.00019	UJ	< 0.00022	UJ
METHOXYCHLOR	mg/kg	< 0.0020	U	< 0.0096	UJ	< 0.014	U	< 0.0021	UJ	< 0.0021	UJ	< 0.0019	UJ	< 0.0022	UJ
TOXAPHENE	mg/kg	< 0.0038	U	< 0.019	UJ	< 0.026	U	< 0.0041	UJ	< 0.0040	UJ	< 0.0038	UJ	< 0.0042	UJ
SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs)															
1,1-BIPHENYL	mg/kg	< 0.29	U	< 0.3	U	< 0.43	U								
1,2,4-TRICHLOROBENZENE	mg/kg	< 0.29	U	< 0.3	U	< 0.43	U								
1,2-DICHLOROBENZENE	mg/kg	< 0.29	U	< 0.3	UJ	< 0.43	UJ								
1,2-DIPHENYLHYDRAZINE	mg/kg	< 0.58	U	< 0.59	U	< 0.86	U								
1,3-DICHLOROBENZENE	mg/kg	< 0.29	U	< 0.3	U	< 0.43	U								
1,4-DICHLOROBENZENE	mg/kg	< 0.29	U	< 0.3	U	< 0.43	U								
2,2'-OXYBIS(1-CHLOROPROPANE)	mg/kg	< 0.29	U	< 0.3	U	< 0.43	U								
2,4,5-TRICHLOROPHENOL	mg/kg	< 0.72	U	< 0.74	U	< 1.1	U								
2,4,6-TRICHLOROPHENOL	mg/kg	< 0.29	U	< 0.3	U	< 0.43	U								
2,4-DICHLOROPHENOL	mg/kg	< 0.29	U	< 0.3	U	< 0.43	U								
2,4-DIMETHYLPHENOL	mg/kg	< 0.29	U	< 0.3	U	< 0.43	U								
2,4-DINITROPHENOL	mg/kg	< 0.72	U	< 0.74	U	< 1.1	U								
2,4-DINITROTOLUENE	mg/kg	< 0.29	U	< 0.3	U	< 0.43	U								
2,6-DICHLOROPHENOL	mg/kg	< 0.29	U	< 0.3	U	< 0.43	U								
2,6-DINITROTOLUENE	mg/kg	< 0.29	U	< 0.3	U	< 0.43	U								
2-CHLORONAPHTHALENE	mg/kg	< 0.29	UJ	< 0.3	UJ	< 0.43	UJ								
2-CHLOROPHENOL	mg/kg	< 0.29	U	< 0.3	UJ	< 0.43	UJ								
2-METHYLNAPHTHALENE	mg/kg	< 0.29	U	< 0.3	U	< 0.43	U								
2-METHYLPHENOL	mg/kg	< 0.29	U	< 0.3	U	< 0.43	U								
2-NITROANILINE	mg/kg	< 0.72	U	< 0.74	U	< 1.1	U								
2-NITROPHENOL	mg/kg	< 0.29	U	< 0.3	U	< 0.43	U								
3- AND 4-METHYLPHENOL	mg/kg	< 0.29	U	< 0.3	U	< 0.43	U								
3,3-DICHLOROBENZIDINE	mg/kg	< 0.29	U	< 0.3	U	< 0.43	U								
3-NITROANILINE	mg/kg	< 0.72	U	< 0.74	U	< 1.1	U								
4,6-DINITRO-2-METHYLPHENOL	mg/kg	< 0.72	U	< 0.74	U	< 1.1	U								
4-BROMOPHENYL-PHENYLETHER	mg/kg	< 0.29	U	< 0.3	U	< 0.43	U								
4-CHLORO-3-METHYLPHENOL	mg/kg	< 0.29	U	< 0.3	U	< 0.43	U								
4-CHLOROANILINE	mg/kg	< 0.29	U	< 0.3	U	< 0.43	U								
4-CHLOROPHENYL-PHENYLETHER	mg/kg	< 0.29	U	< 0.3	U	< 0.43	U								
4-NITROANILINE	mg/kg	< 0.72	U	< 0.74	U	< 1.1	U								
4-NITROPHENOL	mg/kg	< 0.72	U	< 0.74	U	< 1.1	U								
ACENAPHTHENE	mg/kg	< 0.012	U	< 0.012	U	0.0054	J	< 0.012	U	< 0.012	U	< 0.012	U	< 0.013	U
ACENAPHTHYLENE	mg/kg	< 0.012	U	< 0.012	U	0.0023	J	< 0.012	U	< 0.012	U	0.0017	J	0.0025	J
ANTHRACENE	mg/kg	< 0.012	U	0.0028	J	0.011	J	< 0.012	U	0.0027	J	0.0084	J	0.0038	J
BENZIDINE	mg/kg	< 1.3	UJ		R		R								
BENZO[A]ANTHRACENE	mg/kg	< 0.023	UJ	0.014	J	0.065	J	0.0026	J	0.017	J	0.03		0.02	J
BENZO[A]PYRENE	mg/kg	< 0.023	UJ	0.02	J	0.087	J	< 0.012	UL	0.02	J	0.029	L	0.02	J
BENZO[B]FLUORANTHENE	mg/kg	< 0.023	UJ	0.036	J	0.12	J	0.0038	J	0.028	J	0.034		0.027	J
BENZO[G,H,I]PERYLENE	mg/kg	0.0032	J	0.0098	J	0.04	J	< 0.012	U	0.011	J	0.017	J	0.0095	J
BENZO[K]FLUORANTHENE	mg/kg	< 0.012	U	0.0092	J	0.05		< 0.012	UJ	0.0047	J	0.018	J	0.01	J
BENZOIC ACID	mg/kg	< 0.72	UJ	< 0.74	UJ	< 1.1	UJ								
BENZYL ALCOHOL	mg/kg	< 0.58	U	< 0.59	U	< 0.86	U								
BIS(2-CHLOROETHOXY)METHANE	mg/kg	< 0.29	UJ	< 0.3	UJ	< 0.43	UJ								

ATTACHMENT A TABLE 2
SUMMARY OF ANALYTICAL RESULTS - SURFACE
SEDIMENT (0 - 1 FT)
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

	Area	Background		Background		Background		Background		Background		Background		Background	
	Location ID	CRP-SD306		CRP-SD307		CRP-SD308		CRP-SD309		CRP-SD310		CRP-SD312		CRP-SD313	
	Sample Date	12/12/2013		12/17/2013		12/17/2013		4/2/2014		4/2/2014		4/3/2014		4/3/2014	
	Sample ID	BSBG SD306 0012		BSBG SD307 0012		BSBG SD308 0012		BSBG SD309 0012		BSBG SD310 0012		BSBG SD312 0012		BSBG SD313 0012	
	Sample Type	N		N		N		N		N		N		N	
	Depth Interval	0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in	
Chemical	Unit	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
BIS(2-CHLOROETHYL)ETHER	mg/kg	< 0.29	U	< 0.3	UJ	< 0.43	UJ								
BIS(2-ETHYLHEXYL)PHTHALATE	mg/kg	< 0.29	U	< 0.3	U	< 0.43	U								
BUTYLBENZYLPHTHALATE	mg/kg	< 0.29	U	< 0.3	U	< 0.43	U								
CAPROLACTAM	mg/kg	< 0.29	U	< 0.3	U	< 0.43	U								
CARBAZOLE	mg/kg	< 0.29	U	< 0.3	U	< 0.43	U								
CHRYSENE	mg/kg	< 0.012	U	0.016	J	0.084	J	0.0037	J	0.02	J	0.032		0.023	J
DIBENZ[A,H]ANTHRACENE	mg/kg	< 0.012	U	0.0033	J	0.013	J	0.0028	J	0.0047	J	0.0037	J	0.0043	J
DIBENZOFURAN	mg/kg	< 0.29	U	< 0.3	U	< 0.43	U								
DIETHYLPHTHALATE	mg/kg	< 0.29	UJ	< 0.3	UJ	< 0.43	UJ								
DIMETHYL PHTHALATE	mg/kg	< 0.29	U	< 0.3	U	< 0.43	U								
DI-N-BUTYLPHTHALATE	mg/kg	< 0.29	U	< 0.3	U	< 0.43	U								
DI-N-OCTYLPHTHALATE	mg/kg	< 0.29	U	< 0.3	UJ	< 0.43	UJ								
FLUORANTHENE	mg/kg	< 0.023	U	0.024	J	0.11		0.0043	J	0.029		0.058		0.048	
FLUORENE	mg/kg	< 0.012	U	< 0.012	U	< 0.017	U	< 0.012	U	< 0.012	U	< 0.012	U	< 0.013	U
HEXACHLOROBENZENE	mg/kg	< 0.29	U	< 0.3	U	< 0.43	U								
HEXACHLOROBUTADIENE	mg/kg	< 0.29	U	< 0.3	U	< 0.43	U								
HEXACHLOROETHANE	mg/kg	< 0.29	U	< 0.3	U	< 0.43	U								
HPAH, TOTAL	mg/kg	0.012		0.17		0.73		0.021		0.15		0.31		0.19	
INDENO[1,2,3-CD]PYRENE	mg/kg	0.0040	J	0.014	J	0.054		< 0.024	U	< 0.023	U	0.042		< 0.026	U
ISOPHORONE	mg/kg	< 0.29	U	< 0.3	U	< 0.43	U								
LPAH, TOTAL	mg/kg	0.0026		0.015		0.065		< 0.012	U	0.016		0.031		0.027	
NAPHTHALENE	mg/kg	< 0.012	U	< 0.012	U	< 0.017	U	< 0.012	U	< 0.012	U	< 0.012	U	< 0.013	U
NITROBENZENE	mg/kg	< 0.29	U	< 0.3	U	< 0.43	U								
N-NITROSODIMETHYLAMINE	mg/kg	< 0.29	UJ	< 0.3	U	< 0.43	U								
N-NITROSODINPROPYLAMINE	mg/kg	< 0.29	U	< 0.3	U	< 0.43	U								
N-NITROSODIPHENYLAMINE	mg/kg	< 0.29	U	< 0.3	U	< 0.43	U								
N-NITROSOPYRROLIDINE	mg/kg	< 0.29	U		R		R								
PAH, TOTAL	mg/kg	0.014		0.19		0.8		0.021		0.17		0.34		0.22	
PENTACHLOROPHENOL	mg/kg	< 0.72	UJ	< 0.74	UJ	< 1.1	UJ								
PHENANTHRENE	mg/kg	0.0026	J	0.012	J	0.046		< 0.012	U	0.013	J	0.021	J	0.021	J
PHENOL	mg/kg	< 0.29	U	< 0.3	U	< 0.43	U								
PYRENE	mg/kg	0.0044	J	0.026		0.11		0.0036	J	0.02	J	0.047		0.031	J
VOLATILE ORGANIC COMPOUNDS (VOCs)															
1,1,1,2-TETRACHLOROETHANE	mg/kg	< 0.0025	UJ	< 0.0025	UJ	< 0.0038	UJ								
1,1,1-TRICHLOROETHANE	mg/kg	< 0.0025	UJ	< 0.0025	UJ	< 0.0038	UJ								
1,1,2,2-TETRACHLOROETHANE	mg/kg	< 0.0025	UJ	< 0.0025	UJ	< 0.0038	UJ								
1,1,2-TRICHLOROETHANE	mg/kg	< 0.0025	UJ	< 0.0025	UJ	< 0.0038	UJ								
1,1-DICHLOROETHANE	mg/kg	< 0.0025	UJ	< 0.0025	UJ	< 0.0038	UJ								
1,1-DICHLOROETHENE	mg/kg	< 0.0025	UJ	< 0.0025	UJ	< 0.0038	UJ								
1,1-DICHLOROPROPENE	mg/kg	< 0.0025	UJ	< 0.0025	UJ	< 0.0038	UJ								
1,2,3-TRICHLOROBENZENE	mg/kg	< 0.0025	UJ	< 0.0025	UJ	< 0.0038	UJ								
1,2,3-TRICHLOROPROPANE	mg/kg	< 0.0025	UJ	< 0.0025	UJ	< 0.0038	UJ								
1,2,4-TRICHLOROBENZENE	mg/kg	< 0.0025	UJ	< 0.0025	UJ	< 0.0038	UJ								
1,2,4-TRIMETHYLBENZENE	mg/kg	< 0.0025	UJ	< 0.0025	UJ	< 0.0038	UJ								
1,2-DIBROMO-3-CHLOROPROPANE	mg/kg	< 0.0025	UJ	< 0.0025	UJ	< 0.0038	UJ								
1,2-DIBROMOETHANE	mg/kg	< 0.0025	UJ	< 0.0025	UJ	< 0.0038	UJ								
1,2-DICHLOROBENZENE	mg/kg	< 0.0025	UJ	< 0.0025	UJ	< 0.0038	UJ								
1,2-DICHLOROETHANE	mg/kg	< 0.0025	UJ	< 0.0025	UJ	< 0.0038	UJ								
1,2-DICHLOROETHENE, TOTAL	mg/kg	< 0.0050	UJ	< 0.0050	UJ	< 0.0075	UJ								
1,2-DICHLOROPROPANE	mg/kg	< 0.0025	UJ	< 0.0025	UJ	< 0.0038	UJ								
1,3,5-TRIMETHYLBENZENE	mg/kg	< 0.0025	UJ	< 0.0025	UJ	< 0.0038	UJ								
1,3-DICHLOROBENZENE	mg/kg	< 0.0025	UJ	< 0.0025	UJ	< 0.0038	UJ								
1,3-DICHLOROPROPANE	mg/kg	< 0.0025	UJ	< 0.0025	UJ	< 0.0038	UJ								
1,4-DICHLOROBENZENE	mg/kg	< 0.0025	UJ	< 0.0025	UJ	< 0.0038	UJ								
2,2-DICHLOROPROPANE	mg/kg	< 0.0025	UJ	< 0.0025	UJ	< 0.0038	UJ								
2-BUTANONE	mg/kg	< 0.012	UJ	< 0.012	UJ	0.024	J								
2-CHLOROTOLUENE	mg/kg	< 0.0025	UJ	< 0.0025	UJ	< 0.0038	UJ								

ATTACHMENT A TABLE 2
SUMMARY OF ANALYTICAL RESULTS - SURFACE
SEDIMENT (0 - 1 FT)
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

	Area	Background		Background		Background		Background		Background		Background		Background	
	Location ID	CRP-SD306		CRP-SD307		CRP-SD308		CRP-SD309		CRP-SD310		CRP-SD312		CRP-SD313	
	Sample Date	12/12/2013		12/17/2013		12/17/2013		4/2/2014		4/2/2014		4/3/2014		4/3/2014	
	Sample ID	BSBG SD306 0012		BSBG SD307 0012		BSBG SD308 0012		BSBG SD309 0012		BSBG SD310 0012		BSBG SD312 0012		BSBG SD313 0012	
	Sample Type	N		N		N		N		N		N		N	
	Depth Interval	0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in	
Chemical	Unit	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
2-HEXANONE	mg/kg	< 0.012	UJ	< 0.012	UJ	< 0.019	UJ								
4-CHLOROTOLUENE	mg/kg	< 0.0025	UJ	< 0.0025	UJ	< 0.0038	UJ								
4-ISOPROPYLTOLUENE	mg/kg	< 0.0025	UJ	< 0.0025	UJ	< 0.0038	UJ								
4-METHYL-2-PENTANONE	mg/kg	< 0.012	UJ	< 0.012	UJ	< 0.019	UJ								
ACETONE	mg/kg	< 0.012	UJ	< 0.012	UJ	0.11	J								
BENZENE	mg/kg	< 0.0025	UJ	< 0.0025	UJ	< 0.0038	UJ								
BROMOBENZENE	mg/kg	< 0.0025	UJ	< 0.0025	UJ	< 0.0038	UJ								
BROMOCHLOROMETHANE	mg/kg	< 0.0025	UJ	< 0.0025	UJ	< 0.0038	UJ								
BROMODICHLOROMETHANE	mg/kg	< 0.0025	UJ	< 0.0025	UJ	< 0.0038	UJ								
BROMOFORM	mg/kg	< 0.0025	UJ	< 0.0025	UJ	< 0.0038	UJ								
BROMOMETHANE	mg/kg	< 0.0050	UJ	< 0.0050	UJ	< 0.0075	UJ								
CARBON DISULFIDE	mg/kg	0.0022	J	0.0064	J	0.0058									
CARBON TETRACHLORIDE	mg/kg	< 0.0025	UJ	< 0.0025	UJ	< 0.0038	UJ								
CHLOROBENZENE	mg/kg	< 0.0025	UJ	< 0.0025	UJ	< 0.0038	UJ								
CHLOROETHANE	mg/kg	< 0.0050	UJ	< 0.0050	UJ	< 0.0075	UJ								
CHLOROFORM	mg/kg	< 0.0025	UJ	< 0.0025	UJ	< 0.0038	UJ								
CHLOROMETHANE	mg/kg	< 0.0050	UJ	< 0.0050	UJ	< 0.0075	UJ								
CIS-1,2-DICHLOROETHENE	mg/kg	< 0.0025	UJ	< 0.0025	UJ	< 0.0038	UJ								
CIS-1,3-DICHLOROPROPENE	mg/kg	< 0.0025	UJ	< 0.0025	UJ	< 0.0038	UJ								
DIBROMOCHLOROMETHANE	mg/kg	< 0.0025	UJ	< 0.0025	UJ	< 0.0038	UJ								
DIBROMOMETHANE	mg/kg	< 0.0025	UJ	< 0.0025	UJ	< 0.0038	UJ								
DICHLORODIFLUOROMETHANE	mg/kg	< 0.0050	UJ	< 0.0050	UJ	< 0.0075	UJ								
ETHYLBENZENE	mg/kg	< 0.00025	U	< 0.00025	U	< 0.00025	U								
HEXACHLOROBUTADIENE	mg/kg	< 0.0025	UJ	< 0.0025	UJ	< 0.0038	UJ								
ISOPROPYLBENZENE	mg/kg	< 0.0025	UJ	< 0.0025	UJ	< 0.0038	UJ								
M- AND P-XYLENE	mg/kg	< 0.00050	U	< 0.00050	U	< 0.00050	U								
METHYL CYCLOHEXANE	mg/kg	< 0.0025	UJ	< 0.0025	UJ	< 0.0038	UJ								
METHYL TERT-BUTYL ETHER	mg/kg	< 0.0025	UJ	< 0.0025	UJ	< 0.0038	UJ								
METHYLENE CHLORIDE	mg/kg	< 0.012	UJ	< 0.012	UJ	< 0.019	UJ								
N-BUTYLBENZENE	mg/kg	< 0.0025	UJ	< 0.0025	UJ	< 0.0038	UJ								
O-XYLENE	mg/kg	< 0.00025	U	< 0.00025	U	< 0.00025	U								
PROPYLBENZENE	mg/kg	< 0.0025	UJ	< 0.0025	UJ	< 0.0038	UJ								
SEC-BUTYLBENZENE	mg/kg	< 0.0025	UJ	< 0.0025	UJ	< 0.0038	UJ								
STYRENE	mg/kg	< 0.0025	UJ	< 0.0025	UJ	< 0.0038	UJ								
TERT-BUTANOL	mg/kg	< 0.012	UJ	< 0.012	UJ	< 0.019	UJ								
TERT-BUTYLBENZENE	mg/kg	< 0.0025	UJ	< 0.0025	UJ	< 0.0038	UJ								
TETRACHLOROETHENE	mg/kg	< 0.0025	UJ	< 0.0025	UJ	< 0.0038	UJ								
TOLUENE	mg/kg	< 0.0025	UJ	< 0.0025	UJ	< 0.0038	UJ								
TRANS-1,2-DICHLOROETHENE	mg/kg	< 0.0025	UJ	< 0.0025	UJ	< 0.0038	UJ								
TRANS-1,3-DICHLOROPROPENE	mg/kg	< 0.0025	UJ	< 0.0025	UJ	< 0.0038	UJ								
TRICHLOROETHENE	mg/kg	< 0.0025	UJ	< 0.0025	UJ	< 0.0038	UJ								
TRICHLOROFLUOROMETHANE	mg/kg	< 0.0050	UJ	< 0.0050	UJ	< 0.0075	UJ								
VINYL CHLORIDE	mg/kg	< 0.0050	UJ	< 0.0050	UJ	< 0.0075	UJ								
XYLENES, TOTAL	mg/kg	< 0.00075	U	< 0.00075	U	< 0.00075	U								

ATTACHMENT A TABLE 2
SUMMARY OF ANALYTICAL RESULTS - SURFACE
SEDIMENT (0 - 1 FT)
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

	Area	Background		Background		Background		Background		Background		Background		Background	
	Location ID	CRP-SD306		CRP-SD307		CRP-SD308		CRP-SD309		CRP-SD310		CRP-SD312		CRP-SD313	
	Sample Date	12/12/2013		12/17/2013		12/17/2013		4/2/2014		4/2/2014		4/3/2014		4/3/2014	
	Sample ID	BSBG SD306 0012		BSBG SD307 0012		BSBG SD308 0012		BSBG SD309 0012		BSBG SD310 0012		BSBG SD312 0012		BSBG SD313 0012	
	Sample Type	N		N		N		N		N		N		N	
	Depth Interval	0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in	
Chemical	Unit	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
OTHER															
PERCENT FINES	%	7.8		0.8		15.1		8.1		8.6		15.7		21.2	
PERCENT GRAVEL	%	0.8		20.8		42.1		0.2		0.5		2.5		4.1	
PERCENT SAND	%	91.4		78.4		42.8		91.7		90.9		81.8		74.7	
PERCENT SAND, COARSE	%	0.4		10.0		10.3		1.4		1.3		4.1		4.2	
PERCENT SAND, FINE	%	76.7		35.5		20.3		86.3		66.7		56.5		56.9	
PERCENT SAND, MEDIUM	%	14.3		32.9		12.2		4.0		22.9		21.2		13.6	
SIEVE 1 INCH (25.4-MM)	%	0		0		0		0		0		0		0	
SIEVE 1-1/2 INCH (37.5-MM)	%	0		0		0		0		0		0		0	
SIEVE 2 INCH (50-MM)	%	0		0		0		0		0		0		0	
SIEVE 3 INCH (75-MM)	%	0		0		0		0		0		0		0	
SIEVE 3/4 INCH (19-MM)	%	0		0		0		0		0		0		0	
SIEVE 3/8 INCH (9.5-MM)	%	0.4		0		12.8		0		0		1.2		2.1	
SIEVE NO. 004 (4.75-MM)	%	0.4		20.8		29.3		0.2		0.5		1.3		2.0	
SIEVE NO. 010 (2-MM)	%	0.4		10.0		10.3		1.4		1.3		4.1		4.2	
SIEVE NO. 020 (850-UM)	%	3.4		14.3		7.1		1.7		3.6		8.6		5.8	
SIEVE NO. 040 (425-UM)	%	10.9		18.6		5.1		2.3		19.3		12.6		7.8	
SIEVE NO. 060 (250-UM)	%	41.9		12.1		6.5		36.9		32.1		21.1		10.4	
SIEVE NO. 080 (180-UM)	%	20.9		7.6		5.4		29.7		16.5		8.9		6.2	
SIEVE NO. 100 (150-UM)	%	7.4		5.7		2.9		8.9		7.1		4.2		6.5	
SIEVE NO. 200 (75-UM)	%	6.5		10.1		5.5		10.8		11.0		22.3		33.8	
SULFIDE	mg/kg														
TOTAL ORGANIC CARBON	mg/kg	5400		16000		23000		6800		8800		12000		13000	

Notes:
U or < - Non-detect at laboratory detection limit.
J - The compound was positively identified; however, the associated numerical value is an estimated concentration only (+ and - indicate bias).
R - Rejected result.
Sample Type - N = normal sample, FD = duplicate sample.
mg/kg - milligram per kilogram
umol/g - micromole per gram.

ATTACHMENT A TABLE 2
SUMMARY OF ANALYTICAL RESULTS -
SURFACE SEDIMENT (0 - 1 FT)
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

	Area	Site - Wet Sieved		Site - Wet Sieved		Site - Wet Sieved		Site - Wet Sieved		Site - Wet Sieved		Site - Wet Sieved		Site - Wet Sieved		Site - Wet Sieved		Site - Wet Sieved	
	Location ID	CRP-SD102		CRP-SD105		CRP-SD106		CRP-SD106		CRP-SD109		CRP-SD110		CRP-SD111		CRP-SD112		CRP-SD113	
	Sample Date	12/13/2013		12/6/2013		12/10/2013		12/10/2013		12/3/2013		12/3/2013		12/4/2013		12/5/2013		12/5/2013	
	Sample ID	OU09 SD102 0012W		OU09 SD105 0012W		FDSD12101301W		OU09 SD106 0012W		OU09 SD109 0012W		OU09 SD110 0012W		OU09 SD111 0012W		OU09 SD112 0012W		OU09 SD113 0012W	
	Sample Type	N		N		FD		N		N		N		N		N		N	
	Depth Interval	0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in	
Chemical	Unit	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
INORGANICS																			
ALUMINUM	mg/kg	6350		4450		4540		4820		3370		4210		4240		3290		3330	
ANTIMONY	mg/kg	36.6	J	0.09		0.06	J-	0.07	J-	0.06	J	0.04	J	< 0.10	U	< 0.087	U	0.09	
ARSENIC	mg/kg	37.6		1.5		1.6		0.29	J	1.3		1.8		1.8		1.4		1.5	
BARIUM	mg/kg	10.6		7.3		6.8		7.6		6.2		7.2		10.0		5.7		7.2	
BERYLLIUM	mg/kg	0.32		0.17		0.17		0.19		0.13		0.18		0.17		0.14		0.14	
CADMIUM	mg/kg	0.05	J	0.08	J	0.06	J	0.06	J	< 0.077	U	0.07		0.06	J	0.05	J	0.06	J
CALCIUM	mg/kg	2820		4380		14900		17600		1030		21700		6760		2990		902	
CHROMIUM, TOTAL	mg/kg	12.7		11.6		12.5		13.5		8.4		10.3		9.8		8.1		9.3	
COBALT	mg/kg	11.4		3.2		3.1		3.5		2.1		2.4		2.5		2.2		2.4	
COPPER	mg/kg	120	J	7.7		7.2		7.9		4.1		6.5		5.6		4.2		5.0	
IRON	mg/kg	34300		9420		9470		10400		7040		7730		8160		7280		7330	
LEAD	mg/kg	5960	J	12.7		13.8		15.0		7.6		10.4		9.2		10.0		30.0	
MAGNESIUM	mg/kg	3020		2060		2250		2500		1700		2160		2060		1620		1620	
MANGANESE	mg/kg	251		96.2		105	J+	121	J+	71.9		84.0		85.5		74.6		78.4	
MERCURY	mg/kg	0.01	J	0.06		0.04	J	0.03	J	0.02	J	0.03		< 0.031	U	0.02	J	0.03	
NICKEL	mg/kg	30.0	J-	7.8		7.6		8.4		5.8		6.6		6.7		5.6		6.2	
POTASSIUM	mg/kg	758	J+	655		716	J+	775	J+	520		720		713		508		526	
SELENIUM	mg/kg	< 0.35	U	< 0.41	U	0.24	J	1.5		< 0.38	U	< 0.31	U	< 0.52	U	< 0.43	U	< 0.41	U
SILVER	mg/kg	0.26	J	0.09		0.10		0.22		0.04	J	0.09		0.06	J	0.05	J	0.06	J
SODIUM	mg/kg	1250		2560		2930		3110		2800	J-	4130	J-	3620		3040		2860	
THALLIUM	mg/kg	0.07		0.05	J	0.05	J	0.12		0.04	J	0.05	J	0.05	J	0.04	J	0.05	J
VANADIUM	mg/kg	18.7		10.5		10.8		12.2		8.2		9.6		10.0		8.6		9.8	
ZINC	mg/kg	81.4	J	32.5		32.0		36.6		25.2		31.5		29.2		25.8		27.5	
SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs)																			
ACENAPHTHENE	mg/kg	0.0031	J	0.0027	J	0.0032	J	0.0038	J	< 0.012	U	< 0.012	U	< 0.013	U	< 0.013	U	0.0027	J
ACENAPHTHYLENE	mg/kg	< 0.011	U	< 0.013	U	< 0.013	U	< 0.013	U	< 0.012	U	< 0.012	U	< 0.013	U	< 0.013	U	< 0.013	U
ANTHRACENE	mg/kg	0.0057	J	0.0045	J	0.0068	J	0.0058	J	< 0.012	U	0.0022	J	< 0.013	U	< 0.013	U	0.0031	J
BENZO[A]ANTHRACENE	mg/kg	0.045	J	0.026	J	0.039	J	0.036	J	0.0031	J	0.011	J	0.0081	J	0.0038	J	0.022	J
BENZO[A]PYRENE	mg/kg	0.045	J	0.032		0.045	J	0.042	J	< 0.012	U	0.014	J	0.011	J	< 0.013	UJ	0.027	J
BENZO[B]FLUORANTHENE	mg/kg	0.055	J	0.043		0.056	J	0.054	J	0.0040	J	0.018	J	0.016	J	0.0043	J	0.035	J
BENZO[G,H,I]PERYLENE	mg/kg	0.02	J	0.015	J	0.02	J	0.019	J	< 0.012	U	< 0.012	U	0.0032	J	< 0.013	UJ	0.01	J
BENZO[K]FLUORANTHENE	mg/kg	0.011	J	0.0092	J	0.022	J	0.02	J	< 0.012	U	0.0077	J	0.0058	J	< 0.013	U	0.013	J
CHRYSENE	mg/kg	0.056		0.028		0.041		0.038		< 0.012	U	0.0090	J	0.0072	J	< 0.013	U	0.023	J
DIBENZ[A,H]ANTHRACENE	mg/kg	0.011	J	0.0045	J	0.0096	J	0.012	J	< 0.012	U	< 0.012	U	< 0.013	U	< 0.013	U	0.0036	J
FLUORANTHENE	mg/kg	0.05		0.035		0.052		0.049		0.0050	J	0.016	J	0.014	J	0.0039	J	0.028	
FLUORENE	mg/kg	< 0.011	U	< 0.013	U	< 0.013	U	< 0.013	U	< 0.012	U	< 0.012	U	< 0.013	U	< 0.013	U	< 0.013	U
HPAH, TOTAL	mg/kg	0.37		0.25		0.36		0.35		0.012		0.1		0.083		0.017		0.21	
INDENO[1,2,3-CD]PYRENE	mg/kg	0.025	J	0.02	J	0.028		0.03		< 0.012	UJ	0.0091	J	0.0096	J	< 0.013	U	0.016	J
LPAH, TOTAL	mg/kg	0.04		0.027		0.038		0.037		0.0033		0.012		0.0080		< 0.013	U	0.02	
NAPHTHALENE	mg/kg	< 0.011	U	< 0.013	U	< 0.013	U	< 0.013	U	< 0.012	U	< 0.012	U	< 0.013	U	< 0.013	U	< 0.013	U
PAH, TOTAL	mg/kg	0.41		0.27		0.4		0.38		0.015		0.11		0.091		0.017		0.23	
PHENANTHRENE	mg/kg	0.031		0.02	J	0.028		0.027		0.0033	J	0.0095	J	0.0080	J	< 0.013	U	0.014	J
PYRENE	mg/kg	0.054	J	0.034		0.048		0.045		< 0.012	UJ	0.017	J	0.0077	J	0.0048	J	0.028	

Notes:
These data were not evaluated in the ecological risk assessment but were considered in Attachment B to assess the effect of different sieving methods on analytical results.
U or < - Non-detect at laboratory detection limit.
J - The compound was positively identified; however, the associated numerical value is an estimated concentration only (+ and - indicate bias).
R - Rejected result.
Sample Type - N = normal sample, FD = duplicate sample.
mg/kg - milligram per kilogram

ATTACHMENT A TABLE 2
SUMMARY OF ANALYTICAL RESULTS -
SURFACE SEDIMENT (0 - 1 FT)
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

	Area	Site - Wet Sieved		Site - Wet Sieved		Site - Wet Sieved		Site - Wet Sieved		Site - Wet Sieved	
	Location ID	CRP-SD118		CRP-SD119		CRP-SD120		CRP-SD121		CRP-SD122	
	Sample Date	12/10/2013		12/6/2013		12/5/2013		12/4/2013		12/12/2013	
	Sample ID	OU09 SD118 0012W		OU09 SD119 0012W		OU09 SD120 0012W		OU09 SD121 0012W		OU09 SD122 0012W	
	Sample Type	N		N		N		N		N	
	Depth Interval	0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in	
Chemical	Unit	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
INORGANICS											
ALUMINUM	mg/kg	3890		4010		4660		3840		4820	
ANTIMONY	mg/kg	0.43	J-	0.89		0.34		0.06	J	2.7	
ARSENIC	mg/kg	2.8		2.8		2.5		2.1		10.6	
BARIUM	mg/kg	7.3		6.0		8.3		7.3		7.8	J
BERYLLIUM	mg/kg	0.17		0.19		0.24		0.16		0.31	
CADMIUM	mg/kg	0.04	J	0.07		0.11		0.08	J	0.02	J
CALCIUM	mg/kg	1270		7940		3700		1340		2280	J
CHROMIUM, TOTAL	mg/kg	11.4		11.4		13.2		10.8		10.2	J
COBALT	mg/kg	4.2		3.2		3.0		2.6		8.6	
COPPER	mg/kg	6.8		6.8		8.6		5.5		27.6	J
IRON	mg/kg	12400		8850		9410		7910		32400	
LEAD	mg/kg	126		198		120		10.5		241	J
MAGNESIUM	mg/kg	2010		1830		2140		1860		2680	
MANGANESE	mg/kg	131	J+	87.9		91.9		84.4		388	
MERCURY	mg/kg	0.01	J	0.07		0.05		< 0.037	U	< 0.016	U
NICKEL	mg/kg	10.3		9.4		9.4		7.2		18.8	
POTASSIUM	mg/kg	497	J+	550		838		599		382	
SELENIUM	mg/kg	0.16	J	< 0.22	U	0.18	J	< 0.44	U	< 0.29	U
SILVER	mg/kg	0.04	J	0.08		0.13		0.07	J	0.03	J
SODIUM	mg/kg	2430		2620		3990		2800		1740	
THALLIUM	mg/kg	0.04	J	0.04	J	0.07	J	0.06	J	0.03	J
VANADIUM	mg/kg	15.0		10.4		12.2		10.0		19.5	
ZINC	mg/kg	36.2		31.4		37.3		29.9		89.9	J
SEMI-VOLATILE ORGANIC COMPOUNDS (SVO											
ACENAPHTHENE	mg/kg	< 0.013	U	0.0038	J	< 0.013	U	< 0.012	U	0.0064	J
ACENAPHTHYLENE	mg/kg	< 0.013	U	< 0.013	U	< 0.013	U	< 0.012	U	< 0.012	U
ANTHRACENE	mg/kg	< 0.013	U	0.0056	J	0.0031	J	0.0037	J	0.014	J
BENZO[A]ANTHRACENE	mg/kg	0.0055	J	0.028		0.025	J	0.015	J	0.16	
BENZO[A]PYRENE	mg/kg	0.0059	J	0.033		0.03		0.017	J	0.16	J
BENZO[B]FLUORANTHENE	mg/kg	0.0082	J	0.046		0.044	J	0.02	J	0.13	
BENZO[G,H,I]PERYLENE	mg/kg	< 0.013	UJ	0.014	J	0.012	J	0.013	J	0.064	J
BENZO[K]FLUORANTHENE	mg/kg	0.0047	J	0.0089	J	0.014	J	0.0080	J	0.065	
CHRYSENE	mg/kg	0.0081	J	0.029		0.039		0.015	J	0.22	J
DIBENZ[A,H]ANTHRACENE	mg/kg	0.0033	J	0.0046	J	0.0041	J	0.0060	J	0.034	
FLUORANTHENE	mg/kg	0.0062	J	0.038		0.037		0.031		0.11	
FLUORENE	mg/kg	< 0.013	U	< 0.013	U	< 0.013	U	< 0.012	U	0.0048	J
HPAH, TOTAL	mg/kg	0.053		0.26		0.27		0.18		1.1	
INDENO[1,2,3-CD]PYRENE	mg/kg	0.0051	J	0.018	J	0.022	J	0.022	J	0.06	
LPAH, TOTAL	mg/kg	0.0036		0.032		0.019		0.017		0.095	
NAPHTHALENE	mg/kg	< 0.013	U	< 0.013	U	< 0.013	U	< 0.012	U	< 0.012	U
PAH, TOTAL	mg/kg	0.056		0.29		0.29		0.19		1.2	
PHENANTHRENE	mg/kg	0.0036	J	0.023	J	0.016	J	0.013	J	0.07	
PYRENE	mg/kg	0.0058	J	0.036		0.04		0.028		0.14	J

Notes:
These data were not evaluated in the ecological risk assessment but were considered in Attachment B to assess the effect of different sieving methods on analytical results.
U or < - Non-detect at laboratory detection limit.
J - The compound was positively identified; however, the associated numerical value is an estimated concentration only (+ and - indicate bias).
R - Rejected result.
Sample Type - N = normal sample, FD = duplicate sample.
mg/kg - milligram per kilogram

ATTACHMENT A TABLE 3
SUMMARY OF ANALYTICAL RESULTS - SHELLFISH
TISSUE
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

	Area	Site		Site		Site		Site		Site		Site	
	Location ID	CRP-SD101		CRP-SD102		CRP-SD104		CRP-SD106		CRP-SD109		CRP-SD110	
	Tissue Type	blue mussel composite		blue mussel composite		quahog composite		quahog composite		quahog composite		quahog composite	
	Sample Date	11/19/2013		11/19/2013		11/6/2013		11/6/2013		11/5/2013		11/5/2013	
	Sample ID	OU09TS101		OU09TS102		OU09-TS-104		OU09-TS-106		OU09-TS-109		OU09-TS-110	
	Sample Type	N		N		N		N		N		N	
Chemical	Unit	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
INORGANICS													
ALUMINUM	mg/kg	29.5		24.3		2.21		3.52		3.38		2.93	
ANTIMONY	mg/kg	0.0190	J+	0.0287	J+	< 0.0043	U	< 0.0057	U	< 0.0044	U	< 0.0046	U
ARSENIC	mg/kg	3.58	J+	3.38	J+	2.53	J+	2.91	J+	3.81	J+	4.38	J+
BARIUM	mg/kg	0.219	J+	0.172	J+	0.205	J+	0.263	J+	0.277	J+	0.303	J+
BERYLLIUM	mg/kg	0.0021	J	0.0023	J	0.0025		0.0017	J	0.0052		0.0061	
CADMIUM	mg/kg	0.149	J+	0.145	J+	0.0727	J+	0.0588	J+	0.0707	J+	0.116	J+
CALCIUM	mg/kg	651	J	1180	J	537	J	327	J+	377	J+	379	J+
CHROMIUM, TOTAL	mg/kg	0.550	J+	0.232	J+	0.081	J+	0.074	J+	0.247	J+	0.267	J+
COBALT	mg/kg	0.129	J+	0.120	J+	0.108	J+	0.175	J+	0.279	J+	0.146	J+
COPPER	mg/kg	1.50	J+	1.60	J+	0.580	J+	0.976	J+	0.931	J+	1.31	J+
IRON	mg/kg	82.0		79.3		11.3	J+	12.2	J+	7.84	J+	13.7	J+
LEAD	mg/kg	4.13	J	7.26	J	0.132	J	0.0692	J	0.0670	J	0.293	J
MAGNESIUM	mg/kg	763		796		887		815		795		920	
MANGANESE	mg/kg	4.76	J+	3.62	J+	4.14	J+	3.03	J+	2.42	J+	7.42	J+
MERCURY	mg/kg	0.0152		0.0164		0.00701		0.00866		0.0249		0.03	
NICKEL	mg/kg	0.465	J+	0.294	J+	0.472	J+	0.546	J+	0.810	J+	0.455	J+
POTASSIUM	mg/kg	1560	J+	1580	J+	998	J+	1330	J+	1050	J+	1170	J+
SELENIUM	mg/kg	0.44		0.50		0.18		0.20		0.45		0.46	
SILVER	mg/kg	0.0087		0.0087		0.0891	J-	0.106	J-	0.217	J-	0.274	J-
SODIUM	mg/kg	6370		6440		7540		6410		6200		7020	
THALLIUM	mg/kg	< 0.0023	U	< 0.0023	U	< 0.00034	U	< 0.00046	U	< 0.0018	U	< 0.0018	U
VANADIUM	mg/kg	0.178	J+	0.169	J+	0.087	J+	0.057	J+	0.223	J+	0.223	J+
ZINC	mg/kg	12.8	J+	14.4	J+	8.77	J+	15.2	J+	12.0	J+	13.4	J+
POLYCYCLIC AROMATIC HYRDOCARBONS (PAHs)													
ACENAPHTHENE	mg/kg	< 0.0014	UJ	< 0.0013	UJ	0.00019	J	0.00022	J	0.00016	J	0.000099	J
ACENAPHTHYLENE	mg/kg	0.00015	J	0.00015	J	0.00011	J	0.00013	J	0.00012	J	0.000094	J
ANTHRACENE	mg/kg	0.0019		0.0014		0.00015	J	0.00016	J	0.00030	J	0.00027	J
BENZO[A]ANTHRACENE	mg/kg	0.0067		0.0044		0.00040	J	0.00037	J	< 0.00024	UJ	< 0.00021	UJ
BENZO[A]PYRENE	mg/kg	0.015		0.0093		0.00035	J	0.00022	J	0.00019	J	0.00012	J
BENZO[B]FLUORANTHENE	mg/kg	0.018		0.011		0.00055		0.00055		0.00036	J	0.00023	J
BENZO[G,H,I]PERYLENE	mg/kg	0.012		0.0081		0.00038	J	0.00029	J	0.00028	J	0.00015	J
BENZO[K]FLUORANTHENE	mg/kg	0.0062		0.0043		0.00028	J	0.00024	J	0.00017	J	0.00014	J
CHRYSENE	mg/kg	0.029		0.014		0.00076	J	0.00065	J	0.00027	J	0.00020	J
DIBENZ[A,H]ANTHRACENE	mg/kg	0.0029		0.0018	J	< 0.00010	U	< 0.00010	U	< 0.00010	U	< 0.00010	U
FLUORANTHENE	mg/kg	0.017		0.012		0.0010		0.0012		0.00066		0.00047	J
FLUORENE	mg/kg	0.00078		0.00066		0.00033	J	0.00027	J	0.00030	J	0.00028	J
HPAH, TOTAL	mg/kg	0.14		0.083		0.0048		0.0047		0.0028		0.0019	
INDENO[1,2,3-CD]PYRENE	mg/kg	0.0096		0.0068		0.00021	J	0.00017	J	0.00017	J	0.00011	J
LPAH, TOTAL	mg/kg	0.011		0.0080		0.0014		0.0015		0.0015		0.00074	
NAPHTHALENE	mg/kg	< 0.0020	U	< 0.0020	U	< 0.00098	U	< 0.0010	U	< 0.00099	U	< 0.0010	U
PAH, TOTAL	mg/kg	0.15		0.091		0.0062		0.0062		0.0043		0.0027	
PHENANTHRENE	mg/kg	0.0080		0.0058		0.00062		0.00069		0.00060		< 0.00050	U
PYRENE	mg/kg	0.021		0.011		0.00088		0.0010		0.00073		0.00052	
OTHER													
INITIAL GROUP WEIGHT	grams	125		312		538		388		2148		535	
LIPIDS	%	0.61		0.41		0.13		0.29		0.20		0.21	
TOTAL COUNT OF ORGANISMS	count	9		20		4		3		7		2	
TOTAL SOLIDS	%	11.8		11.8		8.56		11.7		9.90		9.17	

Notes:
Tissue data is reported on a wet weight basis.
U or < - Non-detect at laboratory detection limit.
J - The compound was positively identified; however, the associated numerical value is an estimated concentration only (+ and - indicate bias).
Sample Type - N = normal sample, FD = duplicate sample.
mg/kg - milligram per kilogram

ATTACHMENT A TABLE 3
SUMMARY OF ANALYTICAL RESULTS - SHELLFISH
TISSUE
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

	Area	Site		Site		Site		Site		Site		Site	
	Location ID	CRP-SD112		CRP-SD112		CRP-SD115		CRP-SD118		CRP-SD121		CRP-SD122	
	Tissue Type	quahog composite		quahog composite		quahog composite		quahog composite		quahog composite		blue mussel composite	
	Sample Date	11/5/2013		11/5/2013		11/6/2013		11/6/2013		11/6/2013		11/19/2013	
	Sample ID	OU09-TS-112		OU09-TS-201		OU09-TS-115		OU09-TS-118		OU09-TS-121		OU09TS122	
	Sample Type	N		FD		N		N		N		N	
Chemical	Unit	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
INORGANICS													
ALUMINUM	mg/kg	2.42		3.31		3.79		4.82		2.90		23.8	
ANTIMONY	mg/kg	< 0.0045	U	< 0.0045	U	< 0.0050	U	< 0.0041	U	< 0.0044	U	0.0111	J+
ARSENIC	mg/kg	3.00	J+	3.14	J+	2.18	J+	2.55	J+	3.48	J+	2.79	J+
BARIUM	mg/kg	0.153	J	0.282	J	0.284	J+	0.194	J+	0.150	J+	0.119	J+
BERYLLIUM	mg/kg	0.0061		0.0068		0.0025		0.0029		0.0052		0.0018	J
CADMIUM	mg/kg	0.0983	J+	0.0771	J+	0.0737	J+	0.0982	J+	0.0772	J+	0.116	J+
CALCIUM	mg/kg	468	J+	397	J+	340	J+	344	J+	336	J+	558	J
CHROMIUM, TOTAL	mg/kg	0.330	J+	0.325	J+	0.090	J+	0.123	J+	0.276	J+	0.509	J+
COBALT	mg/kg	0.107	J+	0.149	J+	0.144	J+	0.136	J+	0.0632	J+	0.121	J+
COPPER	mg/kg	0.866	J+	0.834	J+	0.787	J+	0.646	J+	0.707	J+	1.02	J+
IRON	mg/kg	6.33	J+	8.00	J+	11.5	J+	16.7	J+	7.88	J+	76.2	
LEAD	mg/kg	0.0841	J	0.0589	J	0.274	J	0.494	J	0.0600	J	1.44	J
MAGNESIUM	mg/kg	870		899		841		941		871		781	
MANGANESE	mg/kg	4.48	J	2.47	J	4.04	J+	4.40	J+	1.37	J+	3.77	J+
MERCURY	mg/kg	0.026		0.0196		0.013		0.0146		0.0225		0.0102	
NICKEL	mg/kg	0.585	J+	0.891	J+	0.685	J+	0.530	J+	0.322	J+	0.384	J+
POTASSIUM	mg/kg	1040	J+	1070	J+	1170	J+	940	J+	1060	J+	1460	J+
SELENIUM	mg/kg	0.49		0.37		0.18		0.18		0.40		0.42	
SILVER	mg/kg	0.250	J-	0.260	J-	0.184	J-	0.122	J-	0.245	J-	0.0047	
SODIUM	mg/kg	7010		7070		6920		7170		7020		6700	
THALLIUM	mg/kg	< 0.0018	U	< 0.0018	U	< 0.0004	U	< 0.00033	U	< 0.00035	U	< 0.0021	U
VANADIUM	mg/kg	0.299	J+	0.354	J+	0.078	J+	0.104	J+	0.348	J+	0.149	J+
ZINC	mg/kg	7.91	J+	7.67	J+	9.87	J+	8.92	J+	5.40	J+	10.8	J+
POLYCYCLIC AROMATIC HYRDOCARBONS (PAHs)													
ACENAPHTHENE	mg/kg	0.00011	J	0.000095	J	0.00013	J	0.00014	J	0.000084	J	< 0.0034	UJ
ACENAPHTHYLENE	mg/kg	0.00014	J	0.00011	J	0.00011	J	0.00016	J	0.000096	J	0.00022	J
ANTHRACENE	mg/kg	0.00026	J	0.00019	J	0.00013	J	0.00027	J	0.00017	J	0.0064	
BENZO[A]ANTHRACENE	mg/kg	< 0.00020	UJ	< 0.00016	UJ	0.00040	J	< 0.00048	UJ	< 0.00025	UJ	0.032	
BENZO[A]PYRENE	mg/kg	0.00012	J	0.000097	J	0.00034	J	0.00043	J	0.00017	J	0.04	
BENZO[B]FLUORANTHENE	mg/kg	0.00025	J	0.00019	J	0.00055		0.00065		0.00035	J	0.044	
BENZO[G,H,I]PERYLENE	mg/kg	0.00018	J	0.00014	J	0.00036	J	0.00048	J	0.00021	J	0.031	
BENZO[K]FLUORANTHENE	mg/kg	0.00012	J	0.00012	J	0.00028	J	0.00029	J	0.00013	J	0.015	
CHRYSENE	mg/kg	0.00021	J	0.00017	J	0.00079	J	0.00083	J	0.00042	J	0.05	
DIBENZ[A,H]ANTHRACENE	mg/kg	< 0.00010	U	< 0.00010	U	< 0.00010	U	< 0.00010	U	< 0.00010	U	0.0081	
FLUORANTHENE	mg/kg	0.00061		0.00044	J	0.00097		0.00093		0.00059		0.04	
FLUORENE	mg/kg	0.00032	J	0.00029	J	0.00028	J	0.00032	J	0.00025	J	0.0017	
HPAH, TOTAL	mg/kg	0.0021				0.0049		0.0049		0.0025		0.33	
INDENO[1,2,3-CD]PYRENE	mg/kg	< 0.00010	U	< 0.00010	U	0.00022	J	0.00030	J	0.00013	J	0.026	
LPAH, TOTAL	mg/kg	0.0014				0.0013		0.0016		0.00060		0.031	
NAPHTHALENE	mg/kg	< 0.00099	U	< 0.00099	U	< 0.0010	U	< 0.00099	U	< 0.00097	U	< 0.0020	U
PAH, TOTAL	mg/kg	0.0035				0.0062		0.0064		0.0031		0.36	
PHENANTHRENE	mg/kg	0.00054		< 0.00050	U	0.00067		0.00066		< 0.00049	U	0.023	
PYRENE	mg/kg	0.00059		0.00045	J	0.0010		0.00098		0.00053		0.04	
OTHER													
INITIAL GROUP WEIGHT	grams	1366		737		257		716		949		178	
LIPIDS	%	0.23		0.20		0.19		0.16		0.16		0.33	
TOTAL COUNT OF ORGANISMS	count	4		3		3		5		3		15	
TOTAL SOLIDS	%	8.99		9.27		9.99		8.17		8.91		10.6	

Notes:
Tissue data is reported on a wet weight basis.
U or < - Non-detect at laboratory detection limit.
J - The compound was positively identified; however, the associated numerical value is an estimated concentration only (+ and - indicate bias).
Sample Type - N = normal sample, FD = duplicate sample.
mg/kg - milligram per kilogram

ATTACHMENT A TABLE 3
SUMMARY OF ANALYTICAL RESULTS - SHELLFISH
TISSUE
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

	Area	Site		Site		Background		Background		Background		Background	
	Location ID	CRP-SD123		CRP-SD124		CRP-SD301		CRP-SD302		CRP-SD303		CRP-SD304	
	Tissue Type	blue mussel composite		blue mussel composite		quahog composite		blue mussel composite		blue mussel composite		blue mussel composite	
	Sample Date	11/19/2013		11/19/2013		11/6/2013		11/6/2013		11/19/2013		11/19/2013	
	Sample ID	OU09TS123		OU09TS124		BSBG-TS-301		BSBG-TS-302		BSBGTS303		BSBGTS304	
	Sample Type	N		N		N		N		N		N	
Chemical	Unit	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
INORGANICS													
ALUMINUM	mg/kg	31.5		30.7		6.77		29.4		21.8		16.7	
ANTIMONY	mg/kg	0.0123	J+	0.0131	J+	< 0.0056	U	< 0.0053	U	< 0.0007	U	< 0.0006	U
ARSENIC	mg/kg	3.63	J+	3.55	J+	3.60	J+	2.50	J+	3.46	J+	3.58	J+
BARIUM	mg/kg	0.155	J+	0.147	J+	0.280	J+	0.259	J+	0.0974	J+	0.106	J+
BERYLLIUM	mg/kg	0.0025	J	0.0021	J	0.0035		0.0023		0.0022	J	0.0018	J
CADMIUM	mg/kg	0.132	J+	0.144	J+	0.0724	J+	0.0805	J+	0.138	J+	0.152	J+
CALCIUM	mg/kg	3980	J	697	J	358	J+	920	J+	665	J	649	J
CHROMIUM, TOTAL	mg/kg	0.771	J+	0.603	J+	0.155	J+	0.207	J+	0.543	J+	0.634	J+
COBALT	mg/kg	0.146	J+	0.145	J+	0.202	J+	0.0646	J+	0.0819	J+	0.111	J+
COPPER	mg/kg	1.35	J+	1.34	J+	1.26	J+	1.02	J+	0.920	J+	0.960	J+
IRON	mg/kg	148		95.2		19.7	J+	57.6	J+	69.7		72.3	
LEAD	mg/kg	1.86	J	2.29	J	0.148	J	0.260	J	0.426	J	0.255	J
MAGNESIUM	mg/kg	748		804		817		862		748		752	
MANGANESE	mg/kg	4.96	J+	4.95	J+	7.72	J+	5.97	J+	2.71	J+	2.60	J+
MERCURY	mg/kg	0.0110		0.0143		0.0153		0.0196		0.0171		0.0120	
NICKEL	mg/kg	0.551	J+	0.462	J+	0.707	J+	0.171	J+	0.332	J+	0.406	J+
POTASSIUM	mg/kg	1700	J+	1670	J+	1370	J+	1270	J+	1620	J+	1740	J+
SELENIUM	mg/kg	0.42		0.52		0.25		0.40		0.44		0.50	
SILVER	mg/kg	0.0056		0.0067		0.306	J-	0.0141	J-	0.0075		0.0064	
SODIUM	mg/kg	6460		6740		6680		7170		6240		6290	
THALLIUM	mg/kg	< 0.0028	U	< 0.0025	U	< 0.0023	U	< 0.0021	U	< 0.0026	U	< 0.0026	U
VANADIUM	mg/kg	0.202	J+	0.203	J+	0.123	J+	0.179	J+	0.149	J+	0.162	J+
ZINC	mg/kg	12.5	J+	12.1	J+	15.6	J+	8.69	J+	11.1	J+	12.8	J+
POLYCYCLIC AROMATIC HYRDOCARBONS (PAHs)													
ACENAPHTHENE	mg/kg	< 0.0040	UJ	0.0026		0.00015	J	< 0.00074	UJ	< 0.0028	UJ	< 0.0024	UJ
ACENAPHTHYLENE	mg/kg	0.00047	J	0.0013		0.00013	J	0.00023	J	0.0011		0.00090	J
ANTHRACENE	mg/kg	0.0030	J	0.0080		0.00021	J	0.00053		0.0052		0.0031	
BENZO[A]ANTHRACENE	mg/kg	0.023		0.018		< 0.00031	UJ	0.00095		0.015		0.0030	
BENZO[A]PYRENE	mg/kg	0.027		0.029		0.00025	J	0.00093	J	0.02		0.0030	
BENZO[B]FLUORANTHENE	mg/kg	0.032		0.034		0.00049	J	0.0024	J	0.021		0.0042	
BENZO[G,H,I]PERYLENE	mg/kg	0.021		0.021		0.00028	J	0.0012	J	0.017		0.0027	
BENZO[K]FLUORANTHENE	mg/kg	0.01		0.012		0.00031	J	0.00073	J	0.0081		0.0018	J
CHRYSENE	mg/kg	0.036		0.05		0.00037	J	0.0015		0.023		0.0049	
DIBENZ[A,H]ANTHRACENE	mg/kg	0.0051		0.0053		< 0.00010	U	< 0.00050	U	0.0037		0.00054	J
FLUORANTHENE	mg/kg	0.022		0.034		0.0012		0.0027		0.024		0.0087	
FLUORENE	mg/kg	0.0032		0.0032		0.00036	J	0.00023	J	0.0012		0.00054	
HPAH, TOTAL	mg/kg	0.22		0.25		0.0041		0.014		0.17		0.037	
INDENO[1,2,3-CD]PYRENE	mg/kg	0.017		0.017		0.00018	J	0.0011	J	0.013		0.0021	J
LPAH, TOTAL	mg/kg	0.022		0.035		0.0016		0.0021		0.023		0.01	
NAPHTHALENE	mg/kg	< 0.0061	U	< 0.0020	U	< 0.00099	U	< 0.00097	U	< 0.0020	U	< 0.0020	U
PAH, TOTAL	mg/kg	0.24		0.29		0.0056		0.016		0.19		0.047	
PHENANTHRENE	mg/kg	0.015		0.02		0.00073		0.0011		0.015		0.0057	
PYRENE	mg/kg	0.029		0.032		0.00097		0.0021		0.022		0.0059	
OTHER													
INITIAL GROUP WEIGHT	grams	100		310		1345		326		313		311	
LIPIDS	%	0.61		0.58		0.21		0.49		0.61		0.43	
TOTAL COUNT OF ORGANISMS	count	7		23		6		14		17		22	
TOTAL SOLIDS	%	14.0		12.7		11.5		10.8		13.5		13.4	

Notes:
Tissue data is reported on a wet weight basis.
U or < - Non-detect at laboratory detection limit.
J - The compound was positively identified; however, the associated numerical value is an estimated concentration only (+ and - indicate bias).
Sample Type - N = normal sample, FD = duplicate sample.
mg/kg - milligram per kilogram

ATTACHMENT A TABLE 4
SUMMARY OF PELLET COUNTS IN SURFACE SOIL AND SURFACE SEDIMENT
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

Location ID	Sample Date	Sample ID	Depth Interval	Pellet Count
SURFACE SOIL (0 - 1 ft)				
CRP-SB226	12/5/2013	OU09 SS226 0001	0 - 1 ft	0
CRP-SB227	12/5/2013	OU09 SS227 0001	0 - 1 ft	0
CRP-SB301	12/6/2013	OU09 SS301 0001	0 - 1 ft	29
CRP-SB224	12/6/2013	OU09 SS224 0001	0 - 1 ft	52
CRP-SB225	12/6/2013	OU09 SS225 0001	0 - 1 ft	0
CRP-SB210	12/6/2013	OU09 SS210 0012	0 - 1 ft	0
CRP-SB222	12/12/2013	OU09 SB222 0001	0 - 1 ft	120
SURFACE SEDIMENT (0 - 1 ft)				
CRP-SD01	6/19/2009	CRP-SD01-0006	0 - 0.5 ft	6
CRP-SD01	6/19/2009	CRP-SD01-0612	0.5 - 1 ft	2
CRP-SD02	6/19/2009	CRP-SD02-0006	0 - 0.5 ft	5
CRP-SD02	6/19/2009	CRP-SD02-0612	0.5 - 1 ft	0
CRP-SD03	6/18/2009	CRP-SD03-0006	0 - 0.5 ft	51
CRP-SD04	6/18/2009	CRP-SD04-0006	0 - 0.5 ft	8
CRP-SD05	6/15/2009	CRP-SD05-0006	0 - 0.5 ft	34
CRP-SD06	6/15/2009	CRP-SD06-0006	0 - 0.5 ft	65
CRP-SD06	6/15/2009	CRP-SD06-0612	0.5 - 1 ft	48
CRP-SD07	6/15/2009	CRP-SD07-0006	0 - 0.5 ft	336
CRP-SD07	6/15/2009	CRP-SD07-0612	0.5 - 1 ft	12
CRP-SD08	6/19/2009	CRP-SD08-0006	0 - 0.5 ft	586
CRP-SD08	6/19/2009	CRP-SD08-0612	0.5 - 1 ft	38
CRP-SD09	6/19/2009	CRP-SD09-0006	0 - 0.5 ft	63
CRP-SD09	6/19/2009	CRP-SD09-0612	0.5 - 1 ft	48
CRP-SD10	6/17/2009	CRP-SD10-0006	0 - 0.5 ft	295
CRP-SD10	6/17/2009	CRP-SD10-0612	0.5 - 1 ft	288
CRP-SD11	6/16/2009	CRP-SD11-0006	0 - 0.5 ft	945
CRP-SD11	6/16/2009	CRP-SD11-0612	0.5 - 1 ft	506
CRP-SD12	6/18/2009	CRP-SD12-0006	0 - 0.5 ft	138
CRP-SD13	6/17/2009	CRP-SD13-0006	0 - 0.5 ft	99
CRP-SD13	6/17/2009	CRP-SD13-0612	0.5 - 1 ft	132
CRP-SD14	6/18/2009	CRP-SD14-0006	0 - 0.5 ft	151
CRP-SD14	6/18/2009	CRP-SD14-0612	0.5 - 1 ft	181
CRP-SD15	6/16/2009	CRP-SD15-0006	0 - 0.5 ft	312
CRP-SD15	6/16/2009	CRP-SD15-0612	0.5 - 1 ft	297
CRP-SD16	6/17/2009	CRP-SD16-0006	0 - 0.5 ft	114
CRP-SD16	6/17/2009	CRP-SD16-0612	0.5 - 1 ft	350
CRP-SD17	6/16/2009	CRP-SD17-0006	0 - 0.5 ft	44
CRP-SD18	6/16/2009	CRP-SD18-0006	0 - 0.5 ft	0
CRP-SD18	6/16/2009	CRP-SD18-0612	0.5 - 1 ft	1
CRP-SD19	6/16/2009	CRP-SD19-0006	0 - 0.5 ft	5
CRP-SD19	6/16/2009	CRP-SD19-0612	0.5 - 1 ft	1
CRP-SD20	6/17/2009	CRP-SD20-0006	0 - 0.5 ft	0
CRP-SD20	6/17/2009	CRP-SD20-0612	0.5 - 1 ft	1
CRP-SD101	12/13/2013	OU09 SD101 0012W	0 - 1 ft	50
CRP-SD102	12/13/2013	OU09 SD102 0012W	0 - 1 ft	127
CRP-SD103	12/13/2013	OU09 SD103 0012W	0 - 1 ft	268
CRP-SD104	4/2/2014	OU09 SD104 0012W	0 - 1 ft	5
CRP-SD105	12/6/2013	OU09 SD105 0012W	0 - 1 ft	0
CRP-SD106	12/10/2013	OU09 SD106 0012W	0 - 1 ft	0
CRP-SD107	12/10/2013	OU09 SD107 0012W	0 - 1 ft	0
CRP-SD108	12/10/2013	OU09 SD108 0012W	0 - 1 ft	0
CRP-SD109	12/3/2013	OU09 SD109 0012W	0 - 1 ft	0
CRP-SD110	12/3/2013	OU09 SD110 0012W	0 - 1 ft	0
CRP-SD111	12/4/2013	OU09 SD111 0012W	0 - 1 ft	0
CRP-SD112	12/5/2013	OU09 SD112 0012W	0 - 1 ft	12
CRP-SD113	12/5/2013	OU09 SD113 0012W	0 - 1 ft	139
CRP-SD114	12/17/2013	OU09 SD114 0012W	0 - 1 ft	84
CRP-SD115	12/17/2013	OU09 SD115 0012W	0 - 1 ft	119
CRP-SD116	4/2/2014	OU09 SD116 0012W	0 - 1 ft	30
CRP-SD117	12/10/2013	OU09 SD117 0012W	0 - 1 ft	0
CRP-SD118	12/10/2013	OU09 SD118 0012W	0 - 1 ft	7
CRP-SD119	12/6/2013	OU09 SD119 0012W	0 - 1 ft	183
CRP-SD120	12/5/2013	OU09 SD120 0012W	0 - 1 ft	504
CRP-SD121	12/4/2013	OU09 SD121 0012W	0 - 1 ft	17
CRP-SD122	12/12/2013	OU09 SD122 0012W	0 - 1 ft	2
CRP-SD123	12/12/2013	OU09 SD123 0012W	0 - 1 ft	2
CRP-SD124	12/12/2013	OU09 SD124 0012W	0 - 1 ft	0
CRP-SD125	12/11/2013	OU09 SD125 0012W	0 - 1 ft	108
CRP-SD126	12/12/2013	OU09 SD126 0012W	0 - 1 ft	0
CRP-SD128	4/1/2014	OU09 SD128 0012W	0 - 1 ft	25
CRP-SD129	4/1/2014	OU09 SD129 0012W	0 - 1 ft	6
CRP-SD130	4/1/2014	OU09 SD130 0012W	0 - 1 ft	37
CRP-SD131	4/1/2014	OU09 SD131 0012W	0 - 1 ft	0
CRP-SD132	4/2/2014	OU09 SD132 0012W	0 - 1 ft	184
CRP-SD133	4/2/2014	OU09 SD133 0012W	0 - 1 ft	0

ATTACHMENT A TABLE 5
TREATED DATA FOR 0-0.5 AND 0.5-1 FT SOILS
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

Location ID for Treated Data		CRP-SS114_0_1		CRP-SS116_0_1		CRP-SS118_0_1		CRP-SS120_0_1		CRP-SS122_0_1	
Chemical	Unit	Result	Detected?	Result	Detected?	Result	Detected?	Result	Detected?	Result	Detected?
INORGANICS											
LEAD	mg/kg	50.7	Y	38.5	Y	100.25	Y	52.35	Y	89.85	Y
SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs)											
2-METHYLNAPHTHALENE	mg/kg	0.33	N	0.383	N	0.376	N	0.353	N	0.345	N
ACENAPHTHENE	mg/kg	0.33	N	0.383	N	0.376	N	0.353	N	0.345	N
ACENAPHTHYLENE	mg/kg	0.059	Y	0.383	N	0.376	N	0.353	N	0.314	Y
ANTHRACENE	mg/kg	0.33	N	0.383	N	0.0788	Y	0.0762	Y	0.218	Y
BENZO[A]ANTHRACENE	mg/kg	0.1616	Y	0.1385	Y	0.3995	Y	0.2395	Y	0.4804	Y
BENZO[A]PYRENE	mg/kg	0.1731	Y	0.131	Y	0.4185	Y	0.2605	Y	0.40265	Y
BENZO[B]FLUORANTHENE	mg/kg	0.17585	Y	0.1495	Y	0.4795	Y	0.3025	Y	0.4975	Y
BENZO[G,H,I]PERYLENE	mg/kg	0.1331	Y	0.09685	Y	0.298	Y	0.19795	Y	0.29575	Y
BENZO[K]FLUORANTHENE	mg/kg	0.114	Y	0.06285	Y	0.1865	Y	0.1184	Y	0.18795	Y
CHRYSENE	mg/kg	0.251	Y	0.203	Y	0.5645	Y	0.3715	Y	0.7255	Y
DIBENZ[A,H]ANTHRACENE	mg/kg	0.0518	Y	0.383	N	0.0692	Y	0.0714	Y	0.115	Y
FLUORANTHENE	mg/kg	0.2277	Y	0.2625	Y	0.599	Y	0.4015	Y	0.813	Y
FLUORENE	mg/kg	0.33	N	0.383	N	0.376	N	0.353	N	0.0602	Y
INDENO[1,2,3-CD]PYRENE	mg/kg	0.1243	Y	0.09885	Y	0.298	Y	0.196	Y	0.29805	Y
NAPHTHALENE	mg/kg	0.33	N	0.383	N	0.376	N	0.353	N	0.345	N
PHENANTHRENE	mg/kg	0.17	Y	0.1315	Y	0.289	Y	0.1844	Y	0.4579	Y
PYRENE	mg/kg	0.2708	Y	0.2385	Y	0.5785	Y	0.3725	Y	1	Y
Total HMW PAHs	mg/kg	1.68325	Y	1.38155	Y	3.8912	Y	2.53175	Y	4.8158	Y
Total LMW PAHs	mg/kg	0.229	Y	0.1315	Y	0.3678	Y	0.2606	Y	1.0501	Y
Total PAHs	mg/kg	1.91225	Y	1.51305	Y	4.259	Y	2.79235	Y	5.8659	Y

Notes:
Y - Chemical was detected in at least one sample within the 0 - 1 ft horizon.
N - Chemical was not detected in the 0 - 0.5 or 0.5 - 1 ft samples.

mg/kg - milligram per kilogram

Data from the 0 to 0.5 ft and 0.5 to 1 ft horizons were averaged together to represent a 0 to 1 ft result, prior to the calculation of summary statistics using the following approach:
When the analyte was detected in both horizons, the average of the detects was used;
When the analyte was detected in one horizon but not the other, the detected concentration was used; and
When the analyte was not detected in either horizon, the maximum detection limit was used.
See Attachment A Table 1 for data from 0 to 0.5 ft and 0.5 to 1 ft horizons.

ATTACHMENT A TABLE 6
TREATED DATA FOR 0-0.5 AND 0.5-1 FT SEDIMENTS
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

Location ID for Treated Data		CRP-SD01_0_1		CRP-SD02_0_1		CRP-SD06_0_1		CRP-SD07_0_1		CRP-SD08_0_1		CRP-SD09_0_1		CRP-SD10_0_1		CRP-SD11_0_1		CRP-SD13_0_1	
Chemical	Unit	Result	Detected?	Result	Detected?	Result	Detected?	Result	Detected?	Result	Detected?	Result	Detected?	Result	Detected?	Result	Detected?	Result	Detected?
INORGANICS																			
ALUMINUM	mg/kg	4375	Y	3855	Y	4160	Y	3970	Y	3640	Y	2890	Y	3685	Y	3940	Y	3240	Y
ANTIMONY	mg/kg	2.3	Y	1.6	Y	0.92	Y	0.42	Y	0.595	Y	0.33	Y	0.34	Y	0.4	Y	0.63	N
ARSENIC	mg/kg	8.75	Y	14.15	Y	2.5	Y	3.35	Y	3.1	Y	2.2	Y	2.05	Y	2.55	Y	1.85	Y
BARIUM	mg/kg	7.2	Y	16.5	Y	8.3	Y	8.5	Y	7.5	Y	6.15	Y	7.5	Y	7.3	Y	5.95	Y
BERYLLIUM	mg/kg	0.305	Y	0.29	Y	0.2	Y	0.235	Y	0.155	Y	0.15	Y	0.16	Y	0.195	Y	0.135	Y
CADMIUM	mg/kg	0.15	Y	0.17	Y	0.17	Y	0.125	Y	0.205	Y	0.195	Y	0.185	Y	0.1275	Y	0.125	Y
CALCIUM	mg/kg	6755	Y	8155	Y	2425	Y	2381.5	Y	4370	Y	2995	Y	3150	Y	3820	Y	2202	Y
CHROMIUM, TOTAL	mg/kg	15.4	Y	12.6	Y	9.75	Y	10.15	Y	10.7	Y	9.55	Y	9.7	Y	10.45	Y	9	Y
COBALT	mg/kg	9	Y	14.05	Y	3.3	Y	3.45	Y	3.4	Y	3.35	Y	2.4	Y	2.65	Y	2.4	Y
COPPER	mg/kg	127.45	Y	43.8	Y	7.15	Y	7.5	Y	7.1	Y	6.25	Y	6.3	Y	7.75	Y	5.2	Y
IRON	mg/kg	35150	Y	36900	Y	10500	Y	11900	Y	10900	Y	11200	Y	8300	Y	10020	Y	8145	Y
LEAD	mg/kg	219	Y	247.6	Y	48.1	Y	82.75	Y	142.2	Y	56.8	Y	91.15	Y	160.5	Y	22.2	Y
MAGNESIUM	mg/kg	2630	Y	2915	Y	1985	Y	1870	Y	1755	Y	1495	Y	1785	Y	1955	Y	1620	Y
MANGANESE	mg/kg	355	Y	1313.5	Y	119	Y	120	Y	107	Y	121	Y	92.35	Y	109.5	Y	89.55	Y
NICKEL	mg/kg	35.3	Y	34.2	Y	8.75	Y	9.3	Y	8.55	Y	8.45	Y	6.95	Y	8.4	Y	6.65	Y
POTASSIUM	mg/kg	542.5	Y	561.5	Y	603.5	Y	574.5	Y	472	Y	415.5	Y	558.5	Y	622	Y	455	Y
SELENIUM	mg/kg	0.78	N	2	N	0.40	N	0.39	N	0.4	N	0.4	N	0.4	Y	0.39	N	0.27	N
SILVER	mg/kg	0.36	N	0.36	N	0.18	N	0.18	N	0.19	N	0.18	N	0.18	N	0.11	Y	0.13	N
SODIUM	mg/kg	2530	Y	2160	N	2170	Y	2295	Y	2110	Y	2025	Y	2435	Y	2970	Y	2600	Y
THALLIUM	mg/kg	0.96	N	0.97	Y	0.49	N	0.48	N	0.49	N	0.49	N	0.49	N	0.48	N	0.34	N
VANADIUM	mg/kg	16.6	Y	15.55	Y	13.25	Y	16.45	Y	12.65	Y	11.6	Y	9.95	Y	12.65	Y	9.65	Y
ZINC	mg/kg	80.85	Y	82.4	Y	38.15	Y	40.05	Y	41.35	Y	42.3	Y	32.6	Y	39.45	Y	31.7	Y
SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs)																			
2-METHYLNAPHTHALENE	mg/kg	0.25	N	0.25	N	0.24	N	0.24	N	0.25	N	0.25	N						
ACENAPHTHENE	mg/kg	0.088	Y	0.063	Y	0.24	N	0.24	N	0.25	N	0.25	N						
ACENAPHTHYLENE	mg/kg	0.25	N	0.25	N	0.24	N	0.24	N	0.25	N	0.25	N						
ANTHRACENE	mg/kg	0.127	Y	0.068	Y	0.24	N	0.24	N	0.25	N	0.25	N						
BENZO[A]ANTHRACENE	mg/kg	0.66	Y	0.37	Y	0.068	Y	0.064	Y	0.25	N	0.11	Y						
BENZO[A]PYRENE	mg/kg	0.875	Y	0.525	Y	0.24	N	0.24	N	0.25	N	0.25	N						
BENZO[B]FLUORANTHENE	mg/kg	0.92	Y	0.525	Y	0.1	Y	0.24	N	0.25	N	0.25	N						
BENZO[G,H,I]PERYLENE	mg/kg	0.68	Y	0.43	Y	0.18	Y	0.24	N	0.25	N	0.23	Y						
BENZO[K]FLUORANTHENE	mg/kg	0.33	Y	0.19	Y	0.24	N	0.24	N	0.25	N	0.25	N						
CHRYSENE	mg/kg	0.79	Y	0.455	Y	0.076	Y	0.062	Y	0.25	N	0.12	Y						
DIBENZ[A,H]ANTHRACENE	mg/kg	0.28	Y	0.25	N	0.24	N	0.24	N	0.25	N	0.25	N						
FLUORANTHENE	mg/kg	0.89	Y	0.5	Y	0.087	Y	0.13	Y	0.25	N	0.17	Y						
FLUORENE	mg/kg	0.06	Y	0.039	Y	0.24	N	0.24	N	0.25	N	0.25	N						
HPAH, TOTAL	mg/kg	7.045	Y	4.04	Y	0.621	Y	0.386	Y	0.25	N	0.81	Y						
INDENO[1,2,3-CD]PYRENE	mg/kg	0.745	Y	0.505	Y	0.24	N	0.24	N	0.25	N	0.25	N						
LPAH, TOTAL	mg/kg	0.865	Y	0.485	Y	0.0445	Y	0.11	Y	0.25	N	0.11	Y						
NAPHTHALENE	mg/kg	0.25	N	0.25	N	0.24	N	0.24	N	0.25	N	0.25	N						
PAH, TOTAL	mg/kg	7.91	Y	4.525	Y	0.6655	Y	0.496	Y	0.25	N	0.92	Y						
PHENANTHRENE	mg/kg	0.59	Y	0.315	Y	0.0445	Y	0.11	Y	0.25	N	0.11	Y						
PYRENE	mg/kg	0.875	Y	0.54	Y	0.11	Y	0.13	Y	0.25	N	0.18	Y						

Notes:
Y - Chemical was detected in at least one sample within the 0 - 1 ft horizon.
N - Chemical was not detected in the 0 - 0.5 or 0.5 - 1 ft samples.
mg/kg - milligram per kilogram
Data from the 0 to 0.5 ft and 0.5 to 1 ft horizons were averaged together to represent a 0 to 1 ft result, prior to the calculation of summary statistics using the following approach:
When the analyte was detected in both horizons, the average of the detects was used;
When the analyte was detected in one horizon but not the other, the detected concentration was used; and
When the analyte was not detected in either horizon, the maximum detection limit was used.
See Attachment A Table 2 for data from 0 to 0.5 ft and 0.5 to 1 ft horizons.

ATTACHMENT A TABLE 6
TREATED DATA FOR 0-0.5 AND 0.5-
1 FT SEDIMENTS
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

Location ID for Treated Data		CRP-SD14_0_1		CRP-SD15_0_1		CRP-SD16_0_1		CRP-SD18_0_1		CRP-SD19_0_1		CRP-SD20_0_1	
Chemical	Unit	Result	Detected?	Result	Detected?	Result	Detected?	Result	Detected?	Result	Detected?	Result	Detected?
INORGANICS													
ALUMINUM	mg/kg	3210	Y	3385	Y	3695	Y	2855	Y	3105	Y	3410	Y
ANTIMONY	mg/kg	0.93	N	0.35	Y	0.68	Y	0.64	N	0.64	N	0.63	N
ARSENIC	mg/kg	1.75	Y	2.45	Y	2.7	Y	1.7	Y	1.9	Y	1.9	Y
BARIUM	mg/kg	5.8	Y	6.85	Y	7.85	Y	5.45	Y	5.7	Y	6.6	Y
BERYLLIUM	mg/kg	0.13	Y	0.165	Y	0.155	Y	0.14	Y	0.145	Y	0.13	Y
CADMIUM	mg/kg	0.14	Y	0.14	Y	0.21	Y	0.074	Y	0.0945	Y	0.16	Y
CALCIUM	mg/kg	753.5	Y	1605	Y	9095	Y	615	Y	1047	Y	2765	Y
CHROMIUM, TOTAL	mg/kg	9.15	Y	8.75	Y	10.4	Y	8.05	Y	8.6	Y	9.9	Y
COBALT	mg/kg	2.4	Y	2.2	Y	2.6	Y	1.9	Y	2.05	Y	2.5	Y
COPPER	mg/kg	5.05	Y	5.25	Y	8.05	Y	4.25	Y	4.7	Y	5.7	Y
IRON	mg/kg	7830	Y	8970	Y	7960	Y	7710	Y	7950	Y	7915	Y
LEAD	mg/kg	33.2	Y	66.35	Y	97.95	Y	7.5	Y	8.35	Y	11.2	Y
MAGNESIUM	mg/kg	1655	Y	1830	Y	1790	Y	1550	Y	1645	Y	1685	Y
MANGANESE	mg/kg	82.75	Y	91	Y	84.65	Y	89.7	Y	91.8	Y	83.15	Y
NICKEL	mg/kg	6.55	Y	8.6	Y	8.45	Y	5.85	Y	6.25	Y	6.75	Y
POTASSIUM	mg/kg	440.5	Y	579	Y	602.5	Y	455.5	Y	489.5	Y	482.5	Y
SELENIUM	mg/kg	0.4	N	0.40	N	0.33	Y	0.28	N	0.28	N	0.27	N
SILVER	mg/kg	0.19	N	0.19	N	0.058	Y	0.13	N	0.13	N	0.13	N
SODIUM	mg/kg	2555	Y	3660	Y	2790	Y	2825	Y	2830	Y	2380	Y
THALLIUM	mg/kg	0.49	N	0.49	N	0.34	N	0.34	N	0.34	N	0.33	N
VANADIUM	mg/kg	8.8	Y	10.6	Y	9.95	Y	9.8	Y	10.1	Y	9.55	Y
ZINC	mg/kg	30.05	Y	31.65	Y	36.75	Y	28.05	Y	30.3	Y	32.6	Y
SEMI-VOLATILE ORGANIC COMPOU													
2-METHYLNAPHTHALENE	mg/kg												
ACENAPHTHENE	mg/kg												
ACENAPHTHYLENE	mg/kg												
ANTHRACENE	mg/kg												
BENZO[A]ANTHRACENE	mg/kg												
BENZO[A]PYRENE	mg/kg												
BENZO[B]FLUORANTHENE	mg/kg												
BENZO[G,H,I]PERYLENE	mg/kg												
BENZO[K]FLUORANTHENE	mg/kg												
CHRYSENE	mg/kg												
DIBENZ[A,H]ANTHRACENE	mg/kg												
FLUORANTHENE	mg/kg												
FLUORENE	mg/kg												
HPAH, TOTAL	mg/kg												
INDENO[1,2,3-CD]PYRENE	mg/kg												
LPAH, TOTAL	mg/kg												
NAPHTHALENE	mg/kg												
PAH, TOTAL	mg/kg												
PHENANTHRENE	mg/kg												
PYRENE	mg/kg												

Notes:
Y - Chemical was detected in at least one sample within the 0 - 1 ft horizon.
N - Chemical was not detected in the 0 - 0.5 or 0.5 - 1 ft samples.
mg/kg - milligram per kilogram
Data from the 0 to 0.5 ft and 0.5 to 1 ft horizons were averaged together to represent a 0 to 1 ft result, prior to the calculation of summary statistics using the following approach:
When the analyte was detected in both horizons, the average of the detects was used;
When the analyte was detected in one horizon but not the other, the detected concentration was used; and
When the analyte was not detected in either horizon, the maximum detection limit was used.
See Attachment A Table 2 for data from 0 to 0.5 ft and 0.5 to 1 ft horizons.

ATTACHMENT B

COMPARISON OF CHEMICAL CONCENTRATIONS IN DRY-SIEVED AND WET-SIEVED SEDIMENT SAMPLES

ATTACHMENT B
COMPARISON OF CHEMICAL CONCENTRATIONS IN DRY-SIEVED AND WET-SIEVED SEDIMENT SAMPLES
CARR POINT – MRP SITE 1

Introduction

Surficial sediment samples collected in the vicinity of MRP Site 1 were dry sieved per the methods described in the Sampling and Analysis Plan (SAP; Resolution Consultants, 2013). Sediment of these samples was pushed through a #10 sieve (2 mm) with a spatula and submitted for laboratory analyses. In contrast, the sediment samples collected in 2009 to support the SI were wet-sieved using a #10 sieve and small amounts of seawater (Tetra Tech, 2010). In order to compare the chemical concentrations detected in sediment that was sieved using both methods (dry and wet), a sub-set of surficial sediment samples collected in 2013 were wet sieved using the same methods as Tetra Tech (2010) and submitted for laboratory analyses. The concentrations of PAHs and metals detected in the dry- and the wet-sieved samples are compared to determine if there is no difference in chemical concentrations resulting from the two sieving methods.

Methods

The chemical concentrations of 13 paired dry- and wet-sieved sediment samples (26 samples total) were compared graphically using boxplots to evaluate the range of dry- versus wet-sieved concentrations per chemical and scatterplots to compare the concentrations of each pair. Both detected and non-detected concentrations (non-detected concentrations are the method detection limits) are included in the graphs. The boxplots are presented in **Figures 1 through 7** and the scatterplots are presented in **Figures 8 through 33**.

Summary statistics were performed on detected concentrations only of each dataset and are presented in **Table 1**. Paired t-tests or the Wilcoxon Signed Rank (WSR) test were performed on each pair[1] to determine if the mean or median concentrations are significantly different. A paired t-test was performed if the data are normally distributed (as determined by the Shapiro-Wilk test) and the WSR test was performed if the data are not normally distributed.

Results

The range of concentrations for dry- versus wet-sieved sediment samples is similar for all chemicals as illustrated in the boxplots (**Figures 1 through 7**). Dry-sieved sediment concentrations are not consistently greater in median value or range of values than wet-sieved and vice versa. For a few metals, large differences in maximum values are apparent, e.g., the maximum value for dry-sieved barium is more than twice that of the wet-sieved barium concentration. For selenium, the wet-sieved maximum concentration is several orders of magnitude greater than the dry-sieved maximum concentration.

The scatterplots illustrate that the paired dry- and wet-sieved concentrations are, in general, similar for most chemicals (**Figures 8 through 33**). There are some notable differences among some paired samples. For example, the dry-sieved concentration of one of the Target Area pairs for antimony (Figure 12) is 10-fold greater than the wet-sieved concentration. In contrast, the opposite is true for another

[1] The method detection limit was used for any non-detected concentrations in order to include all 13 pairs.

paired antimony sample in the Target Area where the wet-sieved concentration is twice that of the dry-sieved concentration. Other chemicals with notable differences among paired samples include PAHs, cadmium, barium, and silver (one pair in the Target Area), lead (two pairs in the Target Area), and selenium and thallium (one pair in the Overshoot Area 300-600 ft).

The pattern of similarity between paired dry- and wet-sieved sediment concentrations is also apparent in the summary statistics presented in **Table 1**. All of the PAHs and the majority of metals were detected in all 13 samples of dry-sieved and 13 samples of wet-sieved sediment. Total LPAHs, antimony, cadmium, and mercury had less than 100% detection, but at least 10 pairs of detected concentrations. Selenium had only three detected concentrations for dry-sieved samples and wet-sieved samples (6 total); therefore, the t-test was not conducted on the selenium pairs because of the low frequency of detection. No significant differences are apparent between the dry- and wet-sieved concentrations for all chemicals (except mercury, discussed below) based on the results of the t-tests or WSR tests.

Dry-sieved concentrations of mercury appear greater than the wet-sieved concentrations in the boxplot (**Figure 6**) and in the scatterplot (**Figure 25**), particularly in the overshoot area. Mercury was detected in 12 out of 13 dry-sieved samples and in 10 out of 13 wet-sieved samples. The results of the WSR test indicated a significant difference between the dry- and wet-sieved concentrations of mercury. This was the only chemical for which a significant difference ($p<0.05$) resulted.

Conclusions

Based on the pair-wise comparisons of chemical concentrations of dry- and wet-sieved samples, it is apparent that both methods result in similar chemical concentrations. Only one chemical (mercury) out of 26 tested resulted in a statistically significant difference between the sieving methods. The remaining 25 chemicals appear to have similar ranges, means, and median concentrations among dry- and wet-sieved sediment samples, and there are no significant differences between the paired dry- and wet-sieved concentrations. Therefore, this analysis suggests that the dry-sieved sediment concentrations can be used to represent sediment chemical concentrations for the samples collected in 2013.

References

Resolution Consultants. 2013. SAP. Former Carr Point Shooting Range (MRP Site 1, OU9), Naval Station (NAVSTA) Newport, Rhode Island: Final. Prepared for Department of the Navy Naval Facilities Engineering Command, Mid-Atlantic. Prepared by Resolution Consultants: A Joint Venture of AECOM & EnSafe.

Tetra Tech. 2010. Site Investigation Report for Munitions Response Program Site 1 - Carr Point. NAVSTA, Newport, RI. May 2010.

ATTACHMENT B TABLE 1
COMPARISON OF DRY- VERSUS WET-SIEVED SEDIMENT CHEMICAL CONCENTRATIONS
CARR POINT - MRP SITE 1

Chemical	Sieve Method	n	FOD	Mean	Median	Min	Max	Standard Deviation	CV	Normality test	Test (a)	t or W value	95% confidence interval (b)	Z-statistic	P-value	Difference between dry and wet? (c)
SVOCs																
Total PAHs	Dry	13	13:13	0.303	0.14	0.012	0.95	0.317	1.049	Normal	Paired t-test	0.611	-0.076 to 0.135	NA	0.552	No
	Wet	13	13:13	0.273	0.23	0.015	1.2	0.308	1.128							
Total LPAHs	Dry	13	11:13	0.0365	0.017	0.0023	0.12	0.0387	1.06	Not normal	WSR	-25	NA	-0.874	0.414	No
	Wet	13	12:13	0.0262	0.0195	0.0033	0.095	0.0249	0.952							
Total HPAHs	Dry	13	13:13	0.272	0.13	0.012	0.83	0.279	1.028	Normal	Paired t-test	0.482	-0.076 to 0.118	NA	0.638	No
	Wet	13	13:13	0.25	0.21	0.012	1.1	0.282	1.126							
Metals																
Aluminum	Dry	13	13:13	4475	4450	3200	6830	1251	0.28	Not normal	WSR	-6	NA	-0.235	0.85	No
	Wet	13	13:13	4252	4210	3290	6350	825	0.194							
Antimony	Dry	13	11:13	5.085	0.1	0.05	36.7	11.7	2.302	Not normal	WSR	30	NA	1.177	0.266	No
	Wet	13	11:13	3.761	0.09	0.04	36.6	10.92	2.903							
Arsenic	Dry	13	13:13	5.969	1.8	1.3	38.1	10.77	1.804	Not normal	WSR	-15	NA	-0.667	0.52	No
	Wet	13	13:13	5.23	1.8	0.29	37.6	10.05	1.921							
Barium	Dry	13	13:13	9.138	8	5.1	26.6	5.512	0.603	Not normal	WSR	-19	NA	-0.845	0.413	No
	Wet	13	13:13	7.577	7.3	5.7	10.6	1.414	0.187							
Beryllium	Dry	13	13:13	0.203	0.17	0.12	0.33	0.074	0.364	Not normal	WSR	-4	NA	-0.179	0.898	No
	Wet	13	13:13	0.193	0.17	0.13	0.32	0.0609	0.315							
Cadmium	Dry	13	12:13	0.0742	0.065	0.03	0.14	0.0309	0.416	Not normal	WSR	-13	NA	-0.664	0.557	No
	Wet	13	12:13	0.0625	0.06	0.02	0.11	0.0226	0.362							
Calcium	Dry	13	13:13	6690	2720	821	25600	8591	1.284	Not normal	WSR	15	NA	0.524	0.635	No
	Wet	13	13:13	5747	2990	902	21700	6584	1.146							
Chromium (d)	Dry	13	13:13	11.04	11.1	7.9	14.3	2.089	0.189	Normal	Paired t-test	0.565	-0.62 to 1.05	NA	0.583	No
	Wet	13	13:13	10.82	10.8	8.1	13.5	1.706	0.158							
Cobalt	Dry	13	13:13	4.323	2.9	2.2	14.1	3.531	0.817	Not normal	WSR	-1	NA	-0.039	0.97	No
	Wet	13	13:13	3.946	3	2.1	11.4	2.808	0.712							
Copper	Dry	13	13:13	14.46	7.1	4.1	92.2	24.04	1.662	Not normal	WSR	21	NA	0.734	0.497	No
	Wet	13	13:13	16.64	6.8	4.1	120	31.64	1.902							
Iron	Dry	13	13:13	13171	8710	7180	36300	10133	0.769	Normal	Paired t-test	1.349	-406 to 1728	NA	0.202	No
	Wet	13	13:13	12510	8850	7040	34300	9374	0.749							
Lead	Dry	13	13:13	507.6	18	7.6	4290	1240	2.444	Not normal	WSR	32	NA	1.255	0.233	No
	Wet	13	13:13	519.3	15	7.6	5960	1637	3.152							
Magnesium	Dry	13	13:13	2157	2020	1650	3040	526.1	0.244	Normal	Paired t-test	0.558	-174 to 294	NA	0.587	No
	Wet	13	13:13	2097	2060	1620	3020	419.4	0.2							
Manganese	Dry	13	13:13	139.5	92.4	69.8	543	128.8	0.924	Not normal	WSR	-7	NA	-0.245	0.839	No
	Wet	13	13:13	126.6	87.9	71.9	388	91.65	0.724							
Mercury	Dry	13	12:13	0.0508	0.055	0.01	0.09	0.0257	0.506	Not normal	WSR	-43	NA	-2.556	0.008	**Yes**
	Wet	13	10:13	0.033	0.03	0.01	0.07	0.0206	0.623							
Nickel	Dry	13	13:13	10.41	7.9	5.6	23.6	6.314	0.607	Normal	Paired t-test	0.286	-1.58 to 2.06	NA	0.78	No
	Wet	13	13:13	10.17	7.8	5.6	30	6.874	0.676							
Potassium	Dry	13	13:13	615.6	523	359	997	210.1	0.341	Normal	Paired t-test	-0.0801	-82.4 to 76.6	NA	0.937	No
	Wet	13	13:13	618.5	599	382	838	135.1	0.218							

ATTACHMENT B TABLE 1
COMPARISON OF DRY- VERSUS WET-SIEVED SEDIMENT CHEMICAL CONCENTRATIONS
CARR POINT - MRP SITE 1

Chemical	Sieve Method	n	FOD	Mean	Median	Min	Max	Standard Deviation	CV	Normality test	Test (a)	t or W value	95% confidence interval (b)	Z-statistic	P-value	Difference between dry and wet? (c)
Selenium	Dry	13	3:13	0.177	0.15	0.14	0.24	0.0551	0.312	(e)	--	--	--	--	--	--
	Wet	13	3:13	0.613	0.18	0.16	1.5	0.768	1.252							
Silver	Dry	13	13:13	0.0838	0.07	0.03	0.15	0.0419	0.5	Not normal	WSR	9	NA	0.534	0.652	No
	Wet	13	13:13	0.0938	0.07	0.03	0.26	0.0705	0.752							
Sodium	Dry	13	13:13	2608	2520	1540	3870	666.8	0.256	Normal	Paired t-test	-1.317	-621 to 153	NA	0.212	No
	Wet	13	13:13	2842	2800	1250	4130	803.3	0.283							
Thallium	Dry	13	13:13	0.0508	0.05	0.03	0.1	0.0185	0.364	Not normal	WSR	9	NA	0.946	0.438	No
	Wet	13	13:13	0.0546	0.05	0.03	0.12	0.023	0.42							
Vanadium	Dry	13	13:13	12.15	11.1	8	22	4.104	0.338	Normal	Paired t-test	0.407	-1.104 to 1.612	NA	0.691	No
	Wet	13	13:13	11.9	10.4	8.2	19.5	3.646	0.306							
Zinc	Dry	13	13:13	42.57	32.4	25.7	91.6	22.45	0.527	Normal	Paired t-test	2.029	-0.22 to 6.22	NA	0.065	No
	Wet	13	13:13	39.57	31.5	25.2	89.9	20.88	0.528							

Notes:
CV - Coefficient of Variation
FOD - Frequency of Detection (number of detected samples: number of total samples)
n - number of samples
NA - Not applicable
ND - non-detected concentration
WSR - Wilcoxon Signed Rank test
(a) Test refers to the type of paired sample test to determine if dry sieve and wet sieve methods produce the same mean or median chemical concentrations.
The test Null Hypothesis is: Dry-sieved sediment = Wet-sieved sediment. If the distribution is normal and all concentrations are detected, then a paired t-test is used.
If the distribution is not normal, then a WSR test is used.
(b) The confidence interval of the mean difference determined by the paired t-test.
(c) If the test p-value is less than 0.05, then it is concluded that dry sieve and wet sieve concentrations are not equal. If the test p-value is greater than 0.05, then there is not enough evidence to reject the hypothesis that dry sieve and wet sieve concentrations are equal.
(d) Total chromium.
(e) There were only three detected selenium concentrations for both dry- and wet-sieved sediment samples. Therefore, paired statistical tests were not conducted.

ATTACHMENT B
COMPARISON OF CHEMICAL CONCENTRATIONS IN DRY-SIEVED AND WET-SIEVED SEDIMENT SAMPLES
CARR POINT – MRP SITE 1

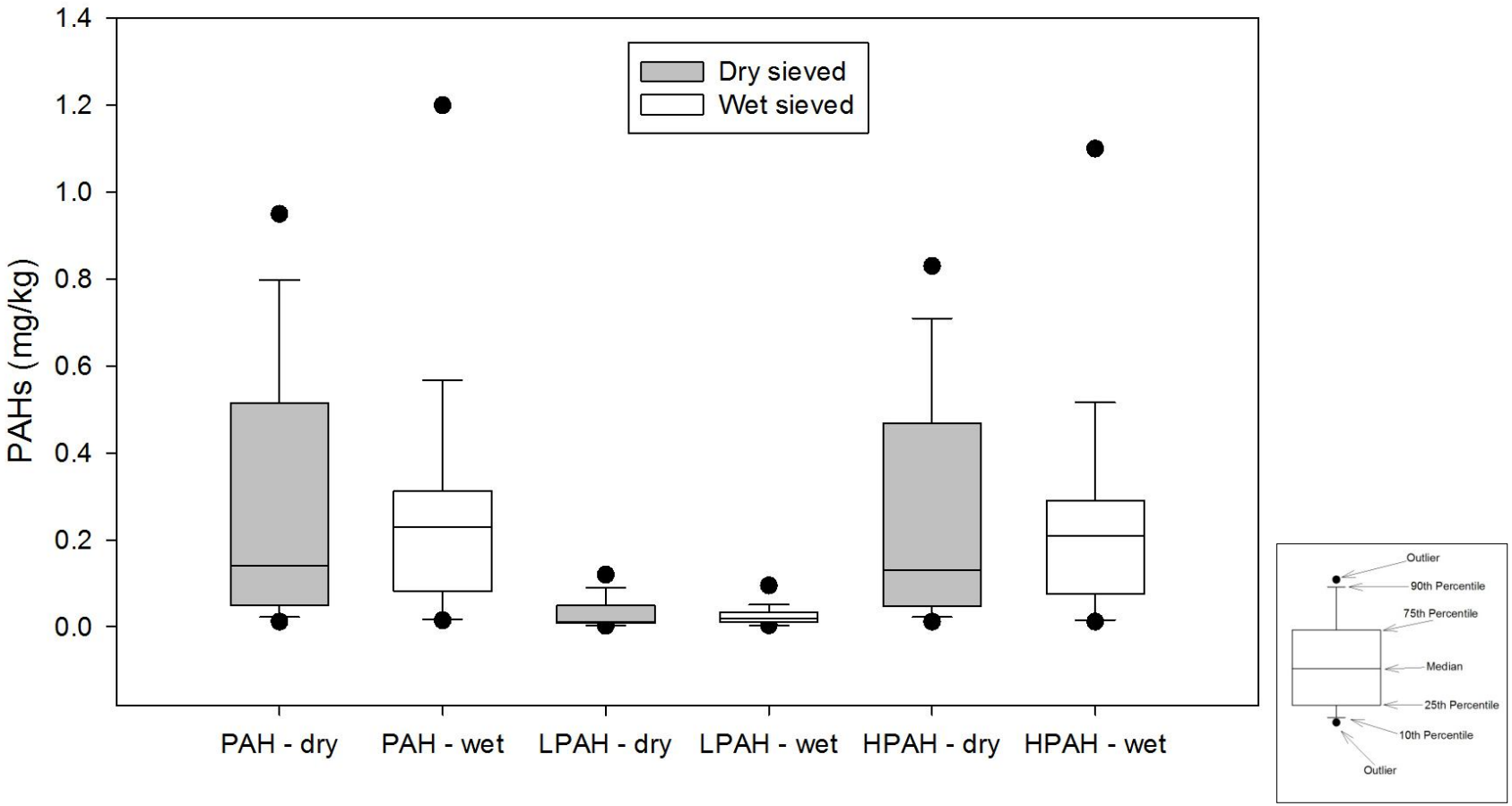


Figure 1. Comparisons of dry- and wet-sieved concentrations of total PAHs, total LPAHs, and total HPAHs in surficial sediment collected in vicinity of MRP Site 1.

ATTACHMENT B
COMPARISON OF CHEMICAL CONCENTRATIONS IN DRY-SIEVED AND WET-SIEVED SEDIMENT SAMPLES
CARR POINT – MRP SITE 1

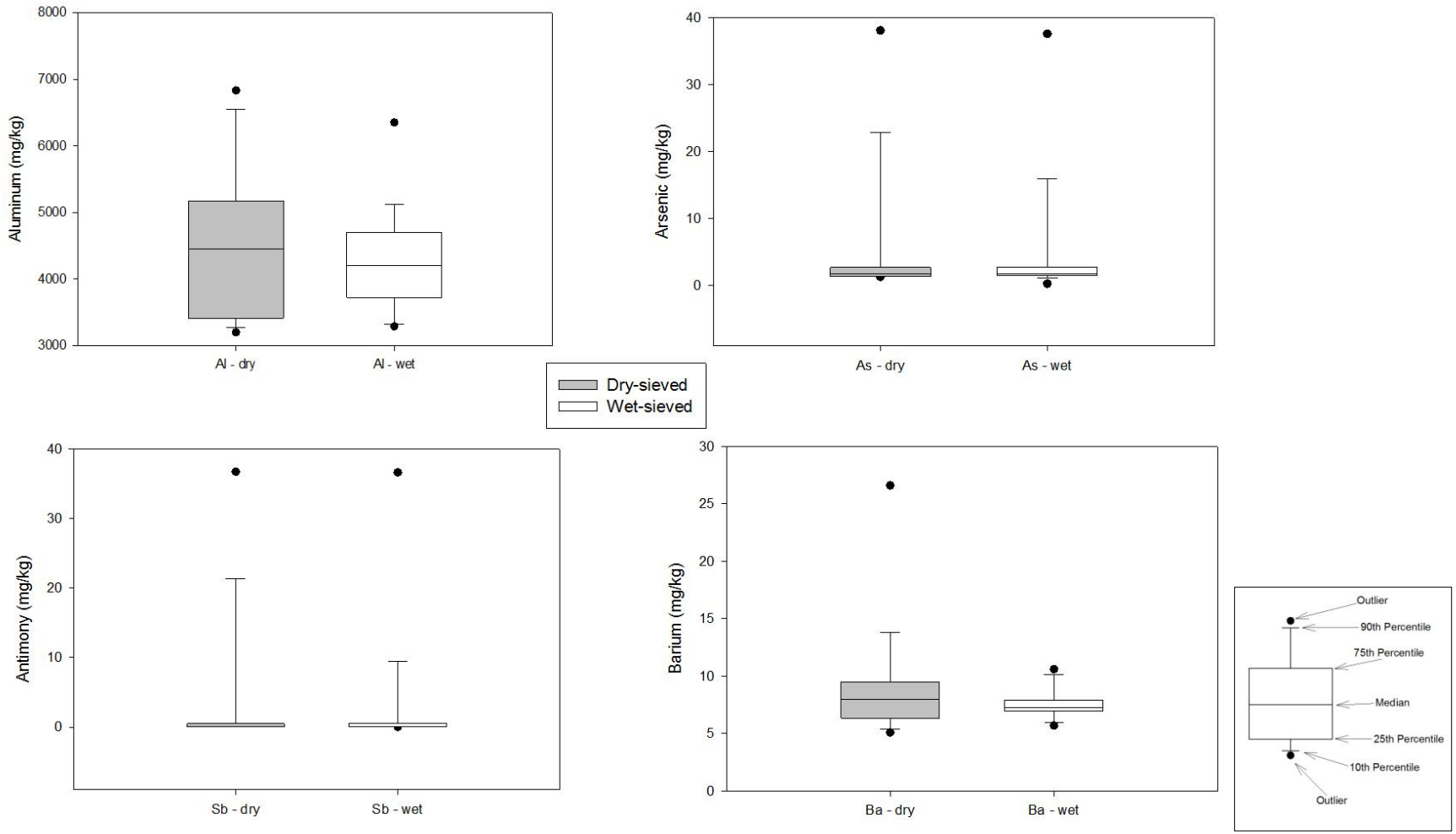


Figure 2. Comparisons of dry- and wet-sieved concentrations of aluminum, antimony, arsenic, and barium in surficial sediment collected in vicinity of MRP Site 1.

ATTACHMENT B
COMPARISON OF CHEMICAL CONCENTRATIONS IN DRY-SIEVED AND WET-SIEVED SEDIMENT SAMPLES
CARR POINT – MRP SITE 1

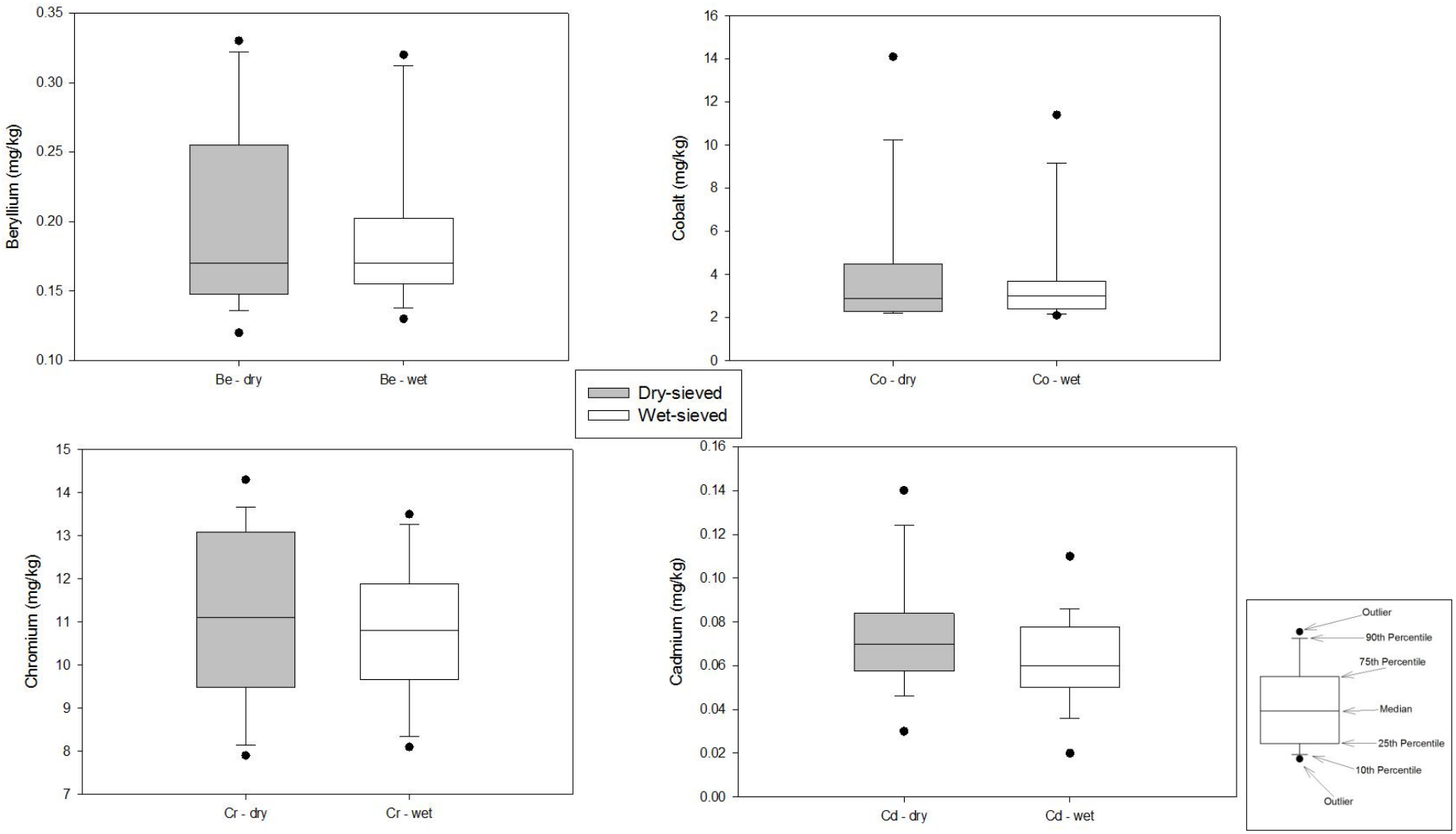


Figure 3. Comparisons of dry- and wet-sieved concentrations of beryllium, chromium, cobalt, and cadmium in surficial sediment collected in vicinity of MRP Site 1.

ATTACHMENT B
COMPARISON OF CHEMICAL CONCENTRATIONS IN DRY-SIEVED AND WET-SIEVED SEDIMENT SAMPLES
CARR POINT – MRP SITE 1

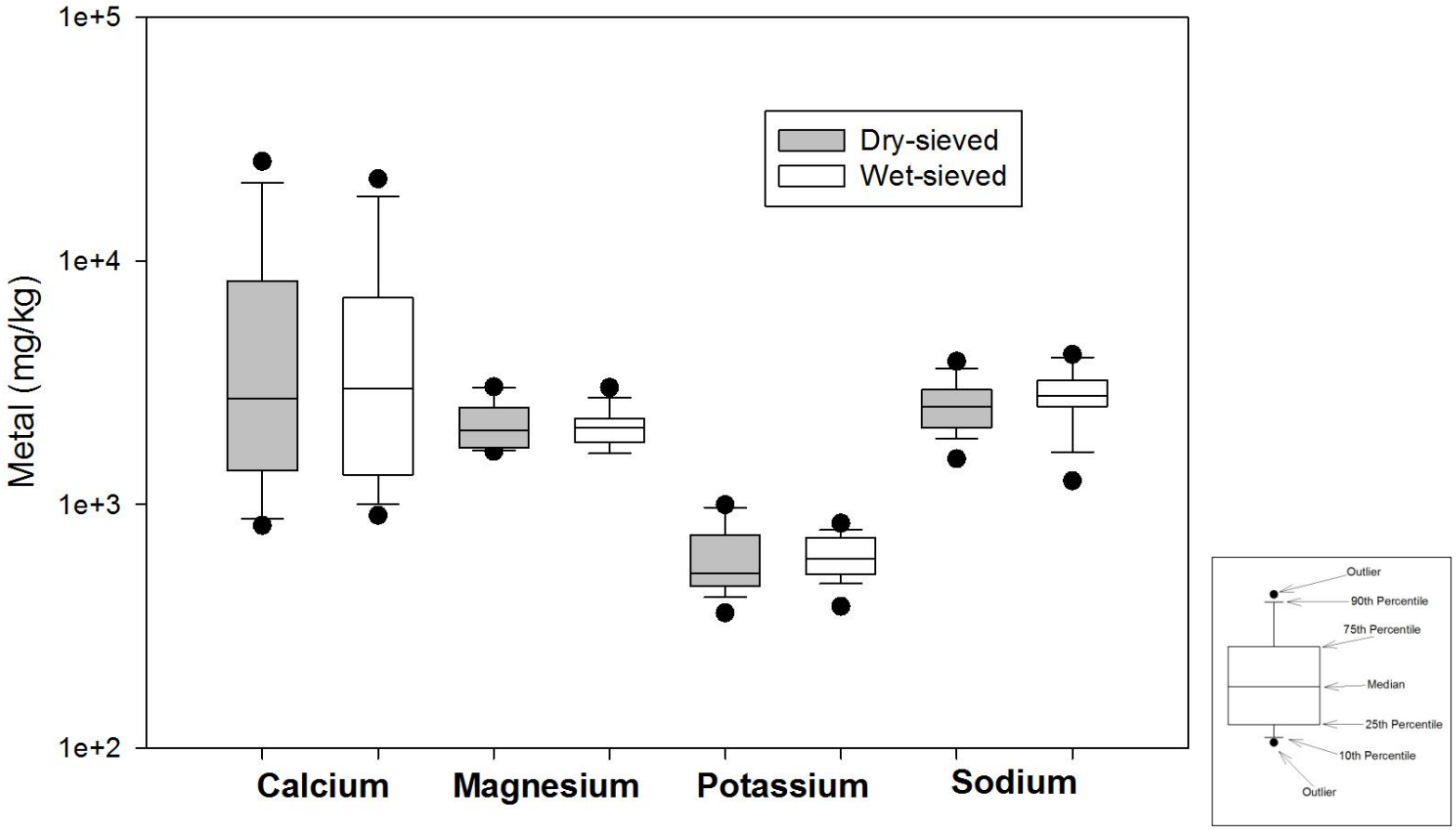


Figure 4. Comparisons of dry- and wet-sieved concentrations of calcium, magnesium, potassium, and sodium in surficial sediment collected in vicinity of MRP Site 1.

ATTACHMENT B
COMPARISON OF CHEMICAL CONCENTRATIONS IN DRY-SIEVED AND WET-SIEVED SEDIMENT SAMPLES
CARR POINT – MRP SITE 1

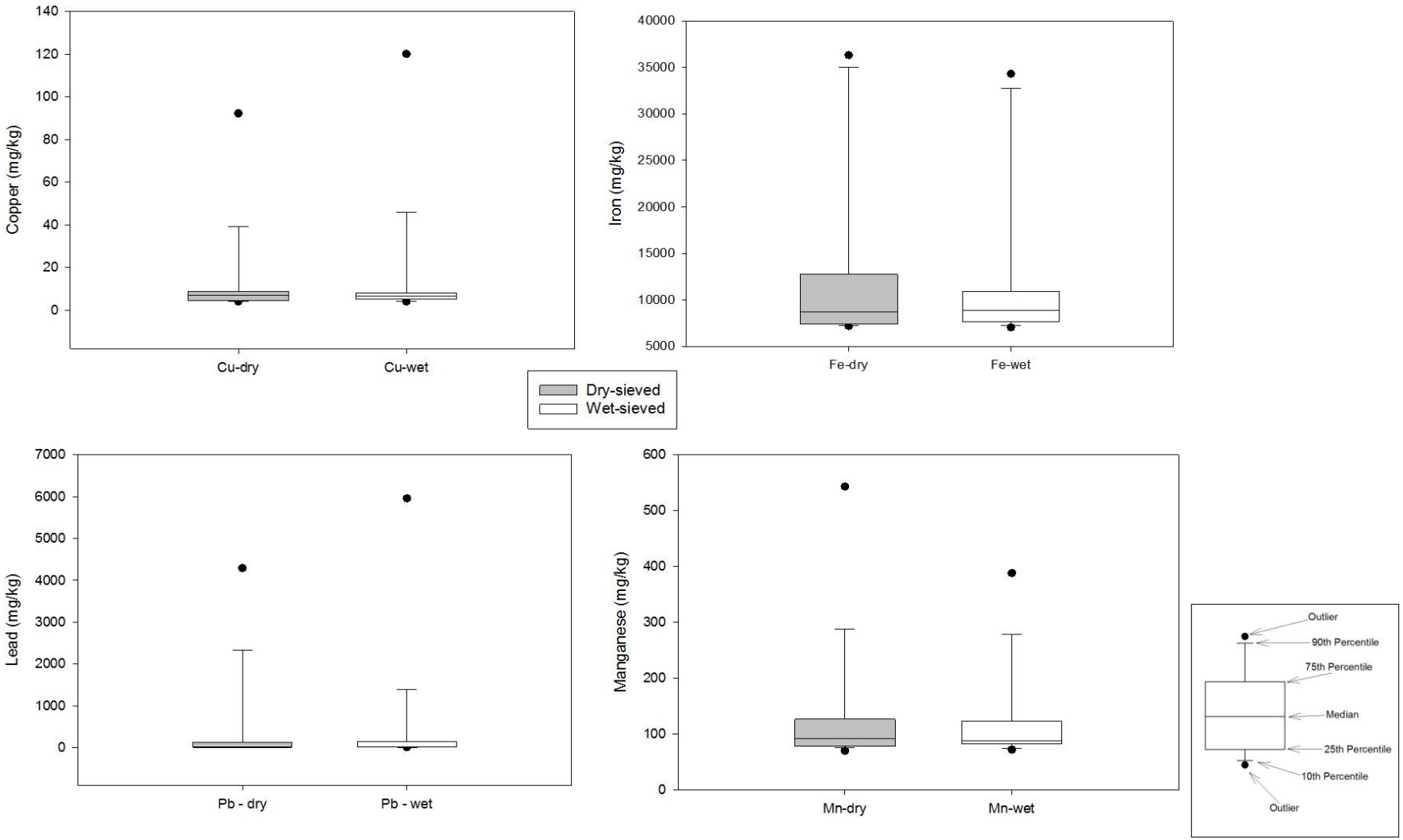


Figure 5. Comparisons of dry- and wet-sieved concentrations of copper, iron, lead, and manganese in surficial sediment collected in vicinity of MRP Site 1.

ATTACHMENT B
COMPARISON OF CHEMICAL CONCENTRATIONS IN DRY-SIEVED AND WET-SIEVED SEDIMENT SAMPLES
CARR POINT – MRP SITE 1

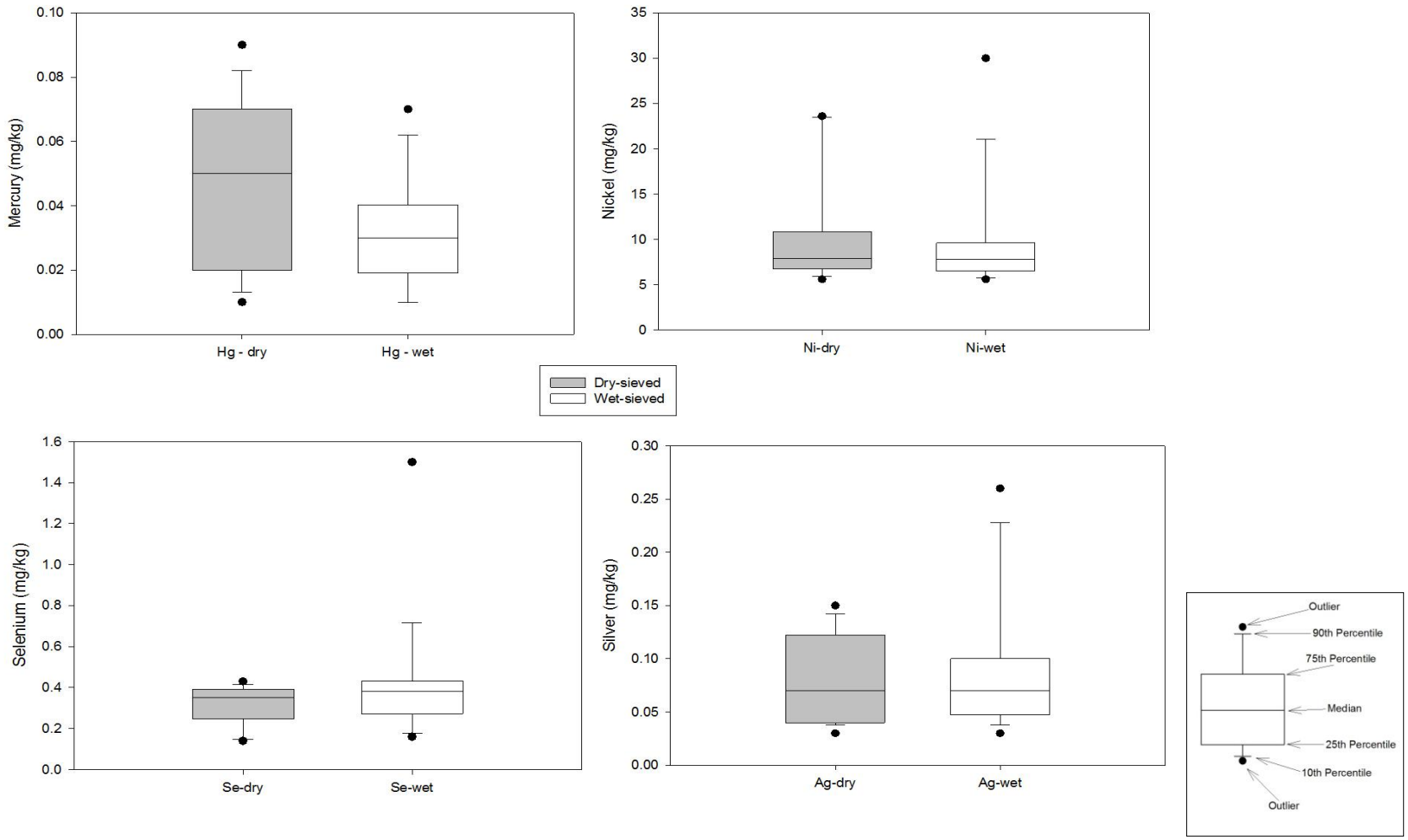


Figure 6. Comparisons of dry- and wet-sieved concentrations of mercury, nickel, selenium, and silver in surficial sediment collected in vicinity of MRP Site 1.

ATTACHMENT B
COMPARISON OF CHEMICAL CONCENTRATIONS IN DRY-SIEVED AND WET-SIEVED SEDIMENT SAMPLES
CARR POINT – MRP SITE 1

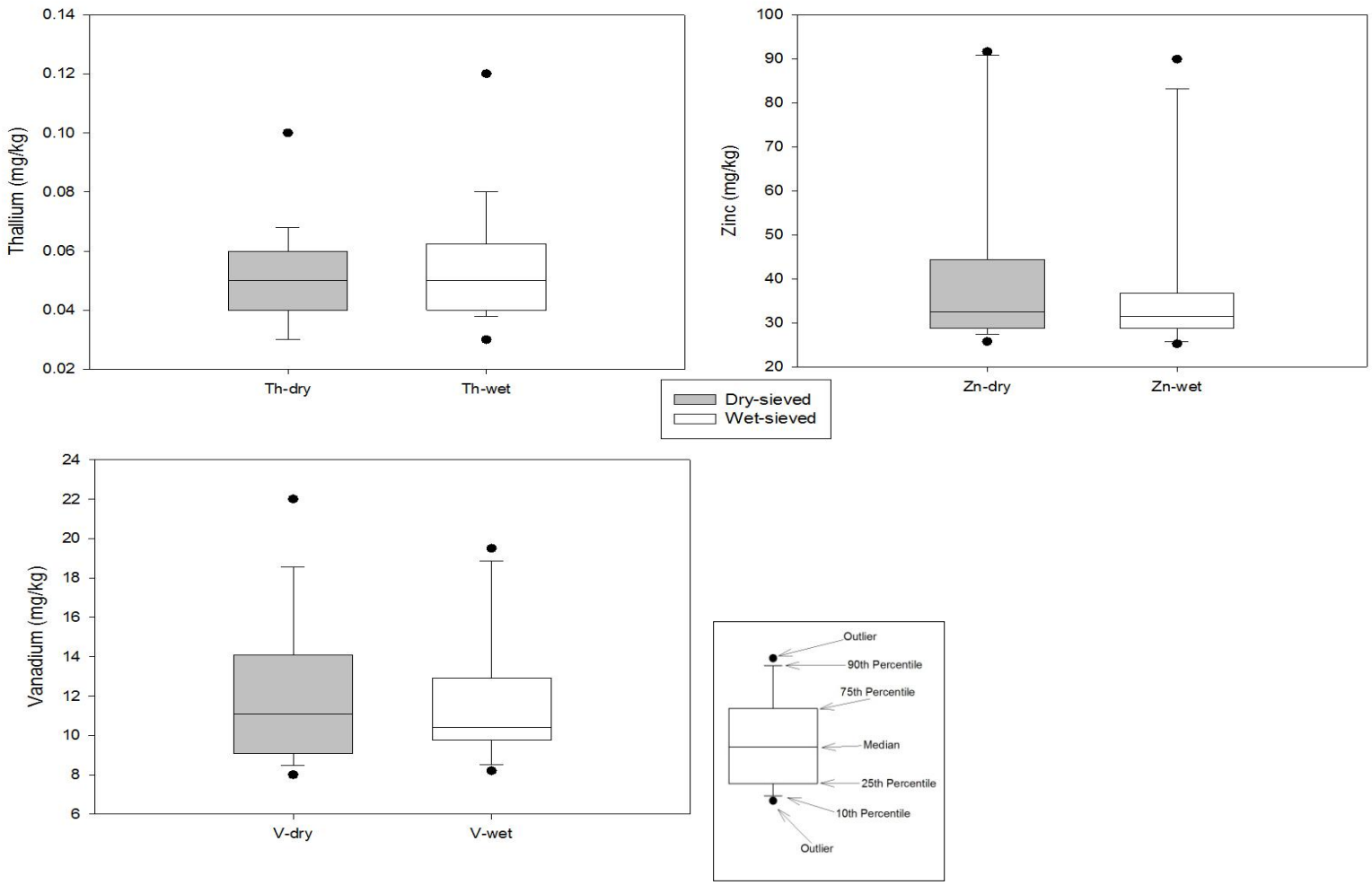


Figure 7. Comparisons of dry- and wet-sieved concentrations of thallium, vanadium, and zinc in surficial sediment collected in vicinity of MRP Site 1.

ATTACHMENT B
COMPARISON OF CHEMICAL CONCENTRATIONS IN DRY-SIEVED AND WET-SIEVED SAMPLES
CARR POINT - MRP SITE 1

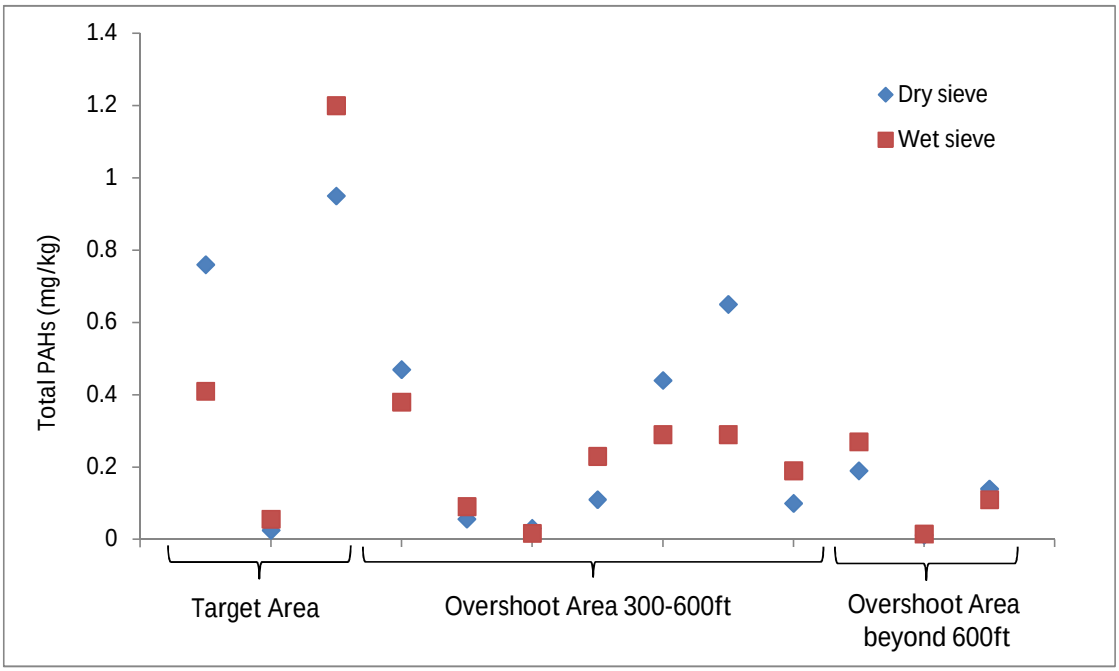


Figure 8. Paired concentrations of Total PAHs in surficial sediment samples collected in the vicinity of MRP Site 1.

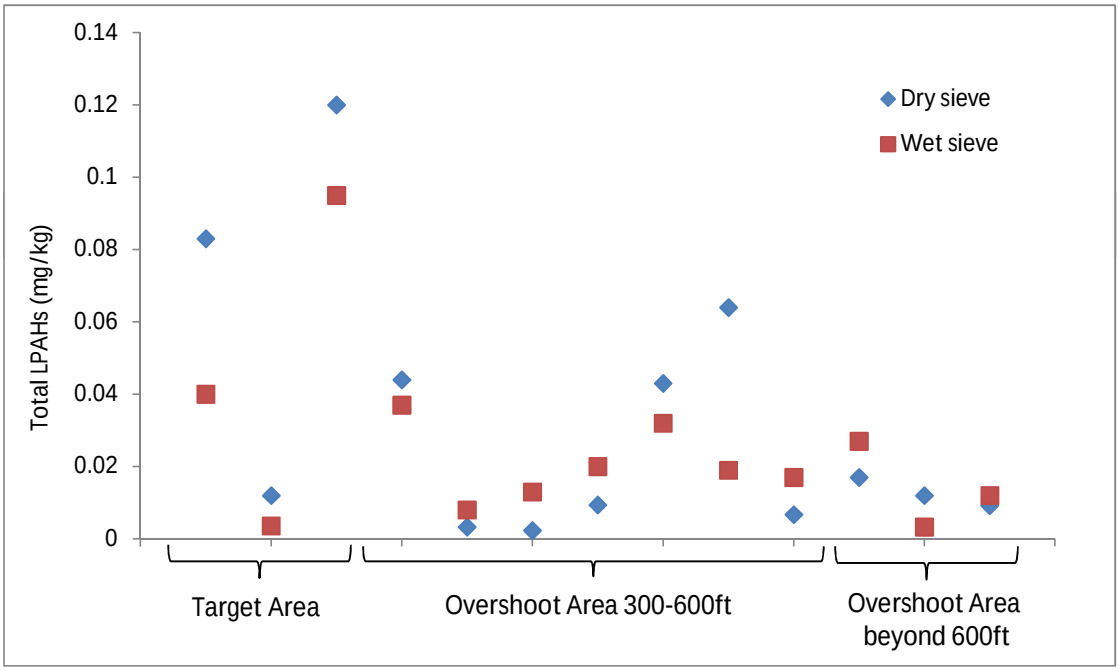


Figure 9. Paired concentrations of Total LPAHs in surficial sediment samples collected in the vicinity of MRP Site 1.

ATTACHMENT B
COMPARISON OF CHEMICAL CONCENTRATIONS IN DRY-SIEVED AND WET-SIEVED SAMPLES
CARR POINT - MRP SITE 1

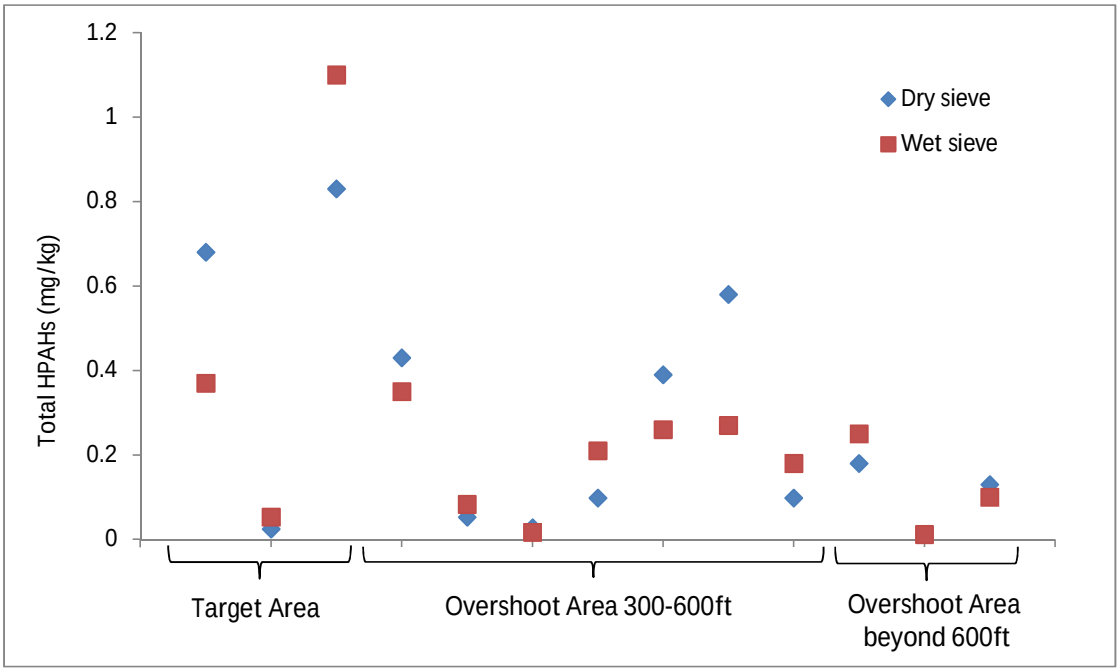


Figure 10. Paired concentrations of Total HPAHs in surficial sediment samples collected in the vicinity of MRP Site 1.

ATTACHMENT B
COMPARISON OF CHEMICAL CONCENTRATIONS IN DRY-SIEVED AND WET-SIEVED SAMPLES
CARR POINT - MRP SITE 1

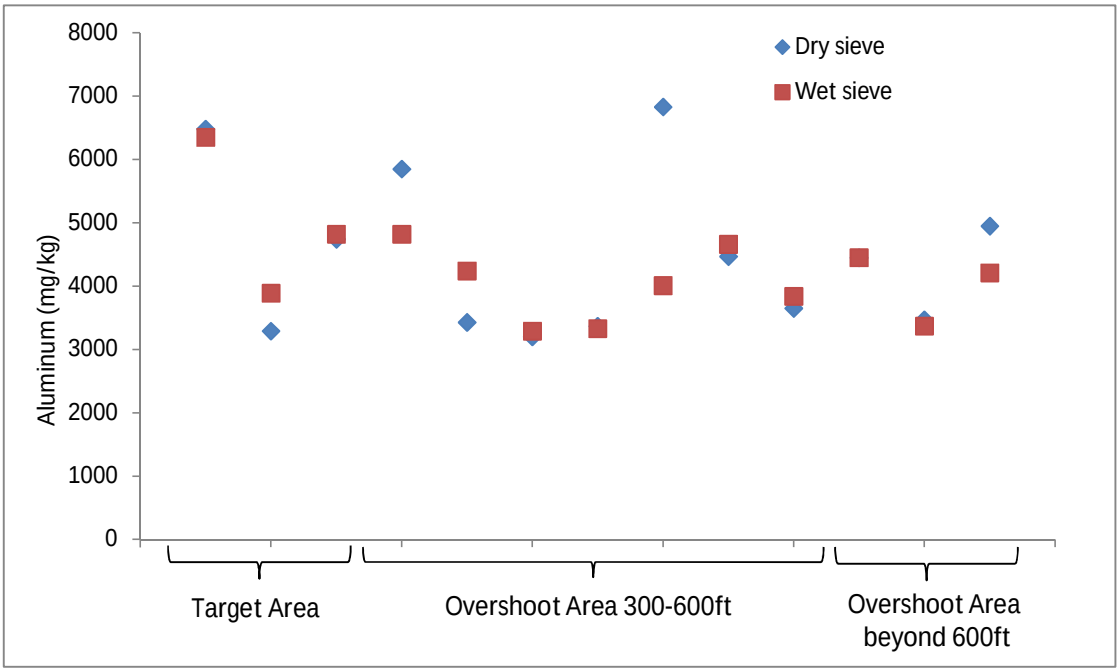


Figure 11. Paired concentrations of aluminum in surficial sediment samples collected in the vicinity of MRP Site 1.

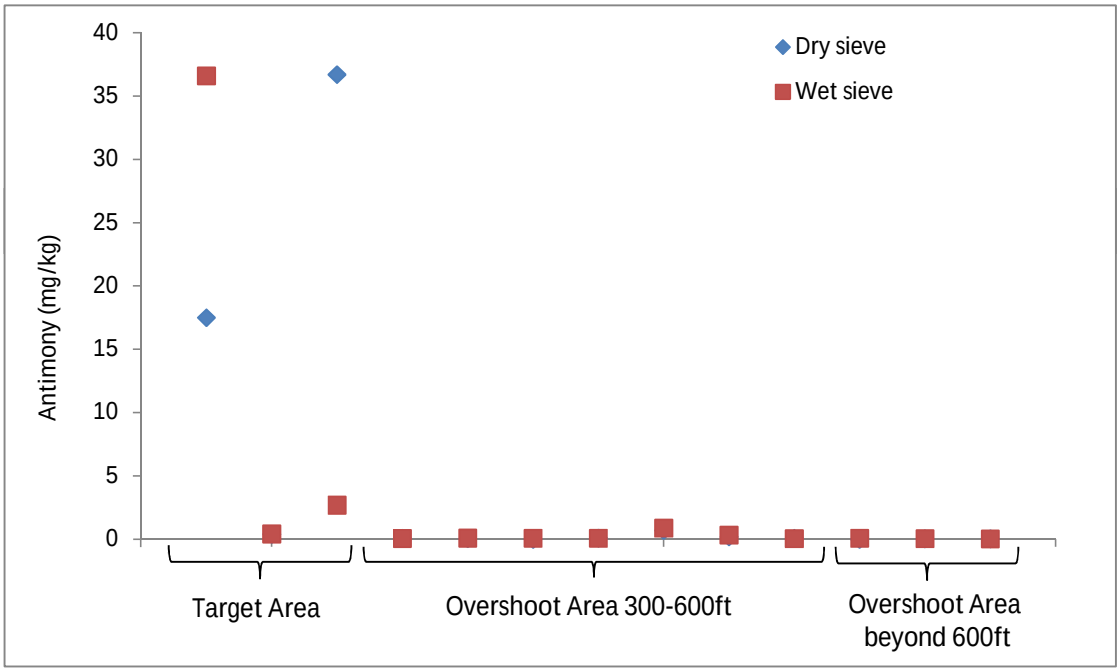


Figure 12. Paired concentrations of antimony in surficial sediment samples collected in the vicinity of MRP Site 1.

ATTACHMENT B
COMPARISON OF CHEMICAL CONCENTRATIONS IN DRY-SIEVED AND WET-SIEVED SAMPLES
CARR POINT - MRP SITE 1

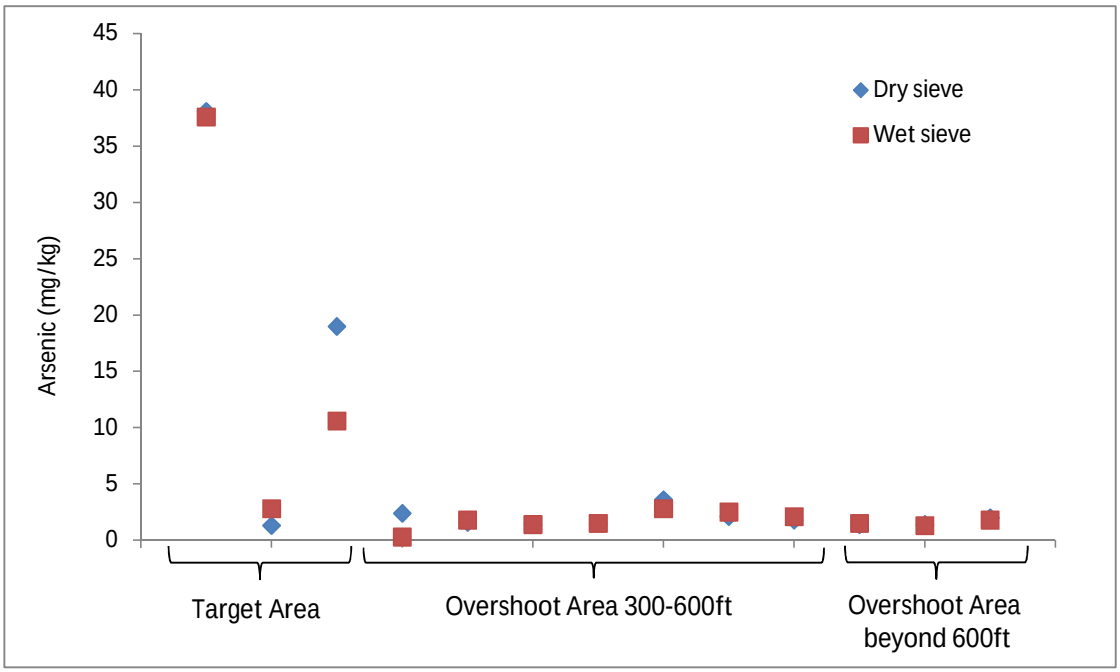


Figure 13. Paired concentrations of arsenic in surficial sediment samples collected in the vicinity of MRP Site 1.

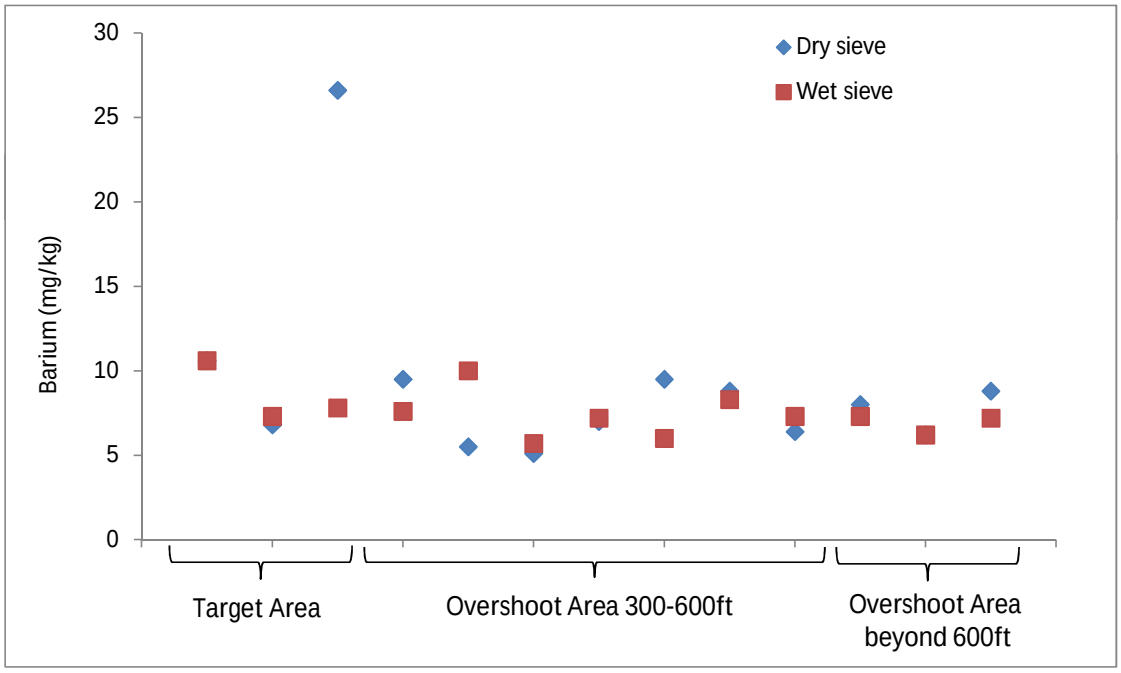


Figure 14. Paired concentrations of barium in surficial sediment samples collected in the vicinity of MRP Site 1.

ATTACHMENT B
COMPARISON OF CHEMICAL CONCENTRATIONS IN DRY-SIEVED AND WET-SIEVED SAMPLES
CARR POINT - MRP SITE 1

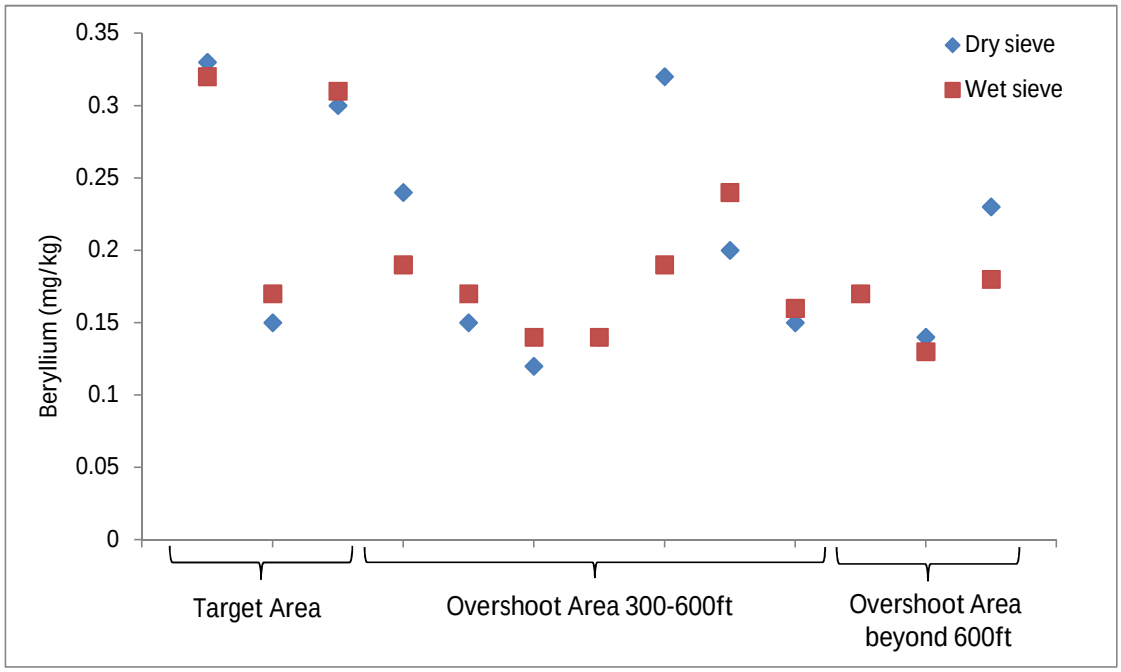


Figure 15. Paired concentrations of beryllium in surficial sediment samples collected in the vicinity of MRP Site 1.

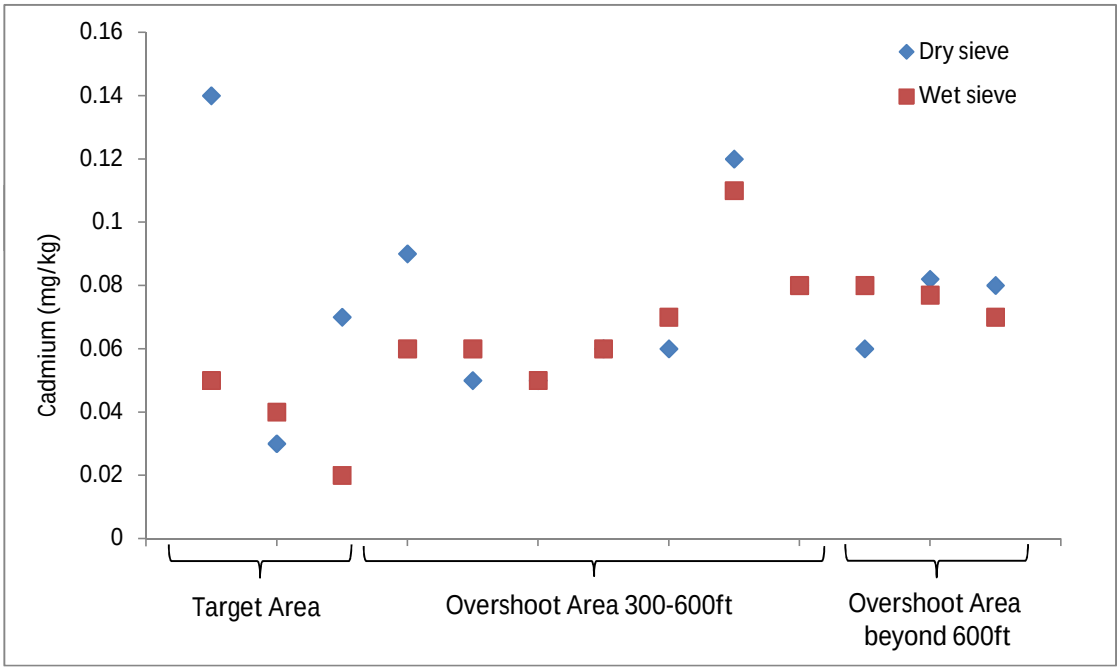


Figure 16. Paired concentrations of cadmium in surficial sediment samples collected in the vicinity of MRP Site 1.

ATTACHMENT B
COMPARISON OF CHEMICAL CONCENTRATIONS IN DRY-SIEVED AND WET-SIEVED SAMPLES
CARR POINT - MRP SITE 1

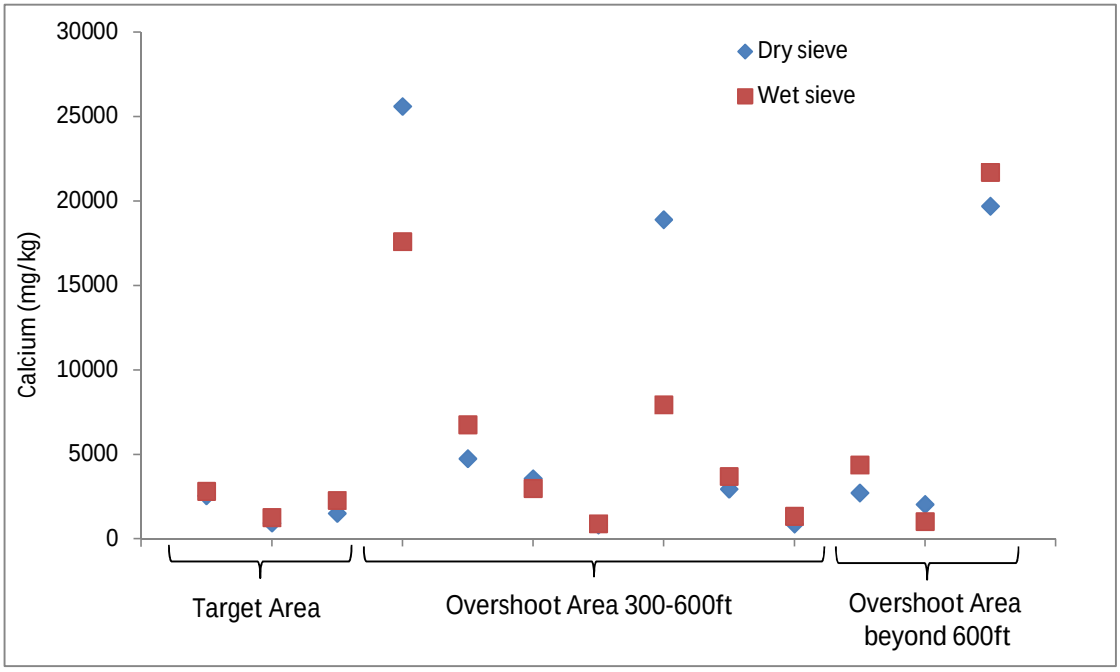


Figure 17. Paired concentrations of calcium in surficial sediment samples collected in the vicinity of MRP Site 1.

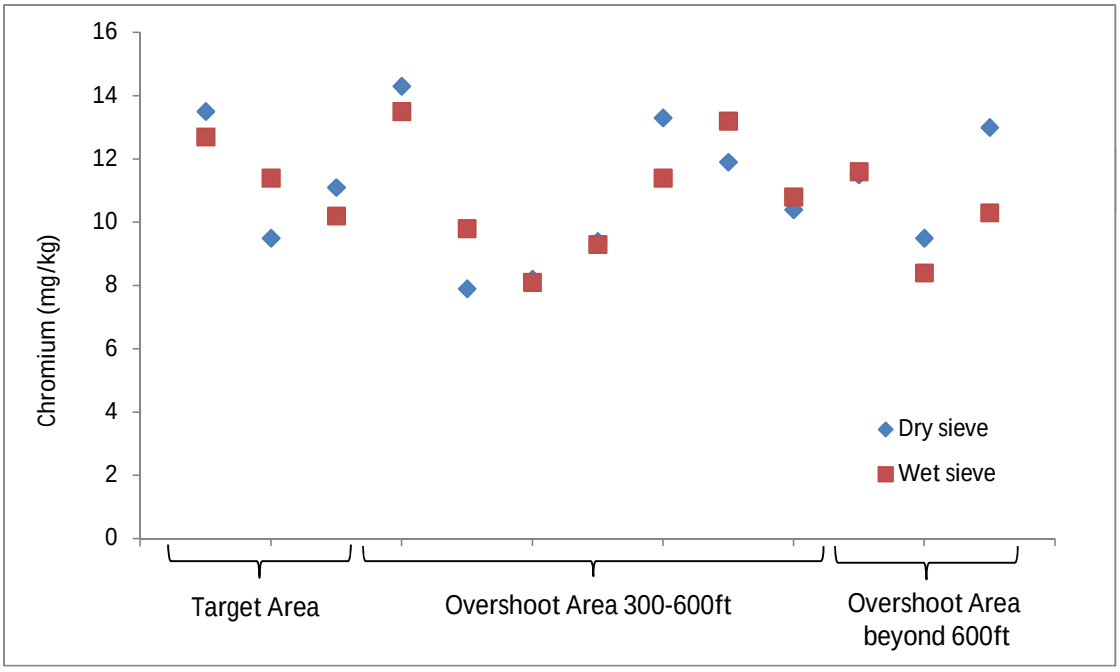


Figure 18. Paired concentrations of chromium in surficial sediment samples collected in the vicinity of MRP Site 1.

ATTACHMENT B
COMPARISON OF CHEMICAL CONCENTRATIONS IN DRY-SIEVED AND WET-SIEVED SAMPLES
CARR POINT - MRP SITE 1

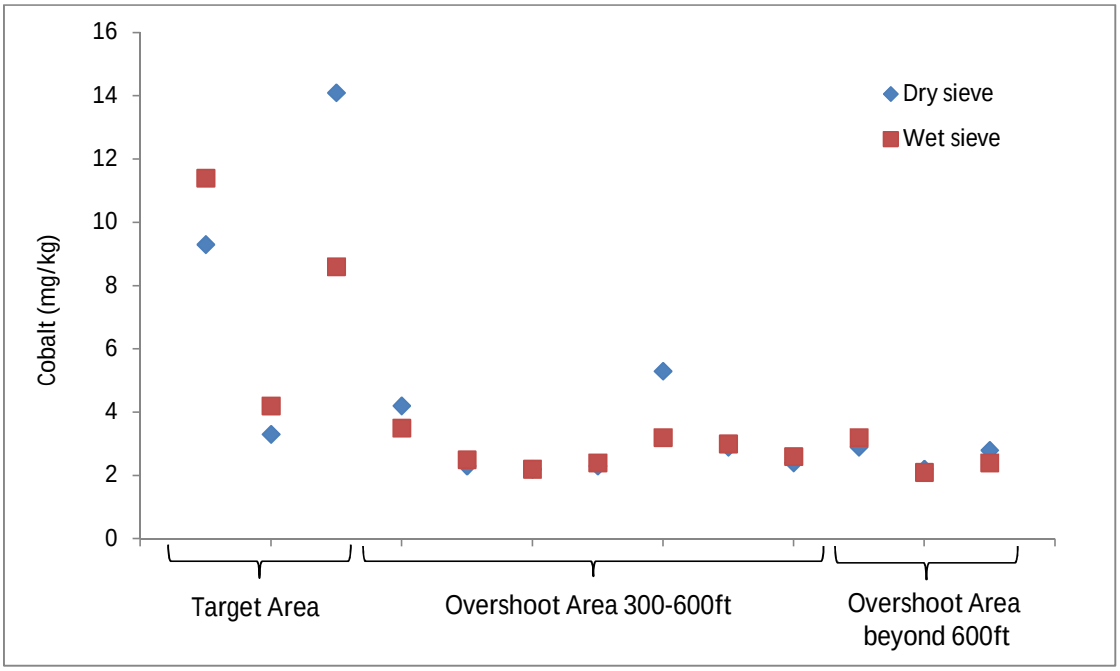


Figure 19. Paired concentrations of cobalt in surficial sediment samples collected in the vicinity of MRP Site 1.

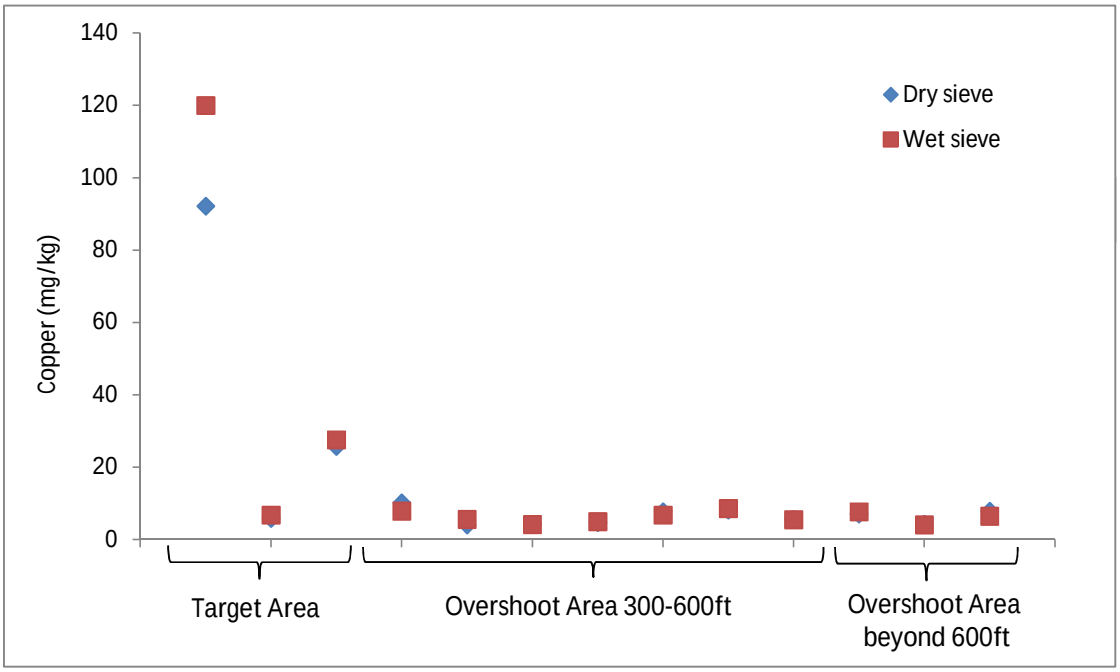


Figure 20. Paired concentrations of copper in surficial sediment samples collected in the vicinity of MRP Site 1.

ATTACHMENT B
COMPARISON OF CHEMICAL CONCENTRATIONS IN DRY-SIEVED AND WET-SIEVED SAMPLES
CARR POINT - MRP SITE 1

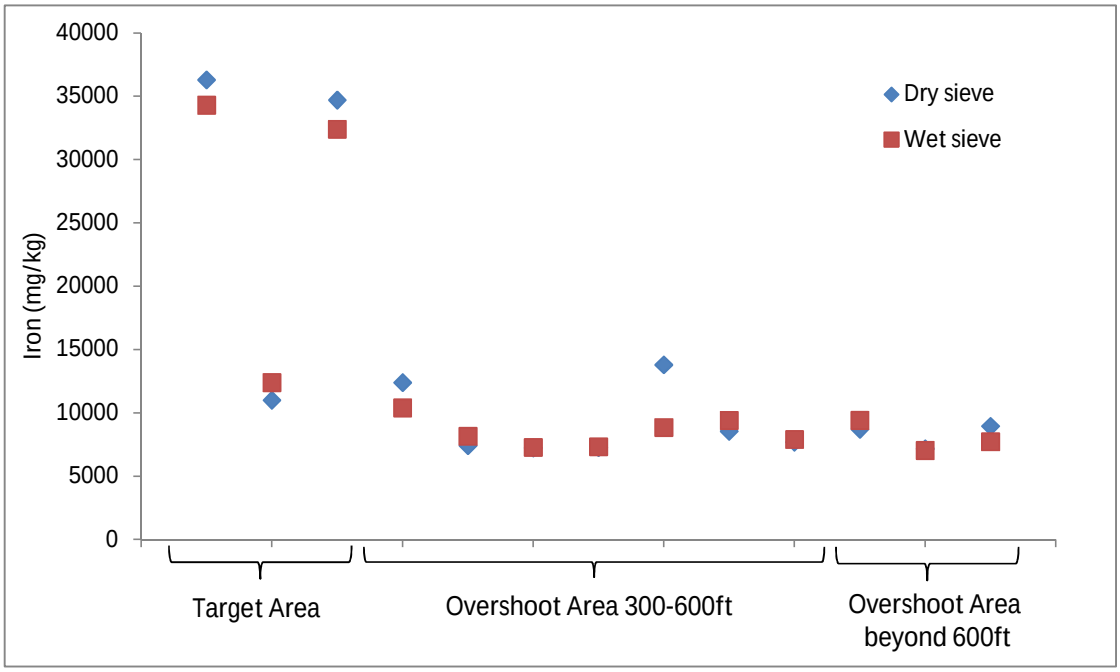


Figure 21. Paired concentrations of iron in surficial sediment samples collected in the vicinity of MRP Site 1.

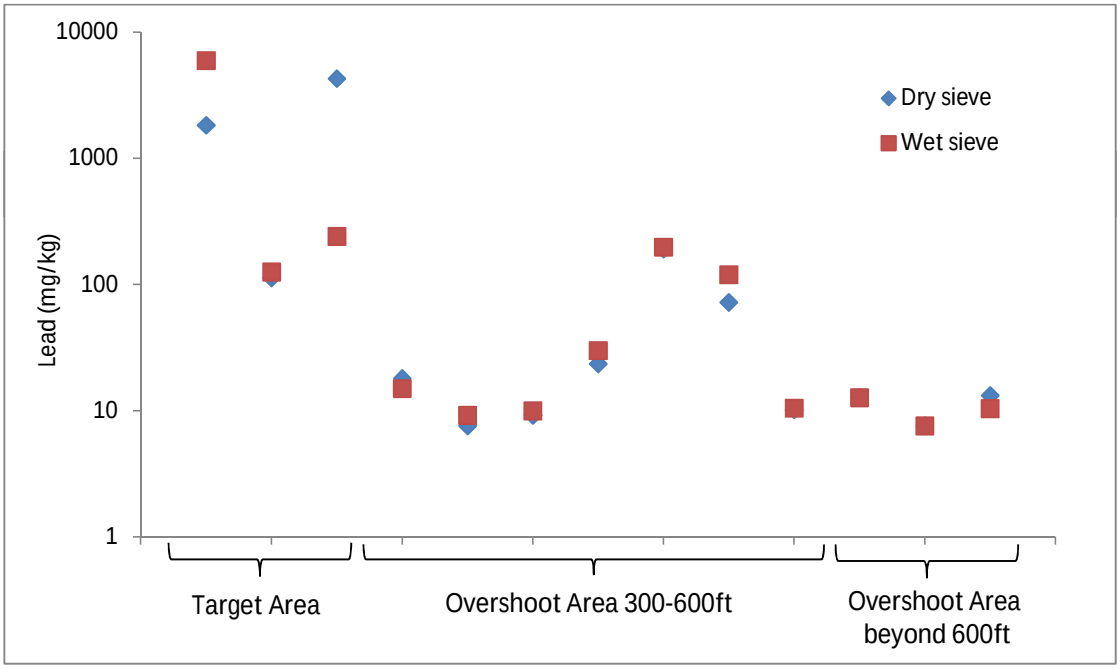


Figure 22. Paired concentrations of lead in surficial sediment samples collected in the vicinity of MRP Site 1.

ATTACHMENT B
COMPARISON OF CHEMICAL CONCENTRATIONS IN DRY-SIEVED AND WET-SIEVED SAMPLES
CARR POINT - MRP SITE 1

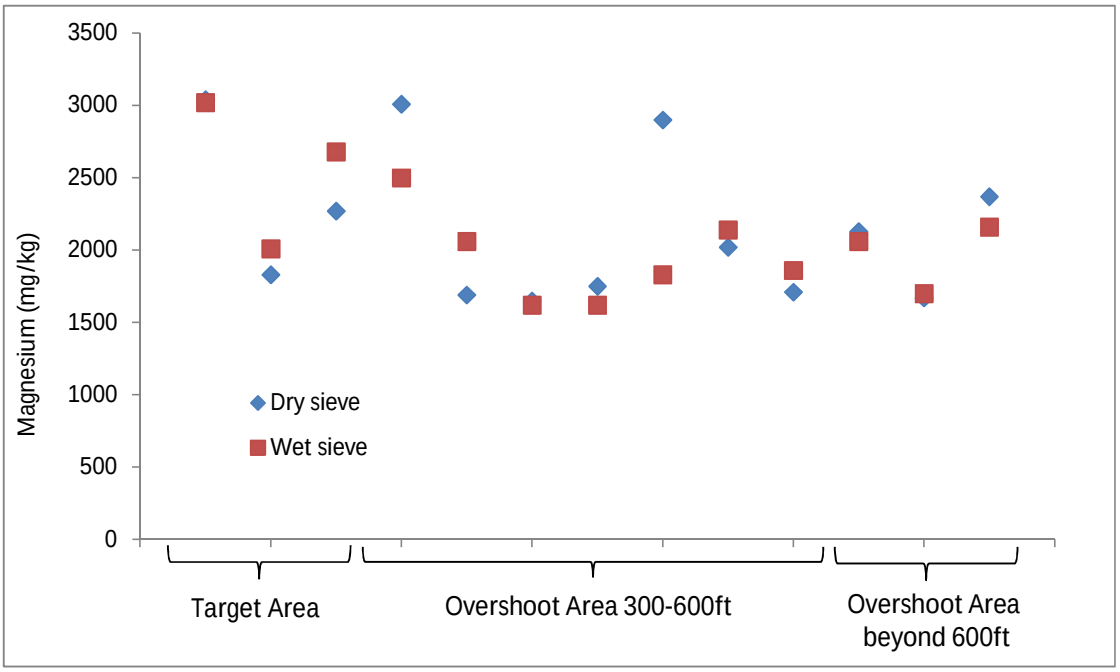


Figure 23. Paired concentrations of magnesium in surficial sediment samples collected in the vicinity of MRP Site 1.

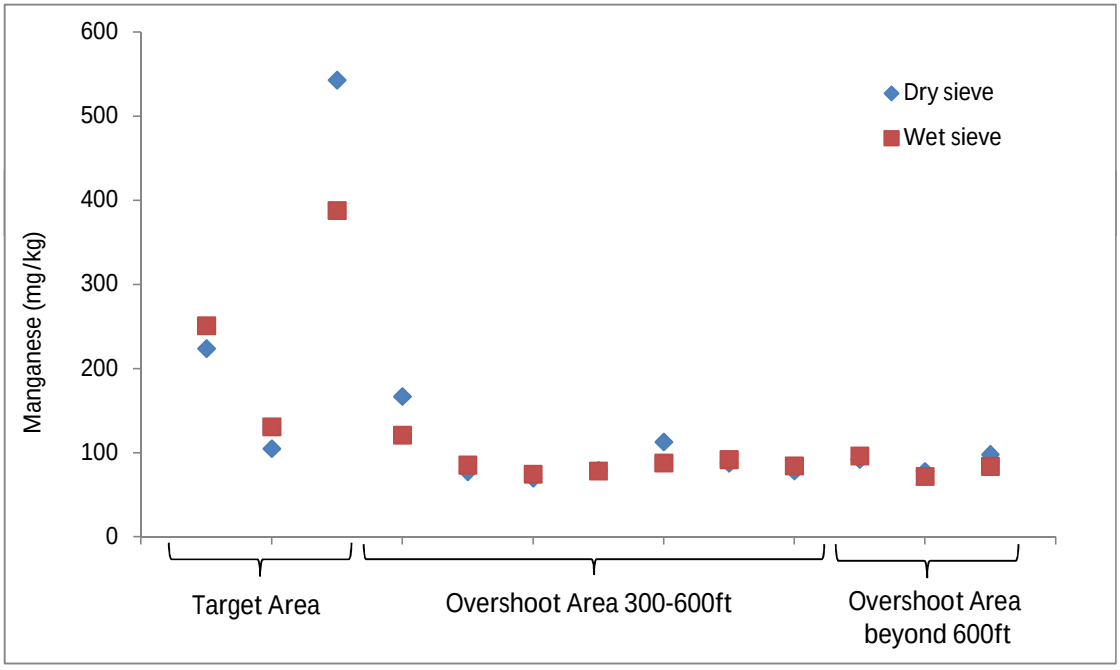


Figure 24. Paired concentrations of manganese in surficial sediment samples collected in the vicinity of MRP Site 1.

ATTACHMENT B
COMPARISON OF CHEMICAL CONCENTRATIONS IN DRY-SIEVED AND WET-SIEVED SAMPLES
CARR POINT - MRP SITE 1

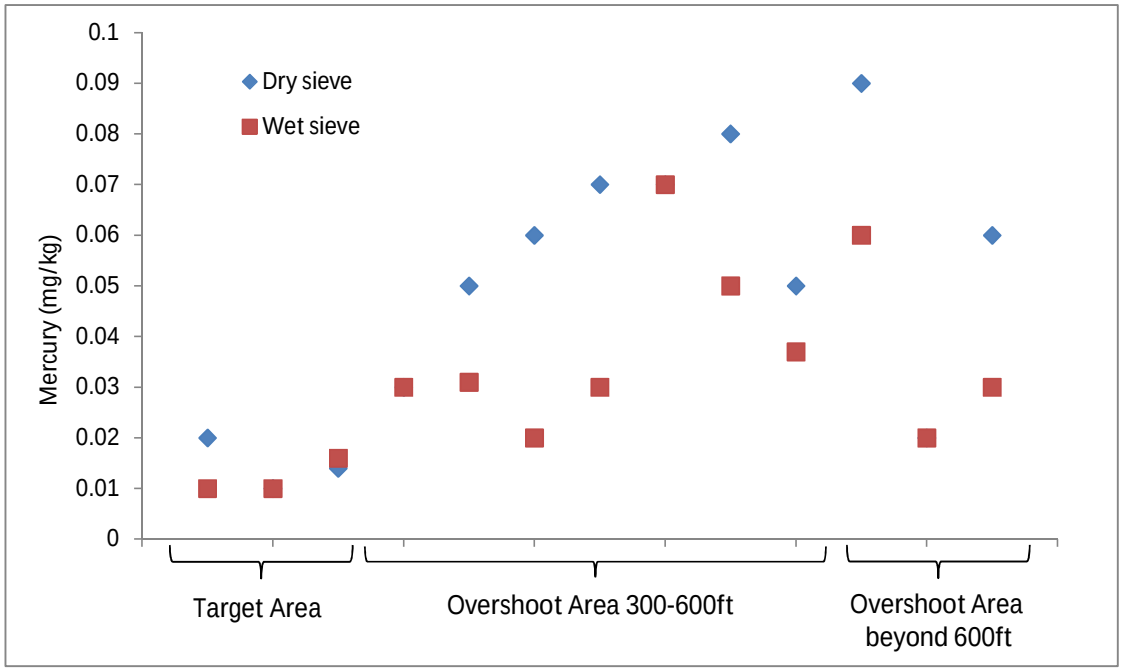


Figure 25. Paired concentrations of mercury in surficial sediment samples collected in the vicinity of MRP Site 1.

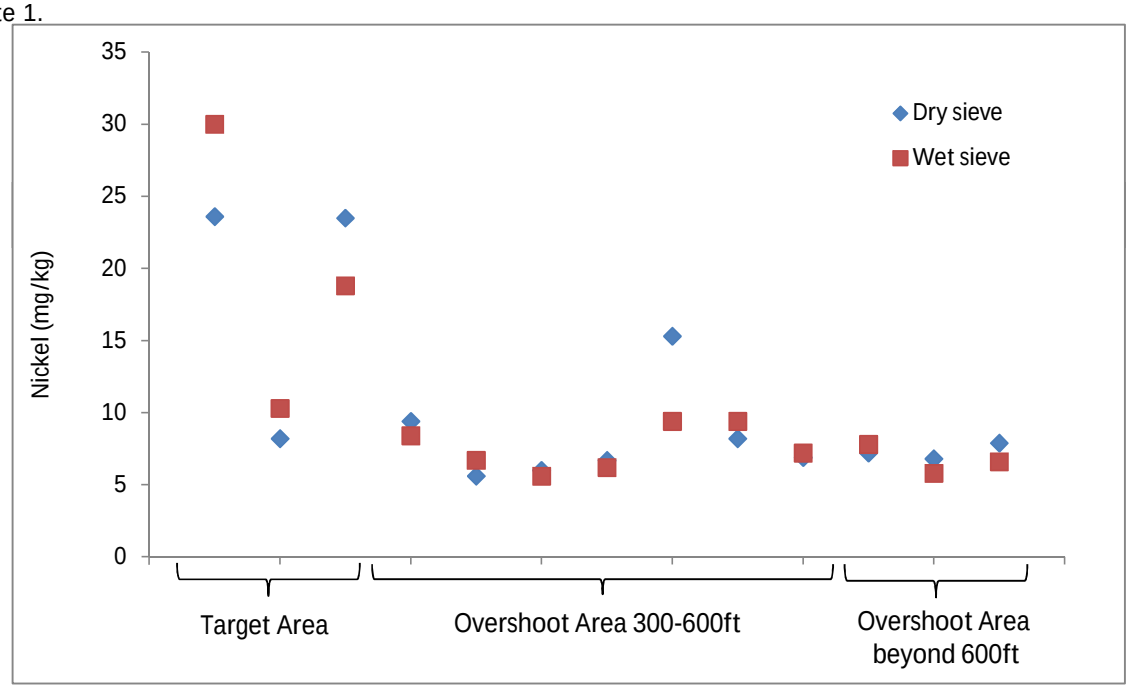


Figure 26. Paired concentrations of nickel in surficial sediment samples collected in the vicinity of MRP Site 1.

ATTACHMENT B
COMPARISON OF CHEMICAL CONCENTRATIONS IN DRY-SIEVED AND WET-SIEVED SAMPLES
CARR POINT - MRP SITE 1

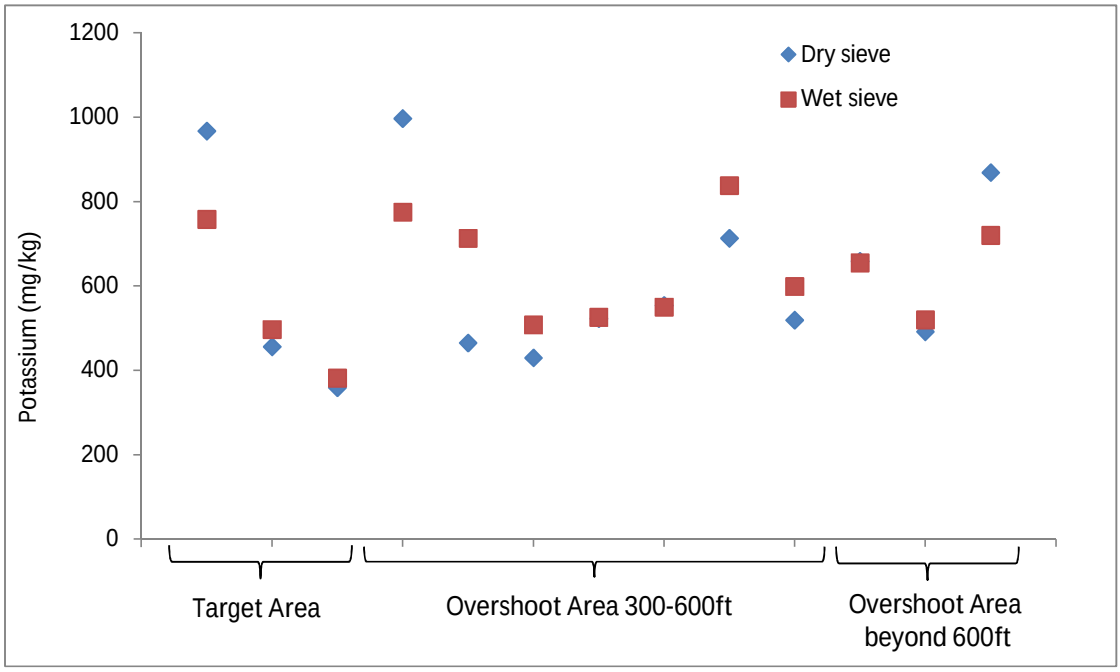


Figure 27. Paired concentrations of potassium in surficial sediment samples collected in the vicinity of MRP Site 1.

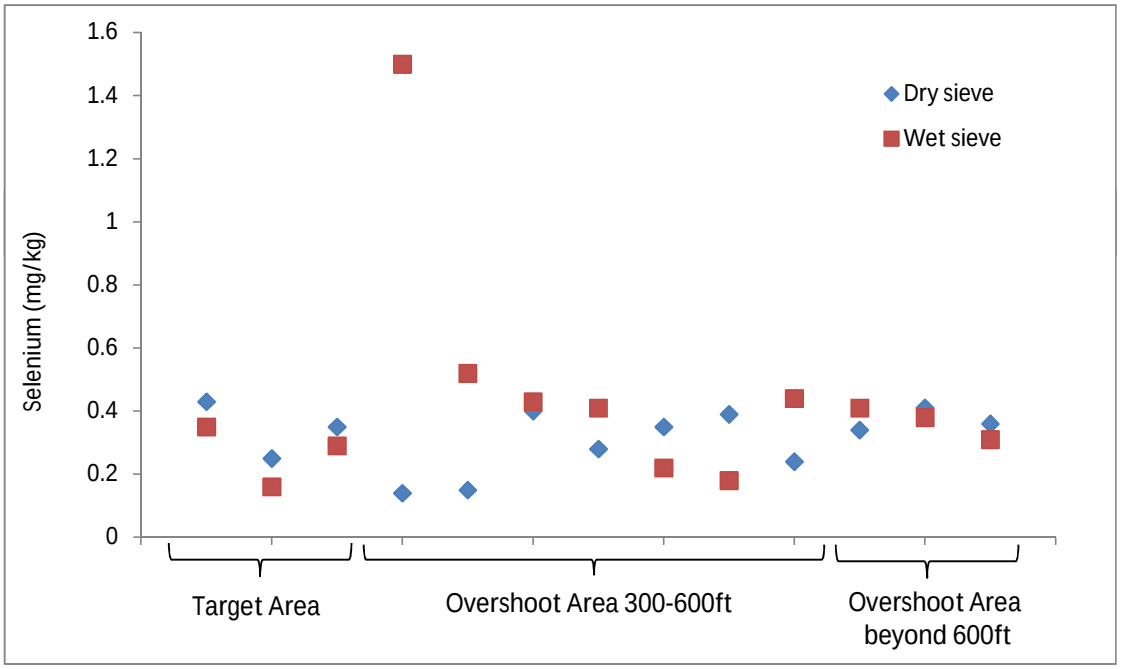


Figure 28. Paired concentrations of selenium in surficial sediment samples collected in the vicinity of MRP Site 1.

ATTACHMENT B
COMPARISON OF CHEMICAL CONCENTRATIONS IN DRY-SIEVED AND WET-SIEVED SAMPLES
CARR POINT - MRP SITE 1

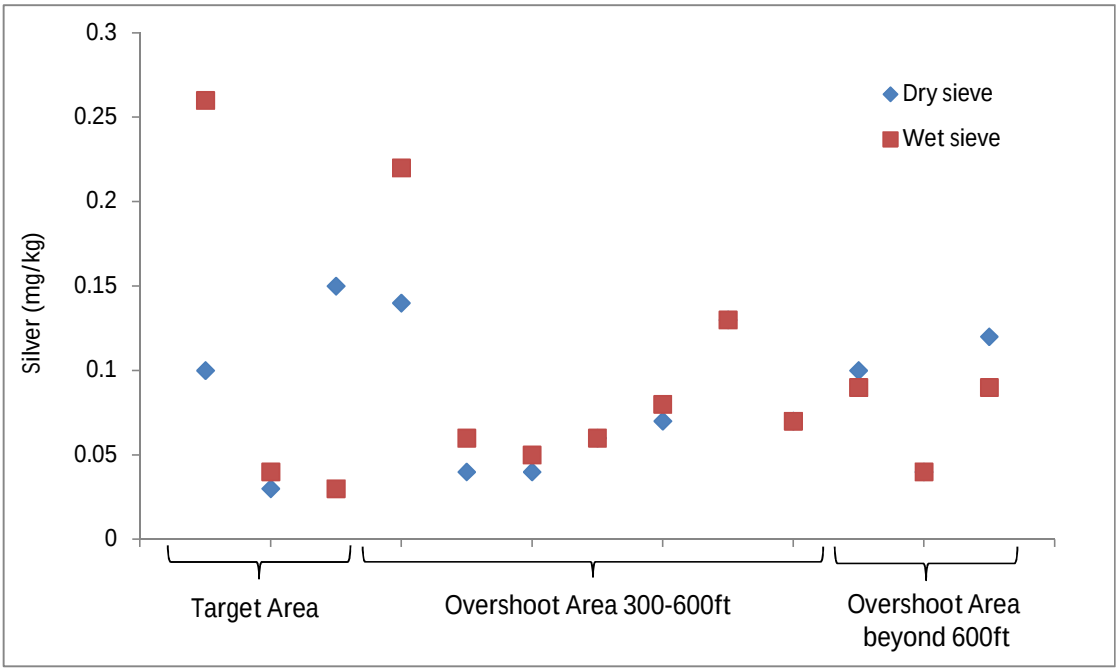


Figure 29. Paired concentrations of silver in surficial sediment samples collected in the vicinity of MRP Site 1.

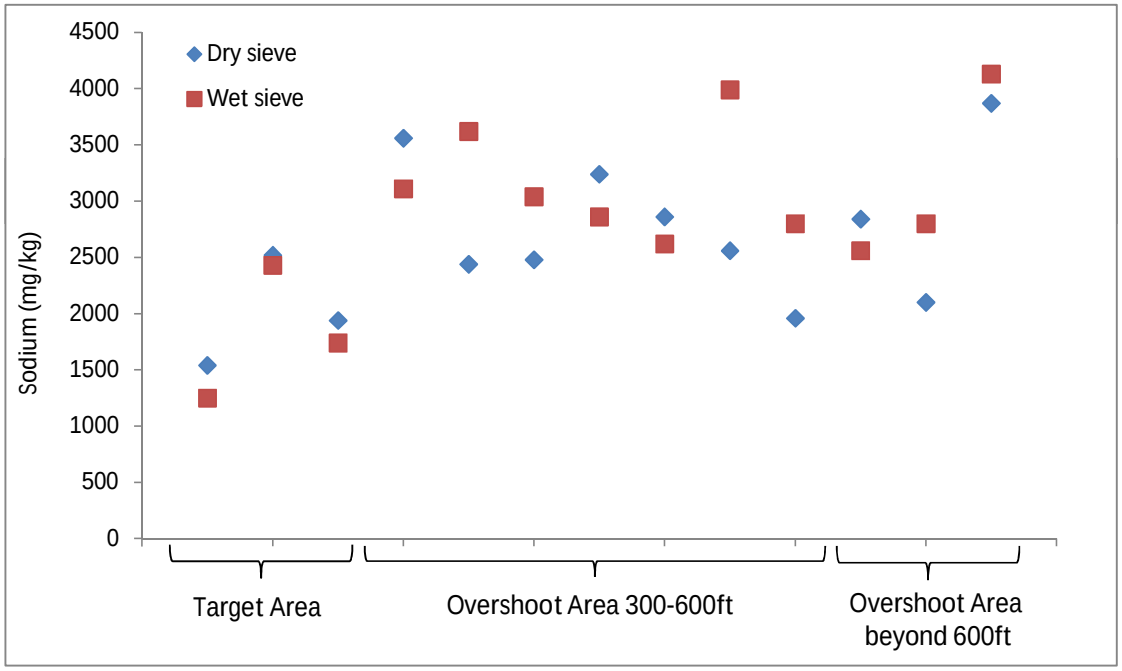


Figure 30. Paired concentrations of sodium in surficial sediment samples collected in the vicinity of MRP Site 1.

ATTACHMENT B
COMPARISON OF CHEMICAL CONCENTRATIONS IN DRY-SIEVED AND WET-SIEVED SAMPLES
CARR POINT - MRP SITE 1

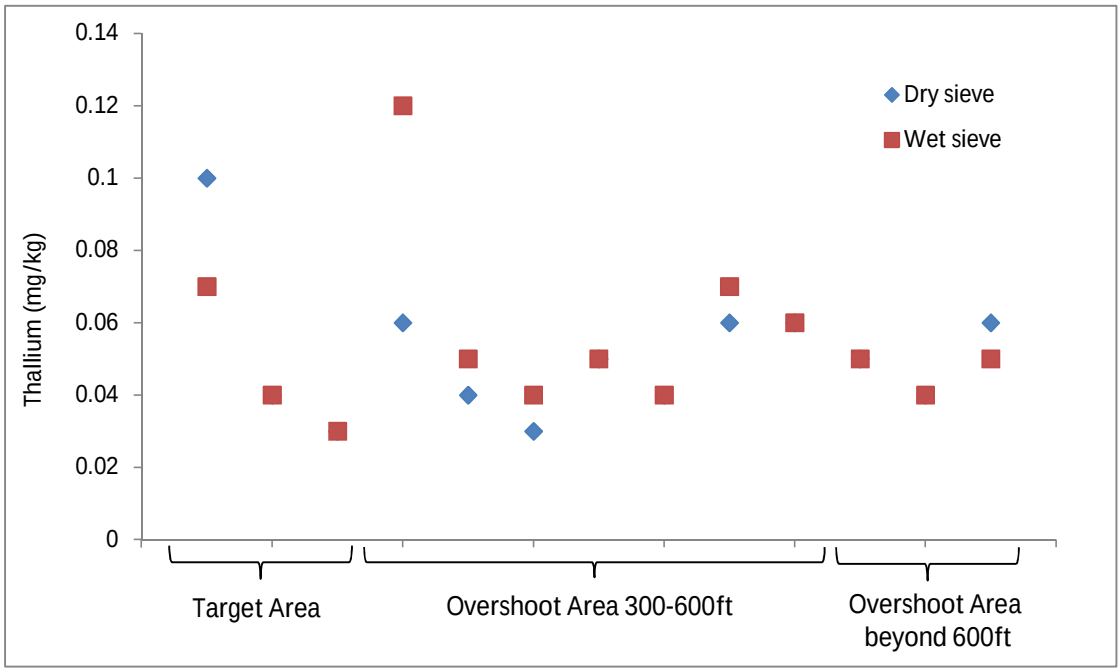


Figure 31. Paired concentrations of thallium in surficial sediment samples collected in the vicinity of MRP Site 1.

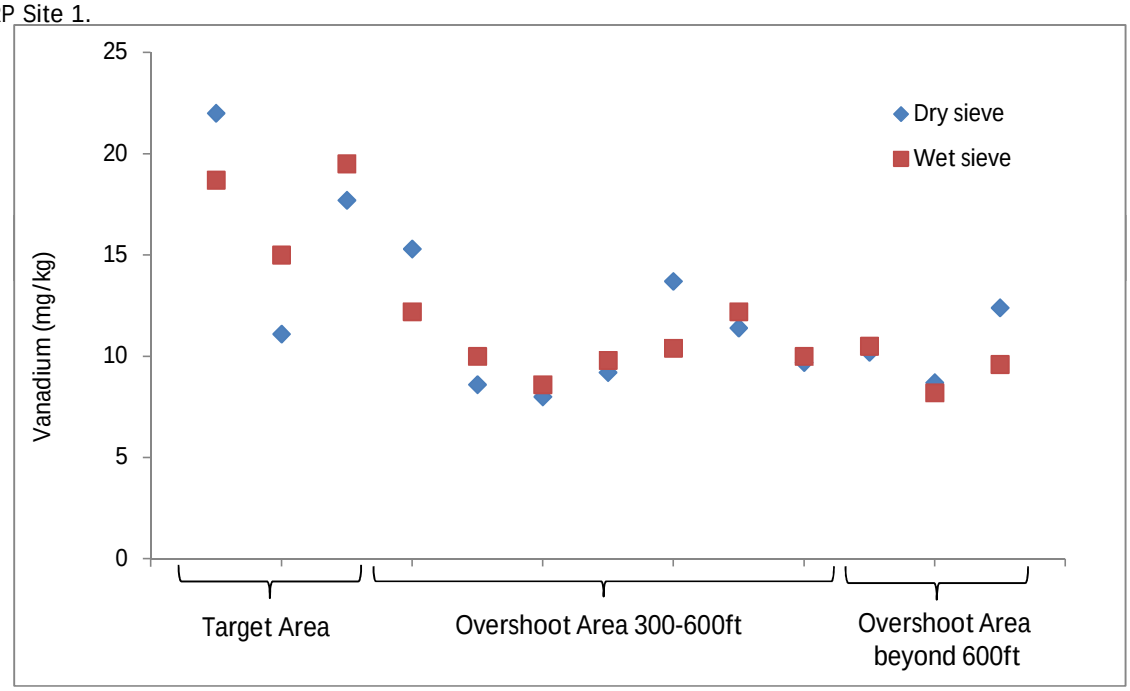


Figure 32. Paired concentrations of vanadium in surficial sediment samples collected in the vicinity of MRP Site 1.

ATTACHMENT B
COMPARISON OF CHEMICAL CONCENTRATIONS IN DRY-SIEVED AND WET-SIEVED SAMPLES
CARR POINT - MRP SITE 1

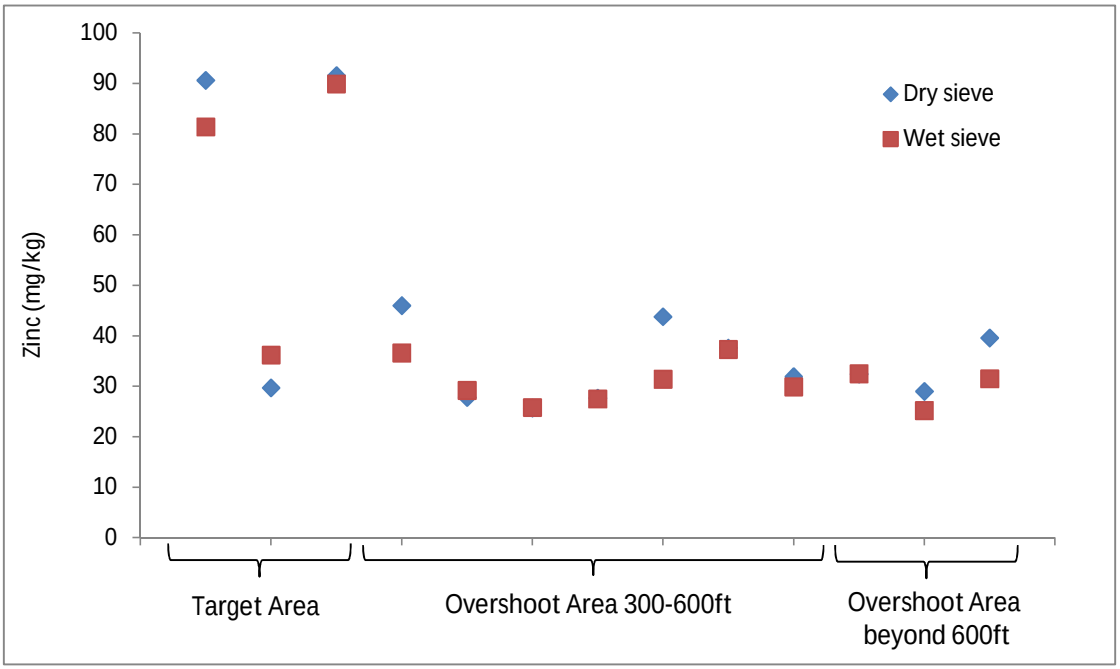


Figure 33. Paired concentrations of zinc in surficial sediment samples collected in the vicinity of MRP Site 1.

ATTACHMENT B
COMPARISON OF CHEMICAL CONCENTRATIONS IN DRY-SIEVED AND WET-SIEVED SEDIMENT SAMPLES – T-TEST RESULTS
CARR POINT – MRP SITE 1

ALUMINUM

Paired t-test: Tuesday, July 08, 2014, 1:59:35 PM

Data source: Data 3 in Sediment - dry vs wet sieved.JNB

Normality Test (Shapiro-Wilk) Failed (P < 0.050)

Test execution ended by user request, Signed Rank Test begun

Wilcoxon Signed Rank Test Tuesday, July 08, 2014, 1:59:35 PM

Data source: Data 3 in Sediment - dry vs wet sieved.JNB

Group	N	Missing	Median	25%	75%
Al-dry	13	0	4450.000	3400.000	5400.000
Al-wet	13	0	4210.000	3605.000	4740.000

W= -6.000 T+ = 36.000 T-= -42.000
Z-Statistic (based on positive ranks) = -0.235
P(est.)= 0.844 P(exact)= 0.850

The change that occurred with the treatment is not great enough to exclude the possibility that it is due to chance (P = 0.850).

ANTIMONY

Paired t-test: Tuesday, July 08, 2014, 2:01:18 PM

Data source: Al - Co in Sediment - dry vs wet sieved.JNB

Normality Test (Shapiro-Wilk) Failed (P < 0.050)

Test execution ended by user request, Signed Rank Test begun

Wilcoxon Signed Rank Test Tuesday, July 08, 2014, 2:01:18 PM

Data source: Al - Co in Sediment - dry vs wet sieved.JNB

Group	N	Missing	Median	25%	75%
Sb-dry	13	0	0.0810	0.0635	0.560
Sb-wet	13	0	0.0900	0.0650	0.660

W= 30.000 T+ = 54.000 T-= -24.000
Z-Statistic (based on positive ranks) = 1.177
P(est.)= 0.255 P(exact)= 0.266

The change that occurred with the treatment is not great enough to exclude the possibility that it is due to chance (P = 0.266).

ATTACHMENT B
COMPARISON OF CHEMICAL CONCENTRATIONS IN DRY-SIEVED AND WET-SIEVED SEDIMENT SAMPLES – T-TEST RESULTS
CARR POINT – MRP SITE 1

ARSENIC

Paired t-test: Wednesday, July 02, 2014, 3:07:43 PM

Data source: Dry vs Wet in Sediment - dry vs wet sieved.JNB

Normality Test (Shapiro-Wilk) Failed (P < 0.050)

Test execution ended by user request, Signed Rank Test begun

Wilcoxon Signed Rank Test Wednesday, July 02, 2014, 3:07:43 PM

Data source: Dry vs Wet in Sediment - dry vs wet sieved.JNB

Group	N	Missing	Median	25%	75%
Arsenic -dry	13	0	1.800	1.400	3.000
Arsenic - wet	13	0	1.800	1.450	2.800

W= -15.000 T+ = 25.500 T-= -40.500
Z-Statistic (based on positive ranks) = -0.667
P(est.)= 0.533 P(exact)= 0.520

The change that occurred with the treatment is not great enough to exclude the possibility that it is due to chance (P = 0.520).

BARIUM

Paired t-test: Tuesday, July 08, 2014, 2:02:17 PM

Data source: Al - Co in Sediment - dry vs wet sieved.JNB

Normality Test (Shapiro-Wilk) Failed (P < 0.050)

Test execution ended by user request, Signed Rank Test begun

Wilcoxon Signed Rank Test Tuesday, July 08, 2014, 2:02:17 PM

Data source: Al - Co in Sediment - dry vs wet sieved.JNB

Group	N	Missing	Median	25%	75%
Ba-dry	13	0	8.000	6.300	9.500
Ba-wet	13	0	7.300	6.700	8.050

W= -19.000 T+ = 23.500 T-= -42.500
Z-Statistic (based on positive ranks) = -0.845
P(est.)= 0.423 P(exact)= 0.413

The change that occurred with the treatment is not great enough to exclude the possibility that it is due to chance (P = 0.413).

ATTACHMENT B
COMPARISON OF CHEMICAL CONCENTRATIONS IN DRY-SIEVED AND WET-SIEVED SEDIMENT SAMPLES – T-TEST RESULTS
CARR POINT – MRP SITE 1

BERYLLIUM

Paired t-test: Tuesday, July 08, 2014, 2:03:20 PM

Data source: Al - Co in Sediment - dry vs wet sieved.JNB

Normality Test (Shapiro-Wilk) Failed (P < 0.050)

Test execution ended by user request, Signed Rank Test begun

Wilcoxon Signed Rank Test Tuesday, July 08, 2014, 2:03:20 PM

Data source: Al - Co in Sediment - dry vs wet sieved.JNB

Group	N	Missing	Median	25%	75%
Be-dry	13	0	0.170	0.145	0.270
Be-wet	13	0	0.170	0.150	0.215

W= -4.000 T+ = 31.000 T-= -35.000
Z-Statistic (based on positive ranks) = -0.179
P(est.)= 0.893 P(exact)= 0.898

The change that occurred with the treatment is not great enough to exclude the possibility that it is due to chance (P = 0.898).

CADMIUM

Paired t-test: Wednesday, July 02, 2014, 3:05:11 PM

Data source: Dry vs Wet in Sediment - dry vs wet sieved.JNB

Normality Test (Shapiro-Wilk) Failed (P < 0.050)

Test execution ended by user request, Signed Rank Test begun

Wilcoxon Signed Rank Test Wednesday, July 02, 2014, 3:05:11 PM

Data source: Dry vs Wet in Sediment - dry vs wet sieved.JNB

Group	N	Missing	Median	25%	75%
Cadmium - dry	13	0	0.0700	0.0550	0.0860
Cadmium - wet	13	0	0.0600	0.0500	0.0785

W= -13.000 T+ = 21.000 T-= -34.000
Z-Statistic (based on positive ranks) = -0.664
P(est.)= 0.540 P(exact)= 0.557

The change that occurred with the treatment is not great enough to exclude the possibility that it is due to chance (P = 0.557).

ATTACHMENT B
COMPARISON OF CHEMICAL CONCENTRATIONS IN DRY-SIEVED AND WET-SIEVED SEDIMENT SAMPLES – T-TEST RESULTS
CARR POINT – MRP SITE 1

CALCIUM

Paired t-test: Tuesday, July 08, 2014, 1:00:15 PM

Data source: Ca,Mg,K,Na in Sediment - dry vs wet sieved.JNB

Normality Test (Shapiro-Wilk) Failed (P < 0.050)

Test execution ended by user request, Signed Rank Test begun

Wilcoxon Signed Rank Test Tuesday, July 08, 2014, 1:00:15 PM

Data source: Ca,Mg,K,Na in Sediment - dry vs wet sieved.JNB

Group	N	Missing	Median	25%	75%
Ca-dry	13	0	2720.000	1228.000	11825.000
Ca-wet	13	0	2990.000	1305.000	7350.000

W= 15.000 T+ = 53.000 T-= -38.000
Z-Statistic (based on positive ranks) = 0.524
P(est.)= 0.625 P(exact)= 0.635

The change that occurred with the treatment is not great enough to exclude the possibility that it is due to chance (P = 0.635).

COBALT

Paired t-test: Tuesday, July 08, 2014, 2:06:05 PM

Data source: Al - Co in Sediment - dry vs wet sieved.JNB

Normality Test (Shapiro-Wilk) Failed (P < 0.050)

Test execution ended by user request, Signed Rank Test begun

Wilcoxon Signed Rank Test Tuesday, July 08, 2014, 2:06:05 PM

Data source: Al - Co in Sediment - dry vs wet sieved.JNB

Group	N	Missing	Median	25%	75%
Co-dry	13	0	2.900	2.300	4.750
Co-wet	13	0	3.000	2.400	3.850

W= -1.000 T+ = 38.500 T-= -39.500
Z-Statistic (based on positive ranks) = -0.0393
P(est.)= 1.000 P(exact)= 0.970

The change that occurred with the treatment is not great enough to exclude the possibility that it is due to chance (P = 0.970).

ATTACHMENT B
COMPARISON OF CHEMICAL CONCENTRATIONS IN DRY-SIEVED AND WET-SIEVED SEDIMENT SAMPLES – T-TEST RESULTS
CARR POINT – MRP SITE 1

CHROMIUM

Paired t-test: Tuesday, July 08, 2014, 2:04:24 PM

Data source: Al - Co in Sediment - dry vs wet sieved.JNB

Normality Test (Shapiro-Wilk) Passed (P = 0.741)

Treatment Name	N	Missing	Mean	Std Dev	SEM
Cr-dry	13	0	11.038	2.089	0.579
Cr-wet	13	0	10.823	1.706	0.473
Difference	13	0	0.215	1.375	0.381

t = 0.565 with 12 degrees of freedom. (P = 0.583)

95 percent confidence interval for difference of means: -0.616 to 1.046

The change that occurred with the treatment is not great enough to exclude the possibility that the difference is due to chance (P = 0.583)

Power of performed test with alpha = 0.050: 0.050

The power of the performed test (0.050) is below the desired power of 0.800.
Less than desired power indicates you are less likely to detect a difference when one actually exists. Negative results should be interpreted cautiously.

COPPER

Paired t-test: Tuesday, July 08, 2014, 2:33:22 PM

Data source: Data 4 in Sediment - dry vs wet sieved.JNB

Normality Test (Shapiro-Wilk) Failed (P < 0.050)

Test execution ended by user request, Signed Rank Test begun

Wilcoxon Signed Rank Test Tuesday, July 08, 2014, 2:33:22 PM

Data source: Data 4 in Sediment - dry vs wet sieved.JNB

Group	N	Missing	Median	25%	75%
Cu-dry	13	0	7.100	4.500	9.200
Cu-wet	13	0	6.800	5.250	8.250

W= 21.000 T+ = 56.000 T-= -35.000
Z-Statistic (based on positive ranks) = 0.734
P(est.)= 0.485 P(exact)= 0.497

The change that occurred with the treatment is not great enough to exclude the possibility that it is due to chance (P = 0.497).

ATTACHMENT B
COMPARISON OF CHEMICAL CONCENTRATIONS IN DRY-SIEVED AND WET-SIEVED SEDIMENT SAMPLES – T-TEST RESULTS
CARR POINT – MRP SITE 1

IRON

Paired t-test: Tuesday, July 08, 2014, 2:34:14 PM

Data source: Data 4 in Sediment - dry vs wet sieved.JNB

Normality Test (Shapiro-Wilk) Passed (P = 0.075)

Treatment Name	N	Missing	Mean	Std Dev	SEM
Fe-dry	13	0	13170.769	10133.017	2810.393
Fe-wet	13	0	12510.000	9374.039	2599.891
Difference	13	0	660.769	1765.698	489.717

t = 1.349 with 12 degrees of freedom. (P = 0.202)

95 percent confidence interval for difference of means: -406.232 to 1727.770

The change that occurred with the treatment is not great enough to exclude the possibility that the difference is due to chance (P = 0.202)

Power of performed test with alpha = 0.050: 0.126

The power of the performed test (0.126) is below the desired power of 0.800.
Less than desired power indicates you are less likely to detect a difference when one actually exists. Negative results should be interpreted cautiously.

LEAD

Paired t-test: Wednesday, July 02, 2014, 2:51:33 PM

Data source: Dry vs Wet in Sediment - dry vs wet sieved.JNB

Normality Test (Shapiro-Wilk) Failed (P < 0.050)

Test execution ended by user request, Signed Rank Test begun

Wilcoxon Signed Rank Test Wednesday, July 02, 2014, 2:51:33 PM

Data source: Dry vs Wet in Sediment - dry vs wet sieved.JNB

Group	N	Missing	Median	25%	75%
Lead - dry	13	0	18.000	9.700	152.000
Lead - wet	13	0	15.000	10.200	162.000

W= 32.000 T+ = 55.000 T-= -23.000
Z-Statistic (based on positive ranks) = 1.255
P(est.)= 0.224 P(exact)= 0.233

The change that occurred with the treatment is not great enough to exclude the possibility that it is due to chance (P = 0.233).

ATTACHMENT B
COMPARISON OF CHEMICAL CONCENTRATIONS IN DRY-SIEVED AND WET-SIEVED SEDIMENT SAMPLES – T-TEST RESULTS
CARR POINT – MRP SITE 1

Magnesium

Paired t-test: Tuesday, July 08, 2014, 1:07:23 PM

Data source: Ca,Mg,K,Na in Sediment - dry vs wet sieved.JNB

Normality Test (Shapiro-Wilk) Passed (P = 0.052)

Treatment Name	N	Missing	Mean	Std Dev	SEM
Mg-dry	13	0	2156.923	526.124	145.921
Mg-wet	13	0	2096.923	419.372	116.313
Difference	13	0	60.000	387.363	107.435

t = 0.558 with 12 degrees of freedom. (P = 0.587)

95 percent confidence interval for difference of means: -174.081 to 294.081

The change that occurred with the treatment is not great enough to exclude the possibility that the difference is due to chance (P = 0.587)

Power of performed test with alpha = 0.050: 0.050

The power of the performed test (0.050) is below the desired power of 0.800.
Less than desired power indicates you are less likely to detect a difference when one actually exists. Negative results should be interpreted cautiously.

MANGANESE

Paired t-test: Tuesday, July 08, 2014, 2:35:22 PM

Data source: Data 4 in Sediment - dry vs wet sieved.JNB

Normality Test (Shapiro-Wilk) Failed (P < 0.050)

Test execution ended by user request, Signed Rank Test begun

Wilcoxon Signed Rank Test Tuesday, July 08, 2014, 2:35:22 PM

Data source: Data 4 in Sediment - dry vs wet sieved.JNB

Group	N	Missing	Median	25%	75%
Mn-dry	13	0	92.400	78.200	140.000
Mn-wet	13	0	87.900	81.200	126.000

W= -7.000 T+ = 42.000 T-= -49.000
Z-Statistic (based on positive ranks) = -0.245
P(est.)= 0.834 P(exact)= 0.839

The change that occurred with the treatment is not great enough to exclude the possibility that it is due to chance (P = 0.839).

ATTACHMENT B
COMPARISON OF CHEMICAL CONCENTRATIONS IN DRY-SIEVED AND WET-SIEVED SEDIMENT SAMPLES – T-TEST RESULTS
CARR POINT – MRP SITE 1

MERCURY

Paired t-test: Wednesday, July 02, 2014, 3:03:49 PM

Data source: Dry vs Wet in Sediment - dry vs wet sieved.JNB

Normality Test (Shapiro-Wilk) Failed (P < 0.050)

Test execution ended by user request, Signed Rank Test begun

Wilcoxon Signed Rank Test Wednesday, July 02, 2014, 3:03:49 PM

Data source: Dry vs Wet in Sediment - dry vs wet sieved.JNB

Group	N	Missing	Median	25%	75%
Mercury - dry	13	0	0.0500	0.0200	0.0700
Mercury - wet	13	0	0.0300	0.0180	0.0435

W= -43.000 T+ = 1.000 T-= -44.000
Z-Statistic (based on positive ranks) = -2.556
P(est.)= 0.013 P(exact)= 0.008

The change that occurred with the treatment is greater than would be expected by chance; there is a statistically significant difference (P = 0.008).

NICKEL

Paired t-test: Tuesday, July 08, 2014, 2:36:05 PM

Data source: Data 4 in Sediment - dry vs wet sieved.JNB

Normality Test (Shapiro-Wilk) Passed (P = 0.300)

Treatment Name	N	Missing	Mean	Std Dev	SEM
Ni-dry	13	0	10.408	6.314	1.751
Ni-wet	13	0	10.169	6.874	1.906
Difference	13	0	0.238	3.010	0.835

t = 0.286 with 12 degrees of freedom. (P = 0.780)

95 percent confidence interval for difference of means: -1.581 to 2.057

The change that occurred with the treatment is not great enough to exclude the possibility that the difference is due to chance (P = 0.780)

Power of performed test with alpha = 0.050: 0.050

The power of the performed test (0.050) is below the desired power of 0.800.
Less than desired power indicates you are less likely to detect a difference when one actually exists. Negative results should be interpreted cautiously.

ATTACHMENT B
COMPARISON OF CHEMICAL CONCENTRATIONS IN DRY-SIEVED AND WET-SIEVED SEDIMENT SAMPLES – T-TEST RESULTS
CARR POINT – MRP SITE 1

Potassium

Paired t-test: Tuesday, July 08, 2014, 1:09:15 PM

Data source: Ca,Mg,K,Na in Sediment - dry vs wet sieved.JNB

Normality Test (Shapiro-Wilk) Passed (P = 0.296)

Treatment Name	N	Missing	Mean	Std Dev	SEM
K-dry	13	0	615.615	210.149	58.285
K-wet	13	0	618.538	135.072	37.462
Difference	13	0	-2.923	131.562	36.489

t = -0.0801 with 12 degrees of freedom. (P = 0.937)

95 percent confidence interval for difference of means: -82.425 to 76.579

The change that occurred with the treatment is not great enough to exclude the possibility that the difference is due to chance (P = 0.937)

Power of performed test with alpha = 0.050: 0.050

The power of the performed test (0.050) is below the desired power of 0.800.
Less than desired power indicates you are less likely to detect a difference when one actually exists. Negative results should be interpreted cautiously.

SELENIUM

Paired t-test: Tuesday, July 08, 2014, 2:37:01 PM

Data source: Data 4 in Sediment - dry vs wet sieved.JNB

Normality Test (Shapiro-Wilk) Failed (P < 0.050)

Test execution ended by user request, Signed Rank Test begun

Wilcoxon Signed Rank Test Tuesday, July 08, 2014, 2:37:01 PM

Data source: Data 4 in Sediment - dry vs wet sieved.JNB

Group	N	Missing	Median	25%	75%
Se-dry	13	0	0.350	0.245	0.395
Se-wet	13	0	0.380	0.255	0.435

W= 8.000 T+ = 49.500 T-= -41.500
Z-Statistic (based on positive ranks) = 0.280
P(est.)= 0.807 P(exact)= 0.787

The change that occurred with the treatment is not great enough to exclude the possibility that it is due to chance (P = 0.787).

ATTACHMENT B
COMPARISON OF CHEMICAL CONCENTRATIONS IN DRY-SIEVED AND WET-SIEVED SEDIMENT SAMPLES – T-TEST RESULTS
CARR POINT – MRP SITE 1

SILVER

Paired t-test: Tuesday, July 08, 2014, 2:37:47 PM

Data source: Data 4 in Sediment - dry vs wet sieved.JNB

Normality Test (Shapiro-Wilk) Failed (P < 0.050)

Test execution ended by user request, Signed Rank Test begun

Wilcoxon Signed Rank Test Tuesday, July 08, 2014, 2:37:47 PM

Data source: Data 4 in Sediment - dry vs wet sieved.JNB

Group	N	Missing	Median	25%	75%
Ag-dry	13	0	0.0700	0.0400	0.125
Ag-wet	13	0	0.0700	0.0450	0.110

W= 9.000 T+ = 27.000 T-= -18.000
Z-Statistic (based on positive ranks) = 0.534
P(est.)= 0.635 P(exact)= 0.652

The change that occurred with the treatment is not great enough to exclude the possibility that it is due to chance (P = 0.652).

Sodium

Paired t-test: Tuesday, July 08, 2014, 1:09:32 PM

Data source: Ca,Mg,K,Na in Sediment - dry vs wet sieved.JNB

Normality Test (Shapiro-Wilk) Passed (P = 0.068)

Treatment Name	N	Missing	Mean	Std Dev	SEM
Na-dry	13	0	2608.462	666.781	184.932
Na-wet	13	0	2842.308	803.349	222.809
Difference	13	0	-233.846	640.202	177.560

t = -1.317 with 12 degrees of freedom. (P = 0.212)

95 percent confidence interval for difference of means: -620.717 to 153.024

The change that occurred with the treatment is not great enough to exclude the possibility that the difference is due to chance (P = 0.212)

Power of performed test with alpha = 0.050: 0.117

The power of the performed test (0.117) is below the desired power of 0.800.
Less than desired power indicates you are less likely to detect a difference when one actually exists. Negative results should be interpreted cautiously.

ATTACHMENT B
COMPARISON OF CHEMICAL CONCENTRATIONS IN DRY-SIEVED AND WET-SIEVED SEDIMENT SAMPLES – T-TEST RESULTS
CARR POINT – MRP SITE 1

VANADIUM

Paired t-test: Tuesday, July 08, 2014, 2:39:08 PM

Data source: Data 4 in Sediment - dry vs wet sieved.JNB

Normality Test (Shapiro-Wilk) Passed (P = 0.140)

Treatment Name	N	Missing	Mean	Std Dev	SEM
V-dry	13	0	12.154	4.104	1.138
V-wet	13	0	11.900	3.646	1.011
Difference	13	0	0.254	2.247	0.623

t = 0.407 with 12 degrees of freedom. (P = 0.691)

95 percent confidence interval for difference of means: -1.104 to 1.612

The change that occurred with the treatment is not great enough to exclude the possibility that the difference is due to chance (P = 0.691)

Power of performed test with alpha = 0.050: 0.050

The power of the performed test (0.050) is below the desired power of 0.800.
Less than desired power indicates you are less likely to detect a difference when one actually exists. Negative results should be interpreted cautiously.

THALLIUM

Paired t-test: Tuesday, July 08, 2014, 2:38:27 PM

Data source: Data 4 in Sediment - dry vs wet sieved.JNB

Normality Test (Shapiro-Wilk) Failed (P < 0.050)

Test execution ended by user request, Signed Rank Test begun

Wilcoxon Signed Rank Test Tuesday, July 08, 2014, 2:38:27 PM

Data source: Data 4 in Sediment - dry vs wet sieved.JNB

Group	N	Missing	Median	25%	75%
Th-dry	13	0	0.0500	0.0400	0.0600
Th-wet	13	0	0.0500	0.0400	0.0650

W= 9.000 T+ = 15.000 T-= -6.000
Z-Statistic (based on positive ranks) = 0.946
P(est.)= 0.400 P(exact)= 0.438

The change that occurred with the treatment is not great enough to exclude the possibility that it is due to chance (P = 0.438).

ATTACHMENT B
COMPARISON OF CHEMICAL CONCENTRATIONS IN DRY-SIEVED AND WET-SIEVED SEDIMENT SAMPLES – T-TEST RESULTS
CARR POINT – MRP SITE 1

ZINC

Paired t-test: Tuesday, July 08, 2014, 2:40:32 PM

Data source: Data 4 in Sediment - dry vs wet sieved.JNB

Normality Test (Shapiro-Wilk) Passed (P = 0.385)

Treatment Name	N	Missing	Mean	Std Dev	SEM
Zn-dry	13	0	42.569	22.451	6.227
Zn-wet	13	0	39.569	20.882	5.792
Difference	13	0	3.000	5.331	1.479

t = 2.029 with 12 degrees of freedom. (P = 0.065)

95 percent confidence interval for difference of means: -0.222 to 6.222

The change that occurred with the treatment is not great enough to exclude the possibility that the difference is due to chance (P = 0.065)

Power of performed test with alpha = 0.050: 0.357

The power of the performed test (0.357) is below the desired power of 0.800.
Less than desired power indicates you are less likely to detect a difference when one actually exists. Negative results should be interpreted cautiously.

Total PAH

Wilcoxon Signed Rank Test Wednesday, July 02, 2014, 2:49:23 PM

Data source: Dry vs Wet in Sediment - dry vs wet sieved.JNB

Normality Test (Shapiro-Wilk) Passed (P = 0.236)

Test execution ended by user request, Paired t-test begun

Paired t-test: Wednesday, July 02, 2014, 2:49:23 PM

Data source: Dry vs Wet in Sediment - dry vs wet sieved.JNB

Treatment Name	N	Missing	Mean	Std Dev	SEM
PAH - dry	13	0	0.303	0.317	0.0880
PAH-wet	13	0	0.273	0.308	0.0854
Difference	13	0	0.0296	0.175	0.0484

t = 0.611 with 12 degrees of freedom. (P = 0.552)

95 percent confidence interval for difference of means: -0.0759 to 0.135

ATTACHMENT B
COMPARISON OF CHEMICAL CONCENTRATIONS IN DRY-SIEVED AND WET-SIEVED SEDIMENT SAMPLES – T-TEST RESULTS
CARR POINT – MRP SITE 1

The change that occurred with the treatment is not great enough to exclude the possibility that the difference is due to chance (P = 0.552)

Power of performed test with alpha = 0.050: 0.050

The power of the performed test (0.050) is below the desired power of 0.800.
Less than desired power indicates you are less likely to detect a difference when one actually exists. Negative results should be interpreted cautiously.

HPAH

Paired t-test: Wednesday, July 02, 2014, 3:02:01 PM

Data source: Dry vs Wet in Sediment - dry vs wet sieved.JNB

Normality Test (Shapiro-Wilk) Passed (P = 0.349)

Treatment Name	N	Missing	Mean	Std Dev	SEM
HPAH - dry	13	0	0.272	0.279	0.0775
HPAH - wet	13	0	0.250	0.282	0.0782
Difference	13	0	0.0215	0.161	0.0445

t = 0.482 with 12 degrees of freedom. (P = 0.638)

95 percent confidence interval for difference of means: -0.0756 to 0.118

The change that occurred with the treatment is not great enough to exclude the possibility that the difference is due to chance (P = 0.638)

Power of performed test with alpha = 0.050: 0.050

The power of the performed test (0.050) is below the desired power of 0.800.
Less than desired power indicates you are less likely to detect a difference when one actually exists. Negative results should be interpreted cautiously.

LPAH

Paired t-test: Wednesday, July 02, 2014, 3:00:42 PM

Data source: Dry vs Wet in Sediment - dry vs wet sieved.JNB

Normality Test (Shapiro-Wilk) Failed (P < 0.050)

Test execution ended by user request, Signed Rank Test begun

Wilcoxon Signed Rank Test Wednesday, July 02, 2014, 3:00:42 PM

Data source: Dry vs Wet in Sediment - dry vs wet sieved.JNB

Group	N	Missing	Median	25%	75%
LPAH - dry	13	0	0.0120	0.00795	0.0540
LPAH - wet	13	0	0.0190	0.01000	0.0345

ATTACHMENT B
COMPARISON OF CHEMICAL CONCENTRATIONS IN DRY-SIEVED AND WET-SIEVED SEDIMENT SAMPLES – T-TEST RESULTS
CARR POINT – MRP SITE 1

W= -25.000 T+ = 33.000 T-= -58.000
Z-Statistic (based on positive ranks) = -0.874
P(est.)= 0.402 P(exact)= 0.414

The change that occurred with the treatment is not great enough to exclude the possibility that it is due to chance (P = 0.414).

ATTACHMENT C

2013 SCIENTIFIC DIVE SURVEY, HABITAT OBSERVATIONS, AND TISSUE COLLECTION

ATTACHMENT C
2013 SCIENTIFIC DIVE SURVEY, HABITAT OBSERVATIONS, AND TISSUE COLLECTION
CARR POINT – MRP SITE 1

Introduction – A ecological evaluation was conducted within the Eastern Passage of Narragansett Bay as part of sampling conducted to support the investigation of the Former Carr Point Shooting Range, Munitions Response Program (MRP) Site 1, Operable Unit (OU) 9 located at the Naval Station (NAVSTA) Newport, Rhode Island. The survey was conducted in November 2013 and included quantifying the extent of submerged aquatic vegetation (SAV) and viable macro invertebrate communities adjacent to MRP Site 1 (the site) and collecting shellfish tissue for chemical analyses. Activities included an underwater video camera survey to document available ecological habitats, SCUBA diving to collect shellfish and verify ecological habitats, and shore-based collection of shellfish.

Video Survey Habitat Evaluation – AECOM scientific dive team members aboard a 18 ft Carolina Skiff® (survey vessel) conducted a topside underwater video survey using an Aqua-Vu® fish camera to document surficial habitat characteristics at proposed sediment sampling stations within the site boundary and at reference locations. Based on the high winds and cold air and water temperatures at the time of the survey, it was determined that the habitat evaluation would be conducted via the video system, rather than put divers in the water to execute the proposed dive transect/ quadrat methodology. Documentation at each station included water depth, grain size, and presence/absence of shell hash, living invertebrates, eelgrass and algal cover. Figure 1 and Table 1 display the findings of the video survey and habitat evaluation.

The substrate within the site and at reference locations consisted of sand and gravel with larger cobble becoming prominent towards the beach. Large (>1 foot) boulders were noted in several locations and a boulder field was delineated along the southern boundary of the firing fan (Figure 1), which included several larger rock outcrops visible at low tide. Skeet fragments were not observed on the sea floor during the video or dive surveys at stations that extend past the low tide water line; however, fragments were seen on the beach above the water line during sampling at low tide. Shell hash was noted at every location and the species of shellfish observed varied from location to location within the site. Dominant shellfish species included slipper shells (*Crepidula fornicata)*, quahogs (*Mercenaria mercenaria*), and blue mussels *(Mytilus edulis).* Other species observed included razor clams *(Silqua patula)*, bay scallops *(Aquipecten irradians)*, knobbed whelks *(Busycon carica)* and periwinkles *(Littorina littorea)*. Numerous large spider crabs (*Libinia emarginata)* were also observed. Algal cover within the site and at reference locations was mixed; transient tufts of algae were noted as well as affixed algae such as rock weed *(Ascophyllum nodosum)* and the locally dominant SAV, eelgrass (*Zoestra marina*). Table 1 provides a summary of the shellfish, algae, and SAV findings for each station.

Shellfish Collection – Locations that were deemed viable for shellfish collection based on substrate and presence of shellfish were noted during the underwater video survey and then selected for the SCUBA shellfish collection survey. Stations intended for shellfish collection efforts were pre-marked using anchor weighted buoys. Locations were navigated to using a hand-held Panasonic CF-U1 Toughbook connected via Bluetooth to a Trimble Pro XT external GPS receiver with sub-meter accuracy. The Toughbook recorded data using ArcPad version 10.0. The survey vessel anchored on station and AECOM

divers descended to the bottom to conduct investigative surveys around each of the sampling locations. Information verifying ecological characteristics previously recorded during the video survey was relayed to the topside support staff using through water ultrasonic, communication.

Once ecological information was verified divers began harvesting for shellfish using handheld clam rakes. There were several locations that were deemed inaccessible via boat due to the shallow water depths. These locations (SD101, SD102, SD122, SD123, SD124, SD303, and SD304) were re-occupied at low tide and sampled from the beach. The same collection methods employed at the diver sampled locations (i.e., handheld clam rakes) were used at these locations.

Shellfish samples were collected from 17 locations (13 from within the site, and 4 from reference locations) in accordance with a Scientific Collector's Permit obtained from the Rhode Island Department of Environmental Management Division of Fish and Wildlife. Dominant species collected during SCUBA collection survey included quahogs (*Mercenaria mercenaria*), and blue mussels *(Mytilus edulis).* Each sample for analysis was composed of a single species. Multiple individuals of a single species and similar size were composited to provide sufficient sample volume for analysis. Table 2 details the sample species information, collection location, average weight, average length and number of individuals per composite.

ATTACHMENT C TABLE 1
HABITAT FINDINGS
CARR POINT - MRP SITE 1

Location	Water Depth (ft)	Grain Size	Shell Hash Present?	Algae/SAV Present	Invertebrates Observed
MRP Site 1					
SD01	3	Gravel/cobble	Yes		Periwinkles
SD02	3	Cobble	Yes		
SD03	5	Sand	Yes	Algae	Razor Clams
SD04	5	Sand	Yes	Algae	Slipper Shell/Spider Crab
SD05	5	Gravel/cobble	Yes	Algae	Spider Crab
SD06	3	Sand	Yes	Algae	Siphon Holes/Razor Clam/Quahog/Scallop
SD07	3	Sand/gravel	Yes		Slipper Shells
SD08	3	Gravel/cobble	Yes	Algae	Slipper Shells and Green Crab
SD09	3	Sand	Yes		Slipper Shells/Razor Clam/Blue Mussels/Quahog
SD10	8	Sand/gravel	Yes		Slipper Shells/Scallop/Horseshoe Crab
SD11	8	Cobble	Yes	Algae	Slipper Shells
SD12	8	Gravel/cobble	Yes	Algae	Slipper Shells
SD13	10	Sand	Yes		Slipper Shells
SD14	8	Sand	Yes		Whelk
SD15	8	Sand/gravel/cobble	Yes		
SD16	8	Sand	Yes	Algae	Slipper Shells
SD17	8	Sand/gravel/cobble	Yes		
SD18	10	Cobble	Yes	Algae	Siphon holes
SD19	10	Silt/cobble	Yes	Algae	Siphon holes
SD20	8	Sand/gravel	Yes	Eelgrass	Slipper Shells/Quahog
SD101	3	Cobble	Yes		Blue Mussels
SD102	3	Sand/cobble	Yes	Algae	Periwinkles
SD103	3	Sand/cobble	Yes		Periwinkles
SD104	3	Sand/cobble	Yes	Algae	Razor Clams/Blue Mussels/Quahog
SD105	8	Sand/small (<1") cobble	Yes	Algae	Slipper Shells
SD106	12	Not Recorded	Yes	Algae	Slipper Shells, Blue Mussels, Whelk
SD107	12	Gravel	Yes	Algae	Razor Clams
SD108	12	Sand/silty firm bottom/some softball sized cobble	Yes		Bay Scallop
SD109	10	Not Recorded	Yes		Blue Mussels, Slipper Shell, Quahog, Spider Crab
SD110	10	Shell hash cover	Yes		Blue Mussels
SD111	10	Silt/cobble	Yes		Spider Crab
SD112	10	Shell hash cover	Yes		Blue Mussels
SD113	10	Sand/small (<1") cobble	Yes	Algae	Slipper Shells
SD114	8	Sand	Yes	Algae	Slipper Shells/Razor Clams/Snails/Siphon Holes
SD115	10	Sand	Yes	Eelgrass	Slipper Shells/Scallop/Whelk/Siphon holes
SD116	4	Sand/cobble	Yes	Algae	Slipper Shells
SD117	5	Sand	Yes	Algae	
SD118	7	Sand/gravel	Yes	Algae	Slipper Shells/Siphon Holes
SD119	8	Sand	Yes	Algae	Slipper Shells
SD120	8	Sand/gravel/small (<1") cobble	Yes	Algae	Slipper Shells
SD121	8	Sand/gravel/small (<1") cobble	Yes	Algae	Slipper Shells/Siphon Holes
SD122	4	6-20" rock with gravel	Yes		Blue Mussels
SD123	3	Gravel/cobble	Yes		Blue Mussels
SD124	3	Cobble	Yes		Blue Mussels

ATTACHMENT C TABLE 1
HABITAT FINDINGS
CARR POINT - MRP SITE 1

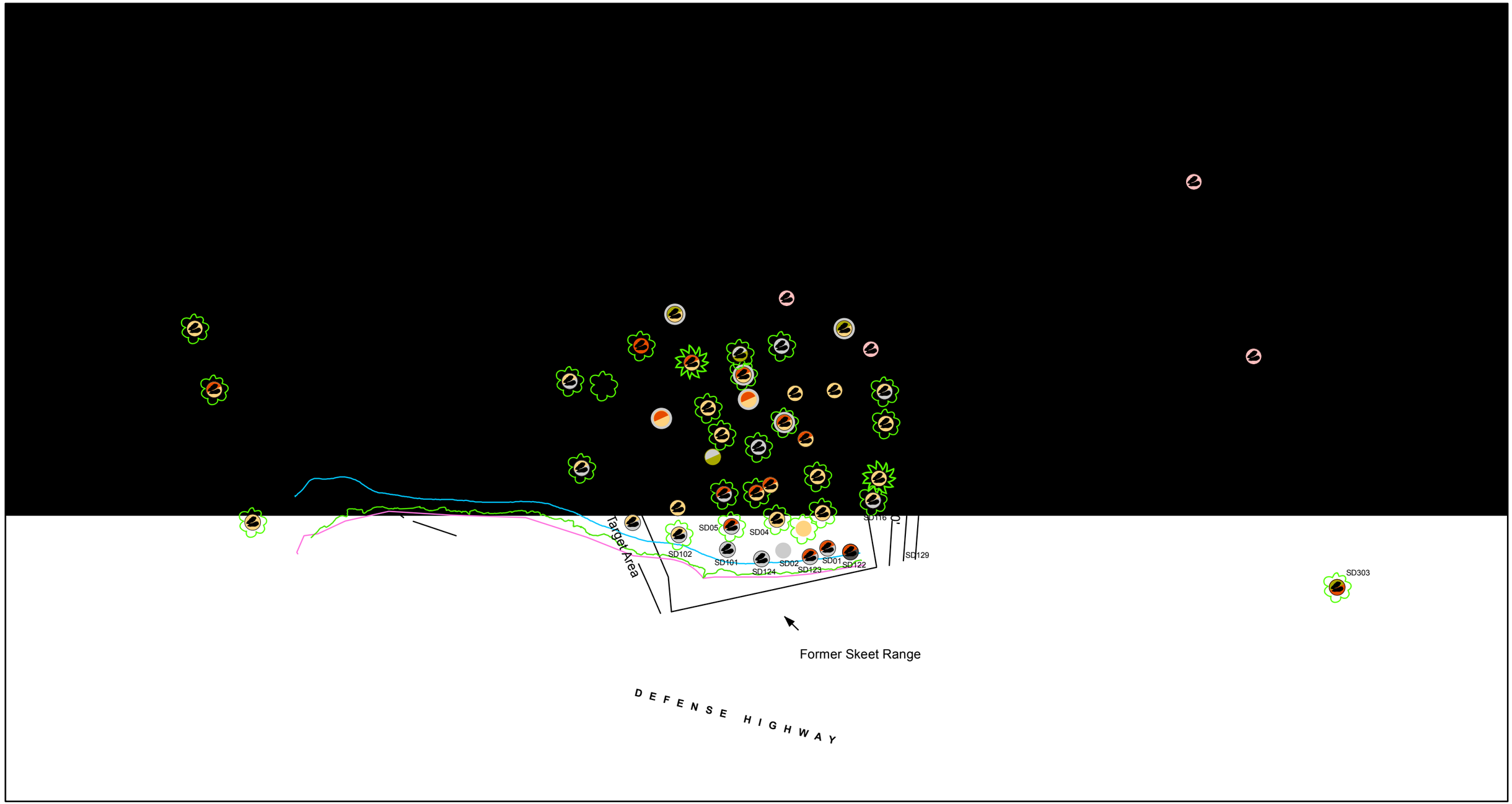
Location	Water Depth (ft)	Grain Size	Shell Hash Present?	Algae/SAV Present	Invertebrates Observed
Background/Reference Locations for MRP Site 1					
SD301	Not recorded	Sand/gravel	Yes	Algae	Slipper Shells/Razor Clams/Bay Scallops
SD302	23	Shell hash cover	Yes		Blue Mussels
SD303	15	Fines/gravel	Yes	Algae	Slipper Shell/Razor Clam/Spider Crab
SD304	Not recorded	Sand	Yes	Algae	Blue Mussels
SD305	20	Shell hash cover	Yes		Blue Mussels
SD306	Not recorded	Sand	Yes	Algae	Slipper Shells/Razor Clams/Quahog/Siphon Holes
Historic Background/Reference Locations within Narragansett Bay					
Dyer Island Ref S	Not recorded	Sand	Yes	Algae	Slipper Shells/Siphon Holes
Dyer Island Ref Mid	Not recorded	Sand	Yes	Algae	Hermit Crabs
Dyer Island Ref N	Not recorded	Fine sand	Yes		Spider Crabs/Razor Clams/Quahog
Cranston Cove Ref N	Not recorded	Silt/gravel	Yes		Siphon holes
GI-JCC-01-0006	Not recorded	Silt	Yes		Siphon holes
MCA-JCC-M-01	Not recorded	Coarse sand	Yes	Algae	
DSY-JPC 01	Not recorded	Sand	Yes	Algae	Siphon holes/Quahogs
DSY-JPC 02	Not recorded	Silt	Yes	Algae	Slipper Shells
DSY-JPC-03	Not recorded	Fine sand	Yes		

Historic locations are not presented on Figure 1 and are not used in the MRP Site 1 evaluation. These historic locations were re-visited as part of field reconnaissance efforts to identify background/refernce locations for MRP Site 1.

ATTACHMENT C TABLE 2
SHELLFISH TISSUE COMPOSITE SUMMARY
CARR POINT - MRP SITE 1

Location	Number of Individuals per Composite	Average Weight (g)	Average Length (mm)
Quahog composite			
SD104	4	134.5	772.5
SD106	3	129.3	723.3
SD109	7	306.9	978.6
SD110	2	267.5	925.0
SD112	4	341.5	1050.0
SD112 (field duplicate)	3	245.7	900.0
SD115	3	85.7	700.0
SD118	5	143.2	760.0
SD121	3	314.3	950.0
SD301	6	224.2	891.7
Blue mussel composite			
SD101	9	14.0	54.0
SD102	20	16.0	52.0
SD122	15	12.0	45.0
SD123	7	14.0	42.0
SD124	23	13.0	46.0
SD302	14	15.0	51.0
SD303	17	18.0	52.0
SD304	22	14.0	43.0

Notes:
g- grams.
mm - millimeter.



[redacted]

Drawn: KNS

Approved:

Project #: 60250336

Map Location

Legend

- Silt/Cobble
- Cobble
- Gravel
- Gravel/Cobble
- Not Recorded
- Rock/Gravel
- Sand
- Sand/Cobble
- Sand/Gravel/Cobble
- Sand/Silt/Cobble
- Sand/Gravel
- Shell Hash
- Silt/Gravel
- Algae
- Eelgrass
- Shellfish
- Approximate High Water Line Estimated by Surveyor
- Approximate High Water Line Marked Via GPS June 2009
- Approximate Low Water Line
- Approx. Rock Boulder Area

0 75 150 300

Scale in Feet

FIGURE 1
DIVE SURVEY RESULTS

MRP SITE 1, CARR POINT
NAVSTA NEWPORT, RHODE ISLAND

G:\Projects\Navy CLEAN AECOM-EnSafe JV\Newport\GIS\Projects\Carr Point\Maps\RI\Maps\DiveSurveyData.mxd

ATTACHMENT D

BENTHIC MACROINVERTEBRATE COMMUNITY DATA

ATTACHMENT D
BENTHIC MACROINVERTEBRATE COMMUNITY DATA
CARR POINT – MRP SITE 1

Introduction – Sediment samples were collected from two stations, SD112 and SD121, in December 2013 as part of sampling conducted to support the investigation of the Former Carr Point Shooting Range, Munitions Response Program (MRP) Site 1, Operable Unit (OU) 9 located at the Naval Station (NAVSTA) Newport, Rhode Island.

Benthic Sample Collection – The benthic biology samples were collected using a power grab (hydraulic open/close mechanism) sampler. The proposed sampling methodology (Resolution Consultants, 2013) included using four subcores (each $0.1m^3$) to remove the required sample size from the large grab sampler. This was done for the sample collected at station SD121. The surface of the usable grab sample collected at station SD112 was covered with *Crepidula* shells and snails, and it was not possible to get the subcores through these organisms and deep enough into the sediment. As a result, approximately the entire grab sample was used to represent the benthic biology sample for this station. Therefore, the volume of sediment processed at the two stations is entirely different, and must be taken into consideration when looking at the raw data for counts as well as biomass.

Benthic Sample Analysis – Samples analysis was performed by Resolution Consultants in Woods Hole, Massachusetts. Prior to sorting, samples were transferred to 70-80% ethanol and stained with Rose Bengal to facilitate removal of small organisms from the sediment. The samples were sorted under a dissecting microscope and each organism was removed. The organisms were sorted into vials by major taxonomic groups that included polychaete families, oligochaetes, bivalves, gastropods, decapods, amphipods, cumaceans, and nemerteans. Specimens were then counted and recorded on specially designed data sheets. This data was later entered electronically into an Excel spreadsheet. A total of 3674 organisms were sorted, identified and enumerated from the two samples. Each taxonomic group was wet-weight biomassed using a Mettler balance accurate to 0.001g. The weights by group were handwritten onto data sheets and later entered into the Excel spreadsheet.

Faunal Composition – Table 1 provides the counts and biomass for each taxon per sample. Table 2 identifies the percent of each sample composed by polychaetes, crustaceans, molluscs, and miscellaneous taxa. Table 3 presents similar percentages based on both samples combined together.

The 3674 specimens identified yielded 26 taxa in five phyla (Tables 1 and 2). Species of polychaete annelids were the most abundant with 1893 individuals, accounting for 51.5% of all organisms identified (Table 3). As shown in Table 3, polychaetes in 19 families were recorded, with Polygordiidae (725) and Cirratulidae (671) contributing the most individuals. Gastropoda (mollusc) was also a common group with a total of 1071 individuals recorded, accounting for 29.2% of all organisms identified. Most of these were the *Crepidula* from station SD112.

As is typical for benthic environments, crustaceans, bivalves, and oligochaetes were also present. Crustaceans from three orders were recorded (amphipods, cumaceans, and decapods), with 342 individuals, making up 9.3% of the total fauna (Table 3). Of these, amphipods were the most common

with 295 individuals. There were a total of 325 oligochaetes and 41 bivalves recorded. A small number of nemerteans (2) were also recorded from one sample.

As shown in Table 1, gastropods accounted for the majority of the biomass of both samples. Weight-wet biomass analysis weighs entire organisms without differentiating tissue mass from total mass. Therefore, the weight of molluscs with shells would be expected to be heavier than invertebrate organisms without shells.

Reference –

Resolution Consultants. 2013. Sampling and Analysis Plan. Former Carr Point Shooting Range (MRP Site 1, OU9), Naval Station (NAVSTA) Newport, Rhode Island. Prepared for NAVFAC. October 11, 2013

ATTACHMENT D TABLE 1
ORGANISM COUNTS AND BIOMASS MEASUREMENTS
CARR POINT - MRP SITE 1

Taxon	Class/Order/Family	Count	Biomass (g)
SD112			
Polychaete	Polygordiidae	499	0.237
Polychaete	Glyceridae	6	0.596
Polychaete	Chaetopteridae	3	0.013
Polychaete	Sigalionidae	1	0.008
Polychaete	Serpulidae	1	0.014
Polychaete	Orbiniidae	17	0.318
Polychaete	Spionidae	38	0.009
Polychaete	Terebellidae	2	0.011
Polychaete	Capitellidae	11	0.021
Polychaete	Nereididae	11	0.147
Polychaete	Phyllodocidae	57	0.012
Polychaete	Syllidae	6	0.001
Polychaete	Paraonidae	3	0.001
Polychaete	Cirratulidae	658	0.755
Polychaete	Oweniidae	1	0.001
Polychaete	Nephtyidae	20	0.112
Polychaete	Magelonidae	4	0.012
Polychaete	Pectinariidae	1	0.226
Polychaete	Ampharetidae	1	<0.001
Misc	Oligochaeta	121	0.018
Crustacean	Amphipoda	254	0.172
Crustacean	Caprellidae	11	0.001
Crustacean	Decapoda	36	34.355
Mollusc	Gastropoda	1044	802.286
Mollusc	Bivalvia	37	4.0
	Total All - SD112	**2843**	**843.3**
SD121			
Polychaete	Nephtyidae	26	0.236
Polychaete	Capitellidae	65	0.013
Polychaete	Orbiniidae	10	0.104
Polychaete	Magelonidae	6	0.005
Polychaete	Phyllodocidae	2	0.002
Polychaete	Nereididae	1	0.003
Polychaete	Glyceridae	2	0.005
Polychaete	Spionidae	176	0.076
Polychaete	Paraonidae	4	0.001
Polychaete	Cirratulidae	13	0.006
Polychaete	Chaetopteridae	22	0.142
Polychaete	Polygordiidae	226	0.051
Misc	Oligochaeta	204	0.031
Misc	Nemertea	2	<0.001
Crustacean	Decapoda	3	0.018
Crustacean	Cumacea	8	0.004
Crustacean	Amphipoda	30	0.317
Mollusc	Bivalvia	4	0.817
Mollusc	Gastropoda	27	18.83
	Total All - SD121	**831**	**20.7**
	Totals for SD112 + SD121	**3674**	**864.0**

Notes:
g - gram.

ATTACHMENT D TABLE 2
ORGANISM COUNTS AND DOMINANCE BY SAMPLE
CARR POINT - MRP SITE 1

Class/Order/Family	Count	Percent of Sample by Count
SD112		
Polygordiidae	499	
Glyceridae	6	
Chaetopteridae	3	
Sigalionidae	1	
Serpulidae	1	
Orbiniidae	17	
Spionidae	38	
Terebellidae	2	
Capitellidae	11	
Nereididae	11	
Phyllodocidae	57	
Syllidae	6	
Paraonidae	3	
Cirratulidae	658	
Oweniidae	1	
Nephtyidae	20	
Magelonidae	4	
Pectinariidae	1	
Ampharetidae	1	
Total Polychaete	**1340**	**47.1%**
Oligochaeta	121	
Total Misc	**121**	**4.3%**
Amphipoda	254	
Caprellidae	11	
Decapoda	36	
Total Crustacean	**301**	**10.6%**
Gastropoda	1044	
Bivalvia	37	
Total Mollusc	**1081**	**38.0%**
Total All - SD112	2843	**100.0%**
SD121		
Nephtyidae	26	
Capitellidae	65	
Orbiniidae	10	
Magelonidae	6	
Phyllodocidae	2	
Nereididae	1	
Glyceridae	2	
Spionidae	176	
Paraonidae	4	
Cirratulidae	13	
Chaetopteridae	22	
Polygordiidae	226	
Total Polychaete	**553**	**66.5%**
Oligochaeta	204	
Nemertea	2	
Total Misc	**206**	**24.8%**
Decapoda	3	
Cumacea	8	
Amphipoda	30	
Total Crustacean	**41**	**4.9%**
Bivalvia	4	
Gastropoda	27	
Total Mollusc	**31**	**3.7%**
Total All - SD121	**831**	**100.0%**

ATTACHMENT D TABLE 3
ORGANISM COUNTS AND DOMINANCE ACROSS BOTH SAMPLES
CARR POINT - MRP SITE 1

Class/Order/Family	Count	Taxon
Ampharetidae	1	Polychaete
Amphipoda	295	Crustacean
Bivalvia	41	Mollusc
Capitellidae	76	Polychaete
Chaetopteridae	25	Polychaete
Cirratulidae	671	Polychaete
Cumacea	8	Crustacean
Decapoda	39	Crustacean
Gastropoda	1071	Mollusc
Glyceridae	8	Polychaete
Magelonidae	10	Polychaete
Nephtyidae	46	Polychaete
Nereididae	12	Polychaete
Oligochaeta	325	Misc
Orbiniidae	27	Polychaete
Oweniidae	1	Polychaete
Paraonidae	7	Polychaete
Pectinariidae	1	Polychaete
Phyllodocidae	59	Polychaete
Polygordiidae	725	Polychaete
Serpulidae	1	Polychaete
Sigalionidae	1	Polychaete
Spionidae	214	Polychaete
Syllidae	6	Polychaete
Terebellidae	2	Polychaete
Nemertea	2	Misc
Total All	**3674**	

Class/Order/Family	Count	Percent by Count
Polychaetes	1893	51.5%
Bivalves	41	1.1%
Gastropoda	1071	29.2%
Amphipoda	295	8.0%
Cumacean	8	0.2%
Decapoda	39	1.1%
Nemertean	2	0.1%
Oligochaeta	325	8.8%
Total All	**3674**	**100%**

ATTACHMENT E

WILDLIFE RECEPTOR PROFILES

ATTACHMENT E
SUMMARY OF REPRESENTATIVE RECEPTORS SELECTED FOR EVALUATION IN THE ECOLOGICAL RISK ASSESSMENT
CARR POINT – MRP SITE 1

It is not feasible to evaluate exposures and risks for each of the vertebrate wildlife species potentially present in the vicinity of MRP Site 1. Therefore, representative wildlife species were identified as surrogates in order to estimate exposure and risk. The surrogate species are wildlife species that are representative of species with similar dietary preferences that may be present within the ecological exposure areas to be evaluated in the ERA. Representative surrogate species were selected based on a review of trophic level, feeding habits, and the availability of life history information. Species-specific exposure assumptions are provided in the food web model appendices for each of the exposure areas and in **Table 1** of this attachment. As indicated in Table 1, exclusive diets have been selected for inclusion in the screening risk assessment (SRA), whereas the baseline ecological risk assessment (BERA), if warranted, includes more realistic dietary assumptions.

In order to evaluate potential bioaccumulation in the food chain, two trophic levels were selected for evaluation. These trophic levels include Trophic Level 2 (TL2) herbivores, and Trophic Level 3 (TL3) omnivores and insectivores. Herbivores are primary consumers, ingesting primary producers (vegetation) and analytes from one trophic level. Omnivores consume both primary producers and consumers and ingest analytes from two trophic levels. Insectivores consume primary consumers (invertebrates). Due to the relatively small size of MRP Site 1, Trophic Level 4 (TL4) carnivores were not selected. Carnivores represent the top of the food chain and are likely to feed over large areas such that any dietary contributions from MRP Site 1 would be very small.

The following individual species were identified as representative surrogate species for the food web model.

Meadow vole *(Microtus pennsylvanicus)*: The meadow vole was selected as a representative mammalian herbivore wildlife species for evaluation of potential risks associated with terrestrial exposure area. The meadow vole is common in the United States and is associated with a wide range of habitats including wetlands and rangelands. Meadow voles inhabit grassy fields, marshes, and bogs; however, they prefer fields with more grass, more cover, and fewer woody plants. They typically consume green succulent vegetation, sedges, seeds, roots, bark, fungi, insects, and animal matter. However, green succulent vegetation makes up the majority of their diet (USEPA, 1993). Home range of the meadow vole listed by USEPA (1993) ranges from 0.000494 to 0.2051 acres with an average of 0.0659 acres. Selection of the meadow vole allows evaluation of a TL2 herbivorous exposure pathway in the terrestrial habitat available at MRP Site 1.

Short-tailed shrew (*Blarina brevicauda*): The short-tailed shrew was selected as a representative small insectivorous mammalian wildlife species that may be found within the terrestrial exposure area. Insects, earthworms, slugs, and snails can make up most of the shrew's food, while plants, fungi, millipedes, centipedes, arachnids, and small mammals also are consumed. Shrews inhabit a wide variety of habitats and are common in areas with abundant vegetative cover. They need cool, moist habitats because of their high metabolic and water-loss rates (USEPA, 1993). The mean home range of the short-tailed shrew listed by USEPA (1993) is 0.96 acres. Selection of the short-tailed shrew allows evaluation of a TL3 insectivorous exposure pathway in the terrestrial habitat available at MRP Site 1.

Raccoon (*Procyon lotor*): The raccoon was selected as a representative small omnivorous mammalian wildlife species that may be found within aquatic and terrestrial exposure areas. The raccoon is the most abundant and widespread medium-sized omnivore in North America. Raccoons are commonly found in aquatic habitats, particularly in hardwood swamps, floodplain forests and freshwater and saltwater marshes. They are also common in suburban residential areas. Raccoons feed primarily on fleshy fruits, nuts, acorns, and corn, but also eat grains, insects, frogs, crayfish, eggs, and virtually any animal and vegetable matter, with plants typically being an important component of

the diet. The proportion of different foods in their diet depends on location and season and they may focus on a preferred food when it is available (USEPA, 1993). Raccoons have a large home range; the home range areas listed by USEPA (1993) ranges from 96 to 6325 acres with an average of 1558 acres. Selection of the raccoon allows evaluation of a TL3 omnivorous exposure pathway in both the upland and shoreline/semi-aquatic habitat available at MRP Site 1.

Bobwhite quail (*Colinus virginianus*): The bobwhite quail was selected as a representative herbivorous avian wildlife species for upland portions of MRP Site 1. Quail are ground-dwelling birds adapted for foraging on the ground for seeds and insects. Bobwhite quail are the most widespread of the North American quail. They prefer to forage in areas with open vegetation, some bare ground, and light litter. Home range areas for the quail range from 8.9 to 41.3 acres with an average of 24.7 acres (USEPA, 1993). Seeds from weeds, woody plants, and grasses comprise the majority of an adult's diet, although green vegetation may also be consumed. Insects and other invertebrates can comprise up to 10 to 25 percent of the adults' diet during the spring and summer in more northerly areas. Bobwhite quail are typically not migratory (USEPA, 1993). Selection of the bobwhite quail allows evaluation of a TL2 herbivorous exposure pathway in the terrestrial habitat available at MRP Site 1.

American robin *(Turdus migratorius)*: The robin was selected as a representative insectivore avian wildlife species for upland portions of MRP Site 1. The robin occurs throughout most of the continental United States and can be found in a variety of habitats including open woodlands, swamps, suburbs, parks, lawns, moist forests, and orchards. Access to fresh water, protected nesting sites and productive foraging areas are important requirements. Robins forage on the ground in open areas, along habitat edges or the edges of streams as well as above ground in shrubs and lower branches of trees. Home range areas of the robin have been reported from 0.37 to 2 acres with an average of 1.2 acres (USEPA, 1993). In the months preceding and during the breeding season, robins feed primarily on invertebrates and on some fruits. During the rest of the year their diet consists primarily of fruits. Most northern robins leave their breeding grounds from September to November and return between February and April (USEPA, 1993). Selection of the robin allows evaluation of a TL3 insectivorous exposure pathway in the terrestrial habitat available at MRP Site 1.

Herring gull (*Larus argentatus*): The herring gull was selected as a representative piscivorous/insectivorous avian wildlife species for the shoreline and aquatic habitat at MRP Site 1. Herring gulls are abundant in temperate coastal areas and can be found in sandy or rocky offshore areas, barrier beach islands, coastal marshes, peninsulas, or cliffs along seacoasts, lakes, and rivers. Gulls forage on open water and within intertidal zones. They can travel far for prey and have been reported to travel distances of 3 to 50 km with an average of 10 km to forage (USEPA, 1993). Prey items include fish, squid, crustacea, mollusks, worms, and insects, among other things (USEPA, 1993). Selection of the herring gull allows evaluation of a TL3 piscivorous/insectivorous exposure pathway in the shoreline and aquatic habitat available at MRP Site 1.

USEPA. 1993. Wildlife Exposure Factors Handbook. Vols. I and II. Office of Research and Development; Washington, D.C. EPA/600-R/R-93/187a,187b.

ATTACHMENT E TABLE 1
EXPOSURE PARAMETERS FOR ECOLOGICAL RECEPTORS
ECOLOGICAL RISK ASSESSMENT
NEWPORT, RHODE ISLAND

Receptor Species	Value for Use in SRA Minimum Body Weight (kg)	Value for Use in SRA [b] Maximum Body Weight (kg)	Value for Use in BERA Average Body Weight (kg)	Value for Use in SRA Food Ingestion Rate (kg_{dw}/day)	Value for Use in BERA Food Ingestion Rate (kg_{dw}/day)	Value for Use in SRA Incidental Soil/Sediment Ingestion (%)	Value for Use in BERA Incidental Soil/Sediment Ingestion (%)	Value for Use in BERA Average Home Range (acres)	Dietary Assumptions for Use in SRA	Dietary Assumptions for Use in BERA
BIRDS										
Bobwhite quail *(Colinus virginianus)*	0.154 [a]	0.194 [a]	0.170 [a]	0.0096 [c]	0.0085 [d]	13.9% [e]	6.1% [f]	24.7 [g]	100% vegetation [h]	86% vegetation 14% soil invertebrates [i]
American robin *(Turdus migratorius)*	0.0773 [a]	0.0862 [a]	0.081 [a]	0.0125 [c]	0.0120 [d]	3.0% [e]	0.9% [f]	1.2 [g]	100% soil invertebrates [h]	63% vegetation 37% soil invertebrates [i]
Herring gull *(Larus argentatus)*	0.951 [a]	1.232 [a]	1.092 [a]	0.1243 [c]	0.1132 [d]	8.2% [e]	8.2% [f]	10 km [g] radius	100% shellfish [h]	68% shellfish 32% fish [i]
MAMMALS										
Meadow vole *(Microtus pennsylvanicus)*	0.0170 [a]	0.0524 [a]	0.033 [a]	0.0103 [c]	0.0077 [d]	3.2% [e]	1.2% [f]	0.0659 [g]	100% vegetation [h]	99% vegetation 1% soil invertebrates [i]
Short-tailed shrew *(Blarina brevicauda)*	0.0150 [a]	0.0192 [a]	0.0168 [a]	0.0023 [c]	0.0022 [d]	3.0% [e]	0.9% [f]	0.9637 [g]	100% soil invertebrates [h]	5% vegetation 87% soil invertebrates 8% small mammals [i]
Raccoon *(Procyon lotor)*	3.67 [a]	7.60 [a]	5.78 [a]	0.1848 [c]	0.1535 [d]	9.4% [e]	9.4% [f]	1558 [g]	100% shellfish [h]	59% vegetation 15% soil invertebrates 17% small mammals 7% fish 2% shellfish [i]

General Notes:

BERA - Baseline Ecological Risk Assessment
BW - Body Weight
DW - Dry Weight
FIR - Food Ingestion Rate
g - grams
kg - kilograms
L - liters
SRA - Screening Risk Assessment
WIR - Water Ingestion Rate

Notes for Bobwhite quail
[a] Range and average of adult body weights listed by USEPA (1993).
[b] Maximum body weight is only used to determine conservative ingestion rates for the SRA.
[c] Food ingestion rate calculated using algorithm for quail developed by Nagy, 2001 [FIR (g_{dw}/day) = $0.088*BW^{0.891}$] using maximum body weight.
[d] Food ingestion rate calculated using algorithm for quail developed by Nagy, 2001 [FIR (g_{dw}/day) = $0.088*BW^{0.891}$] using average body weight.
[e] In the absence of data for quail, the incidental soil ingestion rate is based on 90th percentile value for mourning dove (USEPA, 2007).
[f] In the absence of data for quail, the incidental soil ingestion rate is based on 50th percentile value for mourning dove (USEPA, 2007).
[g] Home range listed by USEPA (1993) ranges from 8.9 to 41.3 acres with an average of 24.7 acres.
[h] An exclusive diet was selected for the SRA.
[i] Average diet over the course of a year for adult quail in the southeastern United States (USEPA, 1993).

ATTACHMENT E TABLE 1
EXPOSURE PARAMETERS FOR ECOLOGICAL RECEPTORS
ECOLOGICAL RISK ASSESSMENT
NEWPORT, RHODE ISLAND

Notes for American robin
[a] Range and average of adult body weights listed by USEPA (1993).
[b] Maximum body weight is only used to determine conservative ingestion rates for the SRA.
[c] Food ingestion rate calculated using algorithm for insectivorous birds developed by Nagy, 2001 [FIR (g_{dw}/day) = $0.540*BW^{0.705}$] using maximum body weight.
[d] Food ingestion rate calculated using algorithm for insectivorous birds developed by Nagy, 2001 [FIR (g_{dw}/day) = $0.540*BW^{0.705}$] using average body weight.
[e] In the absence of data for the robin, the incidental soil ingestion rate is based on 90th percentile value for shrew (consuming 100% earthworms; USEPA, 2007).
[f] In the absence of data for the robin, the incidental soil ingestion rate is based on 50th percentile value for shrew (consuming 100% earthworms; USEPA, 2007).
[g] Home range listed by USEPA (1993) ranges from 0.37 to 2 acres with an average of 1.2 acres.
[h] An exclusive diet was selected for the SRA.
[i] Average diet over the course of a year for adult robin in the eastern United States (USEPA, 1993).

Notes for Herring gull
[a] Range and average of adult body weights listed by USEPA (1993).
[b] Maximum body weight is only used to determine conservative ingestion rates for the SRA.
[c] Food ingestion rate calculated using algorithm for gulls developed by Nagy, 2001 [FIR (g_{dw}/day) = $0.522*BW^{0.769}$] using maximum body weight.
[d] Food ingestion rate calculated using algorithm for gulls developed by Nagy, 2001 [FIR (g_{dw}/day) = $0.522*BW^{0.769}$] using average body weight.
[e] The incidental sediment ingestion rate is based on the value identified by Beyer (1994) for the Canada goose.
[f] The incidental sediment ingestion rate is based on the value identified by Beyer (1994) for the Canada goose.
[g] Foraging range listed by USEPA (1993) ranges from 3 to 50 km with an average of 10 km.
[h] An exclusive diet was selected for the SRA.
[i] Dietary composition for adult herring gulls in coastal regions of the United States (USEPA, 1993). The percent allotted to 'small mammals' and 'garbage' were assigned to fish.

Notes for Meadow vole
[a] Range and average of adult body weights listed by USEPA (1993).
[b] Maximum body weight is only used to determine conservative ingestion rates for the SRA.
[c] Food ingestion rate calculated using algorithm for herbivorous mammals developed by Nagy, 2001 [FIR (g_{dw}/day) = $0.859*BW^{0.628}$] using maximum body weight.
[d] Food ingestion rate calculated using algorithm for herbivorous mammals developed by Nagy, 2001 [FIR (g_{dw}/day) = $0.859*BW^{0.628}$] using average body weight.
[e] The incidental soil ingestion rate is based on 90th percentile value for vole (USEPA, 2007).
[f] The incidental soil ingestion rate is based on 50th percentile value for vole (USEPA, 2007).
[g] Home range listed by USEPA (1993) ranges from 0.000494 to 0.2051 acres with an average of 0.0659 acres.
[h] An exclusive diet was selected for the SRA.
[i] Average diet over the course of a year for meadow vole based on bluegrass habitat in Illinois (USEPA, 1993).

Notes for Short-tailed shrew
[a] Range and average of adult body weights listed by USEPA (1993).
[b] Maximum body weight is only used to determine conservative ingestion rates for the SRA.
[c] Food ingestion rate calculated using algorithm for insectivorous mammals developed by Nagy, 2001 [FIR (g_{dw}/day) = $0.373*BW^{0.622}$] using maximum body weight.
[d] Food ingestion rate calculated using algorithm for insectivorous mammals developed by Nagy, 2001 [FIR (g_{dw}/day) = $0.373*BW^{0.622}$] using average body weight.
[e] The incidental soil ingestion rate is based on 90th percentile value for shrew (USEPA, 2007).
[f] The incidental soil ingestion rate is based on 50th percentile value for shrew (USEPA, 2007).
[g] Mean home range value listed by USEPA (1993).
[h] An exclusive diet was selected for the SRA.
[i] Dietary composition for shrew in New York (June to October; USEPA, 1993). The percent allotted to 'other' was assigned to soil invertebrates.

Notes for Raccoon
[a] Range and average of adult body weights listed by USEPA (1993).
[b] Maximum body weight is only used to determine conservative ingestion rates for the SRA.
[c] Food ingestion rate calculated using algorithm for omnivorous mammals developed by Nagy, 2001 [FIR (g_{dw}/day) = $0.432*BW^{0.678}$] using maximum body weight.
[d] Food ingestion rate calculated using algorithm for omnivorous mammals developed by Nagy, 2001 [FIR (g_{dw}/day) = $0.432*BW^{0.678}$] using average body weight.
[e] The incidental soil ingestion rate is based on the value identified by Beyer (1994) for raccoons.
[f] The incidental soil ingestion rate is based on the value identified by Beyer (1994) for raccoons.
[g] Home range listed by USEPA (1993) ranges from 96 to 6325 acres with an average of 1558 acres.
[h] An exclusive diet was selected for the SRA.
[i] Dietary composition for raccoon in New York (June to October; USEPA, 1993). The percent allotted to small mammals includes birds and carrion. The percent allotted to fish includes amphibians and reptiles.

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ATTACHMENT F

ECOTOXICITY VALUES

ATTACHMENT F TABLE 1
ECOLOGICAL SCREENING VALUES - SOIL
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

	ECOLOGICAL SCREENING VALUES FOR SOIL								
Chemical	Invertebrates			Plants			Wildlife		
INORGANICS									
Aluminum	pH<5.5		Eco-SSL	pH<5.5		Eco-SSL	pH<5.5		Eco-SSL
Antimony	78		Eco-SSL (inverts)	5		ORNL (plants)	0.27		Eco-SSL (mammals)
Arsenic	60		ORNL (inverts)	18		Eco-SSL (plants)	43		Eco-SSL (birds)
Barium	330		Eco-SSL (inverts)	500		ORNL (plants)	2000		Eco-SSL (mammals)
Beryllium	40		Eco-SSL (inverts)	10		ORNL (plants)	21		Eco-SSL (mammals)
Cadmium	140		Eco-SSL (inverts)	32		Eco-SSL (plants)	0.36		Eco-SSL (mammals)
Calcium	NV			NV			NV		
Chromium	0.4		ORNL (inverts)	1		ORNL (plants)	26		Eco-SSL (birds)
Cobalt	20		USEPA R4 (unspecified)	13		Eco-SSL (plants)	120		Eco-SSL (birds)
Copper	80		Eco-SSL (inverts)	70		Eco-SSL (plants)	28		Eco-SSL (birds)
Iron	200		USEPA R4 (microbes)	pH<5, pH>8		Eco-SSL	NV		
Lead	1700		Eco-SSL (inverts)	120		Eco-SSL (plants)	11		Eco-SSL (birds)
Magnesium	NV			NV			NV		
Manganese	450		Eco-SSL (inverts)	220		Eco-SSL (plants)	4000		Eco-SSL (mammals)
Mercury	0.1		ORNL (inverts)	0.3		ORNL (plants)	0.00158	(x)	USEPA R5 (shrew/vole)
Nickel	280		Eco-SSL (inverts)	38		Eco-SSL (plants)	130		Eco-SSL (mammals)
Potassium	NV			NV			NV		
Selenium	4.1		Eco-SSL (inverts)	0.52		Eco-SSL (plants)	0.63		Eco-SSL (mammals)
Silver	2		USEPA R4 (unspecified)	560		Eco-SSL (plants)	4.2		Eco-SSL (birds)
Sodium	NV			NV			NV		
Thallium	1		USEPA R4 (unspecified)	1		ORNL (plants)	0.057		USEPA R5 (shrew/vole)
Vanadium	NV			2		ORNL (plants)	7.8		Eco-SSL (birds)
Zinc	120		Eco-SSL (inverts)	160		Eco-SSL (plants)	46		Eco-SSL (birds)
SEMI VOLATILE ORGANIC COMPOUNDS									
1-Methylnaphthalene	18	(r)	Eco-SSL (inverts)	20	(l)	ORNL (plants)	3.24	(z)	USEPA R5 (shrew/vole)
1,2-Dichlorobenzene	20	(k)	ORNL (inverts)	0.05	(n)	USEPA R4 (unspecified)	3.0		USEPA R5 (shrew/vole)
1,2-Diphenylhydrazine	NV			NV			NV		
1,3-Dichlorobenzene	20	(k)	ORNL (inverts)	0.05	(n)	USEPA R4 (unspecified)	37.7		USEPA R5 (shrew/vole)
1,4-Dichlorobenzene	20		ORNL (inverts)	0.05	(n)	USEPA R4 (unspecified)	0.55		USEPA R5 (shrew/vole)
2,4,5-Trichlorophenol	9		ORNL (inverts)	4		ORNL (plants)	14.1		USEPA R5 (shrew/vole)
2,4,6-Trichlorophenol	10		ORNL (inverts)	4	(d)	ORNL (plants)	9.9		USEPA R5 (shrew/vole)
2,4-Dichlorophenol	20	(g)	ORNL (inverts)	20	(g)	ORNL (plants)	87.5		USEPA R5 (shrew/vole)
2,4-Dimethylphenol	NV			0.01		USEPA R5 (plants)	NV		
2,4-Dinitrophenol	NV			20		ORNL (plants)	0.061		USEPA R5 (shrew/vole)
2,4-Dinitrotoluene	0.05	(q)	USEPA R4 (unspecified)	200	(q)	ORNL (plants)	1.3		USEPA R5 (shrew/vole)
2,6-Dichlorophenol	20	(g)	ORNL (inverts)	20	(g)	ORNL (plants)	1.2		USEPA R5 (shrew/vole)
2,6-Dinitrotoluene	0.05	(q)	USEPA R4 (unspecified)	200	(q)	ORNL (plants)	0.033		USEPA R5 (shrew/vole)
2-Chloronaphthalene	NV			NV			0.012		USEPA R5 (shrew/vole)
2-Chlorophenol	10	(f)	ORNL (inverts)	7	(f)	ORNL (plants)	0.24		USEPA R5 (shrew/vole)
2-Methylnaphthalene	18	(r)	Eco-SSL (inverts)	20	(l)	ORNL (plants)	3.24		USEPA R5 (shrew/vole)
2-Methylphenol	NV			NV			40.4		USEPA R5 (shrew/vole)
2-Nitroaniline	NV			NV			74.1		USEPA R5 (shrew/vole)
2-Nitrophenol	7	(j)	ORNL (inverts)	NV			1.6		USEPA R5 (shrew/vole)
3,3'-Dichlorobenzidine	NV			NV			0.65		USEPA R5 (shrew/vole)
3-Methylphenol & 4-Methylphenol	NV			NV			NV		
3-Nitroaniline	NV			NV			3.2		USEPA R5 (shrew/vole)
4,6-Dintro-2-methylphenol	NV			NV			0.14		USEPA R5 (shrew/vole)
4-Bromophenyl phenyl ether	NV			NV			NV		
4-Chloro-3-methylphenol	NV			NV			8.0		USEPA R5 (shrew/vole)
4-Chloroaniline	30	(e)	ORNL (inverts)	20	(e)	ORNL (plants)	1.1		USEPA R5 (shrew/vole)
4-Chlorophenyl phenyl ether	NV			NV			NV		
4-Nitroaniline	NV			NV			21.9		USEPA R5 (shrew/vole)
4-Nitrophenol	7		ORNL (inverts)	NV			5.1		USEPA R5 (shrew/vole)
Benzidine	NV			NV			NV		
Benzoic acid	NV			NV			NV		
Benzyl alcohol	NV			NV			65.8		USEPA R5 (shrew/vole)
Bis(2-chlorethoxy)methane	NV			NV			0.30		USEPA R5 (shrew/vole)
Bis(2-chloroethyl) ether	NV			NV			23.7		USEPA R5 (shrew/vole)
Bis(2-chloroisopropyl) ether	NV			NV			19.9		USEPA R5 (shrew/vole)
Bis(2-Ethylhexyl)phthalate	0.1	(o)	USEPA R4 (unspecified)	0.1	(o)	USEPA R4 (unspecified)	0.93		USEPA R5 (shrew/vole)
Butyl benzyl phthalate	0.1	(o)	USEPA R4 (unspecified)	0.1	(o)	USEPA R4 (unspecified)	0.24		USEPA R5 (shrew/vole)
Caprolactam	NV			NV			NV		
Carbazole	NV			NV			NV		
Dibenzofuran	NV			NV			NV		
Diethyl phthalate	200	(i)	ORNL (inverts)	100		ORNL (plants)	24.8		USEPA R5 (shrew/vole)
Dimethyl phthalate	200		ORNL (inverts)	100	(b)	ORNL (plants)	734		USEPA R5 (shrew/vole)
Di-n-butyl phthalate	200		USEPA R4 (unspecified)	200		ORNL (plants)	0.15		USEPA R5 (shrew/vole)
Di-n-octyl phthalate	200	(c)	USEPA R4 (unspecified)	200	(c)	ORNL (plants)	709		USEPA R5 (shrew/vole)
Hexachlorobenzene	0.0025		USEPA R4 (unspecified)	0.0025		USEPA R4 (unspecified)	0.20		USEPA R5 (shrew/vole)
Hexachlorobutadiene	NV			NV			0.040		USEPA R5 (shrew/vole)
Hexachloroethane	NV			NV			0.60		USEPA R5 (shrew/vole)
Isophorone	NV			NV			139		USEPA R5 (shrew/vole)
Nitrobenzene	NV			NV			1.3		USEPA R5 (shrew/vole)
N-Nitrosodimethylamine	NV			NV			0.0000321		USEPA R5 (shrew/vole)
N-Nitrosodi-n-propylamine	NV			NV			0.54		USEPA R5 (shrew/vole)
N-Nitrosodiphenylamine	20		ORNL (inverts)	20		USEPA R4 (unspecified)	0.55		USEPA R5 (shrew/vole)
N-Nitrosopyrrolidine	NV			NV			0.013		USEPA R5 (shrew/vole)
Pentachlorophenol	31		Eco-SSL (inverts)	5		Eco-SSL (plants)	2.1		Eco-SSL (birds)
Phenol	30		ORNL (inverts)	70		ORNL (plants)	120		USEPA R5 (shrew/vole)

ATTACHMENT F TABLE 1
ECOLOGICAL SCREENING VALUES - SOIL
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

	ECOLOGICAL SCREENING VALUES FOR SOIL								
Chemical	**Invertebrates**			**Plants**			**Wildlife**		
Acenaphthene	29	(s)	Eco-SSL (inverts)	20		ORNL (plants)	100	(s)	Eco-SSL (mammals)
Acenaphthylene	29	(s)	Eco-SSL (inverts)	20	(l)	ORNL (plants)	100	(s)	Eco-SSL (mammals)
Anthracene	29	(s)	Eco-SSL (inverts)	20	(l)	ORNL (plants)	100	(s)	Eco-SSL (mammals)
Benzo(a)anthracene	18	(r)	Eco-SSL (inverts)	20	(l)	ORNL (plants)	1.1	(r)	Eco-SSL (mammals)
Benzo(a)pyrene	18	(r)	Eco-SSL (inverts)	20	(l)	ORNL (plants)	1.1	(r)	Eco-SSL (mammals)
Benzo(b)fluoranthene	18	(r)	Eco-SSL (inverts)	20	(l)	ORNL (plants)	1.1	(r)	Eco-SSL (mammals)
Benzo(g,h,i)perylene	18	(r)	Eco-SSL (inverts)	20	(l)	ORNL (plants)	1.1	(r)	Eco-SSL (mammals)
Benzo(k)fluoranthene	18	(r)	Eco-SSL (inverts)	20	(l)	ORNL (plants)	1.1	(r)	Eco-SSL (mammals)
Chrysene	18	(r)	Eco-SSL (inverts)	20	(l)	ORNL (plants)	1.1	(r)	Eco-SSL (mammals)
Dibenzo(a,h)anthracene	18	(r)	Eco-SSL (inverts)	20	(l)	ORNL (plants)	1.1	(r)	Eco-SSL (mammals)
Fluoranthene	29	(s)	Eco-SSL (inverts)	20	(l)	ORNL (plants)	100	(s)	Eco-SSL (mammals)
Fluorene	29	(s)	Eco-SSL (inverts)	20	(l)	ORNL (plants)	100	(s)	Eco-SSL (mammals)
Indeno(1,2,3-cd)pyrene	18	(r)	Eco-SSL (inverts)	20	(l)	ORNL (plants)	1.1	(r)	Eco-SSL (mammals)
Naphthalene	29	(s)	Eco-SSL (inverts)	20	(l)	ORNL (plants)	100	(s)	Eco-SSL (mammals)
Phenanthrene	29	(s)	Eco-SSL (inverts)	20	(l)	ORNL (plants)	100	(s)	Eco-SSL (mammals)
Pyrene	18	(r)	Eco-SSL (inverts)	20	(l)	ORNL (plants)	1.1	(r)	Eco-SSL (mammals)
Total PAHs	18	(r)	Eco-SSL (inverts)	20	(l)	ORNL (plants)	1.1	(r)	Eco-SSL (mammals)
Total LMW PAHs	29		Eco-SSL (inverts)	20	(l)	ORNL (plants)	100		Eco-SSL (mammals)
Total HMW PAHs	18		Eco-SSL (inverts)	20	(l)	ORNL (plants)	1.1		Eco-SSL (mammals)
VOLATILE ORGANIC COMPOUNDS									
1,1,1,2-Tetrachloroethane							225		USEPA R5 (shrew/vole)
1,1,1-Trichloroethane	NV			NV			29.8		USEPA R5 (shrew/vole)
1,1,2,2-Tetrachloroethane	NV			NV			0.13		USEPA R5 (shrew/vole)
1,1,2-Trichloroethane	NV			NV			28.6		USEPA R5 (shrew/vole)
1,1-Biphenyl	NV			60		ORNL (plants)	NV		
1,1-Dichloroethane	NV			NV			20.1		USEPA R5 (shrew/vole)
1,1-Dichloroethene	NV			NV			8.3		USEPA R5 (shrew/vole)
1,1-Dichloropropene	NV			NV			NV		
1,2,3-Trichlorobenzene	20		ORNL (inverts)	0.05	(n)	USEPA R4 (unspecified)	11.1	(w)	USEPA R5 (shrew/vole)
1,2,3-Trichloropropane	NV			NV			3.4		USEPA R5 (shrew/vole)
1,2,4-Trichlorobenzene	20		ORNL (inverts)	0.05	(n)	USEPA R4 (unspecified)	11.1		USEPA R5 (shrew/vole)
1,2,4-Trimethylbenzene	0.05	(n)	USEPA R4 (unspecified)	0.05	(n)	USEPA R4 (unspecified)	0.26	(n)	USEPA R5 (shrew/vole)
1,2-Dibromo-3-chloropropane	NV			NV			0.035		USEPA R5 (shrew/vole)
1,2-Dibromoethane	NV			NV			1.2		USEPA R5 (shrew/vole)
1,2-Dichlorobenzene	20	(k)	ORNL (inverts)	0.05	(n)	USEPA R4 (unspecified)	3.0		USEPA R5 (shrew/vole)
1,2-Dichloroethane	0.4		USEPA R4 (unspecified)	0.4		USEPA R4 (unspecified)	21.2		USEPA R5 (shrew/vole)
1,2-Dichloropropane	700		ORNL (inverts)	700		USEPA R4 (unspecified)	32.7		USEPA R5 (shrew/vole)
1,3,5-Trimethylbenzene	0.05	(n)	USEPA R4 (unspecified)	0.05	(n)	USEPA R4 (unspecified)	0.26	(n)	USEPA R5 (shrew/vole)
1,3-Dichlorobenzene	20	(k)	ORNL (inverts)	0.05	(n)	USEPA R4 (unspecified)	37.7		USEPA R5 (shrew/vole)
1,3-Dichloropropane	700	(h)	ORNL (inverts)	NV			32.7	(h)	USEPA R5 (shrew/vole)
1,4-Dichlorobenzene	20		ORNL (inverts)	0.05	(n)	USEPA R4 (unspecified)	0.55		USEPA R5 (shrew/vole)
2,2-Dichloropropane	700	(h)	ORNL (inverts)	NV			32.7	(h)	USEPA R5 (shrew/vole)
2-Butanone	NV			NV			89.6		USEPA R5 (shrew/vole)
2-Chlorotoluene	0.05	(q)	USEPA R4 (unspecified)	200	(q)	ORNL (plants)	5.5	(q)	USEPA R5 (shrew/vole)
2-Hexanone	NV			NV			12.6		USEPA R5 (shrew/vole)
4-Chlorotoluene	0.05	(q)	USEPA R4 (unspecified)	200	(q)	ORNL (plants)	5.5	(q)	USEPA R5 (shrew/vole)
4-Methyl-2-pentanone	NV			NV			443		USEPA R5 (shrew/vole)
Acetone	NV			NV			2.5		USEPA R5 (shrew/vole)
Benzene	0.05		USEPA R4 (unspecified)	0.05		USEPA R4 (unspecified)	0.26		USEPA R5 (shrew/vole)
Bromobenzene	0.05	(n)	USEPA R4 (unspecified)	0.05	(n)	USEPA R4 (unspecified)	0.26	(n)	USEPA R5 (shrew/vole)
Bromochloromethane	NV			NV			NV		
Bromodichloromethane	NV			NV			0.54		USEPA R5 (shrew/vole)
Bromoform	NV			NV			15.9		USEPA R5 (shrew/vole)
Bromomethane	NV			NV			0.24		USEPA R5 (shrew/vole)
Carbon Disulfide	NV			NV			0.094		USEPA R5 (shrew/vole)
Carbon tetrachloride	1000		USEPA R4 (unspecified)	1000		USEPA R4 (unspecified)	3.0		USEPA R5 (shrew/vole)
Chlorobenzene	40		ORNL (inverts)	0.05	(n)	USEPA R4 (unspecified)	13.1		USEPA R5 (shrew/vole)
Chlorodibromomethane	NV			NV			2.1		USEPA R5 (shrew/vole)
Chloroethane	NV			NV			NV		
Chloroform	0.001		USEPA R4 (unspecified)	0.001		USEPA R4 (unspecified)	1.2		USEPA R5 (shrew/vole)
Chloromethane	NV			NV			10.4		USEPA R5 (shrew/vole)
cis-1,2-Dichloroethene	NV			NV			0.78	(v)	USEPA R5 (shrew/vole)
cis-1,3-Dichloropropene	NV			NV			0.40		USEPA R5 (shrew/vole)
Dibromomethane	NV			NV			65		USEPA R5 (shrew/vole)
Dichlorodifluoromethane	NV			NV			39.5		USEPA R5 (shrew/vole)
Ethylbenzene	0.05		USEPA R4 (unspecified)	0.05		USEPA R4 (unspecified)	5.2		USEPA R5 (shrew/vole)
Hexachlorobutadiene	NV			NV			0.040		USEPA R5 (shrew/vole)
Isopropylbenzene	0.05	(n)	USEPA R4 (unspecified)	0.05	(n)	USEPA R4 (unspecified)	0.26	(n)	USEPA R5 (shrew/vole)
Methylcyclohexane	NV			NV			NV		
Methyl tert-butyl ether	NV			NV			NV		
Methylene chloride	2		USEPA R4 (unspecified)	2		USEPA R4 (unspecified)	4.1		USEPA R5 (shrew/vole)
n-Butylbenzene	0.05	(n)	USEPA R4 (unspecified)	0.05	(n)	USEPA R4 (unspecified)	0.26	(n)	USEPA R5 (shrew/vole)
n-Propylbenzene	0.05	(n)	USEPA R4 (unspecified)	0.05	(n)	USEPA R4 (unspecified)	0.26	(n)	USEPA R5 (shrew/vole)
p-Isopropyltoluene	0.05	(q)	USEPA R4 (unspecified)	200	(q)	ORNL (plants)	5.5	(q)	USEPA R5 (shrew/vole)
sec-Butylbenzene	0.05	(n)	USEPA R4 (unspecified)	0.05	(n)	USEPA R4 (unspecified)	0.26	(n)	USEPA R5 (shrew/vole)
Styrene	NV			300		ORNL (plants)	4.7		USEPA R5 (shrew/vole)
tert-Butyl-Alcohol	NV			NV			NV		
tert-Butylbenzene	0.05	(n)	USEPA R4 (unspecified)	0.05	(n)	USEPA R4 (unspecified)	0.26	(n)	USEPA R5 (shrew/vole)
Tetrachloroethene	0.01		USEPA R4 (unspecified)	0.01		USEPA R4 (unspecified)	9.9		USEPA R5 (shrew/vole)
Toluene	0.05		USEPA R4 (unspecified)	200		ORNL (plants)	5.5		USEPA R5 (shrew/vole)
Total-1,2-Dichloroethene	NV			NV			0.78	(v)	USEPA R5 (shrew/vole)
trans-1,2-Dichloroethene	NV			NV			0.78		USEPA R5 (shrew/vole)
trans-1,3-Dichloropropene	NV			NV			0.40		USEPA R5 (shrew/vole)
Trichloroethene	0.001		USEPA R4 (unspecified)	0.001		USEPA R4 (unspecified)	12.4		USEPA R5 (shrew/vole)
Trichlorofluoromethane	NV			NV			16.4		USEPA R5 (shrew/vole)
Vinyl chloride	0.01		USEPA R4 (unspecified)	0.01		USEPA R4 (unspecified)	0.65		USEPA R5 (shrew/vole)
Xylenes (total)	0.05		USEPA R4 (unspecified)	10		USEPA R5 (plants)	0.1		TV (unspecified)

ATTACHMENT F TABLE 1
ECOLOGICAL SCREENING VALUES - SOIL
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

	ECOLOGICAL SCREENING VALUES FOR SOIL								
Chemical	Invertebrates			Plants			Wildlife		
PESTICIDES									
4,4'-DDD	12	(t)	CCME (commercial)	12	(t)	CCME (industrial)	0.021		Eco-SSL (mammals)
4,4'-DDE	12	(t)	CCME (commercial)	12	(t)	CCME (industrial)	0.021		Eco-SSL (mammals)
4,4'-DDT	12	(t)	CCME (commercial)	12	(t)	CCME (industrial)	0.021		Eco-SSL (mammals)
Aldrin	0.0025		USEPA R4 (unspecified)	0.00332		USEPA R5 (plants)	0.00006		TV (unspecified)
alpha-BHC	0.0025		USEPA R4 (unspecified)	0.0025		USEPA R4 (unspecified)	0.099		USEPA R5 (shrew/vole)
alpha-Chlordane	0.00003	(a)	TV (unspecified)	0.224	(a)	USEPA R5 (plants)	0.00003	(a)	TV (unspecified)
beta-BHC	0.001		USEPA R4 (unspecified)	0.00398		USEPA R5 (plants)	0.009		TV (unspecified)
delta-BHC	NV			NV			9.9		USEPA R5 (shrew/vole)
Dieldrin	0.0005		USEPA R4 (unspecified)	0.0005		USEPA R4 (unspecified)	0.0049		Eco-SSL (mammals)
Endosulfan I	0.00001	(u)	TV (unspecified)	0.00001	(u)	TV (unspecified)	0.12		USEPA R5 (shrew/vole)
Endosulfan II	0.00001	(u)	TV (unspecified)	0.00001	(u)	TV (unspecified)	0.12		USEPA R5 (shrew/vole)
Endosulfan sulfate	0.00001	(u)	TV (unspecified)	0.00001	(u)	TV (unspecified)	0.036		USEPA R5 (shrew/vole)
Endrin	0.001		USEPA R4 (unspecified)	0.001		USEPA R4 (unspecified)	0.010		USEPA R5 (shrew/vole)
Endrin aldehyde	0.001	(m)	USEPA R4 (unspecified)	0.001	(m)	USEPA R4 (unspecified)	0.011		USEPA R5 (shrew/vole)
Endrin ketone	0.001	(m)	USEPA R4 (unspecified)	0.001	(m)	USEPA R4 (unspecified)	0.010	(m)	USEPA R5 (shrew/vole)
gamma-BHC	0.00005		USEPA R4 (unspecified)	0.005		USEPA R5 (plants)	0.00005		TV (unspecified)
gamma-Chlordane	0.00003	(a)	TV (unspecified)	0.224	(a)	USEPA R5 (plants)	0.00003	(a)	TV (unspecified)
Heptachlor	NV			NV			0.0060		USEPA R5 (shrew/vole)
Heptachlor epoxide	NV			NV			0.15		USEPA R5 (shrew/vole)
Methoxychlor	NV			NV			0.020		USEPA R5 (shrew/vole)
Toxaphene	NV			NV			0.12		USEPA R5 (shrew/vole)
ENERGETICS									
Nitroglycerin	NV			NV			19.2	(y)	Calculated (USACHPPM wildlife)
POLYCHLORINATED BIPHENYLs									
Aroclor-1016	33	(p)	CCME (commercial)	40	(p)	ORNL (plants)	1.3	(p)	CCME (residential/parkland)
Aroclor-1221	33	(p)	CCME (commercial)	40	(p)	ORNL (plants)	1.3	(p)	CCME (residential/parkland)
Aroclor-1232	33	(p)	CCME (commercial)	40	(p)	ORNL (plants)	1.3	(p)	CCME (residential/parkland)
Aroclor-1242	33	(p)	CCME (commercial)	40	(p)	ORNL (plants)	1.3	(p)	CCME (residential/parkland)
Aroclor-1248	33	(p)	CCME (commercial)	40	(p)	ORNL (plants)	1.3	(p)	CCME (residential/parkland)
Aroclor-1254	33	(p)	CCME (commercial)	40	(p)	ORNL (plants)	1.3	(p)	CCME (residential/parkland)
Aroclor-1260	33	(p)	CCME (commercial)	40	(p)	ORNL (plants)	1.3	(p)	CCME (residential/parkland)
Aroclor-1262	33	(p)	CCME (commercial)	40	(p)	ORNL (plants)	1.3	(p)	CCME (residential/parkland)
Aroclor-1268	33	(p)	CCME (commercial)	40	(p)	ORNL (plants)	1.3	(p)	CCME (residential/parkland)
Total PCBs	33		CCME (commercial)	40		ORNL (plants)	1.3		CCME (residential/parkland)

Notes:
All screening values reported in milligram per kilogram (mg/kg).
CCME - Canadian Council of Ministers of the Environment (2002). Commercial value based on direct contact. Residential/parkland value based on soil and food ingestion.
Eco-SSL - Ecological Soil Screening Level. Derived by USEPA according to USEPA guidance (2005i).
HMW - High Molecular Weight.
LMW - Low Molecular Weight.
NV - No value identified.
ORNL - Oak Ridge National Laboratory (Efroymson, et al., 1997a and b).
PAH - Polycyclic Aromatic Hydrocarbon.
PCB - Polychlorinated Biphenyl.
SVOC - Semivolatile Organic Compound.
TV - Target Value (Dutch standards presented in Buchman, 2008).
USEPA - United States Environmental Protection Agency.
USEPA R4 - USEPA Region 4 recommended ecological screening values for soil (USEPA, 2001).
USEPA R5 - USEPA Region 5 ecological screening levels for soil (USEPA, 2003).
VOC - Volatile Organic Compound.
USACHPPM - U.S. Army Center for Health Promotion and Preventive Medicine

(a) Value for chlordane used due to structural similarities.
(b) Value for diethyl phthalate used due to structural similarities.
(c) Value for di-n-butyl phthalate used due to structural similarities.
(d) Value for 2,4,5-trichlorophenol used due to structural similarities.
(e) Value for 3-chloroaniline used as a surrogate due to structural similarities.
(f) Value for 3-chlorophenol used as a surrogate due to structural similarities.
(g) Value for 3,4-dichlorophenol used as a surrogate due to structural similarities.
(h) Value for 1,2-dichloropropane used as a surrogate due to structural similarities.
(i) Value for dimethyl phthalate used as a surrogate due to structural similarities.
(j) Value for 4-nitrophenol used as a surrogate due to structural similarities.
(k) Value for 1,4-dichlorobenzene used as a surrogate due to structural similarities.
(l) Value for acenaphthene used as a surrogate for individual PAHs without values.
(m) Value for endrin used due to structural similarities.
(n) Value for benzene used due to structural similarities.
(o) Generic value for phthalates (total) used as a surrogate.
(p) Value for Total PCBs used for individual Aroclors without screening values.
(q) Value for toluene used due to structural similarities.
(r) Value for Total HMW PAHs used for individual HMW PAHs without screening values.
(s) Value for Total LMW PAHs used for individual LMW PAHs without screening values.
(t) Value for DDT (Total) used.
(u) Value for endosulfan used due to structural similarities.
(v) Value for trans-1,2-dichloroethene used as a surrogate due to structural similarities.
(w) Value for 1,2,4 trichlorobenzene used as a surrogate due to structural similarities.
(x) Value provided is for methylmercury.
(y) Value based on wildlife toxicity reference value of 3 mg/kd/day (USACHPPM, 2007) and ingestion rate for short-tailed shrew (USEPA, 2005i).
(z) Value for 2-methylnaphthalene used as a surrogate due to structural similarities.

ATTACHMENT F TABLE 2
ECOLOGICAL SCREENING VALUES - MARINE SEDIMENT
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

	ECOLOGICAL SCREENING VALUES FOR SEDIMENT					
Chemical	Value for Use in SRA			Value for Use in BERA		
INORGANICS						
Aluminum	18000		NOAA SQuiRT (Marine; AET)	25500		NOAA SQuiRT (Freshwater; ARCS)
Antimony	2		NOAA ERL (Freshwater/Marine)	25		NOAA ERM (Freshwater/Marine)
Arsenic	8.2		NOAA ERL (Marine)	70		NOAA ERM (Marine)
Barium	48		NOAA SQuiRT (Marine; AET)	130.1		NOAA SQuiRT (Marine; TEL)
Beryllium	NV			NV		
Cadmium	1.2		NOAA ERL (Marine)	9.6		NOAA ERM (Marine)
Calcium	NV			NV		
Chromium	81		NOAA ERL (Marine)	370		NOAA ERM (Marine)
Chromium VI	NV			NV		
Cobalt	10		NOAA SQuiRT (Marine; AET)	50		NOAA SQuiRT (Freshwater; LEL)
Copper	34		NOAA ERL (Marine)	270		NOAA ERM (Marine)
Iron	220000		NOAA SQuiRT (Marine; AET)	NV		
Lead	46.7		NOAA ERL (Marine)	218		NOAA ERM (Marine)
Magnesium	NV			NV		
Manganese	260		NOAA SQuiRT (Marine; AET)	1100		NOAA SQuiRT (Freshwater; UET)
Mercury	0.15		NOAA ERL (Marine)	0.71		NOAA ERM (Marine)
Nickel	20.9		NOAA ERL (Marine)	51.6		NOAA ERM (Marine)
Potassium	NV			NV		
Selenium	1		NOAA SQuiRT (Marine; AET)	NV		
Silver	1		NOAA ERL (Marine)	3.7		NOAA ERM (Marine)
Sodium	NV			NV		
Thallium	NV			NV		
Vanadium	57		NOAA SQuiRT (Marine; AET)	NV		
Zinc	150		NOAA ERL (Marine)	410		NOAA ERM (Marine)
SEMI VOLATILE ORGANIC COMPOUNDS						
1,2-Dichlorobenzene	0.013		NOAA SQuiRT (Marine; AET)	0.34		NOAA SQuiRT (EcoTox EqP @ 1% TOC)
1,2-Diphenylhydrazine	NV			NV		
1,3-Dichlorobenzene	0.013	(j)	NOAA SQuiRT (Marine; AET)	1.7		NOAA SQuiRT (EcoTox EqP @ 1% TOC)
1,4-Dichlorobenzene	0.11		NOAA SQuiRT (Marine; AET)	0.35		NOAA SQuiRT (EcoTox EqP @ 1% TOC)
2,4,5-Trichlorophenol	0.003		NOAA SQuiRT (Marine; AET)	NV		
2,4,6-Trichlorophenol	0.006		NOAA SQuiRT (Marine; AET)	NV		
2,4-Dichlorophenol	0.0002083		NOAA SQuiRT (Marine; AET)	NV		
2,4-Dimethylphenol	0.018		NOAA SQuiRT (Marine; AET)	NV		
2,4-Dinitrophenol	NV			NV		
2,4-Dinitrotoluene	0.0416	(h)	USEPA R3 (Marine)	NV		
2,6-Dichlorophenol	0.0002083	(k)	NOAA SQuiRT (Marine; AET)	NV		
2,6-Dinitrotoluene	0.0416	(h,o)	USEPA R3 (Marine)	NV		
2-Chloronaphthalene	NV			NV		
2-Chlorophenol	0.000333		NOAA SQuiRT (Marine; AET)	NV		
2-Methylnaphthalene	0.07		NOAA ERL (Marine)	0.67		NOAA ERM (Marine)
2-Methylphenol	0.008		NOAA SQuiRT (Marine; AET)	NV		
2-Nitroaniline	NV			NV		
2-Nitrophenol	NV			NV		
3,3'-Dichlorobenzidine	2.06	(a)	USEPA R3 (Marine)	NV		
3-Methylphenol & 4-Methylphenol	0.1	(p)	NOAA SQuiRT (Marine; AET)	NV		
3-Nitroaniline	NV			NV		
4,6-Dintro-2-methylphenol	NV			NV		
4-Bromophenyl phenyl ether	1.23	(h)	USEPA R3 (Marine)	NV		
4-Chloro-3-methylphenol	NV			NV		
4-Chloroaniline	NV			NV		
4-Chlorophenyl phenyl ether	NV			NV		
4-Nitroaniline	NV			NV		
4-Nitrophenol	NV			NV		
Benzidine	0.0017		ORNL SCV (Freshwater)	NV		
Benzoic acid	0.065		NOAA SQuiRT (Marine; AET)	NV		
Benzyl alcohol	0.052		NOAA SQuiRT (Marine; AET)	NV		
Bis(2-chlorethoxy)methane	NV			NV		
Bis(2-chloroethyl) ether	NV			NV		
Bis(2-chloroisopropyl) ether	NV			NV		
Bis(2-Ethylhexyl)phthalate	0.182		NOAA SQuiRT (Marine; TEL)	2.647		NOAA SQuiRT (Marine; PEL)
Butyl benzyl phthalate	0.063		NOAA SQuiRT (Marine; AET)	1.1		NOAA SQuiRT (EcoTox EqP @ 1% TOC)
Caprolactam	NV			NV		
Carbazole	NV			NV		
Dibenzofuran	0.11		NOAA SQuiRT (Marine; AET)	2		NOAA SQuiRT (EcoTox EqP @ 1% TOC)
Diethyl phthalate	0.006		NOAA SQuiRT (Marine; AET)	0.63		NOAA SQuiRT (EcoTox EqP @ 1% TOC)
Dimethyl phthalate	0.006		NOAA SQuiRT (Marine; AET)	0.63	(q)	NOAA SQuiRT (EcoTox EqP @ 1% TOC)
Di-n-butyl phthalate	0.058		NOAA SQuiRT (Marine; AET)	11		NOAA SQuiRT (EcoTox EqP @ 1% TOC)
Di-n-octyl phthalate	0.061		NOAA SQuiRT (Marine; AET)	11	(r)	NOAA SQuiRT (EcoTox EqP @ 1% TOC)
Hexachlorobenzene	0.006		NOAA SQuiRT (Marine; AET)	NV		
Hexachlorobutadiene	0.0013		NOAA SQuiRT (Marine; AET)	NV		
Hexachloroethane	0.073		NOAA SQuiRT (Marine; AET)	1		NOAA SQuiRT (EcoTox EqP @ 1% TOC)
Isophorone	NV			NV		
Nitrobenzene	0.021		NOAA SQuiRT (Marine; AET)	NV		
N-Nitrosodimethylamine	NV			NV		
N-Nitrosodi-n-propylamine	NV			NV		
N-Nitrosodiphenylamine	0.028		NOAA SQuiRT (Marine; AET)	NV		
N-Nitrosopyrrolidine	NV			NV		
Pentachlorophenol	0.017		NOAA SQuiRT (Marine; AET)	NV		
Phenol	0.13		NOAA SQuiRT (Marine; AET)	NV		

ATTACHMENT F TABLE 2
ECOLOGICAL SCREENING VALUES - MARINE SEDIMENT
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

	ECOLOGICAL SCREENING VALUES FOR SEDIMENT					
Chemical	**Value for Use in SRA**			**Value for Use in BERA**		
Acenaphthene	0.016		NOAA ERL (Marine)	0.5		NOAA ERM (Marine)
Acenaphthylene	0.044		NOAA ERL (Marine)	0.64		NOAA ERM (Marine)
Anthracene	0.0853		NOAA ERL (Marine)	1.1		NOAA ERM (Marine)
Benzo(a)anthracene	0.261		NOAA ERL (Marine)	1.6		NOAA ERM (Marine)
Benzo(a)pyrene	0.43		NOAA ERL (Marine)	1.6		NOAA ERM (Marine)
Benzo(b)fluoranthene	0.6	(d)	NOAA ERL (Marine)	5.1	(d)	NOAA ERM (Marine)
Benzo(g,h,i)perylene	0.0634	(e)	NOAA ERL (Marine)	0.26	(e)	NOAA ERM (Marine)
Benzo(k)fluoranthene	0.6	(d)	NOAA ERL (Marine)	5.1	(d)	NOAA ERM (Marine)
Chrysene	0.384		NOAA ERL (Marine)	2.8		NOAA ERM (Marine)
Dibenzo(a,h)anthracene	0.0634		NOAA ERL (Marine)	0.26		NOAA ERM (Marine)
Fluoranthene	0.6		NOAA ERL (Marine)	5.1		NOAA ERM (Marine)
Fluorene	0.019		NOAA ERL (Marine)	0.54		NOAA ERM (Marine)
Indeno(1,2,3-cd)pyrene	0.0634	(e)	NOAA ERL (Marine)	0.26	(e)	NOAA ERM (Marine)
Naphthalene	0.16		NOAA ERL (Marine)	2.1		NOAA ERM (Marine)
Phenanthrene	0.24		NOAA ERL (Marine)	1.5		NOAA ERM (Marine)
Pyrene	0.665		NOAA ERL (Marine)	2.6		NOAA ERM (Marine)
Total PAHs	4.022		NOAA ERL (Marine)	44.792		NOAA ERM (Marine)
Total LMW PAHs	0.552		NOAA ERL (Marine)	3.16		NOAA ERM (Marine)
Total HMW PAHs	1.7		NOAA ERL (Marine)	9.6		NOAA ERM (Marine)
VOLATILE ORGANIC COMPOUNDS						
1,1,1,2-Tetrachloroethane	NV			NV		
1,1,1-Trichloroethane	0.856	(a)	USEPA R3 (Marine)	NV		
1,1,2,2-Tetrachloroethane	0.202	(a)	USEPA R3 (Marine)	NV		
1,1,2-Trichloroethane	0.57	(a)	USEPA R3 (Marine)	NV		
1,1-Biphenyl	NV			NV		
1,1-Dichloroethane	0.027		ORNL SCV (Freshwater)	NV		
1,1-Dichloroethene	2.78	(a)	USEPA R3 (Marine)	NV		
1,1-Dichloropropene	NV			NV		
1,2,3-Trichlorobenzene	0.0048	(l)	NOAA SQuiRT (Marine; AET)	9.2	(l)	NOAA SQuiRT (EcoTox EqP @ 1% TOC)
1,2,3-Trichloropropane	NV			NV		
1,2,4-Trichlorobenzene	0.0048		NOAA SQuiRT (Marine; AET)	9.2		NOAA SQuiRT (EcoTox EqP @ 1% TOC)
1,2,4-Trimethylbenzene	0.137	(a,m)	USEPA R3 (Marine)	0.057	(m)	NOAA SQuiRT (EcoTox EqP @ 1% TOC)
1,2-Dibromo-3-chloropropane	NV			NV		
1,2-Dibromoethane	NV			NV		
1,2-Dichlorobenzene	0.013		NOAA SQuiRT (Marine; AET)	0.34		NOAA SQuiRT (EcoTox EqP @ 1% TOC)
1,2-Dichloroethane	0.25		ORNL SCV (Freshwater)	NV		
1,2-Dichloropropane	NV			NV		
1,3,5-Trimethylbenzene	0.137	(a,m)	USEPA R3 (Marine)	0.057	(m)	NOAA SQuiRT (EcoTox EqP @ 1% TOC)
1,3-Dichlorobenzene	0.013	(j)	NOAA SQuiRT (Marine; AET)	1.7		NOAA SQuiRT (EcoTox EqP @ 1% TOC)
1,3-Dichloropropane	NV			NV		
1,4-Dichlorobenzene	0.11		NOAA SQuiRT (Marine; AET)	0.35		NOAA SQuiRT (EcoTox EqP @ 1% TOC)
2,2-Dichloropropane	NV			NV		
2-Butanone	0.27		ORNL SCV (Freshwater)	NV		
2-Chlorotoluene	1.09	(a,n)	USEPA R3 (Marine)	0.67	(n)	NOAA SQuiRT (EcoTox EqP @ 1% TOC)
2-Hexanone	NV			NV		
4-Chlorotoluene	1.09	(a,n)	USEPA R3 (Marine)	0.67	(n)	NOAA SQuiRT (EcoTox EqP @ 1% TOC)
4-Methyl-2-pentanone	0.033		ORNL SCV (Freshwater)	NV		
Acetone	0.0087		ORNL SCV (Freshwater)	NV		
Benzene	0.137	(a)	USEPA R3 (Marine)	0.057		NOAA SQuiRT (EcoTox EqP @ 1% TOC)
Bromobenzene	0.137	(a,m)	USEPA R3 (Marine)	0.057	(m)	NOAA SQuiRT (EcoTox EqP @ 1% TOC)
Bromochloromethane	NV			NV		
Bromodichloromethane	NV			NV		
Bromoform	1.31	(a)	USEPA R3 (Marine)	0.65		NOAA SQuiRT (EcoTox EqP @ 1% TOC)
Bromomethane	NV			NV		
Carbon Disulfide	0.000851	(h)	USEPA R3 (Marine)	NV		
Carbon tetrachloride	7.24	(a)	USEPA R3 (Marine)	1.2		NOAA SQuiRT (EcoTox EqP @ 1% TOC)
Chlorobenzene	0.162	(a)	USEPA R3 (Marine)	0.82		NOAA SQuiRT (EcoTox EqP @ 1% TOC)
Chlorodibromomethane	NV			NV		
Chloroethane	NV			NV		
Chloroform	0.022		ORNL SCV (Freshwater)	NV		
Chloromethane	NV			NV		
cis-1,2-Dichloroethene	NV			NV		
cis-1,3-Dichloropropene	NV			NV		
Dibromomethane	NV			NV		
Dichlorodifluoromethane	NV			NV		
Ethylbenzene	0.004		NOAA SQuiRT (Marine; AET)	3.6		NOAA SQuiRT (EcoTox EqP @ 1% TOC)
Hexachlorobutadiene	0.0013		NOAA SQuiRT (Marine; AET)	NV		
Isopropylbenzene	0.086	(h)	USEPA R3 (Marine)	0.057	(m)	NOAA SQuiRT (EcoTox EqP @ 1% TOC)
Methylcyclohexane	NV			NV		
Methyl tert-butyl ether	NV			NV		
Methylene chloride	0.37		ORNL SCV (Freshwater)	NV		
n-Butylbenzene	0.137	(a,m)	USEPA R3 (Marine)	0.057	(m)	NOAA SQuiRT (EcoTox EqP @ 1% TOC)
n-Propylbenzene	0.137	(a,m)	USEPA R3 (Marine)	0.057	(m)	NOAA SQuiRT (EcoTox EqP @ 1% TOC)
p-Isopropyltoluene	1.09	(a,n)	USEPA R3 (Marine)	0.67	(n)	NOAA SQuiRT (EcoTox EqP @ 1% TOC)
sec-Butylbenzene	0.137	(a,m)	USEPA R3 (Marine)	0.057	(m)	NOAA SQuiRT (EcoTox EqP @ 1% TOC)
Styrene	7.07	(a)	USEPA R3 (Marine)	NV		
tert-Butyl-Alcohol	NV			NV		
tert-Butylbenzene	0.137	(a,m)	USEPA R3 (Marine)	0.057	(m)	NOAA SQuiRT (EcoTox EqP @ 1% TOC)
Tetrachloroethene	0.057		NOAA SQuiRT (Marine; AET)	0.53		NOAA SQuiRT (EcoTox EqP @ 1% TOC)
Toluene	1.09	(a)	USEPA R3 (Marine)	0.67		NOAA SQuiRT (EcoTox EqP @ 1% TOC)
Total-1,2-Dichloroethene	0.4		ORNL SCV (Freshwater)	NV		
trans-1,2-Dichloroethene	1.05	(h)	USEPA R3 (Marine)	NV		
trans-1,3-Dichloropropene	NV			NV		
Trichloroethene	0.041		NOAA SQuiRT (Marine; AET)	1.6		NOAA SQuiRT (EcoTox EqP @ 1% TOC)
Trichlorofluoromethane	NV			NV		
Vinyl chloride	NV			NV		
Xylenes (total)	0.004		NOAA SQuiRT (Marine; AET)	0.025	(s)	NOAA SQuiRT (EcoTox EqP @ 1% TOC)

ATTACHMENT F TABLE 2
ECOLOGICAL SCREENING VALUES - MARINE SEDIMENT
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

Chemical	ECOLOGICAL SCREENING VALUES FOR SEDIMENT					
	Value for Use in SRA			Value for Use in BERA		
PESTICIDES						
4,4'-DDD	0.002		NOAA SQuiRT (Marine; ERL)	0.02		NOAA SQuiRT (Marine; ERM)
4,4'-DDE	0.0022		NOAA ERL (Marine)	0.027		NOAA ERM (Marine)
4,4'-DDT	0.00158	(c)	NOAA ERL (Marine)	0.0461	(c)	NOAA ERM (Marine)
Aldrin	0.0095		NOAA SQuiRT (Marine; AET)	0.08		NOAA SQuiRT (Freshwater; SEL)
alpha-BHC	0.00032	(i)	NOAA SQuiRT (Marine; TEL)	0.0048	(i)	NOAA SQuiRT (Marine; AET)
alpha-Chlordane	0.0005	(b)	NOAA SQuiRT (Marine; ERL)	0.006	(b)	NOAA SQuiRT (Marine; ERM)
beta-BHC	0.00032	(i)	NOAA SQuiRT (Marine; TEL)	0.0048	(i)	NOAA SQuiRT (Marine; AET)
delta-BHC	0.00032	(i)	NOAA SQuiRT (Marine; TEL)	0.0048	(i)	NOAA SQuiRT (Marine; AET)
Dieldrin	0.00002		NOAA SQuiRT (Marine; ERL)	0.008		NOAA SQuiRT (Marine; ERM)
Endosulfan I	0.0029	(h)	USEPA R3 (Marine)	NV		
Endosulfan II	0.014	(h)	USEPA R3 (Marine)	NV		
Endosulfan sulfate	0.000357	(a)	USEPA R3 (Marine)	NV		
Endrin	0.00267		USEPA R3 (Marine)	NV		
Endrin aldehyde	0.00267	(g)	USEPA R3 (Marine)	NV		
Endrin ketone	0.00267	(g)	USEPA R3 (Marine)	NV		
gamma-BHC	0.00032		NOAA SQuiRT (Marine; TEL)	0.0048		NOAA SQuiRT (Marine; AET)
gamma-Chlordane	0.0005	(b)	NOAA SQuiRT (Marine; ERL)	0.006	(b)	NOAA SQuiRT (Marine; ERM)
Heptachlor	0.0003		NOAA SQuiRT (Marine; AET)	NV		
Heptachlor epoxide	0.0006		NOAA SQuiRT (Marine; T20)	NV		
Methoxychlor	0.0296	(a)	USEPA R3 (Marine)	NV		
Toxaphene	0.0001		NOAA SQuiRT (Marine; TEL)	0.028		NOAA SQuiRT (EcoTox EqP @ 1% TOC)
POLYCHLORINATED BIPHENYLs						
Aroclor-1016	0.0227	(f)	NOAA ERL (Marine)	0.18	(f)	NOAA ERM (Marine)
Aroclor-1221	0.0227	(f)	NOAA ERL (Marine)	0.18	(f)	NOAA ERM (Marine)
Aroclor-1232	0.0227	(f)	NOAA ERL (Marine)	0.18	(f)	NOAA ERM (Marine)
Aroclor-1242	0.0227	(f)	NOAA ERL (Marine)	0.18	(f)	NOAA ERM (Marine)
Aroclor-1248	0.0227	(f)	NOAA ERL (Marine)	0.18	(f)	NOAA ERM (Marine)
Aroclor-1254	0.0227	(f)	NOAA ERL (Marine)	0.18	(f)	NOAA ERM (Marine)
Aroclor-1260	0.0227	(f)	NOAA ERL (Marine)	0.18	(f)	NOAA ERM (Marine)
Aroclor-1262	0.0227	(f)	NOAA ERL (Marine)	0.18	(f)	NOAA ERM (Marine)
Aroclor-1268	0.0227	(f)	NOAA ERL (Marine)	0.18	(f)	NOAA ERM (Marine)
Total PCBs	0.0227		NOAA ERL (Marine)	0.18		NOAA ERM (Marine)

Notes:
All screening values reported in milligram per kilogram (mg/kg).
AET - Apparent Effect Threshold.
ARCS - Assessment and Remediation of Contaminated Sediments TEL for *Hyalella azteca* as presented in Buchman (2008).
BERA - Baseline Ecological Risk Assessment.
EcoTox EqP @ 1% TOC - EcoUpdate EcoTox Thresholds derived using equilibrium partitioning and assumption of 1% total organic carbon (TOC). This is a screening level threshold but is considered to be site-specific if TOC data from the site is used.
ERL - Effects Range Low (Marine - Long, et al., 1995; Freshwater/Marine - Long and Morgan, 1991).
ERM - Effects Range Median (Marine - Long, et al., 1995; Freshwater/Marine - Long and Morgan, 1991).
HMW - High Molecular Weight.
LMW - Low Molecular Weight.
NOAA - National Oceanic and Atmospheric Administration.
NV - No value identified.
ORNL SCV - Oak Ridge National Laboratory Secondary Chronic Value (Jones, et al., 1997).
PAH - Polycyclic Aromatic Hydrocarbon.
PCB - Polychlorinated Biphenyl.
SQuiRT - Screening Quick Reference Tables (Buchman, 2008).
SRA - Screening Risk Assessment.
SVOC - Semivolatile organic compound
T20 - 20% Effect Level.
TEL - Threshold Effect Level.
USEPA - United States Environmental Protection Agency.
USEPA R3 - USEPA Region 3 marine sediment screening values (USEPA, 2006a,b).
VOC - Volatile Organic Compound.

(a) Value derived from the equilibrium partitioning(EqP) method with Region 3 surface water screening values and $\log K_{ow}$ values.
Only $\log K_{ow}$ values between 2 and 6 were used.
(b) Value for chlordane.
(c) Value for Total DDT used.
(d) Value for fluoranthene used as a surrogate due to structural similarities.
(e) Value for dibenzo(a,h)anthracene used as a surrogate due to structural similarities.
(f) Value for Total PCBs used for individual Aroclors without screening values.
(g) Value for endrin used due to structural similarities.
(h) Region 3 freshwater value used when Region 3 marine value is not derived.
(i) Value for gamma-BHC used due to structural similarities.
(j) Value for 1,2-dichlorobenzene used due to structural similarities.
(k) Value for 2,4-dichlorophenol used due to structural similarities.
(l) Value for 1,2,4 trichlorobenzene used due to structural similarities.
(m) Value for benzene used due to structural similarities.
(n) Value for toluene used due to structural similarities.
(o) Value for 2,4-dinitrotoluene used due to structural similarities.
(p) Value for 4-methylphenol used due to structural similarities.
(q) Value for diethyl phthalate used due to structural similarities.
(r) Value for di-n-butyl phthalate used due to structural similarities.
(s) Value for m-xylene used due to structural similarities.

ATTACHMENT F TABLE 3
TOXICITY REFERENCE VALUES FOR FOOD CHAIN MODELS
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

	Mammalian TRV (mg/kg bw/day)		Avian TRV (mg/kg bw/day)	
Chemical	**NOAEL**	**LOAEL**	**NOAEL**	**LOAEL**
INORGANICS				
Antimony	0.059	2.76	NV	NV
Arsenic	1.04	4.55	2.24	4.51
Cadmium	0.77	6.9	1.47	6.35
Chromium	2.4	58.17	2.66	15.63
Copper	5.6	82.7	4.05	34.87
Lead	4.7	186.4	1.63	44.63
Mercury	0.032	0.16	0.0064	0.064
Selenium	0.143	0.66	0.29	0.82
Thallium	0.0074	0.074	NV	NV
Vanadium	4.16	9.44	0.34	1.7
Zinc	75.4	298	66.1	171
SEMI VOLATILE ORGANIC COMPOUNDS				
Low Molecular Weight PAHs	65.6	356	2	20
High Molecular Weight PAHs	0.615	38.4	2	20
PESTICIDES				
4,4'-DDT	0.147	5.56	0.227	2.7
Endosulfan Sulfate	0.15	1.5	10	100
POLYCHLORINATED BIPHENYLs				
Total PCBs	0.068	0.68	0.18	1.8

Notes:
NV - No value identified.
NOAEL - No Observed Adverse Effects Level.
LOAEL - Lowest Observed Adverse Effects Level.
TRV - Toxicity Reference Value.
The sources of these NOAELs and LOAELs are presented in Table 4.

If only a NOAEL was available, the value was multiplied by 10 to estimate the LOAEL.
If only a LOAEL was available, the value was divided by 10 to estimate the NOAEL.

ATTACHMENT F TABLE 4
SOURCES AND ENPOINTS FOR DERIVATION OF WILDLIFE TOXICITY REFERENCE VALUES
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

Chemical	Concentration (mg/kg bw/day)	Endpoint	Effect	Chronic/ Subchronic	Species	Primary Reference	Source of Reference
INORGANICS							
Antimony	0.059	NOAEL	reproduction & growth	chronic	mammals	USEPA, 2005a	
Antimony	2.76	LOAEL	reproduction & growth	chronic	mammals	USEPA, 2005a	
Arsenic	2.24	NOAEL	reproduction & growth	chronic	birds	USEPA, 2005b	
Arsenic	4.51	LOAEL	reproduction & growth	chronic	birds	USEPA, 2005b	
Arsenic	1.04	NOAEL	reproduction & growth	chronic	mammals	USEPA, 2005b	
Arsenic	4.55	LOAEL	reproduction & growth	chronic	mammals	USEPA, 2005b	
Cadmium	1.47	NOAEL	reproduction & growth	chronic	birds	USEPA, 2005c	
Cadmium	6.35	LOAEL	reproduction & growth	chronic	birds	USEPA, 2005c	
Cadmium	0.77	NOAEL	reproduction & growth	chronic	mammals	USEPA, 2005c	
Cadmium	6.9	LOAEL	reproduction & growth	chronic	mammals	USEPA, 2005c	
Chromium(III)	2.66	NOAEL	reproduction & growth	chronic	birds	USEPA, 2008	
Chromium(III)	15.63	LOAEL	reproduction & growth	chronic	birds	USEPA, 2008	
Chromium(III)	2.4	NOAEL	reproduction & growth	chronic	mammals	USEPA, 2008	
Chromium(III)	58.17	LOAEL	reproduction & growth	chronic	mammals	USEPA, 2008	
Copper	4.05	NOAEL	reproduction & growth	chronic	birds	USEPA, 2007a	
Copper	34.87	LOAEL	reproduction & growth	chronic	birds	USEPA, 2007a	
Copper	5.6	NOAEL	reproduction & growth	chronic	mammals	USEPA, 2007a	
Copper	82.7	LOAEL	reproduction & growth	chronic	mammals	USEPA, 2007a	
Lead	1.63	NOAEL	reproduction & growth	chronic	birds	USEPA, 2005d	
Lead	44.6	LOAEL	reproduction & growth	chronic	birds	USEPA, 2005d	
Lead	4.7	NOAEL	reproduction & growth	chronic	mammals	USEPA, 2005d	
Lead	186.4	LOAEL	reproduction & growth	chronic	mammals	USEPA, 2005d	
Mercury	0.064	LOAEL	reproductive	chronic	mallard duck	Heinz, 1979	Sample et al., 1996
Mercury	0.032	NOAEL	reproductive	chronic	rat	Verschuuren et al., 1976	Sample et al., 1996
Mercury	0.16	LOAEL	reproductive	chronic	rat	Verschuuren et al., 1976	Sample et al., 1996
Selenium	0.29	NOAEL	reproduction & growth	chronic	birds	USEPA, 2007b	
Selenium	0.819	LOAEL	reproduction & growth	chronic	birds	USEPA, 2007b	
Selenium	0.143	NOAEL	reproduction & growth	chronic	mammals	USEPA, 2007b	
Selenium	0.661	LOAEL	reproduction & growth	chronic	mammals	USEPA, 2007b	
Thallium	0.0074	NOAEL	reproduction	subchronic	rat	Formigli, et al., 1986	Sample et al., 1996
Thallium	0.074	LOAEL	reproduction	subchronic	rat	Formigli, et al., 1986	Sample et al., 1996
Vanadium	0.344	NOAEL	reproduction & growth	chronic	birds	USEPA, 2005e	
Vanadium	1.686	LOAEL	reproduction & growth	chronic	birds	USEPA, 2005e	
Vanadium	4.16	NOAEL	reproduction & growth	chronic	mammals	USEPA, 2005e	
Vanadium	9.436	LOAEL	reproduction & growth	chronic	mammals	USEPA, 2005e	
Zinc	75.4	NOAEL	reproduction & growth	chronic	mammals	USEPA, 2007c	
Zinc	297.58	LOAEL	reproduction & growth	chronic	mammals	USEPA, 2007c	
Zinc	66.1	NOAEL	reproduction & growth	chronic	birds	USEPA, 2007c	
Zinc	171.44	LOAEL	reproduction & growth	chronic	birds	USEPA, 2007c	
SEMI VOLATILE ORGANIC COMPOUNDS							
Low Molecular Weight PAHs	65.6	NOAEL	reproduction & growth	chronic	mammals	USEPA, 2007d	
Low Molecular Weight PAHs	356	LOAEL	reproduction & growth	chronic	mammals	USEPA, 2007d	
High Molecular Weight PAHs	0.615	NOAEL	reproduction & growth	chronic	mammals	USEPA, 2007d	
High Molecular Weight PAHs	38.4	LOAEL	reproduction & growth	chronic	mammals	USEPA, 2007d	
7,12-Dimethylbenz(a)anthracene	2	NOAEL	systemic	chronic	nestling/starlings	Trust et al., 1994	
7,12-Dimethylbenz(a)anthracene	20	LOAEL	systemic	chronic	nestling/starlings	Trust et al., 1994	

ATTACHMENT F TABLE 4
SOURCES AND ENPOINTS FOR DERIVATION OF WILDLIFE TOXICITY REFERENCE VALUES
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

Chemical	Concentration (mg/kg bw/day)	Endpoint	Effect	Chronic/ Subchronic	Species	Primary Reference	Source of Reference
PESTICIDES							
4,4'-DDT	0.147	NOAEL	reproduction & growth	chronic	mammals	USEPA, 2007e	
4,4'-DDT	5.56	LOAEL	reproduction & growth	chronic	mammals	USEPA, 2007e	
4,4'-DDT	0.227	NOAEL	reproduction & growth	chronic	birds	USEPA, 2007e	
4,4'-DDT	2.7	LOAEL	reproduction & growth	chronic	birds	USEPA, 2007e	
Endosulfan	0.15	NOAEL	reproduction	subchronic	rat	Dikshith et al., 1984	Sample et al., 1996
Endosulfan	10	NOAEL	reproduction	chronic	gray partridge	Abiola, 1992	Sample et al., 1996
POLYCHLORINATED BIPHENYLs							
Aroclor 1254 (Total PCBs)	1.8	LOAEL	reproduction	chronic	pheasant	Dahlgren et al., 1972	Sample et al., 1996
Aroclor 1254 (Total PCBs)	0.68	LOAEL	reproduction	chronic	mouse	McCoy et al., 1995	Sample et al., 1996

Notes:
NOAEL - No Observed Adverse Effects Level.
LOAEL - Lowest Observed Adverse Effects Level.

The avian NOAELs and LOAELs for the PAHs are based on 7,12-dimethylbenz(a)anthracene.

The LOAELs used for several metals were calculated as the geometric mean of growth and reproduction data from the USEPA Ecological Soil Screening Level documents.
The LOAELs for Aroclor-1254 were used as surrogates for Total PCBs.

ATTACHMENT F TABLE 5
REFERENCES FOR ECOTOXICITY VALUES
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

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ATTACHMENT F TABLE 5
REFERENCES FOR ECOTOXICITY VALUES
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

References
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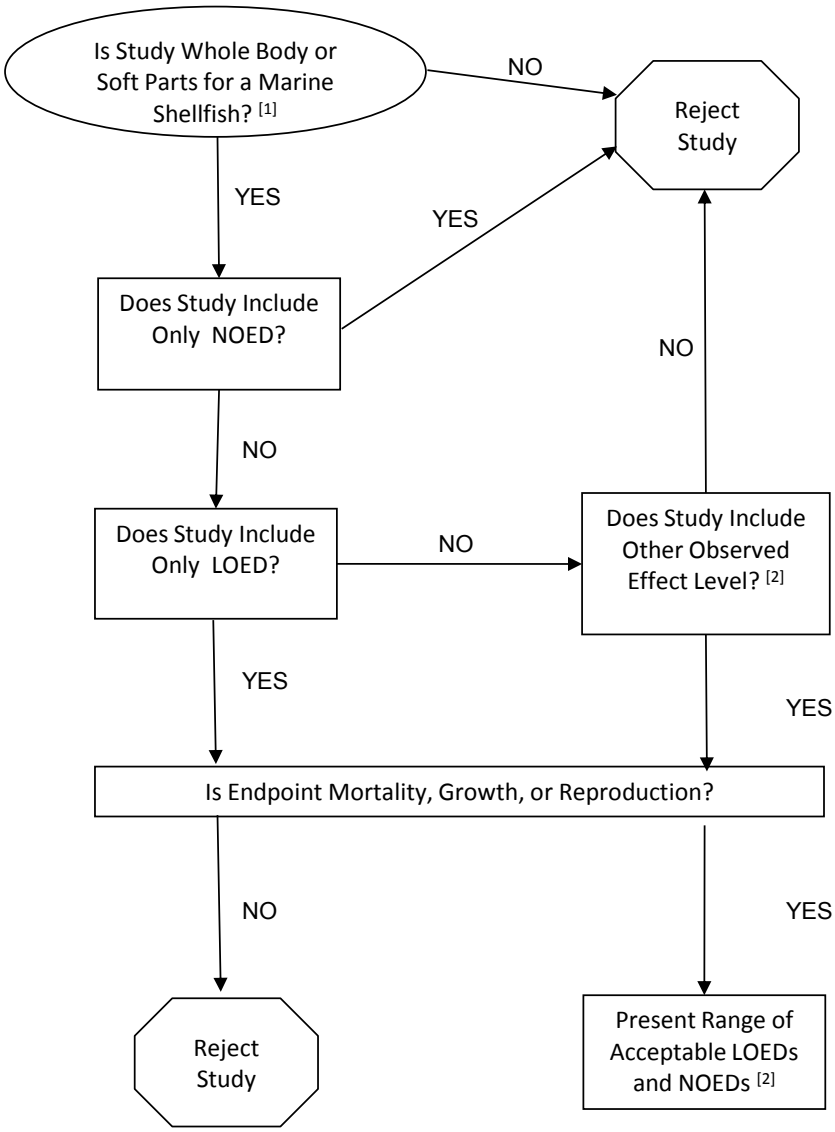
ATTACHMENT G

IDENTIFICATION OF SHELLFISH CRITICAL BODY RESIDUES

ATTACHMENT G FIGURE 1
PROTOCOL FOR SELECTING CRITICAL BODY RESIDUES FOR MARINE SHELLFISH
CARR POINT - MRP SITE 1



Notes:
1 - Freshwater data reviewed if no appropriate marine data were identified.
2 - Other acceptable effects levels, such as LD50s, may be presented if no acceptable NOED or LOED is identified.

LOED - Lowest observed effect dose.
NOED - No observed effect dose.
EDx - Effective dose to x% of the population.

ATTACHMENT G TABLE 1
SUMMARY OF SHELLFISH CRITICAL BODY RESIDUES
CARR POINT - MRP SITE 1

Analyte		Range of Literature Tissue Concentrations (mg/kg wet weight) Measured Effect		
		Mortality	**Growth**	**Reproduction**
ALUMINUM	NOEDs	NS	NS	NS
	LOEDs	NS	NS	NS
ANTIMONY	NOEDs	NS	NS	NS
	LOEDs	NS	NS	NS
ARSENIC	NOEDs	4 *[Hc]* - 16 *[Hc]*	NS	NS
	LOEDs	4.2 [*Hc* ; ED16]	NS	NS
BARIUM	NOEDs	NS	NS	NS
	LOEDs	NS	NS	NS
BERYLLIUM	NOEDs	NS	NS	NS
	LOEDs	NS	NS	NS
CADMIUM	NOEDs	1.6 *[Pp]* - 460 *[H sp.]*	0.36 *[As]* - 4.6 *[Pp]*	NS
	LOEDs	2.6 *[Pp]* - 7 *[Pp]*	5.4 *[As]* - 8 *[Pp]*	NS
CALCIUM	NOEDs	NS	NS	NS
	LOEDs	NS	NS	NS
CHROMIUM, TOTAL	NOEDs	NS	1 *[Ppe]* - 3.2 *[Ppe]* (a)	NS
	LOEDs	NS	*3.2 [Ppe]* - 6.3 *[Ppe]* (a)	NS
COBALT	NOEDs	NS	NS	NS
	LOEDs	NS	NS	NS
COPPER	NOEDs	5 *[Ce]* - 18 *[Mb]*	34.2 *[Me]*	NS
	LOEDs	5 *[Ce]* - 22.1 *[Me]*	49.6 *[Me]*	NS
IRON	NOEDs	NS	NS	NS
	LOEDs	NS	NS	NS
LEAD	NOEDs	0.58 *[Pl]* - 35 *[Dp]*	35 *[Dp]*	NS
	LOEDs	31.36 *[Pl]* - 200 *[Dp]*	200 *[Dp]*	NS
MAGNESIUM	NOEDs	NS	NS	NS
	LOEDs	NS	NS	NS
MANGANESE	NOEDs	NS	NS	NS
	LOEDs	NS	NS	NS
MERCURY	NOEDs	28 *[Cv]*	10 *[Cf]* - 17 *[Cf]*	4 *[Cf]* - 8 *[Cf]*
	LOEDs	73.1 *[Rc]*	22 *[Cf]* - 48 *[Cf]*	10 *[Cf]* - 17 *[Cf]*
NICKEL	NOEDs	79 *[Ce]*	NS	NS
	LOEDs	575 *[Ce]*	NS	NS
POTASSIUM	NOEDs	NS	NS	NS
	LOEDs	NS	NS	NS
SELENIUM	NOEDs	NS	NS	NS
	LOEDs	NS	NS	NS
SILVER	NOEDs	1650 *[Cf]*	800 *[Cf]*	4.47 *[Cfo]* - 9.67 *[Cfo]*
	LOEDs	2510 *[Cf]*	1650 *[Cf]*	*7.53 [Cfo]* - 10 *[Cfo]*

ATTACHMENT G TABLE 1
SUMMARY OF SHELLFISH CRITICAL BODY RESIDUES
CARR POINT - MRP SITE 1

Analyte		Range of Literature Tissue Concentrations (mg/kg wet weight) Measured Effect		
		Mortality	**Growth**	**Reproduction**
SODIUM	NOEDs	NS	NS	NS
	LOEDs	NS	NS	NS
VANADIUM	NOEDs	NS	NS	NS
	LOEDs	NS	NS	NS
ZINC	NOEDs	5 *[Ma]* - 78 *[Me]*	NS	NS
	LOEDs	26 *[Me]* - 194 *[Me]*	25 *[Me]*	NS
Total PAHs	NOEDs	NS	NS	0.028 *[Pb]*
	LOEDs	NS	NS	0.052 [*Pb* ; ED12] - 1.592 [*Pb* ; ED26]

Notes:
Values are whole body concentrations for the adult life stage, unless otherwise noted.
Values represent the range of acceptable LOEDs and NOEDs. Supporting information (e.g., study details, sources) is presented in Tables 2 through 16 of this attachment.
Alternative values (e.g., LDx or EDx) are only presented if no LOED or NOED is identified.
Appropriate studies not identified for aluminum, antimony, barium, beryllium, calcium, cobalt, iron, magnesium, manganese, potassium, selenium, sodium, and vanadium.
(a) The chromium tissue concentrations are based on the juvenile life stage.
Source databases:

Environmental Residue Effects Database (ERED; http://www.wes.army.mil/el/ered/index.html)
Jarvinen, A.W., and G.T. Ankley. 1999. Linkage of effects to tissue residues: Development of a comprehensive database for aquatic organisms exposed to inorganic and organic chemicals. SETAC Press, pp. 1-358.

EDx - Effective dose to x% of the population.
LOED - Lowest observed effect dose.
NOED - No observed effect dose.
NS - No acceptable studies identified.
Species codes:

As -	*Artemia salina*	Brine shrimp (Saltwater)
Ce -	*Cerastoderma edule*	Clam (Saltwater)
Cf -	*Corbicula fluminea*	Asian clam (Saltwater)
Cfo -	*Crepidula fornicata*	Slipper limpet (Saltwater)
Cv -	*Crassostrea virginica*	Oyster (Saltwater)
Dp -	*Dreissena polymorpha*	Zebra mussel (Freshwater)
H sp. -	*Helisoma sp.*	mollusc (Saltwater)
Hc -	*Helisoma campanulata*	mollusc (Freshwater)
Ma -	*Mysella anomala*	mollusc (Saltwater)
Mb -	*Macoma balthica*	clam (Saltwater)
Me -	*Mytilus edulis*	Mussel (Saltwater)
Pb -	*Pandalus Borealis*	Northern shrimp (Saltwater)
Pl -	*Paracentrotus lividus*	Sea urchin (Saltwater)
Pp -	*Palaemonetes pugio*	Grass shrimp (Saltwater)
Ppe -	*Portunus pelagicus*	Sand crab (Saltwater)
Rc -	*Rangia cuneata*	Clam (Saltwater)

ATTACHMENT G TABLE 2
CRITICAL BODY RESIDUE DATA - Aluminum
CARR POINT - MRP SITE 1

Critical Body Residue Data Available							CBR Selection Process			
Species (Common Name)	**Species (Scientific name)**	**Reference Identification**	**Type**	**Concentration (mg/kg wet weight)**	**Effect**	**Endpoint**	**Included Species**	**Included Effect**	**Included Endpoint**	**Reason Value Excluded**
Crayfish	Pacifastacus leniusculus	MEC04-280	Freshwater	1.6	Morphology	NOED	x			
Crayfish	Pacifastacus leniusculus	MEC04-280	Freshwater	1.6	Morphology	NOED	x			
Crayfish	Pacifastacus leniusculus	MEC04-280	Freshwater	232	Morphology	NOED	x			
Crayfish	Pacifastacus leniusculus	MEC04-280	Freshwater	232	Behavior	ED100	x			
Crayfish	Pacifastacus leniusculus	MEC04-280	Freshwater	1.6	Behavior	ED100	x			
Crayfish	Pacifastacus leniusculus	MEC04-280	Freshwater	1.6	Behavior	ED100	x			
Mussel	Mytilus edulis	Weston05-172	Saltwater	31	Mortality	NOED	x	x		No effects value in study
Mussel	Mytilus edulis	Weston05-172	Saltwater	31	Growth	NOED	x	x		No effects value in study
Snail	Lymnaea stagnalis	NewFields07-050	Freshwater	250	Pathology	NOED	x			
Snail	Lymnaea stagnalis	NewFields07-050	Freshwater	250	Physiological	ED166	x			
Snail	Lymnaea stagnalis	NewFields07-050	Freshwater	250	Physiological	ED180	x			

Notes:
All concentrations presented in mg/kg.
Data in italics and boldface were selected for use in the risk assessment.
Only whole body or soft part residues and adult life stage are presented.
Reference Identification corresponds to the references presented in Attachment G Table 16.
CBR - Critical body residue
EDx - Effective dose to x% of the population.
LOED - Lowest observed effect dose
NOED - No observed effect dose

CBR selection process:
1 - Select only whole body or soft part residues.
2 - Identify shellfish and other relevant saltwater invertebrate species (e.g., snails, crayfish).
3 - Identify Reproduction, Growth, and Mortality/Survival effects.
4 - Identify NOED values with no associated effects values and exclude those NOEDs.
5 - Identify range of acceptable NOED and LOED results for the three effects (Reproduction, Growth, and Mortality/Survival).
Alternative effects levels (i.e., LD50) only presented if no acceptable Table NOEDs or LOEDs are identified.

ATTACHMENT G TABLE 3
CRITICAL BODY RESIDUE DATA - Arsenic
CARR POINT - MRP SITE 1

Critical Body Residue Data Available							CBR Selection Process			
Species (Common Name)	**Species (Scientific name)**	**Reference Identification**	**Type**	**Concentration (mg/kg wet weight)**	**Effect**	**Endpoint**	**Included Species**	**Included Effect**	**Included Endpoint**	**Reason Value Excluded**
Grass shrimp	Palaemonetes pugio	259	Saltwater	1.15	Growth	NOED	x	x		No effects value in study
Grass shrimp	Palaemonetes pugio	259	Saltwater	1.28	Growth	NOED	x	x		No effects value in study
Mussel	Mytilus edulis	Weston05-172	Saltwater	3.6	Mortality	NOED	x	x		No effects value in study
Snail	***Helisoma campanulata***	***SEQ97-35***	***Freshwater***	***4.2***	***Mortality***	***ED16***	***x***	***x***		
Snail	Stagnicola emarginatus	SEQ97-35	Freshwater	3.6	Mortality	NOED	x	x		No effects value in study
Snail	Stagnicola emarginatus	SEQ97-35	Freshwater	3.6	Mortality	NOED	x	x		No effects value in study
Snail	Stagnicola emarginatus	SEQ97-35	Freshwater	3.6	Mortality	NOED	x	x		No effects value in study
Snail	Stagnicola emarginatus	SEQ97-35	Freshwater	3.6	Mortality	NOED	x	x		No effects value in study
Snail	***Helisoma campanulata***	***SEQ97-35***	***Freshwater***	***4***	***Mortality***	***NOED***	***x***	***x***	***x***	
Snail	***Helisoma campanulata***	***SEQ97-35***	***Freshwater***	***5.8***	***Mortality***	***NOED***	***x***	***x***	***x***	
Snail	***Helisoma campanulata***	***SEQ97-35***	***Freshwater***	***16***	***Mortality***	***NOED***	***x***	***x***	***x***	

Notes:
All concentrations presented in mg/kg.
Data in italics and boldface were selected for use in the risk assessment.
Only whole body or soft part residues and adult life stage are presented.
Reference Identification corresponds to the references presented in Attachment G Table 16.
CBR - Critical body residue
EDx - Effective dose to x% of the population.
LOED - Lowest observed effect dose
NOED - No observed effect dose

CBR selection process:
1 - Select only whole body or soft part residues.
2 - Identify shellfish and other relevant saltwater invertebrate species (e.g., snails, crayfish).
3 - Identify Reproduction, Growth, and Mortality/Survival effects.
4 - Identify NOED values with no associated effects values and exclude those NOEDs.
5 - Identify range of acceptable NOED and LOED results for the three effects (Reproduction, Growth, and Mortality/Survival).
Alternative effects levels (i.e., LD50) only presented if no acceptable Table NOEDs or LOEDs are identified.

ATTACHMENT G TABLE 4
CRITICAL BODY RESIDUE DATA - Cadmium
CARR POINT - MRP SITE 1

Critical Body Residue Data Available							CBR Selection Process			
Species (Common Name)	Species (Scientific name)	Reference Identification	Type	Concentration (mg/kg wet weight)	Effect	Endpoint	Included Species	Included Effect	Included Endpoint	Reason Value Excluded
Brine shrimp	***Artemia salina***	***222***	***Saltwater***	***5.4 - 7.5***	***Growth***	***LOED***	***x***	***x***	***x***	
Brine shrimp	***Artemia salina***	***222***	***Saltwater***	***0.36***	***Growth***	***NOED***	***x***	***x***	***x***	
Brine shrimp	Artemia salina	225	Saltwater	194.4	Mortality	NOED	x	x		No effects value in study
Crayfish	Cambarus latimanus	452	Freshwater	21.96	Growth	NOED		x		Freshwater species
Crayfish	Cambarus latimanus	452	Freshwater	21.96	Mortality	LOED		x		Freshwater species
Crayfish	Cambarus latimanus	452	Freshwater	14.9	Mortality	NOED		x		Freshwater species
Oyster	Saccostrea commercialis	479	Saltwater	48-72	Mortality	LD100	x	x		
Oyster	Saccostrea commercialis	479	Saltwater	85	Mortality	LD100	x	x		
Oyster	***Saccostrea commercialis***	***479***	***Saltwater***	***25***	***Mortality***	***NOED***	***x***	***x***	***x***	
Mussel - Zebra	Dreissena polymorpha	JA243	Freshwater	108	Mortality	LD50		x		Freshwater species
Mussel - Zebra	Dreissena polymorpha	JA243	Freshwater	160	Mortality	LD96		x		Freshwater species
Mussel - Zebra	Dreissena polymorpha	JA243	Freshwater	114	Mortality	NOED		x		Freshwater species
Mussel - Zebra	Dreissena polymorpha	JA244	Freshwater	100	Mortality	NOED		x		Freshwater species
Mussel - Zebra	Dreissena polymorpha	JA298	Freshwater	32	Mortality	NOED		x		Freshwater species
Crayfish	Orconectes virilis	JA306	Freshwater	19.6-29.3	Mortality	LOED		x		Freshwater species
Crayfish	Orconectes virilis	JA306	Freshwater	17.8	Mortality	LOED		x		Freshwater species
Crayfish	Orconectes virilis	JA306	Freshwater	11.2	Mortality	LD74		x		Freshwater species
Crayfish	Orconectes virilis	JA306	Freshwater	5.7	Mortality	LD25		x		Freshwater species
Crayfish	Orconectes virilis	JA306	Freshwater	0.9	Mortality	NOED		x		Freshwater species
Crayfish	Orconectes virilis	JA306	Freshwater	16.94	Mortality	LD100		x		Freshwater species
Crayfish	Orconectes virilis	JA306	Freshwater	18.74	Mortality	LD100		x		Freshwater species
Crayfish	Orconectes virilis	JA306	Freshwater	28.46	Mortality	LD100		x		Freshwater species
Crayfish	Orconectes virilis	JA306	Freshwater	4.82	Mortality	LD25		x		Freshwater species
Crayfish	Orconectes virilis	JA306	Freshwater	10.32	Mortality	LD74		x		Freshwater species
Mediterranean Mussel	Mytilus galloprovincialis	JA352	Saltwater	39.1	Mortality	LD20	x	x		
Mediterranean Mussel	Mytilus galloprovincialis	JA352	Saltwater	55.59	Mortality	LD90	x	x		
Mediterranean Mussel	***Mytilus galloprovincialis***	***JA352***	***Saltwater***	***28.7***	***Mortality***	***NOED***	***x***	***x***	***x***	
Mussel - Zebra	Dreissena polymorpha	JA446	Freshwater	4	Mortality	NOED		x		Freshwater species
Eastern oyster	Crassostrea virginica	JA497	Saltwater	58.4	Mortality	NOED	x	x		No effects value in study
Clam - Asiatic	Corbicula fluminea	MEC03-340	Freshwater	20	Mortality	NOED		x		Freshwater species
Mussel	Mytilus edulis	SEQ97-13	Saltwater	30	Mortality	NOED	x	x		No effects value in study
Shrimp - Grass	Palaemonetes pugio	SEQ98-19	Saltwater	0.9	Mortality	NOED	x	x		No effects value in study
Mussel	Mytilus edulis	SEQ98-19	Saltwater	6.45	Mortality	NOED	x	x		No effects value in study
Grass shrimp	Palaemonetes pugio	URS224	Saltwater	8	Mortality	LD25	x	x		
Grass shrimp	Palaemonetes pugio	URS224	Saltwater	4.6	Mortality	LD10	x	x		
Grass shrimp	Palaemonetes pugio	URS224	Saltwater	1.8	Mortality	LD05	x	x		
Grass shrimp	***Palaemonetes pugio***	***URS224***	***Saltwater***	***8***	***Growth***	***LOED***	***x***	***x***	***x***	
Grass shrimp	***Palaemonetes pugio***	***URS224***	***Saltwater***	***4.6***	***Growth***	***NOED***	***x***	***x***	***x***	
Shrimp - Grass	***Palaemonetes pugio***	***URS224***	***Saltwater***	***2.6***	***Mortality***	***LOED***	***x***	***x***	***x***	
Shrimp - Grass	***Palaemonetes pugio***	***URS224***	***Saltwater***	***4.6***	***Mortality***	***LOED***	***x***	***x***	***x***	
Shrimp - Grass	***Palaemonetes pugio***	***URS224***	***Saltwater***	***7***	***Mortality***	***LOED***	***x***	***x***	***x***	
Shrimp - Grass	***Palaemonetes pugio***	***URS224***	***Saltwater***	***1.6***	***Mortality***	***NOED***	***x***	***x***	***x***	
Snail	Helisoma sp.	URS53	Saltwater	625	Mortality	LD50	x	x		
Snail	***Helisoma sp.***	***URS53***	***Saltwater***	***300***	***Mortality***	***NOED***	***x***	***x***	***x***	
Snail	***Helisoma sp.***	***URS53***	***Saltwater***	***460***	***Mortality***	***NOED***	***x***	***x***	***x***	
Crayfish	Orconectes propinquus	URS89	Freshwater	534	Mortality	NOED		x		Freshwater species

ATTACHMENT G TABLE 4
CRITICAL BODY RESIDUE DATA - Cadmium
CARR POINT - MRP SITE 1
Notes:
All concentrations presented in mg/kg.
Data in italics and boldface were selected for use in the risk assessment.
Only whole body or soft part residues and adult life stage are presented.
Reference Identification corresponds to the references presented in Attachment G Table 16.
CBR - Critical body residue
EDx - Effective dose to x% of the population.
LDx - Lethal dose to x% of the population.
LOED - Lowest observed effect dose
NOED - No observed effect dose

CBR selection process:
1 - Select only whole body or soft part residues.
2 - Identify shellfish and other relevant saltwater invertebrate species (e.g., snails, crayfish).
3 - Identify Reproduction, Growth, and Mortality/Survival effects.
4 - Identify NOED values with no associated effects values and exclude those NOEDs.
5 - Identify range of acceptable NOED and LOED results for the three effects (Reproduction, Growth, and Mortality/Survival).
Alternative effects levels (i.e., LD50) only presented if no acceptable Table NOEDs or LOEDs are identified.

ATTACHMENT G TABLE 5
CRITICAL BODY RESIDUE DATA - Chromium
CARR POINT - MRP SITE 1

Critical Body Residue Data Available							CBR Selection Process			
Species (Common Name)	**Species (Scientific name)**	**Reference Identification**	**Type**	**Concentration (mg/kg wet weight)**	**Effect**	**Endpoint**	**Included Species**	**Included Effect**	**Included Endpoint**	**Reason Value Excluded**
Sand crab	***Portunus pelagicus***	***310***	***Saltwater***	***3.2***	***Growth***	***LOED***	***x***	***x***	***x***	
Sand crab	***Portunus pelagicus***	***310***	***Saltwater***	***1***	***Growth***	***NOED***	***x***	***x***	***x***	
Sand crab	***Portunus pelagicus***	***310***	***Saltwater***	***6.3***	***Growth***	***LOED***	***x***	***x***	***x***	
Sand crab	***Portunus pelagicus***	***310***	***Saltwater***	***3.2***	***Growth***	***NOED***	***x***	***x***	***x***	

Notes:
All concentrations presented in mg/kg.
Data in italics and boldface were selected for use in the risk assessment.
Only whole body or soft part residues are presented. The chromium residue concentrations are based on the juvenile life stage.
Reference Identification corresponds to the references presented in Attachment G Table 16.
CBR - Critical body residue
LOED - Lowest observed effect dose
NOED - No observed effect dose

CBR selection process:
1 - Select only whole body or soft part residues.
2 - Identify shellfish and other relevant saltwater invertebrate species (e.g., snails, crayfish).
3 - Identify Reproduction, Growth, and Mortality/Survival effects.
4 - Identify NOED values with no associated effects values and exclude those NOEDs.
5 - Identify range of acceptable NOED and LOED results for the three effects (Reproduction, Growth, and Mortality/Survival).
Alternative effects levels (i.e., LD50) only presented if no acceptable Table NOEDs or LOEDs are identified.

ATTACHMENT G TABLE 6
CRITICAL BODY RESIDUE DATA - Copper
CARR POINT - MRP SITE 1

Critical Body Residue Data Available							CBR Selection Process			
Species (Common Name)	Species (Scientific Name)	Reference Identification	Type	Concentration (mg/kg wet weight)	Effect	Endpoint	Included Species	Included Effect	Included Endpoint	Reason Value Excluded
Bivalve	Mysella anomala	Weston05-018	Saltwater	60	Mortality	LD20	x	x		
Bivalve	Mysella anomala	Weston05-018	Saltwater	30	Mortality	LD25	x	x		
Bivalve	Mysella anomala	Weston05-018	Saltwater	52	Mortality	LD25	x	x		
Bivalve	Mysella anomala	Weston05-018	Saltwater	76	Mortality	LD50	x	x		
Bivalve	***Mysella anomala***	***Weston05-018***	***Saltwater***	***8***	***Mortality***	***NOED***	***x***	***x***	***x***	
Mussel - Zebra	Dreissena polymorpha	JA243	Freshwater	40	Behavior	ED56				Freshwater species
Mussel - Zebra	Dreissena polymorpha	JA243	Freshwater	40	Behavior	ED67				Freshwater species
Mussel - Zebra	Dreissena polymorpha	JA243	Freshwater	80	Behavior	ED73				Freshwater species
Mussel - Zebra	Dreissena polymorpha	JA243	Freshwater	4	Behavior	NOED				Freshwater species
Mussel - Zebra	Dreissena polymorpha	JA243	Freshwater	80	Mortality	NOED				Freshwater species
Mussel - Zebra	Dreissena polymorpha	JA244	Freshwater	4	Behavior	NOED				Freshwater species
Mussel - Zebra	Dreissena polymorpha	JA244	Freshwater	32	Mortality	NOED				Freshwater species
Mussel - Zebra	Dreissena polymorpha	JA298	Freshwater	20	Behavior	LOED				Freshwater species
Mussel - Zebra	Dreissena polymorpha	JA298	Freshwater	14	Behavior	NOED				Freshwater species
Mussel - Zebra	Dreissena polymorpha	JA298	Freshwater	20	Mortality	NOED				Freshwater species
Baltic macoma	Macoma balthica	JA3	Saltwater	16.4	Mortality	LD18	x	x		
Baltic macoma	Macoma balthica	JA3	Saltwater	13.8	Mortality	LD28	x	x		
Baltic macoma	Macoma balthica	JA3	Saltwater	12	Mortality	LD32	x	x		
Baltic macoma	Macoma balthica	JA3	Saltwater	12	Mortality	LD45	x	x		
Baltic macoma	***Macoma balthica***	***JA3***	***Saltwater***	***5***	***Mortality***	***NOED***	***x***	***x***	***x***	
Clam	Cerastoderma edule	JA3	Saltwater	5.6	Mortality	NOED	x	x		No effects value in study
Pacific littleneck cla	Protothaca staminea	JA377	Saltwater	9.54	Mortality	LD11	x	x		
Pacific littleneck cla	Protothaca staminea	JA377	Saltwater	9.34	Mortality	LD14	x	x		
Barnacle	Balanus crenatus	SEQ97-41	Saltwater	80	Behavior	NOED	x			
Mussel	Mytilus edulis	URS128	Saltwater	34.2	Mortality	LD50	x	x		
Mussel	Mytilus edulis	URS128	Saltwater	49.6	Mortality	LD50	x	x		
Mussel	Mytilus edulis	URS128	Saltwater	34.2	Behavior	LOED	x			
Mussel	***Mytilus edulis***	***URS128***	***Saltwater***	***49.6***	***Growth***	***LOED***	***x***	***x***	***x***	
Mussel	***Mytilus edulis***	***URS128***	***Saltwater***	***34.2***	***Growth***	***NOED***	***x***	***x***	***x***	
Clam - marine	***Meretrix casta***	***URS154***	***Saltwater***	***201***	***Mortality***	***LOED***	***x***	***x***		
Mussel	Mytilus edulis	URS182	Saltwater	12	Mortality	LD100	x	x		
Mussel	Mytilus edulis	URS182	Saltwater	12	Mortality	LD100	x	x		
Mussel	Mytilus edulis	URS182	Saltwater	12	Mortality	LD100	x	x		
Mussel	Mytilus edulis	URS182	Saltwater	15	Mortality	LD100	x	x		
Mussel	Mytilus edulis	URS182	Saltwater	23	Mortality	LD100	x	x		
Mussel	Mytilus edulis	URS182	Saltwater	36	Mortality	LD100	x	x		
Mussel	Mytilus edulis	URS182	Saltwater	56	Mortality	LD100	x	x		
Mussel	Mytilus edulis	URS182	Saltwater	80	Mortality	LD100	x	x		
Crayfish	Orconectes rusticus	URS79	Freshwater	50	Mortality	NOED				Freshwater species
Mediterranean Mus	Mytilus galloprovincialis	MEC03-226	Saltwater	1	Physiological	NOED	x			
Mediterranean Mus	Mytilus galloprovincialis	MEC03-226	Saltwater	1.8	Physiological	LOED	x			
Mediterranean Mus	Mytilus galloprovincialis	MEC03-226	Saltwater	2.1	Physiological	ED50	x			
Mussel	Mytilus edulis	MEC03-234	Saltwater	4	Growth	LOED	x	x		No effects value in study
Mussel	***Mytilus edulis***	***MEC03-234***	***Saltwater***	***8***	***Mortality***	***LOED***	***x***	***x***		
Mussel	Mytilus edulis	MEC03-234	Saltwater	8	Development	LOED	x			
Sea Urchin	***Paracentrotus lividus***	***MEC03-238***	***Saltwater***	***8.74***	***Mortality***	***LOED***	***x***	***x***		

ATTACHMENT G TABLE 6
CRITICAL BODY RESIDUE DATA - Copper
CARR POINT - MRP SITE 1

Critical Body Residue Data Available							CBR Selection Process			
Species (Common Name)	**Species (Scientific Name)**	**Reference Identification**	**Type**	**Concentration (mg/kg wet weight)**	**Effect**	**Endpoint**	**Included Species**	**Included Effect**	**Included Endpoint**	**Reason Value Excluded**
Sea Urchin	***Paracentrotus lividus***	***MEC03-238***	***Saltwater***	***1.32***	***Mortality***	***NOED***	***x***	***x***		
Sea Urchin	Paracentrotus lividus	MEC03-238	Saltwater	30.36	Mortality	LD50	x	x		
Sea Urchin	Paracentrotus lividus	MEC03-238	Saltwater	23.88	Development	ED50	x			
Sea Urchin	Paracentrotus lividus	MEC03-238	Saltwater	8.74	Development	LOED	x			
Sea Urchin	***Paracentrotus lividus***	***MEC03-238***	***Saltwater***	***8.74***	***Mortality***	***LOED***	***x***	***x***		
Pacific oyster	Crassostrea gigas	MEC03-162	Saltwater	2.6	Biochemical	IP91	x			
Pacific oyster	Crassostrea gigas	MEC03-162	Saltwater	1.6	Development	NOED	x			
Pacific oyster	Crassostrea gigas	MEC03-162	Saltwater	5.6	Development	NOED	x			
Pacific oyster	Crassostrea gigas	MEC03-162	Saltwater	2.4	Development	NOED	x			
Shrimp -Opossum	Mysis relicta	MEC03-199	Freshwater	9.7	Mortality	LD33				Freshwater species
Shrimp -Opossum	Mysis relicta	MEC03-199	Freshwater	5.9	Mortality	LD67				Freshwater species
Shrimp -Opossum	Mysis relicta	MEC03-199	Freshwater	7.4	Mortality	LD35				Freshwater species
Shrimp -Opossum	Mysis relicta	MEC03-199	Freshwater	7.8	Mortality	LD82				Freshwater species
Green Mussel	Perna viridis	MEC04-114	Saltwater	7.8	Physiological	ED58	x			
Mussel	Mytilus edulis	Weston05-172	Saltwater	3.4	Mortality	NOED	x	x		No effects value in study
Mussel	Mytilus edulis	Weston05-172	Saltwater	3.4	Growth	NOED	x	x		No effects value in study
Pacific oyster	Crassostrea gigas	Weston06-052	Saltwater	0.613	Biochemical	NOED	x			
Pacific oyster	Crassostrea gigas	Weston06-052	Saltwater	0.629	Biochemical	NOED	x			
Pacific oyster	Crassostrea gigas	Weston06-052	Saltwater	0.437	Biochemical	NOED	x			
Pacific oyster	Crassostrea gigas	Weston06-052	Saltwater	0.459	Biochemical	NOED	x			
Pacific oyster	Crassostrea gigas	Weston06-052	Saltwater	0.587	Biochemical	NOED	x			
Pacific oyster	Crassostrea gigas	Weston06-052	Saltwater	0.384	Biochemical	NOED	x			
Pacific oyster	Crassostrea gigas	Weston06-052	Saltwater	0.613	Biochemical	ED43	x			
Pacific oyster	Crassostrea gigas	Weston06-052	Saltwater	0.629	Biochemical	ED28	x			
Pacific oyster	Crassostrea gigas	Weston06-052	Saltwater	0.437	Biochemical	ED34	x			
Pacific oyster	Crassostrea gigas	Weston06-052	Saltwater	0.459	Biochemical	NOED	x			
Pacific oyster	Crassostrea gigas	Weston06-052	Saltwater	0.587	Biochemical	NOED	x			
Pacific oyster	Crassostrea gigas	Weston06-052	Saltwater	0.384	Biochemical	NOED	x			
Pacific oyster	Crassostrea gigas	Weston06-052	Saltwater	0.613	Biochemical	NOED	x			
Pacific oyster	Crassostrea gigas	Weston06-052	Saltwater	0.629	Biochemical	NOED	x			
Pacific oyster	Crassostrea gigas	Weston06-052	Saltwater	0.437	Biochemical	NOED	x			
Pacific oyster	Crassostrea gigas	Weston06-052	Saltwater	0.459	Biochemical	NOED	x			
Pacific oyster	Crassostrea gigas	Weston06-052	Saltwater	0.587	Biochemical	NOED	x			
Pacific oyster	Crassostrea gigas	Weston06-052	Saltwater	0.384	Biochemical	NOED	x			
Cupped oyster	Crassostrea angulata	NewFields07-00	Saltwater	1352	Biochemical	NOED	x			
Cupped oyster	Crassostrea angulata	NewFields07-00	Saltwater	1352	Biochemical	NOED	x			
Cupped oyster	Crassostrea angulata	NewFields07-00	Saltwater	1352	Biochemical	NOED	x			
Cupped oyster	Crassostrea angulata	NewFields07-00	Saltwater	1352	Biochemical	NOED	x			
Cupped oyster	Crassostrea angulata	NewFields07-00	Saltwater	1352	Biochemical	ED40	x			
Cupped oyster	Crassostrea angulata	NewFields07-00	Saltwater	1352	Biochemical	IP150	x			
Cupped oyster	Crassostrea angulata	NewFields07-00	Saltwater	1352	Biochemical	ED64	x			
Cupped oyster	Crassostrea angulata	NewFields07-00	Saltwater	1352	Biochemical	ED20	x			
Cupped oyster	Crassostrea angulata	NewFields07-00	Saltwater	1611	Biochemical	IP266	x			
Cupped oyster	Crassostrea angulata	NewFields07-00	Saltwater	1611	Biochemical	IP113	x			
Cupped oyster	Crassostrea angulata	NewFields07-00	Saltwater	1611	Biochemical	NOED	x			
Cupped oyster	Crassostrea angulata	NewFields07-00	Saltwater	1611	Biochemical	IP266	x			

ATTACHMENT G TABLE 6
CRITICAL BODY RESIDUE DATA - Copper
CARR POINT - MRP SITE 1

Critical Body Residue Data Available							CBR Selection Process			
Species (Common Name)	**Species (Scientific Name)**	**Reference Identification**	**Type**	**Concentration (mg/kg wet weight)**	**Effect**	**Endpoint**	**Included Species**	**Included Effect**	**Included Endpoint**	**Reason Value Excluded**
Cupped oyster	Crassostrea angulata	NewFields07-00	Saltwater	1611	Biochemical	IP200	x			
Cupped oyster	Crassostrea angulata	NewFields07-00	Saltwater	1611	Biochemical	IP138	x			
Cupped oyster	Crassostrea angulata	NewFields07-00	Saltwater	1611	Biochemical	ED60	x			
Cupped oyster	Crassostrea angulata	NewFields07-00	Saltwater	1611	Biochemical	ED40	x			
Blue mussel	***Mytilus edulis***	***227***	***Saltwater***	***22.1***	***Mortality***	***LOED***	***x***	***x***	***x***	
Bivalve	***Cerastoderma edule***	***JA3***	***Saltwater***	***5***	***Mortality***	***LOED***	***x***	***x***	***x***	
Bivalve	***Macoma balthica***	***227***	***Saltwater***	***22***	***Mortality***	***LOED***	***x***	***x***	***x***	
Bivalve	***Macoma balthica***	***JA3***	***Saltwater***	***18***	***Mortality***	***NOED***	***x***	***x***	***x***	
Bivalve	Macoma balthica	JA3	Saltwater	16	Mortality	LD45	x	*x*		
Bivalve	Macoma balthica	JA3	Saltwater	22	Mortality	LD32	x	*x*		
Zebra mussel	Dreissena polymorpha	299	Freshwater	30 - 43	Mortality	NOED				Freshwater species
Zebra mussel	Dreissena polymorpha	JA243	Freshwater	40 - 80	Mortality	NOED				Freshwater species
Clam	Protothaca staminea	JA377	Saltwater	9.3	Mortality	NOED	x	*x*		No effects value in study

Notes:
All concentrations presented in mg/kg.
Data in italics and boldface were selected for use in the risk assessment.
Only whole body or soft part residues and adult life stage are presented.
Reference Identification corresponds to the references presented in Attachment G Table 16.
CBR - Critical body residue
EDx - Effective dose to x% of the population.
IP - Induction Percentage.
LDx - Lethal dose to x% of the population.
LOED - Lowest observed effect dose
NOED - No observed effect dose

CBR selection process:
1 - Select only whole body or soft part residues.
2 - Identify shellfish and other relevant saltwater invertebrate species (e.g., snails, crayfish).
3 - Identify Reproduction, Growth, and Mortality/Survival effects.
4 - Identify NOED values with no associated effects values and exclude those NOEDs.
5 - Identify range of acceptable NOED and LOED results for the three effects (Reproduction, Growth, and Mortality/Survival).
Alternative effects levels (i.e., LD50) only presented if no acceptable Table NOEDs or LOEDs are identified.

ATTACHMENT G TABLE 7
CRITICAL BODY RESIDUE DATA - Lead
CARR POINT - MRP SITE 1

Critical Body Residue Data Available							CBR Selection Process			
Species (Common Name)	**Species (Scientific Name)**	**Reference Identification**	**Type**	**Concentration (mg/kg wet weight)**	**Effect**	**Endpoint**	**Included Species**	**Included Effect**	**Included Endpoint**	**Reason Value Excluded**
Eastern oyster	Crassostrea virginica	JA499	Saltwater	2.28	Growth	NOED	x	x		No effects value in study
Eastern oyster	Crassostrea virginica	JA499	Saltwater	2.28	Mortality	NOED	x	x		No effects value in study
Eastern oyster	Crassostrea virginica	JA499	Saltwater	2.6	Reproduction	NOED	x	x		No effects value in study
Barnacle	Balanus crenatus	SEQ97-41	Saltwater	90	Behavior	NOED	x			No effects value in study
Mussel - Zebra	Dreissena polymorpha	URS151	Freshwater	200	Physiological	ED100				
Mussel - Zebra	***Dreissena polymorpha***	***URS151***	***Freshwater***	***200***	***Growth***	***LOED***	***x***	***x***	***x***	
Mussel - Zebra	***Dreissena polymorpha***	***URS151***	***Freshwater***	***200***	***Mortality***	***LOED***	***x***	***x***	***x***	
Mussel - Zebra	Dreissena polymorpha	URS151	Freshwater	35	Physiological	LOED				
Mussel - Zebra	***Dreissena polymorpha***	***URS151***	***Freshwater***	***35***	***Growth***	***NOED***	***x***	***x***	***x***	
Mussel - Zebra	***Dreissena polymorpha***	***URS151***	***Freshwater***	***35***	***Mortality***	***NOED***	***x***	***x***	***x***	
Mussel - Zebra	Dreissena polymorpha	URS151	Freshwater	7	Physiological	NOED				
Sea Urchin	***Paracentrotus lividus***	***MEC03-238***	***Saltwater***	***31.36***	***Mortality***	***LOED***	***x***	***x***	***x***	
Sea Urchin	***Paracentrotus lividus***	***MEC03-238***	***Saltwater***	***0.58***	***Mortality***	***NOED***	***x***	***x***	***x***	
Sea Urchin	Paracentrotus lividus	MEC03-238	Saltwater	621.1	Mortality	ED50	x	x		
Sea Urchin	Paracentrotus lividus	MEC03-238	Saltwater	167.1	Development	ED50	x			
Sea Urchin	Paracentrotus lividus	MEC03-238	Saltwater	31.36	Development	LOED	x			
Snail	Physa integra	419	Freshwater	200	Mortality	NOED		x		No effects value in study
Zebra mussel	Dreissena polymorpha	35	Freshwater	40	Mortality	NOED		x		No effects value in study

Notes:
All concentrations presented in mg/kg.
Data in italics and boldface were selected for use in the risk assessment.
Only whole body or soft part residues and adult life stage are presented.
Reference Identification corresponds to the references presented in Attachment G Table 16.
CBR - Critical body residue
EDx - Effective dose to x% of the population.
LOED - Lowest observed effect dose
NOED - No observed effect dose

CBR selection process:
1 - Select only whole body or soft part residues.
2 - Identify shellfish and other relevant saltwater invertebrate species (e.g., snails, crayfish).
3 - Identify Reproduction, Growth, and Mortality/Survival effects.
4 - Identify NOED values with no associated effects values and exclude those NOEDs.
5 - Identify range of acceptable NOED and LOED results for the three effects (Reproduction, Growth, and Mortality/Survival).
Alternative effects levels (i.e., LD50) only presented if no acceptable Table NOEDs or LOEDs are identified.

ATTACHMENT G TABLE 8
CRITICAL BODY RESIDUE DATA - Magnesium
CARR POINT - MRP SITE 1

Critical Body Residue Data Available							CBR Selection Process			
Species (Common Name)	**Species (Scientific Name)**	**Reference Identification**	**Type**	**Concentration (mg/kg wet weight)**	**Effect**	**Endpoint**	**Included Species**	**Included Effect**	**Included Endpoint**	**Reason Value Excluded**
Blue mussel	Mytilus edulis	JA227	Saltwater	15.5	Mortality	NOED	x	x		No effects value in study
Blue mussel	Mytilus edulis	JA227	Saltwater	18.4	Mortality	NOED	x	x		No effects value in study

Notes:
All concentrations presented in mg/kg.
Data in italics and boldface were selected for use in the risk assessment.
Only whole body or soft part residues and adult life stage are presented.
Reference Identification corresponds to the references presented in Attachment G Table 16.
CBR - Critical body residue
NOED - No observed effect dose

CBR selection process:
1 - Select only whole body or soft part residues.
2 - Identify shellfish and other relevant saltwater invertebrate species (e.g., snails, crayfish).
3 - Identify Reproduction, Growth, and Mortality/Survival effects.
4 - Identify NOED values with no associated effects values and exclude those NOEDs.
5 - Identify range of acceptable NOED and LOED results for the three effects (Reproduction, Growth, and Mortality/Survival).
Alternative effects levels (i.e., LD50) only presented if no acceptable Table NOEDs or LOEDs are identified.

ATTACHMENT G TABLE 9
CRITICAL BODY RESIDUE DATA - Manganese
CARR POINT - MRP SITE 1

Critical Body Residue Data Available							CBR Selection Process			
Species (Common Name)	**Species (Scientific Name)**	**Reference Identification**	**Type**	**Concentration (mg/kg wet weight)**	**Effect**	**Endpoint**	**Included Species**	**Included Effect**	**Included Endpoint**	**Reason Value Excluded**
Blue mussel	*Mytilus edulis*	227	Saltwater	18.4	Mortality	NOED	x	x		No effects value in study
Burrowing clam	*Macoma balthica*	227	Saltwater	15.5	Mortality	NOED	x	x		No effects value in study
Blue mussel	*Mytilus edulis*	Weston05-172	Saltwater	9.6	Mortality	NOED	x	x		No effects value in study
Blue mussel	*Mytilus edulis*	Weston05-172	Saltwater	9.6	Growth	NOED	x	x		No effects value in study

Notes:
All concentrations presented in mg/kg.
Data in italics and boldface were selected for use in the risk assessment.
Only whole body or soft part residues and adult life stage are presented.
Reference Identification corresponds to the references presented in Attachment G Table 16.
CBR - Critical body residue
NOED - No observed effect dose

CBR selection process:
1 - Select only whole body or soft part residues.
2 - Identify shellfish and other relevant saltwater invertebrate species (e.g., snails, crayfish).
3 - Identify Reproduction, Growth, and Mortality/Survival effects.
4 - Identify NOED values with no associated effects values and exclude those NOEDs.
5 - Identify range of acceptable NOED and LOED results for the three effects (Reproduction, Growth, and Mortality/Survival).
Alternative effects levels (i.e., LD50) only presented if no acceptable Table NOEDs or LOEDs are identified.

ATTACHMENT G TABLE 10
CRITICAL BODY RESIDUE DATA - Mercury
CARR POINT - MRP SITE 1

Critical Body Residue Data Available							CBR Selection Process			
Species (Common Name)	**Species (Scientific Name)**	**Reference Identification**	**Type**	**Concentration (mg/kg wet weight)**	**Effect**	**Endpoint**	**Included Species**	**Included Effect**	**Included Endpoint**	**Reason Value Excluded**
Shrimp - Grass	Palaemonetes pugio	URS11	Saltwater	1.64	Behavior	LOED	x			
Shrimp - Grass	Palaemonetes pugio	URS11	Saltwater	1.64	Mortality	NOED	x	x		No effects value in study
Crab - Fiddler	Uca pugnax	URS50	Saltwater	12.3	Development	LOED	x			
Crab - Fiddler	Uca pugnax	URS50	Saltwater	19.4	Development	LOED	x			
Clam - Marsh	Rangia cuneata	URS68	Saltwater	20	Mortality	LD50	x	x		
Clam - Marsh	Rangia cuneata	URS68	Saltwater	20	Mortality	LD50	x	x		
Clam - Marsh	***Rangia cuneata***	***URS68***	***Saltwater***	***73.1***	***Mortality***	***LOED***	***x***	***x***	***x***	
Bottle hornsnail	Pleurocera gradata	MEC03-122	Freshwater	0.8514	Cellular	ED55				Freshwater species
Clam - Soft Shell	Mya arenaria	MEC03-350	Saltwater	25	Biochemical	LOED	x			
Clam - Soft Shell	Mya arenaria	MEC03-350	Saltwater	50	Biochemical	LOED	x			
Snail	Viviparus georgianus	447	Freshwater	6	Mortality	NOED	x	x		No effects value in study
Snail	Viviparus georgianus	447	Freshwater	6	Growth	NOED	x	x		No effects value in study
Oyster	Crassostrea virginica	100	Saltwater	140.7	Mortality	LD65	x	x		
Oyster	***Crassostrea virginica***	***100***	***Saltwater***	***28***	***Mortality***	***NOED***	***x***	***x***	***x***	
Mussel	Elliptio complanata	447	Freshwater	3	Mortality	NOED	x	x		No effects value in study
Mussel	Elliptio complanata	447	Freshwater	3	Growth	NOED	x	x		No effects value in study
Grass shrimp	Palaemonetes pugio	URS11	Saltwater	1.1 - 2.1	Mortality	NOED	x	x		No effects value in study
Slipper limpet	***Crepidula fornicata***	***448***	***Saltwater***	***22 - 48***	***Growth***	***LOED***	***x***	***x***	***x***	
Slipper limpet	***Crepidula fornicata***	***448***	***Saltwater***	***10 - 17***	***Growth***	***NOED***	***x***	***x***	***x***	
Slipper limpet	***Crepidula fornicata***	***448***	***Saltwater***	***10 - 17***	***Reproduction***	***LOED***	***x***	***x***	***x***	
Slipper limpet	***Crepidula fornicata***	***448***	***Saltwater***	***4 - 8***	***Reproduction***	***NOED***	***x***	***x***	***x***	
Mussel	*Pyganodon grandis*	273	Freshwater	0.045	Mortality	NOED	x	x		No effects value in study
Mussel	*Pyganodon grandis*	273	Freshwater	0.045	Growth	NOED	x	x		No effects value in study
Mussel	*Pyganodon grandis*	273	Freshwater	0.045	Reproduction	NOED	x	x		No effects value in study

Notes:
All concentrations presented in mg/kg.
Data in italics and boldface were selected for use in the risk assessment.
Only whole body or soft part residues and adult life stage are presented.
Reference Identification corresponds to the references presented in Attachment G Table 16.
CBR - Critical body residue
EDx - Effective dose to x% of the population.
LDx - Lethal dose to x% of the population.
LOED - Lowest observed effect dose
NOED - No observed effect dose

CBR selection process:
1 - Select only whole body or soft part residues.
2 - Identify shellfish and other relevant saltwater invertebrate species (e.g., snails, crayfish).
3 - Identify Reproduction, Growth, and Mortality/Survival effects.
4 - Identify NOED values with no associated effects values and exclude those NOEDs.
5 - Identify range of acceptable NOED and LOED results for the three effects (Reproduction, Growth, and Mortality/Survival).
Alternative effects levels (i.e., LD50) only presented if no acceptable Table NOEDs or LOEDs are identified.

ATTACHMENT G TABLE 11
CRITICAL BODY RESIDUE DATA - Nickel
CARR POINT - MRP SITE 1

Critical Body Residue Data Available							CBR Selection Process			
Species (Common Name)	**Species (Scientific Name)**	**Reference Identification**	**Type**	**Concentration (mg/kg wet weight)**	**Effect**	**Endpoint**	**Included Species**	**Included Effect**	**Included Endpoint**	**Reason Value Excluded**
Clam	***Cerastoderma edule***	***URS236***	***Saltwater***	***575***	***Mortality***	***LOED***	***x***	***x***	***x***	
Clam	Cerastoderma edule	URS236	Saltwater	575	Growth	NOED	x	x		No effects value in study
Clam	***Cerastoderma edule***	***URS236***	***Saltwater***	***79***	***Mortality***	***NOED***	***x***	***x***	***x***	
Clam	Cerastoderma edule	URS236	Saltwater	167	Physiological	NOED	x			

Notes:
All concentrations presented in mg/kg.
Data in italics and boldface were selected for use in the risk assessment.
Only whole body or soft part residues and adult life stage are presented.
Reference Identification corresponds to the references presented in Attachment G Table 16.
CBR - Critical body residue
LOED - Lowest observed effect dose
NOED - No observed effect dose

CBR selection process:
1 - Select only whole body or soft part residues.
2 - Identify shellfish and other relevant saltwater invertebrate species (e.g., snails, crayfish).
3 - Identify Reproduction, Growth, and Mortality/Survival effects.
4 - Identify NOED values with no associated effects values and exclude those NOEDs.
5 - Identify range of acceptable NOED and LOED results for the three effects (Reproduction, Growth, and Mortality/Survival).
Alternative effects levels (i.e., LD50) only presented if no acceptable Table NOEDs or LOEDs are identified.

ATTACHMENT G TABLE 12
CRITICAL BODY RESIDUE DATA - Silver
CARR POINT - MRP SITE 1

Critical Body Residue Data Available							CBR Selection Process			
Species (Common Name)	**Species (Scientific Name)**	**Reference Identification**	**Type**	**Concentration (mg/kg wet weight)**	**Effect**	**Endpoint**	**Included Species**	**Included Effect**	**Included Endpoint**	**Reason Value Excluded**
Slipper Limpet	Crepidula fornicata	JA323	Saltwater	10.05	Reproduction	ED10	x	x		
Slipper Limpet	Crepidula fornicata	JA323	Saltwater	7.66	Reproduction	ED137	x	x		
Slipper Limpet	Crepidula fornicata	JA323	Saltwater	10.05	Reproduction	ED14	x	x		
Slipper Limpet	Crepidula fornicata	JA323	Saltwater	9.67	Reproduction	ED150	x	x		
Slipper Limpet	Crepidula fornicata	JA323	Saltwater	234	Reproduction	ED22	x	x		
Slipper Limpet	Crepidula fornicata	JA323	Saltwater	10.05	Reproduction	ED35	x	x		
Slipper Limpet	Crepidula fornicata	JA323	Saltwater	6.44	Reproduction	ED43	x	x		
Slipper Limpet	Crepidula fornicata	JA323	Saltwater	10.05	Reproduction	ED517	x	x		
Slipper Limpet	Crepidula fornicata	JA323	Saltwater	10.05	Reproduction	ED517	x	x		
Slipper Limpet	Crepidula fornicata	JA323	Saltwater	9.67	Reproduction	ED521	x	x		
Slipper Limpet	Crepidula fornicata	JA323	Saltwater	4.1	Reproduction	ED8	x	x		
Slipper Limpet	Crepidula fornicata	JA323	Saltwater	7.66	Reproduction	ED80	x	x		
Slipper Limpet	***Crepidula fornicata***	***JA323***	***Saltwater***	***9.67***	***Reproduction***	***NOED***	***x***	***x***	***x***	
Clam - Quahog	Mercenaria mercenaria	URS210	Saltwater	0.8	Physiological	LOED	x			
Mussel	Mytilus edulis	URS210	Saltwater	3.7	Physiological	LOED	x			
Clam - Soft Shell	Mya arenaria	URS210	Saltwater	10.4	Physiological	LOED	x			
Eastern oyster	Crassostrea virginica	URS210	Saltwater	12.4	Physiological	LOED	x			
Clam - Asiatic	***Corbicula fluminea***	***URS67***	***Saltwater***	***1650***	***Growth***	***LOED***	***x***	***x***	***x***	
Clam - Asiatic	***Corbicula fluminea***	***URS67***	***Saltwater***	***2510***	***Mortality***	***LOED***	***x***	***x***	***x***	
Clam - Asiatic	***Corbicula fluminea***	***URS67***	***Saltwater***	***800***	***Growth***	***NOED***	***x***	***x***	***x***	
Clam - Asiatic	***Corbicula fluminea***	***URS67***	***Saltwater***	***1650***	***Mortality***	***NOED***	***x***	***x***	***x***	
Slipper Limpet	***Crepidula fornicata***	***JA323***	***Saltwater***	***7.53***	***Reproduction***	***LOED***	***x***	***x***	***x***	
Slipper Limpet	***Crepidula fornicata***	***JA323***	***Saltwater***	***5.36***	***Reproduction***	***NOED***	***x***	***x***	***x***	
Slipper Limpet	***Crepidula fornicata***	***JA323***	***Saltwater***	***10***	***Reproduction***	***LOED***	***x***	***x***	***x***	
Slipper Limpet	***Crepidula fornicata***	***JA323***	***Saltwater***	***4.47***	***Reproduction***	***NOED***	***x***	***x***	***x***	

Notes:
All concentrations presented in mg/kg.
Data in italics and boldface were selected for use in the risk assessment.
Only whole body or soft part residues and adult life stage are presented.
Reference Identification corresponds to the references presented in Attachment G Table 16.
CBR - Critical body residue
EDx - Effective dose to x% of the population.
LOED - Lowest observed effect dose
NOED - No observed effect dose

CBR selection process:
1 - Select only whole body or soft part residues.
2 - Identify shellfish and other relevant saltwater invertebrate species (e.g., snails, crayfish).
3 - Identify Reproduction, Growth, and Mortality/Survival effects.
4 - Identify NOED values with no associated effects values and exclude those NOEDs.
5 - Identify range of acceptable NOED and LOED results for the three effects (Reproduction, Growth, and Mortality/Survival).
Alternative effects levels (i.e., LD50) only presented if no acceptable Table NOEDs or LOEDs are identified.

ATTACHMENT G TABLE 13
CRITICAL BODY RESIDUE DATA - Vanadium
CARR POINT - MRP SITE 1

Critical Body Residue Data Available							CBR Selection Process			
Species (Common Name)	**Species (Scientific Name)**	**Reference Identification**	**Type**	**Concentration (mg/kg wet weight)**	**Effect**	**Endpoint**	**Included Species**	**Included Effect**	**Included Endpoint**	**Reason Value Excluded**
Shrimp	*Lysmata seticaudata*	URS200	Saltwater	0.58	Mortality	NOED	x	x		No effects value in study
Crab - Shore	*Carcinus maenas*	URS200	Saltwater	0.6	Mortality	NOED	x	x		No effects value in study

Notes:
All concentrations presented in mg/kg.
Data in italics and boldface were selected for use in the risk assessment.
Only whole body or soft part residues and adult life stage are presented.
Reference Identification corresponds to the references presented in Attachment G Table 16.
CBR - Critical body residue
NOED - No observed effect dose

CBR selection process:
1 - Select only whole body or soft part residues.
2 - Identify shellfish and other relevant saltwater invertebrate species (e.g., snails, crayfish).
3 - Identify Reproduction, Growth, and Mortality/Survival effects.
4 - Identify NOED values with no associated effects values and exclude those NOEDs.
5 - Identify range of acceptable NOED and LOED results for the three effects (Reproduction, Growth, and Mortality/Survival).
Alternative effects levels (i.e., LD50) only presented if no acceptable Table NOEDs or LOEDs are identified.

ATTACHMENT G TABLE 14
CRITICAL BODY RESIDUE DATA - Zinc
CARR POINT - MRP SITE 1

Critical Body Residue Data Available							CBR Selection Process			
Species (Common Name)	Species (Scientific Name)	Reference Identification	Type	Concentration (mg/kg wet weight)	Effect	Endpoint	Included Species	Included Effect	Included Endpoint	Reason Value Excluded
Blue mussel	***Mytilus edulis***	***63***	***Saltwater***	***148 - 194***	***Mortality***	***LOED***	***x***	***x***	***x***	
Blue mussel	***Mytilus edulis***	***63***	***Saltwater***	***78***	***Mortality***	***NOED***	***x***	***x***	***x***	
Blue mussel	***Mytilus edulis***	***63***	***Saltwater***	***130***	***Mortality***	***LOED***	***x***	***x***	***x***	
Blue mussel	***Mytilus edulis***	***63***	***Saltwater***	***71***	***Mortality***	***NOED***	***x***	***x***	***x***	
Blue mussel	Mytilus edulis	227	Saltwater	38.4	Mortality	NOED	x	x		No effects value in study
Burrowing clam	Macoma balthica	227	Saltwater	55.8	Mortality	NOED	x	x		No effects value in study
Crayfish	Orconectes virilis	305	Freshwater	69.2	Mortality	LD61				Freshwater species
Crayfish	Orconectes virilis	305	Freshwater	37.8	Mortality	LD42				Freshwater species
Crayfish	Orconectes virilis	305	Freshwater	35.2	Mortality	LD22				Freshwater species
Crayfish	Orconectes virilis	305	Freshwater	12.7	Mortality	NOED		x		Freshwater species
Zebra mussel	Dreissena polymorpha	JA244	Freshwater	122	Mortality	NOED		x		Freshwater species
Mussel - Zebra	Dreissena polymorpha	JA244	Freshwater	30	Behavior	NOED	x			
Mussel - Zebra	Dreissena polymorpha	JA244	Freshwater	120	Mortality	NOED		x		Freshwater species
Pacific oyster	Crassostrea gigas	MEC03-162	Saltwater	10	Biochemical	IP91	x			
Pacific oyster	Crassostrea gigas	MEC03-162	Saltwater	7.6	Biochemical	IP96	x			
Mediterranean Mussel	Mytilus galloprovincialis	MEC03-226	Saltwater	18	Physiological	NOED	x			
Mediterranean Mussel	Mytilus galloprovincialis	MEC03-226	Saltwater	30	Physiological	LOED	x			
Mediterranean Mussel	Mytilus galloprovincialis	MEC03-226	Saltwater	40	Physiological	ED50	x			
Mussel	***Mytilus edulis***	***MEC03-234***	***Saltwater***	***25***	***Growth***	***LOED***	***x***	***x***	***x***	
Mussel	***Mytilus edulis***	***MEC03-234***	***Saltwater***	***26***	***Mortality***	***LOED***	***x***	***x***	***x***	
Mussel	Mytilus edulis	MEC03-234	Saltwater	26	Development	LOED	x			
Sea Urchin	Paracentrotus lividus	MEC03-238	Saltwater	40.6	Development	LOED	x			
Sea Urchin	Paracentrotus lividus	MEC03-238	Saltwater	37	Development	NOED	x			
Sea Urchin	***Paracentrotus lividus***	***MEC03-238***	***Saltwater***	***49.4***	***Mortality***	***NOED***	***x***	***x***	***x***	
Sea Urchin	***Paracentrotus lividus***	***MEC03-238***	***Saltwater***	***79.6***	***Mortality***	***LOED***	***x***	***x***	***x***	
Sea Urchin	Paracentrotus lividus	MEC03-238	Saltwater	106.8	Mortality	LD50	x	x		
Sea Urchin	Paracentrotus lividus	MEC03-238	Saltwater	59.4	Development	ED50	x			
Cupped oyster	Crassostrea angulata	NewFields07-005	Saltwater	2240	Biochemical	NOED	x			
Cupped oyster	Crassostrea angulata	NewFields07-005	Saltwater	1831	Biochemical	NOED	x			
Mediterranean Mussel	Mytilus galloprovincialis	NewFields07-005	Saltwater	73	Biochemical	NOED	x			
Cupped oyster	Crassostrea angulata	NewFields07-005	Saltwater	2240	Biochemical	NOED	x			
Cupped oyster	Crassostrea angulata	NewFields07-005	Saltwater	1831	Biochemical	NOED	x			
Mediterranean Mussel	Mytilus galloprovincialis	NewFields07-005	Saltwater	73	Biochemical	NOED	x			
Cupped oyster	Crassostrea angulata	NewFields07-005	Saltwater	2240	Biochemical	NOED	x			
Cupped oyster	Crassostrea angulata	NewFields07-005	Saltwater	1831	Biochemical	NOED	x			
Mediterranean Mussel	Mytilus galloprovincialis	NewFields07-005	Saltwater	73	Biochemical	NOED	x			
Cupped oyster	Crassostrea angulata	NewFields07-005	Saltwater	2240	Biochemical	NOED	x			
Cupped oyster	Crassostrea angulata	NewFields07-005	Saltwater	1831	Biochemical	NOED	x			
Mediterranean Mussel	Mytilus galloprovincialis	NewFields07-005	Saltwater	73	Biochemical	IP25	x			
Cupped oyster	Crassostrea angulata	NewFields07-005	Saltwater	2240	Biochemical	ED40	x			
Cupped oyster	Crassostrea angulata	NewFields07-005	Saltwater	1831	Biochemical	ED40	x			
Mediterranean Mussel	Mytilus galloprovincialis	NewFields07-005	Saltwater	73	Biochemical	NOED	x			
Cupped oyster	Crassostrea angulata	NewFields07-005	Saltwater	2240	Biochemical	IP150	x			
Cupped oyster	Crassostrea angulata	NewFields07-005	Saltwater	1831	Biochemical	IP150	x			
Mediterranean Mussel	Mytilus galloprovincialis	NewFields07-005	Saltwater	73	Biochemical	ED50	x			
Cupped oyster	Crassostrea angulata	NewFields07-005	Saltwater	2240	Biochemical	ED64	x			
Cupped oyster	Crassostrea angulata	NewFields07-005	Saltwater	1831	Biochemical	ED64	x			
Mediterranean Mussel	Mytilus galloprovincialis	NewFields07-005	Saltwater	73	Biochemical	IP43	x			
Cupped oyster	Crassostrea angulata	NewFields07-005	Saltwater	2240	Biochemical	ED20	x			
Cupped oyster	Crassostrea angulata	NewFields07-005	Saltwater	1831	Biochemical	ED20	x			
Mediterranean Mussel	Mytilus galloprovincialis	NewFields07-005	Saltwater	73	Biochemical	IP43	x			

ATTACHMENT G TABLE 14
CRITICAL BODY RESIDUE DATA - Zinc
CARR POINT - MRP SITE 1

Critical Body Residue Data Available							CBR Selection Process			
Species (Common Name)	Species (Scientific Name)	Reference Identification	Type	Concentration (mg/kg wet weight)	Effect	Endpoint	Included Species	Included Effect	Included Endpoint	Reason Value Excluded
Cupped oyster	Crassostrea angulata	NewFields07-005	Saltwater	3016	Biochemical	IP266	x			
Cupped oyster	Crassostrea angulata	NewFields07-005	Saltwater	15494	Biochemical	IP266	x			
Cupped oyster	Crassostrea angulata	NewFields07-005	Saltwater	3016	Biochemical	IP113	x			
Cupped oyster	Crassostrea angulata	NewFields07-005	Saltwater	15494	Biochemical	IP113	x			
Cupped oyster	Crassostrea angulata	NewFields07-005	Saltwater	3016	Biochemical	NOED	x			
Cupped oyster	Crassostrea angulata	NewFields07-005	Saltwater	15494	Biochemical	NOED	x			
Cupped oyster	Crassostrea angulata	NewFields07-005	Saltwater	3016	Biochemical	IP266	x			
Cupped oyster	Crassostrea angulata	NewFields07-005	Saltwater	15494	Biochemical	IP266	x			
Cupped oyster	Crassostrea angulata	NewFields07-005	Saltwater	3016	Biochemical	IP200	x			
Cupped oyster	Crassostrea angulata	NewFields07-005	Saltwater	15494	Biochemical	IP200	x			
Cupped oyster	Crassostrea angulata	NewFields07-005	Saltwater	3016	Biochemical	IP138	x			
Cupped oyster	Crassostrea angulata	NewFields07-005	Saltwater	15494	Biochemical	IP138	x			
Cupped oyster	Crassostrea angulata	NewFields07-005	Saltwater	3016	Biochemical	ED60	x			
Cupped oyster	Crassostrea angulata	NewFields07-005	Saltwater	15494	Biochemical	ED60	x			
Cupped oyster	Crassostrea angulata	NewFields07-005	Saltwater	3016	Biochemical	ED40	x			
Cupped oyster	Crassostrea angulata	NewFields07-005	Saltwater	15494	Biochemical	ED40	x			
rock oyster	Saccostrea cucullata	NewFields08-033	Saltwater	460	Physiological	IP87	x			
rock oyster	Saccostrea cucullata	NewFields08-033	Saltwater	500	Physiological	IP86	x			
rock oyster	Saccostrea cucullata	NewFields08-033	Saltwater	460	Physiological	IP640	x			
rock oyster	Saccostrea cucullata	NewFields08-033	Saltwater	500	Physiological	IP626	x			
rock oyster	Saccostrea cucullata	NewFields08-033	Saltwater	500	Physiological	IP47	x			
rock oyster	Saccostrea cucullata	NewFields08-033	Saltwater	500	Physiological	IP106	x			
Barnacle	Balanus crenatus	SEQ97-41	Saltwater	3200	Behavior	NOED	x			
Zebra mussel	Dreissena polymorpha	URS151	Freshwater	600	Mortality	LD50		x		Freshwater species
Zebra mussel	Dreissena polymorpha	URS151	Freshwater	150	Mortality	NOED		x	x	Freshwater species
Zebra mussel	Dreissena polymorpha	URS151	Freshwater	600	Growth	NOED		x		No effects value in study
Mussel - Zebra	Dreissena polymorpha	URS151	Freshwater	621	Mortality	LOED		x	x	Freshwater species
Mussel - Zebra	Dreissena polymorpha	URS151	Freshwater	140	Physiological	LOED	x			
Mussel - Zebra	Dreissena polymorpha	URS151	Freshwater	621	Growth	NOED		x		No effects value in study
Mussel - Zebra	Dreissena polymorpha	URS151	Freshwater	140	Mortality	NOED		x	x	Freshwater species
Mussel - Zebra	Dreissena polymorpha	URS151	Freshwater	50	Physiological	NOED	x			
Bivalve	Mysella anomala	Weston05-018	Saltwater	18	Mortality	LD28	x	x		
Bivalve	Mysella anomala	Weston05-018	Saltwater	18	Mortality	LD62	x	x		
Bivalve	Mysella anomala	Weston05-018	Saltwater	30	Mortality	LD65	x	x		
Bivalve	***Mysella anomala***	***Weston05-018***	***Saltwater***	***5***	***Mortality***	***NOED***	***x***	***x***	***x***	
Cupped oyster	Crassostrea angulata	Weston05-161	Saltwater	1720.6	Lesions	NOED	x			
Peppery furrow shell clam	Scrobicularia plana	Weston05-161	Saltwater	160	Lesions	NOED	x			

ATTACHMENT G TABLE 14
CRITICAL BODY RESIDUE DATA - Zinc
CARR POINT - MRP SITE 1

Critical Body Residue Data Available							CBR Selection Process			
Species (Common Name)	**Species (Scientific Name)**	**Reference Identification**	**Type**	**Concentration (mg/kg wet weight)**	**Effect**	**Endpoint**	**Included Species**	**Included Effect**	**Included Endpoint**	**Reason Value Excluded**
Cupped oyster	Crassostrea angulata	Weston05-161	Saltwater	1773	Lesions	TD	x			
Peppery furrow shell clam	Scrobicularia plana	Weston05-161	Saltwater	172.4	Lesions	TD	x			
Mussel	Mytilus edulis	Weston05-172	Saltwater	26	Mortality	NOED	x	x		No effects value in study
Mussel	Mytilus edulis	Weston05-172	Saltwater	26	Growth	NOED	x	x		No effects value in study

Notes:
All concentrations presented in mg/kg.
Data in italics and boldface were selected for use in the risk assessment.
Only whole body or soft part residues and adult life stage are presented.
Reference Identification corresponds to the references presented in Attachment G Table 16.
CBR - Critical body residue
EDx - Effective dose to x% of the population.
IP - Induction Percentage.
LDx - Lethal dose to x% of the population.
LOED - Lowest observed effect dose
NOED - No observed effect dose

CBR selection process:
1 - Select only whole body or soft part residues.
2 - Identify shellfish and other relevant saltwater invertebrate species (e.g., snails, crayfish).
3 - Identify Reproduction, Growth, and Mortality/Survival effects.
4 - Identify NOED values with no associated effects values and exclude those NOEDs.
5 - Identify range of acceptable NOED and LOED results for the three effects (Reproduction, Growth, and Mortality/Survival).
Alternative effects levels (i.e., LD50) only presented if no acceptable Table NOEDs or LOEDs are identified.

ATTACHMENT G TABLE 15
CRITICAL BODY RESIDUE DATA - Total PAHs
CARR POINT - MRP SITE 1

Critical Body Residue Data Available							CBR Selection Process			
Species (Common Name)	**Species (Scientific Name)**	**Reference Identification**	**Type**	**Concentration (mg/kg wet weight)**	**Effect**	**Endpoint**	**Included Species**	**Included Effect**	**Included Endpoint**	**Reason Value Excluded**
Mussel	Mytilus edulis	NewFields11-065	***Saltwater***	5.48	Cellular	NOED	x			
Mussel	Mytilus edulis	NewFields11-065	***Saltwater***	10.428	Cellular	NOED	x			
Mussel	Mytilus edulis	NewFields11-065	***Saltwater***	5.48	Cellular	NOED	x			
Mussel	Mytilus edulis	NewFields11-065	***Saltwater***	10.42	Cellular	ED139	x			
Mussel	Mytilus edulis	NewFields11-065	***Saltwater***	0.11	Cellular	ED25	x			
Mussel	Mytilus edulis	NewFields11-065	***Saltwater***	0.11	Cellular	ED50	x			
Mussel	Mytilus edulis	NewFields11-065	***Saltwater***	0.211	Cellular	ED25	x			
Mussel	Mytilus edulis	NewFields11-065	***Saltwater***	0.095	Cellular	ED50	x			
Mussel	Mytilus edulis	NewFields11-065	***Saltwater***	0.07	Cellular	NOED	x			
Mussel	Mytilus edulis	NewFields11-065	***Saltwater***	0.11	Cellular	ED150	x			
Mussel	Mytilus edulis	NewFields11-065	***Saltwater***	0.176	Cellular	ED200	x			
Mussel	Mytilus edulis	NewFields11-065	***Saltwater***	0.211	Cellular	ED300	x			
Mussel	Mytilus edulis	NewFields11-065	***Saltwater***	0.152	Cellular	ED200	x			
Mussel	Mytilus edulis	NewFields11-065	***Saltwater***	0.095	Cellular	ED150	x			
Mussel	Mytilus edulis	NewFields11-065	***Saltwater***	0.07	Cellular	NOED	x			
Northern shrimp	Pandalus borealis	NewFields11-073	***Saltwater***	0.096	Mortality	LD10	x	x		
Northern shrimp	Pandalus borealis	NewFields11-073	***Saltwater***	0.716	Mortality	LD100	x	x		
Northern shrimp	Pandalus borealis	NewFields11-073	***Saltwater***	0.028	Cellular	ED114	x			
Northern shrimp	Pandalus borealis	NewFields11-073	***Saltwater***	0.716	Cellular	ED54	x			
Northern shrimp	Pandalus borealis	NewFields11-073	***Saltwater***	0.028	Cellular	NOED	x			
Northern shrimp	Pandalus borealis	NewFields11-073	***Saltwater***	0.096	Cellular	ED06	x			
Northern shrimp	Pandalus borealis	NewFields11-073	***Saltwater***	0.716	Cellular	ED11	x			
Northern shrimp	***Pandalus borealis***	***NewFields11-073***	***Saltwater***	***0.028***	***Reproduction***	***NOED***	***x***	***x***	***x***	
Northern shrimp	***Pandalus borealis***	***NewFields11-073***	***Saltwater***	***0.096***	***Reproduction***	***ED18***	***x***	***x***	***x***	
Northern shrimp	***Pandalus borealis***	***NewFields11-073***	***Saltwater***	***0.716***	***Reproduction***	***ED36***	***x***	***x***	***x***	
Northern shrimp	***Pandalus borealis***	***NewFields11-073***	***Saltwater***	***0.716***	***Reproduction***	***ED43***	***x***	***x***	***x***	
Northern shrimp	***Pandalus borealis***	***NewFields11-073***	***Saltwater***	***0.716***	***Reproduction***	***ED66***	***x***	***x***	***x***	
Northern shrimp	Pandalus borealis	NewFields11-073	***Saltwater***	0.182	Mortality	LD10	x	x		
Northern shrimp	Pandalus borealis	NewFields11-073	***Saltwater***	1.592	Mortality	LD100	x	x		
Northern shrimp	Pandalus borealis	NewFields11-073	***Saltwater***	1.592	Cellular	NOED	x			
Northern shrimp	Pandalus borealis	NewFields11-073	***Saltwater***	1.592	Cellular	ED52	x			
Northern shrimp	Pandalus borealis	NewFields11-073	***Saltwater***	1.592	Cellular	ED13	x			
Northern shrimp	***Pandalus borealis***	***NewFields11-073***	***Saltwater***	***0.052***	***Reproduction***	***ED12***	***x***	***x***	***x***	
Northern shrimp	***Pandalus borealis***	***NewFields11-073***	***Saltwater***	***0.182***	***Reproduction***	***ED18***	***x***	***x***	***x***	
Northern shrimp	***Pandalus borealis***	***NewFields11-073***	***Saltwater***	***1.592***	***Reproduction***	***ED26***	***x***	***x***	***x***	
Northern shrimp	Pandalus borealis	NewFields11-073	***Saltwater***	0.182	Cellular	ED42	x			
Northern shrimp	Pandalus borealis	NewFields11-073	***Saltwater***	0.182	Cellular	NOED	x			

ATTACHMENT G TABLE 15
CRITICAL BODY RESIDUE DATA - Total PAHs
CARR POINT - MRP SITE 1
Notes:
All concentrations presented in mg/kg.
Data in italics and boldface were selected for use in the risk assessment.
Only whole body or soft part residues and adult life stage are presented.
Reference Identification corresponds to the references presented in Attachment G Table 16.
CBR - Critical body residue
EDx - Effective dose to x% of the population.
LDx - Lethal dose to x% of the population.
NOED - No observed effect dose

CBR selection process:
1 - Select only whole body or soft part residues.
2 - Identify shellfish and other relevant saltwater invertebrate species (e.g., snails, crayfish).
3 - Identify Reproduction, Growth, and Mortality/Survival effects.
4 - Identify NOED values with no associated effects values and exclude those NOEDs.
5 - Identify range of acceptable NOED and LOED results for the three effects (Reproduction, Growth, and Mortality/Survival).
Alternative effects levels (i.e., LD50) only presented if no acceptable Table NOEDs or LOEDs are identified.

ATTACHMENT G TABLE 16
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CARR POINT - MRP SITE 1

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222	1986	Jayasekara S, Drown DB, Sharma RP	Ecotoxicol Environ Saf 11:23–30
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ATTACHMENT G TABLE 16
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CARR POINT - MRP SITE 1

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ATTACHMENT H

SCREENING LEVEL FOOD WEB MODEL

H-1 TERRESTRIAL RECEPTORS

H-2 SEMI-AQUATIC RECEPTORS

ATTACHMENT H-1
SCREENING LEVEL FOOD CHAIN MODEL - UPLAND EXPOSURE AREA
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ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

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ATTACHMENT H-1 TABLE 1
EXPOSURE PARAMETERS FOR TERRESTRIAL ECOLOGICAL RECEPTORS FOR SRA
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

Receptor Species	Minimum Body Weight (kg)	Maximum Body Weight (kg)	Food Ingestion Rate (kg_{dw}/day)	Dietary Assumptions for Use in SRA (%; kg_{ww}/day)		Incidental Soil/Sediment Ingestion (%; kg_{dw}/day)
				Terestrial Plants	Soil Invertebrates	
BIRDS						
Bobwhite quail *(Colinus virginianus)*	0.154 [a]	0.194 [a,b]	0.0096 [c]	100% [d] 0.0641	--	13.9% [e] 0.0013
American robin *(Turdus migratorius)*	0.0773 [a]	0.0862 [a,b]	0.0125 [c]	--	100% [d] 0.0781	3.0% [e] 0.00038
MAMMALS						
Meadow vole *(Microtus pennsylvanicus)*	0.0170 [a]	0.0524 [a,b]	0.0103 [c]	100% [d] 0.0688	--	3.2% [e] 0.00033
Short-tailed shrew *(Blarina brevicauda)*	0.0150 [a]	0.0192 [a,b]	0.0023 [c]	--	100% [d] 0.0147	3.0% [e] 0.000070

General Notes:

Food ingestion rates are wet weight for food items and dry weight for sediment ingestion. As needed, rate may be converted.

See individual organism notes for source, units, and conversion.

Moisture content of food items assumed to be as follows: 84% for Soil Invertebrates (earthworms), and 85% for Terrestrial Plants (dicots) (USEPA, 1993).

All receptors assumed to be present and actively foraging year-round in screening level evaluation (area use factor [AUF] and exposure duration [ED] set at 100%).

kg - kilogram.
BW - Body Weight.
DW - Dry Weight.
SRA - Screening Risk Assessment.
WW - Wet Weight.
FIR - Food Ingestion Rate.

ATTACHMENT H-1 TABLE 1
EXPOSURE PARAMETERS FOR TERRESTRIAL ECOLOGICAL RECEPTORS FOR SRA
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

Notes for Bobwhite quail
[a] Range of adult body weights listed by USEPA (1993).
[b] Maximum body weight is only used to determine conservative ingestion rates for the SRA.
[c] Food ingestion rate calculated using algorithm for quail developed by Nagy, 2001 [FIR (g_{dw}/day) = $0.088*BW^{0.891}$] using maximum body weight.
[d] An exclusive diet was selected for the SRA.
[e] In the absence of data for quail, the incidental soil ingestion rate is based on 90th percentile value for mourning dove (USEPA, 2007a).

Notes for American robin
[a] Range of adult body weights listed by USEPA (1993).
[b] Maximum body weight is only used to determine conservative ingestion rates for the SRA.
[c] Food ingestion rate calculated using algorithm for insectivorous birds developed by Nagy, 2001 [FIR (g_{dw}/day) = $0.540*BW^{0.705}$] using maximum body weight.
[d] An exclusive diet was selected for the SRA.
[e] In the absence of data for the robin, the incidental soil ingestion rate is based on 90th percentile value for shrew (consuming 100% earthworms; USEPA, 2007a).

Notes for Meadow vole
[a] Range of adult body weights listed by USEPA (1993).
[b] Maximum body weight is only used to determine conservative ingestion rates for the SRA.
[c] Food ingestion rate calculated using algorithm for herbivorous mammals developed by Nagy, 2001 [FIR (g_{dw}/day) = $0.859*BW^{0.628}$] using maximum body weight.
[d] An exclusive diet was selected for the SRA.
[e] The incidental soil ingestion rate is based on 90th percentile value for vole (USEPA, 2007a).

Notes for Short-tailed shrew
[a] Range of adult body weights listed by USEPA (1993).
[b] Maximum body weight is only used to determine conservative ingestion rates for the SRA.
[c] Food ingestion rate calculated using algorithm for insectivorous mammals developed by Nagy, 2001 [FIR (g_{dw}/day) = $0.373*BW^{0.622}$] using maximum body weight.
[d] An exclusive diet was selected for the SRA.
[e] The incidental soil ingestion rate is based on 90th percentile value for shrew (USEPA, 2007a).

ATTACHMENT H-1 TABLE 2
TERRESTRIAL MEDIA AND TISSUE CONCENTRATIONS FOR SRA
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

	Measured Media Concentrations (a)	**Estimated Soil Invertebrate Tissue**			**Estimated Terrestrial Plant Tissue**		
COPC	Maximum Soil EPC (mg/kg_{dw})	Soil-to-Invertebrate Uptake Factor		Maximum Invertebrate Tissue EPC (mg/kg_{ww})	Soil-to-Plant Uptake Factor		Maximum Plant Tissue EPC (mg/kg_{ww})
Inorganics							
ANTIMONY	396	1	(c)	63.4	Eco-SSL regression	(f)	1.6
ARSENIC	130	Eco-SSL regression	(c)	1.2	0.03752	(f)	0.73
CADMIUM	0.84	Eco-SSL regression	(c)	1.2	Eco-SSL regression	(f)	0.08
CHROMIUM, TOTAL	30.1	0.306	(c)	1.5	0.041	(f)	0.19
COPPER	256	0.515	(c)	21.1	Eco-SSL regression	(f)	2.6
LEAD	29900	Eco-SSL regression	(c)	526	Eco-SSL regression	(f)	12.9
MERCURY	0.2	Regression	(b)	0.10	5.0	(e)	0.16
SELENIUM	0.66	Eco-SSL regression	(c)	0.11	Eco-SSL regression	(f)	0.048
THALLIUM	0.15	1	(d)	0.024	1	(d)	0.023
VANADIUM	26.6	0.042	(c)	0.18	0.00485	(f)	0.019
ZINC	433	Eco-SSL regression	(c)	100	Eco-SSL regression	(f)	20.9
Organics							
TOTAL LMW PAHs	140	3.04	(c)	68.1	Eco-SSL regression	(f)	0.38
TOTAL HMW PAHs	650	2.6	(c)	270	Eco-SSL regression	(f)	12.6
TOTAL PCBs	270	15.9	(b)	687	0.00865	(g)	0.35
4,4-DDT	19.0	Eco-SSL regression	(c)	17.3	0.00378	(g)	0.011
ENDOSULFAN SULFATE	12	1	(d)	1.9	0.231	(g, h)	0.42

Notes:
Maximum EPCs for screening level evaluation represent maximum detected concentrations.
Unless otherwise noted, uptake factors derive tissue concentrations on a dry weight basis. Concentrations are adjusted to a wet weight basis using moisture content below.
Moisture content of food items assumed to be as follows: 84% for Soil Invertebrates (earthworms), and 85% for Terrestrial Plants (dicots) (USEPA, 1993).

COPC - Chemical of Potential Concern.
EPC - Exposure Point Concentration.
dw - Dry Weight.
HMW - High Molecular Weight.
LMW - Low Molecular Weight.
PAH - Polycyclic Aromatic Hydrocarbon.
PCB - Polychlorinated Biphenyl.
USEPA - United States Environmental Protection Agency.
ww - Wet Weight.

ATTACHMENT H-1 TABLE 2
TERRESTRIAL MEDIA AND TISSUE CONCENTRATIONS FOR SRA
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

(a) Media summary statistics presented in Tables 3 and 4 of Ecological Risk Assessment appendix.
(b) Soil-to-earthworm uptake factors from Sample, et al (1998) - iron from Table C.1, mercury regression from Table 4, PCBs from Table 11. Value for SRA is 90th percentile.

mercury	ln(tissue concentration) = 0.3369 * ln(soil concentration) + 0.0781

(c) Soil-to-invertebrate uptake factors and regression equations recommended by USEPA in development of Ecological Soil Screening Levels (USEPA, 2007a)

arsenic	ln(tissue concentration) = 0.706 * ln(soil concentration) - 1.421
cadmium	ln(tissue concentration) = 0.795 * ln(soil concentration) + 2.114
lead	ln(tissue concentration) = 0.807 * ln(soil concentration) - 0.218
selenium	ln(tissue concentration) = 0.733 * ln(soil concentration) - 0.075
zinc	ln(tissue concentration) = 0.328 * ln(soil concentration) + 4.449
4,4'-DDT	ln(tissue concentration) = 0.8689 * ln(soil concentration) + 2.1247

(d) A default value of 1 assigned to parameters without uptake factors.
(e) Soil-to-plant uptake factors from Bechtel Jacobs (1998; mercury value from Table 6).
(f) Soil-to-plant uptake factors and regression equations recommended by USEPA in development of Ecological Soil Screening Levels (USEPA, 2007a)

antimony	ln(tissue concentration) = 0.938 * ln(soil concentration) - 3.233
cadmium	ln(tissue concentration) = 0.546 * ln(soil concentration) - 0.475
copper	ln(tissue concentration) = 0.394 * ln(soil concentration) + 0.668
lead	ln(tissue concentration) = 0.561 * ln(soil concentration) - 1.328
selenium	ln(tissue concentration) = 1.104 * ln(soil concentration) - 0.677
zinc	ln(tissue concentration) = 0.554 * ln(soil concentration) + 1.575
Total LMW PAHs	ln(tissue concentration) = 0.4544 * ln(soil concentration) - 1.3205
Total HMW PAHs	ln(tissue concentration) = 0.9469 * ln(soil concentration) - 1.7026

(g) Values identified using the Risk Assessment Information System (http://rais.ornl.gov/cgi-bin/tools/TOX_search?select=chem_spef; accessed September 22, 2012).
(h) Value for endosulfan used as a surrogate due to structural similarity.

ATTACHMENT H-1 TABLE 3
TOXICITY REFERENCE VALUES FOR SRA
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

COPC	TRV ($mg/kg_{bw}/day$)	Endpoint	Effect	Chronic/ Subchronic	Species	Primary Reference	Source of Reference
Inorganics							
ANTIMONY	0.059	NOAEL	reproduction & growth	chronic	mammals	USEPA, 2005a	
ARSENIC	2.24	NOAEL	reproduction & growth	chronic	birds	USEPA, 2005b	
ARSENIC	1.04	NOAEL	reproduction & growth	chronic	mammals	USEPA, 2005b	
CADMIUM	1.47	NOAEL	reproduction & growth	chronic	birds	USEPA, 2005c	
CADMIUM	0.77	NOAEL	reproduction & growth	chronic	mammals	USEPA, 2005c	
CHROMIUM, TOTAL	2.66	NOAEL	reproduction & growth	chronic	birds	USEPA, 2008	
CHROMIUM, TOTAL	2.4	NOAEL	reproduction & growth	chronic	mammals	USEPA, 2008	
COPPER	4.05	NOAEL	reproduction & growth	chronic	birds	USEPA, 2007b	
COPPER	5.6	NOAEL	reproduction & growth	chronic	mammals	USEPA, 2007b	
LEAD	1.63	NOAEL	reproduction & growth	chronic	birds	USEPA, 2005d	
LEAD	4.7	NOAEL	reproduction & growth	chronic	mammals	USEPA, 2005d	
MERCURY	0.0064	estimated NOAEL	reproductive	chronic	mallard duck	Heinz, 1979	Sample et al., 1996
MERCURY	0.032	NOAEL	reproductive	chronic	rat	Verschuuren et al., 1976	Sample et al., 1996
SELENIUM	0.29	NOAEL	reproduction & growth	chronic	birds	USEPA, 2007c	
SELENIUM	0.143	NOAEL	reproduction & growth	chronic	mammals	USEPA, 2007c	
THALLIUM	0.0074	NOAEL	reproduction	subchronic	rat	Formigli, et al., 1986	Sample et al., 1996
VANADIUM	0.344	NOAEL	reproduction & growth	chronic	birds	USEPA, 2005e	
VANADIUM	4.16	NOAEL	reproduction & growth	chronic	mammals	USEPA, 2005e	
ZINC	75.4	NOAEL	reproduction & growth	chronic	mammals	USEPA, 2007d	
ZINC	66.1	NOAEL	reproduction & growth	chronic	birds	USEPA, 2007d	
Organics							
TOTAL LMW PAHs	65.6	NOAEL	reproduction & growth	chronic	mammals	USEPA, 2007e	
TOTAL HMW PAHs	0.615	NOAEL	reproduction & growth	chronic	mammals	USEPA, 2007e	
TOTAL LMW PAHs / HMW PAHs	2	NOAEL	systemic	chronic	nestling/starlings	Trust et al., 1994	
4,4-DDT	0.147	NOAEL	reproduction & growth	chronic	mammals	USEPA, 2007f	
4,4-DDT	0.227	NOAEL	reproduction & growth	chronic	birds	USEPA, 2007f	
ENDOSULFAN	0.15	NOAEL	reproduction	subchronic	rat	Dikshith et al., 1984	ATSDR, 2000
ENDOSULFAN	10	NOAEL	reproduction	chronic	gray partridge	Abiola, 1992	Sample et al., 1996
TOTAL PCBs	0.18	estimated NOAEL	reproduction	chronic	pheasant	Dahlgren et al., 1972	Sample et al., 1996
TOTAL PCBs	0.068	estimated NOAEL	reproduction	chronic	mouse	McCoy et al., 1995	Sample et al., 1996

Notes:
COPC - Chemical of Potential Concern.
HMW - High Molecular Weight.
LMW - Low Molecular Weight.
LOAEL - Lowest Observed Adverse Effects Level.
NOAEL - No Observed Adverse Effects Level.
PAH - Polycyclic Aromatic Hydrocarbon.
PCB - Polychlorinated Biphenyl.
USEPA - United States Environmental Protection Agency.
The avian NOAELs for the HMW and LMW PAHs are based on 7,12-dimethylbenz(a)anthracene.
Avian TRVs are not available for antimony and thallium.
NOAELs were estimated if a NOAEL was not identified in the literature. The LOAEL was divided by 10 to derive an estimated NOAEL.
Endosulfan used as a surrogate for endosulfan sulfate.

ATTACHMENT H-1 TABLE 4
POTENTIAL RISKS TO THE BOBWHITE QUAIL - SRA
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

ASSUMPTIONS FOR THE BOBWHITE QUAIL	
Minimum Body Weight (kg)	0.154
Exposure Duration	1
Area Use Factor	1
Soil Consumption Rate (kg_{dw}/day)	0.0013
Terrestrial Plant Consumption Rate (kg_{ww}/day)	0.0641

$$\text{Total Daily Dose} = \frac{\Sigma([IR_f \times C_f] + [IR_s \times C_s] \times ED \times AUF}{\text{Minimum Body Weight (kg)}}$$

Where:
IR_f = Ingestion rate of food (kg/day)
IR_s = Incidental ingestion rate of soil or sediment (kg/day)
C_f = Concentration of COPC in food (mg/kg)
C_s= Concentration of COPC in sediment or soil (mg/kg)
ED = Exposure duration (fraction of time receptor spends within exposure area)
AUF = Area use factor (ratio of the receptor's home range, etc,...

Notes:
COPC - Chemical of Potential Concern.
dw - Dry Weight.
EPC - Exposure Point Concentration.
HMW - High Molecular Weight.
HQ - Hazard Quotient (Dose/TRV).
LMW - Low Molecular Weight.
NC - Not Calculated.
NV - No Value.
NOAEL - No Observed Adverse Effects Level.
PAHs - Polycyclic Aromatic Hydrocarbons.
PCBs - Polychlorinated Biphenyls.
TRV - Toxicity Reference Value.
ww - Wet Weight.

HQs above 1 are bolded and highlighted.
Maximum EPCs for screening level evaluation represent maximum detected concentrations.

SUPPORTING CALCULATIONS

FOOD WEB MODEL - MAXIMUM CONCENTRATIONS	Media Concentrations		Potential Daily Dose (mg/kg_{dw}/day)				
COPC	Soil (mg/kg_{dw})	Terrestrial Plant (mg/kg_{ww})	Soil	Terrestrial Plant	Total	NOAEL-based TRV (mg/kg_{dw}/day)	NOAEL-based HQ
Inorganics							
ANTIMONY	4.0E+02	1.6E+00	3.4E+00	6.7E-01	4.1E+00	NV	NC
ARSENIC	1.3E+02	7.3E-01	1.1E+00	3.0E-01	1.4E+00	2.2E+00	6.4E-01
CADMIUM	8.4E-01	8.5E-02	7.3E-03	3.5E-02	4.3E-02	1.5E+00	2.9E-02
CHROMIUM, TOTAL	3.0E+01	1.9E-01	2.6E-01	7.7E-02	3.4E-01	2.7E+00	1.3E-01
COPPER	2.6E+02	2.6E+00	2.2E+00	1.1E+00	3.3E+00	4.1E+00	8.2E-01
LEAD	3.0E+04	1.3E+01	2.6E+02	5.4E+00	2.6E+02	1.6E+00	**1.6E+02**
MERCURY	2.1E-01	1.6E-01	1.8E-03	6.6E-02	6.7E-02	6.4E-03	**1.1E+01**
SELENIUM	6.6E-01	4.8E-02	5.7E-03	2.0E-02	2.6E-02	2.9E-01	8.9E-02
THALLIUM	1.5E-01	2.3E-02	1.3E-03	9.4E-03	1.1E-02	NV	NC
VANADIUM	2.7E+01	1.9E-02	2.3E-01	8.1E-03	2.4E-01	3.4E-01	7.0E-01
ZINC	4.3E+02	2.1E+01	3.8E+00	8.7E+00	1.2E+01	6.6E+01	1.9E-01
Organics							
TOTAL LMW PAHs	1.4E+02	3.8E-01	1.2E+00	1.6E-01	1.4E+00	2.0E+00	6.9E-01
TOTAL HMW PAHs	6.5E+02	1.3E+01	5.6E+00	5.2E+00	1.1E+01	2.0E+00	**5.4E+00**
TOTAL PCBs	2.7E+02	3.5E-01	2.3E+00	1.5E-01	2.5E+00	1.8E-01	**1.4E+01**
4,4-DDT	1.9E+01	1.1E-02	1.6E-01	4.5E-03	1.7E-01	2.3E-01	7.5E-01
ENDOSULFAN SULFATE	1.2E+01	4.2E-01	1.0E-01	1.7E-01	2.8E-01	1.0E+01	2.8E-02

ATTACHMENT H-1 TABLE 5

POTENTIAL RISKS TO THE AMERICAN ROBIN - SRA
ECOLOGICAL RISK ASSESSMENT

CARR POINT - MRP SITE 1

ASSUMPTIONS FOR THE AMERICAN ROBIN	
Minimum Body Weight (kg)	0.077
Exposure Duration	1
Area Use Factor	1
Soil Consumption Rate (kg_{dw}/day)	0.00038
Soil Invt. Consumption Rate (kg_{ww}/day)	0.078

$$\text{Total Daily Dose} = \frac{\Sigma([IR_f \times C_f] + [IR_s \times C_s] \times ED \times AUF}{\text{Minimum Body Weight (kg)}}$$

Where:
IR_f = Ingestion rate of food (kg/day)
IR_s = Incidental ingestion rate of soil or sediment (kg/day)
C_f = Concentration of COPC in food (mg/kg)
C_s= Concentration of COPC in sediment or soil (mg/kg)
ED = Exposure duration (fraction of time receptor spends within exposure area)
AUF = Area use factor (ratio of the receptor's home range, etc,...

Notes:
COPC - Chemical of Potential Concern.
dw - Dry Weight.
EPC - Exposure Point Concentration.
HMW - High Molecular Weight.
HQ - Hazard Quotient (Dose/TRV).
LMW - Low Molecular Weight.
NC - Not Calculated.
NV - No Value.
NOAEL - No Observed Adverse Effects Level.
PAHs - Polycyclic Aromatic Hydrocarbons.
PCBs - Polychlorinated Biphenyls.
TRV - Toxicity Reference Value.
ww - Wet Weight.

HQs above 1 are bolded and highlighted.
Maximum EPCs for screening level evaluation represent maximum detected concentrations.

SUPPORTING CALCULATIONS

FOOD WEB MODEL - MAXIMUM CONCENTRATIONS	Media Concentrations		Potential Daily Dose (mg/kg_{dw}/day)			NOAEL-based TRV	NOAEL-based HQ
COPC	Soil (mg/kg_{dw})	Soil Invertebrate (mg/kg_{ww})	Soil	Soil Invertebrate	Total	(mg/kg_{dw}/day)	
Inorganics							
ANTIMONY	4.0E+02	6.3E+01	1.9E+00	6.4E+01	6.6E+01	NV	NC
ARSENIC	1.3E+02	1.2E+00	6.3E-01	1.2E+00	1.8E+00	2.2E+00	8.2E-01
CADMIUM	8.4E-01	1.2E+00	4.1E-03	1.2E+00	1.2E+00	1.5E+00	8.0E-01
CHROMIUM, TOTAL	3.0E+01	1.5E+00	1.5E-01	1.5E+00	1.6E+00	2.7E+00	6.1E-01
COPPER	2.6E+02	2.1E+01	1.2E+00	2.1E+01	2.3E+01	4.1E+00	**5.6E+00**
LEAD	3.0E+04	5.3E+02	1.5E+02	5.3E+02	6.8E+02	1.6E+00	**4.2E+02**
MERCURY	2.1E-01	1.0E-01	1.0E-03	1.0E-01	1.0E-01	6.4E-03	**1.6E+01**
SELENIUM	6.6E-01	1.1E-01	3.2E-03	1.1E-01	1.1E-01	2.9E-01	3.9E-01
THALLIUM	1.5E-01	2.4E-02	7.3E-04	2.4E-02	2.5E-02	NV	NC
VANADIUM	2.7E+01	1.8E-01	1.3E-01	1.8E-01	3.1E-01	3.4E-01	9.1E-01
ZINC	4.3E+02	1.0E+02	2.1E+00	1.0E+02	1.0E+02	6.6E+01	**1.6E+00**
Organics							
TOTAL LMW PAHs	1.4E+02	6.8E+01	6.8E-01	6.9E+01	7.0E+01	2.0E+00	**3.5E+01**
TOTAL HMW PAHs	6.5E+02	2.7E+02	3.2E+00	2.7E+02	2.8E+02	2.0E+00	**1.4E+02**
TOTAL PCBs	2.7E+02	6.9E+02	1.3E+00	6.9E+02	7.0E+02	1.8E-01	**3.9E+03**
4,4-DDT	1.9E+01	1.7E+01	9.2E-02	1.7E+01	1.8E+01	2.3E-01	**7.7E+01**
ENDOSULFAN SULFATE	1.2E+01	1.9E+00	5.8E-02	1.9E+00	2.0E+00	1.0E+01	2.0E-01

ATTACHMENT H-1 TABLE 6

POTENTIAL RISKS TO THE MEADOW VOLE - SRA
ECOLOGICAL RISK ASSESSMENT

CARR POINT - MRP SITE 1

ASSUMPTIONS FOR THE MEADOW VOLE	
Minimum Body Weight (kg)	0.017
Exposure Duration	1
Area Use Factor	1
Soil Consumption Rate (kg_{dw}/day)	0.00033
Terrestrial Plant Consumption Rate (kg_{ww}/day)	0.069

$$\text{Total Daily Dose} = \frac{\Sigma([IR_f \times C_f] + [IR_s \times C_s] \times ED \times AUF}{\text{Minimum Body Weight}}$$

Where:
IR_f = Ingestion rate of food (kg/day)
IR_s = Incidental ingestion rate of soil or sediment (kg/day)
C_f = Concentration of COPC in food (mg/kg)
C_s= Concentration of COPC in sediment or soil (mg/kg)
ED = Exposure duration (fraction of time receptor spends within exposure area)
AUF = Area use factor (ratio of the receptor's home range, etc,... relative

Notes:
COPC - Chemical of Potential Concern.
dw - Dry Weight.
EPC - Exposure Point Concentration.
HMW - High Molecular Weight.
HQ - Hazard Quotient (Dose/TRV).
LMW - Low Molecular Weight.
NC - Not Calculated.
NV - No Value.
NOAEL - No Observed Adverse Effects Level.
PAHs - Polycyclic Aromatic Hydrocarbons.
PCBs - Polychlorinated Biphenyls.
TRV - Toxicity Reference Value.
ww - Wet Weight.

HQs above 1 are bolded and highlighted.
Maximum EPCs for screening level evaluation represent maximum detected concentrations.

SUPPORTING CALCULATIONS

FOOD WEB MODEL - MAXIMUM CONCENTRATIONS	Media Concentrations		Potential Daily Dose (mg/kg_{dw}/day)				
COPC	Soil (mg/kg_{dw})	Terrestrial Plant (mg/kg_{ww})	Soil	Terrestrial Plant	Total	NOAEL-based TRV (mg/kg_{dw}/day)	NOAEL-based HQ
Inorganics							
ANTIMONY	4.0E+02	1.6E+00	7.7E+00	6.5E+00	1.4E+01	5.9E-02	**2.4E+02**
ARSENIC	1.3E+02	7.3E-01	2.5E+00	3.0E+00	5.5E+00	1.0E+00	**5.3E+00**
CADMIUM	8.4E-01	8.5E-02	1.6E-02	3.4E-01	3.6E-01	7.7E-01	4.7E-01
CHROMIUM, TOTAL	3.0E+01	1.9E-01	5.8E-01	7.5E-01	1.3E+00	2.4E+00	5.6E-01
COPPER	2.6E+02	2.6E+00	5.0E+00	1.1E+01	1.5E+01	5.6E+00	**2.8E+00**
LEAD	3.0E+04	1.3E+01	5.8E+02	5.2E+01	6.3E+02	4.7E+00	**1.3E+02**
MERCURY	2.1E-01	1.6E-01	4.1E-03	6.4E-01	6.4E-01	3.2E-02	**2.0E+01**
SELENIUM	6.6E-01	4.8E-02	1.3E-02	2.0E-01	2.1E-01	1.4E-01	**1.5E+00**
THALLIUM	1.5E-01	2.3E-02	2.9E-03	9.1E-02	9.4E-02	7.4E-03	**1.3E+01**
VANADIUM	2.7E+01	1.9E-02	5.2E-01	7.8E-02	6.0E-01	4.2E+00	1.4E-01
ZINC	4.3E+02	2.1E+01	8.4E+00	8.5E+01	9.3E+01	7.5E+01	**1.2E+00**
Organics							
TOTAL LMW PAHs	1.4E+02	3.8E-01	2.7E+00	1.5E+00	4.3E+00	6.6E+01	6.5E-02
TOTAL HMW PAHs	6.5E+02	1.3E+01	1.3E+01	5.1E+01	6.4E+01	6.2E-01	**1.0E+02**
TOTAL PCBs	2.7E+02	3.5E-01	5.2E+00	1.4E+00	6.7E+00	6.8E-02	**9.8E+01**
4,4-DDT	1.9E+01	1.1E-02	3.7E-01	4.4E-02	4.1E-01	1.5E-01	**2.8E+00**
ENDOSULFAN SULFATE	1.2E+01	4.2E-01	2.3E-01	1.7E+00	1.9E+00	1.5E-01	**1.3E+01**

ATTACHMENT H-1 TABLE 7

POTENTIAL RISKS TO THE SHORT-TAILED SHREW - SRA
ECOLOGICAL RISK ASSESSMENT

CARR POINT - MRP SITE 1

ASSUMPTIONS FOR THE SHORT-TAILED SHREW	
Minimum Body Weight (kg)	0.0150
Exposure Duration	1
Area Use Factor	1
Soil Consumption Rate (kg_{dw}/day)	0.000070
Soil Invt. Consumption Rate (kg_{ww}/day)	0.0147

Total Daily Dose = $\frac{\Sigma([IR_f \times C_f] + [IR_s \times C_s] \times ED \times AUF}{\text{Minimum Body Weight}}$

Where:
IR_f = Ingestion rate of food (kg/day)
IR_s = Incidental ingestion rate of soil or sediment (kg/day)
C_f = Concentration of COPC in food (mg/kg)
C_s= Concentration of COPC in sediment or soil (mg/kg)
ED = Exposure duration (fraction of time receptor spends within exposure area)
AUF = Area use factor (ratio of the receptor's home range, etc,... relative

Notes:
COPC - Chemical of Potential Concern.
dw - Dry Weight.
EPC - Exposure Point Concentration.
HMW - High Molecular Weight.
HQ - Hazard Quotient (Dose/TRV).
LMW - Low Molecular Weight.
NC - Not Calculated.
NV - No Value.
NOAEL - No Observed Adverse Effects Level.
PAHs - Polycyclic Aromatic Hydrocarbons.
PCBs - Polychlorinated Biphenyls.
TRV - Toxicity Reference Value.
ww - Wet Weight.

HQs above 1 are bolded and highlighted.
Maximum EPCs for screening level evaluation represent maximum detected concentrations.

SUPPORTING CALCULATIONS

FOOD WEB MODEL - MAXIMUM CONCENTRATIONS	Media Concentrations		Potential Daily Dose (mg/kg_{dw}/day)				
COPC	Soil (mg/kg_{dw})	Soil Invertebrate (mg/kg_{ww})	Soil	Soil Invertebrate	Total	NOAEL-based TRV (mg/kg_{dw}/day)	NOAEL-based HQ
Inorganics							
ANTIMONY	4.0E+02	6.3E+01	1.9E+00	6.2E+01	6.4E+01	5.9E-02	**1.1E+03**
ARSENIC	1.3E+02	1.2E+00	6.1E-01	1.2E+00	1.8E+00	1.0E+00	**1.7E+00**
CADMIUM	8.4E-01	1.2E+00	3.9E-03	1.1E+00	1.1E+00	7.7E-01	**1.5E+00**
CHROMIUM, TOTAL	3.0E+01	1.5E+00	1.4E-01	1.4E+00	1.6E+00	2.4E+00	6.6E-01
COPPER	2.6E+02	2.1E+01	1.2E+00	2.1E+01	2.2E+01	5.6E+00	**3.9E+00**
LEAD	3.0E+04	5.3E+02	1.4E+02	5.1E+02	6.5E+02	4.7E+00	**1.4E+02**
MERCURY	2.1E-01	1.0E-01	9.8E-04	1.0E-01	1.0E-01	3.2E-02	**3.2E+00**
SELENIUM	6.6E-01	1.1E-01	3.1E-03	1.1E-01	1.1E-01	1.4E-01	7.7E-01
THALLIUM	1.5E-01	2.4E-02	7.0E-04	2.3E-02	2.4E-02	7.4E-03	**3.3E+00**
VANADIUM	2.7E+01	1.8E-01	1.2E-01	1.7E-01	3.0E-01	4.2E+00	7.2E-02
ZINC	4.3E+02	1.0E+02	2.0E+00	9.8E+01	1.0E+02	7.5E+01	**1.3E+00**
Organics							
TOTAL LMW PAHs	1.4E+02	6.8E+01	6.6E-01	6.7E+01	6.7E+01	6.6E+01	1.0E+00
TOTAL HMW PAHs	6.5E+02	2.7E+02	3.0E+00	2.6E+02	2.7E+02	6.2E-01	**4.3E+02**
TOTAL PCBs	2.7E+02	6.9E+02	1.3E+00	6.7E+02	6.7E+02	6.8E-02	**9.9E+03**
4,4-DDT	1.9E+01	1.7E+01	8.9E-02	1.7E+01	1.7E+01	1.5E-01	**1.2E+02**
ENDOSULFAN SULFATE	1.2E+01	1.9E+00	5.6E-02	1.9E+00	1.9E+00	1.5E-01	**1.3E+01**

ATTACHMENT H-1 TABLE 8
SUMMARY OF POTENTIAL RISKS TO TERRESTRIAL WILDLIFE - SRA
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

	NOAEL-based HQ - Maximum Concentrations			
COPC	**Bobwhite Quail**	**American Robin**	**Meadow Vole**	**Short-tailed Shrew**
ANTIMONY	NC	NC	**2.4E+02**	**1.1E+03**
ARSENIC	6.4E-01	8.2E-01	**5.3E+00**	**1.7E+00**
CADMIUM	2.9E-02	8.0E-01	4.7E-01	**1.5E+00**
CHROMIUM, TOTAL	1.3E-01	6.1E-01	5.6E-01	6.6E-01
COPPER	8.2E-01	**5.6E+00**	**2.8E+00**	**3.9E+00**
LEAD	**1.6E+02**	**4.2E+02**	**1.3E+02**	**1.4E+02**
MERCURY	**1.1E+01**	**1.6E+01**	**2.0E+01**	**3.2E+00**
SELENIUM	8.9E-02	3.9E-01	**1.5E+00**	7.7E-01
THALLIUM	NC	NC	**1.3E+01**	**3.3E+00**
VANADIUM	7.0E-01	9.1E-01	1.4E-01	7.2E-02
ZINC	1.9E-01	**1.6E+00**	**1.2E+00**	**1.3E+00**
Organics				
TOTAL LMW PAHs	6.9E-01	**3.5E+01**	6.5E-02	1.0E+00
TOTAL HMW PAHs	**5.4E+00**	**1.4E+02**	**1.0E+02**	**4.3E+02**
TOTAL PCBs	**1.4E+01**	**3.9E+03**	**9.8E+01**	**9.9E+03**
4,4-DDT	7.5E-01	**7.7E+01**	**2.8E+00**	**1.2E+02**
ENDOSULFAN SULFATE	2.8E-02	2.0E-01	**1.3E+01**	**1.3E+01**

Notes:
Maximum EPCs for screening level evaluation represent maximum detected concentrations.
Potential risk is calculated using the maximum detected concentrations and NOAEL-based TRVs.
HQs above 1 are bolded and highlighted. COPCs with HQs above 1 in the screening level evaluation were retained for the COPC refinement stage. See Attachment L
COPC - Chemical of Potential Concern.
HMW - High Molecular Weight.
HQ - Hazard Quotient.
LMW - Low Molecular Weight.
NC - Not calculated.
NOAEL - No Observed Adverse Effect Level.
PAH - Polycyclic Aromatic Hydrocarbon.
PCB - Polychlorinated Biphenyl.
TRV - Toxicity Reference Value.

ATTACHMENT H-1 TABLE 9
REFERENCES CITED
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

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ATTACHMENT H-1 TABLE 9
REFERENCES CITED
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

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ATTACHMENT H-2
SCREENING LEVEL FOOD CHAIN MODEL - NARRAGANSETT BAY
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ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

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ATTACHMENT H-2 TABLE 1
EXPOSURE PARAMETERS FOR SEMI-AQUATIC ECOLOGICAL RECEPTORS IN SCREENING RISK ASSESSMENT
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

Receptor Species	Minimum Body Weight (kg)	Maximum Body Weight (kg)	Food Ingestion Rate (kg_{dw}/day)	Dietary Assumptions for Use in SRA (%; kg_{ww}/day)	Incidental Soil/Sediment Ingestion (%; kg_{dw}/day)
				Shellfish	
BIRDS					
Herring gull *(Larus argentatus)*	0.951 [a]	1.232 [a,b]	0.1243 [c]	100% [d] 0.6904	8.2% [e] 0.010
MAMMALS					
Raccoon *(Procyon lotor)*	3.67 [a]	7.60 [a,b]	0.1848 [c]	100% [d] 1.0266	9.4% [e] 0.017

General Notes:

Food ingestion rates are wet weight for food items and dry weight for sediment ingestion. As needed, rate may be converted.

See individual organism notes for source, units, and conversion.

Moisture content of food items assumed to be as follows: 82% for Shellfish (bivalves with no shell)(USEPA, 1993).

All receptors assumed to be present and actively foraging year-round in screening level evaluation (area use factor [AUF] and exposure duration [ED] set at 100%).

kg - kilogram.
BW - Body Weight.
DW - Dry Weight.
SRA - Screening Risk Assessment.
WW - Wet Weight.
FIR - Food Ingestion Rate.

Notes for Herring gull
[a] Range of adult body weights listed by USEPA (1993).
[b] Maximum body weight is only used to determine conservative ingestion rates for the SRA.
[c] Food ingestion rate calculated using algorithm for gulls developed by Nagy, 2001 [FIR (g_{dw}/day) = $0.522*BW^{0.769}$] using maximum body weight.
[d] An exclusive diet was selected for the SRA. Site-specific shellfish tissue data used to reflect dietary exposure.
[e] The incidental sediment ingestion rate is based on the value identified by Beyer (1994) for the Canada goose.

Notes for Raccoon
[a] Range of adult body weights listed by USEPA (1993).
[b] Maximum body weight is only used to determine conservative ingestion rates for the SRA.
[c] Food ingestion rate calculated using algorithm for omnivorous mammals developed by Nagy, 2001 [FIR (g_{dw}/day) = $0.432*BW^{0.678}$] using maximum body weight.
[d] An exclusive diet was selected for the SRA. Site-specific shellfish tissue data used to reflect dietary exposure.
[e] The incidental soil ingestion rate is based on the value identified by Beyer (1994) for raccoons.

ATTACHMENT H-2 TABLE 2
AQUATIC MEDIA AND TISSUE CONCENTRATIONS FOR SRA
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

	Measured Media Concentrations (a)	
COPC	Maximum Sediment EPC (mg/kg_{dw})	Maximum Shellfish EPC (mg/kg_{ww})
Inorganics		
ANTIMONY	36.7	0.0287
COPPER	565	1.6
LEAD	4290	7.26
MERCURY	0.090	0.030
THALLIUM	0.10	ND
VANADIUM	27.1	0.35
ZINC	139	15.2
Organics		
TOTAL LMW PAHs	0.87	0.035
TOTAL HMW PAHs	7.0	0.33

Notes:
Maximum EPCs for screening level evaluation represent maximum detected concentrations.

COPC - Chemical of Potential Concern.
EPC - Exposure Point Concentration.
dw - Dry Weight.
HMW - High Molecular Weight.
LMW - Low Molecular Weight.
PAHs - Polycyclic Aromatic Hydrocarbons.
ww - Wet Weight.

(a) Media summary statistics presented in Tables 3 and 4 of Ecological Risk Assessment appendix.

ATTACHMENT H-2 TABLE 3
TOXICITY REFERENCE VALUES FOR SRA
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

COPC	TRV ($mg/kg_{bw}/day$)	Endpoint	Effect	Chronic/ Subchronic	Species	Primary Reference	Source of Reference
Inorganics							
ANTIMONY	0.059	NOAEL	reproduction & growth	chronic	mammals	USEPA, 2005a	
COPPER	4.05	NOAEL	reproduction & growth	chronic	birds	USEPA, 2007a	
COPPER	5.6	NOAEL	reproduction & growth	chronic	mammals	USEPA, 2007a	
LEAD	1.63	NOAEL	reproduction & growth	chronic	birds	USEPA, 2005c	
LEAD	4.7	NOAEL	reproduction & growth	chronic	mammals	USEPA, 2005c	
MERCURY	0.0064	estimated NOAEL	reproductive	chronic	mallard duck	Heinz, 1979	Sample et al., 1996
MERCURY	0.032	NOAEL	reproductive	chronic	rat	Verschuuren et al., 1976	Sample et al., 1996
THALLIUM	0.0074	NOAEL	reproduction	subchronic	rat	Formigli, et al., 1986	Sample et al., 1996
VANADIUM	0.344	NOAEL	reproduction & growth	chronic	birds	USEPA, 2005d	
VANADIUM	4.16	NOAEL	reproduction & growth	chronic	mammals	USEPA, 2005d	
ZINC	75.4	NOAEL	reproduction & growth	chronic	mammals	USEPA, 2007b	
ZINC	66.1	NOAEL	reproduction & growth	chronic	birds	USEPA, 2007b	
Organics							
TOTAL LMW PAHs	65.6	NOAEL	reproduction & growth	chronic	mammals	USEPA, 2007c	
TOTAL HMW PAHs	0.615	NOAEL	reproduction & growth	chronic	mammals	USEPA, 2007c	
TOTAL LMW PAHs / HMW PAHs	2	NOAEL	systemic	chronic	nestling/starlings	Trust et al., 1994	

Notes:
COPC - Chemical of Potential Concern.
HMW - High Molecular Weight.
LMW - Low Molecular Weight.
LOAEL - Lowest Observed Adverse Effects Level.
NOAEL - No Observed Adverse Effects Level.
PAH - Polycyclic Aromatic Hydrocarbon.
USEPA - United States Environmental Protection Agency.
The avian NOAELs for the HMW and LMW PAHs are based on 7,12-dimethylbenz(a)anthracene.
NOAELs were estimated if a NOAEL was not identified in the literature. The LOAEL was divided by 10 to derive an estimated NOAEL.

Avian TRVs were not available for antimony or thallium.

ATTACHMENT H-2 TABLE 4
POTENTIAL RISKS TO THE HERRING GULL - SRA
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

ASSUMPTIONS FOR THE HERRING GULL	
Minimum Body Weight (kg)	0.951
Exposure Duration	1
Area Use Factor	1
Sediment Consumption Rate (kg_{dw}/day)	0.010
Shellfish Consumption Rate (kg_{ww}/day)	0.69

$$\text{Total Daily Dose} = \frac{\Sigma([IR_f \times C_f] + [IR_s \times C_s] \times ED \times AUF}{\text{Minimum Body Weight (kg)}}$$

Where:
IR_f = Ingestion rate of food (kg/day)
IR_s = Incidental ingestion rate of soil or sediment (kg/day)
C_f = Concentration of COPEC in food (mg/kg)
C_s= Concentration of COPEC in sediment or soil (mg/kg)
ED = Exposure duration (fraction of time receptor spends within exposure area)
AUF = Area use factor (ratio of the receptor's home range, etc,... relative to the size of exposure area)

Notes:
COPC - Chemical of Potential Concern.
dw - Dry Weight.
EPC - Exposure Point Concentration.
HMW - High Molecular Weight.
HQ - Hazard Quotient (Dose/TRV).
LMW - Low Molecular Weight.
NC - Not Calculated.
ND - Not Detected.
NV - No Value.
NOAEL - No Observed Adverse Effects Level.
PAHs - Polycyclic Aromatic Hydrocarbons.
TRV - Toxicity Reference Value.
ww - Wet Weight.

HQs above 1 are bolded and highlighted.
Maximum EPCs for screening level evaluation represent maximum detected concentrations.

SUPPORTING CALCULATIONS

FOOD WEB MODEL - MAXIMUM EPCs	Media Concentrations		Potential Daily Dose (mg/kg_{dw}/day)			NOAEL-based TRV	NOAEL-based HQ
COPEC	Sediment (mg/kg_{dw})	Shellfish (mg/kg_{ww})	Sediment	Shellfish	Total	(mg/kg_{dw}/day)	
Inorganics							
ANTIMONY	3.7E+01	2.9E-02	3.9E-01	2.1E-02	4.1E-01	NV	NC
COPPER	5.7E+02	1.6E+00	6.1E+00	1.2E+00	7.2E+00	4.1E+00	**1.8E+00**
LEAD	4.3E+03	7.3E+00	4.6E+01	5.3E+00	5.1E+01	1.6E+00	**3.1E+01**
MERCURY	9.0E-02	3.0E-02	9.6E-04	2.2E-02	2.3E-02	6.4E-03	**3.6E+00**
THALLIUM	1.0E-01	ND	1.1E-03	NC	1.1E-03	NV	NC
VANADIUM	2.7E+01	3.5E-01	2.9E-01	2.6E-01	5.5E-01	3.4E-01	**1.6E+00**
ZINC	1.4E+02	1.5E+01	1.5E+00	1.1E+01	1.3E+01	6.6E+01	1.9E-01
Organics							
TOTAL LMW PAHs	8.7E-01	3.5E-02	9.3E-03	2.5E-02	3.5E-02	2.0E+00	1.7E-02
TOTAL HMW PAHs	7.0E+00	3.3E-01	7.5E-02	2.4E-01	3.2E-01	2.0E+00	1.6E-01

ATTACHMENT H-2 TABLE 5
POTENTIAL RISKS TO THE RACCOON - SRA
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

$$\text{Total Daily Dose} = \frac{\Sigma([IR_f \times C_f] + [IR_s \times C_s] \times ED \times AUF}{\text{Minimum Body Weight}}$$

Where:
IR_f = Ingestion rate of food (kg/day)
IR_s = Incidental ingestion rate of soil or sediment (kg/day)
C_f = Concentration of COPEC in food (mg/kg)
C_s= Concentration of COPEC in sediment or soil (mg/kg)
ED = Exposure duration (fraction of time receptor spends within exposure area)
AUF = Area use factor (ratio of the receptor's home range, etc,... relative to the size of exposure area)

ASSUMPTIONS FOR THE RACCOON	
Minimum Body Weight (kg)	3.7
Exposure Duration	1
Area Use Factor	1
Sediment Consumption Rate (kg_{dw}/day)	0.0174
Shellfish Consumption Rate (kg_{ww}/day)	1.0

Notes:
COPC - Chemical of Potential Concern.
dw - Dry Weight.
EPC - Exposure Point Concentration.
HMW - High Molecular Weight.
HQ - Hazard Quotient (Dose/TRV).
LMW - Low Molecular Weight.
NC - Not Calculated.
ND - Not Detected.
NV - No Value.
NOAEL - No Observed Adverse Effects Level.
PAHs - Polycyclic Aromatic Hydrocarbons.
TRV - Toxicity Reference Value.
ww - Wet Weight.

HQs above 1 are bolded and highlighted.
Maximum EPCs for screening level evaluation represent maximum detected concentrations.

SUPPORTING CALCULATIONS

FOOD WEB MODEL - MAXIMUM CONCENTRATIONS	Media Concentrations		Potential Daily Dose (mg/kg_{dw}/day)				
COPC	Sediment (mg/kg_{dw})	Shellfish (mg/kg_{ww})	Sediment	Shellfish	Total	NOAEL-based TRV (mg/kg_{dw}/day)	NOAEL-based HQ
Inorganics							
ANTIMONY	3.7E+01	2.9E-02	1.7E-01	8.0E-03	1.8E-01	5.9E-02	**3.1E+00**
COPPER	5.7E+02	1.6E+00	2.7E+00	4.5E-01	3.1E+00	5.6E+00	5.6E-01
LEAD	4.3E+03	7.3E+00	2.0E+01	2.0E+00	2.2E+01	4.7E+00	**4.8E+00**
MERCURY	9.0E-02	3.0E-02	4.3E-04	8.4E-03	8.8E-03	3.2E-02	2.8E-01
THALLIUM	1.0E-01	ND	4.7E-04	NC	4.7E-04	7.4E-03	6.4E-02
VANADIUM	2.7E+01	3.5E-01	1.3E-01	9.9E-02	2.3E-01	4.2E+00	5.5E-02
ZINC	1.4E+02	1.5E+01	6.6E-01	4.3E+00	4.9E+00	7.5E+01	6.5E-02
Organics							
TOTAL LMW PAHs	8.7E-01	3.5E-02	4.1E-03	9.8E-03	1.4E-02	6.6E+01	2.1E-04
TOTAL HMW PAHs	7.0E+00	3.3E-01	3.3E-02	9.2E-02	1.3E-01	6.2E-01	2.0E-01

ATTACHMENT H-2 TABLE 6
SUMMARY OF POTENTIAL RISKS TO SEMI-AQUATIC WILDLIFE - SRA
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

	NOAEL-based HQ - Maximum Concentrations	
COPC	**Herring Gull**	**Raccoon**
Inorganics		
ANTIMONY	NC	**3.1E+00**
COPPER	**1.8E+00**	5.6E-01
LEAD	**3.1E+01**	**4.8E+00**
MERCURY	**3.6E+00**	2.8E-01
THALLIUM	NC	6.4E-02
VANADIUM	**1.6E+00**	5.5E-02
ZINC	1.9E-01	6.5E-02
Organics		
TOTAL LMW PAHs	1.7E-02	2.1E-04
TOTAL HMW PAHs	1.6E-01	2.0E-01

Notes:
Maximum EPCs for screening level evaluation represent maximum detected concentrations.
Potential risk is calculated using the maximum detected concentrations and NOAEL-based TRVs.
HQs above 1 are bolded and highlighted. COPCs with HQs above 1 in the screening level evaluation were retained for the COPC refinement stage. See Appendix L.
COPC - Chemical of Potential Concern.
HMW - High Molecular Weight.
HQ - Hazard Quotient.
LMW - Low Molecular Weight.
NC - Not Calculated. Avian TRV not available.
NOAEL - No Observed Adverse Effect Level.
PAH - Polycyclic Aromatic Hydrocarbon.
TRV - Toxicity Reference Value.

ATTACHMENT H-2 TABLE 7
REFERENCES CITED
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

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ATTACHMENT I

EVALUATION OF DETECTION LIMITS

ATTACHMENT I TABLE 1
EVALUATION OF REPORTING LIMITS - SURFACE SOIL (0-1 ft)
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

Analyte	Unit	FOD	Reporting Limits		Soil SEV	Source	HQ for Minimum Reporting Limit	HQ for Maximum Reporting Limit
			Minimum	Maximum				
Energetics								
2,4-DINITROTOLUENE	mg/kg	0 : 12	0.26	0.28	0.050	USEPA R4 (unspecified)	**5.2**	**5.6**
NITROGLYCERIN	mg/kg	7 : 12	0.34	0.39	19.2	Calculated (USACHPPM wildlife)	0.018	0.020
Inorganics								
CADMIUM	mg/kg	23 : 27	0.076	0.14	0.36	Eco-SSL (mammals)	0.21	0.39
CHROMIUM VI	mg/kg	0 : 2	0.86	1.8	NV		No SEV	No SEV
MERCURY	mg/kg	21 : 27	0.012	0.032	0.0016	USEPA R5 (shrew/vole)	**7.6**	**20.3**
SELENIUM	mg/kg	11 : 27	0.37	0.56	0.52	Eco-SSL (plants)	0.71	**1.1**
SODIUM	mg/kg	5 : 27	48.0	143	NV		No SEV	No SEV
Pesticides								
4,4-DDD	mg/kg	0 : 4	0.00032	0.037	0.021	Eco-SSL (mammals)	0.015	**1.8**
4,4-DDE	mg/kg	2 : 4	0.0017	0.037	0.021	Eco-SSL (mammals)	0.081	**1.8**
4,4-DDT	mg/kg	3 : 4	0.0017	0.0017	0.021	Eco-SSL (mammals)	0.081	0.081
ALDRIN	mg/kg	0 : 4	0.00016	0.019	0.000060	TV (unspecified)	**2.7**	**317**
ALPHA-BHC	mg/kg	0 : 4	0.00016	0.019	0.0025	USEPA R4 (unspecified)	0.064	**7.6**
ALPHA-CHLORDANE	mg/kg	0 : 4	0.00016	0.019	0.000030	TV (unspecified)	**5.3**	**633**
BETA-BHC	mg/kg	0 : 4	0.00016	0.019	0.0010	USEPA R4 (unspecified)	0.16	**19.0**
DELTA-BHC	mg/kg	0 : 4	0.00016	0.019	9.9	USEPA R5 (shrew/vole)	0.000016	0.0019
DIELDRIN	mg/kg	0 : 4	0.0017	0.037	0.00050	USEPA R4 (unspecified)	**3.4**	**74.0**
ENDOSULFAN I	mg/kg	1 : 4	0.00019	0.019	0.000010	TV (unspecified)	**19.0**	**1900**
ENDOSULFAN II	mg/kg	1 : 4	0.0003	0.037	0.000010	TV (unspecified)	**32**	**3700**
ENDOSULFAN SULFATE	mg/kg	2 : 4	0.0003	0.0017	0.000010	TV (unspecified)	**32**	**170**
ENDRIN	mg/kg	1 : 4	0.00038	0.037	0.0010	USEPA R4 (unspecified)	0.38	**37.0**
ENDRIN ALDEHYDE	mg/kg	0 : 4	0.00032	0.037	0.0010	USEPA R4 (unspecified)	0.32	**37.0**
ENDRIN KETONE	mg/kg	1 : 4	0.00032	0.037	0.0010	USEPA R4 (unspecified)	0.3	**37.0**
GAMMA-CHLORDANE	mg/kg	0 : 4	0.00016	0.019	0.000030	TV (unspecified)	**5.3**	**633**
HEPTACHLOR	mg/kg	1 : 4	0.00019	0.019	0.0060	USEPA R5 (shrew/vole)	0.032	**3.2**
HEPTACHLOR EPOXIDE	mg/kg	0 : 4	0.00016	0.019	0.15	USEPA R5 (shrew/vole)	0.0011	0.13
LINDANE	mg/kg	0 : 4	0.00016	0.019	0.000050	TV (unspecified)	**3.2**	**380**
METHOXYCHLOR	mg/kg	1 : 4	0.00190	0.19	0.020	USEPA R5 (shrew/vole)	0.095	**9.5**
TOXAPHENE	mg/kg	0 : 4	0.0032	0.37	0.12	USEPA R5 (shrew/vole)	0.027	**3.1**
Polychlorinated Biphenyls (PCBs)								
AROCLOR-1016	mg/kg	0 : 5	0.0016	1.9	1.3	CCME (residential/parkland)	0.0012	**1.5**
AROCLOR-1221	mg/kg	0 : 5	0.0016	1.9	1.3	CCME (residential/parkland)	0.0012	**1.5**
AROCLOR-1232	mg/kg	0 : 5	0.0019	2.2	1.3	CCME (residential/parkland)	0.0015	**1.7**
AROCLOR-1242	mg/kg	0 : 5	0.0016	1.9	1.3	CCME (residential/parkland)	0.0012	**1.5**
AROCLOR-1248	mg/kg	0 : 5	0.0016	1.9	1.3	CCME (residential/parkland)	0.0012	**1.5**
AROCLOR-1254	mg/kg	1 : 5	0.0016	1.9	1.3	CCME (residential/parkland)	0.0012	**1.5**
AROCLOR-1260	mg/kg	3 : 5	0.0016	0.0089	1.3	CCME (residential/parkland)	0.0012	0.0068
AROCLOR-1262	mg/kg	0 : 5	0.0016	1.9	1.3	CCME (residential/parkland)	0.0012	**1.5**
AROCLOR-1268	mg/kg	0 : 5	0.0016	1.9	1.3	CCME (residential/parkland)	0.0012	**1.5**

ATTACHMENT I TABLE 1
EVALUATION OF REPORTING LIMITS - SURFACE SOIL (0-1 ft)
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

Analyte	Unit	FOD	Reporting Limits		Soil SEV	Source	HQ for Minimum Reporting Limit	HQ for Maximum Reporting Limit
			Minimum	Maximum				
Semi-Volatile Organic Compounds (SVOCs)								
1-METHYLNAPHTHALENE	mg/kg	10 : 19	0.022	0.047	3.2	USEPA R5 (shrew/vole)	0.0068	0.015
1,1-BIPHENYL	mg/kg	0 : 3	0.26	0.28	60.0	ORNL (plants)	0.0043	0.0047
1,2,4-TRICHLOROBENZENE	mg/kg	0 : 3	0.26	0.28	0.050	USEPA R4 (unspecified)	**5.2**	**5.6**
1,2-DICHLOROBENZENE	mg/kg	0 : 3	0.26	0.28	0.050	USEPA R4 (unspecified)	**5.2**	**5.6**
1,2-DIPHENYLHYDRAZINE	mg/kg	0 : 3	0.51	0.56	NV		No SEV	No SEV
1,3-DICHLOROBENZENE	mg/kg	0 : 3	0.26	0.28	0.050	USEPA R4 (unspecified)	**5.2**	**5.6**
1,4-DICHLOROBENZENE	mg/kg	0 : 3	0.26	0.28	0.050	USEPA R4 (unspecified)	**5.2**	**5.6**
2,2'-OXYBIS(1-CHLOROPROPANE)	mg/kg	0 : 3	0.26	0.28	19.9	USEPA R5 (shrew/vole)	0.013	0.014
2,4,5-TRICHLOROPHENOL	mg/kg	0 : 3	0.64	0.70	4.0	ORNL (plants)	0.16	0.18
2,4,6-TRICHLOROPHENOL	mg/kg	0 : 3	0.26	0.28	4.0	ORNL (plants)	0.065	0.070
2,4-DICHLOROPHENOL	mg/kg	0 : 3	0.26	0.28	20.0	ORNL (plants)	0.013	0.014
2,4-DIMETHYLPHENOL	mg/kg	0 : 3	0.26	0.28	0.010	USEPA R5 (plants)	**26.0**	**28.0**
2,4-DINITROPHENOL	mg/kg	0 : 3	0.64	0.70	0.061	USEPA R5 (shrew/vole)	**10.5**	**11.5**
2,4-DINITROTOLUENE	mg/kg	0 : 3	0.26	0.28	0.050	USEPA R4 (unspecified)	**5.2**	**5.6**
2,6-DICHLOROPHENOL	mg/kg	0 : 3	0.26	0.28	1.2	USEPA R5 (shrew/vole)	0.22	0.24
2,6-DINITROTOLUENE	mg/kg	0 : 3	0.26	0.28	0.033	USEPA R5 (shrew/vole)	**7.9**	**8.5**
2-CHLORONAPHTHALENE	mg/kg	0 : 22	0.022	0.047	0.012	USEPA R5 (shrew/vole)	**1.8**	**3.9**
2-CHLOROPHENOL	mg/kg	0 : 3	0.26	0.28	0.24	USEPA R5 (shrew/vole)	**1.1**	**1.2**
2-METHYLNAPHTHALENE	mg/kg	11 : 34	0.022	0.47	3.2	USEPA R5 (shrew/vole)	0.0068	0.15
2-METHYLPHENOL	mg/kg	0 : 3	0.26	0.28	40.4	USEPA R5 (shrew/vole)	0.0064	0.0069
2-NITROANILINE	mg/kg	0 : 3	0.64	0.70	74.1	USEPA R5 (shrew/vole)	0.0086	0.0094
2-NITROPHENOL	mg/kg	0 : 3	0.26	0.28	1.6	USEPA R5 (shrew/vole)	0.16	0.18
3- AND 4-METHYLPHENOL	mg/kg	0 : 3	0.26	0.28	NV		No SEV	No SEV
3,3-DICHLOROBENZIDINE	mg/kg	0 : 3	0.26	0.28	0.65	USEPA R5 (shrew/vole)	0.40	0.43
3-NITROANILINE	mg/kg	0 : 3	0.64	0.70	3.2	USEPA R5 (shrew/vole)	0.20	0.22
4,6-DINITRO-2-METHYLPHENOL	mg/kg	0 : 3	0.64	0.70	0.14	USEPA R5 (shrew/vole)	**4.4**	**4.9**
4-BROMOPHENYL-PHENYLETHER	mg/kg	0 : 3	0.26	0.28	NV		No SEV	No SEV
4-CHLORO-3-METHYLPHENOL	mg/kg	0 : 3	0.26	0.28	8.0	USEPA R5 (shrew/vole)	0.033	0.035
4-CHLOROANILINE	mg/kg	0 : 3	0.26	0.28	1.1	USEPA R5 (shrew/vole)	0.24	0.25
4-CHLOROPHENYL-PHENYLETHER	mg/kg	0 : 3	0.26	0.28	NV		No SEV	No SEV
4-NITROANILINE	mg/kg	0 : 3	0.64	0.70	21.9	USEPA R5 (shrew/vole)	0.029	0.032
4-NITROPHENOL	mg/kg	0 : 3	0.64	0.70	5.1	USEPA R5 (shrew/vole)	0.13	0.14
ACENAPHTHENE	mg/kg	39 : 58	0.0067	0.442	20.0	ORNL (plants)	0.00034	0.022
ACENAPHTHYLENE	mg/kg	24 : 58	0.0067	0.442	20.0	ORNL (plants)	0.00034	0.022
ANTHRACENE	mg/kg	50 : 58	0.0069	0.442	20.0	ORNL (plants)	0.00035	0.022
BENZO[A]ANTHRACENE	mg/kg	56 : 58	0.021	0.025	1.1	Eco-SSL (mammals)	0.019	0.023
BENZO[A]PYRENE	mg/kg	57 : 58	0.021	0.021	1.1	Eco-SSL (mammals)	0.019	0.019
BENZO[G,H,I]PERYLENE	mg/kg	54 : 58	0.0072	0.025	1.1	Eco-SSL (mammals)	0.007	0.023
BENZO[K]FLUORANTHENE	mg/kg	56 : 58	0.0072	0.14	1.1	Eco-SSL (mammals)	0.007	0.127
BENZOIC ACID	mg/kg	0 : 3	0.64	0.70	NV		No SEV	No SEV
BENZYL ALCOHOL	mg/kg	0 : 3	0.51	0.56	65.8	USEPA R5 (shrew/vole)	0.0078	0.0085
BIS(2-CHLOROETHOXY)METHANE	mg/kg	0 : 3	0.26	0.28	0.30	USEPA R5 (shrew/vole)	0.86	0.93
BIS(2-CHLOROETHYL)ETHER	mg/kg	0 : 3	0.26	0.28	23.7	USEPA R5 (shrew/vole)	0.011	0.012
BIS(2-ETHYLHEXYL)PHTHALATE	mg/kg	0 : 3	0.26	0.28	0.10	USEPA R4 (unspecified)	**2.6**	**2.8**
BUTYLBENZYLPHTHALATE	mg/kg	0 : 3	0.26	0.28	0.10	USEPA R4 (unspecified)	**2.6**	**2.8**
CAPROLACTAM	mg/kg	0 : 3	0.26	0.28	NV		No SEV	No SEV
CARBAZOLE	mg/kg	0 : 3	0.26	0.28	NV		No SEV	No SEV

ATTACHMENT I TABLE 1
EVALUATION OF REPORTING LIMITS - SURFACE SOIL (0-1 ft)
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

Analyte	Unit	FOD	Reporting Limits		Soil SEV	Source	HQ for Minimum Reporting Limit	HQ for Maximum Reporting Limit
			Minimum	Maximum				
CHRYSENE	mg/kg	57 : 58	0.0072	0.0072	1.1	Eco-SSL (mammals)	0.0065	0.0
DIBENZ[A,H]ANTHRACENE	mg/kg	47 : 58	0.0069	15	1.1	Eco-SSL (mammals)	0.0063	**13.6**
DIBENZOFURAN	mg/kg	0 : 3	0.26	0.28	NV		No SEV	No SEV
DIETHYLPHTHALATE	mg/kg	0 : 3	0.26	0.28	24.8	USEPA R5 (shrew/vole)	0.010	0.011
DIMETHYL PHTHALATE	mg/kg	0 : 3	0.26	0.28	100	ORNL (plants)	0.0026	0.0028
DI-N-BUTYLPHTHALATE	mg/kg	0 : 3	0.26	0.28	0.15	USEPA R5 (shrew/vole)	**1.7**	**1.9**
DI-N-OCTYLPHTHALATE	mg/kg	0 : 3	0.26	0.28	200	ORNL (plants)	0.0013	0.0014
FLUORENE	mg/kg	37 : 58	0.0067	0.442	20.0	ORNL (plants)	0.00034	0.022
HEXACHLOROBENZENE	mg/kg	0 : 3	0.26	0.28	0.0025	USEPA R4 (unspecified)	**104**	**112**
HEXACHLOROBUTADIENE	mg/kg	0 : 3	0.26	0.28	0.040	USEPA R5 (shrew/vole)	**6.5**	**7.0**
HEXACHLOROETHANE	mg/kg	0 : 3	0.26	0.28	0.60	USEPA R5 (shrew/vole)	0.44	0.47
INDENO[1,2,3-CD]PYRENE	mg/kg	54 : 58	0.0072	0.14	1.1	Eco-SSL (mammals)	0.0065	0.13
ISOPHORONE	mg/kg	0 : 3	0.26	0.28	139	USEPA R5 (shrew/vole)	0.0019	0.0020
NAPHTHALENE	mg/kg	26 : 58	0.0096	2.8	20.0	ORNL (plants)	0.00048	0.14
NITROBENZENE	mg/kg	0 : 3	0.26	0.28	1.3	USEPA R5 (shrew/vole)	0.20	0.21
N-NITROSODIMETHYLAMINE	mg/kg	0 : 3	0.26	0.28	0.000032	USEPA R5 (shrew/vole)	**8100**	**8723**
N-NITROSODINPROPYLAMINE	mg/kg	0 : 3	0.26	0.28	0.54	USEPA R5 (shrew/vole)	0.48	0.51
N-NITROSODIPHENYLAMINE	mg/kg	0 : 3	0.26	0.28	0.55	USEPA R5 (shrew/vole)	0.48	0.51
N-NITROSOPYRROLIDINE	mg/kg	0 : 1	0.28	0.28	0.013	USEPA R5 (shrew/vole)	**22.2**	**22.2**
PENTACHLOROPHENOL	mg/kg	0 : 3	0.64	0.70	2.1	Eco-SSL (birds)	0.30	0.33
PHENANTHRENE	mg/kg	57 : 58	0.0072	0.0072	20.0	ORNL (plants)	0.00036	0.00036
PHENOL	mg/kg	0 : 3	0.26	0.28	30.0	ORNL (inverts)	0.0087	0.0093
TOTAL LMW PAHs	mg/kg	57 : 58	0.024	0.024	20.0	ORNL (plants)	0.0012	0.0012
Volatile Organic Compounds (VOCs)								
1,1,1,2-TETRACHLOROETHANE	mg/kg	0 : 3	0.0028	0.0042	225	USEPA R5 (shrew/vole)	0.000012	0.000019
1,1,1-TRICHLOROETHANE	mg/kg	0 : 3	0.0028	0.0042	29.8	USEPA R5 (shrew/vole)	0.000094	0.00014
1,1,2,2-TETRACHLOROETHANE	mg/kg	0 : 3	0.0028	0.0042	0.13	USEPA R5 (shrew/vole)	0.022	0.033
1,1,2-TRICHLOROETHANE	mg/kg	0 : 3	0.0028	0.0042	28.6	USEPA R5 (shrew/vole)	0.00010	0.00015
1,1-DICHLOROETHANE	mg/kg	0 : 3	0.0028	0.0042	20.1	USEPA R5 (shrew/vole)	0.00014	0.00021
1,1-DICHLOROETHENE	mg/kg	0 : 3	0.0028	0.0042	8.3	USEPA R5 (shrew/vole)	0.00034	0.00051
1,1-DICHLOROPROPENE	mg/kg	0 : 3	0.0028	0.0042	NV		No SEV	No SEV
1,2,3-TRICHLOROBENZENE	mg/kg	0 : 3	0.0028	0.0042	0.050	USEPA R4 (unspecified)	0.056	0.084
1,2,3-TRICHLOROPROPANE	mg/kg	0 : 3	0.0028	0.0042	3.4	USEPA R5 (shrew/vole)	0.00083	0.0013
1,2,4-TRICHLOROBENZENE	mg/kg	0 : 3	0.26	0.28	0.050	USEPA R4 (unspecified)	**5.2**	**5.6**
1,2,4-TRIMETHYLBENZENE	mg/kg	0 : 3	0.0028	0.0042	0.050	USEPA R4 (unspecified)	0.056	0.084
1,2-DIBROMO-3-CHLOROPROPANE	mg/kg	0 : 3	0.0028	0.0042	0.035	USEPA R5 (shrew/vole)	0.080	0.12
1,2-DIBROMOETHANE	mg/kg	0 : 3	0.0028	0.0042	1.2	USEPA R5 (shrew/vole)	0.0023	0.0034
1,2-DICHLOROBENZENE	mg/kg	0 : 3	0.26	0.28	0.050	USEPA R4 (unspecified)	**5.2**	**5.6**
1,2-DICHLOROETHANE	mg/kg	0 : 3	0.0028	0.0042	0.40	USEPA R4 (unspecified)	0.0070	0.011
1,2-DICHLOROETHENE, TOTAL	mg/kg	0 : 3	0.0055	0.0085	0.78	USEPA R5 (shrew/vole)	0.0070	0.011
1,2-DICHLOROPROPANE	mg/kg	0 : 3	0.0028	0.0042	32.7	USEPA R5 (shrew/vole)	0.000086	0.00013
1,3,5-TRIMETHYLBENZENE	mg/kg	0 : 3	0.0028	0.0042	0.050	USEPA R4 (unspecified)	0.056	0.084
1,3-DICHLOROBENZENE	mg/kg	0 : 3	0.26	0.28	0.050	USEPA R4 (unspecified)	**5.2**	**5.6**
1,3-DICHLOROPROPANE	mg/kg	0 : 3	0.0028	0.0042	32.7	USEPA R5 (shrew/vole)	0.000086	0.00013
1,4-DICHLOROBENZENE	mg/kg	0 : 3	0.26	0.28	0.050	USEPA R4 (unspecified)	**5.2**	**5.6**
2,2-DICHLOROPROPANE	mg/kg	0 : 3	0.0028	0.0042	32.7	USEPA R5 (shrew/vole)	0.000086	0.00013
2-BUTANONE	mg/kg	0 : 3	0.014	0.021	89.6	USEPA R5 (shrew/vole)	0.00016	0.00023
2-CHLOROTOLUENE	mg/kg	0 : 3	0.0028	0.0042	0.050	USEPA R4 (unspecified)	0.056	0.084
2-HEXANONE	mg/kg	0 : 3	0.014	0.021	12.6	USEPA R5 (shrew/vole)	0.0011	0.0017

ATTACHMENT I TABLE 1
EVALUATION OF REPORTING LIMITS - SURFACE SOIL (0-1 ft)
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

Analyte	Unit	FOD	Reporting Limits		Soil SEV	Source	HQ for Minimum Reporting Limit	HQ for Maximum Reporting Limit
			Minimum	Maximum				
4-CHLOROTOLUENE	mg/kg	0 : 3	0.0028	0.0042	0.050	USEPA R4 (unspecified)	0.056	0.084
4-ISOPROPYLTOLUENE	mg/kg	0 : 3	0.0028	0.0042	0.050	USEPA R4 (unspecified)	0.056	0.084
4-METHYL-2-PENTANONE	mg/kg	0 : 3	0.014	0.021	443	USEPA R5 (shrew/vole)	0.000032	0.000047
ACETONE	mg/kg	0 : 3	0.014	0.021	2.5	USEPA R5 (shrew/vole)	0.0056	0.0084
BENZENE	mg/kg	0 : 3	0.0028	0.0042	0.050	USEPA R4 (unspecified)	0.056	0.084
BROMOBENZENE	mg/kg	0 : 3	0.0028	0.0042	0.050	USEPA R4 (unspecified)	0.056	0.084
BROMOCHLOROMETHANE	mg/kg	0 : 3	0.0028	0.0042	NV		No SEV	No SEV
BROMODICHLOROMETHANE	mg/kg	0 : 3	0.0028	0.0042	0.54	USEPA R5 (shrew/vole)	0.0052	0.0078
BROMOFORM	mg/kg	0 : 3	0.0028	0.0042	15.9	USEPA R5 (shrew/vole)	0.00018	0.00026
BROMOMETHANE	mg/kg	0 : 3	0.0055	0.0085	0.24	USEPA R5 (shrew/vole)	0.023	0.036
CARBON DISULFIDE	mg/kg	0 : 3	0.0028	0.0042	0.094	USEPA R5 (shrew/vole)	0.030	0.045
CARBON TETRACHLORIDE	mg/kg	0 : 3	0.0028	0.0042	3.0	USEPA R5 (shrew/vole)	0.00094	0.0014
CHLOROBENZENE	mg/kg	0 : 3	0.0028	0.0042	0.050	USEPA R4 (unspecified)	0.056	0.084
CHLOROETHANE	mg/kg	0 : 3	0.0055	0.0085	NV		No SEV	No SEV
CHLOROFORM	mg/kg	0 : 3	0.0028	0.0042	0.0010	USEPA R4 (unspecified)	**2.8**	**4.2**
CHLOROMETHANE	mg/kg	0 : 3	0.0055	0.0085	10.4	USEPA R5 (shrew/vole)	0.00053	0.00082
CIS-1,2-DICHLOROETHENE	mg/kg	0 : 3	0.0028	0.0042	0.78	USEPA R5 (shrew/vole)	0.0036	0.0054
CIS-1,3-DICHLOROPROPENE	mg/kg	0 : 3	0.0028	0.0042	0.40	USEPA R5 (shrew/vole)	0.0070	0.011
DIBROMOCHLOROMETHANE	mg/kg	0 : 3	0.0028	0.0042	2.1	USEPA R5 (shrew/vole)	0.0014	0.0020
DIBROMOMETHANE	mg/kg	0 : 3	0.0028	0.0042	65.0	USEPA R5 (shrew/vole)	0.000043	0.00006
DICHLORODIFLUOROMETHANE	mg/kg	0 : 3	0.0055	0.0085	39.5	USEPA R5 (shrew/vole)	0.00014	0.00022
ETHYLBENZENE	mg/kg	0 : 3	0.0028	0.0042	0.050	USEPA R4 (unspecified)	0.056	0.084
HEXACHLOROBUTADIENE	mg/kg	0 : 3	0.26	0.28	0.040	USEPA R5 (shrew/vole)	**6.5**	**7.0**
ISOPROPYLBENZENE	mg/kg	0 : 3	0.0028	0.0042	0.050	USEPA R4 (unspecified)	0.056	0.084
M- AND P-XYLENE	mg/kg	0 : 3	0.0055	0.0085	0.050	USEPA R4 (unspecified; total xylene)	0.11	0.17
METHYL CYCLOHEXANE	mg/kg	0 : 3	0.0028	0.0042	NV		No SEV	No SEV
METHYL TERT-BUTYL ETHER	mg/kg	0 : 3	0.0028	0.0042	NV		No SEV	No SEV
METHYLENE CHLORIDE	mg/kg	0 : 3	0.014	0.021	2.0	USEPA R4 (unspecified)	0.0070	0.011
N-BUTYLBENZENE	mg/kg	0 : 3	0.0028	0.0042	0.050	USEPA R4 (unspecified)	0.056	0.084
O-XYLENE	mg/kg	0 : 3	0.0028	0.0042	0.050	USEPA R4 (unspecified; total xylene)	0.056	0.084
PROPYLBENZENE	mg/kg	0 : 3	0.0028	0.0042	0.050	USEPA R4 (unspecified)	0.056	0.084
SEC-BUTYLBENZENE	mg/kg	0 : 3	0.0028	0.0042	0.050	USEPA R4 (unspecified)	0.056	0.084
STYRENE	mg/kg	0 : 3	0.0028	0.0042	4.7	USEPA R5 (shrew/vole)	0.00060	0.00090
TERT-BUTANOL	mg/kg	0 : 3	0.014	0.021	NV		No SEV	No SEV
TERT-BUTYLBENZENE	mg/kg	0 : 3	0.0028	0.0042	0.050	USEPA R4 (unspecified)	0.056	0.084
TETRACHLOROETHENE	mg/kg	0 : 3	0.0028	0.0042	0.01	USEPA R4 (unspecified)	0.28	0.42
TOLUENE	mg/kg	0 : 3	0.0028	0.0042	0.050	USEPA R4 (unspecified)	0.056	0.084

ATTACHMENT I TABLE 1
EVALUATION OF REPORTING LIMITS - SURFACE SOIL (0-1 ft)
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

Analyte	Unit	FOD	Reporting Limits		Soil SEV	Source	HQ for Minimum Reporting Limit	HQ for Maximum Reporting Limit
			Minimum	Maximum				
TRANS-1,2-DICHLOROETHENE	mg/kg	0 : 3	0.0028	0.0042	0.78	USEPA R5 (shrew/vole)	0.0036	0.0054
TRANS-1,3-DICHLOROPROPENE	mg/kg	0 : 3	0.0028	0.0042	0.40	USEPA R5 (shrew/vole)	0.0070	0.011
TRICHLOROETHENE	mg/kg	0 : 3	0.0028	0.0042	0.0010	USEPA R4 (unspecified)	**2.8**	**4.2**
TRICHLOROFLUOROMETHANE	mg/kg	0 : 3	0.0055	0.0085	16.4	USEPA R5 (shrew/vole)	0.00034	0.00052
VINYL CHLORIDE	mg/kg	0 : 3	0.0055	0.0085	0.010	USEPA R4 (unspecified)	0.55	0.85
XYLENES, TOTAL	mg/kg	0 : 3	0.0082	0.013	0.050	USEPA R4 (unspecified)	0.16	0.26

Notes:
Shading indicates HQ > 1.
CCME - Canadian Council of Ministers of the Environment (2002).
Eco-SSL - Ecological Soil Screening Level. Derived by USEPA according to USEPA guidance (2005).
FOD - Frequency of Detection.
HMW - High Molecular Weight.
HQ - Hazard Quotient (Detection Limit/SEV).
LMW - Low Molecular Weight.
NV - No value identified.
ORNL - Oak Ridge National Laboratory (Efroymson, et al., 1997a and b).
PAHs - Polycyclic Aromatic Hydrocarbons.
SEV - Screening Ecotoxicity Value (see Attachment F for values and sources).
SVOC - Semivolatile Organic Compound.
TV - Target Value (Dutch standards presented in Buchman, 2008).
USACHPPM - U.S. Army Center for Health Promotion and Preventive Medicine
USEPA - United States Environmental Protection Agency.
USEPA R4 - USEPA Region 4 recommended ecological screening values for soil (USEPA, 2001).
USEPA R5 - USEPA Region 5 ecological screening levels for soil (USEPA, 2003).

ATTACHMENT I TABLE 2
EVALUATION OF REPORTING LIMITS - SURFACE SEDIMENT (0-1 ft)
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

Analyte	Unit	FOD	Reporting Limits		Sediment SEV	Source	HQ for Minimum Reporting Limit	HQ for Maximum Reporting Limit
			Minimum	Maximum				
Inorganics								
ANTIMONY	mg/kg	44 : 55	0.067	0.93	2.0	NOAA ERL (Freshwater/Marine)	0.034	0.47
CADMIUM	mg/kg	53 : 55	0.082	0.10	1.2	NOAA ERL (Marine)	0.068	0.083
CHROMIUM VI	mg/kg	2 : 12	0.34	0.50	NV		No SEV	No SEV
MERCURY	mg/kg	33 : 35	0.013	0.014	0.15	NOAA ERL (Marine)	0.087	0.093
SELENIUM	mg/kg	12 : 55	0.25	2.0	1.0	NOAA SQuiRT (Marine; AET)	0.25	**2.0**
SILVER	mg/kg	38 : 55	0.12	0.36	1.0	NOAA ERL (Marine)	0.12	0.36
THALLIUM	mg/kg	27 : 55	0.059	0.97	NV		No SEV	No SEV
Semi-Volatile Organic Compounds (SVOCs)								
2-METHYLNAPHTHALENE	mg/kg	0 : 9	0.24	0.25	0.070	NOAA ERL (Marine)	**3.4**	**3.6**
ACENAPHTHENE	mg/kg	18 : 41	0.011	0.25	0.016	NOAA ERL (Marine)	0.69	**15.6**
ACENAPHTHYLENE	mg/kg	5 : 41	0.010	0.25	0.044	NOAA ERL (Marine)	0.23	**5.7**
ANTHRACENE	mg/kg	25 : 41	0.011	0.25	0.085	NOAA ERL (Marine)	0.13	**2.9**
BENZO[A]ANTHRACENE	mg/kg	31 : 41	0.012	0.25	0.26	NOAA ERL (Marine)	0.046	0.96
BENZO[A]PYRENE	mg/kg	31 : 41	0.011	0.25	0.43	NOAA ERL (Marine)	0.026	0.58
BENZO[B]FLUORANTHENE	mg/kg	34 : 41	0.012	0.25	0.60	NOAA ERL (Marine)	0.020	0.42
BENZO[G,H,I]PERYLENE	mg/kg	32 : 41	0.011	0.25	0.063	NOAA ERL (Marine)	0.17	**3.9**
BENZO[K]FLUORANTHENE	mg/kg	27 : 41	0.011	0.25	0.60	NOAA ERL (Marine)	0.018	0.42
CHRYSENE	mg/kg	34 : 41	0.012	0.25	0.38	NOAA ERL (Marine)	0.031	0.65
DIBENZ[A,H]ANTHRACENE	mg/kg	26 : 41	0.012	0.25	0.063	NOAA ERL (Marine)	0.19	**3.9**
FLUORANTHENE	mg/kg	35 : 41	0.022	0.25	0.60	NOAA ERL (Marine)	0.037	0.42
FLUORENE	mg/kg	12 : 41	0.011	0.25	0.019	NOAA ERL (Marine)	0.58	**13.2**
INDENO[1,2,3-CD]PYRENE	mg/kg	32 : 41	0.012	0.25	0.063	NOAA ERL (Marine)	0.19	**3.9**
NAPHTHALENE	mg/kg	6 : 41	0.011	0.25	0.16	NOAA ERL (Marine)	0.069	**1.6**
PHENANTHRENE	mg/kg	35 : 41	0.011	0.25	0.24	NOAA ERL (Marine)	0.046	**1.0**
PYRENE	mg/kg	38 : 41	0.25	0.25	0.67	NOAA ERL (Marine)	0.38	0.38
TOTAL HMW PAHs	mg/kg	39 : 41	0.25	0.25	1.7	NOAA ERL (Marine)	0.15	0.15
TOTAL LMW PAHs	mg/kg	35 : 41	0.011	0.25	0.55	NOAA ERL (Marine)	0.020	0.45
TOTAL PAHs	mg/kg	39 : 41	0.25	0.25	4.0	NOAA ERL (Marine)	0.062	0.062

Notes:
Shading indicates HQ > 1.
AET - Apparent Effect Threshold.
ERL - Effects Range Low (Marine - Long, et al., 1995; Freshwater - Long and Morgan, 1991).
FOD - Frequency of Detection.
HMW - High Molecular Weight.
HQ - Hazard Quotient (Detection Limit/SEV).
LMW - Low Molecular Weight.
NOAA - National Oceanic and Atmospheric Administration.
PAHs - Polycyclic Aromatic Hydrocarbons.
SEV - Screening Ecotoxicity Value (see Attachment F for values and sources).
SQuiRT - Screening Quick Reference Tables (Buchman, 2008).

ATTACHMENT J

TIER 2, STEP 3A EXPOSURE POINT CONCENTRATIONS AND SUPPORTING DOCUMENTATION

ATTACHMENT J TABLE 1
SELECTION OF EXPOSURE POINT CONCENTRATIONS -
SURFACE SOIL (0-1 ft)
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

COPC	FOD (a)	UCL Selected (b)	UCL (c, g, i)	Minimum Detect (d, g)	Maximum Detect (e, g)	Mean (f, g)	Location of Maximum Detect	Refined Maximum EPC (h)
Inorganics								
ANTIMONY	27:27	95% Chebyshev (Mean, Sd) UCL	92.5	0.050	396	23.0	CRP-SB302_0_1	92.5
ARSENIC	46:46	95% Chebyshev(Mean, Sd) UCL	24.8	1.2	130	12.4	CRP-SB302_0_1	24.8
CADMIUM	23:27	95% KM (Chebyshev) UCL	0.33	0.030	0.84	0.22	CRP-SB223_0_1	0.33
CHROMIUM, TOTAL	46:46	95% Adjusted Gamma UCL	13.8	5.0	30.1	12.6	CRP-SB223_0_1	13.8
COBALT	27:27	95% Adjusted Gamma UCL	14.2	6.4	24.5	12.4	MW-13_0_1	14.2
COPPER	27:27	95% Chebyshev (Mean, Sd) UCL	81.4	9.2	256	38.1	CRP-SB205_0_1	81.4
IRON	27:27	95% Adjusted Gamma UCL	37470	16100	88500	32600	CRP-SB219_0_1	37470
LEAD	58:58	95% Chebyshev (Mean, Sd) UCL	3187	6.5	29900	815	CRP-SB302_0_1	3187
MANGANESE	27:27	95% Student's-t UCL	535	242	929	482	CRP-SB222_0_1	535
MERCURY	21:27	95% Adjusted Gamma KM-UCL	0.075	0.0060	0.21	0.066	CRP-SB212_0_1	0.075
NICKEL	27:27	95% Student's-t UCL	29.1	13.2	56.6	25.6	CRP-SB223_0_1	29.1
SELENIUM	11:27	95% KM (t) UCL	0.41	0.18	0.66	0.42	CRP-SB201_0_1	0.41
THALLIUM	27:27	95% Student's-t UCL	0.068	0.020	0.15	0.058	CRP-SB212_0_1	0.068
VANADIUM	27:27	95% Student's-t UCL	19.8	12.0	26.6	18.5	CRP-SB202_0_1	19.8
ZINC	27:27	95% Chebyshev(Mean, Sd) UCL	166	33.6	433	103	CRP-SB223_0_1	166
Pesticides/PCBs								
PCB, TOTAL	3:3	NC	--	0.043	270	90.0	CRP-SB223_0_1	270
ENDOSULFAN II	1:3	NC	--	0.00032	0.00032	0.00032	CRP-SB302_0_1	0.00032
ENDOSULFAN SULFATE	2:3	NC	--	0.0021	12.0	6.0	CRP-SB223_0_1	12.0
ENDRIN KETONE	1:3	NC	--	0.0016	0.0016	0.0016	CRP-SB302_0_1	0.0016
4,4-DDT	2:3	NC	--	0.0061	19.0	9.5	CRP-SB223_0_1	19.0
Semivolatile Organic Compounds (SVOCs)								
TOTAL HMW PAHs	58:58	95% Chebyshev (Mean, Sd) UCL	75.5	0.0043	650	23.2	CRP-SB228_0_1	75.5
TOTAL LMW PAHs	57:58	99% KM (Chebyshev) UCL	28.9	0.0051	140	4.1	CRP-SB228_0_1	28.9
TOTAL PAHs	58:58	95% Chebyshev (Mean, Sd) UCL	90.2	0.0043	790	27.2	CRP-SB228_0_1	90.2

Notes:
All concentrations are reported in milligrams per kilogram (mg/kg).
COPC - Chemical of Potential Concern.
EPC - Exposure Point Concentration.
FOD - Frequency of Detection.
HMW - High Molecular Weight.
LMW - Low Molecular Weight.
NC - Not calculated due to low FOD. At least 10 samples and 6 detects were required to run a UCL. Maximum detected concentration was used as the refined maximum EPC when UCL could not be calculated.
PAHs - Polycyclic Aromatic Hydrocarbons.
UCL - Upper Confidence Level.
(a) Number of samples detected: Total number of samples.
(b) UCL recommended for use by ProUCL Version 5.0 (USEPA, 2013). If more than one UCL was recommended, the higher UCL was used.
(c) Recommended UCL on the arithmetic mean for each constituent, after duplicates have been treated, calculated using ProUCL Version 5.0 with recommended detection limit substitution method for datasets with nondetects (USEPA, 2013).
(d) Minimum detected concentration for each constituent.
(e) Maximum detected concentration for each constituent.
(f) Mean of detected concentrations for each constituent.
(g) Calculated after results for duplicate samples have been resolved as follows: 1) where both the sample and the duplicate are not detected, the resulting value is the higher of the limit of detection (LOD); 2) where both the sample and the duplicate are detected, the resulting value is the higher of the detected results; and 3) where one of the pair is reported as not detected and the other is detected, the detected concentration will be used.
(h) Lowest of the recommended UCL and the maximum detected concentration.
(i) ProUCL computes and outputs the H-statistic based UCLs for historic reasons only as it often results in unstable (both low and high) values of UCL95 (USEPA, 2010). As such, the 95% Chebyshev UCL was used to estimate the UCL for this data set.

ATTACHMENT J TABLE 2
SELECTION OF EXPOSURE POINT CONCENTRATIONS -
SURFACE SEDIMENT (0-1 ft)
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

COPC	FOD (a)	UCL Selected (b)	UCL (c, g)	Minimum Detect (d, g)	Maximum Detect (e, g)	Mean (f, g)	Location of Maximum Detect	Refined Maximum EPC (h)
Inorganics								
ANTIMONY	44:55	97.5% KM (Chebyshev) UCL	6.3	0.050	36.7	1.9	CRP-SD122_0_1	6.3
ARSENIC	55:55	95% Chebyshev (Mean, Sd) UCL	8.1	1.3	38.1	4.5	CRP-SD102_0_1	8.1
BERYLLIUM	55:55	95% Student's-t UCL	0.22	0.12	0.44	0.20	CRP-SD101_0_1	0.22
CHROMIUM VI	2:12	NC	--	0.42	1.2	0.81	CRP-SD101_0_1	1.2
COBALT	55:55	95% Chebyshev (Mean, Sd) UCL	6.9	1.9	16.4	4.7	CRP-SD101_0_1	6.9
COPPER	55:55	95% Chebyshev (Mean, Sd) UCL	70.5	4.1	565	25.1	CRP-SD101_0_1	70.5
LEAD	55:55	95% Chebyshev (Mean, Sd) UCL	595	5.2	4290	210	CRP-SD122_0_1	595
MANGANESE	55:55	95% Chebyshev (Mean, Sd) UCL	375	69.8	1510	208	CRP-SD129_0_1	375
MERCURY	33:35	95% KM (Chebyshev) UCL	0.048	0.0040	0.09	0.031	CRP-SD105_0_1	0.048
NICKEL	55:55	95% Chebyshev (Mean, Sd) UCL	16.8	5.6	35.3	11.9	CRP-SD01_0_1	16.8
THALLIUM	27:55	95% KM (% Bootstrap) UCL	0.052	0.020	0.100	0.050	CRP-SD102_0_1	0.052
VANADIUM	55:55	95% Modified-t UCL	13.9	8.0	27.1	12.9	CRP-SD101_0_1	13.9
Semivolatile Organic Compounds (SVOCs)								
TOTAL HMW PAHs	41:41	95% Chebyshev (Mean, Sd) UCL	1.8	0.012	7.0	0.85	CRP-SD01_0_1	1.8
TOTAL LMW PAHs	38:41	95% KM (Chebyshev) UCL	0.24	0.0023	0.87	0.12	CRP-SD01_0_1	0.24
TOTAL PAHs	41:41	95% Adjusted Gamma UCL	1.4	0.012	7.9	0.95	CRP-SD01_0_1	1.4

Notes:

All concentrations are reported in milligrams per kilogram (mg/kg).
COPC - Chemical of Potential Concern.
EPC - Exposure Point Concentration.
FOD - Frequency of Detection.
HMW - High Molecular Weight.
LMW - Low Molecular Weight.
NC - Not calculated due to low FOD. At least 10 samples and 6 detects were required to run a UCL. Maximum detected concentration was used as the refined maximum EPC when UCL could not be calculated.
PAHs - Polycyclic Aromatic Hydrocarbons.
UCL - Upper Confidence Level.
(a) Number of samples detected: Total number of samples.
(b) UCL recommended for use by ProUCL Version 5.0 (USEPA, 2013). If more than one UCL was recommended, the higher UCL was used.
(c) Recommended UCL on the arithmetic mean for each constituent, after duplicates have been treated, calculated using ProUCL Version 5.0 with recommended detection limit substitution method for datasets with nondetects (USEPA, 2013).
(d) Minimum detected concentration for each constituent.
(e) Maximum detected concentration for each constituent.
(f) Mean of detected concentrations for each constituent.
(g) Calculated after results for duplicate samples have been resolved as follows: 1) where both the sample and the duplicate are not detected, the resulting value is the higher of the limit of detection (LOD); 2) where both the sample and the duplicate are detected, the resulting value is the higher of the detected results; and 3) where one of the pair is reported as not detected and the other is detected, the detected concentration will be used.
(h) Lowest of the recommended UCL and the maximum detected concentration.

ATTACHMENT J TABLE 3
SELECTION OF EXPOSURE POINT CONCENTRATIONS -
SHELLFISH TISSUE
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

COPC	FOD (a)	UCL Selected (b)	UCL (c, g, i)	Minimum Detect (d, g)	Maximum Detect (e, g)	Mean (f, g)	Location of Maximum Detect	Refined Maximum EPC (h)
Inorganics								
ALUMINUM	13:13	95% Chebyshev (Mean, Sd) UCL	28.1	2.2	31.5	12.8	CRP-SD123	28.1
ANTIMONY	5:13	95% KM (t) UCL	0.013	0.011	0.029	0.017	CRP-SD102	0.013
ARSENIC	13:13	95% Student's-t UCL	3.5	2.2	4.4	3.2	CRP-SD110	3.5
BARIUM	13:13	95% Student's-t UCL	0.24	0.12	0.30	0.21	CRP-SD110	0.24
BERYLLIUM	13:13	95% Modified-t UCL	0.0043	0.0017	0.0068	0.0034	CRP-SD112	0.00426
CADMIUM	13:13	95% Student's-t UCL	0.12	0.059	0.15	0.10	CRP-SD101	0.12
CHROMIUM, TOTAL	13:13	95% Student's-t UCL	0.43	0.074	0.77	0.32	CRP-SD123	0.43
COBALT	13:13	95% Modified-t UCL	0.17	0.063	0.28	0.14	CRP-SD109	0.17
COPPER	13:13	95% Student's-t UCL	1.2	0.58	1.6	1.05	CRP-SD102	1.2
LEAD	13:13	95% Adjusted Gamma UCL	3.7	0.060	7.3	1.4	CRP-SD102	3.7
IRON	13:13	95% Chebyshev (Mean, Sd) UCL	100.0	7.8	148	43.8	CRP-SD123	100.0
MANGANESE	13:13	95% Student's-t UCL	4.8	1.4	7.42	4.1	CRP-SD110	4.8
MERCURY	13:13	95% Student's-t UCL	0.020	0.0070	0.030	0.016	CRP-SD110	0.020
NICKEL	13:13	95% Student's-t UCL	0.62	0.29	0.891	0.53	CRP-SD112	0.62
SELENIUM	13:13	95% Student's-t UCL	0.44	0.18	0.52	0.37	CRP-SD124	0.44
SILVER	13:13	95% Student's-t UCL	0.17	0.0047	0.27	0.12	CRP-SD110	0.17
VANADIUM	13:13	95% Student's-t UCL	0.23	0.057	0.35	0.18	CRP-SD112	0.23
ZINC	13:13	95% Student's-t UCL	12.5	5.4	15.2	11.1	CRP-SD106	12.5
Semivolatile Organic Compounds (SVOCs)								
TOTAL HMW PAHs	13:13	99% Chebyshev (Mean, Sd) UCL	0.40	0.0019	0.33	0.081	CRP-SD122	0.33
TOTAL LMW PAHs	13:13	95% Chebyshev (Mean, Sd) UCL	0.024	0.00060	0.035	0.0090	CRP-SD124	0.0239
TOTAL PAHs	13:13	99% Chebyshev (Mean, Sd) UCL	0.44	0.0027	0.36	0.090	CRP-SD122	0.36

Notes:
Data set includes both quahog and blue mussel tissue.
All concentrations are reported in milligrams per kilogram (mg/kg).
COPC - Chemical of Potential Concern.
EPC - Exposure Point Concentration.
FOD - Frequency of Detection.
HMW - High Molecular Weight.
LMW - Low Molecular Weight.
NC - Not calculated due to low FOD. At least 10 samples and 6 detects were required to run a UCL. Maximum detected concentration was used as the refined maximum EPC when UCL could not be calculated.
PAHs - Polycyclic Aromatic Hydrocarbons.
UCL - Upper Confidence Level.
(a) Number of samples detected: Total number of samples.
(b) UCL recommended for use by ProUCL Version 5.0 (USEPA, 2013). If more than one UCL was recommended, the higher UCL was used.
(c) Recommended UCL on the arithmetic mean for each constituent, after duplicates have been treated, calculated using ProUCL Version 5.0 with recommended detection limit substitution method for datasets with nondetects (USEPA, 2013).
(d) Minimum detected concentration for each constituent.
(e) Maximum detected concentration for each constituent.
(f) Mean of detected concentrations for each constituent.
(g) Calculated after results for duplicate samples have been resolved as follows: 1) where both the sample and the duplicate are not detected, the resulting value is the higher of the limit of detection (LOD); 2) where both the sample and the duplicate are detected, the resulting value is the higher of the detected results; and 3) where one of the pair is reported as not detected and the other is detected, the detected concentration will be used.
(h) Lowest of the recommended UCL and the maximum detected concentration.
(i) ProUCL computes and outputs the H-statistic based UCLs for historic reasons only as it often results in unstable (both low and high) values of UCL95 (USEPA, 2010). As such, an alternate UCL was selected as the UCL for this data set when ProUCL recommended the H-statistic.

UCL Statistics for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	8/11/2014 8:48:49 AM
From File	Soil_ProUCL_Input_a.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Newport_RA_SO_Metals|ANTIMONY

General Statistics

Total Number of Observations	27	Number of Distinct Observations	23
		Number of Missing Observations	31
Minimum	0.05	Mean	22.99
Maximum	396	Median	0.63
SD	82.85	Std. Error of Mean	15.94
Coefficient of Variation	3.604	Skewness	4.106

Normal GOF Test

Shapiro Wilk Test Statistic	0.31	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.923	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.484	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.171	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	50.18	95% Adjusted-CLT UCL (Chen-1995)	62.68
		95% Modified-t UCL (Johnson-1978)	52.28

Gamma GOF Test

A-D Test Statistic	5.424	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.886	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.365	**Kolmogrov-Smirnoff Gamma GOF Test**
5% K-S Critical Value	0.185	Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	0.233	k star (bias corrected MLE)	0.232
Theta hat (MLE)	98.67	Theta star (bias corrected MLE)	99.18
nu hat (MLE)	12.58	nu star (bias corrected)	12.52
MLE Mean (bias corrected)	22.99	MLE Sd (bias corrected)	47.75
		Approximate Chi Square Value (0.05)	5.568
Adjusted Level of Significance	0.0401	Adjusted Chi Square Value	5.274

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	51.67	95% Adjusted Gamma UCL (use when n<50)	54.55

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.812	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.923	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.232	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.171	Data Not Lognormal at 5% Significance Level

Data Not Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	-2.996	Mean of logged Data	0.0511
Maximum of Logged Data	5.981	SD of logged Data	1.951

Assuming Lognormal Distribution

95% H-UCL	32.1	90% Chebyshev (MVUE) UCL	14.69
95% Chebyshev (MVUE) UCL	18.66	97.5% Chebyshev (MVUE) UCL	24.17
99% Chebyshev (MVUE) UCL	34.99		

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution (0.05)

Nonparametric Distribution Free UCLs

95% CLT UCL	49.21	95% Jackknife UCL	50.18
95% Standard Bootstrap UCL	48.96	95% Bootstrap-t UCL	819.6
95% Hall's Bootstrap UCL	744.1	95% Percentile Bootstrap UCL	51.93
95% BCA Bootstrap UCL	66		
90% Chebyshev(Mean, Sd) UCL	70.82	95% Chebyshev(Mean, Sd) UCL	92.49
97.5% Chebyshev(Mean, Sd) UCL	122.6	99% Chebyshev(Mean, Sd) UCL	181.6

Suggested UCL to Use

95% Chebyshev (Mean, Sd) UCL	92.49

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

Newport_RA_SO_Metals|ARSENIC

General Statistics

Total Number of Observations	46	Number of Distinct Observations	39
		Number of Missing Observations	12
Minimum	1.2	Mean	12.41
Maximum	130	Median	8.4
SD	19.33	Std. Error of Mean	2.85
Coefficient of Variation	1.558	Skewness	5.359

Normal GOF Test

Shapiro Wilk Test Statistic	0.423	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.945	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.32	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.131	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	17.2	95% Adjusted-CLT UCL (Chen-1995)	19.51
		95% Modified-t UCL (Johnson-1978)	17.57

Gamma GOF Test

A-D Test Statistic	2.342	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.77	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.182	**Kolmogrov-Smirnoff Gamma GOF Test**
5% K-S Critical Value	0.133	Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	1.395	k star (bias corrected MLE)	1.319
Theta hat (MLE)	8.894	Theta star (bias corrected MLE)	9.41
nu hat (MLE)	128.4	nu star (bias corrected)	121.3
MLE Mean (bias corrected)	12.41	MLE Sd (bias corrected)	10.81
		Approximate Chi Square Value (0.05)	96.9
Adjusted Level of Significance	0.0448	Adjusted Chi Square Value	96.19

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	15.54	95% Adjusted Gamma UCL (use when n<50)	15.65

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.955	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.945	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.103	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.131	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	0.182	Mean of logged Data	2.119
Maximum of Logged Data	4.868	SD of logged Data	0.789

Assuming Lognormal Distribution

95% H-UCL	14.57	90% Chebyshev (MVUE) UCL	15.65
95% Chebyshev (MVUE) UCL	17.63	97.5% Chebyshev (MVUE) UCL	20.39
99% Chebyshev (MVUE) UCL	25.8		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	17.1	95% Jackknife UCL	17.2
95% Standard Bootstrap UCL	17.05	95% Bootstrap-t UCL	26.75
95% Hall's Bootstrap UCL	36.87	95% Percentile Bootstrap UCL	17.8
95% BCA Bootstrap UCL	20.38		
90% Chebyshev(Mean, Sd) UCL	20.96	95% Chebyshev(Mean, Sd) UCL	24.84
97.5% Chebyshev(Mean, Sd) UCL	30.21	99% Chebyshev(Mean, Sd) UCL	40.77

Suggested UCL to Use

95% H-UCL	14.57

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

ProUCL computes and outputs H-statistic based UCLs for historical reasons only.
H-statistic often results in unstable (both high and low) values of UCL95 as shown in examples in the Technical Guide.
It is therefore recommended to avoid the use of H-statistic based 95% UCLs.
Use of nonparametric methods are preferred to compute UCL95 for skewed data sets which do not follow a gamma distribution.

Newport_RA_SO_Metals|CADMIUM

General Statistics

Total Number of Observations	27	Number of Distinct Observations	21
		Number of Missing Observations	31
Number of Detects	23	Number of Non-Detects	4
Number of Distinct Detects	18	Number of Distinct Non-Detects	4
Minimum Detect	0.03	Minimum Non-Detect	0.076
Maximum Detect	0.84	Maximum Non-Detect	0.14
Variance Detects	0.027	Percent Non-Detects	14.81%
Mean Detects	0.215	SD Detects	0.164
Median Detects	0.17	CV Detects	0.763
Skewness Detects	2.749	Kurtosis Detects	9.451
Mean of Logged Detects	-1.738	SD of Logged Detects	0.648

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.713	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.914	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.271	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.185	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

Mean	0.193	Standard Error of Mean	0.0313
SD	0.158	95% KM (BCA) UCL	0.243
95% KM (t) UCL	0.246	95% KM (Percentile Bootstrap) UCL	0.248
95% KM (z) UCL	0.244	95% KM Bootstrap t UCL	0.281
90% KM Chebyshev UCL	0.287	95% KM Chebyshev UCL	0.329
97.5% KM Chebyshev UCL	0.388	99% KM Chebyshev UCL	0.504

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.829	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.752	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.187	**Kolmogrov-Smirnoff GOF**
5% K-S Critical Value	0.183	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	2.637	k star (bias corrected MLE)	2.322
Theta hat (MLE)	0.0816	Theta star (bias corrected MLE)	0.0927
nu hat (MLE)	121.3	nu star (bias corrected)	106.8
MLE Mean (bias corrected)	0.215	MLE Sd (bias corrected)	0.141

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	1.483	nu hat (KM)	80.1
Approximate Chi Square Value (80.10, α)	60.47	Adjusted Chi Square Value (80.10, β)	59.38
95% Gamma Approximate KM-UCL (use when n>=50)	0.255	95% Gamma Adjusted KM-UCL (use when n<50)	0.26

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as < 0.1

For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	0.187
Maximum	0.84	Median	0.16
SD	0.167	CV	0.892
k hat (MLE)	1.423	k star (bias corrected MLE)	1.289
Theta hat (MLE)	0.131	Theta star (bias corrected MLE)	0.145
nu hat (MLE)	76.82	nu star (bias corrected)	69.62
MLE Mean (bias corrected)	0.187	MLE Sd (bias corrected)	0.164
		Adjusted Level of Significance (β)	0.0401
Approximate Chi Square Value (69.62, α)	51.41	Adjusted Chi Square Value (69.62, β)	50.41
95% Gamma Approximate UCL (use when n>=50)	0.253	95% Gamma Adjusted UCL (use when n<50)	0.258

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.936	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.914	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.148	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.185	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.193	Mean in Log Scale	-1.887
SD in Original Scale	0.161	SD in Log Scale	0.701
95% t UCL (assumes normality of ROS data)	0.246	95% Percentile Bootstrap UCL	0.247
95% BCA Bootstrap UCL	0.263	95% Bootstrap t UCL	0.286
95% H-UCL (Log ROS)	0.261		

UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed

KM Mean (logged)	-1.908	95% H-UCL (KM -Log)	0.269
KM SD (logged)	0.742	95% Critical H Value (KM-Log)	2.206
KM Standard Error of Mean (logged)	0.155		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.191	Mean in Log Scale	-1.918
SD in Original Scale	0.162	SD in Log Scale	0.749
95% t UCL (Assumes normality)	0.245	95% H-Stat UCL	0.269

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Lognormal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (Chebyshev) UCL	0.329

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Newport_RA_SO_Metals|CHROMIUM, TOTAL

General Statistics

Total Number of Observations	46	Number of Distinct Observations	35
		Number of Missing Observations	12
Minimum	5	Mean	12.64
Maximum	30.1	Median	12
SD	4.685	Std. Error of Mean	0.691
Coefficient of Variation	0.371	Skewness	1.797

Normal GOF Test

Shapiro Wilk Test Statistic	0.852	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.945	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.16	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.131	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	13.8	95% Adjusted-CLT UCL (Chen-1995)	13.97
		95% Modified-t UCL (Johnson-1978)	13.83

Gamma GOF Test

A-D Test Statistic	0.855	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.75	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.112	**Kolmogrov-Smirnoff Gamma GOF Test**
5% K-S Critical Value	0.131	Detected data appear Gamma Distributed at 5% Significance Level

Detected data follow Appr. Gamma Distribution at 5% Significance Level

Gamma Statistics

k hat (MLE)	8.82	k star (bias corrected MLE)	8.259
Theta hat (MLE)	1.433	Theta star (bias corrected MLE)	1.531
nu hat (MLE)	811.4	nu star (bias corrected)	759.9
MLE Mean (bias corrected)	12.64	MLE Sd (bias corrected)	4.399
		Approximate Chi Square Value (0.05)	696.9
Adjusted Level of Significance	0.0448	Adjusted Chi Square Value	694.9

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50)	13.78	95% Adjusted Gamma UCL (use when n<50)	13.82

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.954	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.945	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.0988	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.131	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	1.609	Mean of logged Data	2.479
Maximum of Logged Data	3.405	SD of logged Data	0.339

Assuming Lognormal Distribution

95% H-UCL	13.83	90% Chebyshev (MVUE) UCL	14.56
95% Chebyshev (MVUE) UCL	15.44	97.5% Chebyshev (MVUE) UCL	16.66
99% Chebyshev (MVUE) UCL	19.05		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	13.78	95% Jackknife UCL	13.8
95% Standard Bootstrap UCL	13.76	95% Bootstrap-t UCL	14.04
95% Hall's Bootstrap UCL	14.52	95% Percentile Bootstrap UCL	13.78
95% BCA Bootstrap UCL	14		
90% Chebyshev(Mean, Sd) UCL	14.71	95% Chebyshev(Mean, Sd) UCL	15.65
97.5% Chebyshev(Mean, Sd) UCL	16.96	99% Chebyshev(Mean, Sd) UCL	19.51

Suggested UCL to Use

95% Adjusted Gamma UCL	13.82

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

Newport_RA_SO_Metals|COBALT

General Statistics

Total Number of Observations	27	Number of Distinct Observations	26
		Number of Missing Observations	31
Minimum	6.4	Mean	12.4
Maximum	24.5	Median	10.8
SD	4.906	Std. Error of Mean	0.944
Coefficient of Variation	0.396	Skewness	1.218

Normal GOF Test

Shapiro Wilk Test Statistic	0.872	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.923	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.184	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.171	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	14.01	95% Adjusted-CLT UCL (Chen-1995)	14.19
		95% Modified-t UCL (Johnson-1978)	14.05

Gamma GOF Test

A-D Test Statistic	0.627	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.745	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.156	**Kolmogrov-Smirnoff Gamma GOF Test**
5% K-S Critical Value	0.168	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	7.732	k star (bias corrected MLE)	6.898
Theta hat (MLE)	1.604	Theta star (bias corrected MLE)	1.798
nu hat (MLE)	417.5	nu star (bias corrected)	372.5
MLE Mean (bias corrected)	12.4	MLE Sd (bias corrected)	4.723
		Approximate Chi Square Value (0.05)	328.8
Adjusted Level of Significance	0.0401	Adjusted Chi Square Value	326.1

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50)	14.05	95% Adjusted Gamma UCL (use when n<50)	14.17

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.956	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.923	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.135	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.171	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	1.856	Mean of logged Data	2.452
Maximum of Logged Data	3.199	SD of logged Data	0.361

Assuming Lognormal Distribution

95% H-UCL	14.14	90% Chebyshev (MVUE) UCL	15
95% Chebyshev (MVUE) UCL	16.19	97.5% Chebyshev (MVUE) UCL	17.85
99% Chebyshev (MVUE) UCL	21.1		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	13.96	95% Jackknife UCL	14.01
95% Standard Bootstrap UCL	14	95% Bootstrap-t UCL	14.39
95% Hall's Bootstrap UCL	14.27	95% Percentile Bootstrap UCL	13.95
95% BCA Bootstrap UCL	14.1		
90% Chebyshev(Mean, Sd) UCL	15.24	95% Chebyshev(Mean, Sd) UCL	16.52
97.5% Chebyshev(Mean, Sd) UCL	18.3	99% Chebyshev(Mean, Sd) UCL	21.8

Suggested UCL to Use

95% Adjusted Gamma UCL	14.17

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

Newport_RA_SO_Metals|COPPER

General Statistics

Total Number of Observations	27	Number of Distinct Observations	27
		Number of Missing Observations	31
Minimum	9.2	Mean	38.13
Maximum	256	Median	24.4
SD	51.52	Std. Error of Mean	9.916
Coefficient of Variation	1.351	Skewness	3.634

Normal GOF Test

Shapiro Wilk Test Statistic	0.47	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.923	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.378	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.171	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	55.04	95% Adjusted-CLT UCL (Chen-1995)	61.85
		95% Modified-t UCL (Johnson-1978)	56.19

Gamma GOF Test

A-D Test Statistic	2.752	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.763	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.289	**Kolmogrov-Smirnoff Gamma GOF Test**
5% K-S Critical Value	0.171	Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	1.538	k star (bias corrected MLE)	1.392
Theta hat (MLE)	24.79	Theta star (bias corrected MLE)	27.39
nu hat (MLE)	83.06	nu star (bias corrected)	75.17
MLE Mean (bias corrected)	38.13	MLE Sd (bias corrected)	32.31
		Approximate Chi Square Value (0.05)	56.2
Adjusted Level of Significance	0.0401	Adjusted Chi Square Value	55.15

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	50.99	95% Adjusted Gamma UCL (use when n<50)	51.96

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.848	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.923	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.208	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.171	Data Not Lognormal at 5% Significance Level

Data Not Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	2.219	Mean of logged Data	3.282
Maximum of Logged Data	5.545	SD of logged Data	0.716

Assuming Lognormal Distribution

95% H-UCL	46.7	90% Chebyshev (MVUE) UCL	49.2
95% Chebyshev (MVUE) UCL	56.08	97.5% Chebyshev (MVUE) UCL	65.64
99% Chebyshev (MVUE) UCL	84.4		

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution (0.05)

Nonparametric Distribution Free UCLs

95% CLT UCL	54.44	95% Jackknife UCL	55.04
95% Standard Bootstrap UCL	54.01	95% Bootstrap-t UCL	116.6
95% Hall's Bootstrap UCL	141.1	95% Percentile Bootstrap UCL	56.03
95% BCA Bootstrap UCL	65.15		
90% Chebyshev(Mean, Sd) UCL	67.87	95% Chebyshev(Mean, Sd) UCL	81.35
97.5% Chebyshev(Mean, Sd) UCL	100.1	99% Chebyshev(Mean, Sd) UCL	136.8

Suggested UCL to Use

95% Chebyshev (Mean, Sd) UCL	81.35

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

Newport_RA_SO_Metals|IRON

General Statistics

Total Number of Observations	27	Number of Distinct Observations	27
		Number of Missing Observations	31
Minimum	16100	Mean	32552
Maximum	88500	Median	29900
SD	14693	Std. Error of Mean	2828
Coefficient of Variation	0.451	Skewness	2.314

Normal GOF Test

Shapiro Wilk Test Statistic	0.79	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.923	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.198	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.171	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	37375	95% Adjusted-CLT UCL (Chen-1995)	38548
		95% Modified-t UCL (Johnson-1978)	37585

Gamma GOF Test

A-D Test Statistic	0.672	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.746	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.144	**Kolmogrov-Smirnoff Gamma GOF Test**
5% K-S Critical Value	0.168	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	6.922	k star (bias corrected MLE)	6.177
Theta hat (MLE)	4703	Theta star (bias corrected MLE)	5270
nu hat (MLE)	373.8	nu star (bias corrected)	333.6
MLE Mean (bias corrected)	32552	MLE Sd (bias corrected)	13097
		Approximate Chi Square Value (0.05)	292.3
Adjusted Level of Significance	0.0401	Adjusted Chi Square Value	289.8

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50)	37154	95% Adjusted Gamma UCL (use when n<50)	37470

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.953	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.923	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.116	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.171	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	9.687	Mean of logged Data	10.32
Maximum of Logged Data	11.39	SD of logged Data	0.373

Assuming Lognormal Distribution

95% H-UCL	37151	90% Chebyshev (MVUE) UCL	39438
95% Chebyshev (MVUE) UCL	42664	97.5% Chebyshev (MVUE) UCL	47141
99% Chebyshev (MVUE) UCL	55936		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	37203	95% Jackknife UCL	37375
95% Standard Bootstrap UCL	37188	95% Bootstrap-t UCL	39552
95% Hall's Bootstrap UCL	47130	95% Percentile Bootstrap UCL	37333
95% BCA Bootstrap UCL	38522		
90% Chebyshev(Mean, Sd) UCL	41035	95% Chebyshev(Mean, Sd) UCL	44877
97.5% Chebyshev(Mean, Sd) UCL	50210	99% Chebyshev(Mean, Sd) UCL	60686

Suggested UCL to Use

95% Adjusted Gamma UCL 37470

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

Newport_RA_SO_Metals|LEAD

General Statistics

Total Number of Observations	58	Number of Distinct Observations	55
		Number of Missing Observations	0
Minimum	6.5	Mean	815.4
Maximum	29900	Median	61.15
SD	4143	Std. Error of Mean	544
Coefficient of Variation	5.081	Skewness	6.542

Normal GOF Test

Shapiro Wilk Test Statistic	0.209	**Shapiro Wilk GOF Test**
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.479	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.116	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	1725	95% Adjusted-CLT UCL (Chen-1995)	2210
		95% Modified-t UCL (Johnson-1978)	1803

Gamma GOF Test

A-D Test Statistic	11.13	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.873	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.363	**Kolmogrov-Smirnoff Gamma GOF Test**
5% K-S Critical Value	0.127	Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	0.281	k star (bias corrected MLE)	0.278
Theta hat (MLE)	2902	Theta star (bias corrected MLE)	2933
nu hat (MLE)	32.6	nu star (bias corrected)	32.24
MLE Mean (bias corrected)	815.4	MLE Sd (bias corrected)	1547
		Approximate Chi Square Value (0.05)	20.27
Adjusted Level of Significance	0.0459	Adjusted Chi Square Value	20.02

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	1297	95% Adjusted Gamma UCL (use when n<50)	1313

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.87	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk P Value	1.2932E-6	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.141	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.116	Data Not Lognormal at 5% Significance Level

Data Not Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	1.872	Mean of logged Data	4.223
Maximum of Logged Data	10.31	SD of logged Data	1.525

Assuming Lognormal Distribution

95% H-UCL	413.2	90% Chebyshev (MVUE) UCL	379.8
95% Chebyshev (MVUE) UCL	456.8	97.5% Chebyshev (MVUE) UCL	563.8
99% Chebyshev (MVUE) UCL	773.9		

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution (0.05)

Nonparametric Distribution Free UCLs

95% CLT UCL	1710	95% Jackknife UCL	1725
95% Standard Bootstrap UCL	1675	95% Bootstrap-t UCL	13131
95% Hall's Bootstrap UCL	12819	95% Percentile Bootstrap UCL	1842
95% BCA Bootstrap UCL	2544		
90% Chebyshev(Mean, Sd) UCL	2447	95% Chebyshev(Mean, Sd) UCL	3187
97.5% Chebyshev(Mean, Sd) UCL	4213	99% Chebyshev(Mean, Sd) UCL	6228

Suggested UCL to Use

95% Chebyshev (Mean, Sd) UCL 3187

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

Newport_RA_SO_Metals|MANGANESE

General Statistics

Total Number of Observations	27	Number of Distinct Observations	26
		Number of Missing Observations	31
Minimum	242	Mean	482.1
Maximum	929	Median	462
SD	161.1	Std. Error of Mean	31
Coefficient of Variation	0.334	Skewness	0.777

Normal GOF Test

Shapiro Wilk Test Statistic	0.959	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.923	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.0785	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.171	Data appear Normal at 5% Significance Level

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	535	95% Adjusted-CLT UCL (Chen-1995)	538.1
		95% Modified-t UCL (Johnson-1978)	535.8

Gamma GOF Test

A-D Test Statistic	0.116	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.744	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.0583	**Kolmogrov-Smirnoff Gamma GOF Test**
5% K-S Critical Value	0.168	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	9.587	k star (bias corrected MLE)	8.546
Theta hat (MLE)	50.29	Theta star (bias corrected MLE)	56.41
nu hat (MLE)	517.7	nu star (bias corrected)	461.5
MLE Mean (bias corrected)	482.1	MLE Sd (bias corrected)	164.9
		Approximate Chi Square Value (0.05)	412.7
Adjusted Level of Significance	0.0401	Adjusted Chi Square Value	409.7

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	539.1	95% Adjusted Gamma UCL (use when n<50)	543

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.985	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.923	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.0786	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.171	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	5.489	Mean of logged Data	6.125
Maximum of Logged Data	6.834	SD of logged Data	0.334

Assuming Lognormal Distribution

95% H-UCL	545.6	90% Chebyshev (MVUE) UCL	577.4
95% Chebyshev (MVUE) UCL	620.4	97.5% Chebyshev (MVUE) UCL	680.1
99% Chebyshev (MVUE) UCL	797.3		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	533.1	95% Jackknife UCL	535
95% Standard Bootstrap UCL	531.7	95% Bootstrap-t UCL	542.2
95% Hall's Bootstrap UCL	540.5	95% Percentile Bootstrap UCL	530.4
95% BCA Bootstrap UCL	541.1		
90% Chebyshev(Mean, Sd) UCL	575.1	95% Chebyshev(Mean, Sd) UCL	617.2
97.5% Chebyshev(Mean, Sd) UCL	675.7	99% Chebyshev(Mean, Sd) UCL	790.5

Suggested UCL to Use

95% Student's-t UCL	535

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

Newport_RA_SO_Metals|MERCURY

General Statistics

Total Number of Observations	27	Number of Distinct Observations	17
		Number of Missing Observations	31
Number of Detects	21	Number of Non-Detects	6
Number of Distinct Detects	12	Number of Distinct Non-Detects	5
Minimum Detect	0.006	Minimum Non-Detect	0.012
Maximum Detect	0.21	Maximum Non-Detect	0.032
Variance Detects	0.0026	Percent Non-Detects	22.22%
Mean Detects	0.066	SD Detects	0.051
Median Detects	0.05	CV Detects	0.772
Skewness Detects	1.883	Kurtosis Detects	3.444
Mean of Logged Detects	-2.968	SD of Logged Detects	0.76

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.781	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.908	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.231	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.193	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

Mean	0.0534	Standard Error of Mean	0.00987
SD	0.0499	95% KM (BCA) UCL	0.0711
95% KM (t) UCL	0.0702	95% KM (Percentile Bootstrap) UCL	0.0696
95% KM (z) UCL	0.0696	95% KM Bootstrap t UCL	0.0769
90% KM Chebyshev UCL	0.083	95% KM Chebyshev UCL	0.0964
97.5% KM Chebyshev UCL	0.115	99% KM Chebyshev UCL	0.152

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.624	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.753	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.139	**Kolmogrov-Smirnoff GOF**
5% K-S Critical Value	0.192	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	2.154	k star (bias corrected MLE)	1.878
Theta hat (MLE)	0.0306	Theta star (bias corrected MLE)	0.0351
nu hat (MLE)	90.46	nu star (bias corrected)	78.87
MLE Mean (bias corrected)	0.066	MLE Sd (bias corrected)	0.0482

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	1.142	nu hat (KM)	61.65
Approximate Chi Square Value (61.65, α)	44.59	Adjusted Chi Square Value (61.65, β)	43.67
95% Gamma Approximate KM-UCL (use when n>=50)	0.0738	95% Gamma Adjusted KM-UCL (use when n<50)	0.0754

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as < 0.1

For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.006	Mean	0.0536
Maximum	0.21	Median	0.04
SD	0.0506	CV	0.945
k hat (MLE)	1.378	k star (bias corrected MLE)	1.25
Theta hat (MLE)	0.0389	Theta star (bias corrected MLE)	0.0428
nu hat (MLE)	74.44	nu star (bias corrected)	67.5
MLE Mean (bias corrected)	0.0536	MLE Sd (bias corrected)	0.0479
		Adjusted Level of Significance (β)	0.0401
Approximate Chi Square Value (67.50, α)	49.59	Adjusted Chi Square Value (67.50, β)	48.61
95% Gamma Approximate UCL (use when n>=50)	0.0729	95% Gamma Adjusted UCL (use when n<50)	0.0744

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.927	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.908	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.18	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.193	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.0542	Mean in Log Scale	-3.277
SD in Original Scale	0.05	SD in Log Scale	0.895
95% t UCL (assumes normality of ROS data)	0.0707	95% Percentile Bootstrap UCL	0.0704
95% BCA Bootstrap UCL	0.0748	95% Bootstrap t UCL	0.0794
95% H-UCL (Log ROS)	0.0856		

UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed

KM Mean (logged)	-3.393	95% H-UCL (KM -Log)	0.101
KM SD (logged)	1.06	95% Critical H Value (KM-Log)	2.6
KM Standard Error of Mean (logged)	0.215		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	0.0539	Mean in Log Scale	-3.316
SD in Original Scale	0.0504	SD in Log Scale	0.959
95% t UCL (Assumes normality)	0.0704	95% H-Stat UCL	0.0914

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Gamma Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (BCA) UCL	0.0711	95% GROS Adjusted Gamma UCL	0.0744
95% Adjusted Gamma KM-UCL	0.0754		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Newport_RA_SO_Metals|NICKEL

General Statistics

Total Number of Observations	27	Number of Distinct Observations	27
		Number of Missing Observations	31
Minimum	13.2	Mean	25.58
Maximum	56.6	Median	21.5
SD	10.61	Std. Error of Mean	2.041
Coefficient of Variation	0.415	Skewness	1.432

Normal GOF Test

Shapiro Wilk Test Statistic	0.871	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.923	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.168	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.171	Data appear Normal at 5% Significance Level

Data appear Approximate Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	29.06	95% Adjusted-CLT UCL (Chen-1995)	29.54
		95% Modified-t UCL (Johnson-1978)	29.16

Gamma GOF Test

A-D Test Statistic	0.469	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.746	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.146	**Kolmogrov-Smirnoff Gamma GOF Test**
5% K-S Critical Value	0.168	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	7.186	k star (bias corrected MLE)	6.413
Theta hat (MLE)	3.56	Theta star (bias corrected MLE)	3.989
nu hat (MLE)	388.1	nu star (bias corrected)	346.3
MLE Mean (bias corrected)	25.58	MLE Sd (bias corrected)	10.1
		Approximate Chi Square Value (0.05)	304.2
Adjusted Level of Significance	0.0401	Adjusted Chi Square Value	301.6

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	29.12	95% Adjusted Gamma UCL (use when n<50)	29.37

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.963	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.923	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.127	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.171	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	2.58	Mean of logged Data	3.171
Maximum of Logged Data	4.036	SD of logged Data	0.374

Assuming Lognormal Distribution

95% H-UCL	29.32	90% Chebyshev (MVUE) UCL	31.12
95% Chebyshev (MVUE) UCL	33.68	97.5% Chebyshev (MVUE) UCL	37.23
99% Chebyshev (MVUE) UCL	44.19		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	28.94	95% Jackknife UCL	29.06
95% Standard Bootstrap UCL	28.88	95% Bootstrap-t UCL	30.13
95% Hall's Bootstrap UCL	30.35	95% Percentile Bootstrap UCL	29.04
95% BCA Bootstrap UCL	29.18		
90% Chebyshev(Mean, Sd) UCL	31.71	95% Chebyshev(Mean, Sd) UCL	34.48
97.5% Chebyshev(Mean, Sd) UCL	38.33	99% Chebyshev(Mean, Sd) UCL	45.89

Suggested UCL to Use

95% Student's-t UCL	29.06

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

Newport_RA_SO_Metals|SELENIUM

General Statistics

Total Number of Observations	27	Number of Distinct Observations	19
		Number of Missing Observations	31
Number of Detects	11	Number of Non-Detects	16
Number of Distinct Detects	11	Number of Distinct Non-Detects	12
Minimum Detect	0.18	Minimum Non-Detect	0.37
Maximum Detect	0.66	Maximum Non-Detect	0.56
Variance Detects	0.0181	Percent Non-Detects	59.26%
Mean Detects	0.42	SD Detects	0.134
Median Detects	0.41	CV Detects	0.32
Skewness Detects	0.296	Kurtosis Detects	0.598
Mean of Logged Detects	-0.919	SD of Logged Detects	0.35

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.949	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.85	Detected Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.201	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.267	Detected Data appear Normal at 5% Significance Level

Detected Data appear Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

Mean	0.357	Standard Error of Mean	0.033
SD	0.115	95% KM (BCA) UCL	0.411
95% KM (t) UCL	0.414	95% KM (Percentile Bootstrap) UCL	0.412
95% KM (z) UCL	0.412	95% KM Bootstrap t UCL	0.409
90% KM Chebyshev UCL	0.456	95% KM Chebyshev UCL	0.501
97.5% KM Chebyshev UCL	0.563	99% KM Chebyshev UCL	0.685

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.335	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.729	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.164	**Kolmogrov-Smirnoff GOF**
5% K-S Critical Value	0.255	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	9.879	k star (bias corrected MLE)	7.246
Theta hat (MLE)	0.0425	Theta star (bias corrected MLE)	0.058
nu hat (MLE)	217.3	nu star (bias corrected)	159.4
MLE Mean (bias corrected)	0.42	MLE Sd (bias corrected)	0.156

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	9.593	nu hat (KM)	518
Approximate Chi Square Value (518.03, α)	466.3	Adjusted Chi Square Value (518.03, β)	463.1
95% Gamma Approximate KM-UCL (use when n>=50)	0.397	95% Gamma Adjusted KM-UCL (use when n<50)	0.4

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as < 0.1

For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.18	Mean	0.351
Maximum	0.66	Median	0.326
SD	0.106	CV	0.301
k hat (MLE)	13.3	k star (bias corrected MLE)	11.85
Theta hat (MLE)	0.0264	Theta star (bias corrected MLE)	0.0296
nu hat (MLE)	718.3	nu star (bias corrected)	639.8
MLE Mean (bias corrected)	0.351	MLE Sd (bias corrected)	0.102
		Adjusted Level of Significance (β)	0.0401
Approximate Chi Square Value (639.83, α)	582.2	Adjusted Chi Square Value (639.83, β)	578.6
95% Gamma Approximate UCL (use when n>=50)	0.386	95% Gamma Adjusted UCL (use when n<50)	0.388

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.924	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.85	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.173	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.267	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.348	Mean in Log Scale	-1.093
SD in Original Scale	0.106	SD in Log Scale	0.275
95% t UCL (assumes normality of ROS data)	0.383	95% Percentile Bootstrap UCL	0.382
95% BCA Bootstrap UCL	0.389	95% Bootstrap t UCL	0.393
95% H-UCL (Log ROS)	0.384		

UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed

KM Mean (logged)	-1.084	95% H-UCL (KM -Log)	0.406
KM SD (logged)	0.342	95% Critical H Value (KM-Log)	1.848
KM Standard Error of Mean (logged)	0.112		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.301	Mean in Log Scale	-1.277
SD in Original Scale	0.132	SD in Log Scale	0.384
95% t UCL (Assumes normality)	0.345	95% H-Stat UCL	0.346

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	0.414	95% KM (Percentile Bootstrap) UCL	0.412

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Newport_RA_SO_Metals|THALLIUM

General Statistics

Total Number of Observations	27	Number of Distinct Observations	10
		Number of Missing Observations	31
Minimum	0.02	Mean	0.0578
Maximum	0.15	Median	0.05
SD	0.0307	Std. Error of Mean	0.0059
Coefficient of Variation	0.531	Skewness	1.055

Normal GOF Test

Shapiro Wilk Test Statistic	0.919	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.923	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.119	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.171	Data appear Normal at 5% Significance Level

Data appear Approximate Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	0.0678	95% Adjusted-CLT UCL (Chen-1995)	0.0688
		95% Modified-t UCL (Johnson-1978)	0.068

Gamma GOF Test

A-D Test Statistic	0.334	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.75	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.0923	**Kolmogrov-Smirnoff Gamma GOF Test**
5% K-S Critical Value	0.169	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	3.767	k star (bias corrected MLE)	3.373
Theta hat (MLE)	0.0153	Theta star (bias corrected MLE)	0.0171
nu hat (MLE)	203.4	nu star (bias corrected)	182.1
MLE Mean (bias corrected)	0.0578	MLE Sd (bias corrected)	0.0315
		Approximate Chi Square Value (0.05)	151.9
Adjusted Level of Significance	0.0401	Adjusted Chi Square Value	150.1

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	0.0693	95% Adjusted Gamma UCL (use when n<50)	0.0701

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.95	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.923	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.125	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.171	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	-3.912	Mean of logged Data	-2.99
Maximum of Logged Data	-1.897	SD of logged Data	0.552

Assuming Lognormal Distribution

95% H-UCL	0.0728	90% Chebyshev (MVUE) UCL	0.0777
95% Chebyshev (MVUE) UCL	0.0865	97.5% Chebyshev (MVUE) UCL	0.0987
99% Chebyshev (MVUE) UCL	0.123		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	0.0675	95% Jackknife UCL	0.0678
95% Standard Bootstrap UCL	0.0674	95% Bootstrap-t UCL	0.0692
95% Hall's Bootstrap UCL	0.0697	95% Percentile Bootstrap UCL	0.0678
95% BCA Bootstrap UCL	0.0685		
90% Chebyshev(Mean, Sd) UCL	0.0755	95% Chebyshev(Mean, Sd) UCL	0.0835
97.5% Chebyshev(Mean, Sd) UCL	0.0946	99% Chebyshev(Mean, Sd) UCL	0.117

Suggested UCL to Use

95% Student's-t UCL	0.0678

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

Newport_RA_SO_Metals|VANADIUM

General Statistics

Total Number of Observations	27	Number of Distinct Observations	24
		Number of Missing Observations	31
Minimum	12	Mean	18.51
Maximum	26.6	Median	18.3
SD	3.796	Std. Error of Mean	0.731
Coefficient of Variation	0.205	Skewness	0.215

Normal GOF Test

Shapiro Wilk Test Statistic	0.98	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.923	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.0876	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.171	Data appear Normal at 5% Significance Level

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	19.76	95% Adjusted-CLT UCL (Chen-1995)	19.75
		95% Modified-t UCL (Johnson-1978)	19.76

Gamma GOF Test

A-D Test Statistic	0.174	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.744	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.0997	**Kolmogrov-Smirnoff Gamma GOF Test**
5% K-S Critical Value	0.168	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	24.4	k star (bias corrected MLE)	21.72
Theta hat (MLE)	0.759	Theta star (bias corrected MLE)	0.852
nu hat (MLE)	1318	nu star (bias corrected)	1173
MLE Mean (bias corrected)	18.51	MLE Sd (bias corrected)	3.972
		Approximate Chi Square Value (0.05)	1094
Adjusted Level of Significance	0.0401	Adjusted Chi Square Value	1089

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	19.84	95% Adjusted Gamma UCL (use when n<50)	19.93

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.98	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.923	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.108	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.171	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	2.485	Mean of logged Data	2.898
Maximum of Logged Data	3.281	SD of logged Data	0.208

Assuming Lognormal Distribution

95% H-UCL	19.92	90% Chebyshev (MVUE) UCL	20.76
95% Chebyshev (MVUE) UCL	21.78	97.5% Chebyshev (MVUE) UCL	23.19
99% Chebyshev (MVUE) UCL	25.97		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	19.71	95% Jackknife UCL	19.76
95% Standard Bootstrap UCL	19.66	95% Bootstrap-t UCL	19.88
95% Hall's Bootstrap UCL	19.75	95% Percentile Bootstrap UCL	19.7
95% BCA Bootstrap UCL	19.72		
90% Chebyshev(Mean, Sd) UCL	20.7	95% Chebyshev(Mean, Sd) UCL	21.7
97.5% Chebyshev(Mean, Sd) UCL	23.07	99% Chebyshev(Mean, Sd) UCL	25.78

Suggested UCL to Use

95% Student's-t UCL	19.76

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

Newport_RA_SO_Metals|ZINC

General Statistics

Total Number of Observations	27	Number of Distinct Observations	27
		Number of Missing Observations	31
Minimum	33.6	Mean	103.2
Maximum	433	Median	81
SD	75.16	Std. Error of Mean	14.46
Coefficient of Variation	0.729	Skewness	3.489

Normal GOF Test

Shapiro Wilk Test Statistic	0.631	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.923	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.229	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.171	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	127.8	95% Adjusted-CLT UCL (Chen-1995)	137.3
		95% Modified-t UCL (Johnson-1978)	129.4

Gamma GOF Test

A-D Test Statistic	1.095	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.75	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.185	**Kolmogrov-Smirnoff Gamma GOF Test**
5% K-S Critical Value	0.169	Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	3.555	k star (bias corrected MLE)	3.185
Theta hat (MLE)	29.02	Theta star (bias corrected MLE)	32.39
nu hat (MLE)	192	nu star (bias corrected)	172
MLE Mean (bias corrected)	103.2	MLE Sd (bias corrected)	57.8
		Approximate Chi Square Value (0.05)	142.6
Adjusted Level of Significance	0.0401	Adjusted Chi Square Value	140.9

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	124.4	95% Adjusted Gamma UCL (use when n<50)	125.9

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.936	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.923	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.147	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.171	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	3.515	Mean of logged Data	4.489
Maximum of Logged Data	6.071	SD of logged Data	0.506

Assuming Lognormal Distribution

95% H-UCL	123.1	90% Chebyshev (MVUE) UCL	131.3
95% Chebyshev (MVUE) UCL	145.2	97.5% Chebyshev (MVUE) UCL	164.5
99% Chebyshev (MVUE) UCL	202.3		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	126.9	95% Jackknife UCL	127.8
95% Standard Bootstrap UCL	126	95% Bootstrap-t UCL	149.9
95% Hall's Bootstrap UCL	227.5	95% Percentile Bootstrap UCL	128.4
95% BCA Bootstrap UCL	138.5		
90% Chebyshev(Mean, Sd) UCL	146.5	95% Chebyshev(Mean, Sd) UCL	166.2
97.5% Chebyshev(Mean, Sd) UCL	193.5	99% Chebyshev(Mean, Sd) UCL	247.1

Suggested UCL to Use

95% H-UCL	123.1

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

ProUCL computes and outputs H-statistic based UCLs for historical reasons only.
H-statistic often results in unstable (both high and low) values of UCL95 as shown in examples in the Technical Guide.
It is therefore recommended to avoid the use of H-statistic based 95% UCLs.
Use of nonparametric methods are preferred to compute UCL95 for skewed data sets which do not follow a gamma distribution.

UCL Statistics for Uncensored Full Data Sets

User Selected Options	
Date/Time of Computation	8/19/2014 8:43:14 AM
From File	Soil_ProUCL_Input_a.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Newport_RA_SO_SVOCs|HPAH, TOTAL

General Statistics

Total Number of Observations	58	Number of Distinct Observations	53
		Number of Missing Observations	0
Minimum	0.0043	Mean	23.18
Maximum	650	Median	2.331
SD	91.32	Std. Error of Mean	11.99
Coefficient of Variation	3.94	Skewness	6.073

Normal GOF Test

Shapiro Wilk Test Statistic	0.281	**Shapiro Wilk GOF Test**
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.463	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.116	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	43.23	95% Adjusted-CLT UCL (Chen-1995)	53.12
		95% Modified-t UCL (Johnson-1978)	44.82

Gamma GOF Test

A-D Test Statistic	4.963	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.88	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.279	**Kolmogrov-Smirnoff Gamma GOF Test**
5% K-S Critical Value	0.128	Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	0.266	k star (bias corrected MLE)	0.264
Theta hat (MLE)	87.08	Theta star (bias corrected MLE)	87.83
nu hat (MLE)	30.88	nu star (bias corrected)	30.61
MLE Mean (bias corrected)	23.18	MLE Sd (bias corrected)	45.12
		Approximate Chi Square Value (0.05)	18.98
Adjusted Level of Significance	0.0459	Adjusted Chi Square Value	18.74

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	37.4	95% Adjusted Gamma UCL (use when n<50)	37.86

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.971	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk P Value	0.356	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.111	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.116	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	-5.449	Mean of logged Data	0.502
Maximum of Logged Data	6.477	SD of logged Data	2.33

Assuming Lognormal Distribution

95% H-UCL	97.13	90% Chebyshev (MVUE) UCL	52.04
95% Chebyshev (MVUE) UCL	65.94	97.5% Chebyshev (MVUE) UCL	85.23
99% Chebyshev (MVUE) UCL	123.1		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	42.9	95% Jackknife UCL	43.23
95% Standard Bootstrap UCL	42.7	95% Bootstrap-t UCL	92.56
95% Hall's Bootstrap UCL	100.1	95% Percentile Bootstrap UCL	45.22
95% BCA Bootstrap UCL	56.51		
90% Chebyshev(Mean, Sd) UCL	59.15	95% Chebyshev(Mean, Sd) UCL	75.45
97.5% Chebyshev(Mean, Sd) UCL	98.06	99% Chebyshev(Mean, Sd) UCL	142.5

Suggested UCL to Use

95% Chebyshev (Mean, Sd) UCL 75.45

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

Newport_RA_SO_SVOCs|PAH, TOTAL

General Statistics

Total Number of Observations	58	Number of Distinct Observations	54
		Number of Missing Observations	0
Minimum	0.0043	Mean	27.18
Maximum	790	Median	2.499
SD	110	Std. Error of Mean	14.45
Coefficient of Variation	4.049	Skewness	6.217

Normal GOF Test

Shapiro Wilk Test Statistic	0.272	**Shapiro Wilk GOF Test**
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.461	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.116	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	51.33	95% Adjusted-CLT UCL (Chen-1995)	63.54
		95% Modified-t UCL (Johnson-1978)	53.3

Gamma GOF Test

A-D Test Statistic	5.18	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.881	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.284	**Kolmogrov-Smirnoff Gamma GOF Test**
5% K-S Critical Value	0.128	Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	0.264	k star (bias corrected MLE)	0.262
Theta hat (MLE)	103	Theta star (bias corrected MLE)	103.9
nu hat (MLE)	30.6	nu star (bias corrected)	30.35
MLE Mean (bias corrected)	27.18	MLE Sd (bias corrected)	53.13
		Approximate Chi Square Value (0.05)	18.77
Adjusted Level of Significance	0.0459	Adjusted Chi Square Value	18.53

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	43.95	95% Adjusted Gamma UCL (use when n<50)	44.5

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.973	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk P Value	0.41	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.108	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.116	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	-5.449	Mean of logged Data	0.633
Maximum of Logged Data	6.672	SD of logged Data	2.314

Assuming Lognormal Distribution

95% H-UCL	104.5	90% Chebyshev (MVUE) UCL	57
95% Chebyshev (MVUE) UCL	72.17	97.5% Chebyshev (MVUE) UCL	93.22
99% Chebyshev (MVUE) UCL	134.6		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	50.94	95% Jackknife UCL	51.33
95% Standard Bootstrap UCL	50.75	95% Bootstrap-t UCL	117.4
95% Hall's Bootstrap UCL	120	95% Percentile Bootstrap UCL	53.98
95% BCA Bootstrap UCL	74.21		
90% Chebyshev(Mean, Sd) UCL	70.52	95% Chebyshev(Mean, Sd) UCL	90.15
97.5% Chebyshev(Mean, Sd) UCL	117.4	99% Chebyshev(Mean, Sd) UCL	170.9

Suggested UCL to Use

95% Chebyshev (Mean, Sd) UCL 90.15

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

UCL Statistics for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	8/19/2014 8:54:32 AM
From File	Soil_ProUCL_Input_a.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Newport_RA_SO_SVOCs|LPAH, TOTAL

General Statistics

Total Number of Observations	58	Number of Distinct Observations	54
Number of Detects	57	Number of Non-Detects	1
Number of Distinct Detects	53	Number of Distinct Non-Detects	1
Minimum Detect	0.0051	Minimum Non-Detect	0.024
Maximum Detect	140	Maximum Non-Detect	0.024
Variance Detects	366.8	Percent Non-Detects	1.724%
Mean Detects	4.145	SD Detects	19.15
Median Detects	0.229	CV Detects	4.621
Skewness Detects	6.673	Kurtosis Detects	47.25
Mean of Logged Detects	-1.433	SD of Logged Detects	2.11

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.236	**Normal GOF Test on Detected Observations Only**
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.473	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.117	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

Mean	4.074	Standard Error of Mean	2.494
SD	18.83	95% KM (BCA) UCL	9.168
95% KM (t) UCL	8.244	95% KM (Percentile Bootstrap) UCL	8.583
95% KM (z) UCL	8.176	95% KM Bootstrap t UCL	20.47
90% KM Chebyshev UCL	11.56	95% KM Chebyshev UCL	14.95
97.5% KM Chebyshev UCL	19.65	99% KM Chebyshev UCL	28.89

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	7.131	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.889	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.317	**Kolmogrov-Smirnoff GOF**
5% K-S Critical Value	0.13	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.249	k star (bias corrected MLE)	0.248
Theta hat (MLE)	16.65	Theta star (bias corrected MLE)	16.74
nu hat (MLE)	28.38	nu star (bias corrected)	28.22
MLE Mean (bias corrected)	4.145	MLE Sd (bias corrected)	8.331

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	0.0468	nu hat (KM)	5.431
Approximate Chi Square Value (5.43, α)	1.356	Adjusted Chi Square Value (5.43, β)	1.306
95% Gamma Approximate KM-UCL (use when n>=50)	16.31	95% Gamma Adjusted KM-UCL (use when n<50)	16.94

Gamma (KM) may not be used when k hat (KM) is < 0.1

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as < 0.1

For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.0051	Mean	4.074
Maximum	140	Median	0.225
SD	18.99	CV	4.662
k hat (MLE)	0.246	k star (bias corrected MLE)	0.245
Theta hat (MLE)	16.55	Theta star (bias corrected MLE)	16.63
nu hat (MLE)	28.56	nu star (bias corrected)	28.41
MLE Mean (bias corrected)	4.074	MLE Sd (bias corrected)	8.231
		Adjusted Level of Significance (β)	0.0459
Approximate Chi Square Value (28.41, α)	17.25	Adjusted Chi Square Value (28.41, β)	17.03
95% Gamma Approximate UCL (use when n>=50)	6.71	95% Gamma Adjusted UCL (use when n<50)	6.797

Lognormal GOF Test on Detected Observations Only

Lilliefors Test Statistic	0.104	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.117	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Approximate Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	4.074	Mean in Log Scale	-1.488
SD in Original Scale	18.99	SD in Log Scale	2.132
95% t UCL (assumes normality of ROS data)	8.243	95% Percentile Bootstrap UCL	8.796
95% BCA Bootstrap UCL	11.95	95% Bootstrap t UCL	20.15
95% H-UCL (Log ROS)	6.841		

UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed

KM Mean (logged)	-1.487	95% H-UCL (KM -Log)	6.463
KM SD (logged)	2.114	95% Critical H Value (KM-Log)	3.998
KM Standard Error of Mean (logged)	0.28		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	4.074	Mean in Log Scale	-1.485
SD in Original Scale	18.99	SD in Log Scale	2.128
95% t UCL (Assumes normality)	8.243	95% H-Stat UCL	6.778

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Approximate Lognormal Distributed at 5% Significance Level

Suggested UCL to Use

99% KM (Chebyshev) UCL 28.89

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

UCL Statistics for Uncensored Full Data Sets

User Selected Options	
Date/Time of Computation	8/7/2014 5:05:08 PM
From File	Sed_ProUCL_Input_a.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

ARSENIC

General Statistics

Total Number of Observations	55	Number of Distinct Observations	41
		Number of Missing Observations	2
Minimum	1.3	Mean	4.489
Maximum	38.1	Median	2.4
SD	6.079	Std. Error of Mean	0.82
Coefficient of Variation	1.354	Skewness	3.774

Normal GOF Test

Shapiro Wilk Test Statistic	0.539	**Shapiro Wilk GOF Test**
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.339	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.119	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	5.861	95% Adjusted-CLT UCL (Chen-1995)	6.283
		95% Modified-t UCL (Johnson-1978)	5.93

Gamma GOF Test

A-D Test Statistic	5.359	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.771	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.253	**Kolmogrov-Smirnoff Gamma GOF Test**
5% K-S Critical Value	0.123	Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	1.36	k star (bias corrected MLE)	1.298
Theta hat (MLE)	3.301	Theta star (bias corrected MLE)	3.459
nu hat (MLE)	149.6	nu star (bias corrected)	142.7
MLE Mean (bias corrected)	4.489	MLE Sd (bias corrected)	3.94
		Approximate Chi Square Value (0.05)	116.1
Adjusted Level of Significance	0.0456	Adjusted Chi Square Value	115.5

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	5.517	95% Adjusted Gamma UCL (use when n<50)	5.548

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.829	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk P Value	2.5485E-8	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.188	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.119	Data Not Lognormal at 5% Significance Level

Data Not Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	0.262	Mean of logged Data	1.091
Maximum of Logged Data	3.64	SD of logged Data	0.777

Assuming Lognormal Distribution

95% H-UCL	5.027	90% Chebyshev (MVUE) UCL	5.4
95% Chebyshev (MVUE) UCL	6.036	97.5% Chebyshev (MVUE) UCL	6.917
99% Chebyshev (MVUE) UCL	8.65		

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution (0.05)

Nonparametric Distribution Free UCLs

95% CLT UCL	5.837	95% Jackknife UCL	5.861
95% Standard Bootstrap UCL	5.824	95% Bootstrap-t UCL	6.78
95% Hall's Bootstrap UCL	7.719	95% Percentile Bootstrap UCL	5.911
95% BCA Bootstrap UCL	6.442		
90% Chebyshev(Mean, Sd) UCL	6.948	95% Chebyshev(Mean, Sd) UCL	8.062
97.5% Chebyshev(Mean, Sd) UCL	9.608	99% Chebyshev(Mean, Sd) UCL	12.64

Suggested UCL to Use

95% Chebyshev (Mean, Sd) UCL 8.062

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

BERYLLIUM

General Statistics

Total Number of Observations	55	Number of Distinct Observations	34
		Number of Missing Observations	2
Minimum	0.12	Mean	0.2
Maximum	0.44	Median	0.17
SD	0.0704	Std. Error of Mean	0.0095
Coefficient of Variation	0.353	Skewness	1.177

Normal GOF Test

Shapiro Wilk Test Statistic	0.874	**Shapiro Wilk GOF Test**
5% Shapiro Wilk P Value	4.4147E-6	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.191	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.119	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	0.216	95% Adjusted-CLT UCL (Chen-1995)	0.217
		95% Modified-t UCL (Johnson-1978)	0.216

Gamma GOF Test

A-D Test Statistic	1.615	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.751	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.173	**Kolmogrov-Smirnoff Gamma GOF Test**
5% K-S Critical Value	0.12	Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	9.447	k star (bias corrected MLE)	8.943
Theta hat (MLE)	0.0211	Theta star (bias corrected MLE)	0.0223
nu hat (MLE)	1039	nu star (bias corrected)	983.8
MLE Mean (bias corrected)	0.2	MLE Sd (bias corrected)	0.0668
		Approximate Chi Square Value (0.05)	912
Adjusted Level of Significance	0.0456	Adjusted Chi Square Value	910.1

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	0.215	95% Adjusted Gamma UCL (use when n<50)	0.216

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.923	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk P Value	0.00161	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.158	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.119	Data Not Lognormal at 5% Significance Level

Data Not Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	-2.12	Mean of logged Data	-1.664
Maximum of Logged Data	-0.821	SD of logged Data	0.323

Assuming Lognormal Distribution

95% H-UCL	0.215	90% Chebyshev (MVUE) UCL	0.226
95% Chebyshev (MVUE) UCL	0.238	97.5% Chebyshev (MVUE) UCL	0.254
99% Chebyshev (MVUE) UCL	0.287		

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution (0.05)

Nonparametric Distribution Free UCLs

95% CLT UCL	0.215	95% Jackknife UCL	0.216
95% Standard Bootstrap UCL	0.216	95% Bootstrap-t UCL	0.217
95% Hall's Bootstrap UCL	0.217	95% Percentile Bootstrap UCL	0.215
95% BCA Bootstrap UCL	0.217		
90% Chebyshev(Mean, Sd) UCL	0.228	95% Chebyshev(Mean, Sd) UCL	0.241
97.5% Chebyshev(Mean, Sd) UCL	0.259	99% Chebyshev(Mean, Sd) UCL	0.294

Suggested UCL to Use

95% Student's-t UCL	0.216	or 95% Modified-t UCL	0.216

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

COBALT

General Statistics

Total Number of Observations	55	Number of Distinct Observations	37
		Number of Missing Observations	2
Minimum	1.9	Mean	4.714
Maximum	16.4	Median	3.3
SD	3.745	Std. Error of Mean	0.505
Coefficient of Variation	0.794	Skewness	1.859

Normal GOF Test

Shapiro Wilk Test Statistic	0.672	**Shapiro Wilk GOF Test**
5% Shapiro Wilk P Value	3.220E-15	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.315	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.119	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	5.559	95% Adjusted-CLT UCL (Chen-1995)	5.68
		95% Modified-t UCL (Johnson-1978)	5.58

Gamma GOF Test

A-D Test Statistic	5.299	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.76	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.255	**Kolmogrov-Smirnoff Gamma GOF Test**
5% K-S Critical Value	0.121	Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	2.527	k star (bias corrected MLE)	2.401
Theta hat (MLE)	1.866	Theta star (bias corrected MLE)	1.963
nu hat (MLE)	277.9	nu star (bias corrected)	264.1
MLE Mean (bias corrected)	4.714	MLE Sd (bias corrected)	3.042
		Approximate Chi Square Value (0.05)	227.5
Adjusted Level of Significance	0.0456	Adjusted Chi Square Value	226.6

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	5.473	95% Adjusted Gamma UCL (use when n<50)	5.495

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.809	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk P Value	2.8622E-9	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.222	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.119	Data Not Lognormal at 5% Significance Level

Data Not Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	0.642	Mean of logged Data	1.34
Maximum of Logged Data	2.797	SD of logged Data	0.595

Assuming Lognormal Distribution

95% H-UCL	5.335	90% Chebyshev (MVUE) UCL	5.709
95% Chebyshev (MVUE) UCL	6.239	97.5% Chebyshev (MVUE) UCL	6.974
99% Chebyshev (MVUE) UCL	8.419		

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution (0.05)

Nonparametric Distribution Free UCLs

95% CLT UCL	5.545	95% Jackknife UCL	5.559
95% Standard Bootstrap UCL	5.555	95% Bootstrap-t UCL	5.771
95% Hall's Bootstrap UCL	5.587	95% Percentile Bootstrap UCL	5.504
95% BCA Bootstrap UCL	5.638		
90% Chebyshev(Mean, Sd) UCL	6.229	95% Chebyshev(Mean, Sd) UCL	6.915
97.5% Chebyshev(Mean, Sd) UCL	7.868	99% Chebyshev(Mean, Sd) UCL	9.739

Suggested UCL to Use

95% Chebyshev (Mean, Sd) UCL 6.915

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

COPPER

General Statistics

Total Number of Observations	55	Number of Distinct Observations	52
		Number of Missing Observations	2
Minimum	4.1	Mean	25.11
Maximum	565	Median	7.15
SD	77.23	Std. Error of Mean	10.41
Coefficient of Variation	3.076	Skewness	6.612

Normal GOF Test

Shapiro Wilk Test Statistic	0.279	**Shapiro Wilk GOF Test**
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.393	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.119	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	42.54	95% Adjusted-CLT UCL (Chen-1995)	52.16
		95% Modified-t UCL (Johnson-1978)	44.09

Gamma GOF Test

A-D Test Statistic	7.625	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.799	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.319	**Kolmogrov-Smirnoff Gamma GOF Test**
5% K-S Critical Value	0.125	Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	0.675	k star (bias corrected MLE)	0.651
Theta hat (MLE)	37.18	Theta star (bias corrected MLE)	38.59
nu hat (MLE)	74.29	nu star (bias corrected)	71.58
MLE Mean (bias corrected)	25.11	MLE Sd (bias corrected)	31.13
		Approximate Chi Square Value (0.05)	53.1
Adjusted Level of Significance	0.0456	Adjusted Chi Square Value	52.67

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	33.85	95% Adjusted Gamma UCL (use when n<50)	34.12

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.788	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk P Value	2.937E-10	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.227	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.119	Data Not Lognormal at 5% Significance Level

Data Not Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	1.411	Mean of logged Data	2.324
Maximum of Logged Data	6.337	SD of logged Data	0.988

Assuming Lognormal Distribution

95% H-UCL	22.71	90% Chebyshev (MVUE) UCL	24.15
95% Chebyshev (MVUE) UCL	27.65	97.5% Chebyshev (MVUE) UCL	32.5
99% Chebyshev (MVUE) UCL	42.04		

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution (0.05)

Nonparametric Distribution Free UCLs

95% CLT UCL	42.24	95% Jackknife UCL	42.54
95% Standard Bootstrap UCL	41.73	95% Bootstrap-t UCL	95.95
95% Hall's Bootstrap UCL	99.73	95% Percentile Bootstrap UCL	44.28
95% BCA Bootstrap UCL	56.43		
90% Chebyshev(Mean, Sd) UCL	56.35	95% Chebyshev(Mean, Sd) UCL	70.5
97.5% Chebyshev(Mean, Sd) UCL	90.14	99% Chebyshev(Mean, Sd) UCL	128.7

Suggested UCL to Use

95% Chebyshev (Mean, Sd) UCL 70.5

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

UCL Statistics for Uncensored Full Data Sets

User Selected Options	
Date/Time of Computation	8/14/2014 9:30:54 AM
From File	Sed_ProUCL_Input_a.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

LEAD

General Statistics

Total Number of Observations	55	Number of Distinct Observations	53
		Number of Missing Observations	2
Minimum	5.2	Mean	209.9
Maximum	4290	Median	37.6
SD	655.9	Std. Error of Mean	88.44
Coefficient of Variation	3.125	Skewness	5.146

Normal GOF Test

Shapiro Wilk Test Statistic	0.337	**Shapiro Wilk GOF Test**
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.404	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.119	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	357.9	95% Adjusted-CLT UCL (Chen-1995)	420.9
		95% Modified-t UCL (Johnson-1978)	368.1

Gamma GOF Test

A-D Test Statistic	5.494	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.833	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.242	**Kolmogrov-Smirnoff Gamma GOF Test**
5% K-S Critical Value	0.128	Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	0.425	k star (bias corrected MLE)	0.414
Theta hat (MLE)	494.1	Theta star (bias corrected MLE)	507.3
nu hat (MLE)	46.73	nu star (bias corrected)	45.52
MLE Mean (bias corrected)	209.9	MLE Sd (bias corrected)	326.3
		Approximate Chi Square Value (0.05)	31.04
Adjusted Level of Significance	0.0456	Adjusted Chi Square Value	30.72

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	307.8	95% Adjusted Gamma UCL (use when n<50)	311

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.919	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk P Value	0.00109	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.0937	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.119	Data appear Lognormal at 5% Significance Level

Data appear Approximate Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	1.649	Mean of logged Data	3.813
Maximum of Logged Data	8.364	SD of logged Data	1.478

Assuming Lognormal Distribution

95% H-UCL	246.4	90% Chebyshev (MVUE) UCL	232.9
95% Chebyshev (MVUE) UCL	279.7	97.5% Chebyshev (MVUE) UCL	344.6
99% Chebyshev (MVUE) UCL	472		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	355.4	95% Jackknife UCL	357.9
95% Standard Bootstrap UCL	358.4	95% Bootstrap-t UCL	748.8
95% Hall's Bootstrap UCL	493.3	95% Percentile Bootstrap UCL	369.2
95% BCA Bootstrap UCL	435.9		
90% Chebyshev(Mean, Sd) UCL	475.2	95% Chebyshev(Mean, Sd) UCL	595.4
97.5% Chebyshev(Mean, Sd) UCL	762.2	99% Chebyshev(Mean, Sd) UCL	1090

Suggested UCL to Use

95% Chebyshev (Mean, Sd) UCL 595.4

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

MANGANESE

General Statistics

Total Number of Observations	55	Number of Distinct Observations	51
		Number of Missing Observations	2
Minimum	69.8	Mean	207.8
Maximum	1510	Median	106
SD	284.8	Std. Error of Mean	38.4
Coefficient of Variation	1.371	Skewness	3.354

Normal GOF Test

Shapiro Wilk Test Statistic	0.5	**Shapiro Wilk GOF Test**
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.365	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.119	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	272.1	95% Adjusted-CLT UCL (Chen-1995)	289.5
		95% Modified-t UCL (Johnson-1978)	275

Gamma GOF Test

A-D Test Statistic	7.575	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.771	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.321	**Kolmogrov-Smirnoff Gamma GOF Test**
5% K-S Critical Value	0.122	Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	1.378	k star (bias corrected MLE)	1.315
Theta hat (MLE)	150.7	Theta star (bias corrected MLE)	158
nu hat (MLE)	151.6	nu star (bias corrected)	144.7
MLE Mean (bias corrected)	207.8	MLE Sd (bias corrected)	181.2
		Approximate Chi Square Value (0.05)	117.9
Adjusted Level of Significance	0.0456	Adjusted Chi Square Value	117.2

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	255	95% Adjusted Gamma UCL (use when n<50)	256.4

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.735	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk P Value	1.353E-12	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.274	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.119	Data Not Lognormal at 5% Significance Level

Data Not Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	4.246	Mean of logged Data	4.932
Maximum of Logged Data	7.32	SD of logged Data	0.747

Assuming Lognormal Distribution

95% H-UCL	226.2	90% Chebyshev (MVUE) UCL	243
95% Chebyshev (MVUE) UCL	270.7	97.5% Chebyshev (MVUE) UCL	309
99% Chebyshev (MVUE) UCL	384.3		

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution (0.05)

Nonparametric Distribution Free UCLs

95% CLT UCL	271	95% Jackknife UCL	272.1
95% Standard Bootstrap UCL	268.3	95% Bootstrap-t UCL	321
95% Hall's Bootstrap UCL	308.6	95% Percentile Bootstrap UCL	270.7
95% BCA Bootstrap UCL	295.6		
90% Chebyshev(Mean, Sd) UCL	323	95% Chebyshev(Mean, Sd) UCL	375.2
97.5% Chebyshev(Mean, Sd) UCL	447.6	99% Chebyshev(Mean, Sd) UCL	589.9

Suggested UCL to Use

95% Chebyshev (Mean, Sd) UCL 375.2

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

NICKEL

General Statistics

Total Number of Observations	55	Number of Distinct Observations	48
		Number of Missing Observations	2
Minimum	5.6	Mean	11.94
Maximum	35.3	Median	8.45
SD	8.238	Std. Error of Mean	1.111
Coefficient of Variation	0.69	Skewness	1.736

Normal GOF Test

Shapiro Wilk Test Statistic	0.675	**Shapiro Wilk GOF Test**
5% Shapiro Wilk P Value	4.219E-15	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.316	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.119	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	13.8	95% Adjusted-CLT UCL (Chen-1995)	14.05
		95% Modified-t UCL (Johnson-1978)	13.85

Gamma GOF Test

A-D Test Statistic	5.687	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.757	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.278	**Kolmogrov-Smirnoff Gamma GOF Test**
5% K-S Critical Value	0.121	Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	3.199	k star (bias corrected MLE)	3.037
Theta hat (MLE)	3.733	Theta star (bias corrected MLE)	3.933
nu hat (MLE)	351.9	nu star (bias corrected)	334
MLE Mean (bias corrected)	11.94	MLE Sd (bias corrected)	6.854
		Approximate Chi Square Value (0.05)	292.7
Adjusted Level of Significance	0.0456	Adjusted Chi Square Value	291.7

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	13.63	95% Adjusted Gamma UCL (use when n<50)	13.68

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.791	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk P Value	4.368E-10	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.251	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.119	Data Not Lognormal at 5% Significance Level

Data Not Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	1.723	Mean of logged Data	2.316
Maximum of Logged Data	3.564	SD of logged Data	0.529

Assuming Lognormal Distribution

95% H-UCL	13.36	90% Chebyshev (MVUE) UCL	14.25
95% Chebyshev (MVUE) UCL	15.44	97.5% Chebyshev (MVUE) UCL	17.09
99% Chebyshev (MVUE) UCL	20.34		

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution (0.05)

Nonparametric Distribution Free UCLs

95% CLT UCL	13.77	95% Jackknife UCL	13.8
95% Standard Bootstrap UCL	13.76	95% Bootstrap-t UCL	14.17
95% Hall's Bootstrap UCL	13.89	95% Percentile Bootstrap UCL	13.98
95% BCA Bootstrap UCL	14.13		
90% Chebyshev(Mean, Sd) UCL	15.28	95% Chebyshev(Mean, Sd) UCL	16.79
97.5% Chebyshev(Mean, Sd) UCL	18.88	99% Chebyshev(Mean, Sd) UCL	23

Suggested UCL to Use

95% Chebyshev (Mean, Sd) UCL 16.79

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

VANADIUM

General Statistics

Total Number of Observations	55	Number of Distinct Observations	47
		Number of Missing Observations	2
Minimum	8	Mean	12.92
Maximum	27.1	Median	12.2
SD	4.171	Std. Error of Mean	0.562
Coefficient of Variation	0.323	Skewness	1.41

Normal GOF Test

Shapiro Wilk Test Statistic	0.866	**Shapiro Wilk GOF Test**
5% Shapiro Wilk P Value	1.7374E-6	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.135	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.119	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	13.86	95% Adjusted-CLT UCL (Chen-1995)	13.96
		95% Modified-t UCL (Johnson-1978)	13.88

Gamma GOF Test

A-D Test Statistic	1.243	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.75	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.131	**Kolmogrov-Smirnoff Gamma GOF Test**
5% K-S Critical Value	0.12	Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	11.54	k star (bias corrected MLE)	10.93
Theta hat (MLE)	1.119	Theta star (bias corrected MLE)	1.182
nu hat (MLE)	1270	nu star (bias corrected)	1202
MLE Mean (bias corrected)	12.92	MLE Sd (bias corrected)	3.909
		Approximate Chi Square Value (0.05)	1122
Adjusted Level of Significance	0.0456	Adjusted Chi Square Value	1120

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	13.83	95% Adjusted Gamma UCL (use when n<50)	13.86

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.934	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk P Value	0.00673	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.128	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.119	Data Not Lognormal at 5% Significance Level

Data Not Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	2.079	Mean of logged Data	2.515
Maximum of Logged Data	3.3	SD of logged Data	0.29

Assuming Lognormal Distribution

95% H-UCL	13.79	90% Chebyshev (MVUE) UCL	14.42
95% Chebyshev (MVUE) UCL	15.12	97.5% Chebyshev (MVUE) UCL	16.08
99% Chebyshev (MVUE) UCL	17.98		

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution (0.05)

Nonparametric Distribution Free UCLs

95% CLT UCL	13.84	95% Jackknife UCL	13.86
95% Standard Bootstrap UCL	13.82	95% Bootstrap-t UCL	13.99
95% Hall's Bootstrap UCL	13.9	95% Percentile Bootstrap UCL	13.85
95% BCA Bootstrap UCL	13.88		
90% Chebyshev(Mean, Sd) UCL	14.61	95% Chebyshev(Mean, Sd) UCL	15.37
97.5% Chebyshev(Mean, Sd) UCL	16.43	99% Chebyshev(Mean, Sd) UCL	18.52

Suggested UCL to Use

95% Student's-t UCL	13.86	or 95% Modified-t UCL	13.88

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

UCL Statistics for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	8/7/2014 5:05:45 PM
From File	Sed_ProUCL_Input_b.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

ANTIMONY

General Statistics

Total Number of Observations	55	Number of Distinct Observations	40
		Number of Missing Observations	2
Number of Detects	44	Number of Non-Detects	11
Number of Distinct Detects	33	Number of Distinct Non-Detects	8
Minimum Detect	0.05	Minimum Non-Detect	0.067
Maximum Detect	36.7	Maximum Non-Detect	0.93
Variance Detects	39.01	Percent Non-Detects	20%
Mean Detects	1.912	SD Detects	6.245
Median Detects	0.31	CV Detects	3.266
Skewness Detects	4.704	Kurtosis Detects	23.82
Mean of Logged Detects	-1.179	SD of Logged Detects	1.575

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.332	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.944	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.437	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.134	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

Mean	1.571	Standard Error of Mean	0.759
SD	5.565	95% KM (BCA) UCL	3.133
95% KM (t) UCL	2.841	95% KM (Percentile Bootstrap) UCL	2.85
95% KM (z) UCL	2.819	95% KM Bootstrap t UCL	5.046
90% KM Chebyshev UCL	3.848	95% KM Chebyshev UCL	4.88
97.5% KM Chebyshev UCL	6.312	99% KM Chebyshev UCL	9.124

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	5.603	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.845	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.331	**Kolmogrov-Smirnoff GOF**
5% K-S Critical Value	0.144	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.365	k star (bias corrected MLE)	0.356
Theta hat (MLE)	5.234	Theta star (bias corrected MLE)	5.377
nu hat (MLE)	32.15	nu star (bias corrected)	31.29
MLE Mean (bias corrected)	1.912	MLE Sd (bias corrected)	3.207

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	0.0797	nu hat (KM)	8.763
Approximate Chi Square Value (8.76, α)	3.184	Adjusted Chi Square Value (8.76, β)	3.094
95% Gamma Approximate KM-UCL (use when n>=50)	4.322	95% Gamma Adjusted KM-UCL (use when n<50)	4.448

Gamma (KM) may not be used when k hat (KM) is < 0.1

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as < 0.1

For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	1.534
Maximum	36.7	Median	0.13
SD	5.625	CV	3.667
k hat (MLE)	0.306	k star (bias corrected MLE)	0.301
Theta hat (MLE)	5.013	Theta star (bias corrected MLE)	5.089
nu hat (MLE)	33.66	nu star (bias corrected)	33.16
MLE Mean (bias corrected)	1.534	MLE Sd (bias corrected)	2.794
		Adjusted Level of Significance (β)	0.0456
Approximate Chi Square Value (33.16, α)	20.99	Adjusted Chi Square Value (33.16, β)	20.73
95% Gamma Approximate UCL (use when n>=50)	2.423	95% Gamma Adjusted UCL (use when n<50)	2.453

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.88	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.944	Detected Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.149	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.134	Detected Data Not Lognormal at 5% Significance Level

Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	1.565	Mean in Log Scale	-1.334
SD in Original Scale	5.617	SD in Log Scale	1.476
95% t UCL (assumes normality of ROS data)	2.833	95% Percentile Bootstrap UCL	2.944
95% BCA Bootstrap UCL	3.603	95% Bootstrap t UCL	4.857
95% H-UCL (Log ROS)	1.427		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	1.591	Mean in Log Scale	-1.23
SD in Original Scale	5.611	SD in Log Scale	1.466
95% t UCL (Assumes normality)	2.857	95% H-Stat UCL	1.551

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

97.5% KM (Chebyshev) UCL 6.312

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

MERCURY

General Statistics

Total Number of Observations	35	Number of Distinct Observations	16
		Number of Missing Observations	15
Number of Detects	33	Number of Non-Detects	2
Number of Distinct Detects	15	Number of Distinct Non-Detects	2
Minimum Detect	0.004	Minimum Non-Detect	0.013
Maximum Detect	0.09	Maximum Non-Detect	0.014
Variance Detects	5.7472E-4	Percent Non-Detects	5.714%
Mean Detects	0.0313	SD Detects	0.024
Median Detects	0.02	CV Detects	0.765
Skewness Detects	0.95	Kurtosis Detects	-0.237
Mean of Logged Detects	-3.762	SD of Logged Detects	0.812

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.86	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.931	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.227	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.154	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

Mean	0.0301	Standard Error of Mean	0.00403
SD	0.0235	95% KM (BCA) UCL	0.0367
95% KM (t) UCL	0.0369	95% KM (Percentile Bootstrap) UCL	0.0366
95% KM (z) UCL	0.0367	95% KM Bootstrap t UCL	0.0378
90% KM Chebyshev UCL	0.0422	95% KM Chebyshev UCL	0.0477
97.5% KM Chebyshev UCL	0.0553	99% KM Chebyshev UCL	0.0702

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.801	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.761	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.166	**Kolmogrov-Smirnoff GOF**
5% K-S Critical Value	0.156	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	1.822	k star (bias corrected MLE)	1.677
Theta hat (MLE)	0.0172	Theta star (bias corrected MLE)	0.0187
nu hat (MLE)	120.3	nu star (bias corrected)	110.7
MLE Mean (bias corrected)	0.0313	MLE Sd (bias corrected)	0.0242

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	1.642	nu hat (KM)	114.9
Approximate Chi Square Value (114.95, α)	91.2	Adjusted Chi Square Value (114.95, β)	90.19
95% Gamma Approximate KM-UCL (use when n>=50)	0.0379	95% Gamma Adjusted KM-UCL (use when n<50)	0.0383

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as < 0.1

For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.004	Mean	0.0301
Maximum	0.09	Median	0.02
SD	0.0238	CV	0.79
k hat (MLE)	1.775	k star (bias corrected MLE)	1.642
Theta hat (MLE)	0.017	Theta star (bias corrected MLE)	0.0183
nu hat (MLE)	124.3	nu star (bias corrected)	115
MLE Mean (bias corrected)	0.0301	MLE Sd (bias corrected)	0.0235
		Adjusted Level of Significance (β)	0.0425
Approximate Chi Square Value (114.95, α)	91.2	Adjusted Chi Square Value (114.95, β)	90.2
95% Gamma Approximate UCL (use when n>=50)	0.038	95% Gamma Adjusted UCL (use when n<50)	0.0384

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.951	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.931	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.13	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.154	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.0301	Mean in Log Scale	-3.812
SD in Original Scale	0.0238	SD in Log Scale	0.814
95% t UCL (assumes normality of ROS data)	0.0369	95% Percentile Bootstrap UCL	0.0366
95% BCA Bootstrap UCL	0.0376	95% Bootstrap t UCL	0.0381
95% H-UCL (Log ROS)	0.0421		

UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed

KM Mean (logged)	-3.815	95% H-UCL (KM -Log)	0.0417
KM SD (logged)	0.81	95% Critical H Value (KM-Log)	2.238
KM Standard Error of Mean (logged)	0.14		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.0299	Mean in Log Scale	-3.833
SD in Original Scale	0.024	SD in Log Scale	0.84
95% t UCL (Assumes normality)	0.0368	95% H-Stat UCL	0.0427

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Lognormal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (Chebyshev) UCL 0.0477

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

THALLIUM

General Statistics

Total Number of Observations	55	Number of Distinct Observations	22
		Number of Missing Observations	2
Number of Detects	27	Number of Non-Detects	28
Number of Distinct Detects	7	Number of Distinct Non-Detects	15
Minimum Detect	0.02	Minimum Non-Detect	0.059
Maximum Detect	0.1	Maximum Non-Detect	0.97
Variance Detects	2.5641E-4	Percent Non-Detects	50.91%
Mean Detects	0.0478	SD Detects	0.016
Median Detects	0.04	CV Detects	0.335
Skewness Detects	1.302	Kurtosis Detects	3.214
Mean of Logged Detects	-3.091	SD of Logged Detects	0.323

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.888	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.923	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.205	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.171	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

Mean	0.0471	Standard Error of Mean	0.00278
SD	0.0149	95% KM (BCA) UCL	0.0517
95% KM (t) UCL	0.0517	95% KM (Percentile Bootstrap) UCL	0.0518
95% KM (z) UCL	0.0516	95% KM Bootstrap t UCL	0.0527
90% KM Chebyshev UCL	0.0554	95% KM Chebyshev UCL	0.0592
97.5% KM Chebyshev UCL	0.0644	99% KM Chebyshev UCL	0.0747

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.826	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.744	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.189	**Kolmogrov-Smirnoff GOF**
5% K-S Critical Value	0.168	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	10.11	k star (bias corrected MLE)	9.011
Theta hat (MLE)	0.00473	Theta star (bias corrected MLE)	0.0053
nu hat (MLE)	545.9	nu star (bias corrected)	486.6
MLE Mean (bias corrected)	0.0478	MLE Sd (bias corrected)	0.0159

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	9.957	nu hat (KM)	1095
Approximate Chi Square Value (N/A, α)	1019	Adjusted Chi Square Value (N/A, β)	1018
95% Gamma Approximate KM-UCL (use when n>=50)	0.0506	95% Gamma Adjusted KM-UCL (use when n<50)	0.0507

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as < 0.1

For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.02	Mean	0.0467
Maximum	0.1	Median	0.045
SD	0.0125	CV	0.267
k hat (MLE)	15.74	k star (bias corrected MLE)	14.9
Theta hat (MLE)	0.00296	Theta star (bias corrected MLE)	0.00313
nu hat (MLE)	1732	nu star (bias corrected)	1639
MLE Mean (bias corrected)	0.0467	MLE Sd (bias corrected)	0.0121
		Adjusted Level of Significance (β)	0.0456
Approximate Chi Square Value (N/A, α)	1546	Adjusted Chi Square Value (N/A, β)	1543
95% Gamma Approximate UCL (use when n>=50)	0.0495	95% Gamma Adjusted UCL (use when n<50)	0.0495

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.945	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.923	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.198	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.171	Detected Data Not Lognormal at 5% Significance Level

Detected Data appear Approximate Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.0463	Mean in Log Scale	-3.103
SD in Original Scale	0.0124	SD in Log Scale	0.252
95% t UCL (assumes normality of ROS data)	0.0491	95% Percentile Bootstrap UCL	0.0491
95% BCA Bootstrap UCL	0.0496	95% Bootstrap t UCL	0.0497
95% H-UCL (Log ROS)	0.0492		

UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed

KM Mean (logged)	-3.104	95% H-UCL (KM -Log)	0.0506
KM SD (logged)	0.308	95% Critical H Value (KM-Log)	1.706
KM Standard Error of Mean (logged)	0.0589		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	0.115	Mean in Log Scale	-2.533
SD in Original Scale	0.107	SD in Log Scale	0.84
95% t UCL (Assumes normality)	0.139	95% H-Stat UCL	0.145

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Approximate Lognormal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	0.0517	95% KM (% Bootstrap) UCL	0.0518

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

UCL Statistics for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	8/14/2014 12:10:59 PM
From File	Sed_ProUCL_Input_c.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

LPAH, TOTAL

General Statistics

Total Number of Observations	41	Number of Distinct Observations	34
		Number of Missing Observations	9
Number of Detects	38	Number of Non-Detects	3
Number of Distinct Detects	32	Number of Distinct Non-Detects	2
Minimum Detect	0.0023	Minimum Non-Detect	0.011
Maximum Detect	0.865	Maximum Non-Detect	0.012
Variance Detects	0.0335	Percent Non-Detects	7.317%
Mean Detects	0.129	SD Detects	0.183
Median Detects	0.0443	CV Detects	1.416
Skewness Detects	2.294	Kurtosis Detects	6.244
Mean of Logged Detects	-3.092	SD of Logged Detects	1.626

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.712	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.938	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.244	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.144	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

Mean	0.12	Standard Error of Mean	0.028
SD	0.177	95% KM (BCA) UCL	0.172
95% KM (t) UCL	0.167	95% KM (Percentile Bootstrap) UCL	0.171
95% KM (z) UCL	0.166	95% KM Bootstrap t UCL	0.184
90% KM Chebyshev UCL	0.204	95% KM Chebyshev UCL	0.242
97.5% KM Chebyshev UCL	0.295	99% KM Chebyshev UCL	0.399

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.652	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.804	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.135	**Kolmogrov-Smirnoff GOF**
5% K-S Critical Value	0.15	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.592	k star (bias corrected MLE)	0.563
Theta hat (MLE)	0.218	Theta star (bias corrected MLE)	0.23
nu hat (MLE)	44.97	nu star (bias corrected)	42.75
MLE Mean (bias corrected)	0.129	MLE Sd (bias corrected)	0.172

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	0.463	nu hat (KM)	37.94
Approximate Chi Square Value (37.94, α)	24.84	Adjusted Chi Square Value (37.94, β)	24.45
95% Gamma Approximate KM-UCL (use when n>=50)	0.184	95% Gamma Adjusted KM-UCL (use when n<50)	0.187

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as < 0.1

For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.0023	Mean	0.121
Maximum	0.865	Median	0.043
SD	0.179	CV	1.483
k hat (MLE)	0.572	k star (bias corrected MLE)	0.547
Theta hat (MLE)	0.211	Theta star (bias corrected MLE)	0.22
nu hat (MLE)	46.93	nu star (bias corrected)	44.83
MLE Mean (bias corrected)	0.121	MLE Sd (bias corrected)	0.163
		Adjusted Level of Significance (β)	0.0441
Approximate Chi Square Value (44.83, α)	30.47	Adjusted Chi Square Value (44.83, β)	30.04
95% Gamma Approximate UCL (use when n>=50)	0.177	95% Gamma Adjusted UCL (use when n<50)	0.18

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.959	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.938	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.102	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.144	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.12	Mean in Log Scale	-3.242
SD in Original Scale	0.179	SD in Log Scale	1.655
95% t UCL (assumes normality of ROS data)	0.167	95% Percentile Bootstrap UCL	0.166
95% BCA Bootstrap UCL	0.179	95% Bootstrap t UCL	0.187
95% H-UCL (Log ROS)	0.352		

UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed

KM Mean (logged)	-3.251	95% H-UCL (KM -Log)	0.344
KM SD (logged)	1.649	95% Critical H Value (KM-Log)	3.154
KM Standard Error of Mean (logged)	0.262		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.12	Mean in Log Scale	-3.243
SD in Original Scale	0.179	SD in Log Scale	1.654
95% t UCL (Assumes normality)	0.167	95% H-Stat UCL	0.351

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Gamma Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (Chebyshev) UCL	0.242	95% GROS Adjusted Gamma UCL	0.18
95% Adjusted Gamma KM-UCL	0.187		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

UCL Statistics for Uncensored Full Data Sets

User Selected Options	
Date/Time of Computation	8/14/2014 12:09:56 PM
From File	Sed_ProUCL_Input_d.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

HPAH, TOTAL

General Statistics

Total Number of Observations	41	Number of Distinct Observations	37
		Number of Missing Observations	9
Minimum	0.012	Mean	0.848
Maximum	7.045	Median	0.25
SD	1.46	Std. Error of Mean	0.228
Coefficient of Variation	1.723	Skewness	2.73

Normal GOF Test

Shapiro Wilk Test Statistic	0.604	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.941	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.304	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.138	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	1.232	95% Adjusted-CLT UCL (Chen-1995)	1.327
		95% Modified-t UCL (Johnson-1978)	1.248

Gamma GOF Test

A-D Test Statistic	1.385	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.809	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.151	**Kolmogrov-Smirnoff Gamma GOF Test**
5% K-S Critical Value	0.145	Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	0.549	k star (bias corrected MLE)	0.525
Theta hat (MLE)	1.545	Theta star (bias corrected MLE)	1.615
nu hat (MLE)	45	nu star (bias corrected)	43.04
MLE Mean (bias corrected)	0.848	MLE Sd (bias corrected)	1.17
		Approximate Chi Square Value (0.05)	29
Adjusted Level of Significance	0.0441	Adjusted Chi Square Value	28.57

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	1.258	95% Adjusted Gamma UCL (use when n<50)	1.277

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.977	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.941	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.0657	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.138	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	-4.423	Mean of logged Data	-1.306
Maximum of Logged Data	1.952	SD of logged Data	1.575

Assuming Lognormal Distribution

95% H-UCL	2.001	90% Chebyshev (MVUE) UCL	1.736
95% Chebyshev (MVUE) UCL	2.125	97.5% Chebyshev (MVUE) UCL	2.664
99% Chebyshev (MVUE) UCL	3.724		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	1.223	95% Jackknife UCL	1.232
95% Standard Bootstrap UCL	1.228	95% Bootstrap-t UCL	1.447
95% Hall's Bootstrap UCL	1.368	95% Percentile Bootstrap UCL	1.24
95% BCA Bootstrap UCL	1.363		
90% Chebyshev(Mean, Sd) UCL	1.532	95% Chebyshev(Mean, Sd) UCL	1.842
97.5% Chebyshev(Mean, Sd) UCL	2.272	99% Chebyshev(Mean, Sd) UCL	3.117

Suggested UCL to Use

95% Chebyshev (Mean, Sd) UCL 1.842

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

PAH, TOTAL

General Statistics

Total Number of Observations	41	Number of Distinct Observations	37
		Number of Missing Observations	9
Minimum	0.012	Mean	0.946
Maximum	7.91	Median	0.25
SD	1.634	Std. Error of Mean	0.255
Coefficient of Variation	1.728	Skewness	2.741

Normal GOF Test

Shapiro Wilk Test Statistic	0.604	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.941	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.301	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.138	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	1.376	95% Adjusted-CLT UCL (Chen-1995)	1.482
		95% Modified-t UCL (Johnson-1978)	1.394

Gamma GOF Test

A-D Test Statistic	1.332	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.809	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.141	**Kolmogrov-Smirnoff Gamma GOF Test**
5% K-S Critical Value	0.146	Detected data appear Gamma Distributed at 5% Significance Level

Detected data follow Appr. Gamma Distribution at 5% Significance Level

Gamma Statistics

k hat (MLE)	0.54	k star (bias corrected MLE)	0.517
Theta hat (MLE)	1.751	Theta star (bias corrected MLE)	1.83
nu hat (MLE)	44.29	nu star (bias corrected)	42.38
MLE Mean (bias corrected)	0.946	MLE Sd (bias corrected)	1.316
		Approximate Chi Square Value (0.05)	28.46
Adjusted Level of Significance	0.0441	Adjusted Chi Square Value	28.04

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50)	1.409	95% Adjusted Gamma UCL (use when n<50)	1.43

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.979	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.941	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.0601	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.138	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	-4.423	Mean of logged Data	-1.218
Maximum of Logged Data	2.068	SD of logged Data	1.6

Assuming Lognormal Distribution

95% H-UCL	2.324	90% Chebyshev (MVUE) UCL	1.99
95% Chebyshev (MVUE) UCL	2.44	97.5% Chebyshev (MVUE) UCL	3.065
99% Chebyshev (MVUE) UCL	4.292		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	1.366	95% Jackknife UCL	1.376
95% Standard Bootstrap UCL	1.357	95% Bootstrap-t UCL	1.594
95% Hall's Bootstrap UCL	1.528	95% Percentile Bootstrap UCL	1.403
95% BCA Bootstrap UCL	1.509		
90% Chebyshev(Mean, Sd) UCL	1.712	95% Chebyshev(Mean, Sd) UCL	2.058
97.5% Chebyshev(Mean, Sd) UCL	2.54	99% Chebyshev(Mean, Sd) UCL	3.485

Suggested UCL to Use

95% Adjusted Gamma UCL 1.43

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

UCL Statistics for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	8/8/2014 3:22:59 PM
From File	ShellFish_Input_a.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Newport_RA_TA_Metals|ANTIMONY

General Statistics

Total Number of Observations	13	Number of Distinct Observations	12
		Number of Missing Observations	26
Number of Detects	5	Number of Non-Detects	8
Number of Distinct Detects	5	Number of Distinct Non-Detects	7
Minimum Detect	0.0111	Minimum Non-Detect	0.0041
Maximum Detect	0.0287	Maximum Non-Detect	0.0057
Variance Detects	5.3218E-5	Percent Non-Detects	61.54%
Mean Detects	0.0168	SD Detects	0.0073
Median Detects	0.0131	CV Detects	0.433
Skewness Detects	1.442	Kurtosis Detects	1.495
Mean of Logged Detects	-4.15	SD of Logged Detects	0.391

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.833	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.762	Detected Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.296	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.396	Detected Data appear Normal at 5% Significance Level

Detected Data appear Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

Mean	0.009	Standard Error of Mean	0.0023
SD	0.0074	95% KM (BCA) UCL	0.0129
95% KM (t) UCL	0.0131	95% KM (Percentile Bootstrap) UCL	0.0126
95% KM (z) UCL	0.0128	95% KM Bootstrap t UCL	0.012
90% KM Chebyshev UCL	0.0159	95% KM Chebyshev UCL	0.019
97.5% KM Chebyshev UCL	0.0233	99% KM Chebyshev UCL	0.0318

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.447	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.68	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.309	**Kolmogrov-Smirnoff GOF**
5% K-S Critical Value	0.358	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	7.778	k star (bias corrected MLE)	3.245
Theta hat (MLE)	0.00217	Theta star (bias corrected MLE)	0.00519
nu hat (MLE)	77.78	nu star (bias corrected)	32.45
MLE Mean (bias corrected)	0.0168	MLE Sd (bias corrected)	0.00935

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	1.478	nu hat (KM)	38.44
Approximate Chi Square Value (38.44, α)	25.24	Adjusted Chi Square Value (38.44, β)	23.72
95% Gamma Approximate KM-UCL (use when n>=50)	0.0137	95% Gamma Adjusted KM-UCL (use when n<50)	0.0146

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as < 0.1

For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	0.0126
Maximum	0.0287	Median	0.01
SD	0.00545	CV	0.432
k hat (MLE)	8.732	k star (bias corrected MLE)	6.768
Theta hat (MLE)	0.00145	Theta star (bias corrected MLE)	0.00187
nu hat (MLE)	227	nu star (bias corrected)	176
MLE Mean (bias corrected)	0.0126	MLE Sd (bias corrected)	0.00486
		Adjusted Level of Significance (β)	0.0301
Approximate Chi Square Value (175.97, α)	146.3	Adjusted Chi Square Value (175.97, β)	142.4
95% Gamma Approximate UCL (use when n>=50)	0.0152	95% Gamma Adjusted UCL (use when n<50)	0.0156

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.885	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.762	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.282	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.396	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.00907	Mean in Log Scale	-4.968
SD in Original Scale	0.00767	SD in Log Scale	0.719
95% t UCL (assumes normality of ROS data)	0.0129	95% Percentile Bootstrap UCL	0.0127
95% BCA Bootstrap UCL	0.0133	95% Bootstrap t UCL	0.0156
95% H-UCL (Log ROS)	0.0148		

UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed

KM Mean (logged)	-4.979	95% H-UCL (KM -Log)	0.014
KM SD (logged)	0.69	95% Critical H Value (KM-Log)	2.357
KM Standard Error of Mean (logged)	0.214		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	0.0079	Mean in Log Scale	-5.334
SD in Original Scale	0.00848	SD in Log Scale	1.004
95% t UCL (Assumes normality)	0.0121	95% H-Stat UCL	0.0182

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	0.0131	95% KM (Percentile Bootstrap) UCL	0.0126

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

UCL Statistics for Uncensored Full Data Sets

User Selected Options	
Date/Time of Computation	8/11/2014 11:18:26 AM
From File	ShellFish_Input_a.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Newport_RA_TA_Metals|ALUMINUM

General Statistics

Total Number of Observations	13	Number of Distinct Observations	13
		Number of Missing Observations	26
Minimum	2.21	Mean	12.82
Maximum	31.5	Median	3.79
SD	12.65	Std. Error of Mean	3.508
Coefficient of Variation	0.987	Skewness	0.624

Normal GOF Test

Shapiro Wilk Test Statistic	0.723	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.866	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.352	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.246	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	19.07	95% Adjusted-CLT UCL (Chen-1995)	19.24
		95% Modified-t UCL (Johnson-1978)	19.17

Gamma GOF Test

A-D Test Statistic	1.597	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.757	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.314	**Kolmogrov-Smirnoff Gamma GOF Test**
5% K-S Critical Value	0.243	Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	1.06	k star (bias corrected MLE)	0.867
Theta hat (MLE)	12.1	Theta star (bias corrected MLE)	14.8
nu hat (MLE)	27.55	nu star (bias corrected)	22.53
MLE Mean (bias corrected)	12.82	MLE Sd (bias corrected)	13.77
		Approximate Chi Square Value (0.05)	12.74
Adjusted Level of Significance	0.0301	Adjusted Chi Square Value	11.7

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	22.68	95% Adjusted Gamma UCL (use when n<50)	24.69

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.771	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.866	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.27	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.246	Data Not Lognormal at 5% Significance Level

Data Not Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	0.793	Mean of logged Data	2.01
Maximum of Logged Data	3.45	SD of logged Data	1.097

Assuming Lognormal Distribution

95% H-UCL	35.47	90% Chebyshev (MVUE) UCL	25.41
95% Chebyshev (MVUE) UCL	31.14	97.5% Chebyshev (MVUE) UCL	39.1
99% Chebyshev (MVUE) UCL	54.74		

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution (0.05)

Nonparametric Distribution Free UCLs

95% CLT UCL	18.59	95% Jackknife UCL	19.07
95% Standard Bootstrap UCL	18.35	95% Bootstrap-t UCL	20.51
95% Hall's Bootstrap UCL	17.48	95% Percentile Bootstrap UCL	18.47
95% BCA Bootstrap UCL	19.15		
90% Chebyshev(Mean, Sd) UCL	23.34	95% Chebyshev(Mean, Sd) UCL	28.11
97.5% Chebyshev(Mean, Sd) UCL	34.73	99% Chebyshev(Mean, Sd) UCL	47.72

Suggested UCL to Use

95% Chebyshev (Mean, Sd) UCL 28.11

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

Newport_RA_TA_Metals|ARSENIC

General Statistics

Total Number of Observations	13	Number of Distinct Observations	13
		Number of Missing Observations	26
Minimum	2.18	Mean	3.224
Maximum	4.38	Median	3.38
SD	0.612	Std. Error of Mean	0.17
Coefficient of Variation	0.19	Skewness	0.0102

Normal GOF Test

Shapiro Wilk Test Statistic	0.972	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.866	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.139	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.246	Data appear Normal at 5% Significance Level

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	3.526	95% Adjusted-CLT UCL (Chen-1995)	3.503
		95% Modified-t UCL (Johnson-1978)	3.526

Gamma GOF Test

A-D Test Statistic	0.288	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.733	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.164	**Kolmogrov-Smirnoff Gamma GOF Test**
5% K-S Critical Value	0.236	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	29.15	k star (bias corrected MLE)	22.47
Theta hat (MLE)	0.111	Theta star (bias corrected MLE)	0.143
nu hat (MLE)	757.8	nu star (bias corrected)	584.2
MLE Mean (bias corrected)	3.224	MLE Sd (bias corrected)	0.68
		Approximate Chi Square Value (0.05)	529.2
Adjusted Level of Significance	0.0301	Adjusted Chi Square Value	521.7

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	3.559	95% Adjusted Gamma UCL (use when n<50)	3.61

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.963	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.866	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.168	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.246	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	0.779	Mean of logged Data	1.153
Maximum of Logged Data	1.477	SD of logged Data	0.196

Assuming Lognormal Distribution

95% H-UCL	3.581	90% Chebyshev (MVUE) UCL	3.752
95% Chebyshev (MVUE) UCL	3.991	97.5% Chebyshev (MVUE) UCL	4.323
99% Chebyshev (MVUE) UCL	4.974		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	3.503	95% Jackknife UCL	3.526
95% Standard Bootstrap UCL	3.485	95% Bootstrap-t UCL	3.541
95% Hall's Bootstrap UCL	3.504	95% Percentile Bootstrap UCL	3.505
95% BCA Bootstrap UCL	3.496		
90% Chebyshev(Mean, Sd) UCL	3.733	95% Chebyshev(Mean, Sd) UCL	3.963
97.5% Chebyshev(Mean, Sd) UCL	4.283	99% Chebyshev(Mean, Sd) UCL	4.911

Suggested UCL to Use

95% Student's-t UCL 3.526

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

Newport_RA_TA_Metals|BARIUM

General Statistics

Total Number of Observations	13	Number of Distinct Observations	13
		Number of Missing Observations	26
Minimum	0.119	Mean	0.213
Maximum	0.303	Median	0.205
SD	0.0627	Std. Error of Mean	0.0174
Coefficient of Variation	0.294	Skewness	0.0609

Normal GOF Test

Shapiro Wilk Test Statistic	0.919	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.866	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.172	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.246	Data appear Normal at 5% Significance Level

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	0.244	95% Adjusted-CLT UCL (Chen-1995)	0.242
		95% Modified-t UCL (Johnson-1978)	0.244

Gamma GOF Test

A-D Test Statistic	0.448	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.734	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.187	**Kolmogrov-Smirnoff Gamma GOF Test**
5% K-S Critical Value	0.237	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	11.99	k star (bias corrected MLE)	9.274
Theta hat (MLE)	0.0178	Theta star (bias corrected MLE)	0.023
nu hat (MLE)	311.7	nu star (bias corrected)	241.1
MLE Mean (bias corrected)	0.213	MLE Sd (bias corrected)	0.07
		Approximate Chi Square Value (0.05)	206.2
Adjusted Level of Significance	0.0301	Adjusted Chi Square Value	201.6

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	0.249	95% Adjusted Gamma UCL (use when n<50)	0.255

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.926	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.866	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.179	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.246	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	-2.129	Mean of logged Data	-1.588
Maximum of Logged Data	-1.194	SD of logged Data	0.307

Assuming Lognormal Distribution

95% H-UCL	0.254	90% Chebyshev (MVUE) UCL	0.268
95% Chebyshev (MVUE) UCL	0.293	97.5% Chebyshev (MVUE) UCL	0.328
99% Chebyshev (MVUE) UCL	0.396		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	0.242	95% Jackknife UCL	0.244
95% Standard Bootstrap UCL	0.24	95% Bootstrap-t UCL	0.243
95% Hall's Bootstrap UCL	0.239	95% Percentile Bootstrap UCL	0.24
95% BCA Bootstrap UCL	0.242		
90% Chebyshev(Mean, Sd) UCL	0.265	95% Chebyshev(Mean, Sd) UCL	0.289
97.5% Chebyshev(Mean, Sd) UCL	0.322	99% Chebyshev(Mean, Sd) UCL	0.386

Suggested UCL to Use

95% Student's-t UCL 0.244

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

Newport_RA_TA_Metals|BERYLLIUM

General Statistics

Total Number of Observations	13	Number of Distinct Observations	9
		Number of Missing Observations	26
Minimum	0.0017	Mean	0.00336
Maximum	0.0068	Median	0.0025
SD	0.00178	Std. Error of Mean	4.9375E-4
Coefficient of Variation	0.53	Skewness	1.012

Normal GOF Test

Shapiro Wilk Test Statistic	0.797	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.866	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.301	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.246	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	0.00424	95% Adjusted-CLT UCL (Chen-1995)	0.00432
		95% Modified-t UCL (Johnson-1978)	0.00426

Gamma GOF Test

A-D Test Statistic	1.038	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.737	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.285	**Kolmogrov-Smirnoff Gamma GOF Test**
5% K-S Critical Value	0.238	Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	4.523	k star (bias corrected MLE)	3.53
Theta hat (MLE)	7.4324E-4	Theta star (bias corrected MLE)	9.5218E-4
nu hat (MLE)	117.6	nu star (bias corrected)	91.79
MLE Mean (bias corrected)	0.00336	MLE Sd (bias corrected)	0.00179
		Approximate Chi Square Value (0.05)	70.7
Adjusted Level of Significance	0.0301	Adjusted Chi Square Value	68.06

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	0.00436	95% Adjusted Gamma UCL (use when n<50)	0.00453

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.859	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.866	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.262	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.246	Data Not Lognormal at 5% Significance Level

Data Not Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	-6.377	Mean of logged Data	-5.81
Maximum of Logged Data	-4.991	SD of logged Data	0.482

Assuming Lognormal Distribution

95% H-UCL	0.0045	90% Chebyshev (MVUE) UCL	0.0047
95% Chebyshev (MVUE) UCL	0.00532	97.5% Chebyshev (MVUE) UCL	0.00619
99% Chebyshev (MVUE) UCL	0.00788		

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution (0.05)

Nonparametric Distribution Free UCLs

95% CLT UCL	0.00417	95% Jackknife UCL	0.00424
95% Standard Bootstrap UCL	0.00412	95% Bootstrap-t UCL	0.00453
95% Hall's Bootstrap UCL	0.00409	95% Percentile Bootstrap UCL	0.00417
95% BCA Bootstrap UCL	0.00424		
90% Chebyshev(Mean, Sd) UCL	0.00484	95% Chebyshev(Mean, Sd) UCL	0.00551
97.5% Chebyshev(Mean, Sd) UCL	0.00644	99% Chebyshev(Mean, Sd) UCL	0.00827

Suggested UCL to Use

95% Student's-t UCL	0.00424	or 95% Modified-t UCL	0.00426

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

Newport_RA_TA_Metals|CADMIUM

General Statistics

Total Number of Observations	13	Number of Distinct Observations	12
		Number of Missing Observations	26
Minimum	0.0588	Mean	0.104
Maximum	0.149	Median	0.0983
SD	0.0319	Std. Error of Mean	0.00885
Coefficient of Variation	0.307	Skewness	0.131

Normal GOF Test

Shapiro Wilk Test Statistic	0.91	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.866	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.184	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.246	Data appear Normal at 5% Significance Level

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	0.12	95% Adjusted-CLT UCL (Chen-1995)	0.119
		95% Modified-t UCL (Johnson-1978)	0.12

Gamma GOF Test

A-D Test Statistic	0.486	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.734	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.185	**Kolmogrov-Smirnoff Gamma GOF Test**
5% K-S Critical Value	0.237	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	11.14	k star (bias corrected MLE)	8.618
Theta hat (MLE)	0.00934	Theta star (bias corrected MLE)	0.0121
nu hat (MLE)	289.5	nu star (bias corrected)	224.1
MLE Mean (bias corrected)	0.104	MLE Sd (bias corrected)	0.0354
		Approximate Chi Square Value (0.05)	190.4
Adjusted Level of Significance	0.0301	Adjusted Chi Square Value	186

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	0.122	95% Adjusted Gamma UCL (use when n<50)	0.125

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.916	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.866	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.171	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.246	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	-2.834	Mean of logged Data	-2.309
Maximum of Logged Data	-1.904	SD of logged Data	0.318

Assuming Lognormal Distribution

95% H-UCL	0.125	90% Chebyshev (MVUE) UCL	0.132
95% Chebyshev (MVUE) UCL	0.145	97.5% Chebyshev (MVUE) UCL	0.162
99% Chebyshev (MVUE) UCL	0.196		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	0.119	95% Jackknife UCL	0.12
95% Standard Bootstrap UCL	0.118	95% Bootstrap-t UCL	0.12
95% Hall's Bootstrap UCL	0.118	95% Percentile Bootstrap UCL	0.118
95% BCA Bootstrap UCL	0.117		
90% Chebyshev(Mean, Sd) UCL	0.131	95% Chebyshev(Mean, Sd) UCL	0.143
97.5% Chebyshev(Mean, Sd) UCL	0.159	99% Chebyshev(Mean, Sd) UCL	0.192

Suggested UCL to Use

95% Student's-t UCL 0.12

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

Newport_RA_TA_Metals|CHROMIUM, TOTAL

General Statistics

Total Number of Observations	13	Number of Distinct Observations	13
		Number of Missing Observations	26
Minimum	0.074	Mean	0.319
Maximum	0.771	Median	0.267
SD	0.223	Std. Error of Mean	0.062
Coefficient of Variation	0.7	Skewness	0.747

Normal GOF Test

Shapiro Wilk Test Statistic	0.904	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.866	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.192	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.246	Data appear Normal at 5% Significance Level

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	0.43	95% Adjusted-CLT UCL (Chen-1995)	0.435
		95% Modified-t UCL (Johnson-1978)	0.432

Gamma GOF Test

A-D Test Statistic	0.351	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.743	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.137	**Kolmogrov-Smirnoff Gamma GOF Test**
5% K-S Critical Value	0.239	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	2.062	k star (bias corrected MLE)	1.638
Theta hat (MLE)	0.155	Theta star (bias corrected MLE)	0.195
nu hat (MLE)	53.62	nu star (bias corrected)	42.58
MLE Mean (bias corrected)	0.319	MLE Sd (bias corrected)	0.25
		Approximate Chi Square Value (0.05)	28.62
Adjusted Level of Significance	0.0301	Adjusted Chi Square Value	27

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	0.475	95% Adjusted Gamma UCL (use when n<50)	0.504

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.927	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.866	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.163	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.246	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	-2.604	Mean of logged Data	-1.403
Maximum of Logged Data	-0.26	SD of logged Data	0.794

Assuming Lognormal Distribution

95% H-UCL	0.599	90% Chebyshev (MVUE) UCL	0.555
95% Chebyshev (MVUE) UCL	0.659	97.5% Chebyshev (MVUE) UCL	0.802
99% Chebyshev (MVUE) UCL	1.084		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	0.421	95% Jackknife UCL	0.43
95% Standard Bootstrap UCL	0.417	95% Bootstrap-t UCL	0.459
95% Hall's Bootstrap UCL	0.438	95% Percentile Bootstrap UCL	0.424
95% BCA Bootstrap UCL	0.427		
90% Chebyshev(Mean, Sd) UCL	0.505	95% Chebyshev(Mean, Sd) UCL	0.59
97.5% Chebyshev(Mean, Sd) UCL	0.707	99% Chebyshev(Mean, Sd) UCL	0.936

Suggested UCL to Use

95% Student's-t UCL 0.43

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

Newport_RA_TA_Metals|COBALT

General Statistics

Total Number of Observations	13	Number of Distinct Observations	12
		Number of Missing Observations	26
Minimum	0.0632	Mean	0.143
Maximum	0.279	Median	0.144
SD	0.0487	Std. Error of Mean	0.0135
Coefficient of Variation	0.34	Skewness	1.671

Normal GOF Test

Shapiro Wilk Test Statistic	0.808	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.866	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.298	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.246	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	0.167	95% Adjusted-CLT UCL (Chen-1995)	0.172
		95% Modified-t UCL (Johnson-1978)	0.168

Gamma GOF Test

A-D Test Statistic	0.836	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.734	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.254	**Kolmogrov-Smirnoff Gamma GOF Test**
5% K-S Critical Value	0.237	Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	10.41	k star (bias corrected MLE)	8.058
Theta hat (MLE)	0.0138	Theta star (bias corrected MLE)	0.0178
nu hat (MLE)	270.6	nu star (bias corrected)	209.5
MLE Mean (bias corrected)	0.143	MLE Sd (bias corrected)	0.0504
		Approximate Chi Square Value (0.05)	177
Adjusted Level of Significance	0.0301	Adjusted Chi Square Value	172.8

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	0.169	95% Adjusted Gamma UCL (use when n<50)	0.174

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.875	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.866	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.239	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.246	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	-2.761	Mean of logged Data	-1.993
Maximum of Logged Data	-1.277	SD of logged Data	0.326

Assuming Lognormal Distribution

95% H-UCL	0.173	90% Chebyshev (MVUE) UCL	0.183
95% Chebyshev (MVUE) UCL	0.2	97.5% Chebyshev (MVUE) UCL	0.225
99% Chebyshev (MVUE) UCL	0.274		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	0.165	95% Jackknife UCL	0.167
95% Standard Bootstrap UCL	0.165	95% Bootstrap-t UCL	0.177
95% Hall's Bootstrap UCL	0.302	95% Percentile Bootstrap UCL	0.167
95% BCA Bootstrap UCL	0.173		
90% Chebyshev(Mean, Sd) UCL	0.184	95% Chebyshev(Mean, Sd) UCL	0.202
97.5% Chebyshev(Mean, Sd) UCL	0.227	99% Chebyshev(Mean, Sd) UCL	0.277

Suggested UCL to Use

95% Student's-t UCL	0.167	or 95% Modified-t UCL	0.168
or 95% H-UCL	0.173		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

ProUCL computes and outputs H-statistic based UCLs for historical reasons only.
H-statistic often results in unstable (both high and low) values of UCL95 as shown in examples in the Technical Guide.
It is therefore recommended to avoid the use of H-statistic based 95% UCLs.
Use of nonparametric methods are preferred to compute UCL95 for skewed data sets which do not follow a gamma distribution.

Newport_RA_TA_Metals|COPPER

General Statistics

Total Number of Observations	13	Number of Distinct Observations	13
		Number of Missing Observations	26
Minimum	0.58	Mean	1.047
Maximum	1.6	Median	0.976
SD	0.338	Std. Error of Mean	0.0938
Coefficient of Variation	0.323	Skewness	0.259

Normal GOF Test

Shapiro Wilk Test Statistic	0.937	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.866	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.166	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.246	Data appear Normal at 5% Significance Level

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	1.214	95% Adjusted-CLT UCL (Chen-1995)	1.209
		95% Modified-t UCL (Johnson-1978)	1.215

Gamma GOF Test

A-D Test Statistic	0.324	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.734	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.186	**Kolmogrov-Smirnoff Gamma GOF Test**
5% K-S Critical Value	0.237	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	10.19	k star (bias corrected MLE)	7.887
Theta hat (MLE)	0.103	Theta star (bias corrected MLE)	0.133
nu hat (MLE)	264.9	nu star (bias corrected)	205.1
MLE Mean (bias corrected)	1.047	MLE Sd (bias corrected)	0.373
		Approximate Chi Square Value (0.05)	172.9
Adjusted Level of Significance	0.0301	Adjusted Chi Square Value	168.7

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	1.242	95% Adjusted Gamma UCL (use when n<50)	1.273

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.948	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.866	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.18	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.246	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	-0.545	Mean of logged Data	-0.00381
Maximum of Logged Data	0.47	SD of logged Data	0.332

Assuming Lognormal Distribution

95% H-UCL	1.268	90% Chebyshev (MVUE) UCL	1.342
95% Chebyshev (MVUE) UCL	1.474	97.5% Chebyshev (MVUE) UCL	1.659
99% Chebyshev (MVUE) UCL	2.021		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	1.201	95% Jackknife UCL	1.214
95% Standard Bootstrap UCL	1.196	95% Bootstrap-t UCL	1.225
95% Hall's Bootstrap UCL	1.198	95% Percentile Bootstrap UCL	1.19
95% BCA Bootstrap UCL	1.201		
90% Chebyshev(Mean, Sd) UCL	1.328	95% Chebyshev(Mean, Sd) UCL	1.456
97.5% Chebyshev(Mean, Sd) UCL	1.633	99% Chebyshev(Mean, Sd) UCL	1.98

Suggested UCL to Use

95% Student's-t UCL 1.214

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

Newport_RA_TA_Metals|LEAD

General Statistics

Total Number of Observations	13	Number of Distinct Observations	13
		Number of Missing Observations	26
Minimum	0.06	Mean	1.419
Maximum	7.26	Median	0.293
SD	2.137	Std. Error of Mean	0.593
Coefficient of Variation	1.505	Skewness	2.061

Normal GOF Test

Shapiro Wilk Test Statistic	0.702	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.866	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.283	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.246	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	2.476	95% Adjusted-CLT UCL (Chen-1995)	2.756
		95% Modified-t UCL (Johnson-1978)	2.532

Gamma GOF Test

A-D Test Statistic	0.621	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.787	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.205	**Kolmogrov-Smirnoff Gamma GOF Test**
5% K-S Critical Value	0.249	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	0.536	k star (bias corrected MLE)	0.463
Theta hat (MLE)	2.65	Theta star (bias corrected MLE)	3.064
nu hat (MLE)	13.93	nu star (bias corrected)	12.05
MLE Mean (bias corrected)	1.419	MLE Sd (bias corrected)	2.085
		Approximate Chi Square Value (0.05)	5.257
Adjusted Level of Significance	0.0301	Adjusted Chi Square Value	4.634

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50)	3.253	95% Adjusted Gamma UCL (use when n<50)	3.69

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.909	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.866	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.145	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.246	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	-2.813	Mean of logged Data	-0.823
Maximum of Logged Data	1.982	SD of logged Data	1.698

Assuming Lognormal Distribution

95% H-UCL	14.12	90% Chebyshev (MVUE) UCL	3.854
95% Chebyshev (MVUE) UCL	4.922	97.5% Chebyshev (MVUE) UCL	6.404
99% Chebyshev (MVUE) UCL	9.316		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	2.394	95% Jackknife UCL	2.476
95% Standard Bootstrap UCL	2.325	95% Bootstrap-t UCL	3.738
95% Hall's Bootstrap UCL	6.411	95% Percentile Bootstrap UCL	2.492
95% BCA Bootstrap UCL	2.767		
90% Chebyshev(Mean, Sd) UCL	3.197	95% Chebyshev(Mean, Sd) UCL	4.003
97.5% Chebyshev(Mean, Sd) UCL	5.12	99% Chebyshev(Mean, Sd) UCL	7.316

Suggested UCL to Use

95% Adjusted Gamma UCL 3.69

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

Newport_RA_TA_Metals|IRON

General Statistics

Total Number of Observations	13	Number of Distinct Observations	13
		Number of Missing Observations	26
Minimum	7.84	Mean	43.83
Maximum	148	Median	13.7
SD	46.43	Std. Error of Mean	12.88
Coefficient of Variation	1.059	Skewness	1.096

Normal GOF Test

Shapiro Wilk Test Statistic	0.768	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.866	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.336	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.246	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	66.78	95% Adjusted-CLT UCL (Chen-1995)	69.2
		95% Modified-t UCL (Johnson-1978)	67.44

Gamma GOF Test

A-D Test Statistic	1.258	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.757	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.299	**Kolmogrov-Smirnoff Gamma GOF Test**
5% K-S Critical Value	0.243	Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	1.004	k star (bias corrected MLE)	0.823
Theta hat (MLE)	43.68	Theta star (bias corrected MLE)	53.24
nu hat (MLE)	26.09	nu star (bias corrected)	21.4
MLE Mean (bias corrected)	43.83	MLE Sd (bias corrected)	48.31
		Approximate Chi Square Value (0.05)	11.89
Adjusted Level of Significance	0.0301	Adjusted Chi Square Value	10.89

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	78.89	95% Adjusted Gamma UCL (use when n<50)	86.12

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.817	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.866	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.251	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.246	Data Not Lognormal at 5% Significance Level

Data Not Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	2.059	Mean of logged Data	3.205
Maximum of Logged Data	4.997	SD of logged Data	1.125

Assuming Lognormal Distribution

95% H-UCL	125.8	90% Chebyshev (MVUE) UCL	87.36
95% Chebyshev (MVUE) UCL	107.3	97.5% Chebyshev (MVUE) UCL	135.1
99% Chebyshev (MVUE) UCL	189.5		

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution (0.05)

Nonparametric Distribution Free UCLs

95% CLT UCL	65.02	95% Jackknife UCL	66.78
95% Standard Bootstrap UCL	64.4	95% Bootstrap-t UCL	77.33
95% Hall's Bootstrap UCL	65.98	95% Percentile Bootstrap UCL	64.34
95% BCA Bootstrap UCL	70.69		
90% Chebyshev(Mean, Sd) UCL	82.47	95% Chebyshev(Mean, Sd) UCL	99.97
97.5% Chebyshev(Mean, Sd) UCL	124.3	99% Chebyshev(Mean, Sd) UCL	172

Suggested UCL to Use

95% Chebyshev (Mean, Sd) UCL 99.97

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

Newport_RA_TA_Metals|MANGANESE

General Statistics

Total Number of Observations	13	Number of Distinct Observations	13
		Number of Missing Observations	26
Minimum	1.37	Mean	4.105
Maximum	7.42	Median	4.14
SD	1.441	Std. Error of Mean	0.4
Coefficient of Variation	0.351	Skewness	0.375

Normal GOF Test

Shapiro Wilk Test Statistic	0.941	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.866	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.199	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.246	Data appear Normal at 5% Significance Level

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	4.817	95% Adjusted-CLT UCL (Chen-1995)	4.806
		95% Modified-t UCL (Johnson-1978)	4.824

Gamma GOF Test

A-D Test Statistic	0.509	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.735	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.183	**Kolmogrov-Smirnoff Gamma GOF Test**
5% K-S Critical Value	0.237	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	7.605	k star (bias corrected MLE)	5.901
Theta hat (MLE)	0.54	Theta star (bias corrected MLE)	0.696
nu hat (MLE)	197.7	nu star (bias corrected)	153.4
MLE Mean (bias corrected)	4.105	MLE Sd (bias corrected)	1.69
		Approximate Chi Square Value (0.05)	125.8
Adjusted Level of Significance	0.0301	Adjusted Chi Square Value	122.2

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	5.006	95% Adjusted Gamma UCL (use when n<50)	5.152

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.89	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.866	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.212	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.246	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	0.315	Mean of logged Data	1.345
Maximum of Logged Data	2.004	SD of logged Data	0.408

Assuming Lognormal Distribution

95% H-UCL	5.285	90% Chebyshev (MVUE) UCL	5.573
95% Chebyshev (MVUE) UCL	6.221	97.5% Chebyshev (MVUE) UCL	7.121
99% Chebyshev (MVUE) UCL	8.888		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	4.762	95% Jackknife UCL	4.817
95% Standard Bootstrap UCL	4.726	95% Bootstrap-t UCL	4.875
95% Hall's Bootstrap UCL	4.973	95% Percentile Bootstrap UCL	4.736
95% BCA Bootstrap UCL	4.766		
90% Chebyshev(Mean, Sd) UCL	5.304	95% Chebyshev(Mean, Sd) UCL	5.847
97.5% Chebyshev(Mean, Sd) UCL	6.601	99% Chebyshev(Mean, Sd) UCL	8.081

Suggested UCL to Use

95% Student's-t UCL 4.817

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

Newport_RA_TA_Metals|MERCURY

General Statistics

Total Number of Observations	13	Number of Distinct Observations	13
		Number of Missing Observations	26
Minimum	0.00701	Mean	0.0164
Maximum	0.03	Median	0.0146
SD	0.0072	Std. Error of Mean	0.002
Coefficient of Variation	0.438	Skewness	0.636

Normal GOF Test

Shapiro Wilk Test Statistic	0.926	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.866	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.195	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.246	Data appear Normal at 5% Significance Level

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	0.02	95% Adjusted-CLT UCL (Chen-1995)	0.0201
		95% Modified-t UCL (Johnson-1978)	0.0201

Gamma GOF Test

A-D Test Statistic	0.28	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.736	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.139	**Kolmogrov-Smirnoff Gamma GOF Test**
5% K-S Critical Value	0.237	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	5.762	k star (bias corrected MLE)	4.484
Theta hat (MLE)	0.00285	Theta star (bias corrected MLE)	0.00367
nu hat (MLE)	149.8	nu star (bias corrected)	116.6
MLE Mean (bias corrected)	0.0164	MLE Sd (bias corrected)	0.00777
		Approximate Chi Square Value (0.05)	92.65
Adjusted Level of Significance	0.0301	Adjusted Chi Square Value	89.61

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	0.0207	95% Adjusted Gamma UCL (use when n<50)	0.0214

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.967	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.866	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.126	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.246	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	-4.96	Mean of logged Data	-4.197
Maximum of Logged Data	-3.507	SD of logged Data	0.444

Assuming Lognormal Distribution

95% H-UCL	0.0216	90% Chebyshev (MVUE) UCL	0.0227
95% Chebyshev (MVUE) UCL	0.0255	97.5% Chebyshev (MVUE) UCL	0.0294
99% Chebyshev (MVUE) UCL	0.037		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	0.0197	95% Jackknife UCL	0.02
95% Standard Bootstrap UCL	0.0196	95% Bootstrap-t UCL	0.0204
95% Hall's Bootstrap UCL	0.02	95% Percentile Bootstrap UCL	0.0196
95% BCA Bootstrap UCL	0.0197		
90% Chebyshev(Mean, Sd) UCL	0.0224	95% Chebyshev(Mean, Sd) UCL	0.0252
97.5% Chebyshev(Mean, Sd) UCL	0.0289	99% Chebyshev(Mean, Sd) UCL	0.0363

Suggested UCL to Use

95% Student's-t UCL 0.02

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

Newport_RA_TA_Metals|NICKEL

General Statistics

Total Number of Observations	13	Number of Distinct Observations	13
		Number of Missing Observations	26
Minimum	0.294	Mean	0.528
Maximum	0.891	Median	0.472
SD	0.176	Std. Error of Mean	0.0488
Coefficient of Variation	0.333	Skewness	0.872

Normal GOF Test

Shapiro Wilk Test Statistic	0.918	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.866	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.218	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.246	Data appear Normal at 5% Significance Level

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	0.615	95% Adjusted-CLT UCL (Chen-1995)	0.621
		95% Modified-t UCL (Johnson-1978)	0.617

Gamma GOF Test

A-D Test Statistic	0.331	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.734	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.174	**Kolmogrov-Smirnoff Gamma GOF Test**
5% K-S Critical Value	0.237	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	10.41	k star (bias corrected MLE)	8.061
Theta hat (MLE)	0.0507	Theta star (bias corrected MLE)	0.0655
nu hat (MLE)	270.7	nu star (bias corrected)	209.6
MLE Mean (bias corrected)	0.528	MLE Sd (bias corrected)	0.186
		Approximate Chi Square Value (0.05)	177.1
Adjusted Level of Significance	0.0301	Adjusted Chi Square Value	172.8

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	0.625	95% Adjusted Gamma UCL (use when n<50)	0.641

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.962	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.866	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.158	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.246	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	-1.224	Mean of logged Data	-0.687
Maximum of Logged Data	-0.115	SD of logged Data	0.323

Assuming Lognormal Distribution

95% H-UCL	0.635	90% Chebyshev (MVUE) UCL	0.672
95% Chebyshev (MVUE) UCL	0.737	97.5% Chebyshev (MVUE) UCL	0.827
99% Chebyshev (MVUE) UCL	1.004		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	0.609	95% Jackknife UCL	0.615
95% Standard Bootstrap UCL	0.607	95% Bootstrap-t UCL	0.643
95% Hall's Bootstrap UCL	0.669	95% Percentile Bootstrap UCL	0.604
95% BCA Bootstrap UCL	0.606		
90% Chebyshev(Mean, Sd) UCL	0.675	95% Chebyshev(Mean, Sd) UCL	0.741
97.5% Chebyshev(Mean, Sd) UCL	0.833	99% Chebyshev(Mean, Sd) UCL	1.014

Suggested UCL to Use

95% Student's-t UCL 0.615

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

Newport_RA_TA_Metals|SELENIUM

General Statistics

Total Number of Observations	13	Number of Distinct Observations	10
		Number of Missing Observations	26
Minimum	0.18	Mean	0.372
Maximum	0.52	Median	0.42
SD	0.134	Std. Error of Mean	0.0372
Coefficient of Variation	0.361	Skewness	-0.726

Normal GOF Test

Shapiro Wilk Test Statistic	0.794	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.866	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.274	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.246	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	0.439	95% Adjusted-CLT UCL (Chen-1995)	0.426
		95% Modified-t UCL (Johnson-1978)	0.437

Gamma GOF Test

A-D Test Statistic	1.527	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.735	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.316	**Kolmogrov-Smirnoff Gamma GOF Test**
5% K-S Critical Value	0.237	Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	6.553	k star (bias corrected MLE)	5.092
Theta hat (MLE)	0.0568	Theta star (bias corrected MLE)	0.0731
nu hat (MLE)	170.4	nu star (bias corrected)	132.4
MLE Mean (bias corrected)	0.372	MLE Sd (bias corrected)	0.165
		Approximate Chi Square Value (0.05)	106.8
Adjusted Level of Significance	0.0301	Adjusted Chi Square Value	103.5

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	0.461	95% Adjusted Gamma UCL (use when n<50)	0.476

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.741	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.866	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.326	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.246	Data Not Lognormal at 5% Significance Level

Data Not Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	-1.715	Mean of logged Data	-1.066
Maximum of Logged Data	-0.654	SD of logged Data	0.439

Assuming Lognormal Distribution

95% H-UCL	0.491	90% Chebyshev (MVUE) UCL	0.516
95% Chebyshev (MVUE) UCL	0.579	97.5% Chebyshev (MVUE) UCL	0.668
99% Chebyshev (MVUE) UCL	0.84		

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution (0.05)

Nonparametric Distribution Free UCLs

95% CLT UCL	0.434	95% Jackknife UCL	0.439
95% Standard Bootstrap UCL	0.432	95% Bootstrap-t UCL	0.428
95% Hall's Bootstrap UCL	0.423	95% Percentile Bootstrap UCL	0.43
95% BCA Bootstrap UCL	0.423		
90% Chebyshev(Mean, Sd) UCL	0.484	95% Chebyshev(Mean, Sd) UCL	0.535
97.5% Chebyshev(Mean, Sd) UCL	0.605	99% Chebyshev(Mean, Sd) UCL	0.743

Suggested UCL to Use

95% Student's-t UCL	0.439	or 95% Modified-t UCL	0.437

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets.

Newport_RA_TA_Metals|SILVER

General Statistics

Total Number of Observations	13	Number of Distinct Observations	12
		Number of Missing Observations	26
Minimum	0.0047	Mean	0.118
Maximum	0.274	Median	0.106
SD	0.107	Std. Error of Mean	0.0297
Coefficient of Variation	0.909	Skewness	0.253

Normal GOF Test

Shapiro Wilk Test Statistic	0.855	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.866	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.231	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.246	Data appear Normal at 5% Significance Level

Data appear Approximate Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	0.171	95% Adjusted-CLT UCL (Chen-1995)	0.169
		95% Modified-t UCL (Johnson-1978)	0.171

Gamma GOF Test

A-D Test Statistic	1.004	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.774	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.248	**Kolmogrov-Smirnoff Gamma GOF Test**
5% K-S Critical Value	0.247	Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	0.697	k star (bias corrected MLE)	0.588
Theta hat (MLE)	0.169	Theta star (bias corrected MLE)	0.2
nu hat (MLE)	18.13	nu star (bias corrected)	15.28
MLE Mean (bias corrected)	0.118	MLE Sd (bias corrected)	0.154
		Approximate Chi Square Value (0.05)	7.457
Adjusted Level of Significance	0.0301	Adjusted Chi Square Value	6.692

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	0.241	95% Adjusted Gamma UCL (use when n<50)	0.269

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.798	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.866	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.251	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.246	Data Not Lognormal at 5% Significance Level

Data Not Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	-5.36	Mean of logged Data	-3.006
Maximum of Logged Data	-1.295	SD of logged Data	1.689

Assuming Lognormal Distribution

95% H-UCL	1.537	90% Chebyshev (MVUE) UCL	0.428
95% Chebyshev (MVUE) UCL	0.546	97.5% Chebyshev (MVUE) UCL	0.71
99% Chebyshev (MVUE) UCL	1.032		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	0.167	95% Jackknife UCL	0.171
95% Standard Bootstrap UCL	0.165	95% Bootstrap-t UCL	0.171
95% Hall's Bootstrap UCL	0.162	95% Percentile Bootstrap UCL	0.165
95% BCA Bootstrap UCL	0.171		
90% Chebyshev(Mean, Sd) UCL	0.207	95% Chebyshev(Mean, Sd) UCL	0.247
97.5% Chebyshev(Mean, Sd) UCL	0.303	99% Chebyshev(Mean, Sd) UCL	0.413

Suggested UCL to Use

95% Student's-t UCL 0.171

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

Newport_RA_TA_Metals|VANADIUM

General Statistics

Total Number of Observations	13	Number of Distinct Observations	12
		Number of Missing Observations	26
Minimum	0.057	Mean	0.183
Maximum	0.354	Median	0.178
SD	0.0932	Std. Error of Mean	0.0258
Coefficient of Variation	0.51	Skewness	0.628

Normal GOF Test

Shapiro Wilk Test Statistic	0.921	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.866	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.179	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.246	Data appear Normal at 5% Significance Level

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	0.229	95% Adjusted-CLT UCL (Chen-1995)	0.23
		95% Modified-t UCL (Johnson-1978)	0.229

Gamma GOF Test

A-D Test Statistic	0.303	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.737	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.129	**Kolmogrov-Smirnoff Gamma GOF Test**
5% K-S Critical Value	0.238	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	3.941	k star (bias corrected MLE)	3.083
Theta hat (MLE)	0.0464	Theta star (bias corrected MLE)	0.0593
nu hat (MLE)	102.5	nu star (bias corrected)	80.16
MLE Mean (bias corrected)	0.183	MLE Sd (bias corrected)	0.104
		Approximate Chi Square Value (0.05)	60.53
Adjusted Level of Significance	0.0301	Adjusted Chi Square Value	58.11

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	0.242	95% Adjusted Gamma UCL (use when n<50)	0.252

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.946	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.866	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.154	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.246	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	-2.865	Mean of logged Data	-1.832
Maximum of Logged Data	-1.038	SD of logged Data	0.557

Assuming Lognormal Distribution

95% H-UCL	0.265	90% Chebyshev (MVUE) UCL	0.273
95% Chebyshev (MVUE) UCL	0.313	97.5% Chebyshev (MVUE) UCL	0.368
99% Chebyshev (MVUE) UCL	0.477		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	0.225	95% Jackknife UCL	0.229
95% Standard Bootstrap UCL	0.224	95% Bootstrap-t UCL	0.235
95% Hall's Bootstrap UCL	0.245	95% Percentile Bootstrap UCL	0.223
95% BCA Bootstrap UCL	0.229		
90% Chebyshev(Mean, Sd) UCL	0.26	95% Chebyshev(Mean, Sd) UCL	0.295
97.5% Chebyshev(Mean, Sd) UCL	0.344	99% Chebyshev(Mean, Sd) UCL	0.44

Suggested UCL to Use

95% Student's-t UCL 0.229

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

Newport_RA_TA_Metals|ZINC

General Statistics

Total Number of Observations	13	Number of Distinct Observations	13
		Number of Missing Observations	26
Minimum	5.4	Mean	11.08
Maximum	15.2	Median	12
SD	2.8	Std. Error of Mean	0.777
Coefficient of Variation	0.253	Skewness	-0.499

Normal GOF Test

Shapiro Wilk Test Statistic	0.969	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.866	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.167	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.246	Data appear Normal at 5% Significance Level

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	12.47	95% Adjusted-CLT UCL (Chen-1995)	12.25
		95% Modified-t UCL (Johnson-1978)	12.45

Gamma GOF Test

A-D Test Statistic	0.338	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.734	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.192	**Kolmogrov-Smirnoff Gamma GOF Test**
5% K-S Critical Value	0.236	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	14.63	k star (bias corrected MLE)	11.31
Theta hat (MLE)	0.757	Theta star (bias corrected MLE)	0.98
nu hat (MLE)	380.4	nu star (bias corrected)	294
MLE Mean (bias corrected)	11.08	MLE Sd (bias corrected)	3.296
		Approximate Chi Square Value (0.05)	255.3
Adjusted Level of Significance	0.0301	Adjusted Chi Square Value	250.1

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	12.76	95% Adjusted Gamma UCL (use when n<50)	13.03

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.916	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.866	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.193	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.246	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	1.686	Mean of logged Data	2.371
Maximum of Logged Data	2.721	SD of logged Data	0.286

Assuming Lognormal Distribution

95% H-UCL	13.05	90% Chebyshev (MVUE) UCL	13.79
95% Chebyshev (MVUE) UCL	15	97.5% Chebyshev (MVUE) UCL	16.69
99% Chebyshev (MVUE) UCL	19.99		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	12.36	95% Jackknife UCL	12.47
95% Standard Bootstrap UCL	12.34	95% Bootstrap-t UCL	12.36
95% Hall's Bootstrap UCL	12.24	95% Percentile Bootstrap UCL	12.31
95% BCA Bootstrap UCL	12.27		
90% Chebyshev(Mean, Sd) UCL	13.41	95% Chebyshev(Mean, Sd) UCL	14.47
97.5% Chebyshev(Mean, Sd) UCL	15.93	99% Chebyshev(Mean, Sd) UCL	18.81

Suggested UCL to Use

95% Student's-t UCL 12.47

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets.

Newport_RA_TA_PAHs|HPAH, TOTAL

General Statistics

Total Number of Observations	13	Number of Distinct Observations	12
		Number of Missing Observations	26
Minimum	0.0019	Mean	0.0809
Maximum	0.33	Median	0.0049
SD	0.116	Std. Error of Mean	0.0322
Coefficient of Variation	1.433	Skewness	1.231

Normal GOF Test

Shapiro Wilk Test Statistic	0.728	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.866	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.359	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.246	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	0.138	95% Adjusted-CLT UCL (Chen-1995)	0.146
		95% Modified-t UCL (Johnson-1978)	0.14

Gamma GOF Test

A-D Test Statistic	1.367	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.81	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.362	**Kolmogrov-Smirnoff Gamma GOF Test**
5% K-S Critical Value	0.253	Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	0.4	k star (bias corrected MLE)	0.359
Theta hat (MLE)	0.202	Theta star (bias corrected MLE)	0.226
nu hat (MLE)	10.39	nu star (bias corrected)	9.325
MLE Mean (bias corrected)	0.0809	MLE Sd (bias corrected)	0.135
		Approximate Chi Square Value (0.05)	3.525
Adjusted Level of Significance	0.0301	Adjusted Chi Square Value	3.034

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	0.214	95% Adjusted Gamma UCL (use when n<50)	0.249

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.794	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.866	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.326	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.246	Data Not Lognormal at 5% Significance Level

Data Not Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	-6.266	Mean of logged Data	-4.162
Maximum of Logged Data	-1.109	SD of logged Data	2.079

Assuming Lognormal Distribution

95% H-UCL	2.694	90% Chebyshev (MVUE) UCL	0.268
95% Chebyshev (MVUE) UCL	0.348	97.5% Chebyshev (MVUE) UCL	0.459
99% Chebyshev (MVUE) UCL	0.676		

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution (0.05)

Nonparametric Distribution Free UCLs

95% CLT UCL	0.134	95% Jackknife UCL	0.138
95% Standard Bootstrap UCL	0.132	95% Bootstrap-t UCL	0.155
95% Hall's Bootstrap UCL	0.132	95% Percentile Bootstrap UCL	0.135
95% BCA Bootstrap UCL	0.14		
90% Chebyshev(Mean, Sd) UCL	0.177	95% Chebyshev(Mean, Sd) UCL	0.221
97.5% Chebyshev(Mean, Sd) UCL	0.282	99% Chebyshev(Mean, Sd) UCL	0.401

Suggested UCL to Use

99% Chebyshev (Mean, Sd) UCL 0.401

Recommended UCL exceeds the maximum observation

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

Newport_RA_TA_PAHs|LPAH, TOTAL

General Statistics

Total Number of Observations	13	Number of Distinct Observations	11
		Number of Missing Observations	26
Minimum	6.0000E-4	Mean	0.009
Maximum	0.035	Median	0.0015
SD	0.0123	Std. Error of Mean	0.00341
Coefficient of Variation	1.366	Skewness	1.412

Normal GOF Test

Shapiro Wilk Test Statistic	0.709	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.866	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.342	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.246	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	0.0151	95% Adjusted-CLT UCL (Chen-1995)	0.016
		95% Modified-t UCL (Johnson-1978)	0.0153

Gamma GOF Test

A-D Test Statistic	1.212	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.78	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.347	**Kolmogrov-Smirnoff Gamma GOF Test**
5% K-S Critical Value	0.248	Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	0.632	k star (bias corrected MLE)	0.538
Theta hat (MLE)	0.0142	Theta star (bias corrected MLE)	0.0167
nu hat (MLE)	16.44	nu star (bias corrected)	13.98
MLE Mean (bias corrected)	0.009	MLE Sd (bias corrected)	0.0123
		Approximate Chi Square Value (0.05)	6.557
Adjusted Level of Significance	0.0301	Adjusted Chi Square Value	5.847

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	0.0192	95% Adjusted Gamma UCL (use when n<50)	0.0215

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.843	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.866	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.313	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.246	Data Not Lognormal at 5% Significance Level

Data Not Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	-7.419	Mean of logged Data	-5.68
Maximum of Logged Data	-3.352	SD of logged Data	1.462

Assuming Lognormal Distribution

95% H-UCL	0.0476	90% Chebyshev (MVUE) UCL	0.0203
95% Chebyshev (MVUE) UCL	0.0256	97.5% Chebyshev (MVUE) UCL	0.0329
99% Chebyshev (MVUE) UCL	0.0473		

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution (0.05)

Nonparametric Distribution Free UCLs

95% CLT UCL	0.0146	95% Jackknife UCL	0.0151
95% Standard Bootstrap UCL	0.0145	95% Bootstrap-t UCL	0.0189
95% Hall's Bootstrap UCL	0.015	95% Percentile Bootstrap UCL	0.0146
95% BCA Bootstrap UCL	0.0156		
90% Chebyshev(Mean, Sd) UCL	0.0192	95% Chebyshev(Mean, Sd) UCL	0.0239
97.5% Chebyshev(Mean, Sd) UCL	0.0303	99% Chebyshev(Mean, Sd) UCL	0.0429

Suggested UCL to Use

95% Chebyshev (Mean, Sd) UCL 0.0239

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

Newport_RA_TA_PAHs|PAH, TOTAL

General Statistics

Total Number of Observations	13	Number of Distinct Observations	11
		Number of Missing Observations	26
Minimum	0.0027	Mean	0.09
Maximum	0.36	Median	0.0062
SD	0.128	Std. Error of Mean	0.0355
Coefficient of Variation	1.424	Skewness	1.233

Normal GOF Test

Shapiro Wilk Test Statistic	0.726	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.866	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.358	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.246	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	0.153	95% Adjusted-CLT UCL (Chen-1995)	0.161
		95% Modified-t UCL (Johnson-1978)	0.155

Gamma GOF Test

A-D Test Statistic	1.385	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.804	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.364	**Kolmogrov-Smirnoff Gamma GOF Test**
5% K-S Critical Value	0.252	Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	0.428	k star (bias corrected MLE)	0.381
Theta hat (MLE)	0.21	Theta star (bias corrected MLE)	0.236
nu hat (MLE)	11.13	nu star (bias corrected)	9.894
MLE Mean (bias corrected)	0.09	MLE Sd (bias corrected)	0.146
		Approximate Chi Square Value (0.05)	3.876
Adjusted Level of Significance	0.0301	Adjusted Chi Square Value	3.356

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	0.23	95% Adjusted Gamma UCL (use when n<50)	0.265

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.791	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.866	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.331	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.246	Data Not Lognormal at 5% Significance Level

Data Not Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	-5.915	Mean of logged Data	-3.929
Maximum of Logged Data	-1.022	SD of logged Data	1.965

Assuming Lognormal Distribution

95% H-UCL	1.967	90% Chebyshev (MVUE) UCL	0.275
95% Chebyshev (MVUE) UCL	0.355	97.5% Chebyshev (MVUE) UCL	0.467
99% Chebyshev (MVUE) UCL	0.686		

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution (0.05)

Nonparametric Distribution Free UCLs

95% CLT UCL	0.148	95% Jackknife UCL	0.153
95% Standard Bootstrap UCL	0.146	95% Bootstrap-t UCL	0.179
95% Hall's Bootstrap UCL	0.151	95% Percentile Bootstrap UCL	0.149
95% BCA Bootstrap UCL	0.158		
90% Chebyshev(Mean, Sd) UCL	0.197	95% Chebyshev(Mean, Sd) UCL	0.245
97.5% Chebyshev(Mean, Sd) UCL	0.312	99% Chebyshev(Mean, Sd) UCL	0.444

Suggested UCL to Use

99% Chebyshev (Mean, Sd) UCL 0.444

Recommended UCL exceeds the maximum observation

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

ATTACHMENT K

SEDIMENT TOXICITY TESTING

K-1 SUMMARY TABLES AND SUPPORTING FIGURES

K-2 LABORATORY REPORT

ATTACHMENT K-1 TABLE 1
SUMMARY OF SEDIMENT TOXICITY TESTING RESULTS BY ENDPOINT
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

SURVIVAL

Replicate	Lab Control	SD302	SD303	SD304	SD102	SD106	SD112	SD114	SD115	SD118	SD120	SD121	SD122	SD124
1	95%	45%	100%	45%	0%	45%	80%	70%	95%	75%	55%	90%	75%	80%
2	65%	85%	85%	60%	10%	70%	55%	80%	70%	75%	70%	65%	25%	85%
3	80%	40%	100%	65%	45%	80%	80%	85%	90%	80%	100%	40%	35%	60%
4	95%	65%	75%	65%	40%	60%	90%	95%	90%	30%	85%	90%	65%	80%
5	90%	60%	30%	70%	50%	65%	75%	70%	70%	80%	70%	80%	40%	40%
6	80%	65%	65%	85%	15%	70%	80%	80%	60%	25%	70%	55%	15%	70%
7	75%	85%	70%	60%	5%	60%	70%	40%	60%	60%	45%	80%	35%	85%
8	90%	30%	65%	55%	40%	95%	60%	80%	90%	60%	30%	90%	30%	70%
MINIMUM	*65%*	*30%*	*30%*	*45%*	*0%*	*45%*	*55%*	*40%*	*60%*	*25%*	*30%*	*40%*	*15%*	*40%*
MEAN	*84%*	*59%*	*74%*	*63%*	*26%*	*68%*	*74%*	*75%*	*78%*	*61%*	*66%*	*74%*	*40%*	*71%*
MAXIMUM	*95%*	*85%*	*100%*	*85%*	*50%*	*95%*	*90%*	*95%*	*95%*	*80%*	*100%*	*90%*	*75%*	*85%*
STANDARD ERROR OF THE MEAN	3.7%	7.1%	8.0%	4.1%	7.1%	5.3%	4.1%	5.7%	5.2%	7.8%	7.8%	6.6%	7.1%	5.4%

MEAN DRY WEIGHT

Replicate	Lab Control	SD302	SD303	SD304	SD102	SD106	SD112	SD114	SD115	SD118	SD120	SD121	SD122	SD124
1	0.794	0.602	1.060	0.720	NA	0.578	1.143	0.921	0.900	0.952	0.534	1.115	0.584	0.440
2	1.524	1.236	1.015	0.726	0.295	0.704	0.600	1.291	1.070	1.017	1.014	1.266	0.368	0.605
3	0.794	0.679	1.199	1.238	0.232	1.004	1.110	0.992	1.008	0.965	1.148	0.889	0.657	0.515
4	1.488	0.770	0.752	0.819	0.456	1.066	1.354	1.025	1.194	0.942	1.366	0.927	0.515	0.466
5	1.187	1.076	0.425	0.651	0.261	0.877	0.737	1.078	0.631	0.805	1.156	1.282	0.608	0.518
6	1.284	0.818	1.295	0.755	0.647	1.063	0.872	0.907	1.198	0.542	1.211	0.999	0.307	0.416
7	1.613	0.867	0.881	1.238	0.510	1.653	1.160	1.230	0.708	0.920	0.910	1.236	0.229	0.709
8	0.999	0.193	1.142	0.915	0.469	0.756	0.845	0.903	0.954	1.197	0.297	1.139	0.765	0.489
MINIMUM	*0.79*	*0.19*	*0.42*	*0.65*	*0.23*	*0.58*	*0.60*	*0.90*	*0.63*	*0.54*	*0.30*	*0.89*	*0.23*	*0.42*
MEAN	*1.21*	*0.78*	*0.97*	*0.88*	*0.41*	*0.96*	*0.98*	*1.04*	*0.96*	*0.92*	*0.95*	*1.11*	*0.50*	*0.52*
MAXIMUM	*1.61*	*1.24*	*1.30*	*1.24*	*0.65*	*1.65*	*1.35*	*1.29*	*1.20*	*1.20*	*1.37*	*1.28*	*0.77*	*0.71*
STANDARD ERROR OF THE MEAN	*0.115*	*0.111*	*0.099*	*0.082*	*0.057*	*0.117*	*0.090*	*0.052*	*0.073*	*0.066*	*0.129*	*0.054*	*0.066*	*0.034*

ATTACHMENT K-1 TABLE 1
SUMMARY OF SEDIMENT TOXICITY TESTING RESULTS BY ENDPOINT
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

MEAN DRY BIOMASS

Replicate	Lab Control	SD302	SD303	SD304	SD102	SD106	SD112	SD114	SD115	SD118	SD120	SD121	SD122	SD124
1	0.754	0.271	1.060	0.324	0.000	0.260	0.914	0.644	0.855	0.714	0.294	1.004	0.438	0.352
2	0.991	1.051	0.863	0.435	0.030	0.493	0.330	1.033	0.749	0.763	0.710	0.823	0.092	0.514
3	0.635	0.272	1.199	0.805	0.105	0.804	0.888	0.844	0.908	0.772	1.148	0.356	0.230	0.309
4	1.414	0.501	0.564	0.533	0.183	0.640	1.219	0.974	1.075	0.283	1.161	0.834	0.335	0.373
5	1.068	0.646	0.127	0.456	0.130	0.570	0.553	0.755	0.442	0.644	0.810	1.026	0.243	0.207
6	1.027	0.532	0.842	0.642	0.097	0.744	0.697	0.726	0.719	0.136	0.848	0.549	0.046	0.291
7	1.210	0.737	0.617	0.743	0.025	0.992	0.812	0.492	0.425	0.552	0.410	0.988	0.080	0.603
8	0.899	0.058	0.742	0.503	0.188	0.719	0.507	0.722	0.859	0.718	0.089	1.025	0.230	0.342
MINIMUM	*0.63*	*0.06*	*0.13*	*0.32*	*0.00*	*0.26*	*0.33*	*0.49*	*0.43*	*0.14*	*0.09*	*0.36*	*0.05*	*0.21*
MEAN	*1.00*	*0.51*	*0.75*	*0.56*	*0.09*	*0.65*	*0.74*	*0.77*	*0.75*	*0.57*	*0.68*	*0.83*	*0.21*	*0.37*
MAXIMUM	*1.41*	*1.05*	*1.20*	*0.81*	*0.19*	*0.99*	*1.22*	*1.03*	*1.07*	*0.77*	*1.16*	*1.03*	*0.44*	*0.60*
STANDARD ERROR OF THE MEAN	*0.087*	*0.110*	*0.116*	*0.058*	*0.025*	*0.078*	*0.099*	*0.062*	*0.080*	*0.084*	*0.138*	*0.088*	*0.048*	*0.045*

JUVENILES PER SURVIVING ORGANISM

Replicate	Lab Control	SD302	SD303	SD304	SD102	SD106	SD112	SD114	SD115	SD118	SD120	SD121	SD122	SD124
1	1.789	0.000	1.600	0.667	NA	0.444	3.875	3.571	1.000	4.067	1.000	3.111	0.667	0.313
2	5.538	2.353	8.529	0.833	0.000	0.857	0.455	1.813	0.571	2.667	4.286	1.923	3.000	0.588
3	5.563	0.375	3.150	0.154	0.778	1.875	1.313	2.176	3.778	2.438	1.400	3.000	0.000	0.000
4	7.368	1.077	3.400	0.923	0.000	8.583	2.222	2.158	4.056	1.167	2.294	2.778	0.308	0.125
5	5.667	3.333	1.167	0.643	0.000	4.308	2.467	3.786	3.286	4.375	8.143	3.063	0.250	3.625
6	4.875	0.769	3.615	0.412	0.000	1.571	1.438	2.750	0.333	0.200	5.286	3.182	0.000	0.214
7	2.867	2.059	1.714	0.000	2.000	1.833	1.071	0.000	1.583	1.333	0.000	4.313	0.000	0.941
8	1.667	0.167	3.077	1.818	0.500	2.316	1.667	2.375	2.000	3.333	1.667	3.056	0.000	2.143
MINIMUM	*1.67*	*0.00*	*1.17*	*0.00*	*0.00*	*0.44*	*0.45*	*0.00*	*0.33*	*0.20*	*0.00*	*1.92*	*0.00*	*0.00*
MEAN	*4.42*	*1.27*	*3.28*	*0.68*	*0.47*	*2.72*	*1.81*	*2.33*	*2.08*	*2.45*	*3.01*	*3.05*	*0.53*	*0.99*
MAXIMUM	*7.37*	*3.33*	*8.53*	*1.82*	*2.00*	*8.58*	*3.88*	*3.79*	*4.06*	*4.38*	*8.14*	*4.31*	*3.00*	*3.63*
STANDARD ERROR OF THE MEAN	*0.731*	*0.422*	*0.818*	*0.198*	*0.281*	*0.931*	*0.370*	*0.414*	*0.517*	*0.519*	*0.956*	*0.230*	*0.363*	*0.448*

ATTACHMENT K-1 TABLE 1
SUMMARY OF SEDIMENT TOXICITY TESTING RESULTS BY ENDPOINT
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

JUVENILES PER FEMALE

Replicate	Lab Control	SD302	SD303	SD304	SD102	SD106	SD112	SD114	SD115	SD118	SD120	SD121	SD122	SD124
1	3.091	0.000	2.909	1.500	NA	0.800	6.200	6.250	1.900	6.778	1.571	7.000	1.111	0.500
2	12.000	4.000	16.111	1.111	0.000	1.714	0.556	3.222	1.143	4.000	8.571	3.571	5.000	1.000
3	8.091	0.750	6.300	0.333	0.778	3.750	2.333	3.364	5.231	3.545	3.111	6.000	0.000	0.000
4	14.000	1.400	5.667	1.333	0.000	14.714	5.000	4.100	6.083	1.750	4.333	4.167	0.333	0.143
5	20.400	5.000	1.400	1.500	0.000	7.000	3.700	7.571	5.750	7.778	16.286	7.000	0.333	4.833
6	11.143	1.429	7.833	0.583	NA	2.750	1.769	4.889	0.667	0.200	8.222	5.833	0.000	0.333
7	4.778	4.375	3.000	0.000	2.000	3.667	1.667	0.000	3.167	8.000	0.000	8.625	0.000	1.778
8	2.727	1.000	4.000	3.333	1.333	5.500	2.857	4.222	5.143	8.000	5.000	6.875	NA	3.750
MINIMUM	*2.73*	*0.00*	*1.40*	*0.00*	*0.00*	*0.80*	*0.56*	*0.00*	*0.67*	*0.20*	*0.00*	*3.57*	*0.00*	*0.00*
MEAN	*9.53*	*2.24*	*5.90*	*1.21*	*0.69*	*4.99*	*3.01*	*4.20*	*3.64*	*5.01*	*5.89*	*6.13*	*0.97*	*1.54*
MAXIMUM	*20.40*	*5.00*	*16.11*	*3.33*	*2.00*	*14.71*	*6.20*	*7.57*	*6.08*	*8.00*	*16.29*	*8.63*	*5.00*	*4.83*
STANDARD ERROR OF THE MEAN	*2.152*	*0.674*	*1.634*	*0.362*	*0.345*	*1.555*	*0.661*	*0.795*	*0.774*	*1.082*	*1.817*	*0.579*	*0.688*	*0.640*

ATTACHMENT K-1 TABLE 2
SUMMARY OF ANALYTICAL CHEMISTRY RESULTS FOR SEDIMENT TOXICITY TESTING SAMPLES
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

Location ID	CRP-SD102		CRP-SD106		CRP-SD112		CRP-SD114		CRP-SD115		CRP-SD118		CRP-SD120	
Sample Date	12/13/2013		12/10/2013		12/5/2013		12/17/2013		12/17/2013		12/10/2013		12/5/2013	
Sample ID	OU09 SD102 0012		OU09 SD106 0012		OU09 SD112 0012		OU09 SD114 0012		OU09 SD115 0012		OU09 SD118 0012		OU09 SD120 0012	
Depth Interval	0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in	
INORGANICS (mg/kg)														
ALUMINUM	6480		5850		3200		3340		3910		3290		4470	
ANTIMONY	17.5	J	0.07	J-	< 0.081	U	0.1	J	0.25	J-	0.41	J-	0.21	
ARSENIC	38.1		2.4		1.4		1.3		2		1.3		2.1	
BARIUM	10.6		9.5	J	5.1		5.8		7.9		6.8	J	8.8	
BERYLLIUM	0.33	J-	0.24		0.12		0.15		0.16		0.15		0.2	
CADMIUM	0.14	J	0.09	J	0.05	J	0.07	J	0.11		0.03	J	0.12	
CALCIUM	2560		25600	J	3570		857		970		936	J	2960	
CHROMIUM VI	0.42	J									< 0.36	UJ		
CHROMIUM, TOTAL	13.5	J-	14.3	J	8.2		9.9		8.4		9.5	J	11.9	
COBALT	9.3		4.2		2.2		2.7		2.6		3.3		2.9	
COPPER	92.2	J	10.2	J	4.3		5		18.8	J-	5.9	J	8.2	
IRON	36300		12400		7240		7470		7500		11000		8560	
LEAD	1830	J	18	J	9.2		21.2	J+	57.9	J	113	J	72.3	
MAGNESIUM	3040		3010		1650		1550		1690		1830		2020	
MANGANESE	224		167	J+	69.8		86.4	J+	87.2		105	J+	87.8	
MERCURY	0.02	J	0.03	J	0.06		0.02	J	0.01	J	0.01	J	0.08	
NICKEL	23.6	J	9.4		6		7.4		6.8		8.2		8.2	
POTASSIUM	967	J	997	J+	430		490	J	643		456	J+	713	
SELENIUM	< 0.43	UJ	0.14	J	< 0.40	U	< 0.41	U	< 0.35	U	< 0.25	U	< 0.39	U
SILVER	0.1	J	0.14	J	0.04	J	0.06	J	0.05	J	0.03	J	0.13	
SODIUM	1540		3560		2480		2450		2280		2520		2560	
THALLIUM	0.1		0.06	J	0.03	J	0.05	J	0.07		0.04	J	0.06	J
VANADIUM	22	J-	15.3		8		9.8		11		11.1		11.4	
ZINC	90.6	J-	46	J	25.7		28.6		55.6	J-	29.7	J	37.6	
POLYCYCLIC AROMATIC HYDROCARBONS (mg/kg)														
HPAH, TOTAL	0.68		0.43		0.028		0.16		0.097		0.025		0.58	
LPAH, TOTAL	0.083		0.044		0.0023		0.02		0.0096		< 0.012	U	0.064	
PAH, TOTAL	0.76		0.47		0.031		0.18		0.11		0.025		0.65	
TOTAL ORGANIC CARBON (%)														
TOTAL ORGANIC CARBON	1.6		1.2		0.55		0.67		0.91		0.82		1.2	

Notes:
J - The compound was positively identified; however, the associated numerical value is an estimated concentration only (+ and - indicate bias).
U - Compound was not detected.
SD302, SD303, and SD304 are background/reference samples. All others are site samples.

ATTACHMENT K-1 TABLE 2
SUMMARY OF ANALYTICAL CHEMISTRY RESULTS FOR SEDIMENT TOXICITY TESTING SAMPLES
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

Location ID	CRP-SD121		CRP-SD122		CRP-SD124		CRP-SD302		CRP-SD303		CRP-SD303	
Sample Date	12/4/2013		12/12/2013		12/12/2013		12/11/2013		12/13/2013		12/13/2013	
Sample ID	OU09 SD121 0012		OU09 SD122 0012		OU09 SD124 0012		BSBG SD302 0012		BSBG SD303 0012		FDSD12131302	
Depth Interval	0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in		0 - 12 in	
INORGANICS (mg/kg)												
ALUMINUM	3650		4740		5160		5350		3680		4420	
ANTIMONY	0.07	J	36.7		0.58		0.08	J-	0.06	J	0.04	J
ARSENIC	1.8		19		9.9		3.4		2.2		1.7	
BARIUM	6.4		26.6	J	7.8	J	10.7	J	4.1		5.2	
BERYLLIUM	0.15		0.3		0.31		0.27		0.17	J-	0.18	J-
CADMIUM	0.08		0.07		0.16		0.14		0.02	J	0.02	J
CALCIUM	886		1520	J	2300	J	31200	J	792		1250	
CHROMIUM VI	< 0.34	UJ	< 0.39	UJ	< 0.34	UJ	< 0.33	UJ	0.62	J	0.53	J
CHROMIUM, TOTAL	10.4		11.1	J	12	J	19	J	7.7	J-	9	J-
COBALT	2.4		14.1		10.4		3.6		2.9		3	
COPPER	5.6		25.8	J	42	J	14.3	J	6.6	J	9	J
IRON	7690		34700		39100		11100		13700		11400	
LEAD	10.2		4290	J	131	J	22.2	J	10.1	J	15.1	J
MAGNESIUM	1710		2270		2280		2950		1700		2030	
MANGANESE	78.4		543		481		127	J+	99.9		105	
MERCURY	0.05		< 0.014	U	0.004	J	0.08	J	0.02	J	0.01	J
NICKEL	6.9		23.5		23.4		9		8.4	J	8.9	J
POTASSIUM	519		359		402		1210	J+	322	J	472	J
SELENIUM	0.24	J	< 0.35	U	< 0.30	U	0.33	J	< 0.28	UJ	< 0.37	UJ
SILVER	0.07	J	0.15	J	0.02	J	0.27	J	0.03	J	0.04	J
SODIUM	1960		1940		1210		4660		1750		2270	
THALLIUM	0.06	J	0.03	J	0.03	J	0.07	J	0.02	J	0.02	J
VANADIUM	9.7		17.7		18.7		15.8		9	J-	9.6	J-
ZINC	31.9		91.6	J	110	J	54.7	J	38.2	J-	36.1	J-
POLYCYCLIC AROMATIC HYDROCARBONS (mg/kg)												
HPAH, TOTAL	0.098		0.83		3.9		0.0035		6		3.9	
LPAH, TOTAL	0.0067		0.12		0.44		0.0022		0.87		0.51	
PAH, TOTAL	0.1		0.95		4.3		0.0057		6.9		4.5	
TOTAL ORGANIC CARBON (%)												
TOTAL ORGANIC CARBON	0.88		1.6		Not Measured		2.1		0.76		1.7	

Notes:
J - The compound was positively identified; however, the associated numerical value is an estimated concentration only (+ and - indicate bias).
U - Compound was not detected.
SD302, SD303, and SD304 are background/reference samples. All others are site samples.

ATTACHMENT K-1 TABLE 2
SUMMARY OF ANALYTICAL CHEMISTRY RESULTS FOR SEDIMENT TOXICITY TESTING SAMPLES
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

Location ID	CRP-SD304		CRP-SD304	
Sample Date	12/13/2013		12/13/2013	
Sample ID	BSBG SD304 0012		FDSD12131301	
Depth Interval	0 - 12 in		0 - 12 in	
INORGANICS (mg/kg)				
ALUMINUM	3840		3550	
ANTIMONY	0.07	J	0.1	J
ARSENIC	5.7		5.7	
BARIUM	7.6		6.5	
BERYLLIUM	0.24	J-	0.23	J-
CADMIUM	0.04	J	0.04	J
CALCIUM	8480		10100	
CHROMIUM VI				
CHROMIUM, TOTAL	9.1	J-	8.8	J-
COBALT	8		6.8	
COPPER	14.1	J	11.3	J
IRON	27200		28300	
LEAD	11.1	J	10.9	J
MAGNESIUM	1740		1680	
MANGANESE	282		247	
MERCURY	0.006	J	0.01	J
NICKEL	17.7	J	15	J
POTASSIUM	328	J	316	J
SELENIUM	< 0.33	UJ	< 0.31	UJ
SILVER	0.03	J	0.03	J
SODIUM	1420		1240	
THALLIUM	0.02	J	0.02	J
VANADIUM	18.9	J-	18.1	J-
ZINC	67	J-	59	J-
POLYCYCLIC AROMATIC HYDROCARBONS (mg/kg)				
HPAH, TOTAL	0.11		0.16	
LPAH, TOTAL	0.022		0.018	
PAH, TOTAL	0.13		0.18	
TOTAL ORGANIC CARBON (%)				
TOTAL ORGANIC CARBON	1.7		Not Measured	

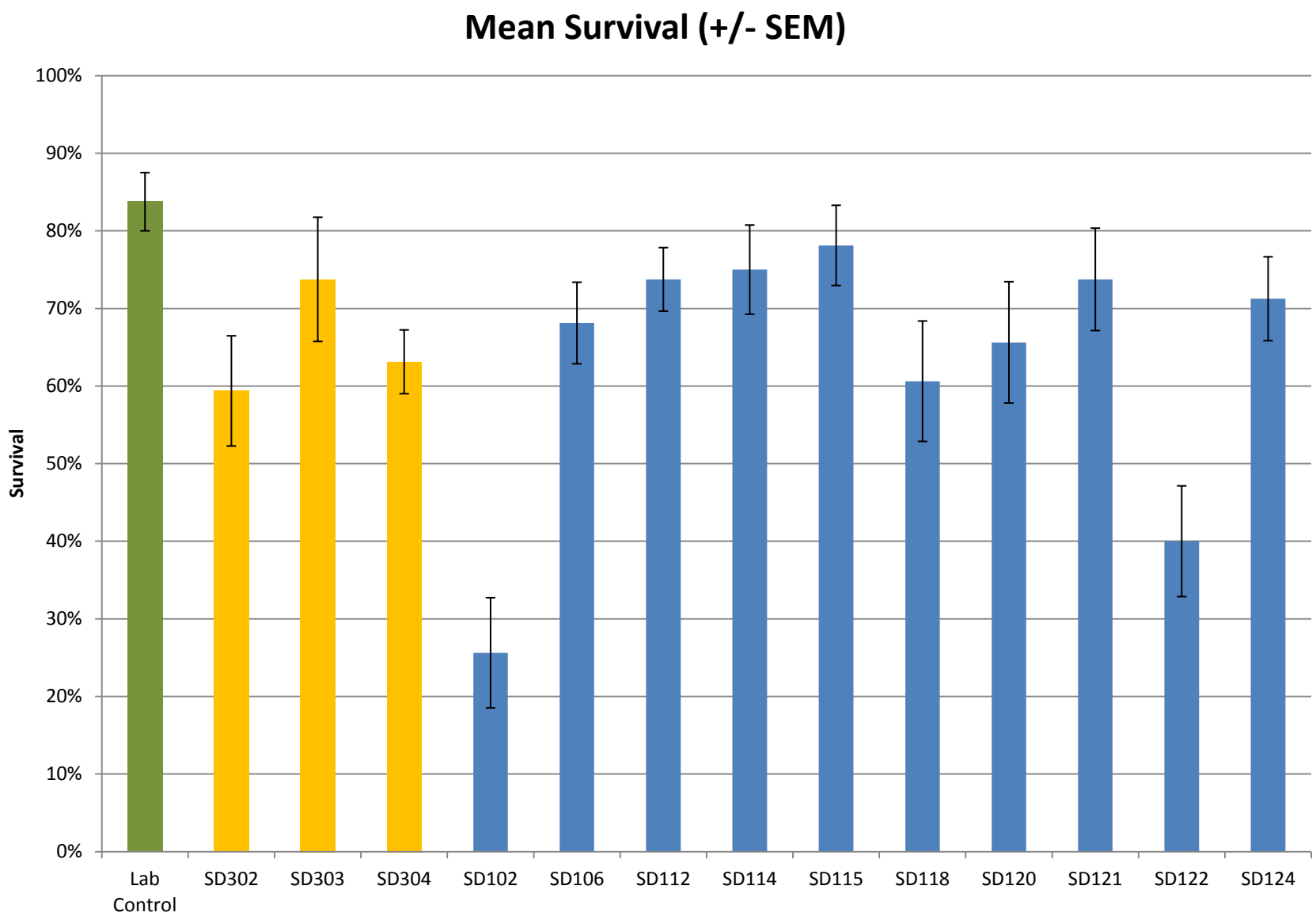
Notes:
J - The compound was positively identified; however, the associated numerical value is an estimated concentration only (+ and - indicate bias).
U - Compound was not detected.
SD302, SD303, and SD304 are background/reference samples. All others are site samples.

ATTACHMENT K-2 TABLE 3
SUMMARY OF GRAIN SIZE RESULTS FOR SEDIMENT TOXICITY TESTING SAMPLES
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

Location ID	CRP-SD102	CRP-SD112	CRP-SD118	CRP-SD120	CRP-SD121	CRP-SD122	CRP-SD302	CRP-SD303	CRP-SD304
Sample Date	12/13/2013	12/5/2013	12/10/2013	12/5/2013	12/4/2013	12/12/2013	12/11/2013	12/13/2013	12/13/2013
Sample ID	OU09 SD102 0012	OU09 SD112 0012	OU09 SD118 0012	OU09 SD120 0012	OU09 SD121 0012	OU09 SD122 0012	BSBG SD302 0012	BSBG SD303 0012	BSBG SD304 0012
Depth Interval	0 - 12 in	0 - 12 in	0 - 12 in	0 - 12 in	0 - 12 in	0 - 12 in	0 - 12 in	0 - 12 in	0 - 12 in
Chemical									
GRAINSIZE (%)									
PERCENT FINES	16.7	4.3	10.3	9.7	5.5	2.7	15	0.7	2.6
PERCENT GRAVEL	**46.7**	3.6	39	3.2	0.7	**54.2**	10.6	**67.3**	45.9
PERCENT SAND	36.6	**92.1**	**50.7**	**87.1**	**93.8**	43.2	**74.4**	32	**51.5**
PERCENT SAND, COARSE	11	1.4	15.6	5.7	2.7	11.6	16.1	4.7	10.3
PERCENT SAND, FINE	11.3	82.4	21.5	62.1	68.9	7.7	32.5	19.9	14.4
PERCENT SAND, MEDIUM	14.3	8.3	13.6	19.3	22.2	23.9	25.8	7.4	26.8
TOTAL ORGANIC CARBON (%)									
TOTAL ORGANIC CARBON	1.6	0.55	0.82	1.2	0.88	1.6	2.1	0.76	1.7

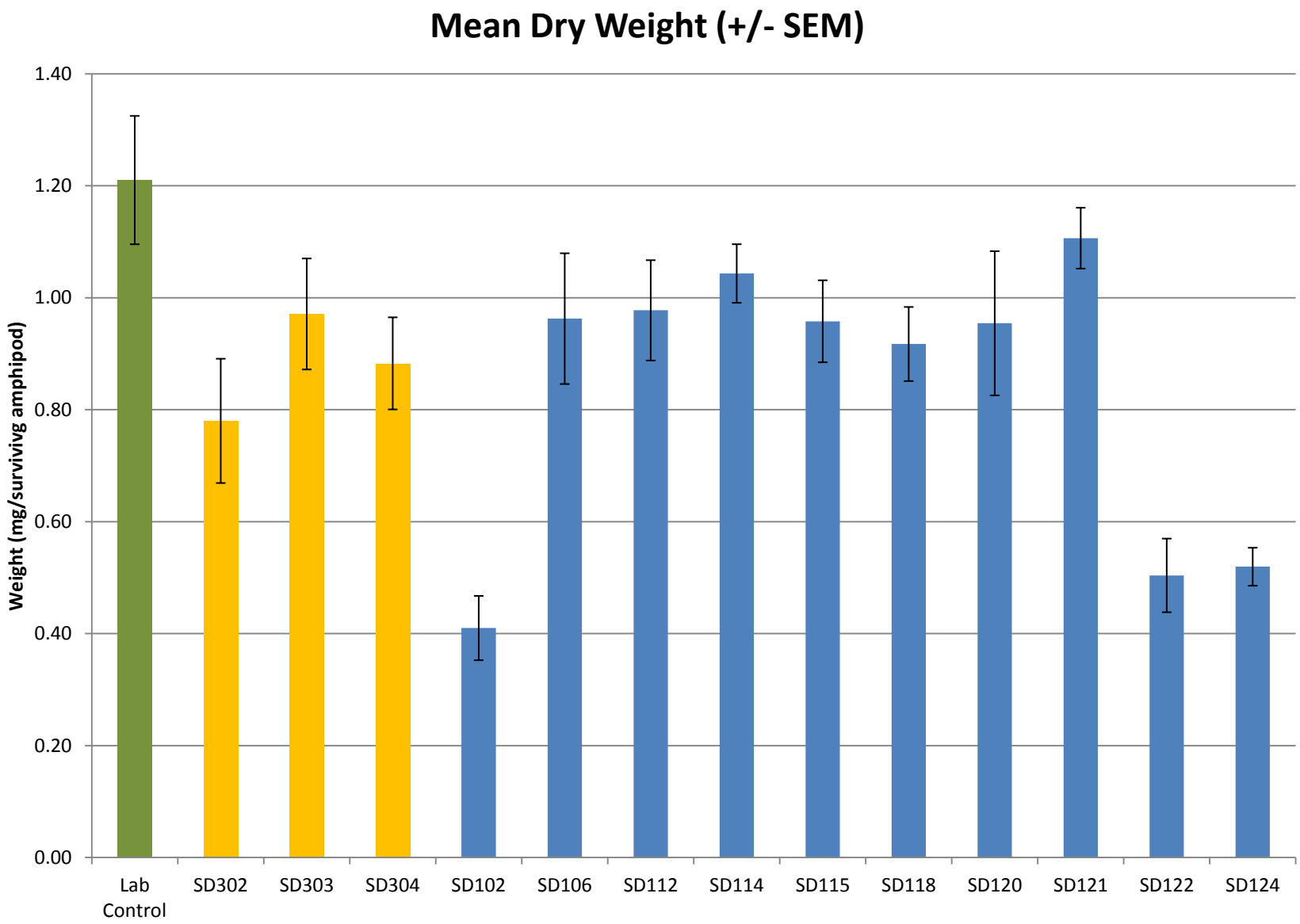
Notes:
Dominant grain size fraction in each sample is highlighted.
SD302, SD303, and SD304 are background/reference samples. All others are site samples.

ATTACHMENT K-1 FIGURE 1
SURVIVAL RESULTS FROM SEDIMENT TOXICITY TESTS
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1



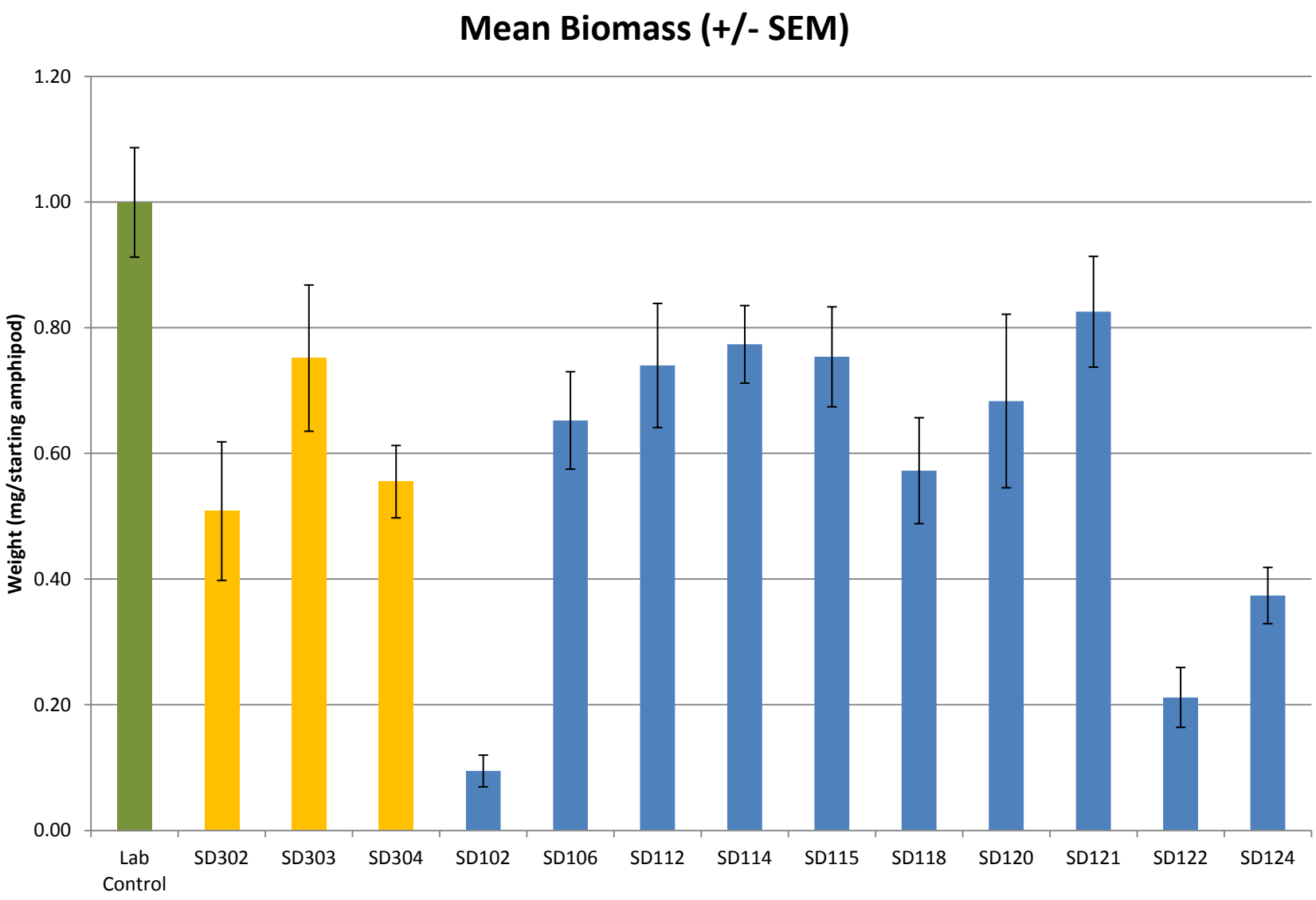
Notes:
SEM - Standard Error of the Mean.
SD302, SD303, and SD304 are background/reference samples. All others are site samples or the laboratory control.

ATTACHMENT K-1 FIGURE 2
DRY WEIGHT RESULTS FROM SEDIMENT TOXICITY TESTS
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1



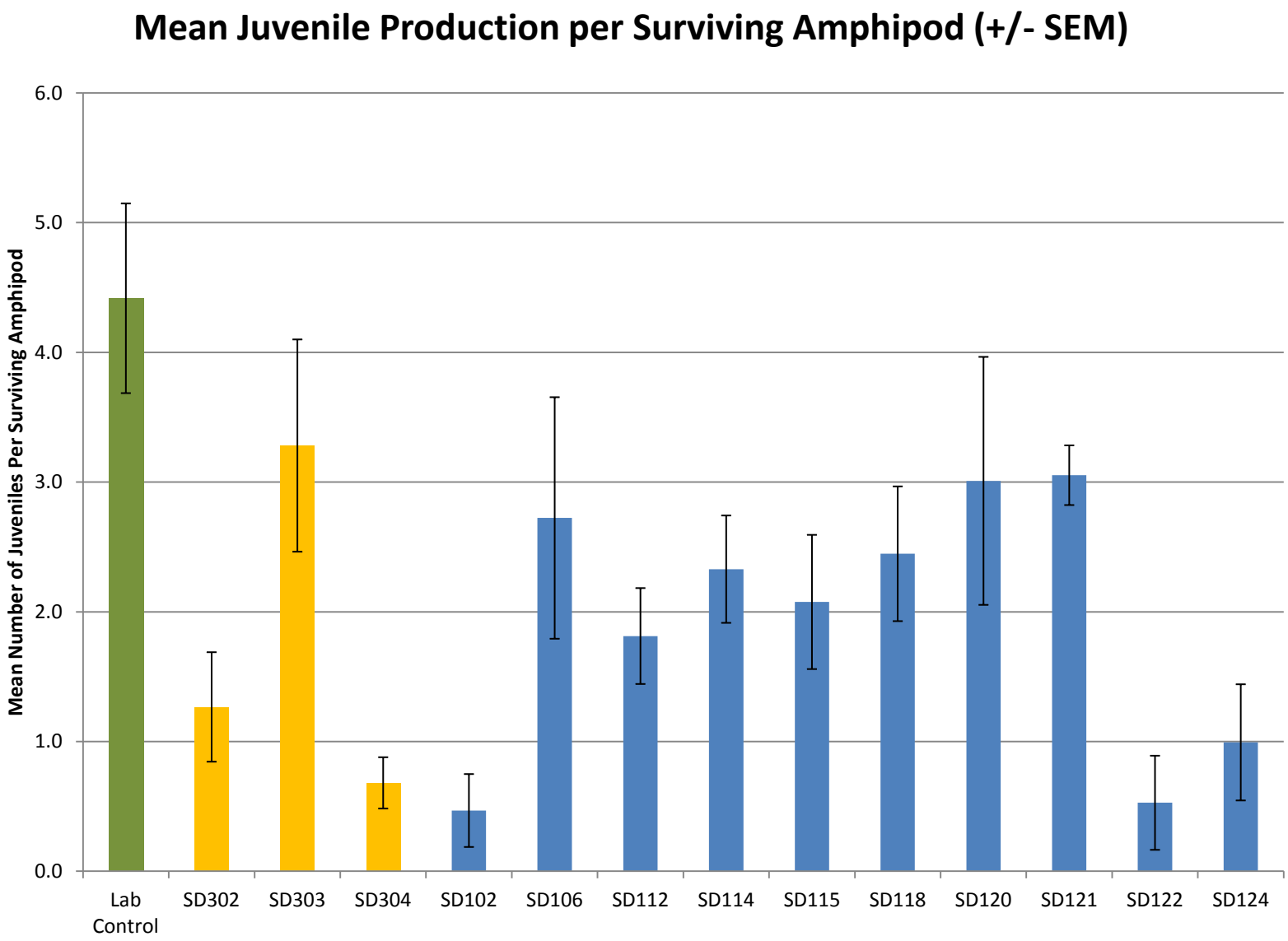
Notes:
SEM - Standard Error of the Mean.
SD302, SD303, and SD304 are background/reference samples. All others are site samples or the laboratory control.

ATTACHMENT K-1 FIGURE 3
BIOMASS RESULTS FROM SEDIMENT TOXICITY TESTS
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1



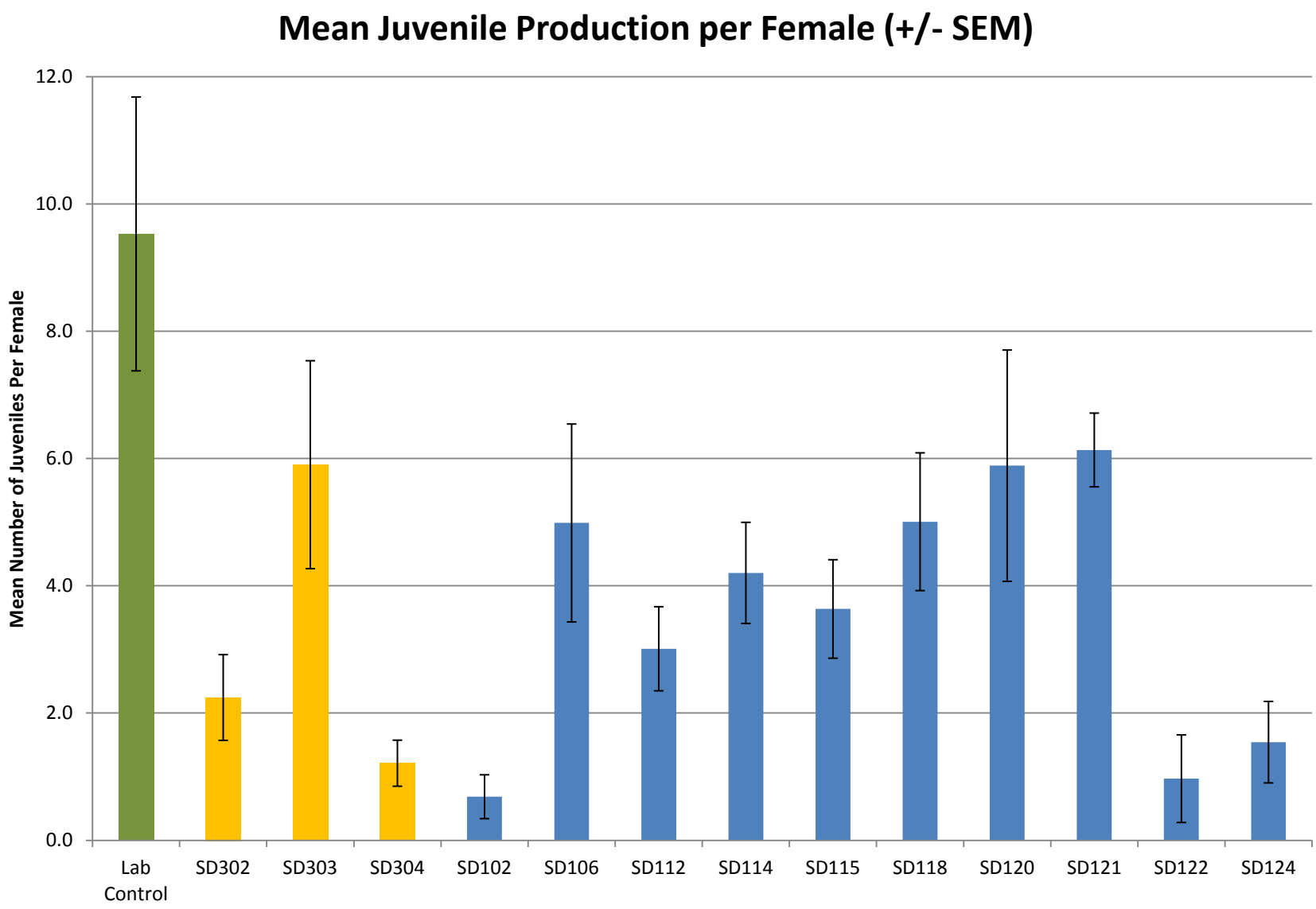
Notes:
SEM - Standard Error of the Mean.
SD302, SD303, and SD304 are background/reference samples. All others are site samples or the laboratory control.

ATTACHMENT K-1 FIGURE 4
REPRODUCTION PER SURVIVING AMPHIPOD RESULTS FROM SEDIMENT TOXICITY TESTS
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1



Notes:
SEM - Standard Error of the Mean.
SD302, SD303, and SD304 are background/reference samples. All others are site samples or the laboratory control.

ATTACHMENT K-1 FIGURE 5
REPRODUCTION PER FEMALE RESULTS FROM SEDIMENT TOXICITY TESTS
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1



Notes:
SEM - Standard Error of the Mean.
SD302, SD303, and SD304 are background/reference samples. All others are site samples or the laboratory control.

TOXICOLOGICAL EVALUATION OF SEDIMENT SAMPLES

Carr Point MRP Site 1
Naval Station, Newport, Rhode Island

Subcontract Number: 12S-15313-RC05
Project Number: 60250336

28 Day *Leptocheirus plumulosus*
Survival, Growth and Reproduction Toxicity Tests

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TOXICOLOGICAL EVALUATION
OF SEDIMENT SAMPLES

Carr Point MRP Site 1
Naval Station, Newport, Rhode Island

28 Day *Leptocheirus plumulosus*
Survival, Growth and Reproduction Toxicity Tests

1.0 INTRODUCTION

This report presents the results of toxicity tests carried out on sediment samples collected from the Carr Point MRP Site 1 located on the Naval Station in Newport, Rhode Island. Samples were provided by Resolution Consultants, Manchester, New Hampshire. Biological testing was based on programs and protocols developed by the US Environmental Protection Agency, (US EPA 2001, 1994) and ASTM (2012). Potential toxicological impacts of the samples were determined by conducting 28 day toxicity tests with the estuarine amphipod, *Leptocheirus plumulosus*. All testing, toxicological and analytical, was performed at EnviroSystems, Incorporated (ESI), Hampton, New Hampshire.

Toxicity tests expose groups of organisms to environmental samples, reference sites and laboratory control samples for a specified period to assess potential impacts. Endpoints evaluated as part of these assays include survival, growth and reproduction. Analysis of variance techniques are used to determine if differences in a measured endpoint for organisms exposed to a test sample are significantly different from responses obtained from organisms exposed to field reference sites or laboratory control samples.

2.0 MATERIALS AND METHODS

2.1 General Methods, Biological Evaluations

Toxicological and analytical protocols used in this program follow procedures outlined in *Standard Test Method for Measuring the Toxicity of Sediment-Associated Contaminants with Estuarine and Marine Invertebrates* (ASTM 2012), *Methods for Assessing the Chronic Toxicity of Marine and Estuarine Sediment-associated Contaminants with the Amphipod, Leptocheirus plumulosus* (US EPA 2001), *Methods for Assessing the Toxicity of Sediment-Associated Contaminants with Estuarine and Marine Amphipods* (US EPA 1994), and *Standard Methods for the Examination of Water and Wastewater*, 22nd Edition (APHA 2012). These protocols provide standard approaches for physical and chemical analyses and for the evaluation of toxicological effects of sediments on aquatic invertebrates.

2.2 Test Species

Leptocheirus plumulosus were obtained from cultures maintained by Aquatic BioSystems, Inc. (ABS) of Fort Collins, Colorado. Amphipods used in the assay were size selected from those that pass through a 600µm sieve and are retained by a 500 µm screen at the start of the test.

2.3 Test Samples

Sediment samples were received at ESI under chain of custody. Once received, samples were inspected to determine integrity, given unique sample numbers and logged into the laboratory sample management database. Once logged in, the samples were placed in a secure refrigerated, 2 - 4 °C, storage area. A listing of sample sites, sample collection, and receipt information is summarized in Table 1.

Sediment for the laboratory control treatment was collected from the Hampton Estuary, Hampton, New Hampshire. The area is not known to receive any direct industrial inputs and has been used as a laboratory reference sediment in the testing of marine sediments for over 25 years. Overlying seawater was also obtained from the Hampton Estuary. Water from the estuary has been used for the culture and maintenance of test organisms at ESI since 1978. Seawater is obtained through a filter system located on the bottom of the estuary at a point approximately 1 mile from the open ocean. The water is classified as SA-1.

2.4 *L. plumulosus* 28 Day Survival, Growth and Reproduction Toxicity Tests

The 28 day amphipod sediment tests were conducted according to the methods provided in the ASTM (2012) and US EPA (2001, 1994). Endpoints measured at the completion of the assay were survival, growth and reproduction. Growth was measured as dry weight and dry biomass. Reproduction was measured as juvenile production per surviving amphipod and juvenile production per surviving female amphipod.

Prior to testing samples, the pore water salinity was measured in order to determine the appropriate overlying water salinity to be used during the test. Then the samples were press sieved through a 2-mm stainless steel screen to remove large stones, sticks, roots, man-made material and indigenous organisms. Once sieved, the sediment was homogenized and placed in test chambers. Overlying water was added immediately and the chambers were allowed to stabilize. During this period, the chambers received one volume addition daily and the pore water was measured for ammonia. The published threshold for *Leptocheirus* in waters with a pH of 7.7, is <60mg/L measured as total ammonia and <0.8mg/L measured as unionized ammonia. Once the pore water ammonia was sufficiently below these levels, the assay was allowed to proceed.

Test vessels were 1000 mL glass beakers containing 175 mL of sediment and approximately 725 mL of overlying water. Test vessels were drilled at a consistent height, approximately 3 cm below the lip, and the drilled hole covered with Nitex® screen to facilitate water exchange without the loss of test organisms. Vessels were maintained in a water bath during the test. Depth of the water in the bath was set below the drain hole in the test vessel to eliminate flow of water from the bath into the test vessel. Test chambers were randomly placed in the water bath after addition of test sediments. Placement locations were generated by the CETIS™ software program. The randomization work sheets are included in the data appendix. The water bath was maintained in a limited access, temperature controlled room. Temperatures in the room and water bath were independently set at a temperature of 25°C. Temperature was recorded on an hourly frequency using a temperature logger placed in a surrogate vessel. The photoperiod in the test chamber was set at 16:8 hour light:dark. Lighting was supplied by cool white fluorescent bulbs.

A total of 20 amphipods were randomly selected from the pool of organisms and added to each replicate. Each treatment group included 8 replicates and a surrogate test chamber that was used to obtain water qualities during the assay without disturbing the test animals. The surrogate chamber was treated the same as actual test chambers with the addition of animals and food, but was not used to determine endpoint data. Organisms were added once the pore water ammonia levels had reached acceptable levels.

Each day during the test, chambers received approximately 1 volume addition of seawater having a salinity of 20±3 ‰ and a temperature of 25±1°C. Water exchanges were facilitated by use of a distribution system designed to provide equal and regulated flow to each chamber. The system was activated manually by the addition of water during the test. Overlying water dissolved oxygen, pH, salinity, specific conductivity and temperature were measured daily in a surrogate chamber for each treatment. Test chambers were aerated in order to maintain dissolved oxygen levels at ≥60% saturation. Water quality measurements were completed prior to overlying water renewals. The total ammonia concentration of the overlying and pore water was measured on days 0, 7, 14, 21 and 28. In order to calculate the unionized ammonia levels in the pore water, the pH and temperature was also measured.

Test chambers were observed daily and any organisms found floating on the surface were noted on the data sheets. Dead amphipods were removed from the test chambers and live amphipods were re-submerged. Organisms were fed three times weekly with a 20mg/mL suspension of flake fish food, dried alfalfa leaves, wheat grass powder and shrimp maturation feed. During the first 2 weeks of the assay, amphipods in each replicate were fed 1mL of the suspension at each feeding. The amount of food was increased to 2mL for the last 2 weeks of the assay.

After the 28 days exposure, organisms were recovered from the sediments. Each test chamber was gently swirled to loosen the sediments and the test material was dumped into stacked 8" stainless steel sieves with 710 and 355 µm mesh (US Standard Number 25 and Number 45) screens. The sediments were washed through the sieve using water and material left on the screen was sorted to recover all amphipods. This process was continued until the entire sample was evaluated. Juvenile *L. plumulosus* were discarded once

they were counted. Adult *L. plumulosus* were differentiated from juveniles based on a visual inspection of size. Adult organisms were preserved with formalin solution and sexed. Adults were then placed on tared weighing pans and dried overnight at 104°C to obtain dry weight to the nearest 0.01 mg. The mean weight of surviving adult organisms was determined to assess growth.

2.5 Statistical Analysis

Survival, growth and reproduction data were analyzed using CETIS™ v1.8.6.6 software to determine significant differences between the test sediments and the associated reference sediments, and the laboratory control. Data sets were evaluated to determine normality of distribution and homogeneity of sample variance. Data sets were subsequently evaluated using the appropriate parametric or non-parametric Analysis of Variance (ANOVA) statistic. If outliers were found in the data set, then the analysis was conducted with and without the outlier. Statistical comparisons were made for the following endpoints: survival, dry weight, dry biomass, juvenile production per surviving amphipod and juvenile production per surviving female. Pair-wise comparisons were made using the appropriate statistical evaluation. Statistical difference was evaluated at $\alpha=0.05$.

2.6 Reference Toxicant Evaluation

As part of the laboratory quality control program, reference toxicant evaluations are conducted by ESI on a regular basis for each test species. These results provide relative health and response data while allowing for comparison with historic data sets. Results are summarized in Table 2.

3.0 RESULTS AND DISCUSSION

3.1 Laboratory Control and Project Reference Site Performance

Review of the laboratory control data indicates that amphipod performance for all endpoints met the minimum acceptability criteria specified by protocol (ASTM, US EPA). Mean control survival was 84% with an inter-replicate survival range of 65 to 95%. The coefficient of variation (CV) was computed to be 13%. At the end of the assay, the mean dry weight of surviving amphipods was 1.210 mg/organism. The mean dry weight of 40 randomly selected amphipods at the start of the assay was 0.040 mg/organism. The overall mean juvenile production was calculated to be 4.4 juveniles/amphipod. Minimum acceptable performance for the laboratory control is specified as ≥80% survival on day 28, with no individual replicate having less than 60% survival, and organisms must show some evidence of growth and reproduction. Table 3 provides a summary of assay acceptability criteria and laboratory control achievement. Table 4 summarizes reference site performance.

Temperature values collected during daily observations recorded a mean of 25.3°C, with a range of 22.5 to 26.9°C. Acceptable criteria are a mean temperature value of 25±1°C with maximum temporary fluctuations of 25±3°C. Protocol specifies a salinity mean of 20±2‰ with maximum temporary fluctuations of 20±3‰. Daily water quality observations demonstrated a mean salinity value of 19.83‰ with a range of 18.94 to 22.04‰.

3.2 Protocol Deviations

Review of data generated during the 28-day exposure period documented no protocol deviations

3.3 Summary

This program utilized protocols developed by the US EPA and ASTM to assess the potential toxicological impacts that exposure to sediments from the Carr Point MRP Site 1 would have on aquatic invertebrates. Table 5 provides a summary of samples that demonstrated a negative effect, based on the finding of a statistically significant reduction in an endpoint as compared to the laboratory control or reference site. Table 6 summarizes *L. plumulosus* survival data. Tables 7 and 8 provide summaries of *L. plumulosus* growth data (dry weight and dry biomass). Tables 9 and 10 provide summaries of *L. plumulosus* reproduction data (juvenile production per amphipod and production per female amphipod). Table 11 summarizes water

quality data. Support data, including copies of laboratory bench sheets and statistics are included in Appendix A.

4.0 LITERATURE CITED

APHA. 2012. *Standard Methods for the Examination of Water and Wastewater*, 22nd edition. Washington D.C.

ASTM. 2012. *Standard Test Method for Measuring the Toxicity of Sediment-Associated Contaminants with Estuarine and Marine Invertebrates*. Method E 1367-03, re-approved 2008. ASTM Annual Book of Standards, Volume 11.06.

US EPA. 1994. *Methods for Assessing the Toxicity of Sediment-Associated Contaminants with Estuarine and Marine Amphipods*. EPA 600/R-94/025.

US EPA. 2001. *Methods for Assessing the Chronic Toxicity of Marine and Estuarine Sediment- Associated Contaminants with the Amphipod, Leptocheirus plumulosus.* EPA 600/R-01/020.

Table 1. Sample Collection and Receipt Summary. Carr Point MRP Site 1, Naval Station, Newport, Rhode Island. March 2014.

Field ID	ESI Code	Sample Number	Sample Type	Sample Collected Date	Sample Collected Time	Sample Received Date	Sample Received Time
BSBG SD302 0012	24077-006	001	reference	12/11/13	0906	12/11/13	1215
BSBG SD307 0012	24077-015	-	hold	12/17/13	1235	12/18/13	1130
BSBG SD304 0012	24077-010	002	reference	12/13/13	0950	12/18/13	1130
BSBG SD303 0012	24077-012	003	reference	12/13/13	1045	12/18/13	1130
OU09 SD121 0012	24077-001	004	project site	12/04/13	1210	12/06/13	1330
OU09 SD120 0012	24077-002	005	project site	12/05/13	1045	12/06/13	1330
OU09 SD112 0012	24077-003	006	project site	12/05/13	1254	12/06/13	1330
OU09 SD113 0012	24077-004	-	hold	12/05/13	1537	12/06/13	1330
OU09 SD106 0012	24077-005	007	project site	12/10/13	0939	12/11/13	1215
OU09 SD118 0012	24077-007	008	project site	12/11/13	1329	12/13/13	0835
OU09 SD124 0012	24077-008	009	project site	12/12/13	0750	12/13/13	0835
OU09 SD122 0012	24077-009	010	project site	12/12/13	0915	12/13/13	0835
OU09 SD102 0012	24077-011	011	project site	12/13/13	1010	12/18/13	1130
OU09 SD115 0012	24077-013	012	project site	12/17/13	0955	12/18/13	1130
OU09 SD114 0012	24077-014	013	project site	12/17/13	1100	12/18/13	1130

Table 2. Reference Toxicant Evaluation. Carr Point MRP Site 1, Naval Station, Newport, Rhode Island. March 2014.

Date	Organism Lot	Endpoint	Value	units	Historic Mean	Acceptable Range	Reference Toxicant
Leptocheirus plumulosus							
01/24/14	99LpABS012214	LC-50:	1.24	mg/L	0.96	0.0 - 2.33	Cadmium

Table 3. Summary of Acceptable Endpoints and Measurements. Carr Point MRP Site 1, Naval Station, Newport, Rhode Island. March 2014.

Endpoint / Measurement	Protocol Criteria	Unit of Measure	Results	Protocol Met
Survival	lab mean ≥ 80% and no replicates <60%	Mean Survival %	84%	Yes
		Minimum Survival %	65%	Yes
Growth	Measured Growth	start dry wt. (mg)	0.040	Yes
		end dry wt. (mg)	1.210	
Reproduction	Juvenile Production	Juveniles per Adult	4.4	Yes
Temperature	Mean: 25 ±1°C	daily / hourly*	25.3 / 26.1*	Yes / Yes
	Minimum: 22°C	daily / hourly*	22.5 / 24.0	Yes / Yes
	Maximum: 28°C	daily / hourly*	26.9 / 27.2	Yes / Yes
Salinity	Mean: 20 ±2‰	Mean Salinity	19.83	Yes
	Minimum: 17‰	Minimum Salinity	18.94	Yes
	Maximum: 23‰	Maximum Salinity	22.04	Yes

Note: A section of the water bath was taken offline on Day 19 (February 11, 2014) and the temperature logger was not moved to the remaining section being maintained. As a consequence hourly readings taken after this point in time have not been reported since they do not represent the exposure conditions. Daily temperature readings were recorded as specified in the protocol.
Since 26.1°C rounds to 26°C, the mean temperature recorded is not considered a protocol deviation.

Table 4. Summary of Project Reference Site Performance. Carr Point MRP Site 1, Naval Station, Newport, Rhode Island. March 2014.

		Survival	Growth		Reproduction	
Reference Sample	ESI Code	(%)	Dry Weight (mg)	Dry Biomass (mg)	Juveniles per Amphipod	Juveniles per Female
BSBG SD302 0012	001	59%	0.780	0.508	1.3	2.2
BSBG SD304 0012	002	63%	0.883	0.555	0.7	1.2
BSBG SD303 0012	003	74%	0.971	0.752	3.3	5.9

Table 5. Summary of Statistically Significant Endpoints. Carr Point MRP Site 1, Naval Station, Newport, Rhode Island. March 2014.

		Laboratory Control (000)					BSBG SD302 0012 (001)					BSBG SD304 0012 (002)					BSBG SD303 0012 (003)				
		Survival	Growth		Juveniles produced per		Survival	Growth		Juveniles produced per		Survival	Growth		Juveniles produced per		Survival	Growth		Juveniles produced per	
Field ID	Sample Number		Dry wt	Bio-mass	♂♀	♀		Dry wt	Bio-mass	♂♀	♀		Dry wt	Bio-mass	♂♀	♀		Dry wt	Bio-mass	♂♀	♀
Laboratory Control	000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BSBG SD302 0012	001	X	X	X	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BSBG SD304 0012	002	X	X	X	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BSBG SD303 0012	003						-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OU09 SD121 0012	004																				
OU09 SD120 0012	005	X		X																	
OU09 SD112 0012	006	X		X	X	X															
OU09 SD106 0012	007	X		X																	
OU09 SD118 0012	008	X	X	X	X	X															
OU09 SD124 0012	009	X	X	X	X	X		X					X	X				X	X	X	X
OU09 SD122 0012	010	X	X	X	X	X	X	X	X			X	X	X	X	X	X	X	X	X	X
OU09 SD102 0012	011	X	X	X	X	X	X	X	X		X	X	X	X			X	X	X	X	X
OU09 SD115 0012	012		X	X	X	X															
OU09 SD114 0012	013			X	X	X															

Note: Data were analyzed to determine significant differences between test sediments, reference sediments, and the laboratory control. Statistical difference was evaluated at α=0.05.
"X" Indicates that a statistical difference was found.
"-" Indicates that statistical analysis was not conducted.
" " An empty cell indicates that a statistical difference was not found.

Table 6. Survival Summary and Statistical Analysis. Carr Point MRP Site 1, Naval Station, Newport, Rhode Island. March 2014.

Day 28 Survival Summary

Field ID	ESI Code	Sample Number	Reps	Mean	Minimum	Maximum	CV
Laboratory Control	24077-000	000	8	84%	65%	95%	13%
BSBG SD302 0012	24077-006	001	8	59%	30%	85%	34%
BSBG SD304 0012	24077-010	002	8	63%	45%	85%	18%
BSBG SD303 0012	24077-012	003	8	74%	30%	100%	31%
OU09 SD121 0012	24077-001	004	8	74%	40%	90%	25%
OU09 SD120 0012	24077-002	005	8	66%	30%	100%	34%
OU09 SD112 0012	24077-003	006	8	74%	55%	90%	16%
OU09 SD106 0012	24077-005	007	8	68%	45%	95%	22%
OU09 SD118 0012	24077-007	008	8	61%	25%	80%	36%
OU09 SD124 0012	24077-008	009	8	71%	40%	85%	21%
OU09 SD122 0012	24077-009	010	8	40%	15%	75%	50%
OU09 SD102 0012	24077-011	011	8	26%	0%	50%	78%
OU09 SD115 0012	24077-013	012	8	78%	60%	95%	19%
OU09 SD114 0012	24077-014	013	8	75%	40%	95%	22%

Day 28 Survival Statistical Analysis

			Statistically Significant Difference as Compared to:			
Field ID	Sample Number	Mean	Laboratory Control (000)	BSBG SD302 0012 (001)	BSBG SD304 0012 (002)	BSBG SD303 0012 (003)
Laboratory Control	000	84%	-	-	-	-
BSBG SD302 0012	001	59%	Yes	-	-	-
BSBG SD304 0012	002	63%	Yes	-	-	-
BSBG SD303 0012	003	74%	No	-	-	-
OU09 SD121 0012	004	74%	No	No	No	No
OU09 SD120 0012	005	66%	Yes	No	No	No
OU09 SD112 0012	006	74%	Yes	No	No	No
OU09 SD106 0012	007	68%	Yes	No	No	No
OU09 SD118 0012	008	61%	Yes	No	No	No
OU09 SD124 0012	009	71%	Yes	No	No	No
OU09 SD122 0012	010	40%	Yes	Yes	Yes	Yes
OU09 SD102 0012	011	26%	Yes	Yes	Yes	Yes
OU09 SD115 0012	012	78%	No	No	No	No
OU09 SD114 0012	013	75%	No	No	No	No

Table 7. Mean Dry Weight (mg) Summary and Statistical Analysis. Carr Point MRP Site 1, Naval Station, Newport, Rhode Island. March 2014.

Mean Dry Weight (mg) Summary

Field ID	ESI Code	Sample Number	Reps	Mean	Minimum	Maximum	CV
Laboratory Control	24077-000	000	8	1.210	0.794	1.613	27%
BSBG SD302 0012	24077-006	001	8	0.780	0.193	1.236	40%
BSBG SD304 0012	24077-010	002	8	0.883	0.651	1.238	26%
BSBG SD303 0012	24077-012	003	8	0.971	0.425	1.295	29%
OU09 SD121 0012	24077-001	004	8	1.107	0.889	1.282	14%
OU09 SD120 0012	24077-002	005	8	0.955	0.297	1.366	38%
OU09 SD112 0012	24077-003	006	8	0.978	0.600	1.354	26%
OU09 SD106 0012	24077-005	007	8	0.963	0.578	1.653	34%
OU09 SD118 0012	24077-007	008	8	0.917	0.542	1.197	20%
OU09 SD124 0012	24077-008	009	8	0.520	0.416	0.709	18%
OU09 SD122 0012	24077-009	010	8	0.504	0.229	0.765	37%
OU09 SD102 0012	24077-011	011	7	0.410	0.232	0.647	37%
OU09 SD115 0012	24077-013	012	8	0.958	0.631	1.197	22%
OU09 SD114 0012	24077-014	013	8	1.043	0.903	1.291	14%

Mean Dry Weight (mg) Statistical Analysis

			Statistically Significant Difference as Compared to:			
Field ID	Sample Number	Mean	Laboratory Control (000)	BSBG SD302 0012 (001)	BSBG SD304 0012 (002)	BSBG SD303 0012 (003)
Laboratory Control	000	1.210	-	-	-	-
BSBG SD302 0012	001	0.780	Yes	-	-	-
BSBG SD304 0012	002	0.883	Yes	-	-	-
BSBG SD303 0012	003	0.971	No	-	-	-
OU09 SD121 0012	004	1.107	No	No	No	No
OU09 SD120 0012	005	0.955	No	No	No	No
OU09 SD112 0012	006	0.978	No	No	No	No
OU09 SD106 0012	007	0.963	No	No	No	No
OU09 SD118 0012	008	0.917	Yes	No	No	No
OU09 SD124 0012	009	0.520	Yes	Yes / Yes[A]	Yes	Yes / Yes[B]
OU09 SD122 0012	010	0.504	Yes	Yes	Yes	Yes
OU09 SD102 0012	011	0.410	Yes	Yes	Yes	Yes
OU09 SD115 0012	012	0.958	Yes	No	No	No
OU09 SD114 0012	013	1.043	No	No	No	No

Note:

Yes / Yes Indicates that there was no difference in outcome when an outlier was excluded from the analysis.

A For this comparison, Sample 001, replicate 8 with a value of 0.193 was identified as an outlier.

B For this comparison, Sample 003, replicate 5 with a value of 0.425 was identified as an outlier.

Table 8. Mean Dry Biomass (mg) Summary and Statistical Analysis. Carr Point MRP Site 1, Naval Station, Newport, Rhode Island. March 2014.

Mean Dry Biomass (mg) Summary

Field ID	ESI Code	Sample Number	Reps	Mean	Minimum	Maximum	CV
Laboratory Control	24077-000	000	8	1.000	0.635	1.414	25%
BSBG SD302 0012	24077-006	001	8	0.508	0.058	1.051	61%
BSBG SD304 0012	24077-010	002	8	0.555	0.324	0.805	29%
BSBG SD303 0012	24077-012	003	8	0.752	0.128	1.199	44%
OU09 SD121 0012	24077-001	004	8	0.826	0.356	1.025	30%
OU09 SD120 0012	24077-002	005	8	0.684	0.089	1.161	57%
OU09 SD112 0012	24077-003	006	8	0.740	0.330	1.219	38%
OU09 SD106 0012	24077-005	007	8	0.653	0.260	0.992	34%
OU09 SD118 0012	24077-007	008	8	0.573	0.136	0.772	42%
OU09 SD124 0012	24077-008	009	8	0.374	0.207	0.603	34%
OU09 SD122 0012	24077-009	010	8	0.212	0.046	0.438	64%
OU09 SD102 0012	24077-011	011	7	0.108	0.026	0.188	60%
OU09 SD115 0012	24077-013	012	8	0.754	0.425	1.075	30%
OU09 SD114 0012	24077-014	013	8	0.774	0.492	1.032	23%

Mean Dry Biomass (mg) Statistical Analysis

			Statistically Significant Difference as Compared to:			
Field ID	Sample Number	Mean	Laboratory Control (000)	BSBG SD302 0012 (001)	BSBG SD304 0012 (002)	BSBG SD303 0012 (003)
Laboratory Control	000	1.000	-	-	-	-
BSBG SD302 0012	001	0.508	Yes	-	-	-
BSBG SD304 0012	002	0.555	Yes	-	-	-
BSBG SD303 0012	003	0.752	No	-	-	-
OU09 SD121 0012	004	0.826	No	No	No	No
OU09 SD120 0012	005	0.684	Yes	No	No	No
OU09 SD112 0012	006	0.740	Yes	No	No	No
OU09 SD106 0012	007	0.653	Yes	No	No	No
OU09 SD118 0012	008	0.573	Yes	No	No	No
OU09 SD124 0012	009	0.374	Yes	No	Yes	Yes / Yes[A]
OU09 SD122 0012	010	0.212	Yes	Yes	Yes	Yes
OU09 SD102 0012	011	0.108	Yes	Yes	Yes	Yes / Yes[A]
OU09 SD115 0012	012	0.754	Yes	No	No	No
OU09 SD114 0012	013	0.774	Yes	No	No	No

Note:

Yes / Yes Indicates that there was no difference in outcome when an outlier was excluded from the analysis.

A For this comparison, Sample 003, replicate 5 with a value of 0.128 was identified as an outlier.

Table 9. Juvenile Production per Surviving Amphipod Summary and Statistical Analysis. Carr Point MRP Site 1, Naval Station, Newport, Rhode Island. March 2014.

Juvenile Production per Surviving Amphipod Summary

Field ID	ESI Code	Sample Number	Reps	Mean	Minimum	Maximum	CV
Laboratory Control	24077-000	000	8	4.4	1.7	7.4	47%
BSBG SD302 0012	24077-006	001	8	1.3	0.0	3.3	94%
BSBG SD304 0012	24077-010	002	8	0.7	0.0	1.8	82%
BSBG SD303 0012	24077-012	003	8	3.3	1.2	8.5	71%
OU09 SD121 0012	24077-001	004	8	3.1	1.9	4.3	21%
OU09 SD120 0012	24077-002	005	8	3.0	0.0	8.1	90%
OU09 SD112 0012	24077-003	006	8	1.8	0.5	3.9	58%
OU09 SD106 0012	24077-005	007	8	2.7	0.4	8.6	97%
OU09 SD118 0012	24077-007	008	8	2.4	0.2	4.4	60%
OU09 SD124 0012	24077-008	009	8	1.0	0.0	3.6	127%
OU09 SD122 0012	24077-009	010	8	0.5	0.0	3.0	194%
OU09 SD102 0012	24077-011	011	7	0.5	0.0	2.0	159%
OU09 SD115 0012	24077-013	012	8	2.1	0.3	4.1	70%
OU09 SD114 0012	24077-014	013	8	2.3	0.0	3.8	50%

Juvenile Production per Surviving Amphipod Statistical Analysis

			Statistically Significant Difference as Compared to:			
Field ID	Sample Number	Mean	Laboratory Control (000)	BSBG SD302 0012 (001)	BSBG SD304 0012 (002)	BSBG SD303 0012 (003)
Laboratory Control	000	4.4	-	-	-	-
BSBG SD302 0012	001	1.3	Yes	-	-	-
BSBG SD304 0012	002	0.7	Yes	-	-	-
BSBG SD303 0012	003	3.3	No	-	-	-
OU09 SD121 0012	004	3.1	No	No	No	No / No[F]
OU09 SD120 0012	005	3.0	No	No	No / No[B]	No
OU09 SD112 0012	006	1.8	Yes	No	No	No / No[F]
OU09 SD106 0012	007	2.7	No	No / No[A]	No / No[A]	No
OU09 SD118 0012	008	2.4	Yes	No	No	No / No[F]
OU09 SD124 0012	009	1.0	Yes	No	No / No[C]	Yes / Yes[F]
OU09 SD122 0012	010	0.5	Yes	No	No / Yes[1D]	Yes / Yes[F]
OU09 SD102 0012	011	0.5	Yes	No	No	Yes / Yes[F]
OU09 SD115 0012	012	2.1	Yes	No	No	No / No[F]
OU09 SD114 0012	013	2.3	Yes	No	No / No[E]	No / No[F]

Note:

No / No, Yes / Yes
Indicate that there was no difference in outcome when an outlier was excluded from the analysis.

1 Indicates that the analysis excluded an outlier and resulted in a difference in significance.

A For this comparison, Sample 007, replicate 4 with a value of 8.6 was identified as an outlier.

B For this comparison, Sample 005, replicate 5 with a value of 8.1 was identified as an outlier.

C For this comparison, Sample 009, replicate 5 with a value of 3.6 was identified as an outlier.

D For this comparison, Sample 010, replicate 2 with a value of 3.0 was identified as an outlier.

E For this comparison, Sample 013, replicate 7 with a value of 0.0 was identified as an outlier.

F For this comparison, Sample 003, replicate 2 with a value of 8.5 was identified as an outlier.

Table 10. Juvenile Production per Female Amphipod Summary and Statistical Analysis. Carr Point MRP Site 1, Naval Station, Newport, Rhode Island. March 2014.

Juvenile Production per Female Amphipod Summary

Field ID	ESI Code	Sample Number	Reps	Mean	Minimum	Maximum	CV
Laboratory Control	24077-000	000	8	9.5	2.7	20.4	64%
BSBG SD302 0012	24077-006	001	8	2.2	0.0	5.0	85%
BSBG SD304 0012	24077-010	002	8	1.2	0.0	3.3	84%
BSBG SD303 0012	24077-012	003	8	5.9	1.4	16.1	78%
OU09 SD121 0012	24077-001	004	8	6.1	3.6	8.6	27%
OU09 SD120 0012	24077-002	005	8	5.9	0.0	16.3	87%
OU09 SD112 0012	24077-003	006	8	3.0	0.6	6.2	62%
OU09 SD106 0012	24077-005	007	8	5.0	0.8	14.7	88%
OU09 SD118 0012	24077-007	008	8	5.0	0.2	8.0	61%
OU09 SD124 0012	24077-008	009	8	1.5	0.0	4.8	117%
OU09 SD122 0012	24077-009	010	7	1.0	0.0	5.0	188%
OU09 SD102 0012	24077-011	011	6	0.7	0.0	2.0	123%
OU09 SD115 0012	24077-013	012	8	3.6	0.7	6.1	60%
OU09 SD114 0012	24077-014	013	8	4.2	0.0	7.6	53%

Juvenile Production per Female Amphipod Statistical Analysis

			Statistically Significant Difference as Compared to:			
Field ID	Sample Number	Mean	Laboratory Control (000)	BSBG SD302 0012 (001)	BSBG SD304 0012 (002)	BSBG SD303 0012 (003)
Laboratory Control	000	9.5	-	-	-	-
BSBG SD302 0012	001	2.2	Yes	-	-	-
BSBG SD304 0012	002	1.2	Yes	-	-	-
BSBG SD303 0012	003	5.9	No	-	-	-
OU09 SD121 0012	004	6.1	No	No	No	No / No[D]
OU09 SD120 0012	005	5.9	No	No / No[A]	No / No[A]	No
OU09 SD112 0012	006	3.0	Yes	No	No	No / No[D]
OU09 SD106 0012	007	5.0	No	No / No[B]	No / No[B]	No
OU09 SD118 0012	008	5.0	Yes	No	No	No / No[D]
OU09 SD124 0012	009	1.5	Yes	No	No	Yes / Yes[D]
OU09 SD122 0012	010	1.0	Yes	No	No / Yes[1C]	Yes / Yes[D]
OU09 SD102 0012	011	0.7	Yes	Yes	No	Yes / Yes[D]
OU09 SD115 0012	012	3.6	Yes	No	No	No / No[D]
OU09 SD114 0012	013	4.2	Yes	No	No	No / No[D]

Note:

No / No, Yes / Yes
Indicate that there was no difference in outcome when an outlier was excluded from the analysis.

1 Indicates that the analysis excluded an outlier and resulted in a difference in significance.

A For this comparison, Sample 005, replicate 5 with a value of 16.3 was identified as an outlier.

B For this comparison, Sample 007, replicate 4 with a value of 14.7 was identified as an outlier.

C For this comparison, Sample 010, replicate 2 with a value of 5.0 was identified as an outlier.

D For this comparison, Sample 003, replicate 2 with a value of 16.1 was identified as an outlier.

Table 11. Summary of Water Qualities. Carr Point MRP Site 1, Naval Station, Newport, Rhode Island. March 2014.

ESI Code	Field ID	Sample Number	Day	Salinity (‰)	Overlying Water Ammonia (mg/L) Total	Overlying Water Ammonia (mg/L) Unionized	Pore Water Ammonia (mg/L) Total	Pore Water Ammonia (mg/L) Unionized
24077-000	Laboratory Control	000	0	22.41	<0.1	<0.0027	0.4	0.0020
24077-006	BSBG SD302 0012	001	0	22.41	<0.1	<0.0041	0.44	0.0177
24077-010	BSBG SD304 0012	002	0	22.34	<0.1	<0.0027	<0.1	<0.0019
24077-012	BSBG SD303 0012	003	0	22.44	<0.1	<0.0030	1.1	0.0184
24077-001	OU09 SD121 0012	004	0	22.29	<0.1	<0.0036	0.2	0.0064
24077-002	OU09 SD120 0012	005	0	22.22	<0.1	<0.0037	1.9	0.0202
24077-003	OU09 SD112 0012	006	0	22.16	<0.1	<0.0029	0.27	0.0045
24077-005	OU09 SD106 0012	007	0	22.48	<0.1	<0.0037	0.19	0.0058
24077-007	OU09 SD118 0012	008	0	22.09	<0.1	<0.0033	0.7	0.0047
24077-008	OU09 SD124 0012	009	0	22.35	<0.1	<0.0028	<0.1	<0.0018
24077-009	OU09 SD122 0012	010	0	22.22	<0.1	<0.0023	<0.1	<0.0014
24077-011	OU09 SD102 0012	011	0	22.42	<0.1	<0.0025	0.42	0.0057
24077-013	OU09 SD115 0012	012	0	22.03	<0.1	<0.0036	0.61	0.0137
24077-014	OU09 SD114 0012	013	0	22.04	<0.1	<0.0049	0.46	0.0088
24077-000	Laboratory Control	000	7	20.88	<0.1	<0.0021	<0.1	<0.0004
24077-006	BSBG SD302 0012	001	7	20.52	<0.1	<0.0042	<0.1	<0.0019
24077-010	BSBG SD304 0012	002	7	20.43	<0.1	<0.0027	<0.1	<0.0014
24077-012	BSBG SD303 0012	003	7	20.79	<0.1	<0.0028	0.15	0.0032
24077-001	OU09 SD121 0012	004	7	20.68	<0.1	<0.0030	<0.1	<0.0015
24077-002	OU09 SD120 0012	005	7	20.14	<0.1	<0.0035	0.33	0.0035
24077-003	OU09 SD112 0012	006	7	20.04	<0.1	<0.0026	<0.1	<0.0014
24077-005	OU09 SD106 0012	007	7	20.16	<0.1	<0.0032	<0.1	<0.0018
24077-007	OU09 SD118 0012	008	7	20.25	<0.1	<0.0033	0.13	0.0010
24077-008	OU09 SD124 0012	009	7	20.19	<0.1	<0.0027	<0.1	<0.0018
24077-009	OU09 SD122 0012	010	7	20.00	<0.1	<0.0024	<0.1	<0.0015
24077-011	OU09 SD102 0012	011	7	20.07	<0.1	<0.0024	0.12	0.0033
24077-013	OU09 SD115 0012	012	7	20.25	<0.1	<0.0032	<0.1	<0.0008
24077-014	OU09 SD114 0012	013	7	20.10	<0.1	<0.0033	<0.1	<0.0007
24077-000	Laboratory Control	000	14	19.93	<0.1	<0.0012	<0.1	<0.0004
24077-006	BSBG SD302 0012	001	14	19.72	<0.1	<0.0028	<0.1	<0.0020
24077-010	BSBG SD304 0012	002	14	19.90	<0.1	<0.0023	<0.1	<0.0018
24077-012	BSBG SD303 0012	003	14	20.06	<0.1	<0.0019	<0.1	<0.0017
24077-001	OU09 SD121 0012	004	14	20.13	<0.1	<0.0026	<0.1	<0.0019
24077-002	OU09 SD120 0012	005	14	19.64	<0.1	<0.0029	<0.1	<0.0004
24077-003	OU09 SD112 0012	006	14	19.52	<0.1	<0.0022	<0.1	<0.0012
24077-005	OU09 SD106 0012	007	14	19.48	<0.1	<0.0029	<0.1	<0.0014
24077-007	OU09 SD118 0012	008	14	19.46	<0.1	<0.0026	<0.1	<0.0005
24077-008	OU09 SD124 0012	009	14	19.58	<0.1	<0.0025	<0.1	<0.0018
24077-009	OU09 SD122 0012	010	14	19.69	<0.1	<0.0023	<0.1	<0.0018
24077-011	OU09 SD102 0012	011	14	19.95	<0.1	<0.0025	<0.1	<0.0018
24077-013	OU09 SD115 0012	012	14	20.04	<0.1	<0.0028	<0.1	<0.0018
24077-014	OU09 SD114 0012	013	14	19.99	<0.1	<0.0026	<0.1	<0.0009
24077-000	Laboratory Control	000	21	19.44	<0.1	<0.0011	0.36	0.0007
24077-006	BSBG SD302 0012	001	21	19.36	<0.1	<0.0022	<0.1	<0.0006
24077-010	BSBG SD304 0012	002	21	19.41	<0.1	<0.0018	<0.1	<0.0012

ESI Code	Field ID	Sample Number	Day	Salinity (‰)	Overlying Water Ammonia (mg/L) Total	Overlying Water Ammonia (mg/L) Unionized	Pore Water Ammonia (mg/L) Total	Pore Water Ammonia (mg/L) Unionized
24077-012	BSBG SD303 0012	003	21	19.45	<0.1	<0.0024	<0.1	<0.0011
24077-001	OU09 SD121 0012	004	21	19.71	<0.1	<0.0027	<0.1	<0.0010
24077-002	OU09 SD120 0012	005	21	19.27	<0.1	<0.0027	0.32	0.0037
24077-003	OU09 SD112 0012	006	21	18.96	<0.1	<0.0019	<0.1	<0.0007
24077-005	OU09 SD106 0012	007	21	19.04	<0.1	<0.0024	<0.1	<0.0005
24077-007	OU09 SD118 0012	008	21	19.06	<0.1	<0.0026	<0.1	<0.0003
24077-008	OU09 SD124 0012	009	21	19.08	<0.1	<0.0023	<0.1	<0.0011
24077-009	OU09 SD122 0012	010	21	19.03	<0.1	<0.0024	<0.1	<0.0012
24077-011	OU09 SD102 0012	011	21	19.14	<0.1	<0.0026	<0.1	<0.0010
24077-013	OU09 SD115 0012	012	21	19.21	<0.1	<0.0025	0.22	0.0020
24077-014	OU09 SD114 0012	013	21	19.18	<0.1	<0.0022	0.26	0.0026
24077-000	Laboratory Control	000	28	19.68	<0.1	<0.0008	<0.1	<0.0003
24077-006	BSBG SD302 0012	001	28	19.31	<0.1	<0.0019	<0.1	<0.0011
24077-010	BSBG SD304 0012	002	28	19.47	<0.1	<0.0018	<0.1	<0.0012
24077-012	BSBG SD303 0012	003	28	19.57	<0.1	<0.0024	<0.1	<0.0015
24077-001	OU09 SD121 0012	004	28	19.38	<0.1	<0.0023	<0.1	<0.0013
24077-002	OU09 SD120 0012	005	28	20.21	<0.1	<0.0025	<0.1	<0.0009
24077-003	OU09 SD112 0012	006	28	19.84	<0.1	<0.0019	<0.1	<0.0009
24077-005	OU09 SD106 0012	007	28	19.93	<0.1	<0.0027	<0.1	<0.0008
24077-007	OU09 SD118 0012	008	28	19.99	<0.1	<0.0027	<0.1	<0.0004
24077-008	OU09 SD124 0012	009	28	20.00	<0.1	<0.0025	<0.1	<0.0012
24077-009	OU09 SD122 0012	010	28	19.53	<0.1	<0.0024	<0.1	<0.0014
24077-011	OU09 SD102 0012	011	28	19.60	<0.1	<0.0026	<0.1	<0.0017
24077-013	OU09 SD115 0012	012	28	19.73	<0.1	<0.0025	<0.1	<0.0008
24077-014	OU09 SD114 0012	013	28	19.67	<0.1	<0.0027	<0.1	<0.0008

Note:

Additional water quality and analytical support data provided in Appendix A.

ESI's standard operating procedure is to maintain salinity within 20 ±3‰ as the daily limit.

The published threshold for *Leptocheirus* in waters with a pH of 7.7, is <60mg/L measured as total ammonia and <0.8mg/L measured as unionized ammonia.

APPENDIX A
RAW DATA AND STATISTICAL SUPPORT

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Leptocheirus plumulosus 28 Day Sediment Evaluation

Study:24077 **Client:AECOM** **Project:** Carr Point MRP Site 1, Naval Station, Newport, Rhode Island

Day	Date	Renew	Fed		Initial	Notes
0	1/23	✓	1mL		ND/JTP	
1	1/24	✓	1mL	✓	RS	
2	1/25/14	✓	1mL		CS/RS	
3	1/26	✓	1mL		UB/EH	
4	1/27	✓	1mL	✓	ND/JTP	
5	1/28	✓	1mL		ND/RS	
6	1/29	✓	1mL	✓	RS	fed new lepto food C-7107
7	1/30	✓	1mL		RS	
8	01/31/14	✓	1mL	✓	JTP	
9	02/01	✓	1mL		RS	
10	2/2	✓	1mL		UB/EH	
11	2/3	✓	1mL	✓	ND/JTP	
12	2/4	✓	1mL		ND	
13	2/5	✓	1mL	✓	ND/JTP	
14	2/6	✓	1mL		ND	
15	2/7	✓	2mL	✓	ND/JTP	
16	2/8	✓	2mL	✓	RS	
17	2/9	✓	2mL	✓	UB	
18	02/10/14	✓	2mL	✓	JTP	
19	2/11/14	✓	2mL			
20	2/12/14	✓	2mL	✓	ND/JTP	
21	2/13/14	✓	2mL		ND/JTP	
22	2/14/14	✓	2mL	✓	ND/JTP	
23	2/15	✓	2mL		RS	
24	2/16	✓	2mL		UB	
25	2/17	✓	2mL	✓	ND	Temp Deviation observed, bath heater modified.
26	2/18	✓	2mL		ND	
27	2/19	✓	2mL	✓	ND/JTP	
28	2/20		2mL		RS	

ND 2/14/14

Pore Water collected for pH and Ammonia		
	Day 0	Initial: RS
	Day 7	Initial: RS
	Day 14	Initial: ND
	Day 21	Initial: JTP
	Day 28	Initial: RS

Feed Monday/Wednesday/Friday	Overlying Salinity: 20ppt	Temperature: 25°C

1300 Blue Spruce Drive, Suite C
Fort Collins, Colorado 80524

AQUATIC BIO SYSTEMS ABS INC.

Toll Free: 800/331-5916
Tel: 970/484-5091 Fax:970/484-2514

Lot # 99LpABS012214

ORGANISM HISTORY

DATE: 1/21/14

SPECIES: *Leptocheirus plumulosus*

AGE: 2-3 week

LIFE STAGE: Juvenile

HATCH DATE: Variable

BEGAN FEEDING: Immediately

FOOD: Flake Slurry

Water Chemistry Record:	**Current**	**Range**
TEMPERATURE:	21°C	21-25°C
SALINITY/CONDUCTIVITY:	21 ppt	15-21 ppt
TOTAL HARDNESS (as $CaCO_3$):	--	--
TOTAL ALKALINITY (as $CaCO_3$):	150 mg/l	110-175 mg/l
pH:	7.84	7.20-8.36

Comments:

Facility Supervisor

Sample Key

STUDY: 24077
CLIENT: AECOM
PROJECT: Carr Point MRP Site 1, Naval Station, Newport,

LabID	Field ID	Sample Number	Sample Designation	Sampled	Received
24077-000	Laboratory Control	000			
24077-006	BSB6 SD302 0012	001	reference	12/11/13 0906	12/11/13 1215
24077-015	BSB6 SD307 0012	-	hold	12/17/13 1235	12/18/13 1130
24077-010	BSB6 SD304 0012	002	reference	12/13/13 0950	12/18/13 1130
24077-012	BSB6 SD303 0012	003	reference	12/13/13 1045	12/18/13 1130
24077-001	OU09 SD121 0012	004	project site	12/04/13 1210	12/06/13 1330
24077-002	OU09 SD120 0012	005	project site	12/05/13 1045	12/06/13 1330
24077-003	OU09 SD112 0012	006	project site	12/05/13 1254	12/06/13 1330
24077-004	OU09 SD113 0012	-	hold	12/05/13 1537	12/06/13 1330
24077-005	OU09 SD106 0012	007	project site	12/10/13 0939	12/11/13 1215
24077-007	OU09 SD118 0012	008	project site	12/11/13 1329	12/13/13 0835
24077-008	OU09 SD124 0012	009	project site	12/12/13 0750	12/13/13 0835
24077-009	OU09 SD122 0012	010	project site	12/12/13 0915	12/13/13 0835
24077-011	OU09 SD102 0012	011	project site	12/13/13 1010	12/18/13 1130
24077-013	OU09 SD115 0012	012	project site	12/17/13 0955	12/18/13 1130
24077-014	OU09 SD114 0012	013	project site	12/17/13 1100	12/18/13 1130

CETIS Test Data Worksheet

Report Date: 10 Mar-14 09:11 (p 1 of 3)
Test Code: 20-9805-5845/24077Lp

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Start Date: 16 Jan-14 12:00 **Species:** Leptocheirus plumulosus **Sample Code:** 24077-000; 000
End Date: 13 Feb-14 12:00 **Protocol:** EPA/600/R-01/020 (2001) **Sample Source:** Carr Point MRP Site 1, Naval Station
Sample Date: 03 Jan-14 12:00 **Material:** Laboratory Control Sediment **Sample Station:** Laboratory Control; 24077-000

Sample Code	Rep	Pos	# Exposed	# Survived	Total Weight-mg	Tare Weight-mg	Pan Count	leonate Weight-m	# Offspring	#Females	Total Weight - Females in mg	are Weight - Females in m	Pan Count - Females
24077-009; 010	1	1	20	15	215.17	206.41	15		10	9			
24077-012; 003	1	2	20	20	229.33	208.14	20		32	11			
24077-000; 000	1	3	20	19	223.67	208.59	19		34	11			
24077-001; 004	1	4	20	18	227.6	207.53	18		56	8			
24077-002; 005	1	5	20	11	213.82	207.95	11		11	7			
24077-010; 002	1	6	20	9	214.61	208.13	9		6	4			
24077-003; 006	1	7	20	16	227.12	208.84	16		62	10			
24077-007; 008	1	8	20	15	222.87	208.59	15		61	9			
24077-013; 012	1	9	20	19	225.3	208.2	19		19	10			
24077-006; 001	1	10	20	9	213.59	208.17	9		0	6			
24077-014; 013	1	11	20	14	220.64	207.75	14		50	8			
24077-005; 007	1	12	20	9	212.4	207.2	9		4	5			
24077-008; 009	1	13	20	16	215.33	208.29	16		5	10			
24077-011; 011	1	14	20	0		0							
24077-013; 012	2	15	20	14	223.02	208.04	14		8	7			
24077-002; 005	2	16	20	14	222.27	208.08	14		60	7			
24077-009; 010	2	17	20	5	209.07	207.23	5		15	3			
24077-010; 002	2	18	20	12	217.17	208.46	12		10	9			
24077-006; 001	2	19	20	17	228.94	207.93	17		40	10			
24077-012; 003	2	20	20	17	225.63	208.38	17		145	9			
24077-008; 009	2	21	20	17	216.72	206.44	17		10	10			
24077-005; 007	2	22	20	14	218.7	208.84	14		12	7			
24077-003; 006	2	23	20	11	214.58	207.98	11		5	9			
24077-011; 011	2	24	20	2	208.27	207.68	2		0	2			
24077-000; 000	2	25	20	13	228.07	208.26	13		72	6			
24077-014; 013	2	26	20	16	228.84	208.19	16		29	9			
24077-007; 008	2	27	20	15	223.1	207.85	15		40	10			
24077-001; 004	2	28	20	13	224.2	207.74	13		25	7			
24077-003; 006	3	29	20	16	224.77	207.01	16		21	9			
24077-001; 004	3	30	20	8	216.11	209	8		24	4			
24077-006; 001	3	31	20	8	213.16	207.73	8		3	4			
24077-013; 012	3	32	20	18	228.36	210.21	18		68	13			
24077-007; 008	3	33	20	16	221.78	206.34	16		39	11			
24077-008; 009	3	34	20	12	213.98	207.8	12		0	10			
24077-000; 000	3	35	20	16	220.29	207.59	16		89	11			
24077-014; 013	3	36	20	17	225.8	208.93	17		37	11			
24077-010; 002	3	37	20	13	223.23	207.13	13		2	6			
24077-012; 003	3	38	20	20	232.78	208.8	20		63	10			
24077-011; 011	3	39	20	9	210.11	208.02	9		7	9			
24077-002; 005	3	40	20	20	230.52	207.56	20		28	9			

Sample Code	Rep	Pos	# Exposed	# Survived	Total Weight-mg	Tare Weight-mg	Pan Count	leonate Weight-me	# Offspring	#Females	Total Weight - Females in mg	are Weight - Females in me	Pan Count - Females
24077-009; 010	3	41	20	7	211.38	206.78	7		0	5			
24077-005; 007	3	42	20	16	223.78	207.71	16		30	8			
24077-013; 012	4	43	20	18	228.94	207.45	18		73	12			
24077-005; 007	4	44	20	12	220.45	207.66	12		103	7			
24077-003; 006	4	45	20	18	232.28	207.9	18		40	8			
24077-006; 001	4	46	20	13	219.74	209.73	13		14	10			
24077-007; 008	4	47	20	6	213.09	207.44	6		7	4			
24077-008; 009	4	48	20	16	217.68	210.23	16		2	14			
24077-002; 005	4	49	20	17	231.52	208.3	17		39	9			
24077-000; 000	4	50	20	19	235.57	207.3	19		140	10			
24077-014; 013	4	51	20	19	227.07	207.59	19		41	10			
24077-011; 011	4	52	20	8	211.36	207.71	8		0	5			
24077-001; 004	4	53	20	18	223.89	207.21	18		50	12			
24077-009; 010	4	54	20	13	214.85	208.15	13		4	12			
24077-010; 002	4	55	20	13	220.9	210.25	13		12	9			
24077-012; 003	4	56	20	15	221.37	210.09	15		51	9			
24077-014; 013	5	57	20	14	223.12	208.03	14		53	7			
24077-001; 004	5	58	20	16	228.61	208.1	16		49	7			
24077-009; 010	5	59	20	8	211.75	206.89	8		2	6			
24077-002; 005	5	60	20	14	224.51	208.32	14		114	7			
24077-000; 000	5	61	20	18	229.7	208.34	18		102	5			
24077-008; 009	5	62	20	8	212.78	208.64	8		29	6			
24077-012; 003	5	63	20	6	210.92	208.37	6		7	5			
24077-006; 001	5	64	20	12	222.14	209.23	12		40	8			
24077-003; 006	5	65	20	15	219.5	208.45	15		37	10			
24077-011; 011	5	66	20	10	210.54	207.93	10		0	9			
24077-005; 007	5	67	20	13	220.32	208.92	13		56	8			
24077-007; 008	5	68	20	16	223	210.12	16		70	9			
24077-010; 002	5	69	20	14	217.11	207.99	14		9	6			
24077-013; 012	5	70	20	14	217.93	209.09	14		46	8			
24077-006; 001	6	71	20	13	218.2	207.57	13		10	7			
24077-011; 011	6	72	20	3	211.05	209.11	3		0				
24077-010; 002	6	73	20	17	220.86	208.03	17		7	12			
24077-000; 000	6	74	20	16	229.28	208.74	16		78	7			
24077-001; 004	6	75	20	11	219.73	208.74	11		35	6			
24077-008; 009	6	76	20	14	212.79	206.97	14		3	9			
24077-005; 007	6	77	20	14	222.06	207.18	14		22	8			
24077-014; 013	6	78	20	16	222.02	207.51	16		44	9			
24077-003; 006	6	79	20	16	223.31	209.36	16		23	13			
24077-012; 003	6	80	20	13	225.6	208.76	13		47	6			
24077-002; 005	6	81	20	14	227.45	210.49	14		74	9			
24077-013; 012	6	82	20	12	220.44	206.07	12		4	6			
24077-007; 008	6	83	20	5	209.65	206.94	5		1	5			
24077-009; 010	6	84	20	3	210.64	209.72	3		0	2			
24077-010; 002	7	85	20	12	225.02	210.16	12		0	6			
24077-000; 000	7	86	20	15	230.63	206.43	15		43	9			

Sample Code	Rep	Pos	# Exposed	# Survived	Total Weight-mg	Tare Weight-mg	Pan Count	Neonate Weight-mg	# Offspring	#Females	Total Weight - Females in mg	Tare Weight - Females in mg	Pan Count - Females
24077-005; 007	7	87	20	12	227.36	207.52	12		22	6			
24077-014; 013	7	88	20	8	218.2	208.36	8		0	5			
24077-002; 005	7	89	20	9	215.48	207.29	9		0	6			
24077-003; 006	7	90	20	14	222.75	206.51	14		15	9			
24077-001; 004	7	91	20	16	227.67	207.9	16		69	8			
24077-008; 009	7	92	20	17	220.67	208.61	17		16	9			
24077-013; 012	7	93	20	12	218.03	209.53	12		19	6			
24077-012; 003	7	94	20	14	220.45	208.11	14		24	8			
24077-007; 008	7	95	20	12	220.31	209.27	12		16	2			
24077-009; 010	7	96	20	7	208.4	206.8	7		0	7			
24077-006; 001	7	97	20	17	222.93	208.19	17		35	8			
24077-011; 011	7	98	20	1	208.48	207.97	1		2	1			
24077-014; 013	8	99	20	16	222.51	208.06	16		38	9			
24077-003; 006	8	100	20	12	218.66	208.52	12		20	7			
24077-006; 001	8	101	20	6	208.19	207.03	6		1	1			
24077-000; 000	8	102	20	18	226.57	208.59	18		30	11			
24077-013; 012	8	103	20	18	224.39	207.21	18		36	7			
24077-011; 011	8	104	20	8	211.13	207.38	8		4	3			
24077-010; 002	8	105	20	11	219.16	209.1	11		20	6			
24077-002; 005	8	106	20	6	209.63	207.85	6		10	2			
24077-005; 007	8	107	20	19	223.06	208.69	19		44	8			
24077-007; 008	8	108	20	12	223.49	209.13	12		40	5			
24077-009; 010	8	109	20	6	211.37	206.78	6		0				
24077-001; 004	8	110	20	18	229.28	208.78	18		55	8			
24077-012; 003	8	111	20	13	224.4	209.56	13		40	10			
24077-008; 009	8	112	20	14	214.4	207.56	14		30	8			

Leptocheirus plumulosus Day 28 Recovery

STUDY: 24077 CLIENT: AECOM

DATE: 02/20/14 PROJECT: Carr Point MRP Site 1, Naval Station, Newport, Rhode Island

Sample Code	Rep	Pos	# Alive			Initials	
			total	juveniles	females		
24077-009; 010	1	1	15	10	r 9	RAM	
24077-012; 003	1	2	20	32	11		
24077-000; 000	1	3	19	34	11		
24077-001; 004	1	4	18	56	8		
24077-002; 005	1	5	11	11	7		
24077-010; 002	1	6	9	6	4		
24077-003; 006	1	7	16 ~~17~~	62	10		E3 ND 2/24/14
24077-007; 008	1	8	15	61	9		
24077-013; 012	1	9	19	19	10		
24077-006; 001	1	10	9	0	6		
24077-014; 013	1	11	14	50	8		
24077-005; 007	1	12	9	4	5		
24077-008; 009	1	13	16	5	10	RaH	
24077-011; 011	1	14	0	0	—		
24077-013; 012	2	15	E3 RaH 2/20 ~~8~~ 14	8	7		
24077-002; 005	2	16	14	60	7		
24077-009; 010	2	17	5	15	3		
24077-010; 002	2	18	12	10	9		
24077-006; 001	2	19	~~16~~ 17	40	10		E3 ND 2/24/14
24077-012; 003	2	20	17	145	9		
24077-008; 009	2	21	17	10	10		
24077-005; 007	2	22	14	12	7		
24077-003; 006	2	23	11	5	9		
24077-011; 011	2	24	2	0	2		
24077-000; 000	2	25	13	72	~~EH~~ 6	EH	E3 2/20

Leptocheirus plumulosus Day 28 Recovery

STUDY: 24077	**CLIENT: AECOM**
DATE: 02/20/14	**PROJECT: Carr Point MRP Site 1, Naval Station, Newport, Rhode Island**

Sample Code	Rep	Pos	# Alive			Initials	
			total	juveniles	females		
24077-014; 013	2	26	16	29	9	EH	
24077-007; 008	2	27	15	40	10		
24077-001; 004	2	28	13	25	7		
24077-003; 006	3	29	16	21	9		
24077-001; 004	3	30	8	24	4		
24077-006; 001	3	31	8	3	4		
24077-013; 012	3	32	18	68	13		
24077-007; 008	3	33	~~15~~ 16	39	11		E3 ND 2/24/14
24077-008; 009	3	34	12	0	10		
24077-000; 000	3	35	16	89	11		
24077-014; 013	3	36	17	37	11		
24077-010; 002	3	37	13	2	6	KL	
24077-012; 003	3	38	E3 2/26 ~~19~~ 20	E3 2/26 ~~62~~ 23	10		
24077-011; 011	3	39	9	7	9		
24077-002; 005	3	40	20	28	9		
24077-009; 010	3	41	7	0	5		
24077-005; 007	3	42	16	30	8		
24077-013; 012	4	43	18	73	12		
24077-005; 007	4	44	12	103	7		
24077-003; 006	4	45	18	40	8		
24077-006; 001	4	46	13	14	10		
24077-007; 008	4	47	6	7	4		
24077-008; 009	4	48	~~17~~ 16	2	14		E3 ND 2/24/14
24077-002; 005	4	49	17	39	9	RS	
24077-000; 000	4	50	~~20~~ 19	140	10	RaH	E3 ND 2/24/14

Leptocheirus plumulosus Day 28 Recovery

STUDY: 24077 **CLIENT:** AECOM

DATE: 02/20/14 **PROJECT:** Carr Point MRP Site 1, Naval Station, Newport, Rhode Island

Sample Code	Rep	Pos	# Alive			Initials
			total	juveniles	females	
24077-014; 013	4	51	189 (E2) RAM	41	10	RAM
24077-011; 011	4	52	8	0	5	
24077-001; 004	4	53	18	50	12	
24077-009; 010	4	54	13	4	12	
24077-010; 002	4	55	13	12	9	
24077-012; 003	4	56	15	51	9	
24077-014; 013	5	57	14 ~~15~~	53	7	
24077-001; 004	5	58	16	49	7	
24077-009; 010	5	59	8	2	6	
24077-002; 005	5	60	14 ~~16~~	114	7	
24077-000; 000	5	61	18	102	5	JTP
24077-008; 009	5	62	8	29	6	
24077-012; 003	5	63	6	7	5	
24077-006; 001	5	64	12	40	8	
24077-003; 006	5	65	~~16~~ 15	37	10	
24077-011; 011	5	66	10	0	9	
24077-005; 007	5	67	13	56	8	
24077-007; 008	5	68	16	70	~~6~~ 9	
24077-010; 002	5	69	14	9	6	
24077-013; 012	5	70	14 ~~16~~	46	8	
24077-006; 001	6	71	13 ~~14~~	10	7	ND
24077-011; 011	6	72	3	0	0	EH
24077-010; 002	6	73	~~18~~ 17	7	12	UB
24077-000; 000	6	74	16	78	7	UB
24077-001; 004	6	75	11	35	6	UB

Leptocheirus plumulosus Day 28 Recovery

STUDY: 24077	CLIENT: AECOM
DATE: 02/20/14	PROJECT: Carr Point MRP Site 1, Naval Station, Newport, Rhode Island

Sample Code	Rep	Pos	# Alive			Initials
			total	juveniles	females	
24077-008; 009	6	76	14	3	9	K
24077-005; 007	6	77	14	22	8	↓
24077-014; 013	6	78	16	44	9	↓
24077-003; 006	6	79	16	23	13	↓
24077-012; 003	6	80	13	47	6	↓
24077-002; 005	6	81	14	74	9	↓
24077-013; 012	6	82	12	4	6	EH
24077-007; 008	6	83	5	1	5	CS
24077-009; 010	6	84	3	0	2	ND
24077-010; 002	7	85	~~13~~ 12	0	6	EH
24077-000; 000	7	86	15	43	9	↓
24077-005; 007	7	87	~~1~~ 12	22	6	↓
24077-014; 013	7	88	8	0	5	↓
24077-002; 005	7	89	9	0	6	↓
24077-003; 006	7	90	14	15	9	↓
24077-001; 004	7	91	~~1~~ 16	69	8	↓
24077-008; 009	7	92	17	16	9	↓
24077-013; 012	7	93	12	19	6	↓
24077-012; 003	7	94	14	24	8	↓
24077-007; 008	7	95	12	16	2	↓
24077-009; 010	7	96	7	0	7	↓
24077-006; 001	7	97	17	35	8	CS
24077-011; 011	7	98	1	2	1	ND
24077-014; 013	8	99	16	38	9	CS
24077-003; 006	8	100	12	20	7	ND

(E3) ND 2/24/14

(E3) ND 2/24/14

Leptocheirus plumulosus Day 28 Recovery

STUDY: 24077	CLIENT: AECOM
DATE: 02/20/14	PROJECT: Carr Point MRP Site 1, Naval Station, Newport, Rhode Island

Sample Code	Rep	Pos	# Alive			Initials
			total	juveniles	females	
24077-006; 001	8	101	6	1	1	CJ
24077-000; 000	8	102	18	30	11	RQH
24077-013; 012	8	103	18	36	7	↓
24077-011; 011	8	104	8	4	3	↓
24077-010; 002	8	105	11	20	6	ND
24077-002; 005	8	106	~~7~~ 6	10	2	↓
24077-005; 007	8	107	19	44	8	CJ
24077-007; 008	8	108	12	40	5	ND
24077-009; 010	8	109	6	0	0	RQH
24077-001; 004	8	110	18	55	8	↓
24077-012; 003	8	111	13	40	10	↓
24077-008; 009	8	112	14	30	8	↓

Leptocheirus plumulosus Sediment Evaluation
Initial Weight

Study: 24077

Client: AECOM

Project: Carr Point MRP Site 1, Naval Station, Newport, Rhode Island

	REP	TARE WEIGHT (mg)	*L. plumulosus* + FOIL (mg)	NET WEIGHT (mg)	# *L. plumulosus*	MEAN DRY WEIGHT PER Individual (mg)
START ORGANISMS	A	208.46	208.71	0.25	10	0.025
	B	208.64	209.20	0.56	10	0.056
	C	207.21	207.52	0.31	~~10~~ 9	0.0344
	D	208.10	208.55	0.45	10	0.045
RECORDED BY:		JTP	JTP	Overall Mean Dry Weight Per Individual:		
DATE:		02/06/14	02/07/14	0.0401 mg		

NOTES:

STUDY: 24077
CLIENT: AECOM
PROJECT: Carr Point MRP Site 1, Naval Station, Newport, Rhode Island
ASSAY: Leptocheirus plumulosus 28 Day Sediment Assay
TASK: Dry Weight Data - AccuSeries Balance Output File
BALANCE: AccuSeries Model 225D
Serial #: 17008376

Date / Initial:	03/06/14 GL	02/18/14 GL	Duplicates	
Position	Total Wt (mg)	Tare Wt (mg)	Total Wt (mg)	Tare Wt (mg)
001	215.17	206.41		
002	229.33	208.14		
003	223.67	208.59		
004	227.60	207.53		
005	213.82	207.95		
006	214.61	208.13		
007	227.12	208.84		
008	222.87	208.59		
009	225.30	208.20		
010	213.59	208.17		
011	220.64	207.75		
012	212.40	207.20		
013	215.33	208.29		
014		208.60		
015	223.02	208.04		
016	222.27	208.08		
017	209.07	207.23		
018	217.17	208.46		
019	228.94	207.93		
020	225.63	208.38	225.63	208.40
021	216.72	206.44		
022	218.70	208.84		
023	214.58	207.98		
024	208.27	207.68		
025	228.07	208.26		
026	228.84	208.19		
027	223.10	207.85		
028	224.20	207.74		
029	224.77	207.01		
030	216.11	209.00		
031	213.16	207.73		
032	228.36	210.21		
033	221.78	206.34		
034	213.98	207.80		
035	220.29	207.59		
036	225.80	208.93		
037	223.23	207.13		

Date / Initial:	03/06/14 GL	02/18/14 GL	Duplicates	
Position	Total Wt (mg)	Tare Wt (mg)	Total Wt (mg)	Tare Wt (mg)
038	232.78	208.80		
039	210.11	208.02		
040	230.52	207.56	230.55	207.58
041	211.38	206.78		
042	223.78	207.71		
043	228.94	207.45		
044	220.45	207.66		
045	232.28	207.90		
046	219.74	209.73		
047	213.09	207.44		
048	217.68	210.23		
049	231.52	208.30		
050	235.57	207.30		
051	227.07	207.59		
052	211.36	207.71		
053	223.89	207.21		
054	214.85	208.15		
055	220.90	210.25		
056	221.37	210.09		
057	223.12	208.03		
058	228.61	208.10		
059	211.75	206.89		
060	224.51	208.32	224.51	208.30
061	229.70	208.34		
062	212.78	208.64		
063	210.92	208.37		
064	222.14	209.23		
065	219.50	208.45		
066	210.54	207.93		
067	220.32	208.92		
068	223.00	210.12		
069	217.11	207.99		
070	217.93	209.09		
071	218.20	207.57		
072	211.05	209.11		
073	220.86	208.03		
074	229.28	208.74		
075	219.73	208.74		
076	212.79	206.97		
077	222.06	207.18		
078	222.02	207.51		
079	223.31	209.36		
080	225.60	208.76	225.58	208.76
081	227.45	210.49		
082	220.44	206.07		

Date / Initial:	03/06/14 GL	02/18/14 GL	Duplicates	
Position	Total Wt (mg)	Tare Wt (mg)	Total Wt (mg)	Tare Wt (mg)
083	209.65	206.94		
084	210.64	209.72		
085	225.02	210.16		
086	230.63	206.43		
087	227.36	207.52		
088	218.20	208.36		
089	215.48	207.29		
090	222.75	206.51		
091	227.67	207.90		
092	220.67	208.61		
093	218.03	209.53		
094	220.45	208.11		
095	220.31	209.27		
096	208.40	206.80		
097	222.93	208.19		
098	208.48	207.97		
099	222.51	208.06		
100	218.66	208.52	218.70	208.51
101	208.19	207.03		
102	226.57	208.59		
103	224.39	207.21		
104	211.13	207.38		
105	219.16	209.10		
106	209.63	207.85		
107	223.06	208.69		
108	223.49	209.13		
109	211.37	206.78		
110	229.28	208.78		
111	224.40	209.56		
112	214.40	207.56	214.43	207.60

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-000; 000	18-1601-2962	03 Jan-14 12:00	03 Jan-14 12:00	13d 0h	AECOM	Ecological Risk Asse
24077-006; 001	07-4145-0866	11 Dec-13 09:06	11 Dec-13 12:15	36d 3h		
24077-010; 002	10-5151-8705	13 Dec-13 09:50	18 Dec-13 11:30	34d 2h		
24077-012; 003	20-3314-4845	13 Dec-13 10:45	18 Dec-13 11:30	34d 1h		
24077-001; 004	02-3274-4005	04 Dec-13 12:10	06 Dec-13 13:30	43d		
24077-002; 005	01-7804-1542	05 Dec-13 10:45	06 Dec-13 13:30	42d 1h		
24077-003; 006	06-6548-1906	05 Dec-13 12:54	06 Dec-13 13:30	41d 23h		
24077-005; 007	00-8496-1430	10 Dec-13 09:39	11 Dec-13 12:15	37d 2h		
24077-007; 008	21-1048-1554	11 Dec-13 13:29	13 Dec-13 08:35	35d 23h		
24077-008; 009	08-1847-2615	12 Dec-13 07:50	13 Dec-13 08:35	35d 4h		
24077-009; 010	18-6710-2589	12 Dec-13 09:15	13 Dec-13 08:35	35d 3h		
24077-011; 011	10-2024-6603	13 Dec-13 10:10	18 Dec-13 11:30	34d 2h		
24077-013; 012	08-9458-1886	17 Dec-13 09:55	18 Dec-13 11:30	30d 2h		
24077-014; 013	10-4129-5048	17 Dec-13 11:00	18 Dec-13 11:30	30d 1h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-000; 000	Laboratory Control S	Carr Point MRP Site 1, Naval Stat	Laboratory Control; 24077-000		
24077-006; 001	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD302 0012; 24077-006		
24077-010; 002	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD304 0012; 24077-010		
24077-012; 003	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD303 0012; 24077-012		
24077-001; 004	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD121 0012; 24077-001		
24077-002; 005	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD120 0012; 24077-002		
24077-003; 006	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD112 0012; 24077-003		
24077-005; 007	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD106 0012; 24077-005		
24077-007; 008	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD118 0012; 24077-007		
24077-008; 009	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD124 0012; 24077-008		
24077-009; 010	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD122 0012; 24077-009		
24077-011; 011	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD102 0012; 24077-011		
24077-013; 012	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD115 0012; 24077-013		
24077-014; 013	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD114 0012; 24077-014		

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Mean Dry Biomass-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
24077-000; 000	8	0.9996	0.7938	1.205	0.635	1.414	0.08706	0.2462	24.63%	0.0%
24077-006; 001	8	0.5082	0.2475	0.7689	0.058	1.051	0.1103	0.3119	61.37%	49.16%
24077-010; 002	8	0.5551	0.4188	0.6913	0.324	0.805	0.05763	0.163	29.37%	44.47%
24077-012; 003	8	0.7517	0.4765	1.027	0.1275	1.199	0.1164	0.3291	43.79%	24.8%
24077-001; 004	8	0.8256	0.6171	1.034	0.3555	1.025	0.08816	0.2493	30.2%	17.41%
24077-002; 005	8	0.6835	0.3569	1.01	0.089	1.161	0.1381	0.3906	57.15%	31.62%
24077-003; 006	8	0.74	0.5065	0.9735	0.33	1.219	0.09876	0.2793	37.75%	25.97%
24077-005; 007	8	0.6526	0.4691	0.8361	0.26	0.992	0.0776	0.2195	33.64%	34.72%
24077-007; 008	8	0.5726	0.3733	0.7718	0.1355	0.772	0.08427	0.2384	41.63%	42.72%
24077-008; 009	8	0.3738	0.2678	0.4798	0.207	0.603	0.04483	0.1268	33.92%	62.6%
24077-009; 010	8	0.2117	0.099	0.3244	0.046	0.438	0.04765	0.1348	63.67%	78.82%
24077-011; 011	7	0.1081	0.04788	0.1684	0.0255	0.1875	0.02463	0.06516	60.26%	89.18%
24077-013; 012	8	0.7538	0.5657	0.9419	0.425	1.075	0.07955	0.225	29.85%	24.59%
24077-014; 013	8	0.7736	0.6277	0.9196	0.492	1.032	0.06172	0.1746	22.57%	22.61%

Mean Dry Weight-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
24077-000; 000	8	1.21	0.9392	1.481	0.7937	1.613	0.1146	0.3242	26.78%	0.0%
24077-006; 001	8	0.7801	0.5175	1.043	0.1933	1.236	0.111	0.3141	40.26%	35.54%
24077-010; 002	8	0.8828	0.6883	1.077	0.6514	1.238	0.08227	0.2327	26.36%	27.05%
24077-012; 003	8	0.9711	0.7367	1.205	0.425	1.295	0.09912	0.2803	28.87%	19.76%
24077-001; 004	8	1.107	0.978	1.235	0.8888	1.282	0.05434	0.1537	13.89%	8.57%
24077-002; 005	8	0.9545	0.6499	1.259	0.2967	1.366	0.1288	0.3643	38.16%	21.13%
24077-003; 006	8	0.9776	0.7657	1.189	0.6	1.354	0.08958	0.2534	25.92%	19.22%
24077-005; 007	8	0.9627	0.6865	1.239	0.5778	1.653	0.1168	0.3304	34.32%	20.45%
24077-007; 008	8	0.9174	0.7608	1.074	0.542	1.197	0.06621	0.1873	20.41%	24.2%
24077-008; 009	8	0.5196	0.4394	0.5997	0.4157	0.7094	0.03389	0.09584	18.45%	57.07%
24077-009; 010	8	0.504	0.3486	0.6595	0.2286	0.765	0.06575	0.186	36.9%	58.35%
24077-011; 011	7	0.41	0.2694	0.5506	0.2322	0.6467	0.05745	0.152	37.08%	66.12%
24077-013; 012	8	0.958	0.7848	1.131	0.6314	1.197	0.07325	0.2072	21.63%	20.84%
24077-014; 013	8	1.043	0.9196	1.167	0.9031	1.291	0.05234	0.148	14.19%	13.79%

Offspring/Surviving Female Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
24077-000; 000	8	9.529	4.441	14.62	2.727	20.4	2.152	6.086	63.86%	0.0%
24077-006; 001	8	2.244	0.6513	3.837	0	5	0.6736	1.905	84.9%	76.45%
24077-010; 002	8	1.212	0.3565	2.067	0	3.333	0.3617	1.023	84.43%	87.28%
24077-012; 003	8	5.903	2.04	9.765	1.4	16.11	1.634	4.62	78.28%	38.06%
24077-001; 004	8	6.134	4.764	7.504	3.571	8.625	0.5794	1.639	26.72%	35.63%
24077-002; 005	8	5.887	1.589	10.18	0	16.29	1.817	5.141	87.32%	38.22%
24077-003; 006	8	3.01	1.447	4.573	0.5556	6.2	0.6609	1.869	62.1%	68.41%
24077-005; 007	8	4.987	1.309	8.665	0.8	14.71	1.555	4.399	88.21%	47.66%
24077-007; 008	8	5.006	2.447	7.566	0.2	8	1.082	3.061	61.14%	47.46%
24077-008; 009	8	1.542	0.02874	3.056	0	4.833	0.64	1.81	117.4%	83.82%
24077-009; 010	7	0.9683	-0.7158	2.652	0	5	0.6882	1.821	188.1%	89.84%
24077-011; 011	6	0.6852	-0.2011	1.571	0	2	0.3448	0.8445	123.3%	92.81%
24077-013; 012	8	3.635	1.805	5.465	0.6667	6.083	0.7739	2.189	60.21%	61.85%
24077-014; 013	8	4.202	2.324	6.081	0	7.571	0.7945	2.247	53.48%	55.9%

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Proportion Survived Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
24077-000; 000	8	0.8375	0.7488	0.9262	0.65	0.95	0.0375	0.1061	12.66%	0.0%
24077-006; 001	8	0.5938	0.4259	0.7616	0.3	0.85	0.07099	0.2008	33.82%	29.1%
24077-010; 002	8	0.6313	0.534	0.7285	0.45	0.85	0.04112	0.1163	18.42%	24.63%
24077-012; 003	8	0.7375	0.5482	0.9268	0.3	1	0.08004	0.2264	30.7%	11.94%
24077-001; 004	8	0.7375	0.5815	0.8935	0.4	0.9	0.06597	0.1866	25.3%	11.94%
24077-002; 005	8	0.6563	0.4714	0.8411	0.3	1	0.07817	0.2211	33.69%	21.64%
24077-003; 006	8	0.7375	0.6407	0.8343	0.55	0.9	0.04092	0.1157	15.69%	11.94%
24077-005; 007	8	0.6812	0.557	0.8055	0.45	0.95	0.05256	0.1487	21.82%	18.66%
24077-007; 008	8	0.6062	0.4228	0.7897	0.25	0.8	0.0776	0.2195	36.2%	27.61%
24077-008; 009	8	0.7125	0.5846	0.8404	0.4	0.85	0.05408	0.1529	21.47%	14.93%
24077-009; 010	8	0.4	0.2313	0.5687	0.15	0.75	0.07134	0.2018	50.44%	52.24%
24077-011; 011	8	0.2563	0.08839	0.4241	0	0.5	0.07099	0.2008	78.35%	69.4%
24077-013; 012	8	0.7812	0.659	0.9035	0.6	0.95	0.0517	0.1462	18.72%	6.72%
24077-014; 013	8	0.75	0.6141	0.8859	0.4	0.95	0.05748	0.1626	21.68%	10.45%

Reproduction Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
24077-000; 000	8	4.417	2.688	6.145	1.667	7.368	0.731	2.068	46.81%	0.0%
24077-006; 001	8	1.267	0.2688	2.264	0	3.333	0.422	1.194	94.23%	71.32%
24077-010; 002	8	0.6812	0.2135	1.149	0	1.818	0.1978	0.5594	82.12%	84.58%
24077-012; 003	8	3.282	1.347	5.216	1.167	8.529	0.8181	2.314	70.51%	25.7%
24077-001; 004	8	3.053	2.509	3.597	1.923	4.313	0.23	0.6505	21.31%	30.88%
24077-002; 005	8	3.009	0.7492	5.27	0	8.143	0.9558	2.703	89.84%	31.86%
24077-003; 006	8	1.813	0.9391	2.688	0.4545	3.875	0.3697	1.046	57.67%	58.94%
24077-005; 007	8	2.724	0.5222	4.925	0.4444	8.583	0.9309	2.633	96.68%	38.34%
24077-007; 008	8	2.447	1.219	3.675	0.2	4.375	0.5193	1.469	60.02%	44.59%
24077-008; 009	8	0.9936	-0.06504	2.052	0	3.625	0.4477	1.266	127.4%	77.5%
24077-009; 010	8	0.528	-0.3298	1.386	0	3	0.3628	1.026	194.3%	88.04%
24077-011; 011	7	0.4683	-0.2197	1.156	0	2	0.2812	0.7439	158.9%	89.4%
24077-013; 012	8	2.076	0.8527	3.299	0.3333	4.056	0.5173	1.463	70.48%	53.0%
24077-014; 013	8	2.329	1.35	3.307	0	3.786	0.4138	1.17	50.26%	47.28%

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test **EnviroSystems, Inc.**

Mean Dry Biomass-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-000; 000	0.754	0.9905	0.635	1.414	1.068	1.027	1.21	0.899
24077-006; 001	0.271	1.051	0.2715	0.5005	0.6455	0.5315	0.737	0.058
24077-010; 002	0.324	0.4355	0.805	0.5325	0.456	0.6415	0.743	0.503
24077-012; 003	1.06	0.8625	1.199	0.564	0.1275	0.842	0.617	0.742
24077-001; 004	1.004	0.823	0.3555	0.834	1.025	0.5495	0.9885	1.025
24077-002; 005	0.2935	0.7095	1.148	1.161	0.8095	0.848	0.4095	0.089
24077-003; 006	0.914	0.33	0.888	1.219	0.5525	0.6975	0.812	0.507
24077-005; 007	0.26	0.493	0.8035	0.6395	0.57	0.744	0.992	0.7185
24077-007; 008	0.714	0.7625	0.772	0.2825	0.644	0.1355	0.552	0.718
24077-008; 009	0.352	0.514	0.309	0.3725	0.207	0.291	0.603	0.342
24077-009; 010	0.438	0.092	0.23	0.335	0.243	0.046	0.08	0.2295
24077-011; 011		0.0295	0.1045	0.1825	0.1305	0.097	0.0255	0.1875
24077-013; 012	0.855	0.749	0.9075	1.075	0.442	0.7185	0.425	0.859
24077-014; 013	0.6445	1.032	0.8435	0.974	0.7545	0.7255	0.492	0.7225

Mean Dry Weight-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-000; 000	0.7937	1.524	0.7937	1.488	1.187	1.284	1.613	0.9989
24077-006; 001	0.6022	1.236	0.6788	0.77	1.076	0.8177	0.8671	0.1933
24077-010; 002	0.72	0.7258	1.238	0.8192	0.6514	0.7547	1.238	0.9145
24077-012; 003	1.06	1.015	1.199	0.752	0.425	1.295	0.8814	1.142
24077-001; 004	1.115	1.266	0.8888	0.9267	1.282	0.9991	1.236	1.139
24077-002; 005	0.5336	1.014	1.148	1.366	1.156	1.211	0.91	0.2967
24077-003; 006	1.142	0.6	1.11	1.354	0.7367	0.8719	1.16	0.845
24077-005; 007	0.5778	0.7043	1.004	1.066	0.8769	1.063	1.653	0.7563
24077-007; 008	0.952	1.017	0.965	0.9417	0.805	0.542	0.92	1.197
24077-008; 009	0.44	0.6047	0.515	0.4656	0.5175	0.4157	0.7094	0.4886
24077-009; 010	0.584	0.368	0.6571	0.5154	0.6075	0.3067	0.2286	0.765
24077-011; 011	0.295	0.2322	0.4562	0.261	0.6467	0.51	0.4688	
24077-013; 012	0.9	1.07	1.008	1.194	0.6314	1.197	0.7083	0.9544
24077-014; 013	0.9207	1.291	0.9924	1.025	1.078	0.9069	1.23	0.9031

Offspring/Surviving Female Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-000; 000	3.091	12	8.091	14	20.4	11.14	4.778	2.727
24077-006; 001	0	4	0.75	1.4	5	1.429	4.375	1
24077-010; 002	1.5	1.111	0.3333	1.333	1.5	0.5833	0	3.333
24077-012; 003	2.909	16.11	6.3	5.667	1.4	7.833	3	4
24077-001; 004	7	3.571	6	4.167	7	5.833	8.625	6.875
24077-002; 005	1.571	8.571	3.111	4.333	16.29	8.222	0	5
24077-003; 006	6.2	0.5556	2.333	5	3.7	1.769	1.667	2.857
24077-005; 007	0.8	1.714	3.75	14.71	7	2.75	3.667	5.5
24077-007; 008	6.778	4	3.545	1.75	7.778	0.2	8	8
24077-008; 009	0.5	1	0	0.1429	4.833	0.3333	1.778	3.75
24077-009; 010	1.111	5	0	0.3333	0.3333	0	0	
24077-011; 011	0	0.7778	0	0	2	1.333		
24077-013; 012	1.9	1.143	5.231	6.083	5.75	0.6667	3.167	5.143
24077-014; 013	6.25	3.222	3.364	4.1	7.571	4.889	0	4.222

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Proportion Survived Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-000; 000	0.95	0.65	0.8	0.95	0.9	0.8	0.75	0.9
24077-006; 001	0.45	0.85	0.4	0.65	0.6	0.65	0.85	0.3
24077-010; 002	0.45	0.6	0.65	0.65	0.7	0.85	0.6	0.55
24077-012; 003	1	0.85	1	0.75	0.3	0.65	0.7	0.65
24077-001; 004	0.9	0.65	0.4	0.9	0.8	0.55	0.8	0.9
24077-002; 005	0.55	0.7	1	0.85	0.7	0.7	0.45	0.3
24077-003; 006	0.8	0.55	0.8	0.9	0.75	0.8	0.7	0.6
24077-005; 007	0.45	0.7	0.8	0.6	0.65	0.7	0.6	0.95
24077-007; 008	0.75	0.75	0.8	0.3	0.8	0.25	0.6	0.6
24077-008; 009	0.8	0.85	0.6	0.8	0.4	0.7	0.85	0.7
24077-009; 010	0.75	0.25	0.35	0.65	0.4	0.15	0.35	0.3
24077-011; 011	0	0.1	0.45	0.4	0.5	0.15	0.05	0.4
24077-013; 012	0.95	0.7	0.9	0.9	0.7	0.6	0.6	0.9
24077-014; 013	0.7	0.8	0.85	0.95	0.7	0.8	0.4	0.8

Reproduction Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-000; 000	1.789	5.538	5.563	7.368	5.667	4.875	2.867	1.667
24077-006; 001	0	2.353	0.375	1.077	3.333	0.7692	2.059	0.1667
24077-010; 002	0.6667	0.8333	0.1538	0.9231	0.6429	0.4118	0	1.818
24077-012; 003	1.6	8.529	3.15	3.4	1.167	3.615	1.714	3.077
24077-001; 004	3.111	1.923	3	2.778	3.063	3.182	4.313	3.056
24077-002; 005	1	4.286	1.4	2.294	8.143	5.286	0	1.667
24077-003; 006	3.875	0.4545	1.313	2.222	2.467	1.438	1.071	1.667
24077-005; 007	0.4444	0.8571	1.875	8.583	4.308	1.571	1.833	2.316
24077-007; 008	4.067	2.667	2.438	1.167	4.375	0.2	1.333	3.333
24077-008; 009	0.3125	0.5882	0	0.125	3.625	0.2143	0.9412	2.143
24077-009; 010	0.6667	3	0	0.3077	0.25	0	0	0
24077-011; 011		0	0.7778	0	0	0	2	0.5
24077-013; 012	1	0.5714	3.778	4.056	3.286	0.3333	1.583	2
24077-014; 013	3.571	1.813	2.176	2.158	3.786	2.75	0	2.375

CETIS Analytical Reports
Survival Comparisons

Carr Point MRP Site 1
Naval Station, Newport, Rhode Island

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	03-7610-9393	**Endpoint:**	Proportion Survived	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:02	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-000; 000	18-1601-2962	03 Jan-14 12:00	03 Jan-14 12:00	13d 0h	AECOM	Ecological Risk Asse
24077-006; 001	07-4145-0866	11 Dec-13 09:06	11 Dec-13 12:15	36d 3h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-000; 000	Laboratory Control S	Carr Point MRP Site 1, Naval Stat	Laboratory Control; 24077-000		
24077-006; 001	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD302 0012; 24077-006		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Angular (Corrected)	NA	C > T	NA	NA	14.3%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-000; 000		24077-006; 001	3.085	1.761	0.163	14	0.0040	CDF	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	1.73	2.586	1.0000	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.3250321	0.3250321	1	9.52	0.0081	Significant Effect
Error	0.4780048	0.0341432	14			
Total	0.8030369		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	2.17	8.885	0.3282	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9682	0.8408	0.8095	Normal Distribution

Proportion Survived Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-000; 000	8	0.8375	0.7488	0.9262	0.85	0.65	0.95	0.0375	12.66%	0.0%
24077-006; 001	8	0.5938	0.4259	0.7616	0.625	0.3	0.85	0.07099	33.82%	29.1%

Angular (Corrected) Transformed Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-000; 000	8	1.173	1.051	1.296	1.178	0.9377	1.345	0.05189	12.51%	0.0%
24077-006; 001	8	0.8884	0.7077	1.069	0.9119	0.5796	1.173	0.07644	24.34%	24.29%

Proportion Survived Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-000; 000	0.95	0.65	0.8	0.95	0.9	0.8	0.75	0.9
24077-006; 001	0.45	0.85	0.4	0.65	0.6	0.65	0.85	0.3

Angular (Corrected) Transformed Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-000; 000	1.345	0.9377	1.107	1.345	1.249	1.107	1.047	1.249
24077-006; 001	0.7353	1.173	0.6847	0.9377	0.8861	0.9377	1.173	0.5796

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	03-3276-6426	**Endpoint:**	Proportion Survived	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:02	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-000; 000	18-1601-2962	03 Jan-14 12:00	03 Jan-14 12:00	13d 0h	AECOM	Ecological Risk Asse
24077-010; 002	10-5151-8705	13 Dec-13 09:50	18 Dec-13 11:30	34d 2h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-000; 000	Laboratory Control S	Carr Point MRP Site 1, Naval Stat	Laboratory Control; 24077-000		
24077-010; 002	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD304 0012; 24077-010		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Angular (Corrected)	NA	C > T	NA	NA	9.9%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-000; 000		24077-010; 002	3.65	1.761	0.121	14	0.0013	CDF	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	1.886	2.586	0.7523	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.2513027	0.2513027	1	13.33	0.0026	Significant Effect
Error	0.2640113	0.01885795	14			
Total	0.515314		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.331	8.885	0.7152	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9807	0.8408	0.9686	Normal Distribution

Proportion Survived Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-000; 000	8	0.8375	0.7488	0.9262	0.85	0.65	0.95	0.0375	12.66%	0.0%
24077-010; 002	8	0.6313	0.534	0.7285	0.625	0.45	0.85	0.04112	18.42%	24.63%

Angular (Corrected) Transformed Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-000; 000	8	1.173	1.051	1.296	1.178	0.9377	1.345	0.05189	12.51%	0.0%
24077-010; 002	8	0.9228	0.8165	1.029	0.9119	0.7353	1.173	0.04497	13.78%	21.36%

Proportion Survived Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-000; 000	0.95	0.65	0.8	0.95	0.9	0.8	0.75	0.9
24077-010; 002	0.45	0.6	0.65	0.65	0.7	0.85	0.6	0.55

Angular (Corrected) Transformed Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-000; 000	1.345	0.9377	1.107	1.345	1.249	1.107	1.047	1.249
24077-010; 002	0.7353	0.8861	0.9377	0.9377	0.9912	1.173	0.8861	0.8355

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	17-1307-5828	**Endpoint:**	Proportion Survived	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:02	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-000; 000	18-1601-2962	03 Jan-14 12:00	03 Jan-14 12:00	13d 0h	AECOM	Ecological Risk Asse
24077-012; 003	20-3314-4845	13 Dec-13 10:45	18 Dec-13 11:30	34d 1h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-000; 000	Laboratory Control S	Carr Point MRP Site 1, Naval Stat	Laboratory Control; 24077-000		
24077-012; 003	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD303 0012; 24077-012		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Angular (Corrected)	NA	C > T	NA	NA	18.7%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-000; 000		24077-012; 003	0.8707	1.761	0.203	14	0.1993	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.213	2.586	0.2580	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.04038088	0.04038088	1	0.7581	0.3986	Non-Significant Effect
Error	0.7457665	0.05326904	14			
Total	0.7861474		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	3.946	8.885	0.0905	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9548	0.8408	0.5690	Normal Distribution

Proportion Survived Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-000; 000	8	0.8375	0.7488	0.9262	0.85	0.65	0.95	0.0375	12.66%	0.0%
24077-012; 003	8	0.7375	0.5482	0.9268	0.725	0.3	1	0.08004	30.7%	11.94%

Angular (Corrected) Transformed Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-000; 000	8	1.173	1.051	1.296	1.178	0.9377	1.345	0.05189	12.51%	0.0%
24077-012; 003	8	1.073	0.8293	1.317	1.019	0.5796	1.459	0.1031	27.17%	8.56%

Proportion Survived Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-000; 000	0.95	0.65	0.8	0.95	0.9	0.8	0.75	0.9
24077-012; 003	1	0.85	1	0.75	0.3	0.65	0.7	0.65

Angular (Corrected) Transformed Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-000; 000	1.345	0.9377	1.107	1.345	1.249	1.107	1.047	1.249
24077-012; 003	1.459	1.173	1.459	1.047	0.5796	0.9377	0.9912	0.9377

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	14-2588-5865	**Endpoint:**	Proportion Survived	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:02	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-000; 000	18-1601-2962	03 Jan-14 12:00	03 Jan-14 12:00	13d 0h	AECOM	Ecological Risk Asse
24077-001; 004	02-3274-4005	04 Dec-13 12:10	06 Dec-13 13:30	43d		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-000; 000	Laboratory Control S	Carr Point MRP Site 1, Naval Stat	Laboratory Control; 24077-000		
24077-001; 004	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD121 0012; 24077-001		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Angular (Corrected)	NA	C > T	NA	NA	14.1%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-000; 000		24077-001; 004	1.324	1.761	0.161	14	0.1033	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.081	2.586	0.4102	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.05862652	0.05862652	1	1.753	0.2067	Non-Significant Effect
Error	0.4681631	0.03344022	14			
Total	0.5267896		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	2.105	8.885	0.3472	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9129	0.8408	0.1296	Normal Distribution

Proportion Survived Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-000; 000	8	0.8375	0.7488	0.9262	0.85	0.65	0.95	0.0375	12.66%	0.0%
24077-001; 004	8	0.7375	0.5815	0.8935	0.8	0.4	0.9	0.06597	25.3%	11.94%

Angular (Corrected) Transformed Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-000; 000	8	1.173	1.051	1.296	1.178	0.9377	1.345	0.05189	12.51%	0.0%
24077-001; 004	8	1.052	0.8744	1.23	1.107	0.6847	1.249	0.07528	20.23%	10.32%

Proportion Survived Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-000; 000	0.95	0.65	0.8	0.95	0.9	0.8	0.75	0.9
24077-001; 004	0.9	0.65	0.4	0.9	0.8	0.55	0.8	0.9

Angular (Corrected) Transformed Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-000; 000	1.345	0.9377	1.107	1.345	1.249	1.107	1.047	1.249
24077-001; 004	1.249	0.9377	0.6847	1.249	1.107	0.8355	1.107	1.249

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	08-3781-7935	**Endpoint:**	Proportion Survived	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:02	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-000; 000	18-1601-2962	03 Jan-14 12:00	03 Jan-14 12:00	13d 0h	AECOM	Ecological Risk Asse
24077-002; 005	01-7804-1542	05 Dec-13 10:45	06 Dec-13 13:30	42d 1h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-000; 000	Laboratory Control S	Carr Point MRP Site 1, Naval Stat	Laboratory Control; 24077-000		
24077-002; 005	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD120 0012; 24077-002		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Angular (Corrected)	NA	C > T	NA	NA	17.4%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-000; 000		24077-002; 005	1.882	1.761	0.191	14	0.0404	CDF	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.336	2.586	0.1588	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.1664916	0.1664916	1	3.543	0.0807	Non-Significant Effect
Error	0.6577985	0.04698561	14			
Total	0.8242902		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	3.363	8.885	0.1321	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9713	0.8408	0.8595	Normal Distribution

Proportion Survived Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-000; 000	8	0.8375	0.7488	0.9262	0.85	0.65	0.95	0.0375	12.66%	0.0%
24077-002; 005	8	0.6563	0.4714	0.8411	0.7	0.3	1	0.07817	33.69%	21.64%

Angular (Corrected) Transformed Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-000; 000	8	1.173	1.051	1.296	1.178	0.9377	1.345	0.05189	12.51%	0.0%
24077-002; 005	8	0.9695	0.7445	1.194	0.9912	0.5796	1.459	0.09515	27.76%	17.39%

Proportion Survived Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-000; 000	0.95	0.65	0.8	0.95	0.9	0.8	0.75	0.9
24077-002; 005	0.55	0.7	1	0.85	0.7	0.7	0.45	0.3

Angular (Corrected) Transformed Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-000; 000	1.345	0.9377	1.107	1.345	1.249	1.107	1.047	1.249
24077-002; 005	0.8355	0.9912	1.459	1.173	0.9912	0.9912	0.7353	0.5796

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	03-3728-1473	**Endpoint:**	Proportion Survived	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:02	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-000; 000	18-1601-2962	03 Jan-14 12:00	03 Jan-14 12:00	13d 0h	AECOM	Ecological Risk Asse
24077-003; 006	06-6548-1906	05 Dec-13 12:54	06 Dec-13 13:30	41d 23h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-000; 000	Laboratory Control S	Carr Point MRP Site 1, Naval Stat	Laboratory Control; 24077-000		
24077-003; 006	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD112 0012; 24077-003		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Angular (Corrected)	NA	C > T	NA	NA	10.2%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-000; 000		24077-003; 006	1.883	1.761	0.124	14	0.0403	CDF	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	1.738	2.586	1.0000	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.06989305	0.06989305	1	3.546	0.0806	Non-Significant Effect
Error	0.2759419	0.01971013	14			
Total	0.3458349		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.205	8.885	0.8124	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9497	0.8408	0.4849	Normal Distribution

Proportion Survived Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-000; 000	8	0.8375	0.7488	0.9262	0.85	0.65	0.95	0.0375	12.66%	0.0%
24077-003; 006	8	0.7375	0.6407	0.8343	0.775	0.55	0.9	0.04092	15.69%	11.94%

Angular (Corrected) Transformed Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-000; 000	8	1.173	1.051	1.296	1.178	0.9377	1.345	0.05189	12.51%	0.0%
24077-003; 006	8	1.041	0.9295	1.153	1.077	0.8355	1.249	0.04728	12.84%	11.26%

Proportion Survived Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-000; 000	0.95	0.65	0.8	0.95	0.9	0.8	0.75	0.9
24077-003; 006	0.8	0.55	0.8	0.9	0.75	0.8	0.7	0.6

Angular (Corrected) Transformed Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-000; 000	1.345	0.9377	1.107	1.345	1.249	1.107	1.047	1.249
24077-003; 006	1.107	0.8355	1.107	1.249	1.047	1.107	0.9912	0.8861

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	06-0882-2819	**Endpoint:**	Proportion Survived	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:01	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-000; 000	18-1601-2962	03 Jan-14 12:00	03 Jan-14 12:00	13d 0h	AECOM	Ecological Risk Asse
24077-005; 007	00-8496-1430	10 Dec-13 09:39	11 Dec-13 12:15	37d 2h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-000; 000	Laboratory Control S	Carr Point MRP Site 1, Naval Stat	Laboratory Control; 24077-000		
24077-005; 007	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD106 0012; 24077-005		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Angular (Corrected)	NA	C > T	NA	NA	12.4%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-000; 000		24077-005; 007	2.289	1.761	0.145	14	0.0191	CDF	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.264	2.586	0.2119	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.1421175	0.1421175	1	5.24	0.0381	Significant Effect
Error	0.3797184	0.02712274	14			
Total	0.5218358		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.519	8.885	0.5951	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9652	0.8408	0.7554	Normal Distribution

Proportion Survived Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-000; 000	8	0.8375	0.7488	0.9262	0.85	0.65	0.95	0.0375	12.66%	0.0%
24077-005; 007	8	0.6812	0.557	0.8055	0.675	0.45	0.95	0.05256	21.82%	18.66%

Angular (Corrected) Transformed Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-000; 000	8	1.173	1.051	1.296	1.178	0.9377	1.345	0.05189	12.51%	0.0%
24077-005; 007	8	0.985	0.8338	1.136	0.9645	0.7353	1.345	0.06394	18.36%	16.06%

Proportion Survived Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-000; 000	0.95	0.65	0.8	0.95	0.9	0.8	0.75	0.9
24077-005; 007	0.45	0.7	0.8	0.6	0.65	0.7	0.6	0.95

Angular (Corrected) Transformed Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-000; 000	1.345	0.9377	1.107	1.345	1.249	1.107	1.047	1.249
24077-005; 007	0.7353	0.9912	1.107	0.8861	0.9377	0.9912	0.8861	1.345

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	07-4930-8884	**Endpoint:**	Proportion Survived	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:01	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-000; 000	18-1601-2962	03 Jan-14 12:00	03 Jan-14 12:00	13d 0h	AECOM	Ecological Risk Asse
24077-007; 008	21-1048-1554	11 Dec-13 13:29	13 Dec-13 08:35	35d 23h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-000; 000	Laboratory Control S	Carr Point MRP Site 1, Naval Stat	Laboratory Control; 24077-000		
24077-007; 008	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD118 0012; 24077-007		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Angular (Corrected)	NA	C > T	NA	NA	15.1%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-000; 000		24077-007; 008	2.846	1.761	0.171	14	0.0065	CDF	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.002	2.586	0.5306	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.3035491	0.3035491	1	8.101	0.0129	Significant Effect
Error	0.524591	0.03747079	14			
Total	0.8281401		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	2.479	8.885	0.2539	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9047	0.8408	0.0957	Normal Distribution

Proportion Survived Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-000; 000	8	0.8375	0.7488	0.9262	0.85	0.65	0.95	0.0375	12.66%	0.0%
24077-007; 008	8	0.6063	0.4228	0.7897	0.675	0.25	0.8	0.0776	36.2%	27.61%

Angular (Corrected) Transformed Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-000; 000	8	1.173	1.051	1.296	1.178	0.9377	1.345	0.05189	12.51%	0.0%
24077-007; 008	8	0.898	0.7048	1.091	0.9666	0.5236	1.107	0.0817	25.73%	23.48%

Proportion Survived Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-000; 000	0.95	0.65	0.8	0.95	0.9	0.8	0.75	0.9
24077-007; 008	0.75	0.75	0.8	0.3	0.8	0.25	0.6	0.6

Angular (Corrected) Transformed Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-000; 000	1.345	0.9377	1.107	1.345	1.249	1.107	1.047	1.249
24077-007; 008	1.047	1.047	1.107	0.5796	1.107	0.5236	0.8861	0.8861

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	20-0133-7161	**Endpoint:**	Proportion Survived	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:01	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-000; 000	18-1601-2962	03 Jan-14 12:00	03 Jan-14 12:00	13d 0h	AECOM	Ecological Risk Asse
24077-008; 009	08-1847-2615	12 Dec-13 07:50	13 Dec-13 08:35	35d 4h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-000; 000	Laboratory Control S	Carr Point MRP Site 1, Naval Stat	Laboratory Control; 24077-000		
24077-008; 009	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD124 0012; 24077-008		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Angular (Corrected)	NA	C > T	NA	NA	11.7%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-000; 000		24077-008; 009	2.031	1.761	0.138	14	0.0309	CDF	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.174	2.586	0.2975	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.1014894	0.1014894	1	4.123	0.0617	Non-Significant Effect
Error	0.3445815	0.02461296	14			
Total	0.4460709		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.285	8.885	0.7488	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9168	0.8408	0.1499	Normal Distribution

Proportion Survived Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-000; 000	8	0.8375	0.7488	0.9262	0.85	0.65	0.95	0.0375	12.66%	0.0%
24077-008; 009	8	0.7125	0.5846	0.8404	0.75	0.4	0.85	0.05408	21.47%	14.93%

Angular (Corrected) Transformed Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-000; 000	8	1.173	1.051	1.296	1.178	0.9377	1.345	0.05189	12.51%	0.0%
24077-008; 009	8	1.014	0.8751	1.153	1.049	0.6847	1.173	0.05883	16.41%	13.57%

Proportion Survived Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-000; 000	0.95	0.65	0.8	0.95	0.9	0.8	0.75	0.9
24077-008; 009	0.8	0.85	0.6	0.8	0.4	0.7	0.85	0.7

Angular (Corrected) Transformed Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-000; 000	1.345	0.9377	1.107	1.345	1.249	1.107	1.047	1.249
24077-008; 009	1.107	1.173	0.8861	1.107	0.6847	0.9912	1.173	0.9912

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	07-7901-8364	**Endpoint:**	Proportion Survived	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:01	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-000; 000	18-1601-2962	03 Jan-14 12:00	03 Jan-14 12:00	13d 0h	AECOM	Ecological Risk Asse
24077-009; 010	18-6710-2589	12 Dec-13 09:15	13 Dec-13 08:35	35d 3h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-000; 000	Laboratory Control S	Carr Point MRP Site 1, Naval Stat	Laboratory Control; 24077-000		
24077-009; 010	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD122 0012; 24077-009		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Angular (Corrected)	NA	C > T	NA	NA	14.2%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-000; 000		24077-009; 010	5.387	1.761	0.162	14	<0.0001	CDF	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.075	2.586	0.4187	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.9757459	0.9757459	1	29.02	<0.0001	Significant Effect
Error	0.4706936	0.03362097	14			
Total	1.44644		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	2.122	8.885	0.3422	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9687	0.8408	0.8176	Normal Distribution

Proportion Survived Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-000; 000	8	0.8375	0.7488	0.9262	0.85	0.65	0.95	0.0375	12.66%	0.0%
24077-009; 010	8	0.4	0.2313	0.5687	0.35	0.15	0.75	0.07134	50.44%	52.24%

Angular (Corrected) Transformed Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-000; 000	8	1.173	1.051	1.296	1.178	0.9377	1.345	0.05189	12.51%	0.0%
24077-009; 010	8	0.6796	0.5009	0.8583	0.6331	0.3977	1.047	0.07558	31.46%	42.09%

Proportion Survived Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-000; 000	0.95	0.65	0.8	0.95	0.9	0.8	0.75	0.9
24077-009; 010	0.75	0.25	0.35	0.65	0.4	0.15	0.35	0.3

Angular (Corrected) Transformed Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-000; 000	1.345	0.9377	1.107	1.345	1.249	1.107	1.047	1.249
24077-009; 010	1.047	0.5236	0.6331	0.9377	0.6847	0.3977	0.6331	0.5796

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	14-6896-9975	**Endpoint:**	Proportion Survived	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 15:58	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-000; 000	18-1601-2962	03 Jan-14 12:00	03 Jan-14 12:00	13d 0h	AECOM	Ecological Risk Asse
24077-011; 011	10-2024-6603	13 Dec-13 10:10	18 Dec-13 11:30	34d 2h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-000; 000	Laboratory Control S	Carr Point MRP Site 1, Naval Stat	Laboratory Control; 24077-000		
24077-011; 011	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD102 0012; 24077-011		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Angular (Corrected)	NA	C > T	NA	NA	16.8%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-000; 000		24077-011; 011	6.445	1.761	0.186	14	<0.0001	CDF	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	1.87	2.586	0.7876	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	1.850106	1.850106	1	41.54	<0.0001	Significant Effect
Error	0.6235852	0.0445418	14			
Total	2.473692		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	3.136	8.885	0.1546	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9446	0.8408	0.4088	Normal Distribution

Proportion Survived Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-000; 000	8	0.8375	0.7488	0.9262	0.85	0.65	0.95	0.0375	12.66%	0.0%
24077-011; 011	8	0.2563	0.08839	0.4241	0.275	0	0.5	0.07099	78.35%	69.4%

Angular (Corrected) Transformed Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-000; 000	8	1.173	1.051	1.296	1.178	0.9377	1.345	0.05189	12.51%	0.0%
24077-011; 011	8	0.4934	0.2761	0.7107	0.5412	0.112	0.7854	0.09189	52.67%	57.95%

Proportion Survived Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-000; 000	0.95	0.65	0.8	0.95	0.9	0.8	0.75	0.9
24077-011; 011	0	0.1	0.45	0.4	0.5	0.15	0.05	0.4

Angular (Corrected) Transformed Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-000; 000	1.345	0.9377	1.107	1.345	1.249	1.107	1.047	1.249
24077-011; 011	0.112	0.3218	0.7353	0.6847	0.7854	0.3977	0.2255	0.6847

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	03-1802-5057	**Endpoint:**	Proportion Survived	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 15:58	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-000; 000	18-1601-2962	03 Jan-14 12:00	03 Jan-14 12:00	13d 0h	AECOM	Ecological Risk Asse
24077-013; 012	08-9458-1886	17 Dec-13 09:55	18 Dec-13 11:30	30d 2h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-000; 000	Laboratory Control S	Carr Point MRP Site 1, Naval Stat	Laboratory Control; 24077-000		
24077-013; 012	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD115 0012; 24077-013		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Angular (Corrected)	NA	C > T	NA	NA	12.7%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-000; 000		24077-013; 012	0.8077	1.761	0.148	14	0.2164	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	1.48	2.586	1.0000	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.01829319	0.01829319	1	0.6525	0.4327	Non-Significant Effect
Error	0.3925236	0.0280374	14			
Total	0.4108168		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.603	8.885	0.5484	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9004	0.8408	0.0815	Normal Distribution

Proportion Survived Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-000; 000	8	0.8375	0.7488	0.9262	0.85	0.65	0.95	0.0375	12.66%	0.0%
24077-013; 012	8	0.7812	0.659	0.9035	0.8	0.6	0.95	0.0517	18.72%	6.72%

Angular (Corrected) Transformed Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-000; 000	8	1.173	1.051	1.296	1.178	0.9377	1.345	0.05189	12.51%	0.0%
24077-013; 012	8	1.106	0.9505	1.261	1.12	0.8861	1.345	0.0657	16.8%	5.76%

Proportion Survived Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-000; 000	0.95	0.65	0.8	0.95	0.9	0.8	0.75	0.9
24077-013; 012	0.95	0.7	0.9	0.9	0.7	0.6	0.6	0.9

Angular (Corrected) Transformed Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-000; 000	1.345	0.9377	1.107	1.345	1.249	1.107	1.047	1.249
24077-013; 012	1.345	0.9912	1.249	1.249	0.9912	0.8861	0.8861	1.249

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	00-1119-8688	**Endpoint:**	Proportion Survived	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 15:58	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-000; 000	18-1601-2962	03 Jan-14 12:00	03 Jan-14 12:00	13d 0h	AECOM	Ecological Risk Asse
24077-014; 013	10-4129-5048	17 Dec-13 11:00	18 Dec-13 11:30	30d 1h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-000; 000	Laboratory Control S	Carr Point MRP Site 1, Naval Stat	Laboratory Control; 24077-000		
24077-014; 013	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD114 0012; 24077-014		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Angular (Corrected)	NA	C > T	NA	NA	12.8%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-000; 000		24077-014; 013	1.3	1.761	0.149	14	0.1073	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.313	2.586	0.1746	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.0485143	0.0485143	1	1.69	0.2146	Non-Significant Effect
Error	0.4018416	0.02870297	14			
Total	0.4503559		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.665	8.885	0.5172	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9587	0.8408	0.6390	Normal Distribution

Proportion Survived Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-000; 000	8	0.8375	0.7488	0.9262	0.85	0.65	0.95	0.0375	12.66%	0.0%
24077-014; 013	8	0.75	0.6141	0.8859	0.8	0.4	0.95	0.05748	21.68%	10.45%

Angular (Corrected) Transformed Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-000; 000	8	1.173	1.051	1.296	1.178	0.9377	1.345	0.05189	12.51%	0.0%
24077-014; 013	8	1.063	0.905	1.222	1.107	0.6847	1.345	0.06696	17.81%	9.39%

Proportion Survived Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-000; 000	0.95	0.65	0.8	0.95	0.9	0.8	0.75	0.9
24077-014; 013	0.7	0.8	0.85	0.95	0.7	0.8	0.4	0.8

Angular (Corrected) Transformed Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-000; 000	1.345	0.9377	1.107	1.345	1.249	1.107	1.047	1.249
24077-014; 013	0.9912	1.107	1.173	1.345	0.9912	1.107	0.6847	1.107

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	09-3606-4513	**Endpoint:**	Proportion Survived	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:05	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-006; 001	07-4145-0866	11 Dec-13 09:06	11 Dec-13 12:15	36d 3h	AECOM	Ecological Risk Asse
24077-001; 004	02-3274-4005	04 Dec-13 12:10	06 Dec-13 13:30	43d		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-006; 001	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD302 0012; 24077-006		
24077-001; 004	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD121 0012; 24077-001		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Angular (Corrected)	NA	C > T	NA	NA	30.2%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-006; 001		24077-001; 004	-1.529	1.761	0.189	14	0.9257	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	1.774	2.586	1.0000	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.1075753	0.1075753	1	2.336	0.1487	Non-Significant Effect
Error	0.6446258	0.0460447	14			
Total	0.7522011		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.031	8.885	0.9689	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9391	0.8408	0.3381	Normal Distribution

Proportion Survived Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-006; 001	8	0.5938	0.4259	0.7616	0.625	0.3	0.85	0.07099	33.82%	0.0%
24077-001; 004	8	0.7375	0.5815	0.8935	0.8	0.4	0.9	0.06597	25.3%	-24.21%

Angular (Corrected) Transformed Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-006; 001	8	0.8884	0.7077	1.069	0.9119	0.5796	1.173	0.07644	24.34%	0.0%
24077-001; 004	8	1.052	0.8744	1.23	1.107	0.6847	1.249	0.07528	20.23%	-18.46%

Proportion Survived Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-006; 001	0.45	0.85	0.4	0.65	0.6	0.65	0.85	0.3
24077-001; 004	0.9	0.65	0.4	0.9	0.8	0.55	0.8	0.9

Angular (Corrected) Transformed Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-006; 001	0.7353	1.173	0.6847	0.9377	0.8861	0.9377	1.173	0.5796
24077-001; 004	1.249	0.9377	0.6847	1.249	1.107	0.8355	1.107	1.249

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	12-0097-2269	**Endpoint:**	Proportion Survived	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:05	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-006; 001	07-4145-0866	11 Dec-13 09:06	11 Dec-13 12:15	36d 3h	AECOM	Ecological Risk Asse
24077-002; 005	01-7804-1542	05 Dec-13 10:45	06 Dec-13 13:30	42d 1h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-006; 001	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD302 0012; 24077-006		
24077-002; 005	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD120 0012; 24077-002		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Angular (Corrected)	NA	C > T	NA	NA	34.5%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-006; 001		24077-002; 005	-0.664	1.761	0.215	14	0.7413	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.075	2.586	0.4194	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.02627058	0.02627058	1	0.4409	0.5175	Non-Significant Effect
Error	0.8342613	0.05959009	14			
Total	0.8605319		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.549	8.885	0.5776	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9679	0.8408	0.8042	Normal Distribution

Proportion Survived Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-006; 001	8	0.5938	0.4259	0.7616	0.625	0.3	0.85	0.07099	33.82%	0.0%
24077-002; 005	8	0.6563	0.4714	0.8411	0.7	0.3	1	0.07817	33.69%	-10.53%

Angular (Corrected) Transformed Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-006; 001	8	0.8884	0.7077	1.069	0.9119	0.5796	1.173	0.07644	24.34%	0.0%
24077-002; 005	8	0.9695	0.7445	1.194	0.9912	0.5796	1.459	0.09515	27.76%	-9.12%

Proportion Survived Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-006; 001	0.45	0.85	0.4	0.65	0.6	0.65	0.85	0.3
24077-002; 005	0.55	0.7	1	0.85	0.7	0.7	0.45	0.3

Angular (Corrected) Transformed Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-006; 001	0.7353	1.173	0.6847	0.9377	0.8861	0.9377	1.173	0.5796
24077-002; 005	0.8355	0.9912	1.459	1.173	0.9912	0.9912	0.7353	0.5796

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	06-6287-7947	**Endpoint:**	Proportion Survived	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:05	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-006; 001	07-4145-0866	11 Dec-13 09:06	11 Dec-13 12:15	36d 3h	AECOM	Ecological Risk Asse
24077-003; 006	06-6548-1906	05 Dec-13 12:54	06 Dec-13 13:30	41d 23h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-006; 001	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD302 0012; 24077-006		
24077-003; 006	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD112 0012; 24077-003		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Angular (Corrected)	NA	C > T	NA	NA	25.1%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-006; 001		24077-003; 006	-1.701	1.761	0.158	14	0.9445	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	1.778	2.586	1.0000	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.09347874	0.09347874	1	2.893	0.1111	Non-Significant Effect
Error	0.4524046	0.03231461	14			
Total	0.5458834		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	2.614	8.885	0.2281	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9491	0.8408	0.4757	Normal Distribution

Proportion Survived Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-006; 001	8	0.5938	0.4259	0.7616	0.625	0.3	0.85	0.07099	33.82%	0.0%
24077-003; 006	8	0.7375	0.6407	0.8343	0.775	0.55	0.9	0.04092	15.69%	-24.21%

Angular (Corrected) Transformed Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-006; 001	8	0.8884	0.7077	1.069	0.9119	0.5796	1.173	0.07644	24.34%	0.0%
24077-003; 006	8	1.041	0.9295	1.153	1.077	0.8355	1.249	0.04728	12.84%	-17.21%

Proportion Survived Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-006; 001	0.45	0.85	0.4	0.65	0.6	0.65	0.85	0.3
24077-003; 006	0.8	0.55	0.8	0.9	0.75	0.8	0.7	0.6

Angular (Corrected) Transformed Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-006; 001	0.7353	1.173	0.6847	0.9377	0.8861	0.9377	1.173	0.5796
24077-003; 006	1.107	0.8355	1.107	1.249	1.047	1.107	0.9912	0.8861

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	18-2732-0310	**Endpoint:**	Proportion Survived	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:04	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-006; 001	07-4145-0866	11 Dec-13 09:06	11 Dec-13 12:15	36d 3h	AECOM	Ecological Risk Asse
24077-005; 007	00-8496-1430	10 Dec-13 09:39	11 Dec-13 12:15	37d 2h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-006; 001	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD302 0012; 24077-006		
24077-005; 007	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD106 0012; 24077-005		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Angular (Corrected)	NA	C > T	NA	NA	28.0%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-006; 001		24077-005; 007	-0.969	1.761	0.176	14	0.8255	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	1.871	2.586	0.7861	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.03729965	0.03729965	1	0.9389	0.3490	Non-Significant Effect
Error	0.5561811	0.03972722	14			
Total	0.5934807		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.429	8.885	0.6492	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9587	0.8408	0.6388	Normal Distribution

Proportion Survived Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-006; 001	8	0.5938	0.4259	0.7616	0.625	0.3	0.85	0.07099	33.82%	0.0%
24077-005; 007	8	0.6812	0.557	0.8055	0.675	0.45	0.95	0.05256	21.82%	-14.74%

Angular (Corrected) Transformed Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-006; 001	8	0.8884	0.7077	1.069	0.9119	0.5796	1.173	0.07644	24.34%	0.0%
24077-005; 007	8	0.985	0.8338	1.136	0.9645	0.7353	1.345	0.06394	18.36%	-10.87%

Proportion Survived Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-006; 001	0.45	0.85	0.4	0.65	0.6	0.65	0.85	0.3
24077-005; 007	0.45	0.7	0.8	0.6	0.65	0.7	0.6	0.95

Angular (Corrected) Transformed Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-006; 001	0.7353	1.173	0.6847	0.9377	0.8861	0.9377	1.173	0.5796
24077-005; 007	0.7353	0.9912	1.107	0.8861	0.9377	0.9912	0.8861	1.345

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	12-6796-3397	**Endpoint:**	Proportion Survived	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:04	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-006; 001	07-4145-0866	11 Dec-13 09:06	11 Dec-13 12:15	36d 3h	AECOM	Ecological Risk Asse
24077-007; 008	21-1048-1554	11 Dec-13 13:29	13 Dec-13 08:35	35d 23h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-006; 001	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD302 0012; 24077-006		
24077-007; 008	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD118 0012; 24077-007		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Angular (Corrected)	NA	C > T	NA	NA	31.5%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-006; 001		24077-007; 008	-0.08564	1.761	0.197	14	0.5335	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	1.732	2.586	1.0000	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.0003672203	0.0003672203	1	0.007333	0.9330	Non-Significant Effect
Error	0.7010538	0.05007527	14			
Total	0.701421		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.142	8.885	0.8651	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9286	0.8408	0.2313	Normal Distribution

Proportion Survived Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-006; 001	8	0.5938	0.4259	0.7616	0.625	0.3	0.85	0.07099	33.82%	0.0%
24077-007; 008	8	0.6063	0.4228	0.7897	0.675	0.25	0.8	0.0776	36.2%	-2.11%

Angular (Corrected) Transformed Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-006; 001	8	0.8884	0.7077	1.069	0.9119	0.5796	1.173	0.07644	24.34%	0.0%
24077-007; 008	8	0.898	0.7048	1.091	0.9666	0.5236	1.107	0.0817	25.73%	-1.08%

Proportion Survived Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-006; 001	0.45	0.85	0.4	0.65	0.6	0.65	0.85	0.3
24077-007; 008	0.75	0.75	0.8	0.3	0.8	0.25	0.6	0.6

Angular (Corrected) Transformed Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-006; 001	0.7353	1.173	0.6847	0.9377	0.8861	0.9377	1.173	0.5796
24077-007; 008	1.047	1.047	1.107	0.5796	1.107	0.5236	0.8861	0.8861

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	19-2755-4326	**Endpoint:**	Proportion Survived	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:04	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-006; 001	07-4145-0866	11 Dec-13 09:06	11 Dec-13 12:15	36d 3h	AECOM	Ecological Risk Asse
24077-008; 009	08-1847-2615	12 Dec-13 07:50	13 Dec-13 08:35	35d 4h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-006; 001	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD302 0012; 24077-006		
24077-008; 009	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD124 0012; 24077-008		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Angular (Corrected)	NA	C > T	NA	NA	27.0%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-006; 001		24077-008; 009	-1.304	1.761	0.17	14	0.8933	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	1.768	2.586	1.0000	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.0632733	0.0632733	1	1.7	0.2133	Non-Significant Effect
Error	0.5210442	0.03721744	14			
Total	0.5843175		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.688	8.885	0.5060	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9585	0.8408	0.6349	Normal Distribution

Proportion Survived Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-006; 001	8	0.5938	0.4259	0.7616	0.625	0.3	0.85	0.07099	33.82%	0.0%
24077-008; 009	8	0.7125	0.5846	0.8404	0.75	0.4	0.85	0.05408	21.47%	-20.0%

Angular (Corrected) Transformed Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-006; 001	8	0.8884	0.7077	1.069	0.9119	0.5796	1.173	0.07644	24.34%	0.0%
24077-008; 009	8	1.014	0.8751	1.153	1.049	0.6847	1.173	0.05883	16.41%	-14.16%

Proportion Survived Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-006; 001	0.45	0.85	0.4	0.65	0.6	0.65	0.85	0.3
24077-008; 009	0.8	0.85	0.6	0.8	0.4	0.7	0.85	0.7

Angular (Corrected) Transformed Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-006; 001	0.7353	1.173	0.6847	0.9377	0.8861	0.9377	1.173	0.5796
24077-008; 009	1.107	1.173	0.8861	1.107	0.6847	0.9912	1.173	0.9912

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	13-4979-2135	**Endpoint:**	Proportion Survived	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:04	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-006; 001	07-4145-0866	11 Dec-13 09:06	11 Dec-13 12:15	36d 3h	AECOM	Ecological Risk Asse
24077-009; 010	18-6710-2589	12 Dec-13 09:15	13 Dec-13 08:35	35d 3h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-006; 001	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD302 0012; 24077-006		
24077-009; 010	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD122 0012; 24077-009		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Angular (Corrected)	NA	C > T	NA	NA	30.3%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-006; 001		24077-009; 010	1.943	1.761	0.189	14	0.0362	CDF	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	1.77	2.586	1.0000	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.1744588	0.1744588	1	3.774	0.0724	Non-Significant Effect
Error	0.6471564	0.04622545	14			
Total	0.8216151		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.023	8.885	0.9770	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9401	0.8408	0.3507	Normal Distribution

Proportion Survived Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-006; 001	8	0.5938	0.4259	0.7616	0.625	0.3	0.85	0.07099	33.82%	0.0%
24077-009; 010	8	0.4	0.2313	0.5687	0.35	0.15	0.75	0.07134	50.44%	32.63%

Angular (Corrected) Transformed Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-006; 001	8	0.8884	0.7077	1.069	0.9119	0.5796	1.173	0.07644	24.34%	0.0%
24077-009; 010	8	0.6796	0.5009	0.8583	0.6331	0.3977	1.047	0.07558	31.46%	23.51%

Proportion Survived Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-006; 001	0.45	0.85	0.4	0.65	0.6	0.65	0.85	0.3
24077-009; 010	0.75	0.25	0.35	0.65	0.4	0.15	0.35	0.3

Angular (Corrected) Transformed Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-006; 001	0.7353	1.173	0.6847	0.9377	0.8861	0.9377	1.173	0.5796
24077-009; 010	1.047	0.5236	0.6331	0.9377	0.6847	0.3977	0.6331	0.5796

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	10-1181-8995	**Endpoint:**	Proportion Survived	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:04	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-006; 001	07-4145-0866	11 Dec-13 09:06	11 Dec-13 12:15	36d 3h	AECOM	Ecological Risk Asse
24077-011; 011	10-2024-6603	13 Dec-13 10:10	18 Dec-13 11:30	34d 2h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-006; 001	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD302 0012; 24077-006		
24077-011; 011	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD102 0012; 24077-011		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Angular (Corrected)	NA	C > T	NA	NA	33.8%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-006; 001		24077-011; 011	3.305	1.761	0.211	14	0.0026	CDF	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	1.651	2.586	1.0000	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.6242111	0.6242111	1	10.92	0.0052	Significant Effect
Error	0.800048	0.05714628	14			
Total	1.424259		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.445	8.885	0.6394	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9205	0.8408	0.1720	Normal Distribution

Proportion Survived Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-006; 001	8	0.5938	0.4259	0.7616	0.625	0.3	0.85	0.07099	33.82%	0.0%
24077-011; 011	8	0.2563	0.08839	0.4241	0.275	0	0.5	0.07099	78.35%	56.84%

Angular (Corrected) Transformed Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-006; 001	8	0.8884	0.7077	1.069	0.9119	0.5796	1.173	0.07644	24.34%	0.0%
24077-011; 011	8	0.4934	0.2761	0.7107	0.5412	0.112	0.7854	0.09189	52.67%	44.46%

Proportion Survived Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-006; 001	0.45	0.85	0.4	0.65	0.6	0.65	0.85	0.3
24077-011; 011	0	0.1	0.45	0.4	0.5	0.15	0.05	0.4

Angular (Corrected) Transformed Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-006; 001	0.7353	1.173	0.6847	0.9377	0.8861	0.9377	1.173	0.5796
24077-011; 011	0.112	0.3218	0.7353	0.6847	0.7854	0.3977	0.2255	0.6847

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	19-6223-4228	**Endpoint:**	Proportion Survived	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:04	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-006; 001	07-4145-0866	11 Dec-13 09:06	11 Dec-13 12:15	36d 3h	AECOM	Ecological Risk Asse
24077-013; 012	08-9458-1886	17 Dec-13 09:55	18 Dec-13 11:30	30d 2h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-006; 001	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD302 0012; 24077-006		
24077-013; 012	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD115 0012; 24077-013		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Angular (Corrected)	NA	C > T	NA	NA	28.3%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-006; 001		24077-013; 012	-2.157	1.761	0.178	14	0.9756	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	1.585	2.586	1.0000	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.1891063	0.1891063	1	4.653	0.0489	Significant Effect
Error	0.5689864	0.04064188	14			
Total	0.7580927		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.354	8.885	0.6996	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.933	0.8408	0.2717	Normal Distribution

Proportion Survived Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-006; 001	8	0.5938	0.4259	0.7616	0.625	0.3	0.85	0.07099	33.82%	0.0%
24077-013; 012	8	0.7812	0.659	0.9035	0.8	0.6	0.95	0.0517	18.72%	-31.58%

Angular (Corrected) Transformed Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-006; 001	8	0.8884	0.7077	1.069	0.9119	0.5796	1.173	0.07644	24.34%	0.0%
24077-013; 012	8	1.106	0.9505	1.261	1.12	0.8861	1.345	0.0657	16.8%	-24.47%

Proportion Survived Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-006; 001	0.45	0.85	0.4	0.65	0.6	0.65	0.85	0.3
24077-013; 012	0.95	0.7	0.9	0.9	0.7	0.6	0.6	0.9

Angular (Corrected) Transformed Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-006; 001	0.7353	1.173	0.6847	0.9377	0.8861	0.9377	1.173	0.5796
24077-013; 012	1.345	0.9912	1.249	1.249	0.9912	0.8861	0.8861	1.249

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	17-2686-6015	**Endpoint:**	Proportion Survived	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:03	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-006; 001	07-4145-0866	11 Dec-13 09:06	11 Dec-13 12:15	36d 3h	AECOM	Ecological Risk Asse
24077-014; 013	10-4129-5048	17 Dec-13 11:00	18 Dec-13 11:30	30d 1h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-006; 001	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD302 0012; 24077-006		
24077-014; 013	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD114 0012; 24077-014		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Angular (Corrected)	NA	C > T	NA	NA	28.5%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-006; 001		24077-014; 013	-1.721	1.761	0.179	14	0.9464	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	1.928	2.586	0.6650	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.1223994	0.1223994	1	2.963	0.1072	Non-Significant Effect
Error	0.5783044	0.04130745	14			
Total	0.7007037		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.303	8.885	0.7355	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.938	0.8408	0.3256	Normal Distribution

Proportion Survived Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-006; 001	8	0.5938	0.4259	0.7616	0.625	0.3	0.85	0.07099	33.82%	0.0%
24077-014; 013	8	0.75	0.6141	0.8859	0.8	0.4	0.95	0.05748	21.68%	-26.32%

Angular (Corrected) Transformed Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-006; 001	8	0.8884	0.7077	1.069	0.9119	0.5796	1.173	0.07644	24.34%	0.0%
24077-014; 013	8	1.063	0.905	1.222	1.107	0.6847	1.345	0.06696	17.81%	-19.69%

Proportion Survived Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-006; 001	0.45	0.85	0.4	0.65	0.6	0.65	0.85	0.3
24077-014; 013	0.7	0.8	0.85	0.95	0.7	0.8	0.4	0.8

Angular (Corrected) Transformed Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-006; 001	0.7353	1.173	0.6847	0.9377	0.8861	0.9377	1.173	0.5796
24077-014; 013	0.9912	1.107	1.173	1.345	0.9912	1.107	0.6847	1.107

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	07-8179-4054	**Endpoint:**	Proportion Survived	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:08	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-010; 002	10-5151-8705	13 Dec-13 09:50	18 Dec-13 11:30	34d 2h	AECOM	Ecological Risk Asse
24077-001; 004	02-3274-4005	04 Dec-13 12:10	06 Dec-13 13:30	43d		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-010; 002	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD304 0012; 24077-010		
24077-001; 004	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD121 0012; 24077-001		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Angular (Corrected)	NA	C > T	NA	NA	23.5%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-010; 002		24077-001; 004	-1.478	1.761	0.155	14	0.9192	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.17	2.586	0.3015	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.06717003	0.06717003	1	2.184	0.1616	Non-Significant Effect
Error	0.4306323	0.03075945	14			
Total	0.4978023		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	2.803	8.885	0.1973	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9596	0.8408	0.6539	Normal Distribution

Proportion Survived Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-010; 002	8	0.6313	0.534	0.7285	0.625	0.45	0.85	0.04112	18.42%	0.0%
24077-001; 004	8	0.7375	0.5815	0.8935	0.8	0.4	0.9	0.06597	25.3%	-16.83%

Angular (Corrected) Transformed Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-010; 002	8	0.9228	0.8165	1.029	0.9119	0.7353	1.173	0.04497	13.78%	0.0%
24077-001; 004	8	1.052	0.8744	1.23	1.107	0.6847	1.249	0.07528	20.23%	-14.04%

Proportion Survived Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-010; 002	0.45	0.6	0.65	0.65	0.7	0.85	0.6	0.55
24077-001; 004	0.9	0.65	0.4	0.9	0.8	0.55	0.8	0.9

Angular (Corrected) Transformed Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-010; 002	0.7353	0.8861	0.9377	0.9377	0.9912	1.173	0.8861	0.8355
24077-001; 004	1.249	0.9377	0.6847	1.249	1.107	0.8355	1.107	1.249

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	16-2740-3740	**Endpoint:**	Proportion Survived	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:08	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-010; 002	10-5151-8705	13 Dec-13 09:50	18 Dec-13 11:30	34d 2h	AECOM	Ecological Risk Asse
24077-002; 005	01-7804-1542	05 Dec-13 10:45	06 Dec-13 13:30	42d 1h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-010; 002	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD304 0012; 24077-010		
24077-002; 005	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD120 0012; 24077-002		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Angular (Corrected)	NA	C > T	NA	NA	28.4%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-010; 002		24077-002; 005	-0.4431	1.761	0.185	14	0.6678	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.406	2.586	0.1181	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.00869875	0.00869875	1	0.1963	0.6645	Non-Significant Effect
Error	0.6202678	0.04430484	14			
Total	0.6289666		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	4.477	8.885	0.0662	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9479	0.8408	0.4575	Normal Distribution

Proportion Survived Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-010; 002	8	0.6313	0.534	0.7285	0.625	0.45	0.85	0.04112	18.42%	0.0%
24077-002; 005	8	0.6563	0.4714	0.8411	0.7	0.3	1	0.07817	33.69%	-3.96%

Angular (Corrected) Transformed Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-010; 002	8	0.9228	0.8165	1.029	0.9119	0.7353	1.173	0.04497	13.78%	0.0%
24077-002; 005	8	0.9695	0.7445	1.194	0.9912	0.5796	1.459	0.09515	27.76%	-5.05%

Proportion Survived Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-010; 002	0.45	0.6	0.65	0.65	0.7	0.85	0.6	0.55
24077-002; 005	0.55	0.7	1	0.85	0.7	0.7	0.45	0.3

Angular (Corrected) Transformed Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-010; 002	0.7353	0.8861	0.9377	0.9377	0.9912	1.173	0.8861	0.8355
24077-002; 005	0.8355	0.9912	1.459	1.173	0.9912	0.9912	0.7353	0.5796

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	02-5601-6675	**Endpoint:**	Proportion Survived	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:07	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-010; 002	10-5151-8705	13 Dec-13 09:50	18 Dec-13 11:30	34d 2h	AECOM	Ecological Risk Asse
24077-003; 006	06-6548-1906	05 Dec-13 12:54	06 Dec-13 13:30	41d 23h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-010; 002	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD304 0012; 24077-010		
24077-003; 006	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD112 0012; 24077-003		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Angular (Corrected)	NA	C > T	NA	NA	17.2%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-010; 002		24077-003; 006	-1.816	1.761	0.115	14	0.9545	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	1.985	2.586	0.5596	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.05613488	0.05613488	1	3.296	0.0909	Non-Significant Effect
Error	0.2384111	0.01702937	14			
Total	0.294546		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.105	8.885	0.8983	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9548	0.8408	0.5685	Normal Distribution

Proportion Survived Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-010; 002	8	0.6313	0.534	0.7285	0.625	0.45	0.85	0.04112	18.42%	0.0%
24077-003; 006	8	0.7375	0.6407	0.8343	0.775	0.55	0.9	0.04092	15.69%	-16.83%

Angular (Corrected) Transformed Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-010; 002	8	0.9228	0.8165	1.029	0.9119	0.7353	1.173	0.04497	13.78%	0.0%
24077-003; 006	8	1.041	0.9295	1.153	1.077	0.8355	1.249	0.04728	12.84%	-12.84%

Proportion Survived Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-010; 002	0.45	0.6	0.65	0.65	0.7	0.85	0.6	0.55
24077-003; 006	0.8	0.55	0.8	0.9	0.75	0.8	0.7	0.6

Angular (Corrected) Transformed Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-010; 002	0.7353	0.8861	0.9377	0.9377	0.9912	1.173	0.8861	0.8355
24077-003; 006	1.107	0.8355	1.107	1.249	1.047	1.107	0.9912	0.8861

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	04-1598-3109	**Endpoint:**	Proportion Survived	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:07	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-010; 002	10-5151-8705	13 Dec-13 09:50	18 Dec-13 11:30	34d 2h	AECOM	Ecological Risk Asse
24077-005; 007	00-8496-1430	10 Dec-13 09:39	11 Dec-13 12:15	37d 2h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-010; 002	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD304 0012; 24077-010		
24077-005; 007	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD106 0012; 24077-005		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Angular (Corrected)	NA	C > T	NA	NA	20.8%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-010; 002		24077-005; 007	-0.7952	1.761	0.138	14	0.7801	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.385	2.586	0.1292	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.01545453	0.01545453	1	0.6323	0.4398	Non-Significant Effect
Error	0.3421876	0.02444197	14			
Total	0.3576421		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	2.022	8.885	0.3735	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9332	0.8408	0.2739	Normal Distribution

Proportion Survived Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-010; 002	8	0.6313	0.534	0.7285	0.625	0.45	0.85	0.04112	18.42%	0.0%
24077-005; 007	8	0.6812	0.557	0.8055	0.675	0.45	0.95	0.05256	21.82%	-7.92%

Angular (Corrected) Transformed Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-010; 002	8	0.9228	0.8165	1.029	0.9119	0.7353	1.173	0.04497	13.78%	0.0%
24077-005; 007	8	0.985	0.8338	1.136	0.9645	0.7353	1.345	0.06394	18.36%	-6.74%

Proportion Survived Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-010; 002	0.45	0.6	0.65	0.65	0.7	0.85	0.6	0.55
24077-005; 007	0.45	0.7	0.8	0.6	0.65	0.7	0.6	0.95

Angular (Corrected) Transformed Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-010; 002	0.7353	0.8861	0.9377	0.9377	0.9912	1.173	0.8861	0.8355
24077-005; 007	0.7353	0.9912	1.107	0.8861	0.9377	0.9912	0.8861	1.345

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	07-5118-6352	**Endpoint:**	Proportion Survived	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:07	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-010; 002	10-5151-8705	13 Dec-13 09:50	18 Dec-13 11:30	34d 2h	AECOM	Ecological Risk Asse
24077-007; 008	21-1048-1554	11 Dec-13 13:29	13 Dec-13 08:35	35d 23h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-010; 002	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD304 0012; 24077-010		
24077-007; 008	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD118 0012; 24077-007		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Angular (Corrected)	NA	C > T	NA	NA	25.0%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-010; 002		24077-007; 008	0.2662	1.761	0.164	14	0.3970	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.078	2.586	0.4151	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.002465315	0.002465315	1	0.07086	0.7940	Non-Significant Effect
Error	0.4870603	0.03479002	14			
Total	0.4895256		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	3.301	8.885	0.1378	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.935	0.8408	0.2926	Normal Distribution

Proportion Survived Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-010; 002	8	0.6313	0.534	0.7285	0.625	0.45	0.85	0.04112	18.42%	0.0%
24077-007; 008	8	0.6063	0.4228	0.7897	0.675	0.25	0.8	0.0776	36.2%	3.96%

Angular (Corrected) Transformed Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-010; 002	8	0.9228	0.8165	1.029	0.9119	0.7353	1.173	0.04497	13.78%	0.0%
24077-007; 008	8	0.898	0.7048	1.091	0.9666	0.5236	1.107	0.0817	25.73%	2.69%

Proportion Survived Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-010; 002	0.45	0.6	0.65	0.65	0.7	0.85	0.6	0.55
24077-007; 008	0.75	0.75	0.8	0.3	0.8	0.25	0.6	0.6

Angular (Corrected) Transformed Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-010; 002	0.7353	0.8861	0.9377	0.9377	0.9912	1.173	0.8861	0.8355
24077-007; 008	1.047	1.047	1.107	0.5796	1.107	0.5236	0.8861	0.8861

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	03-3896-0742	**Endpoint:**	Proportion Survived	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:07	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-010; 002	10-5151-8705	13 Dec-13 09:50	18 Dec-13 11:30	34d 2h	AECOM	Ecological Risk Asse
24077-008; 009	08-1847-2615	12 Dec-13 07:50	13 Dec-13 08:35	35d 4h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-010; 002	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD304 0012; 24077-010		
24077-008; 009	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD124 0012; 24077-008		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Angular (Corrected)	NA	C > T	NA	NA	19.7%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-010; 002		24077-008; 009	-1.234	1.761	0.130	14	0.8812	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.303	2.586	0.1821	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.03338913	0.03338913	1	1.522	0.2376	Non-Significant Effect
Error	0.3070507	0.02193219	14			
Total	0.3404398		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.711	8.885	0.4952	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9735	0.8408	0.8917	Normal Distribution

Proportion Survived Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-010; 002	8	0.6313	0.534	0.7285	0.625	0.45	0.85	0.04112	18.42%	0.0%
24077-008; 009	8	0.7125	0.5846	0.8404	0.75	0.4	0.85	0.05408	21.47%	-12.87%

Angular (Corrected) Transformed Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-010; 002	8	0.9228	0.8165	1.029	0.9119	0.7353	1.173	0.04497	13.78%	0.0%
24077-008; 009	8	1.014	0.8751	1.153	1.049	0.6847	1.173	0.05883	16.41%	-9.9%

Proportion Survived Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-010; 002	0.45	0.6	0.65	0.65	0.7	0.85	0.6	0.55
24077-008; 009	0.8	0.85	0.6	0.8	0.4	0.7	0.85	0.7

Angular (Corrected) Transformed Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-010; 002	0.7353	0.8861	0.9377	0.9377	0.9912	1.173	0.8861	0.8355
24077-008; 009	1.107	1.173	0.8861	1.107	0.6847	0.9912	1.173	0.9912

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	02-6201-5458	**Endpoint:**	Proportion Survived	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:07	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-010; 002	10-5151-8705	13 Dec-13 09:50	18 Dec-13 11:30	34d 2h	AECOM	Ecological Risk Asse
24077-009; 010	18-6710-2589	12 Dec-13 09:15	13 Dec-13 08:35	35d 3h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-010; 002	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD304 0012; 24077-010		
24077-009; 010	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD122 0012; 24077-009		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Angular (Corrected)	NA	C > T	NA	NA	23.6%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-010; 002		24077-009; 010	2.766	1.761	0.155	14	0.0076	CDF	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.163	2.586	0.3090	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.2366799	0.2366799	1	7.65	0.0152	Significant Effect
Error	0.4331628	0.0309402	14			
Total	0.6698427		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	2.825	8.885	0.1940	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9281	0.8408	0.2274	Normal Distribution

Proportion Survived Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-010; 002	8	0.6313	0.534	0.7285	0.625	0.45	0.85	0.04112	18.42%	0.0%
24077-009; 010	8	0.4	0.2313	0.5687	0.35	0.15	0.75	0.07134	50.44%	36.63%

Angular (Corrected) Transformed Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-010; 002	8	0.9228	0.8165	1.029	0.9119	0.7353	1.173	0.04497	13.78%	0.0%
24077-009; 010	8	0.6796	0.5009	0.8583	0.6331	0.3977	1.047	0.07558	31.46%	26.36%

Proportion Survived Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-010; 002	0.45	0.6	0.65	0.65	0.7	0.85	0.6	0.55
24077-009; 010	0.75	0.25	0.35	0.65	0.4	0.15	0.35	0.3

Angular (Corrected) Transformed Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-010; 002	0.7353	0.8861	0.9377	0.9377	0.9912	1.173	0.8861	0.8355
24077-009; 010	1.047	0.5236	0.6331	0.9377	0.6847	0.3977	0.6331	0.5796

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	07-3284-5302	**Endpoint:**	Proportion Survived	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:07	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-010; 002	10-5151-8705	13 Dec-13 09:50	18 Dec-13 11:30	34d 2h	AECOM	Ecological Risk Asse
24077-011; 011	10-2024-6603	13 Dec-13 10:10	18 Dec-13 11:30	34d 2h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-010; 002	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD304 0012; 24077-010		
24077-011; 011	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD102 0012; 24077-011		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Angular (Corrected)	NA	C > T	NA	NA	27.6%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-010; 002		24077-011; 011	4.198	1.761	0.180	14	0.0004	CDF	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	1.929	2.586	0.6631	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.7376839	0.7376839	1	17.62	0.0009	Significant Effect
Error	0.5860544	0.04186103	14			
Total	1.323738		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	4.175	8.885	0.0789	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9619	0.8408	0.6968	Normal Distribution

Proportion Survived Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-010; 002	8	0.6313	0.534	0.7285	0.625	0.45	0.85	0.04112	18.42%	0.0%
24077-011; 011	8	0.2563	0.08839	0.4241	0.275	0	0.5	0.07099	78.35%	59.41%

Angular (Corrected) Transformed Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-010; 002	8	0.9228	0.8165	1.029	0.9119	0.7353	1.173	0.04497	13.78%	0.0%
24077-011; 011	8	0.4934	0.2761	0.7107	0.5412	0.112	0.7854	0.09189	52.67%	46.54%

Proportion Survived Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-010; 002	0.45	0.6	0.65	0.65	0.7	0.85	0.6	0.55
24077-011; 011	0	0.1	0.45	0.4	0.5	0.15	0.05	0.4

Angular (Corrected) Transformed Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-010; 002	0.7353	0.8861	0.9377	0.9377	0.9912	1.173	0.8861	0.8355
24077-011; 011	0.112	0.3218	0.7353	0.6847	0.7854	0.3977	0.2255	0.6847

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	06-7167-0336	**Endpoint:**	Proportion Survived	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:07	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-010; 002	10-5151-8705	13 Dec-13 09:50	18 Dec-13 11:30	34d 2h	AECOM	Ecological Risk Asse
24077-013; 012	08-9458-1886	17 Dec-13 09:55	18 Dec-13 11:30	30d 2h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-010; 002	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD304 0012; 24077-010		
24077-013; 012	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD115 0012; 24077-013		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Angular (Corrected)	NA	C > T	NA	NA	21.2%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-010; 002		24077-013; 012	-2.299	1.761	0.140	14	0.9813	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	1.627	2.586	1.0000	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.1339916	0.1339916	1	5.284	0.0374	Significant Effect
Error	0.3549929	0.02535663	14			
Total	0.4889845		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	2.135	8.885	0.3384	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.945	0.8408	0.4150	Normal Distribution

Proportion Survived Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-010; 002	8	0.6313	0.534	0.7285	0.625	0.45	0.85	0.04112	18.42%	0.0%
24077-013; 012	8	0.7812	0.659	0.9035	0.8	0.6	0.95	0.0517	18.72%	-23.76%

Angular (Corrected) Transformed Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-010; 002	8	0.9228	0.8165	1.029	0.9119	0.7353	1.173	0.04497	13.78%	0.0%
24077-013; 012	8	1.106	0.9505	1.261	1.12	0.8861	1.345	0.0657	16.8%	-19.83%

Proportion Survived Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-010; 002	0.45	0.6	0.65	0.65	0.7	0.85	0.6	0.55
24077-013; 012	0.95	0.7	0.9	0.9	0.7	0.6	0.6	0.9

Angular (Corrected) Transformed Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-010; 002	0.7353	0.8861	0.9377	0.9377	0.9912	1.173	0.8861	0.8355
24077-013; 012	1.345	0.9912	1.249	1.249	0.9912	0.8861	0.8861	1.249

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	05-5404-1467	**Endpoint:**	Proportion Survived	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:07	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-010; 002	10-5151-8705	13 Dec-13 09:50	18 Dec-13 11:30	34d 2h	AECOM	Ecological Risk Asse
24077-014; 013	10-4129-5048	17 Dec-13 11:00	18 Dec-13 11:30	30d 1h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-010; 002	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD304 0012; 24077-010		
24077-014; 013	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD114 0012; 24077-014		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Angular (Corrected)	NA	C > T	NA	NA	21.5%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-010; 002		24077-014; 013	-1.742	1.761	0.142	14	0.9483	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.43	2.586	0.1064	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.07898423	0.07898423	1	3.035	0.1034	Non-Significant Effect
Error	0.3643109	0.0260222	14			
Total	0.4432951		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	2.217	8.885	0.3154	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9384	0.8408	0.3300	Normal Distribution

Proportion Survived Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-010; 002	8	0.6313	0.534	0.7285	0.625	0.45	0.85	0.04112	18.42%	0.0%
24077-014; 013	8	0.75	0.6141	0.8859	0.8	0.4	0.95	0.05748	21.68%	-18.81%

Angular (Corrected) Transformed Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-010; 002	8	0.9228	0.8165	1.029	0.9119	0.7353	1.173	0.04497	13.78%	0.0%
24077-014; 013	8	1.063	0.905	1.222	1.107	0.6847	1.345	0.06696	17.81%	-15.23%

Proportion Survived Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-010; 002	0.45	0.6	0.65	0.65	0.7	0.85	0.6	0.55
24077-014; 013	0.7	0.8	0.85	0.95	0.7	0.8	0.4	0.8

Angular (Corrected) Transformed Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-010; 002	0.7353	0.8861	0.9377	0.9377	0.9912	1.173	0.8861	0.8355
24077-014; 013	0.9912	1.107	1.173	1.345	0.9912	1.107	0.6847	1.107

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	00-3143-0264	**Endpoint:**	Proportion Survived	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:11	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-012; 003	20-3314-4845	13 Dec-13 10:45	18 Dec-13 11:30	34d 1h	AECOM	Ecological Risk Asse
24077-001; 004	02-3274-4005	04 Dec-13 12:10	06 Dec-13 13:30	43d		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-012; 003	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD303 0012; 24077-012		
24077-001; 004	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD121 0012; 24077-001		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Angular (Corrected)	NA	C > T	NA	NA	23.7%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-012; 003		24077-001; 004	0.1613	1.761	0.225	14	0.4371	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2	2.586	0.5333	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.001695727	0.001695727	1	0.02602	0.8742	Non-Significant Effect
Error	0.9123875	0.06517053	14			
Total	0.9140833		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.875	8.885	0.4260	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9693	0.8408	0.8275	Normal Distribution

Proportion Survived Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-012; 003	8	0.7375	0.5482	0.9268	0.725	0.3	1	0.08004	30.7%	0.0%
24077-001; 004	8	0.7375	0.5815	0.8935	0.8	0.4	0.9	0.06597	25.3%	0.0%

Angular (Corrected) Transformed Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-012; 003	8	1.073	0.8293	1.317	1.019	0.5796	1.459	0.1031	27.17%	0.0%
24077-001; 004	8	1.052	0.8744	1.23	1.107	0.6847	1.249	0.07528	20.23%	1.92%

Proportion Survived Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-012; 003	1	0.85	1	0.75	0.3	0.65	0.7	0.65
24077-001; 004	0.9	0.65	0.4	0.9	0.8	0.55	0.8	0.9

Angular (Corrected) Transformed Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-012; 003	1.459	1.173	1.459	1.047	0.5796	0.9377	0.9912	0.9377
24077-001; 004	1.249	0.9377	0.6847	1.249	1.107	0.8355	1.107	1.249

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	04-8804-0998	**Endpoint:**	Proportion Survived	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:11	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-012; 003	20-3314-4845	13 Dec-13 10:45	18 Dec-13 11:30	34d 1h	AECOM	Ecological Risk Asse
24077-002; 005	01-7804-1542	05 Dec-13 10:45	06 Dec-13 13:30	42d 1h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-012; 003	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD303 0012; 24077-012		
24077-002; 005	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD120 0012; 24077-002		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Angular (Corrected)	NA	C > T	NA	NA	26.7%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-012; 003		24077-002; 005	0.7381	1.761	0.247	14	0.2363	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	1.82	2.586	0.9066	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.04288375	0.04288375	1	0.5448	0.4726	Non-Significant Effect
Error	1.102023	0.07871593	14			
Total	1.144907		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.173	8.885	0.8382	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9641	0.8408	0.7364	Normal Distribution

Proportion Survived Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-012; 003	8	0.7375	0.5482	0.9268	0.725	0.3	1	0.08004	30.7%	0.0%
24077-002; 005	8	0.6563	0.4714	0.8411	0.7	0.3	1	0.07817	33.69%	11.02%

Angular (Corrected) Transformed Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-012; 003	8	1.073	0.8293	1.317	1.019	0.5796	1.459	0.1031	27.17%	0.0%
24077-002; 005	8	0.9695	0.7445	1.194	0.9912	0.5796	1.459	0.09515	27.76%	9.65%

Proportion Survived Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-012; 003	1	0.85	1	0.75	0.3	0.65	0.7	0.65
24077-002; 005	0.55	0.7	1	0.85	0.7	0.7	0.45	0.3

Angular (Corrected) Transformed Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-012; 003	1.459	1.173	1.459	1.047	0.5796	0.9377	0.9912	0.9377
24077-002; 005	0.8355	0.9912	1.459	1.173	0.9912	0.9912	0.7353	0.5796

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	12-5381-1459	**Endpoint:**	Proportion Survived	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:10	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-012; 003	20-3314-4845	13 Dec-13 10:45	18 Dec-13 11:30	34d 1h	AECOM	Ecological Risk Asse
24077-003; 006	06-6548-1906	05 Dec-13 12:54	06 Dec-13 13:30	41d 23h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-012; 003	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD303 0012; 24077-012		
24077-003; 006	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD112 0012; 24077-003		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Angular (Corrected)	NA	C > T	NA	NA	20.3%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-012; 003		24077-003; 006	0.2796	1.761	0.2	14	0.3919	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.252	2.586	0.2227	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.00402248	0.00402248	1	0.0782	0.7838	Non-Significant Effect
Error	0.7201663	0.05144045	14			
Total	0.7241888		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	4.753	8.885	0.0569	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9515	0.8408	0.5132	Normal Distribution

Proportion Survived Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-012; 003	8	0.7375	0.5482	0.9268	0.725	0.3	1	0.08004	30.7%	0.0%
24077-003; 006	8	0.7375	0.6407	0.8343	0.775	0.55	0.9	0.04092	15.69%	0.0%

Angular (Corrected) Transformed Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-012; 003	8	1.073	0.8293	1.317	1.019	0.5796	1.459	0.1031	27.17%	0.0%
24077-003; 006	8	1.041	0.9295	1.153	1.077	0.8355	1.249	0.04728	12.84%	2.96%

Proportion Survived Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-012; 003	1	0.85	1	0.75	0.3	0.65	0.7	0.65
24077-003; 006	0.8	0.55	0.8	0.9	0.75	0.8	0.7	0.6

Angular (Corrected) Transformed Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-012; 003	1.459	1.173	1.459	1.047	0.5796	0.9377	0.9912	0.9377
24077-003; 006	1.107	0.8355	1.107	1.249	1.047	1.107	0.9912	0.8861

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	20-7776-9065	**Endpoint:**	Proportion Survived	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:10	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-012; 003	20-3314-4845	13 Dec-13 10:45	18 Dec-13 11:30	34d 1h	AECOM	Ecological Risk Asse
24077-005; 007	00-8496-1430	10 Dec-13 09:39	11 Dec-13 12:15	37d 2h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-012; 003	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD303 0012; 24077-012		
24077-005; 007	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD106 0012; 24077-005		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Angular (Corrected)	NA	C > T	NA	NA	22.2%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-012; 003		24077-005; 007	0.7256	1.761	0.214	14	0.2400	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.105	2.586	0.3786	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.03098824	0.03098824	1	0.5265	0.4800	Non-Significant Effect
Error	0.8239428	0.05885306	14			
Total	0.854931		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	2.599	8.885	0.2309	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9258	0.8408	0.2089	Normal Distribution

Proportion Survived Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-012; 003	8	0.7375	0.5482	0.9268	0.725	0.3	1	0.08004	30.7%	0.0%
24077-005; 007	8	0.6812	0.557	0.8055	0.675	0.45	0.95	0.05256	21.82%	7.63%

Angular (Corrected) Transformed Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-012; 003	8	1.073	0.8293	1.317	1.019	0.5796	1.459	0.1031	27.17%	0.0%
24077-005; 007	8	0.985	0.8338	1.136	0.9645	0.7353	1.345	0.06394	18.36%	8.2%

Proportion Survived Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-012; 003	1	0.85	1	0.75	0.3	0.65	0.7	0.65
24077-005; 007	0.45	0.7	0.8	0.6	0.65	0.7	0.6	0.95

Angular (Corrected) Transformed Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-012; 003	1.459	1.173	1.459	1.047	0.5796	0.9377	0.9912	0.9377
24077-005; 007	0.7353	0.9912	1.107	0.8861	0.9377	0.9912	0.8861	1.345

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	06-1045-5631	**Endpoint:**	Proportion Survived	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:11	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-012; 003	20-3314-4845	13 Dec-13 10:45	18 Dec-13 11:30	34d 1h	AECOM	Ecological Risk Asse
24077-007; 008	21-1048-1554	11 Dec-13 13:29	13 Dec-13 08:35	35d 23h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-012; 003	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD303 0012; 24077-012		
24077-007; 008	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD118 0012; 24077-007		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Angular (Corrected)	NA	C > T	NA	NA	24.6%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-012; 003		24077-007; 008	1.331	1.761	0.232	14	0.1023	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	1.941	2.586	0.6397	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.1225021	0.1225021	1	1.77	0.2046	Non-Significant Effect
Error	0.9688155	0.0692011	14			
Total	1.091318		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.592	8.885	0.5547	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9637	0.8408	0.7294	Normal Distribution

Proportion Survived Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-012; 003	8	0.7375	0.5482	0.9268	0.725	0.3	1	0.08004	30.7%	0.0%
24077-007; 008	8	0.6063	0.4228	0.7897	0.675	0.25	0.8	0.0776	36.2%	17.8%

Angular (Corrected) Transformed Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-012; 003	8	1.073	0.8293	1.317	1.019	0.5796	1.459	0.1031	27.17%	0.0%
24077-007; 008	8	0.898	0.7048	1.091	0.9666	0.5236	1.107	0.0817	25.73%	16.31%

Proportion Survived Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-012; 003	1	0.85	1	0.75	0.3	0.65	0.7	0.65
24077-007; 008	0.75	0.75	0.8	0.3	0.8	0.25	0.6	0.6

Angular (Corrected) Transformed Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-012; 003	1.459	1.173	1.459	1.047	0.5796	0.9377	0.9912	0.9377
24077-007; 008	1.047	1.047	1.107	0.5796	1.107	0.5236	0.8861	0.8861

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	01-0038-1422	**Endpoint:**	Proportion Survived	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:10	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-012; 003	20-3314-4845	13 Dec-13 10:45	18 Dec-13 11:30	34d 1h	AECOM	Ecological Risk Asse
24077-008; 009	08-1847-2615	12 Dec-13 07:50	13 Dec-13 08:35	35d 4h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-012; 003	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD303 0012; 24077-012		
24077-008; 009	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD124 0012; 24077-008		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Angular (Corrected)	NA	C > T	NA	NA	21.6%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-012; 003		24077-008; 009	0.4955	1.761	0.209	14	0.3140	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.151	2.586	0.3222	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.01383543	0.01383543	1	0.2456	0.6279	Non-Significant Effect
Error	0.7888059	0.05634328	14			
Total	0.8026413		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	3.07	8.885	0.1621	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9569	0.8408	0.6067	Normal Distribution

Proportion Survived Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-012; 003	8	0.7375	0.5482	0.9268	0.725	0.3	1	0.08004	30.7%	0.0%
24077-008; 009	8	0.7125	0.5846	0.8404	0.75	0.4	0.85	0.05408	21.47%	3.39%

Angular (Corrected) Transformed Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-012; 003	8	1.073	0.8293	1.317	1.019	0.5796	1.459	0.1031	27.17%	0.0%
24077-008; 009	8	1.014	0.8751	1.153	1.049	0.6847	1.173	0.05883	16.41%	5.48%

Proportion Survived Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-012; 003	1	0.85	1	0.75	0.3	0.65	0.7	0.65
24077-008; 009	0.8	0.85	0.6	0.8	0.4	0.7	0.85	0.7

Angular (Corrected) Transformed Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-012; 003	1.459	1.173	1.459	1.047	0.5796	0.9377	0.9912	0.9377
24077-008; 009	1.107	1.173	0.8861	1.107	0.6847	0.9912	1.173	0.9912

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	20-6522-9544	**Endpoint:**	Proportion Survived	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:10	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-012; 003	20-3314-4845	13 Dec-13 10:45	18 Dec-13 11:30	34d 1h	AECOM	Ecological Risk Asse
24077-009; 010	18-6710-2589	12 Dec-13 09:15	13 Dec-13 08:35	35d 3h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-012; 003	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD303 0012; 24077-012		
24077-009; 010	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD122 0012; 24077-009		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Angular (Corrected)	NA	C > T	NA	NA	23.8%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-012; 003		24077-009; 010	3.078	1.761	0.225	14	0.0041	CDF	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	1.998	2.586	0.5380	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.6191307	0.6191307	1	9.474	0.0082	Significant Effect
Error	0.9149181	0.06535129	14			
Total	1.534049		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.86	8.885	0.4318	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9258	0.8408	0.2092	Normal Distribution

Proportion Survived Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-012; 003	8	0.7375	0.5482	0.9268	0.725	0.3	1	0.08004	30.7%	0.0%
24077-009; 010	8	0.4	0.2313	0.5687	0.35	0.15	0.75	0.07134	50.44%	45.76%

Angular (Corrected) Transformed Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-012; 003	8	1.073	0.8293	1.317	1.019	0.5796	1.459	0.1031	27.17%	0.0%
24077-009; 010	8	0.6796	0.5009	0.8583	0.6331	0.3977	1.047	0.07558	31.46%	36.67%

Proportion Survived Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-012; 003	1	0.85	1	0.75	0.3	0.65	0.7	0.65
24077-009; 010	0.75	0.25	0.35	0.65	0.4	0.15	0.35	0.3

Angular (Corrected) Transformed Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-012; 003	1.459	1.173	1.459	1.047	0.5796	0.9377	0.9912	0.9377
24077-009; 010	1.047	0.5236	0.6331	0.9377	0.6847	0.3977	0.6331	0.5796

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	14-4302-5241	**Endpoint:**	Proportion Survived	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:10	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-012; 003	20-3314-4845	13 Dec-13 10:45	18 Dec-13 11:30	34d 1h	AECOM	Ecological Risk Asse
24077-011; 011	10-2024-6603	13 Dec-13 10:10	18 Dec-13 11:30	34d 2h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-012; 003	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD303 0012; 24077-012		
24077-011; 011	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD102 0012; 24077-011		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Angular (Corrected)	NA	C > T	NA	NA	26.2%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-012; 003		24077-011; 011	4.197	1.761	0.243	14	0.0004	CDF	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	1.849	2.586	0.8364	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	1.343829	1.343829	1	17.62	0.0009	Significant Effect
Error	1.06781	0.07627212	14			
Total	2.411638		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.258	8.885	0.7694	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9574	0.8408	0.6142	Normal Distribution

Proportion Survived Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-012; 003	8	0.7375	0.5482	0.9268	0.725	0.3	1	0.08004	30.7%	0.0%
24077-011; 011	8	0.2563	0.08839	0.4241	0.275	0	0.5	0.07099	78.35%	65.25%

Angular (Corrected) Transformed Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-012; 003	8	1.073	0.8293	1.317	1.019	0.5796	1.459	0.1031	27.17%	0.0%
24077-011; 011	8	0.4934	0.2761	0.7107	0.5412	0.112	0.7854	0.09189	52.67%	54.02%

Proportion Survived Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-012; 003	1	0.85	1	0.75	0.3	0.65	0.7	0.65
24077-011; 011	0	0.1	0.45	0.4	0.5	0.15	0.05	0.4

Angular (Corrected) Transformed Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-012; 003	1.459	1.173	1.459	1.047	0.5796	0.9377	0.9912	0.9377
24077-011; 011	0.112	0.3218	0.7353	0.6847	0.7854	0.3977	0.2255	0.6847

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	11-2318-6191	**Endpoint:**	Proportion Survived	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:09	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-012; 003	20-3314-4845	13 Dec-13 10:45	18 Dec-13 11:30	34d 1h	AECOM	Ecological Risk Asse
24077-013; 012	08-9458-1886	17 Dec-13 09:55	18 Dec-13 11:30	30d 2h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-012; 003	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD303 0012; 24077-012		
24077-013; 012	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD115 0012; 24077-013		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Angular (Corrected)	NA	C > T	NA	NA	22.4%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-012; 003		24077-013; 012	-0.2687	1.761	0.215	14	0.6040	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.089	2.586	0.3999	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.004316179	0.004316179	1	0.07222	0.7921	Non-Significant Effect
Error	0.8367481	0.05976772	14			
Total	0.8410642		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	2.461	8.885	0.2577	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9543	0.8408	0.5600	Normal Distribution

Proportion Survived Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-012; 003	8	0.7375	0.5482	0.9268	0.725	0.3	1	0.08004	30.7%	0.0%
24077-013; 012	8	0.7812	0.659	0.9035	0.8	0.6	0.95	0.0517	18.72%	-5.93%

Angular (Corrected) Transformed Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-012; 003	8	1.073	0.8293	1.317	1.019	0.5796	1.459	0.1031	27.17%	0.0%
24077-013; 012	8	1.106	0.9505	1.261	1.12	0.8861	1.345	0.0657	16.8%	-3.06%

Proportion Survived Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-012; 003	1	0.85	1	0.75	0.3	0.65	0.7	0.65
24077-013; 012	0.95	0.7	0.9	0.9	0.7	0.6	0.6	0.9

Angular (Corrected) Transformed Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-012; 003	1.459	1.173	1.459	1.047	0.5796	0.9377	0.9912	0.9377
24077-013; 012	1.345	0.9912	1.249	1.249	0.9912	0.8861	0.8861	1.249

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	04-4396-8994	**Endpoint:**	Proportion Survived	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:09	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-012; 003	20-3314-4845	13 Dec-13 10:45	18 Dec-13 11:30	34d 1h	AECOM	Ecological Risk Asse
24077-014; 013	10-4129-5048	17 Dec-13 11:00	18 Dec-13 11:30	30d 1h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-012; 003	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD303 0012; 24077-012		
24077-014; 013	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD114 0012; 24077-014		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Angular (Corrected)	NA	C > T	NA	NA	22.6%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-012; 003		24077-014; 013	0.07855	1.761	0.217	14	0.4693	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.077	2.586	0.4156	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.0003728643	0.0003728643	1	0.00617	0.9385	Non-Significant Effect
Error	0.8460661	0.06043329	14			
Total	0.8464389		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	2.37	8.885	0.2776	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9467	0.8408	0.4400	Normal Distribution

Proportion Survived Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-012; 003	8	0.7375	0.5482	0.9268	0.725	0.3	1	0.08004	30.7%	0.0%
24077-014; 013	8	0.75	0.6141	0.8859	0.8	0.4	0.95	0.05748	21.68%	-1.7%

Angular (Corrected) Transformed Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-012; 003	8	1.073	0.8293	1.317	1.019	0.5796	1.459	0.1031	27.17%	0.0%
24077-014; 013	8	1.063	0.905	1.222	1.107	0.6847	1.345	0.06696	17.81%	0.9%

Proportion Survived Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-012; 003	1	0.85	1	0.75	0.3	0.65	0.7	0.65
24077-014; 013	0.7	0.8	0.85	0.95	0.7	0.8	0.4	0.8

Angular (Corrected) Transformed Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-012; 003	1.459	1.173	1.459	1.047	0.5796	0.9377	0.9912	0.9377
24077-014; 013	0.9912	1.107	1.173	1.345	0.9912	1.107	0.6847	1.107

CETIS Analytical Reports
Dry Weight Comparisons

Carr Point MRP Site 1
Naval Station, Newport, Rhode Island

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	20-7064-7965	**Endpoint:**	Mean Dry Weight-mg	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:02	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-000; 000	18-1601-2962	03 Jan-14 12:00	03 Jan-14 12:00	13d 0h	AECOM	Ecological Risk Asse
24077-006; 001	07-4145-0866	11 Dec-13 09:06	11 Dec-13 12:15	36d 3h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-000; 000	Laboratory Control S	Carr Point MRP Site 1, Naval Stat	Laboratory Control; 24077-000		
24077-006; 001	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD302 0012; 24077-006		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	23.2%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-000; 000		24077-006; 001	2.695	1.761	0.281	14	0.0087	CDF	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	1.903	2.586	0.7167	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.7400482	0.7400482	1	7.265	0.0174	Significant Effect
Error	1.426018	0.1018584	14			
Total	2.166066		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.065	8.885	0.9357	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.961	0.8408	0.6807	Normal Distribution

Mean Dry Weight-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-000; 000	8	1.21	0.9392	1.481	1.235	0.7937	1.613	0.1146	26.78%	0.0%
24077-006; 001	8	0.7801	0.5175	1.043	0.7938	0.1933	1.236	0.111	40.26%	35.54%

Mean Dry Weight-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-000; 000	0.7937	1.524	0.7937	1.488	1.187	1.284	1.613	0.9989
24077-006; 001	0.6022	1.236	0.6788	0.77	1.076	0.8177	0.8671	0.1933

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	16-9609-8264	**Endpoint:**	Mean Dry Weight-mg	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:02	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-000; 000	18-1601-2962	03 Jan-14 12:00	03 Jan-14 12:00	13d 0h	AECOM	Ecological Risk Asse
24077-010; 002	10-5151-8705	13 Dec-13 09:50	18 Dec-13 11:30	34d 2h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-000; 000	Laboratory Control S	Carr Point MRP Site 1, Naval Stat	Laboratory Control; 24077-000		
24077-010; 002	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD304 0012; 24077-010		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	20.5%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-000; 000		24077-010; 002	2.321	1.761	0.249	14	0.0180	CDF	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	1.528	2.586	1.0000	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.4287893	0.4287893	1	5.386	0.0359	Significant Effect
Error	1.114569	0.07961206	14			
Total	1.543358		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.941	8.885	0.4014	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9251	0.8408	0.2036	Normal Distribution

Mean Dry Weight-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-000; 000	8	1.21	0.9392	1.481	1.235	0.7937	1.613	0.1146	26.78%	0.0%
24077-010; 002	8	0.8828	0.6883	1.077	0.787	0.6514	1.238	0.08227	26.36%	27.05%

Mean Dry Weight-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-000; 000	0.7937	1.524	0.7937	1.488	1.187	1.284	1.613	0.9989
24077-010; 002	0.72	0.7258	1.238	0.8192	0.6514	0.7547	1.238	0.9145

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	03-3785-8423	**Endpoint:**	Mean Dry Weight-mg	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:02	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-000; 000	18-1601-2962	03 Jan-14 12:00	03 Jan-14 12:00	13d 0h	AECOM	Ecological Risk Asse
24077-012; 003	20-3314-4845	13 Dec-13 10:45	18 Dec-13 11:30	34d 1h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-000; 000	Laboratory Control S	Carr Point MRP Site 1, Naval Stat	Laboratory Control; 24077-000		
24077-012; 003	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD303 0012; 24077-012		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	22.1%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-000; 000		24077-012; 003	1.578	1.761	0.267	14	0.0684	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	1.865	2.586	0.7993	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.2287848	0.2287848	1	2.491	0.1368	Non-Significant Effect
Error	1.285673	0.09183378	14			
Total	1.514458		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.337	8.885	0.7113	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9427	0.8408	0.3833	Normal Distribution

Mean Dry Weight-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-000; 000	8	1.21	0.9392	1.481	1.235	0.7937	1.613	0.1146	26.78%	0.0%
24077-012; 003	8	0.9711	0.7367	1.205	1.037	0.425	1.295	0.09912	28.87%	19.76%

Mean Dry Weight-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-000; 000	0.7937	1.524	0.7937	1.488	1.187	1.284	1.613	0.9989
24077-012; 003	1.06	1.015	1.199	0.752	0.425	1.295	0.8814	1.142

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	09-4974-2661	**Endpoint:**	Mean Dry Weight-mg	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:02	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-000; 000	18-1601-2962	03 Jan-14 12:00	03 Jan-14 12:00	13d 0h	AECOM	Ecological Risk Asse
24077-001; 004	02-3274-4005	04 Dec-13 12:10	06 Dec-13 13:30	43d		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-000; 000	Laboratory Control S	Carr Point MRP Site 1, Naval Stat	Laboratory Control; 24077-000		
24077-001; 004	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD121 0012; 24077-001		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	18.5%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-000; 000		24077-001; 004	0.8178	1.761	0.223	14	0.2136	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	1.7	2.586	1.0000	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.04303214	0.04303214	1	0.6687	0.4272	Non-Significant Effect
Error	0.9008699	0.06434785	14			
Total	0.943902		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	4.449	8.885	0.0673	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9677	0.8408	0.8008	Normal Distribution

Mean Dry Weight-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-000; 000	8	1.21	0.9392	1.481	1.235	0.7937	1.613	0.1146	26.78%	0.0%
24077-001; 004	8	1.107	0.978	1.235	1.127	0.8888	1.282	0.05434	13.89%	8.57%

Mean Dry Weight-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-000; 000	0.7937	1.524	0.7937	1.488	1.187	1.284	1.613	0.9989
24077-001; 004	1.115	1.266	0.8888	0.9267	1.282	0.9991	1.236	1.139

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	03-1560-4605	**Endpoint:**	Mean Dry Weight-mg	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:02	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-000; 000	18-1601-2962	03 Jan-14 12:00	03 Jan-14 12:00	13d 0h	AECOM	Ecological Risk Asse
24077-002; 005	01-7804-1542	05 Dec-13 10:45	06 Dec-13 13:30	42d 1h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-000; 000	Laboratory Control S	Carr Point MRP Site 1, Naval Stat	Laboratory Control; 24077-000		
24077-002; 005	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD120 0012; 24077-002		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	25.1%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-000; 000		24077-002; 005	1.484	1.761	0.304	14	0.0800	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	1.975	2.586	0.5778	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.261684	0.261684	1	2.201	0.1601	Non-Significant Effect
Error	1.664342	0.1188816	14			
Total	1.926026		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.263	8.885	0.7661	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9179	0.8408	0.1562	Normal Distribution

Mean Dry Weight-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-000; 000	8	1.21	0.9392	1.481	1.235	0.7937	1.613	0.1146	26.78%	0.0%
24077-002; 005	8	0.9545	0.6499	1.259	1.081	0.2967	1.366	0.1288	38.16%	21.13%

Mean Dry Weight-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-000; 000	0.7937	1.524	0.7937	1.488	1.187	1.284	1.613	0.9989
24077-002; 005	0.5336	1.014	1.148	1.366	1.156	1.211	0.91	0.2967

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	10-0239-6270	**Endpoint:**	Mean Dry Weight-mg	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:02	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-000; 000	18-1601-2962	03 Jan-14 12:00	03 Jan-14 12:00	13d 0h	AECOM	Ecological Risk Asse
24077-003; 006	06-6548-1906	05 Dec-13 12:54	06 Dec-13 13:30	41d 23h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-000; 000	Laboratory Control S	Carr Point MRP Site 1, Naval Stat	Laboratory Control; 24077-000		
24077-003; 006	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD112 0012; 24077-003		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	21.2%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-000; 000		24077-003; 006	1.599	1.761	0.256	14	0.0660	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	1.482	2.586	1.0000	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.2165339	0.2165339	1	2.558	0.1320	Non-Significant Effect
Error	1.184932	0.08463801	14			
Total	1.401466		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.637	8.885	0.5313	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.936	0.8408	0.3032	Normal Distribution

Mean Dry Weight-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-000; 000	8	1.21	0.9392	1.481	1.235	0.7937	1.613	0.1146	26.78%	0.0%
24077-003; 006	8	0.9776	0.7657	1.189	0.9909	0.6	1.354	0.08958	25.92%	19.22%

Mean Dry Weight-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-000; 000	0.7937	1.524	0.7937	1.488	1.187	1.284	1.613	0.9989
24077-003; 006	1.142	0.6	1.11	1.354	0.7367	0.8719	1.16	0.845

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	07-3395-4668	**Endpoint:**	Mean Dry Weight-mg	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:02	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-000; 000	18-1601-2962	03 Jan-14 12:00	03 Jan-14 12:00	13d 0h	AECOM	Ecological Risk Asse
24077-005; 007	00-8496-1430	10 Dec-13 09:39	11 Dec-13 12:15	37d 2h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-000; 000	Laboratory Control S	Carr Point MRP Site 1, Naval Stat	Laboratory Control; 24077-000		
24077-005; 007	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD106 0012; 24077-005		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	23.8%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-000; 000		24077-005; 007	1.512	1.761	0.288	14	0.0763	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.184	2.586	0.2867	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.2450537	0.2450537	1	2.287	0.1527	Non-Significant Effect
Error	1.499812	0.1071294	14			
Total	1.744866		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.039	8.885	0.9610	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9546	0.8408	0.5652	Normal Distribution

Mean Dry Weight-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-000; 000	8	1.21	0.9392	1.481	1.235	0.7937	1.613	0.1146	26.78%	0.0%
24077-005; 007	8	0.9627	0.6865	1.239	0.9406	0.5778	1.653	0.1168	34.32%	20.45%

Mean Dry Weight-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-000; 000	0.7937	1.524	0.7937	1.488	1.187	1.284	1.613	0.9989
24077-005; 007	0.5778	0.7043	1.004	1.066	0.8769	1.063	1.653	0.7563

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	05-2688-3600	**Endpoint:**	Mean Dry Weight-mg	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:01	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-000; 000	18-1601-2962	03 Jan-14 12:00	03 Jan-14 12:00	13d 0h	AECOM	Ecological Risk Asse
24077-007; 008	21-1048-1554	11 Dec-13 13:29	13 Dec-13 08:35	35d 23h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-000; 000	Laboratory Control S	Carr Point MRP Site 1, Naval Stat	Laboratory Control; 24077-000		
24077-007; 008	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD118 0012; 24077-007		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	19.3%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-000; 000		24077-007; 008	2.213	1.761	0.233	14	0.0220	CDF	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	1.629	2.586	1.0000	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.3430501	0.3430501	1	4.896	0.0440	Significant Effect
Error	0.9810002	0.07007144	14			
Total	1.32405		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	2.997	8.885	0.1709	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9349	0.8408	0.2910	Normal Distribution

Mean Dry Weight-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-000; 000	8	1.21	0.9392	1.481	1.235	0.7937	1.613	0.1146	26.78%	0.0%
24077-007; 008	8	0.9174	0.7608	1.074	0.9468	0.542	1.197	0.06621	20.41%	24.2%

Mean Dry Weight-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-000; 000	0.7937	1.524	0.7937	1.488	1.187	1.284	1.613	0.9989
24077-007; 008	0.952	1.017	0.965	0.9417	0.805	0.542	0.92	1.197

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	15-4972-7085	**Endpoint:**	Mean Dry Weight-mg	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:01	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-000; 000	18-1601-2962	03 Jan-14 12:00	03 Jan-14 12:00	13d 0h	AECOM	Ecological Risk Asse
24077-008; 009	08-1847-2615	12 Dec-13 07:50	13 Dec-13 08:35	35d 4h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-000; 000	Laboratory Control S	Carr Point MRP Site 1, Naval Stat	Laboratory Control; 24077-000		
24077-008; 009	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD124 0012; 24077-008		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	18.4%	

Unequal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-000; 000		24077-008; 009	5.779	1.86	0.222	8	0.0002	CDF	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	1.804	2.586	0.9481	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	1.908051	1.908051	1	33.4	<0.0001	Significant Effect
Error	0.7998393	0.05713138	14			
Total	2.707891		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	11.44	8.885	0.0047	Unequal Variances
Distribution	Shapiro-Wilk W Normality	0.9542	0.8408	0.5590	Normal Distribution

Mean Dry Weight-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-000; 000	8	1.21	0.9392	1.481	1.235	0.7937	1.613	0.1146	26.78%	0.0%
24077-008; 009	8	0.5196	0.4394	0.5997	0.5018	0.4157	0.7094	0.03389	18.45%	57.07%

Mean Dry Weight-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-000; 000	0.7937	1.524	0.7937	1.488	1.187	1.284	1.613	0.9989
24077-008; 009	0.44	0.6047	0.515	0.4656	0.5175	0.4157	0.7094	0.4886

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	13-5011-2083	**Endpoint:**	Mean Dry Weight-mg	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:01	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-000; 000	18-1601-2962	03 Jan-14 12:00	03 Jan-14 12:00	13d 0h	AECOM	Ecological Risk Asse
24077-009; 010	18-6710-2589	12 Dec-13 09:15	13 Dec-13 08:35	35d 3h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-000; 000	Laboratory Control S	Carr Point MRP Site 1, Naval Stat	Laboratory Control; 24077-000		
24077-009; 010	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD122 0012; 24077-009		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	19.2%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-000; 000		24077-009; 010	5.345	1.761	0.233	14	<0.0001	CDF	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	1.632	2.586	1.0000	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	1.994838	1.994838	1	28.57	0.0001	Significant Effect
Error	0.9776509	0.06983221	14			
Total	2.972489		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	3.038	8.885	0.1658	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9581	0.8408	0.6278	Normal Distribution

Mean Dry Weight-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-000; 000	8	1.21	0.9392	1.481	1.235	0.7937	1.613	0.1146	26.78%	0.0%
24077-009; 010	8	0.504	0.3486	0.6595	0.5497	0.2286	0.765	0.06575	36.9%	58.35%

Mean Dry Weight-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-000; 000	0.7937	1.524	0.7937	1.488	1.187	1.284	1.613	0.9989
24077-009; 010	0.584	0.368	0.6571	0.5154	0.6075	0.3067	0.2286	0.765

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	13-0912-0731	**Endpoint:**	Mean Dry Weight-mg	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:01	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-000; 000	18-1601-2962	03 Jan-14 12:00	03 Jan-14 12:00	13d 0h	AECOM	Ecological Risk Asse
24077-011; 011	10-2024-6603	13 Dec-13 10:10	18 Dec-13 11:30	34d 2h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-000; 000	Laboratory Control S	Carr Point MRP Site 1, Naval Stat	Laboratory Control; 24077-000		
24077-011; 011	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD102 0012; 24077-011		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	19.6%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-000; 000		24077-011; 011	5.963	1.771	0.238	13	<0.0001	CDF	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	1.667	2.548	1.0000	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	2.390785	2.390785	1	35.55	<0.0001	Significant Effect
Error	0.8741685	0.06724373	13			
Total	3.264953		14			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	4.548	10.79	0.0841	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9624	0.8328	0.7345	Normal Distribution

Mean Dry Weight-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-000; 000	8	1.21	0.9392	1.481	1.235	0.7937	1.613	0.1146	26.78%	0.0%
24077-011; 011	7	0.41	0.2694	0.5506	0.4562	0.2322	0.6467	0.05745	37.08%	66.12%

Mean Dry Weight-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-000; 000	0.7937	1.524	0.7937	1.488	1.187	1.284	1.613	0.9989
24077-011; 011	0.295	0.2322	0.4562	0.261	0.6467	0.51	0.4688	

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	07-5009-1249	**Endpoint:**	Mean Dry Weight-mg	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 15:58	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-000; 000	18-1601-2962	03 Jan-14 12:00	03 Jan-14 12:00	13d 0h	AECOM	Ecological Risk Asse
24077-013; 012	08-9458-1886	17 Dec-13 09:55	18 Dec-13 11:30	30d 2h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-000; 000	Laboratory Control S	Carr Point MRP Site 1, Naval Stat	Laboratory Control; 24077-000		
24077-013; 012	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD115 0012; 24077-013		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	19.8%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-000; 000		24077-013; 012	1.854	1.761	0.24	14	0.0424	CDF	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	1.585	2.586	1.0000	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.2544919	0.2544919	1	3.439	0.0849	Non-Significant Effect
Error	1.035978	0.07399844	14			
Total	1.29047		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	2.448	8.885	0.2604	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9469	0.8408	0.4418	Normal Distribution

Mean Dry Weight-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-000; 000	8	1.21	0.9392	1.481	1.235	0.7937	1.613	0.1146	26.78%	0.0%
24077-013; 012	8	0.958	0.7848	1.131	0.9814	0.6314	1.197	0.07325	21.63%	20.84%

Mean Dry Weight-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-000; 000	0.7937	1.524	0.7937	1.488	1.187	1.284	1.613	0.9989
24077-013; 012	0.9	1.07	1.008	1.194	0.6314	1.197	0.7083	0.9544

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	18-8841-0473	**Endpoint:**	Mean Dry Weight-mg	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 15:58	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-000; 000	18-1601-2962	03 Jan-14 12:00	03 Jan-14 12:00	13d 0h	AECOM	Ecological Risk Asse
24077-014; 013	10-4129-5048	17 Dec-13 11:00	18 Dec-13 11:30	30d 1h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-000; 000	Laboratory Control S	Carr Point MRP Site 1, Naval Stat	Laboratory Control; 24077-000		
24077-014; 013	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD114 0012; 24077-014		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	18.3%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-000; 000		24077-014; 013	1.324	1.761	0.222	14	0.1033	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	1.711	2.586	1.0000	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.1113896	0.1113896	1	1.754	0.2066	Non-Significant Effect
Error	0.8889669	0.06349763	14			
Total	1.000357		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	4.794	8.885	0.0556	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.962	0.8408	0.6981	Normal Distribution

Mean Dry Weight-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-000; 000	8	1.21	0.9392	1.481	1.235	0.7937	1.613	0.1146	26.78%	0.0%
24077-014; 013	8	1.043	0.9196	1.167	1.009	0.9031	1.291	0.05234	14.19%	13.79%

Mean Dry Weight-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-000; 000	0.7937	1.524	0.7937	1.488	1.187	1.284	1.613	0.9989
24077-014; 013	0.9207	1.291	0.9924	1.025	1.078	0.9069	1.23	0.9031

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	08-0411-7588	**Endpoint:**	Mean Dry Weight-mg	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:05	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-006; 001	07-4145-0866	11 Dec-13 09:06	11 Dec-13 12:15	36d 3h	AECOM	Ecological Risk Asse
24077-001; 004	02-3274-4005	04 Dec-13 12:10	06 Dec-13 13:30	43d		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-006; 001	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD302 0012; 24077-006		
24077-001; 004	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD121 0012; 24077-001		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	27.9%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-006; 001		24077-001; 004	-2.64	1.761	0.218	14	0.9903	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.457	2.586	0.0941	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.4261722	0.4261722	1	6.972	0.0194	Significant Effect
Error	0.8558121	0.06112943	14			
Total	1.281984		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	4.176	8.885	0.0788	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9624	0.8408	0.7055	Normal Distribution

Mean Dry Weight-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-006; 001	8	0.7801	0.5175	1.043	0.7938	0.1933	1.236	0.111	40.26%	0.0%
24077-001; 004	8	1.107	0.978	1.235	1.127	0.8888	1.282	0.05434	13.89%	-41.84%

Mean Dry Weight-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-006; 001	0.6022	1.236	0.6788	0.77	1.076	0.8177	0.8671	0.1933
24077-001; 004	1.115	1.266	0.8888	0.9267	1.282	0.9991	1.236	1.139

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	01-5622-0498	**Endpoint:**	Mean Dry Weight-mg	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:05	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-006; 001	07-4145-0866	11 Dec-13 09:06	11 Dec-13 12:15	36d 3h	AECOM	Ecological Risk Asse
24077-002; 005	01-7804-1542	05 Dec-13 10:45	06 Dec-13 13:30	42d 1h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-006; 001	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD302 0012; 24077-006		
24077-002; 005	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD120 0012; 24077-002		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	38.4%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-006; 001		24077-002; 005	-1.025	1.761	0.3	14	0.8387	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.002	2.586	0.5307	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.1215986	0.1215986	1	1.051	0.3226	Non-Significant Effect
Error	1.619285	0.1156632	14			
Total	1.740883		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.345	8.885	0.7055	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.935	0.8408	0.2918	Normal Distribution

Mean Dry Weight-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-006; 001	8	0.7801	0.5175	1.043	0.7938	0.1933	1.236	0.111	40.26%	0.0%
24077-002; 005	8	0.9545	0.6499	1.259	1.081	0.2967	1.366	0.1288	38.16%	-22.35%

Mean Dry Weight-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-006; 001	0.6022	1.236	0.6788	0.77	1.076	0.8177	0.8671	0.1933
24077-002; 005	0.5336	1.014	1.148	1.366	1.156	1.211	0.91	0.2967

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	00-7981-1148	**Endpoint:**	Mean Dry Weight-mg	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:05	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-006; 001	07-4145-0866	11 Dec-13 09:06	11 Dec-13 12:15	36d 3h	AECOM	Ecological Risk Asse
24077-003; 006	06-6548-1906	05 Dec-13 12:54	06 Dec-13 13:30	41d 23h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-006; 001	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD302 0012; 24077-006		
24077-003; 006	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD112 0012; 24077-003		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	32.2%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-006; 001		24077-003; 006	-1.384	1.761	0.251	14	0.9060	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.129	2.586	0.3492	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.1559685	0.1559685	1	1.916	0.1880	Non-Significant Effect
Error	1.139874	0.0814196	14			
Total	1.295843		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.536	8.885	0.5849	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.985	0.8408	0.9911	Normal Distribution

Mean Dry Weight-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-006; 001	8	0.7801	0.5175	1.043	0.7938	0.1933	1.236	0.111	40.26%	0.0%
24077-003; 006	8	0.9776	0.7657	1.189	0.9909	0.6	1.354	0.08958	25.92%	-25.31%

Mean Dry Weight-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-006; 001	0.6022	1.236	0.6788	0.77	1.076	0.8177	0.8671	0.1933
24077-003; 006	1.142	0.6	1.11	1.354	0.7367	0.8719	1.16	0.845

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	07-5868-3974	**Endpoint:**	Mean Dry Weight-mg	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:05	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-006; 001	07-4145-0866	11 Dec-13 09:06	11 Dec-13 12:15	36d 3h	AECOM	Ecological Risk Asse
24077-005; 007	00-8496-1430	10 Dec-13 09:39	11 Dec-13 12:15	37d 2h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-006; 001	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD302 0012; 24077-006		
24077-005; 007	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD106 0012; 24077-005		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	36.4%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-006; 001		24077-005; 007	-1.133	1.761	0.284	14	0.8619	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.218	2.586	0.2533	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.1333941	0.1333941	1	1.284	0.2762	Non-Significant Effect
Error	1.454754	0.103911	14			
Total	1.588148		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.107	8.885	0.8969	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9733	0.8408	0.8882	Normal Distribution

Mean Dry Weight-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-006; 001	8	0.7801	0.5175	1.043	0.7938	0.1933	1.236	0.111	40.26%	0.0%
24077-005; 007	8	0.9627	0.6865	1.239	0.9406	0.5778	1.653	0.1168	34.32%	-23.41%

Mean Dry Weight-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-006; 001	0.6022	1.236	0.6788	0.77	1.076	0.8177	0.8671	0.1933
24077-005; 007	0.5778	0.7043	1.004	1.066	0.8769	1.063	1.653	0.7563

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	00-1129-3754	**Endpoint:**	Mean Dry Weight-mg	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:04	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-006; 001	07-4145-0866	11 Dec-13 09:06	11 Dec-13 12:15	36d 3h	AECOM	Ecological Risk Asse
24077-007; 008	21-1048-1554	11 Dec-13 13:29	13 Dec-13 08:35	35d 23h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-006; 001	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD302 0012; 24077-006		
24077-007; 008	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD118 0012; 24077-007		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	29.2%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-006; 001		24077-007; 008	-1.062	1.761	0.228	14	0.8469	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.349	2.586	0.1508	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.07538086	0.07538086	1	1.128	0.3063	Non-Significant Effect
Error	0.9359424	0.06685302	14			
Total	1.011323		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	2.813	8.885	0.1958	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9432	0.8408	0.3898	Normal Distribution

Mean Dry Weight-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-006; 001	8	0.7801	0.5175	1.043	0.7938	0.1933	1.236	0.111	40.26%	0.0%
24077-007; 008	8	0.9174	0.7608	1.074	0.9468	0.542	1.197	0.06621	20.41%	-17.6%

Mean Dry Weight-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-006; 001	0.6022	1.236	0.6788	0.77	1.076	0.8177	0.8671	0.1933
24077-007; 008	0.952	1.017	0.965	0.9417	0.805	0.542	0.92	1.197

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	04-9130-2025	**Endpoint:**	Mean Dry Weight-mg	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:04	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-006; 001	07-4145-0866	11 Dec-13 09:06	11 Dec-13 12:15	36d 3h	AECOM	Ecological Risk Asse
24077-008; 009	08-1847-2615	12 Dec-13 07:50	13 Dec-13 08:35	35d 4h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-006; 001	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD302 0012; 24077-006		
24077-008; 009	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD124 0012; 24077-008		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	27.7%	

Unequal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-006; 001		24077-008; 009	2.244	1.86	0.216	8	0.0275	CDF	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.616	2.586	0.0426	Outlier Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.2715054	0.2715054	1	5.036	0.0415	Significant Effect
Error	0.7547815	0.05391296	14			
Total	1.026287		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	10.74	8.885	0.0057	Unequal Variances
Distribution	Shapiro-Wilk W Normality	0.9092	0.8408	0.1128	Normal Distribution

Mean Dry Weight-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-006; 001	8	0.7801	0.5175	1.043	0.7938	0.1933	1.236	0.111	40.26%	0.0%
24077-008; 009	8	0.5196	0.4394	0.5997	0.5018	0.4157	0.7094	0.03389	18.45%	33.4%

Mean Dry Weight-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-006; 001	0.6022	1.236	0.6788	0.77	1.076	0.8177	0.8671	0.1933
24077-008; 009	0.44	0.6047	0.515	0.4656	0.5175	0.4157	0.7094	0.4886

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	16-7942-3351	**Endpoint:**	Mean Dry Weight-mg	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:04	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-006; 001	07-4145-0866	11 Dec-13 09:06	11 Dec-13 12:15	36d 3h	AECOM	Ecological Risk Asse
24077-008; 009	08-1847-2615	12 Dec-13 07:50	13 Dec-13 08:35	35d 4h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-006; 001	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD302 0012; 24077-006		
24077-008; 009	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD124 0012; 24077-008		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	17.7%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-006; 001		24077-008; 009	3.991	1.771	0.153	13	0.0008	CDF	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.4426978	0.4426978	1	15.93	0.0015	Significant Effect
Error	0.3613065	0.02779281	13			
Total	0.8040043		14			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	5.389	9.155	0.0437	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9377	0.8328	0.3544	Normal Distribution

Mean Dry Weight-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-006; 001	7	0.8639	0.6582	1.07	0.8177	0.6022	1.236	0.08409	25.75%	0.0%
24077-008; 009	8	0.5196	0.4394	0.5997	0.5018	0.4157	0.7094	0.03389	18.45%	39.86%

Mean Dry Weight-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-006; 001	0.6022	1.236	0.6788	0.77	1.076	0.8177	0.8671	Outlier
24077-008; 009	0.44	0.6047	0.515	0.4656	0.5175	0.4157	0.7094	0.4886

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	16-6276-5504	**Endpoint:**	Mean Dry Weight-mg	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:04	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-006; 001	07-4145-0866	11 Dec-13 09:06	11 Dec-13 12:15	36d 3h	AECOM	Ecological Risk Asse
24077-009; 010	18-6710-2589	12 Dec-13 09:15	13 Dec-13 08:35	35d 3h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-006; 001	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD302 0012; 24077-006		
24077-009; 010	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD122 0012; 24077-009		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	29.1%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-006; 001		24077-009; 010	2.139	1.761	0.227	14	0.0253	CDF	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.353	2.586	0.1482	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.304844	0.304844	1	4.576	0.0505	Non-Significant Effect
Error	0.9325931	0.06661379	14			
Total	1.237437		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	2.852	8.885	0.1902	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9763	0.8408	0.9278	Normal Distribution

Mean Dry Weight-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-006; 001	8	0.7801	0.5175	1.043	0.7938	0.1933	1.236	0.111	40.26%	0.0%
24077-009; 010	8	0.504	0.3486	0.6595	0.5497	0.2286	0.765	0.06575	36.9%	35.39%

Mean Dry Weight-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-006; 001	0.6022	1.236	0.6788	0.77	1.076	0.8177	0.8671	0.1933
24077-009; 010	0.584	0.368	0.6571	0.5154	0.6075	0.3067	0.2286	0.765

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	14-5534-8077	**Endpoint:**	Mean Dry Weight-mg	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:04	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-006; 001	07-4145-0866	11 Dec-13 09:06	11 Dec-13 12:15	36d 3h	AECOM	Ecological Risk Asse
24077-011; 011	10-2024-6603	13 Dec-13 10:10	18 Dec-13 11:30	34d 2h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-006; 001	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD302 0012; 24077-006		
24077-011; 011	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD102 0012; 24077-011		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	29.7%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-006; 001		24077-011; 011	2.832	1.771	0.232	13	0.0071	CDF	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.411	2.548	0.0990	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.5114045	0.5114045	1	8.019	0.0141	Significant Effect
Error	0.8291106	0.06377774	13			
Total	1.340515		14			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	4.269	10.79	0.0968	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.95	0.8328	0.5243	Normal Distribution

Mean Dry Weight-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-006; 001	8	0.7801	0.5175	1.043	0.7938	0.1933	1.236	0.111	40.26%	0.0%
24077-011; 011	7	0.41	0.2694	0.5506	0.4562	0.2322	0.6467	0.05745	37.08%	47.44%

Mean Dry Weight-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-006; 001	0.6022	1.236	0.6788	0.77	1.076	0.8177	0.8671	0.1933
24077-011; 011	0.295	0.2322	0.4562	0.261	0.6467	0.51	0.4688	

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	17-1110-9465	**Endpoint:**	Mean Dry Weight-mg	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:04	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-006; 001	07-4145-0866	11 Dec-13 09:06	11 Dec-13 12:15	36d 3h	AECOM	Ecological Risk Asse
24077-013; 012	08-9458-1886	17 Dec-13 09:55	18 Dec-13 11:30	30d 2h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-006; 001	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD302 0012; 24077-006		
24077-013; 012	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD115 0012; 24077-013		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	30.0%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-006; 001		24077-013; 012	-1.337	1.761	0.234	14	0.8988	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.283	2.586	0.1972	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.1265855	0.1265855	1	1.788	0.2024	Non-Significant Effect
Error	0.9909204	0.07078002	14			
Total	1.117506		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	2.298	8.885	0.2946	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9796	0.8408	0.9601	Normal Distribution

Mean Dry Weight-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-006; 001	8	0.7801	0.5175	1.043	0.7938	0.1933	1.236	0.111	40.26%	0.0%
24077-013; 012	8	0.958	0.7848	1.131	0.9814	0.6314	1.197	0.07325	21.63%	-22.8%

Mean Dry Weight-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-006; 001	0.6022	1.236	0.6788	0.77	1.076	0.8177	0.8671	0.1933
24077-013; 012	0.9	1.07	1.008	1.194	0.6314	1.197	0.7083	0.9544

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	08-1333-1898	**Endpoint:**	Mean Dry Weight-mg	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:04	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-006; 001	07-4145-0866	11 Dec-13 09:06	11 Dec-13 12:15	36d 3h	AECOM	Ecological Risk Asse
24077-014; 013	10-4129-5048	17 Dec-13 11:00	18 Dec-13 11:30	30d 1h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-006; 001	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD302 0012; 24077-006		
24077-014; 013	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD114 0012; 24077-014		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	27.7%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-006; 001		24077-014; 013	-2.144	1.761	0.216	14	0.9750	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.474	2.586	0.0869	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.2772125	0.2772125	1	4.599	0.0500	Significant Effect
Error	0.8439091	0.06027922	14			
Total	1.121122		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	4.5	8.885	0.0654	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9445	0.8408	0.4080	Normal Distribution

Mean Dry Weight-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-006; 001	8	0.7801	0.5175	1.043	0.7938	0.1933	1.236	0.111	40.26%	0.0%
24077-014; 013	8	1.043	0.9196	1.167	1.009	0.9031	1.291	0.05234	14.19%	-33.75%

Mean Dry Weight-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-006; 001	0.6022	1.236	0.6788	0.77	1.076	0.8177	0.8671	0.1933
24077-014; 013	0.9207	1.291	0.9924	1.025	1.078	0.9069	1.23	0.9031

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	10-3923-4511	**Endpoint:**	Mean Dry Weight-mg	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:08	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-010; 002	10-5151-8705	13 Dec-13 09:50	18 Dec-13 11:30	34d 2h	AECOM	Ecological Risk Asse
24077-001; 004	02-3274-4005	04 Dec-13 12:10	06 Dec-13 13:30	43d		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-010; 002	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD304 0012; 24077-010		
24077-001; 004	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD121 0012; 24077-001		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	19.7%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-010; 002		24077-001; 004	-2.269	1.761	0.174	14	0.9802	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	1.867	2.586	0.7955	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.2001472	0.2001472	1	5.147	0.0396	Significant Effect
Error	0.5443633	0.03888309	14			
Total	0.7445105		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	2.293	8.885	0.2960	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9125	0.8408	0.1275	Normal Distribution

Mean Dry Weight-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-010; 002	8	0.8828	0.6883	1.077	0.787	0.6514	1.238	0.08227	26.36%	0.0%
24077-001; 004	8	1.107	0.978	1.235	1.127	0.8888	1.282	0.05434	13.89%	-25.34%

Mean Dry Weight-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-010; 002	0.72	0.7258	1.238	0.8192	0.6514	0.7547	1.238	0.9145
24077-001; 004	1.115	1.266	0.8888	0.9267	1.282	0.9991	1.236	1.139

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	07-3111-4175	**Endpoint:**	Mean Dry Weight-mg	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:08	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-010; 002	10-5151-8705	13 Dec-13 09:50	18 Dec-13 11:30	34d 2h	AECOM	Ecological Risk Asse
24077-002; 005	01-7804-1542	05 Dec-13 10:45	06 Dec-13 13:30	42d 1h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-010; 002	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD304 0012; 24077-010		
24077-002; 005	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD120 0012; 24077-002		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	30.5%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-010; 002		24077-002; 005	-0.4687	1.761	0.269	14	0.6768	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.228	2.586	0.2440	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.02052614	0.02052614	1	0.2197	0.6465	Non-Significant Effect
Error	1.307836	0.09341684	14			
Total	1.328362		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	2.45	8.885	0.2599	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9566	0.8408	0.6008	Normal Distribution

Mean Dry Weight-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-010; 002	8	0.8828	0.6883	1.077	0.787	0.6514	1.238	0.08227	26.36%	0.0%
24077-002; 005	8	0.9545	0.6499	1.259	1.081	0.2967	1.366	0.1288	38.16%	-8.11%

Mean Dry Weight-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-010; 002	0.72	0.7258	1.238	0.8192	0.6514	0.7547	1.238	0.9145
24077-002; 005	0.5336	1.014	1.148	1.366	1.156	1.211	0.91	0.2967

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	08-8581-6973	**Endpoint:**	Mean Dry Weight-mg	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:07	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-010; 002	10-5151-8705	13 Dec-13 09:50	18 Dec-13 11:30	34d 2h	AECOM	Ecological Risk Asse
24077-003; 006	06-6548-1906	05 Dec-13 12:54	06 Dec-13 13:30	41d 23h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-010; 002	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD304 0012; 24077-010		
24077-003; 006	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD112 0012; 24077-003		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	24.3%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-010; 002		24077-003; 006	-0.779	1.761	0.214	14	0.7755	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	1.607	2.586	1.0000	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.03590569	0.03590569	1	0.6068	0.4490	Non-Significant Effect
Error	0.8284256	0.05917326	14			
Total	0.8643312		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.186	8.885	0.8280	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9265	0.8408	0.2148	Normal Distribution

Mean Dry Weight-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-010; 002	8	0.8828	0.6883	1.077	0.787	0.6514	1.238	0.08227	26.36%	0.0%
24077-003; 006	8	0.9776	0.7657	1.189	0.9909	0.6	1.354	0.08958	25.92%	-10.73%

Mean Dry Weight-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-010; 002	0.72	0.7258	1.238	0.8192	0.6514	0.7547	1.238	0.9145
24077-003; 006	1.142	0.6	1.11	1.354	0.7367	0.8719	1.16	0.845

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	18-5152-5931	**Endpoint:**	Mean Dry Weight-mg	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:07	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-010; 002	10-5151-8705	13 Dec-13 09:50	18 Dec-13 11:30	34d 2h	AECOM	Ecological Risk Asse
24077-005; 007	00-8496-1430	10 Dec-13 09:39	11 Dec-13 12:15	37d 2h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-010; 002	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD304 0012; 24077-010		
24077-005; 007	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD106 0012; 24077-005		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	28.5%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-010; 002		24077-005; 007	-0.5592	1.761	0.252	14	0.7076	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.502	2.586	0.0762	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.02553318	0.02553318	1	0.3127	0.5849	Non-Significant Effect
Error	1.143305	0.08166466	14			
Total	1.168838		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	2.016	8.885	0.3752	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.913	0.8408	0.1302	Normal Distribution

Mean Dry Weight-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-010; 002	8	0.8828	0.6883	1.077	0.787	0.6514	1.238	0.08227	26.36%	0.0%
24077-005; 007	8	0.9627	0.6865	1.239	0.9406	0.5778	1.653	0.1168	34.32%	-9.05%

Mean Dry Weight-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-010; 002	0.72	0.7258	1.238	0.8192	0.6514	0.7547	1.238	0.9145
24077-005; 007	0.5778	0.7043	1.004	1.066	0.8769	1.063	1.653	0.7563

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	07-8958-6402	**Endpoint:**	Mean Dry Weight-mg	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:07	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-010; 002	10-5151-8705	13 Dec-13 09:50	18 Dec-13 11:30	34d 2h	AECOM	Ecological Risk Asse
24077-007; 008	21-1048-1554	11 Dec-13 13:29	13 Dec-13 08:35	35d 23h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-010; 002	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD304 0012; 24077-010		
24077-007; 008	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD118 0012; 24077-007		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	21.1%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-010; 002		24077-007; 008	-0.3272	1.761	0.186	14	0.6258	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	1.84	2.586	0.8589	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.004776918	0.004776918	1	0.1071	0.7483	Non-Significant Effect
Error	0.6244935	0.04460668	14			
Total	0.6292704		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.544	8.885	0.5806	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9498	0.8408	0.4861	Normal Distribution

Mean Dry Weight-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-010; 002	8	0.8828	0.6883	1.077	0.787	0.6514	1.238	0.08227	26.36%	0.0%
24077-007; 008	8	0.9174	0.7608	1.074	0.9468	0.542	1.197	0.06621	20.41%	-3.91%

Mean Dry Weight-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-010; 002	0.72	0.7258	1.238	0.8192	0.6514	0.7547	1.238	0.9145
24077-007; 008	0.952	1.017	0.965	0.9417	0.805	0.542	0.92	1.197

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	13-6828-8544	**Endpoint:**	Mean Dry Weight-mg	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:07	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-010; 002	10-5151-8705	13 Dec-13 09:50	18 Dec-13 11:30	34d 2h	AECOM	Ecological Risk Asse
24077-008; 009	08-1847-2615	12 Dec-13 07:50	13 Dec-13 08:35	35d 4h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-010; 002	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD304 0012; 24077-010		
24077-008; 009	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD124 0012; 24077-008		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	17.8%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-010; 002		24077-008; 009	4.083	1.761	0.157	14	0.0006	CDF	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.069	2.586	0.4279	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.5278056	0.5278056	1	16.67	0.0011	Significant Effect
Error	0.4433327	0.03166662	14			
Total	0.9711382		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	5.895	8.885	0.0321	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.8882	0.8408	0.0522	Normal Distribution

Mean Dry Weight-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-010; 002	8	0.8828	0.6883	1.077	0.787	0.6514	1.238	0.08227	26.36%	0.0%
24077-008; 009	8	0.5196	0.4394	0.5997	0.5018	0.4157	0.7094	0.03389	18.45%	41.15%

Mean Dry Weight-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-010; 002	0.72	0.7258	1.238	0.8192	0.6514	0.7547	1.238	0.9145
24077-008; 009	0.44	0.6047	0.515	0.4656	0.5175	0.4157	0.7094	0.4886

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	10-3153-2111	**Endpoint:**	Mean Dry Weight-mg	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:07	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-010; 002	10-5151-8705	13 Dec-13 09:50	18 Dec-13 11:30	34d 2h	AECOM	Ecological Risk Asse
24077-009; 010	18-6710-2589	12 Dec-13 09:15	13 Dec-13 08:35	35d 3h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-010; 002	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD304 0012; 24077-010		
24077-009; 010	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD122 0012; 24077-009		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	21.0%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-010; 002		24077-009; 010	3.597	1.761	0.186	14	0.0015	CDF	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	1.748	2.586	1.0000	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.5739082	0.5739082	1	12.94	0.0029	Significant Effect
Error	0.6211443	0.04436745	14			
Total	1.195053		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.566	8.885	0.5687	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9284	0.8408	0.2296	Normal Distribution

Mean Dry Weight-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-010; 002	8	0.8828	0.6883	1.077	0.787	0.6514	1.238	0.08227	26.36%	0.0%
24077-009; 010	8	0.504	0.3486	0.6595	0.5497	0.2286	0.765	0.06575	36.9%	42.91%

Mean Dry Weight-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-010; 002	0.72	0.7258	1.238	0.8192	0.6514	0.7547	1.238	0.9145
24077-009; 010	0.584	0.368	0.6571	0.5154	0.6075	0.3067	0.2286	0.765

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	16-0818-2099	**Endpoint:**	Mean Dry Weight-mg	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:07	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-010; 002	10-5151-8705	13 Dec-13 09:50	18 Dec-13 11:30	34d 2h	AECOM	Ecological Risk Asse
24077-011; 011	10-2024-6603	13 Dec-13 10:10	18 Dec-13 11:30	34d 2h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-010; 002	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD304 0012; 24077-010		
24077-011; 011	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD102 0012; 24077-011		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	20.7%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-010; 002		24077-011; 011	4.578	1.771	0.183	13	0.0003	CDF	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	1.85	2.548	0.7684	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.8346648	0.8346648	1	20.96	0.0005	Significant Effect
Error	0.5176618	0.03982014	13			
Total	1.352327		14			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	2.344	10.79	0.3191	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.8839	0.8328	0.0542	Normal Distribution

Mean Dry Weight-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-010; 002	8	0.8828	0.6883	1.077	0.787	0.6514	1.238	0.08227	26.36%	0.0%
24077-011; 011	7	0.41	0.2694	0.5506	0.4562	0.2322	0.6467	0.05745	37.08%	53.56%

Mean Dry Weight-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-010; 002	0.72	0.7258	1.238	0.8192	0.6514	0.7547	1.238	0.9145
24077-011; 011	0.295	0.2322	0.4562	0.261	0.6467	0.51	0.4688	

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	09-0455-4976	**Endpoint:**	Mean Dry Weight-mg	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:07	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-010; 002	10-5151-8705	13 Dec-13 09:50	18 Dec-13 11:30	34d 2h	AECOM	Ecological Risk Asse
24077-013; 012	08-9458-1886	17 Dec-13 09:55	18 Dec-13 11:30	30d 2h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-010; 002	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD304 0012; 24077-010		
24077-013; 012	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD115 0012; 24077-013		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	22.0%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-010; 002		24077-013; 012	-0.6825	1.761	0.194	14	0.7470	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	1.671	2.586	1.0000	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.02260455	0.02260455	1	0.4657	0.5061	Non-Significant Effect
Error	0.6794716	0.04853369	14			
Total	0.7020762		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.262	8.885	0.7670	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9505	0.8408	0.4983	Normal Distribution

Mean Dry Weight-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-010; 002	8	0.8828	0.6883	1.077	0.787	0.6514	1.238	0.08227	26.36%	0.0%
24077-013; 012	8	0.958	0.7848	1.131	0.9814	0.6314	1.197	0.07325	21.63%	-8.52%

Mean Dry Weight-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-010; 002	0.72	0.7258	1.238	0.8192	0.6514	0.7547	1.238	0.9145
24077-013; 012	0.9	1.07	1.008	1.194	0.6314	1.197	0.7083	0.9544

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	10-0483-9389	**Endpoint:**	Mean Dry Weight-mg	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:07	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-010; 002	10-5151-8705	13 Dec-13 09:50	18 Dec-13 11:30	34d 2h	AECOM	Ecological Risk Asse
24077-014; 013	10-4129-5048	17 Dec-13 11:00	18 Dec-13 11:30	30d 1h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-010; 002	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD304 0012; 24077-010		
24077-014; 013	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD114 0012; 24077-014		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	19.5%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-010; 002		24077-014; 013	-1.646	1.761	0.172	14	0.9390	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	1.888	2.586	0.7495	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.1030855	0.1030855	1	2.71	0.1219	Non-Significant Effect
Error	0.5324603	0.03803288	14			
Total	0.6355457		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	2.47	8.885	0.2558	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.8682	0.8408	0.0255	Normal Distribution

Mean Dry Weight-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-010; 002	8	0.8828	0.6883	1.077	0.787	0.6514	1.238	0.08227	26.36%	0.0%
24077-014; 013	8	1.043	0.9196	1.167	1.009	0.9031	1.291	0.05234	14.19%	-18.18%

Mean Dry Weight-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-010; 002	0.72	0.7258	1.238	0.8192	0.6514	0.7547	1.238	0.9145
24077-014; 013	0.9207	1.291	0.9924	1.025	1.078	0.9069	1.23	0.9031

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	16-1001-9644	**Endpoint:**	Mean Dry Weight-mg	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:11	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-012; 003	20-3314-4845	13 Dec-13 10:45	18 Dec-13 11:30	34d 1h	AECOM	Ecological Risk Asse
24077-001; 004	02-3274-4005	04 Dec-13 12:10	06 Dec-13 13:30	43d		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-012; 003	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD303 0012; 24077-012		
24077-001; 004	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD121 0012; 24077-001		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	20.5%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-012; 003		24077-001; 004	-1.198	1.761	0.199	14	0.8746	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.5	2.586	0.0766	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.07337199	0.07337199	1	1.436	0.2507	Non-Significant Effect
Error	0.7154672	0.0511048	14			
Total	0.7888392		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	3.327	8.885	0.1353	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9393	0.8408	0.3400	Normal Distribution

Mean Dry Weight-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-012; 003	8	0.9711	0.7367	1.205	1.037	0.425	1.295	0.09912	28.87%	0.0%
24077-001; 004	8	1.107	0.978	1.235	1.127	0.8888	1.282	0.05434	13.89%	-13.95%

Mean Dry Weight-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-012; 003	1.06	1.015	1.199	0.752	0.425	1.295	0.8814	1.142
24077-001; 004	1.115	1.266	0.8888	0.9267	1.282	0.9991	1.236	1.139

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	17-6324-7420	**Endpoint:**	Mean Dry Weight-mg	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:11	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-012; 003	20-3314-4845	13 Dec-13 10:45	18 Dec-13 11:30	34d 1h	AECOM	Ecological Risk Asse
24077-002; 005	01-7804-1542	05 Dec-13 10:45	06 Dec-13 13:30	42d 1h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-012; 003	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD303 0012; 24077-012		
24077-002; 005	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD120 0012; 24077-002		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	29.5%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-012; 003		24077-002; 005	0.1023	1.761	0.286	14	0.4600	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.095	2.586	0.3920	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.001104634	0.001104634	1	0.01046	0.9200	Non-Significant Effect
Error	1.47894	0.1056385	14			
Total	1.480044		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.688	8.885	0.5061	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9079	0.8408	0.1075	Normal Distribution

Mean Dry Weight-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-012; 003	8	0.9711	0.7367	1.205	1.037	0.425	1.295	0.09912	28.87%	0.0%
24077-002; 005	8	0.9545	0.6499	1.259	1.081	0.2967	1.366	0.1288	38.16%	1.71%

Mean Dry Weight-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-012; 003	1.06	1.015	1.199	0.752	0.425	1.295	0.8814	1.142
24077-002; 005	0.5336	1.014	1.148	1.366	1.156	1.211	0.91	0.2967

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	12-0370-9831	**Endpoint:**	Mean Dry Weight-mg	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:11	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-012; 003	20-3314-4845	13 Dec-13 10:45	18 Dec-13 11:30	34d 1h	AECOM	Ecological Risk Asse
24077-003; 006	06-6548-1906	05 Dec-13 12:54	06 Dec-13 13:30	41d 23h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-012; 003	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD303 0012; 24077-012		
24077-003; 006	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD112 0012; 24077-003		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	24.2%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-012; 003		24077-003; 006	-0.04859	1.761	0.235	14	0.5190	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.115	2.586	0.3654	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.000168544	0.000168544	1	0.002361	0.9619	Non-Significant Effect
Error	0.9995295	0.07139497	14			
Total	0.9996981		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.224	8.885	0.7964	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9585	0.8408	0.6349	Normal Distribution

Mean Dry Weight-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-012; 003	8	0.9711	0.7367	1.205	1.037	0.425	1.295	0.09912	28.87%	0.0%
24077-003; 006	8	0.9776	0.7657	1.189	0.9909	0.6	1.354	0.08958	25.92%	-0.67%

Mean Dry Weight-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-012; 003	1.06	1.015	1.199	0.752	0.425	1.295	0.8814	1.142
24077-003; 006	1.142	0.6	1.11	1.354	0.7367	0.8719	1.16	0.845

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	03-1018-0200	**Endpoint:**	Mean Dry Weight-mg	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:10	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-012; 003	20-3314-4845	13 Dec-13 10:45	18 Dec-13 11:30	34d 1h	AECOM	Ecological Risk Asse
24077-005; 007	00-8496-1430	10 Dec-13 09:39	11 Dec-13 12:15	37d 2h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-012; 003	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD303 0012; 24077-012		
24077-005; 007	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD106 0012; 24077-005		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	27.8%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-012; 003		24077-005; 007	0.05455	1.761	0.27	14	0.4786	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.333	2.586	0.1611	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.0002793727	0.0002793727	1	0.002976	0.9573	Non-Significant Effect
Error	1.314409	0.09388637	14			
Total	1.314689		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.389	8.885	0.6754	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9733	0.8408	0.8886	Normal Distribution

Mean Dry Weight-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-012; 003	8	0.9711	0.7367	1.205	1.037	0.425	1.295	0.09912	28.87%	0.0%
24077-005; 007	8	0.9627	0.6865	1.239	0.9406	0.5778	1.653	0.1168	34.32%	0.86%

Mean Dry Weight-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-012; 003	1.06	1.015	1.199	0.752	0.425	1.295	0.8814	1.142
24077-005; 007	0.5778	0.7043	1.004	1.066	0.8769	1.063	1.653	0.7563

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	05-7634-4775	**Endpoint:**	Mean Dry Weight-mg	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:10	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-012; 003	20-3314-4845	13 Dec-13 10:45	18 Dec-13 11:30	34d 1h	AECOM	Ecological Risk Asse
24077-007; 008	21-1048-1554	11 Dec-13 13:29	13 Dec-13 08:35	35d 23h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-012; 003	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD303 0012; 24077-012		
24077-007; 008	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD118 0012; 24077-007		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	21.6%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-012; 003		24077-007; 008	0.4505	1.761	0.21	14	0.3296	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.371	2.586	0.1374	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.01153267	0.01153267	1	0.2029	0.6593	Non-Significant Effect
Error	0.7955975	0.05682839	14			
Total	0.8071302		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	2.241	8.885	0.3090	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9308	0.8408	0.2508	Normal Distribution

Mean Dry Weight-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-012; 003	8	0.9711	0.7367	1.205	1.037	0.425	1.295	0.09912	28.87%	0.0%
24077-007; 008	8	0.9174	0.7608	1.074	0.9468	0.542	1.197	0.06621	20.41%	5.53%

Mean Dry Weight-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-012; 003	1.06	1.015	1.199	0.752	0.425	1.295	0.8814	1.142
24077-007; 008	0.952	1.017	0.965	0.9417	0.805	0.542	0.92	1.197

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	19-3030-1699	**Endpoint:**	Mean Dry Weight-mg	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:10	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-012; 003	20-3314-4845	13 Dec-13 10:45	18 Dec-13 11:30	34d 1h	AECOM	Ecological Risk Asse
24077-008; 009	08-1847-2615	12 Dec-13 07:50	13 Dec-13 08:35	35d 4h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-012; 003	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD303 0012; 24077-012		
24077-008; 009	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD124 0012; 24077-008		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	19.0%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-012; 003		24077-008; 009	4.31	1.761	0.185	14	0.0004	CDF	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.698	2.586	0.0269	Outlier Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.8154231	0.8154231	1	18.58	0.0007	Significant Effect
Error	0.6144366	0.04388833	14			
Total	1.42986		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	8.556	8.885	0.0112	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9263	0.8408	0.2128	Normal Distribution

Mean Dry Weight-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-012; 003	8	0.9711	0.7367	1.205	1.037	0.425	1.295	0.09912	28.87%	0.0%
24077-008; 009	8	0.5196	0.4394	0.5997	0.5018	0.4157	0.7094	0.03389	18.45%	46.5%

Mean Dry Weight-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-012; 003	1.06	1.015	1.199	0.752	0.425	1.295	0.8814	1.142
24077-008; 009	0.44	0.6047	0.515	0.4656	0.5175	0.4157	0.7094	0.4886

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	10-7517-8412	**Endpoint:**	Mean Dry Weight-mg	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:10	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-012; 003	20-3314-4845	13 Dec-13 10:45	18 Dec-13 11:30	34d 1h	AECOM	Ecological Risk Asse
24077-008; 009	08-1847-2615	12 Dec-13 07:50	13 Dec-13 08:35	35d 4h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-012; 003	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD303 0012; 24077-012		
24077-008; 009	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD124 0012; 24077-008		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	12.7%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-012; 003		24077-008; 009	7.052	1.771	0.133	13	<0.0001	CDF	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	1.04677	1.04677	1	49.73	<0.0001	Significant Effect
Error	0.2736462	0.02104971	13			
Total	1.320416		14			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	3.798	9.155	0.1042	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9793	0.8328	0.9648	Normal Distribution

Mean Dry Weight-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-012; 003	7	1.049	0.8763	1.222	1.06	0.752	1.295	0.0706	17.81%	0.0%
24077-008; 009	8	0.5196	0.4394	0.5997	0.5018	0.4157	0.7094	0.03389	18.45%	50.47%

Mean Dry Weight-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-012; 003	1.06	1.015	1.199	0.752	Outlier	1.295	0.8814	1.142
24077-008; 009	0.44	0.6047	0.515	0.4656	0.5175	0.4157	0.7094	0.4886

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	19-5301-2760	**Endpoint:**	Mean Dry Weight-mg	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:10	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-012; 003	20-3314-4845	13 Dec-13 10:45	18 Dec-13 11:30	34d 1h	AECOM	Ecological Risk Asse
24077-009; 010	18-6710-2589	12 Dec-13 09:15	13 Dec-13 08:35	35d 3h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-012; 003	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD303 0012; 24077-012		
24077-009; 010	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD122 0012; 24077-009		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	21.6%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-012; 003		24077-009; 010	3.927	1.761	0.21	14	0.0008	CDF	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.376	2.586	0.1345	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.872492	0.872492	1	15.42	0.0015	Significant Effect
Error	0.7922482	0.05658916	14			
Total	1.66474		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	2.272	8.885	0.3011	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.949	0.8408	0.4746	Normal Distribution

Mean Dry Weight-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-012; 003	8	0.9711	0.7367	1.205	1.037	0.425	1.295	0.09912	28.87%	0.0%
24077-009; 010	8	0.504	0.3486	0.6595	0.5497	0.2286	0.765	0.06575	36.9%	48.1%

Mean Dry Weight-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-012; 003	1.06	1.015	1.199	0.752	0.425	1.295	0.8814	1.142
24077-009; 010	0.584	0.368	0.6571	0.5154	0.6075	0.3067	0.2286	0.765

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	19-2818-2315	**Endpoint:**	Mean Dry Weight-mg	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:10	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-012; 003	20-3314-4845	13 Dec-13 10:45	18 Dec-13 11:30	34d 1h	AECOM	Ecological Risk Asse
24077-011; 011	10-2024-6603	13 Dec-13 10:10	18 Dec-13 11:30	34d 2h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-012; 003	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD303 0012; 24077-012		
24077-011; 011	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD102 0012; 24077-011		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	21.7%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-012; 003		24077-011; 011	4.71	1.771	0.211	13	0.0002	CDF	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.462	2.548	0.0778	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	1.175317	1.175317	1	22.18	0.0004	Significant Effect
Error	0.6887658	0.05298198	13			
Total	1.864083		14			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	3.401	10.79	0.1570	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9421	0.8328	0.4098	Normal Distribution

Mean Dry Weight-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-012; 003	8	0.9711	0.7367	1.205	1.037	0.425	1.295	0.09912	28.87%	0.0%
24077-011; 011	7	0.41	0.2694	0.5506	0.4562	0.2322	0.6467	0.05745	37.08%	57.78%

Mean Dry Weight-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-012; 003	1.06	1.015	1.199	0.752	0.425	1.295	0.8814	1.142
24077-011; 011	0.295	0.2322	0.4562	0.261	0.6467	0.51	0.4688	

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	04-2834-9283	**Endpoint:**	Mean Dry Weight-mg	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:10	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-012; 003	20-3314-4845	13 Dec-13 10:45	18 Dec-13 11:30	34d 1h	AECOM	Ecological Risk Asse
24077-013; 012	08-9458-1886	17 Dec-13 09:55	18 Dec-13 11:30	30d 2h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-012; 003	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD303 0012; 24077-012		
24077-013; 012	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD115 0012; 24077-013		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	22.4%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-012; 003		24077-013; 012	0.1061	1.761	0.217	14	0.4585	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.293	2.586	0.1893	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.0006842096	0.0006842096	1	0.01126	0.9170	Non-Significant Effect
Error	0.8505756	0.0607554	14			
Total	0.8512598		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.831	8.885	0.4433	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9432	0.8408	0.3899	Normal Distribution

Mean Dry Weight-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-012; 003	8	0.9711	0.7367	1.205	1.037	0.425	1.295	0.09912	28.87%	0.0%
24077-013; 012	8	0.958	0.7848	1.131	0.9814	0.6314	1.197	0.07325	21.63%	1.35%

Mean Dry Weight-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-012; 003	1.06	1.015	1.199	0.752	0.425	1.295	0.8814	1.142
24077-013; 012	0.9	1.07	1.008	1.194	0.6314	1.197	0.7083	0.9544

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	19-8154-1083	**Endpoint:**	Mean Dry Weight-mg	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:09	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-012; 003	20-3314-4845	13 Dec-13 10:45	18 Dec-13 11:30	34d 1h	AECOM	Ecological Risk Asse
24077-014; 013	10-4129-5048	17 Dec-13 11:00	18 Dec-13 11:30	30d 1h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-012; 003	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD303 0012; 24077-012		
24077-014; 013	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD114 0012; 24077-014		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	20.3%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-012; 003		24077-014; 013	-0.6449	1.761	0.197	14	0.7353	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.521	2.586	0.0692	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.02089868	0.02089868	1	0.4159	0.5294	Non-Significant Effect
Error	0.7035642	0.05025459	14			
Total	0.7244629		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	3.586	8.885	0.1138	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9463	0.8408	0.4331	Normal Distribution

Mean Dry Weight-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-012; 003	8	0.9711	0.7367	1.205	1.037	0.425	1.295	0.09912	28.87%	0.0%
24077-014; 013	8	1.043	0.9196	1.167	1.009	0.9031	1.291	0.05234	14.19%	-7.44%

Mean Dry Weight-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-012; 003	1.06	1.015	1.199	0.752	0.425	1.295	0.8814	1.142
24077-014; 013	0.9207	1.291	0.9924	1.025	1.078	0.9069	1.23	0.9031

CETIS Analytical Reports
Dry Biomass Comparisons

Carr Point MRP Site 1
Naval Station, Newport, Rhode Island

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	05-9616-0574	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:02	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-000; 000	18-1601-2962	03 Jan-14 12:00	03 Jan-14 12:00	13d 0h	AECOM	Ecological Risk Asse
24077-006; 001	07-4145-0866	11 Dec-13 09:06	11 Dec-13 12:15	36d 3h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-000; 000	Laboratory Control S	Carr Point MRP Site 1, Naval Stat	Laboratory Control; 24077-000		
24077-006; 001	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD302 0012; 24077-006		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	24.8%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-000; 000		24077-006; 001	3.498	1.761	0.248	14	0.0018	CDF	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	1.998	2.586	0.5378	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.9660438	0.9660438	1	12.24	0.0035	Significant Effect
Error	1.10533	0.07895213	14			
Total	2.071373		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.604	8.885	0.5481	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9753	0.8408	0.9159	Normal Distribution

Mean Dry Biomass-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-000; 000	8	0.9996	0.7938	1.205	1.009	0.635	1.414	0.08706	24.63%	0.0%
24077-006; 001	8	0.5082	0.2475	0.7689	0.516	0.058	1.051	0.1103	61.37%	49.16%

Mean Dry Biomass-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-000; 000	0.754	0.9905	0.635	1.414	1.068	1.027	1.21	0.899
24077-006; 001	0.271	1.051	0.2715	0.5005	0.6455	0.5315	0.737	0.058

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	13-8546-4788	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:02	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-000; 000	18-1601-2962	03 Jan-14 12:00	03 Jan-14 12:00	13d 0h	AECOM	Ecological Risk Asse
24077-010; 002	10-5151-8705	13 Dec-13 09:50	18 Dec-13 11:30	34d 2h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-000; 000	Laboratory Control S	Carr Point MRP Site 1, Naval Stat	Laboratory Control; 24077-000		
24077-010; 002	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD304 0012; 24077-010		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	18.4%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-000; 000		24077-010; 002	4.258	1.761	0.184	14	0.0004	CDF	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.052	2.586	0.4526	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.7905447	0.7905447	1	18.13	0.0008	Significant Effect
Error	0.6104455	0.04360325	14			
Total	1.40099		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	2.282	8.885	0.2985	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9875	0.8408	0.9968	Normal Distribution

Mean Dry Biomass-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-000; 000	8	0.9996	0.7938	1.205	1.009	0.635	1.414	0.08706	24.63%	0.0%
24077-010; 002	8	0.5551	0.4188	0.6913	0.5177	0.324	0.805	0.05763	29.37%	44.47%

Mean Dry Biomass-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-000; 000	0.754	0.9905	0.635	1.414	1.068	1.027	1.21	0.899
24077-010; 002	0.324	0.4355	0.805	0.5325	0.456	0.6415	0.743	0.503

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	08-6510-4128	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:02	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-000; 000	18-1601-2962	03 Jan-14 12:00	03 Jan-14 12:00	13d 0h	AECOM	Ecological Risk Asse
24077-012; 003	20-3314-4845	13 Dec-13 10:45	18 Dec-13 11:30	34d 1h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-000; 000	Laboratory Control S	Carr Point MRP Site 1, Naval Stat	Laboratory Control; 24077-000		
24077-012; 003	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD303 0012; 24077-012		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	25.6%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-000; 000		24077-012; 003	1.706	1.761	0.256	14	0.0550	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.223	2.586	0.2485	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.2458924	0.2458924	1	2.91	0.1101	Non-Significant Effect
Error	1.182811	0.08448647	14			
Total	1.428703		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.787	8.885	0.4618	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9764	0.8408	0.9291	Normal Distribution

Mean Dry Biomass-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-000; 000	8	0.9996	0.7938	1.205	1.009	0.635	1.414	0.08706	24.63%	0.0%
24077-012; 003	8	0.7517	0.4765	1.027	0.792	0.1275	1.199	0.1164	43.79%	24.8%

Mean Dry Biomass-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-000; 000	0.754	0.9905	0.635	1.414	1.068	1.027	1.21	0.899
24077-012; 003	1.06	0.8625	1.199	0.564	0.1275	0.842	0.617	0.742

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	11-4584-2622	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:02	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-000; 000	18-1601-2962	03 Jan-14 12:00	03 Jan-14 12:00	13d 0h	AECOM	Ecological Risk Asse
24077-001; 004	02-3274-4005	04 Dec-13 12:10	06 Dec-13 13:30	43d		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-000; 000	Laboratory Control S	Carr Point MRP Site 1, Naval Stat	Laboratory Control; 24077-000		
24077-001; 004	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD121 0012; 24077-001		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	21.8%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-000; 000		24077-001; 004	1.405	1.761	0.218	14	0.0909	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	1.964	2.586	0.5981	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.1211915	0.1211915	1	1.974	0.1819	Non-Significant Effect
Error	0.8596748	0.06140534	14			
Total	0.9808663		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.025	8.885	0.9745	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9518	0.8408	0.5190	Normal Distribution

Mean Dry Biomass-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-000; 000	8	0.9996	0.7938	1.205	1.009	0.635	1.414	0.08706	24.63%	0.0%
24077-001; 004	8	0.8256	0.6171	1.034	0.9112	0.3555	1.025	0.08816	30.2%	17.41%

Mean Dry Biomass-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-000; 000	0.754	0.9905	0.635	1.414	1.068	1.027	1.21	0.899
24077-001; 004	1.004	0.823	0.3555	0.834	1.025	0.5495	0.9885	1.025

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	05-2785-6818	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:02	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-000; 000	18-1601-2962	03 Jan-14 12:00	03 Jan-14 12:00	13d 0h	AECOM	Ecological Risk Asse
24077-002; 005	01-7804-1542	05 Dec-13 10:45	06 Dec-13 13:30	42d 1h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-000; 000	Laboratory Control S	Carr Point MRP Site 1, Naval Stat	Laboratory Control; 24077-000		
24077-002; 005	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD120 0012; 24077-002		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	28.8%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-000; 000		24077-002; 005	1.936	1.761	0.288	14	0.0366	CDF	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	1.885	2.586	0.7559	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.3997406	0.3997406	1	3.75	0.0733	Non-Significant Effect
Error	1.492451	0.1066037	14			
Total	1.892192		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	2.516	8.885	0.2466	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9649	0.8408	0.7504	Normal Distribution

Mean Dry Biomass-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-000; 000	8	0.9996	0.7938	1.205	1.009	0.635	1.414	0.08706	24.63%	0.0%
24077-002; 005	8	0.6835	0.3569	1.01	0.7595	0.089	1.161	0.1381	57.15%	31.62%

Mean Dry Biomass-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-000; 000	0.754	0.9905	0.635	1.414	1.068	1.027	1.21	0.899
24077-002; 005	0.2935	0.7095	1.148	1.161	0.8095	0.848	0.4095	0.089

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	20-7638-8740	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:02	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-000; 000	18-1601-2962	03 Jan-14 12:00	03 Jan-14 12:00	13d 0h	AECOM	Ecological Risk Asse
24077-003; 006	06-6548-1906	05 Dec-13 12:54	06 Dec-13 13:30	41d 23h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-000; 000	Laboratory Control S	Carr Point MRP Site 1, Naval Stat	Laboratory Control; 24077-000		
24077-003; 006	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD112 0012; 24077-003		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	23.2%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-000; 000		24077-003; 006	1.972	1.761	0.232	14	0.0343	CDF	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	1.883	2.586	0.7596	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.2696207	0.2696207	1	3.889	0.0687	Non-Significant Effect
Error	0.9706233	0.06933024	14			
Total	1.240244		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.287	8.885	0.7479	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.975	0.8408	0.9112	Normal Distribution

Mean Dry Biomass-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-000; 000	8	0.9996	0.7938	1.205	1.009	0.635	1.414	0.08706	24.63%	0.0%
24077-003; 006	8	0.74	0.5065	0.9735	0.7548	0.33	1.219	0.09876	37.75%	25.97%

Mean Dry Biomass-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-000; 000	0.754	0.9905	0.635	1.414	1.068	1.027	1.21	0.899
24077-003; 006	0.914	0.33	0.888	1.219	0.5525	0.6975	0.812	0.507

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	09-5876-3703	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:02	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-000; 000	18-1601-2962	03 Jan-14 12:00	03 Jan-14 12:00	13d 0h	AECOM	Ecological Risk Asse
24077-005; 007	00-8496-1430	10 Dec-13 09:39	11 Dec-13 12:15	37d 2h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-000; 000	Laboratory Control S	Carr Point MRP Site 1, Naval Stat	Laboratory Control; 24077-000		
24077-005; 007	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD106 0012; 24077-005		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	20.5%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-000; 000		24077-005; 007	2.976	1.761	0.205	14	0.0050	CDF	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	1.837	2.586	0.8664	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.4818103	0.4818103	1	8.855	0.0100	Significant Effect
Error	0.7617278	0.05440912	14			
Total	1.243538		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.259	8.885	0.7693	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9777	0.8408	0.9422	Normal Distribution

Mean Dry Biomass-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-000; 000	8	0.9996	0.7938	1.205	1.009	0.635	1.414	0.08706	24.63%	0.0%
24077-005; 007	8	0.6526	0.4691	0.8361	0.679	0.26	0.992	0.0776	33.64%	34.72%

Mean Dry Biomass-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-000; 000	0.754	0.9905	0.635	1.414	1.068	1.027	1.21	0.899
24077-005; 007	0.26	0.493	0.8035	0.6395	0.57	0.744	0.992	0.7185

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	20-4647-2563	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:01	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-000; 000	18-1601-2962	03 Jan-14 12:00	03 Jan-14 12:00	13d 0h	AECOM	Ecological Risk Asse
24077-007; 008	21-1048-1554	11 Dec-13 13:29	13 Dec-13 08:35	35d 23h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-000; 000	Laboratory Control S	Carr Point MRP Site 1, Naval Stat	Laboratory Control; 24077-000		
24077-007; 008	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD118 0012; 24077-007		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	21.3%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-000; 000		24077-007; 008	3.525	1.761	0.213	14	0.0017	CDF	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	1.867	2.586	0.7956	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.7295306	0.7295306	1	12.42	0.0034	Significant Effect
Error	0.8221616	0.05872583	14			
Total	1.551692		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.067	8.885	0.9337	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9521	0.8408	0.5229	Normal Distribution

Mean Dry Biomass-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-000; 000	8	0.9996	0.7938	1.205	1.009	0.635	1.414	0.08706	24.63%	0.0%
24077-007; 008	8	0.5726	0.3733	0.7718	0.679	0.1355	0.772	0.08427	41.63%	42.72%

Mean Dry Biomass-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-000; 000	0.754	0.9905	0.635	1.414	1.068	1.027	1.21	0.899
24077-007; 008	0.714	0.7625	0.772	0.2825	0.644	0.1355	0.552	0.718

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	17-7055-8076	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:01	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-000; 000	18-1601-2962	03 Jan-14 12:00	03 Jan-14 12:00	13d 0h	AECOM	Ecological Risk Asse
24077-008; 009	08-1847-2615	12 Dec-13 07:50	13 Dec-13 08:35	35d 4h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-000; 000	Laboratory Control S	Carr Point MRP Site 1, Naval Stat	Laboratory Control; 24077-000		
24077-008; 009	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD124 0012; 24077-008		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	17.3%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-000; 000		24077-008; 009	6.391	1.761	0.173	14	<0.0001	CDF	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.187	2.586	0.2833	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	1.566567	1.566567	1	40.84	<0.0001	Significant Effect
Error	0.5370207	0.03835863	14			
Total	2.103588		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	3.771	8.885	0.1010	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9782	0.8408	0.9480	Normal Distribution

Mean Dry Biomass-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-000; 000	8	0.9996	0.7938	1.205	1.009	0.635	1.414	0.08706	24.63%	0.0%
24077-008; 009	8	0.3738	0.2678	0.4798	0.347	0.207	0.603	0.04483	33.92%	62.6%

Mean Dry Biomass-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-000; 000	0.754	0.9905	0.635	1.414	1.068	1.027	1.21	0.899
24077-008; 009	0.352	0.514	0.309	0.3725	0.207	0.291	0.603	0.342

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	10-4195-9074	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:01	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-000; 000	18-1601-2962	03 Jan-14 12:00	03 Jan-14 12:00	13d 0h	AECOM	Ecological Risk Asse
24077-009; 010	18-6710-2589	12 Dec-13 09:15	13 Dec-13 08:35	35d 3h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-000; 000	Laboratory Control S	Carr Point MRP Site 1, Naval Stat	Laboratory Control; 24077-000		
24077-009; 010	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD122 0012; 24077-009		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	17.5%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-000; 000		24077-009; 010	7.939	1.761	0.175	14	<0.0001	CDF	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.158	2.586	0.3146	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	2.483383	2.483383	1	63.03	<0.0001	Significant Effect
Error	0.5516422	0.03940302	14			
Total	3.035025		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	3.338	8.885	0.1343	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9814	0.8408	0.9736	Normal Distribution

Mean Dry Biomass-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-000; 000	8	0.9996	0.7938	1.205	1.009	0.635	1.414	0.08706	24.63%	0.0%
24077-009; 010	8	0.2117	0.099	0.3244	0.2298	0.046	0.438	0.04765	63.67%	78.82%

Mean Dry Biomass-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-000; 000	0.754	0.9905	0.635	1.414	1.068	1.027	1.21	0.899
24077-009; 010	0.438	0.092	0.23	0.335	0.243	0.046	0.08	0.2295

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	07-0026-7008	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:01	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-000; 000	18-1601-2962	03 Jan-14 12:00	03 Jan-14 12:00	13d 0h	AECOM	Ecological Risk Asse
24077-011; 011	10-2024-6603	13 Dec-13 10:10	18 Dec-13 11:30	34d 2h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-000; 000	Laboratory Control S	Carr Point MRP Site 1, Naval Stat	Laboratory Control; 24077-000		
24077-011; 011	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD102 0012; 24077-011		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	16.8%	

Unequal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-000; 000		24077-011; 011	9.853	1.86	0.168	8	<0.0001	CDF	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.309	2.548	0.1558	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	2.967032	2.967032	1	85.72	<0.0001	Significant Effect
Error	0.449945	0.03461115	13			
Total	3.416977		14			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	14.28	10.79	0.0047	Unequal Variances
Distribution	Shapiro-Wilk W Normality	0.9413	0.8328	0.3991	Normal Distribution

Mean Dry Biomass-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-000; 000	8	0.9996	0.7938	1.205	1.009	0.635	1.414	0.08706	24.63%	0.0%
24077-011; 011	7	0.1081	0.04788	0.1684	0.1045	0.0255	0.1875	0.02463	60.26%	89.18%

Mean Dry Biomass-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-000; 000	0.754	0.9905	0.635	1.414	1.068	1.027	1.21	0.899
24077-011; 011	0.0295	0.1045	0.1825	0.1305	0.097	0.0255	0.1875	

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	12-4367-6518	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 15:58	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-000; 000	18-1601-2962	03 Jan-14 12:00	03 Jan-14 12:00	13d 0h	AECOM	Ecological Risk Asse
24077-013; 012	08-9458-1886	17 Dec-13 09:55	18 Dec-13 11:30	30d 2h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-000; 000	Laboratory Control S	Carr Point MRP Site 1, Naval Stat	Laboratory Control; 24077-000		
24077-013; 012	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD115 0012; 24077-013		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	20.8%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-000; 000		24077-013; 012	2.084	1.761	0.208	14	0.0280	CDF	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	1.816	2.586	0.9164	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.2416955	0.2416955	1	4.345	0.0559	Non-Significant Effect
Error	0.7788454	0.05563182	14			
Total	1.020541		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.198	8.885	0.8179	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9609	0.8408	0.6777	Normal Distribution

Mean Dry Biomass-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-000; 000	8	0.9996	0.7938	1.205	1.009	0.635	1.414	0.08706	24.63%	0.0%
24077-013; 012	8	0.7538	0.5657	0.9419	0.802	0.425	1.075	0.07955	29.85%	24.59%

Mean Dry Biomass-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-000; 000	0.754	0.9905	0.635	1.414	1.068	1.027	1.21	0.899
24077-013; 012	0.855	0.749	0.9075	1.075	0.442	0.7185	0.425	0.859

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	13-1488-6721	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 15:58	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-000; 000	18-1601-2962	03 Jan-14 12:00	03 Jan-14 12:00	13d 0h	AECOM	Ecological Risk Asse
24077-014; 013	10-4129-5048	17 Dec-13 11:00	18 Dec-13 11:30	30d 1h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-000; 000	Laboratory Control S	Carr Point MRP Site 1, Naval Stat	Laboratory Control; 24077-000		
24077-014; 013	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD114 0012; 24077-014		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	18.8%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-000; 000		24077-014; 013	2.118	1.761	0.188	14	0.0263	CDF	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.007	2.586	0.5222	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.2043042	0.2043042	1	4.485	0.0526	Non-Significant Effect
Error	0.6377974	0.04555695	14			
Total	0.8421016		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.99	8.885	0.3842	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9825	0.8408	0.9805	Normal Distribution

Mean Dry Biomass-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-000; 000	8	0.9996	0.7938	1.205	1.009	0.635	1.414	0.08706	24.63%	0.0%
24077-014; 013	8	0.7736	0.6277	0.9196	0.74	0.492	1.032	0.06172	22.57%	22.61%

Mean Dry Biomass-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-000; 000	0.754	0.9905	0.635	1.414	1.068	1.027	1.21	0.899
24077-014; 013	0.6445	1.032	0.8435	0.974	0.7545	0.7255	0.492	0.7225

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	08-4983-0898	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:05	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-006; 001	07-4145-0866	11 Dec-13 09:06	11 Dec-13 12:15	36d 3h	AECOM	Ecological Risk Asse
24077-001; 004	02-3274-4005	04 Dec-13 12:10	06 Dec-13 13:30	43d		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-006; 001	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD302 0012; 24077-006		
24077-001; 004	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD121 0012; 24077-001		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	48.9%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-006; 001		24077-001; 004	-2.248	1.761	0.249	14	0.9794	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	1.988	2.586	0.5543	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.402907	0.402907	1	5.054	0.0412	Significant Effect
Error	1.116071	0.07971936	14			
Total	1.518978		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.564	8.885	0.5693	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9427	0.8408	0.3830	Normal Distribution

Mean Dry Biomass-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-006; 001	8	0.5082	0.2475	0.7689	0.516	0.058	1.051	0.1103	61.37%	0.0%
24077-001; 004	8	0.8256	0.6171	1.034	0.9112	0.3555	1.025	0.08816	30.2%	-62.45%

Mean Dry Biomass-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-006; 001	0.271	1.051	0.2715	0.5005	0.6455	0.5315	0.737	0.058
24077-001; 004	1.004	0.823	0.3555	0.834	1.025	0.5495	0.9885	1.025

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	01-9532-5209	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:05	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-006; 001	07-4145-0866	11 Dec-13 09:06	11 Dec-13 12:15	36d 3h	AECOM	Ecological Risk Asse
24077-002; 005	01-7804-1542	05 Dec-13 10:45	06 Dec-13 13:30	42d 1h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-006; 001	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD302 0012; 24077-006		
24077-002; 005	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD120 0012; 24077-002		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	61.2%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-006; 001		24077-002; 005	-0.992	1.761	0.311	14	0.8310	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	1.741	2.586	1.0000	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.1229378	0.1229378	1	0.9842	0.3380	Non-Significant Effect
Error	1.748848	0.1249177	14			
Total	1.871786		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.569	8.885	0.5671	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9612	0.8408	0.6845	Normal Distribution

Mean Dry Biomass-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-006; 001	8	0.5082	0.2475	0.7689	0.516	0.058	1.051	0.1103	61.37%	0.0%
24077-002; 005	8	0.6835	0.3569	1.01	0.7595	0.089	1.161	0.1381	57.15%	-34.5%

Mean Dry Biomass-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-006; 001	0.271	1.051	0.2715	0.5005	0.6455	0.5315	0.737	0.058
24077-002; 005	0.2935	0.7095	1.148	1.161	0.8095	0.848	0.4095	0.089

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	17-4354-4965	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:05	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-006; 001	07-4145-0866	11 Dec-13 09:06	11 Dec-13 12:15	36d 3h	AECOM	Ecological Risk Asse
24077-003; 006	06-6548-1906	05 Dec-13 12:54	06 Dec-13 13:30	41d 23h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-006; 001	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD302 0012; 24077-006		
24077-003; 006	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD112 0012; 24077-003		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	51.3%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-006; 001		24077-003; 006	-1.566	1.761	0.261	14	0.9302	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	1.896	2.586	0.7313	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.2149483	0.2149483	1	2.453	0.1397	Non-Significant Effect
Error	1.22702	0.08764426	14			
Total	1.441968		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.247	8.885	0.7786	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9626	0.8408	0.7084	Normal Distribution

Mean Dry Biomass-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-006; 001	8	0.5082	0.2475	0.7689	0.516	0.058	1.051	0.1103	61.37%	0.0%
24077-003; 006	8	0.74	0.5065	0.9735	0.7548	0.33	1.219	0.09876	37.75%	-45.62%

Mean Dry Biomass-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-006; 001	0.271	1.051	0.2715	0.5005	0.6455	0.5315	0.737	0.058
24077-003; 006	0.914	0.33	0.888	1.219	0.5525	0.6975	0.812	0.507

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	01-9897-5475	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:05	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-006; 001	07-4145-0866	11 Dec-13 09:06	11 Dec-13 12:15	36d 3h	AECOM	Ecological Risk Asse
24077-005; 007	00-8496-1430	10 Dec-13 09:39	11 Dec-13 12:15	37d 2h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-006; 001	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD302 0012; 24077-006		
24077-005; 007	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD106 0012; 24077-005		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	46.7%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-006; 001		24077-005; 007	-1.071	1.761	0.238	14	0.8488	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.082	2.586	0.4099	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.08337638	0.08337638	1	1.146	0.3024	Non-Significant Effect
Error	1.018124	0.07272314	14			
Total	1.1015		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	2.019	8.885	0.3744	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9844	0.8408	0.9888	Normal Distribution

Mean Dry Biomass-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-006; 001	8	0.5082	0.2475	0.7689	0.516	0.058	1.051	0.1103	61.37%	0.0%
24077-005; 007	8	0.6526	0.4691	0.8361	0.679	0.26	0.992	0.0776	33.64%	-28.41%

Mean Dry Biomass-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-006; 001	0.271	1.051	0.2715	0.5005	0.6455	0.5315	0.737	0.058
24077-005; 007	0.26	0.493	0.8035	0.6395	0.57	0.744	0.992	0.7185

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	09-5319-7498	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:04	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-006; 001	07-4145-0866	11 Dec-13 09:06	11 Dec-13 12:15	36d 3h	AECOM	Ecological Risk Asse
24077-007; 008	21-1048-1554	11 Dec-13 13:29	13 Dec-13 08:35	35d 23h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-006; 001	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD302 0012; 24077-006		
24077-007; 008	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD118 0012; 24077-007		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	48.1%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-006; 001		24077-007; 008	-0.4639	1.761	0.244	14	0.6751	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.022	2.586	0.4974	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.01657647	0.01657647	1	0.2152	0.6499	Non-Significant Effect
Error	1.078558	0.07703985	14			
Total	1.095134		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.712	8.885	0.4949	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9426	0.8408	0.3818	Normal Distribution

Mean Dry Biomass-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-006; 001	8	0.5082	0.2475	0.7689	0.516	0.058	1.051	0.1103	61.37%	0.0%
24077-007; 008	8	0.5726	0.3733	0.7718	0.679	0.1355	0.772	0.08427	41.63%	-12.67%

Mean Dry Biomass-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-006; 001	0.271	1.051	0.2715	0.5005	0.6455	0.5315	0.737	0.058
24077-007; 008	0.714	0.7625	0.772	0.2825	0.644	0.1355	0.552	0.718

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	14-4029-0244	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:04	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-006; 001	07-4145-0866	11 Dec-13 09:06	11 Dec-13 12:15	36d 3h	AECOM	Ecological Risk Asse
24077-008; 009	08-1847-2615	12 Dec-13 07:50	13 Dec-13 08:35	35d 4h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-006; 001	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD302 0012; 24077-006		
24077-008; 009	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD124 0012; 24077-008		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	41.3%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-006; 001		24077-008; 009	1.129	1.761	0.21	14	0.1390	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.358	2.586	0.1452	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.07222678	0.07222678	1	1.274	0.2779	Non-Significant Effect
Error	0.793417	0.05667264	14			
Total	0.8656438		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	6.049	8.885	0.0299	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9646	0.8408	0.7462	Normal Distribution

Mean Dry Biomass-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-006; 001	8	0.5082	0.2475	0.7689	0.516	0.058	1.051	0.1103	61.37%	0.0%
24077-008; 009	8	0.3738	0.2678	0.4798	0.347	0.207	0.603	0.04483	33.92%	26.44%

Mean Dry Biomass-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-006; 001	0.271	1.051	0.2715	0.5005	0.6455	0.5315	0.737	0.058
24077-008; 009	0.352	0.514	0.309	0.3725	0.207	0.291	0.603	0.342

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	14-6794-2794	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:04	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-006; 001	07-4145-0866	11 Dec-13 09:06	11 Dec-13 12:15	36d 3h	AECOM	Ecological Risk Asse
24077-009; 010	18-6710-2589	12 Dec-13 09:15	13 Dec-13 08:35	35d 3h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-006; 001	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD302 0012; 24077-006		
24077-009; 010	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD122 0012; 24077-009		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	41.6%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-006; 001		24077-009; 010	2.468	1.761	0.212	14	0.0135	CDF	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.337	2.586	0.1588	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.351649	0.351649	1	6.093	0.0271	Significant Effect
Error	0.8080385	0.05771704	14			
Total	1.159688		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	5.354	8.885	0.0416	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9681	0.8408	0.8075	Normal Distribution

Mean Dry Biomass-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-006; 001	8	0.5082	0.2475	0.7689	0.516	0.058	1.051	0.1103	61.37%	0.0%
24077-009; 010	8	0.2117	0.099	0.3244	0.2298	0.046	0.438	0.04765	63.67%	58.34%

Mean Dry Biomass-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-006; 001	0.271	1.051	0.2715	0.5005	0.6455	0.5315	0.737	0.058
24077-009; 010	0.438	0.092	0.23	0.335	0.243	0.046	0.08	0.2295

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	19-6920-7974	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:04	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-006; 001	07-4145-0866	11 Dec-13 09:06	11 Dec-13 12:15	36d 3h	AECOM	Ecological Risk Asse
24077-011; 011	10-2024-6603	13 Dec-13 10:10	18 Dec-13 11:30	34d 2h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-006; 001	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD302 0012; 24077-006		
24077-011; 011	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD102 0012; 24077-011		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	42.1%	

Unequal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-006; 001		24077-011; 011	3.541	1.895	0.214	7	0.0047	CDF	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.414	2.548	0.0975	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.5974669	0.5974669	1	11	0.0056	Significant Effect
Error	0.7063413	0.05433394	13			
Total	1.303808		14			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	22.91	10.79	0.0013	Unequal Variances
Distribution	Shapiro-Wilk W Normality	0.9379	0.8328	0.3570	Normal Distribution

Mean Dry Biomass-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-006; 001	8	0.5082	0.2475	0.7689	0.516	0.058	1.051	0.1103	61.37%	0.0%
24077-011; 011	7	0.1081	0.04788	0.1684	0.1045	0.0255	0.1875	0.02463	60.26%	78.72%

Mean Dry Biomass-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-006; 001	0.271	1.051	0.2715	0.5005	0.6455	0.5315	0.737	0.058
24077-011; 011	0.0295	0.1045	0.1825	0.1305	0.097	0.0255	0.1875	

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	15-8351-6480	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:04	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-006; 001	07-4145-0866	11 Dec-13 09:06	11 Dec-13 12:15	36d 3h	AECOM	Ecological Risk Asse
24077-013; 012	08-9458-1886	17 Dec-13 09:55	18 Dec-13 11:30	30d 2h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-006; 001	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD302 0012; 24077-006		
24077-013; 012	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD115 0012; 24077-013		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	47.1%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-006; 001		24077-013; 012	-1.807	1.761	0.24	14	0.9538	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.064	2.586	0.4341	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.2413264	0.2413264	1	3.264	0.0924	Non-Significant Effect
Error	1.035242	0.07394584	14			
Total	1.276568		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.921	8.885	0.4084	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9714	0.8408	0.8612	Normal Distribution

Mean Dry Biomass-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-006; 001	8	0.5082	0.2475	0.7689	0.516	0.058	1.051	0.1103	61.37%	0.0%
24077-013; 012	8	0.7538	0.5657	0.9419	0.802	0.425	1.075	0.07955	29.85%	-48.33%

Mean Dry Biomass-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-006; 001	0.271	1.051	0.2715	0.5005	0.6455	0.5315	0.737	0.058
24077-013; 012	0.855	0.749	0.9075	1.075	0.442	0.7185	0.425	0.859

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	03-4867-4956	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:04	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-006; 001	07-4145-0866	11 Dec-13 09:06	11 Dec-13 12:15	36d 3h	AECOM	Ecological Risk Asse
24077-014; 013	10-4129-5048	17 Dec-13 11:00	18 Dec-13 11:30	30d 1h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-006; 001	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD302 0012; 24077-006		
24077-014; 013	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD114 0012; 24077-014		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	43.8%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-006; 001		24077-014; 013	-2.101	1.761	0.223	14	0.9729	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.221	2.586	0.2500	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.2818282	0.2818282	1	4.412	0.0543	Non-Significant Effect
Error	0.8941936	0.06387097	14			
Total	1.176022		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	3.192	8.885	0.1487	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9819	0.8408	0.9767	Normal Distribution

Mean Dry Biomass-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-006; 001	8	0.5082	0.2475	0.7689	0.516	0.058	1.051	0.1103	61.37%	0.0%
24077-014; 013	8	0.7736	0.6277	0.9196	0.74	0.492	1.032	0.06172	22.57%	-52.23%

Mean Dry Biomass-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-006; 001	0.271	1.051	0.2715	0.5005	0.6455	0.5315	0.737	0.058
24077-014; 013	0.6445	1.032	0.8435	0.974	0.7545	0.7255	0.492	0.7225

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	08-6922-5551	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:08	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-010; 002	10-5151-8705	13 Dec-13 09:50	18 Dec-13 11:30	34d 2h	AECOM	Ecological Risk Asse
24077-001; 004	02-3274-4005	04 Dec-13 12:10	06 Dec-13 13:30	43d		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-010; 002	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD304 0012; 24077-010		
24077-001; 004	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD121 0012; 24077-001		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	33.4%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-010; 002		24077-001; 004	-2.568	1.761	0.186	14	0.9888	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.31	2.586	0.1771	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.2926812	0.2926812	1	6.596	0.0223	Significant Effect
Error	0.6211868	0.04437049	14			
Total	0.913868		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	2.34	8.885	0.2845	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9229	0.8408	0.1879	Normal Distribution

Mean Dry Biomass-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-010; 002	8	0.5551	0.4188	0.6913	0.5177	0.324	0.805	0.05763	29.37%	0.0%
24077-001; 004	8	0.8256	0.6171	1.034	0.9112	0.3555	1.025	0.08816	30.2%	-48.73%

Mean Dry Biomass-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-010; 002	0.324	0.4355	0.805	0.5325	0.456	0.6415	0.743	0.503
24077-001; 004	1.004	0.823	0.3555	0.834	1.025	0.5495	0.9885	1.025

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	19-5718-1506	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:08	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-010; 002	10-5151-8705	13 Dec-13 09:50	18 Dec-13 11:30	34d 2h	AECOM	Ecological Risk Asse
24077-002; 005	01-7804-1542	05 Dec-13 10:45	06 Dec-13 13:30	42d 1h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-010; 002	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD304 0012; 24077-010		
24077-002; 005	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD120 0012; 24077-002		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	47.5%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-010; 002		24077-002; 005	-0.8583	1.761	0.264	14	0.7974	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.056	2.586	0.4459	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.06598498	0.06598498	1	0.7367	0.4052	Non-Significant Effect
Error	1.253963	0.08956882	14			
Total	1.319948		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	5.743	8.885	0.0345	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9816	0.8408	0.9751	Normal Distribution

Mean Dry Biomass-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-010; 002	8	0.5551	0.4188	0.6913	0.5177	0.324	0.805	0.05763	29.37%	0.0%
24077-002; 005	8	0.6835	0.3569	1.01	0.7595	0.089	1.161	0.1381	57.15%	-23.14%

Mean Dry Biomass-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-010; 002	0.324	0.4355	0.805	0.5325	0.456	0.6415	0.743	0.503
24077-002; 005	0.2935	0.7095	1.148	1.161	0.8095	0.848	0.4095	0.089

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	02-8590-3933	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:07	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-010; 002	10-5151-8705	13 Dec-13 09:50	18 Dec-13 11:30	34d 2h	AECOM	Ecological Risk Asse
24077-003; 006	06-6548-1906	05 Dec-13 12:54	06 Dec-13 13:30	41d 23h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-010; 002	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD304 0012; 24077-010		
24077-003; 006	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD112 0012; 24077-003		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	36.3%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-010; 002		24077-003; 006	-1.617	1.761	0.201	14	0.9360	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.168	2.586	0.3036	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.136808	0.136808	1	2.616	0.1281	Non-Significant Effect
Error	0.7321354	0.05229538	14			
Total	0.8689434		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	2.937	8.885	0.1786	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.985	0.8408	0.9910	Normal Distribution

Mean Dry Biomass-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-010; 002	8	0.5551	0.4188	0.6913	0.5177	0.324	0.805	0.05763	29.37%	0.0%
24077-003; 006	8	0.74	0.5065	0.9735	0.7548	0.33	1.219	0.09876	37.75%	-33.32%

Mean Dry Biomass-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-010; 002	0.324	0.4355	0.805	0.5325	0.456	0.6415	0.743	0.503
24077-003; 006	0.914	0.33	0.888	1.219	0.5525	0.6975	0.812	0.507

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	16-5561-6980	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:07	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-010; 002	10-5151-8705	13 Dec-13 09:50	18 Dec-13 11:30	34d 2h	AECOM	Ecological Risk Asse
24077-005; 007	00-8496-1430	10 Dec-13 09:39	11 Dec-13 12:15	37d 2h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-010; 002	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD304 0012; 24077-010		
24077-005; 007	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD106 0012; 24077-005		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	30.7%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-010; 002		24077-005; 007	-1.009	1.761	0.170	14	0.8349	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.102	2.586	0.3827	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.0380251	0.0380251	1	1.017	0.3302	Non-Significant Effect
Error	0.5232398	0.03737427	14			
Total	0.5612649		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.813	8.885	0.4505	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9912	0.8408	0.9997	Normal Distribution

Mean Dry Biomass-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-010; 002	8	0.5551	0.4188	0.6913	0.5177	0.324	0.805	0.05763	29.37%	0.0%
24077-005; 007	8	0.6526	0.4691	0.8361	0.679	0.26	0.992	0.0776	33.64%	-17.57%

Mean Dry Biomass-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-010; 002	0.324	0.4355	0.805	0.5325	0.456	0.6415	0.743	0.503
24077-005; 007	0.26	0.493	0.8035	0.6395	0.57	0.744	0.992	0.7185

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	17-7338-0809	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:07	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-010; 002	10-5151-8705	13 Dec-13 09:50	18 Dec-13 11:30	34d 2h	AECOM	Ecological Risk Asse
24077-007; 008	21-1048-1554	11 Dec-13 13:29	13 Dec-13 08:35	35d 23h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-010; 002	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD304 0012; 24077-010		
24077-007; 008	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD118 0012; 24077-007		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	32.4%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-010; 002		24077-007; 008	-0.1714	1.761	0.18	14	0.5668	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.216	2.586	0.2552	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.001225016	0.001225016	1	0.02938	0.8664	Non-Significant Effect
Error	0.5836737	0.04169098	14			
Total	0.5848987		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	2.138	8.885	0.3374	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9313	0.8408	0.2552	Normal Distribution

Mean Dry Biomass-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-010; 002	8	0.5551	0.4188	0.6913	0.5177	0.324	0.805	0.05763	29.37%	0.0%
24077-007; 008	8	0.5726	0.3733	0.7718	0.679	0.1355	0.772	0.08427	41.63%	-3.15%

Mean Dry Biomass-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-010; 002	0.324	0.4355	0.805	0.5325	0.456	0.6415	0.743	0.503
24077-007; 008	0.714	0.7625	0.772	0.2825	0.644	0.1355	0.552	0.718

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	01-8304-0362	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:07	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-010; 002	10-5151-8705	13 Dec-13 09:50	18 Dec-13 11:30	34d 2h	AECOM	Ecological Risk Asse
24077-008; 009	08-1847-2615	12 Dec-13 07:50	13 Dec-13 08:35	35d 4h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-010; 002	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD304 0012; 24077-010		
24077-008; 009	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD124 0012; 24077-008		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	23.2%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-010; 002		24077-008; 009	2.482	1.761	0.129	14	0.0132	CDF	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	1.772	2.586	1.0000	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.1314061	0.1314061	1	6.162	0.0263	Significant Effect
Error	0.2985328	0.02132377	14			
Total	0.4299389		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.652	8.885	0.5235	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9418	0.8408	0.3715	Normal Distribution

Mean Dry Biomass-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-010; 002	8	0.5551	0.4188	0.6913	0.5177	0.324	0.805	0.05763	29.37%	0.0%
24077-008; 009	8	0.3738	0.2678	0.4798	0.347	0.207	0.603	0.04483	33.92%	32.65%

Mean Dry Biomass-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-010; 002	0.324	0.4355	0.805	0.5325	0.456	0.6415	0.743	0.503
24077-008; 009	0.352	0.514	0.309	0.3725	0.207	0.291	0.603	0.342

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	05-2231-3559	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:07	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-010; 002	10-5151-8705	13 Dec-13 09:50	18 Dec-13 11:30	34d 2h	AECOM	Ecological Risk Asse
24077-009; 010	18-6710-2589	12 Dec-13 09:15	13 Dec-13 08:35	35d 3h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-010; 002	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD304 0012; 24077-010		
24077-009; 010	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD122 0012; 24077-009		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	23.7%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-010; 002		24077-009; 010	4.592	1.761	0.132	14	0.0002	CDF	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	1.73	2.586	1.0000	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.4716248	0.4716248	1	21.08	0.0004	Significant Effect
Error	0.3131543	0.02236816	14			
Total	0.7847791		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.462	8.885	0.6285	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9581	0.8408	0.6273	Normal Distribution

Mean Dry Biomass-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-010; 002	8	0.5551	0.4188	0.6913	0.5177	0.324	0.805	0.05763	29.37%	0.0%
24077-009; 010	8	0.2117	0.099	0.3244	0.2298	0.046	0.438	0.04765	63.67%	61.86%

Mean Dry Biomass-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-010; 002	0.324	0.4355	0.805	0.5325	0.456	0.6415	0.743	0.503
24077-009; 010	0.438	0.092	0.23	0.335	0.243	0.046	0.08	0.2295

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	10-0884-3905	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:07	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-010; 002	10-5151-8705	13 Dec-13 09:50	18 Dec-13 11:30	34d 2h	AECOM	Ecological Risk Asse
24077-011; 011	10-2024-6603	13 Dec-13 10:10	18 Dec-13 11:30	34d 2h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-010; 002	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD304 0012; 24077-010		
24077-011; 011	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD102 0012; 24077-011		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	21.1%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-010; 002		24077-011; 011	6.771	1.771	0.117	13	<0.0001	CDF	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.034	2.548	0.4352	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.7456847	0.7456847	1	45.84	<0.0001	Significant Effect
Error	0.211457	0.01626593	13			
Total	0.9571418		14			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	6.257	10.79	0.0399	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9756	0.8328	0.9303	Normal Distribution

Mean Dry Biomass-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-010; 002	8	0.5551	0.4188	0.6913	0.5177	0.324	0.805	0.05763	29.37%	0.0%
24077-011; 011	7	0.1081	0.04788	0.1684	0.1045	0.0255	0.1875	0.02463	60.26%	80.52%

Mean Dry Biomass-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-010; 002	0.324	0.4355	0.805	0.5325	0.456	0.6415	0.743	0.503
24077-011; 011	0.0295	0.1045	0.1825	0.1305	0.097	0.0255	0.1875	

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	16-1532-3259	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:07	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-010; 002	10-5151-8705	13 Dec-13 09:50	18 Dec-13 11:30	34d 2h	AECOM	Ecological Risk Asse
24077-013; 012	08-9458-1886	17 Dec-13 09:55	18 Dec-13 11:30	30d 2h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-010; 002	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD304 0012; 24077-010		
24077-013; 012	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD115 0012; 24077-013		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	31.2%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-010; 002		24077-013; 012	-2.023	1.761	0.173	14	0.9687	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	1.732	2.586	1.0000	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.1580066	0.1580066	1	4.094	0.0626	Non-Significant Effect
Error	0.5403575	0.03859696	14			
Total	0.6983641		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.905	8.885	0.4143	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9711	0.8408	0.8556	Normal Distribution

Mean Dry Biomass-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-010; 002	8	0.5551	0.4188	0.6913	0.5177	0.324	0.805	0.05763	29.37%	0.0%
24077-013; 012	8	0.7538	0.5657	0.9419	0.802	0.425	1.075	0.07955	29.85%	-35.81%

Mean Dry Biomass-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-010; 002	0.324	0.4355	0.805	0.5325	0.456	0.6415	0.743	0.503
24077-013; 012	0.855	0.749	0.9075	1.075	0.442	0.7185	0.425	0.859

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	11-8794-1835	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:07	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-010; 002	10-5151-8705	13 Dec-13 09:50	18 Dec-13 11:30	34d 2h	AECOM	Ecological Risk Asse
24077-014; 013	10-4129-5048	17 Dec-13 11:00	18 Dec-13 11:30	30d 1h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-010; 002	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD304 0012; 24077-010		
24077-014; 013	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD114 0012; 24077-014		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	26.8%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-010; 002		24077-014; 013	-2.588	1.761	0.149	14	0.9893	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	1.726	2.586	1.0000	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.1910788	0.1910788	1	6.699	0.0215	Significant Effect
Error	0.3993094	0.0285221	14			
Total	0.5903882		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.147	8.885	0.8610	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9495	0.8408	0.4821	Normal Distribution

Mean Dry Biomass-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-010; 002	8	0.5551	0.4188	0.6913	0.5177	0.324	0.805	0.05763	29.37%	0.0%
24077-014; 013	8	0.7736	0.6277	0.9196	0.74	0.492	1.032	0.06172	22.57%	-39.38%

Mean Dry Biomass-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-010; 002	0.324	0.4355	0.805	0.5325	0.456	0.6415	0.743	0.503
24077-014; 013	0.6445	1.032	0.8435	0.974	0.7545	0.7255	0.492	0.7225

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	10-8731-9005	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:11	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-012; 003	20-3314-4845	13 Dec-13 10:45	18 Dec-13 11:30	34d 1h	AECOM	Ecological Risk Asse
24077-001; 004	02-3274-4005	04 Dec-13 12:10	06 Dec-13 13:30	43d		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-012; 003	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD303 0012; 24077-012		
24077-001; 004	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD121 0012; 24077-001		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	34.2%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-012; 003		24077-001; 004	-0.506	1.761	0.257	14	0.6896	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.213	2.586	0.2579	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.02182998	0.02182998	1	0.2561	0.6207	Non-Significant Effect
Error	1.193552	0.0852537	14			
Total	1.215382		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.742	8.885	0.4811	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9481	0.8408	0.4598	Normal Distribution

Mean Dry Biomass-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-012; 003	8	0.7517	0.4765	1.027	0.792	0.1275	1.199	0.1164	43.79%	0.0%
24077-001; 004	8	0.8256	0.6171	1.034	0.9112	0.3555	1.025	0.08816	30.2%	-9.83%

Mean Dry Biomass-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-012; 003	1.06	0.8625	1.199	0.564	0.1275	0.842	0.617	0.742
24077-001; 004	1.004	0.823	0.3555	0.834	1.025	0.5495	0.9885	1.025

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	01-0159-5717	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:11	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-012; 003	20-3314-4845	13 Dec-13 10:45	18 Dec-13 11:30	34d 1h	AECOM	Ecological Risk Asse
24077-002; 005	01-7804-1542	05 Dec-13 10:45	06 Dec-13 13:30	42d 1h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-012; 003	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD303 0012; 24077-012		
24077-002; 005	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD120 0012; 24077-002		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	42.3%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-012; 003		24077-002; 005	0.3776	1.761	0.318	14	0.3557	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	1.789	2.586	0.9874	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.01859815	0.01859815	1	0.1426	0.7114	Non-Significant Effect
Error	1.826329	0.130452	14			
Total	1.844927		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.408	8.885	0.6628	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9467	0.8408	0.4392	Normal Distribution

Mean Dry Biomass-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-012; 003	8	0.7517	0.4765	1.027	0.792	0.1275	1.199	0.1164	43.79%	0.0%
24077-002; 005	8	0.6835	0.3569	1.01	0.7595	0.089	1.161	0.1381	57.15%	9.07%

Mean Dry Biomass-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-012; 003	1.06	0.8625	1.199	0.564	0.1275	0.842	0.617	0.742
24077-002; 005	0.2935	0.7095	1.148	1.161	0.8095	0.848	0.4095	0.089

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	20-1307-2372	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:11	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-012; 003	20-3314-4845	13 Dec-13 10:45	18 Dec-13 11:30	34d 1h	AECOM	Ecological Risk Asse
24077-003; 006	06-6548-1906	05 Dec-13 12:54	06 Dec-13 13:30	41d 23h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-012; 003	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD303 0012; 24077-012		
24077-003; 006	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD112 0012; 24077-003		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	35.8%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-012; 003		24077-003; 006	0.07658	1.761	0.269	14	0.4700	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.117	2.586	0.3639	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.000546379	0.000546379	1	0.005864	0.9400	Non-Significant Effect
Error	1.3045	0.0931786	14			
Total	1.305047		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.389	8.885	0.6759	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9773	0.8408	0.9387	Normal Distribution

Mean Dry Biomass-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-012; 003	8	0.7517	0.4765	1.027	0.792	0.1275	1.199	0.1164	43.79%	0.0%
24077-003; 006	8	0.74	0.5065	0.9735	0.7548	0.33	1.219	0.09876	37.75%	1.56%

Mean Dry Biomass-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-012; 003	1.06	0.8625	1.199	0.564	0.1275	0.842	0.617	0.742
24077-003; 006	0.914	0.33	0.888	1.219	0.5525	0.6975	0.812	0.507

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	19-4304-3144	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:10	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-012; 003	20-3314-4845	13 Dec-13 10:45	18 Dec-13 11:30	34d 1h	AECOM	Ecological Risk Asse
24077-005; 007	00-8496-1430	10 Dec-13 09:39	11 Dec-13 12:15	37d 2h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-012; 003	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD303 0012; 24077-012		
24077-005; 007	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD106 0012; 24077-005		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	32.8%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-012; 003		24077-005; 007	0.7087	1.761	0.246	14	0.2451	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.31	2.586	0.1773	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.03930314	0.03930314	1	0.5022	0.4902	Non-Significant Effect
Error	1.095605	0.07825749	14			
Total	1.134908		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	2.249	8.885	0.3071	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9653	0.8408	0.7579	Normal Distribution

Mean Dry Biomass-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-012; 003	8	0.7517	0.4765	1.027	0.792	0.1275	1.199	0.1164	43.79%	0.0%
24077-005; 007	8	0.6526	0.4691	0.8361	0.679	0.26	0.992	0.0776	33.64%	13.19%

Mean Dry Biomass-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-012; 003	1.06	0.8625	1.199	0.564	0.1275	0.842	0.617	0.742
24077-005; 007	0.26	0.493	0.8035	0.6395	0.57	0.744	0.992	0.7185

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	13-3895-1667	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:10	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-012; 003	20-3314-4845	13 Dec-13 10:45	18 Dec-13 11:30	34d 1h	AECOM	Ecological Risk Asse
24077-007; 008	21-1048-1554	11 Dec-13 13:29	13 Dec-13 08:35	35d 23h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-012; 003	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD303 0012; 24077-012		
24077-007; 008	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD118 0012; 24077-007		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	33.7%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-012; 003		24077-007; 008	1.247	1.761	0.253	14	0.1165	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.248	2.586	0.2255	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.1283432	0.1283432	1	1.554	0.2330	Non-Significant Effect
Error	1.156039	0.08257419	14			
Total	1.284382		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.907	8.885	0.4138	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9498	0.8408	0.4862	Normal Distribution

Mean Dry Biomass-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-012; 003	8	0.7517	0.4765	1.027	0.792	0.1275	1.199	0.1164	43.79%	0.0%
24077-007; 008	8	0.5726	0.3733	0.7718	0.679	0.1355	0.772	0.08427	41.63%	23.83%

Mean Dry Biomass-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-012; 003	1.06	0.8625	1.199	0.564	0.1275	0.842	0.617	0.742
24077-007; 008	0.714	0.7625	0.772	0.2825	0.644	0.1355	0.552	0.718

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	17-5713-7493	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:10	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-012; 003	20-3314-4845	13 Dec-13 10:45	18 Dec-13 11:30	34d 1h	AECOM	Ecological Risk Asse
24077-008; 009	08-1847-2615	12 Dec-13 07:50	13 Dec-13 08:35	35d 4h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-012; 003	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD303 0012; 24077-012		
24077-008; 009	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD124 0012; 24077-008		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	29.2%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-012; 003		24077-008; 009	3.03	1.761	0.22	14	0.0045	CDF	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.59	2.586	0.0488	Outlier Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.5711585	0.5711585	1	9.182	0.0090	Significant Effect
Error	0.8708978	0.06220699	14			
Total	1.442056		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	6.738	8.885	0.0222	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9374	0.8408	0.3188	Normal Distribution

Mean Dry Biomass-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-012; 003	8	0.7517	0.4765	1.027	0.792	0.1275	1.199	0.1164	43.79%	0.0%
24077-008; 009	8	0.3738	0.2678	0.4798	0.347	0.207	0.603	0.04483	33.92%	50.27%

Mean Dry Biomass-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-012; 003	1.06	0.8625	1.199	0.564	0.1275	0.842	0.617	0.742
24077-008; 009	0.352	0.514	0.309	0.3725	0.207	0.291	0.603	0.342

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	00-8361-6158	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:10	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-012; 003	20-3314-4845	13 Dec-13 10:45	18 Dec-13 11:30	34d 1h	AECOM	Ecological Risk Asse
24077-008; 009	08-1847-2615	12 Dec-13 07:50	13 Dec-13 08:35	35d 4h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-012; 003	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD303 0012; 24077-012		
24077-008; 009	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD124 0012; 24077-008		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	19.7%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-012; 003		24077-008; 009	4.987	1.771	0.166	13	0.0001	CDF	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.814355	0.814355	1	24.87	0.0002	Significant Effect
Error	0.4256294	0.03274072	13			
Total	1.239984		14			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	3.245	9.155	0.1490	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9596	0.8328	0.6855	Normal Distribution

Mean Dry Biomass-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-012; 003	7	0.8409	0.6296	1.052	0.842	0.564	1.199	0.08634	27.17%	0.0%
24077-008; 009	8	0.3738	0.2678	0.4798	0.347	0.207	0.603	0.04483	33.92%	55.54%

Mean Dry Biomass-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-012; 003	1.06	0.8625	1.199	0.564	Outlier	0.842	0.617	0.742
24077-008; 009	0.352	0.514	0.309	0.3725	0.207	0.291	0.603	0.342

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	06-1500-9213	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:10	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-012; 003	20-3314-4845	13 Dec-13 10:45	18 Dec-13 11:30	34d 1h	AECOM	Ecological Risk Asse
24077-009; 010	18-6710-2589	12 Dec-13 09:15	13 Dec-13 08:35	35d 3h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-012; 003	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD303 0012; 24077-012		
24077-009; 010	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD122 0012; 24077-009		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	29.5%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-012; 003		24077-009; 010	4.294	1.761	0.222	14	0.0004	CDF	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.569	2.586	0.0545	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	1.1664	1.1664	1	18.44	0.0007	Significant Effect
Error	0.8855193	0.06325138	14			
Total	2.051919		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	5.963	8.885	0.0311	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9398	0.8408	0.3471	Normal Distribution

Mean Dry Biomass-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-012; 003	8	0.7517	0.4765	1.027	0.792	0.1275	1.199	0.1164	43.79%	0.0%
24077-009; 010	8	0.2117	0.099	0.3244	0.2298	0.046	0.438	0.04765	63.67%	71.84%

Mean Dry Biomass-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-012; 003	1.06	0.8625	1.199	0.564	0.1275	0.842	0.617	0.742
24077-009; 010	0.438	0.092	0.23	0.335	0.243	0.046	0.08	0.2295

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	14-3446-2953	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:10	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-012; 003	20-3314-4845	13 Dec-13 10:45	18 Dec-13 11:30	34d 1h	AECOM	Ecological Risk Asse
24077-011; 011	10-2024-6603	13 Dec-13 10:10	18 Dec-13 11:30	34d 2h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-012; 003	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD303 0012; 24077-012		
24077-011; 011	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD102 0012; 24077-011		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	20.7%	

Unequal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-012; 003		24077-011; 011	8.161	1.943	0.175	6	<0.0001	CDF	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	1.879046	1.879046	1	66.6	<0.0001	Significant Effect
Error	0.3385536	0.0282128	12			
Total	2.217599		13			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	12.29	11.07	0.0076	Unequal Variances
Distribution	Shapiro-Wilk W Normality	0.951	0.8239	0.5767	Normal Distribution

Mean Dry Biomass-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-012; 003	7	0.8409	0.6296	1.052	0.842	0.564	1.199	0.08634	27.17%	0.0%
24077-011; 011	7	0.1081	0.04788	0.1684	0.1045	0.0255	0.1875	0.02463	60.26%	87.14%

Mean Dry Biomass-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-012; 003	1.06	0.8625	1.199	0.564	Outlier	0.842	0.617	0.742
24077-011; 011	0.0295	0.1045	0.1825	0.1305	0.097	0.0255	0.1875	

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	13-8384-2026	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:10	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-012; 003	20-3314-4845	13 Dec-13 10:45	18 Dec-13 11:30	34d 1h	AECOM	Ecological Risk Asse
24077-011; 011	10-2024-6603	13 Dec-13 10:10	18 Dec-13 11:30	34d 2h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-012; 003	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD303 0012; 24077-012		
24077-011; 011	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD102 0012; 24077-011		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	30.0%	

Unequal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-012; 003		24077-011; 011	5.41	1.895	0.225	7	0.0005	CDF	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.638	2.548	0.0302	Outlier Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	1.546159	1.546159	1	25.64	0.0002	Significant Effect
Error	0.7838221	0.06029401	13			
Total	2.329981		14			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	25.51	10.79	0.0009	Unequal Variances
Distribution	Shapiro-Wilk W Normality	0.8996	0.8328	0.0938	Normal Distribution

Mean Dry Biomass-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-012; 003	8	0.7517	0.4765	1.027	0.792	0.1275	1.199	0.1164	43.79%	0.0%
24077-011; 011	7	0.1081	0.04788	0.1684	0.1045	0.0255	0.1875	0.02463	60.26%	85.61%

Mean Dry Biomass-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-012; 003	1.06	0.8625	1.199	0.564	0.1275	0.842	0.617	0.742
24077-011; 011	0.0295	0.1045	0.1825	0.1305	0.097	0.0255	0.1875	

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	20-0562-3100	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:10	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-012; 003	20-3314-4845	13 Dec-13 10:45	18 Dec-13 11:30	34d 1h	AECOM	Ecological Risk Asse
24077-013; 012	08-9458-1886	17 Dec-13 09:55	18 Dec-13 11:30	30d 2h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-012; 003	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD303 0012; 24077-012		
24077-013; 012	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD115 0012; 24077-013		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	33.0%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-012; 003		24077-013; 012	-0.01507	1.761	0.248	14	0.5059	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.292	2.586	0.1904	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	1.806229E-05	1.806229E-05	1	0.0002273	0.9882	Non-Significant Effect
Error	1.112723	0.07948018	14			
Total	1.112741		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	2.14	8.885	0.3369	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9643	0.8408	0.7401	Normal Distribution

Mean Dry Biomass-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-012; 003	8	0.7517	0.4765	1.027	0.792	0.1275	1.199	0.1164	43.79%	0.0%
24077-013; 012	8	0.7538	0.5657	0.9419	0.802	0.425	1.075	0.07955	29.85%	-0.28%

Mean Dry Biomass-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-012; 003	1.06	0.8625	1.199	0.564	0.1275	0.842	0.617	0.742
24077-013; 012	0.855	0.749	0.9075	1.075	0.442	0.7185	0.425	0.859

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	12-0905-6283	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:09	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-012; 003	20-3314-4845	13 Dec-13 10:45	18 Dec-13 11:30	34d 1h	AECOM	Ecological Risk Asse
24077-014; 013	10-4129-5048	17 Dec-13 11:00	18 Dec-13 11:30	30d 1h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-012; 003	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD303 0012; 24077-012		
24077-014; 013	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD114 0012; 24077-014		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	30.9%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-012; 003		24077-014; 013	-0.1665	1.761	0.232	14	0.5649	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.452	2.586	0.0959	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.001925025	0.001925025	1	0.02774	0.8701	Non-Significant Effect
Error	0.9716744	0.06940532	14			
Total	0.9735995		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	3.555	8.885	0.1161	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9671	0.8408	0.7889	Normal Distribution

Mean Dry Biomass-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-012; 003	8	0.7517	0.4765	1.027	0.792	0.1275	1.199	0.1164	43.79%	0.0%
24077-014; 013	8	0.7736	0.6277	0.9196	0.74	0.492	1.032	0.06172	22.57%	-2.92%

Mean Dry Biomass-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-012; 003	1.06	0.8625	1.199	0.564	0.1275	0.842	0.617	0.742
24077-014; 013	0.6445	1.032	0.8435	0.974	0.7545	0.7255	0.492	0.7225

CETIS Analytical Reports
Juvenile Production per Surviving Amphipod Comparisons

Carr Point MRP Site 1
Naval Station, Newport, Rhode Island

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	02-9652-2586	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:02	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-000; 000	18-1601-2962	03 Jan-14 12:00	03 Jan-14 12:00	13d 0h	AECOM	Ecological Risk Asse
24077-006; 001	07-4145-0866	11 Dec-13 09:06	11 Dec-13 12:15	36d 3h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-000; 000	Laboratory Control S	Carr Point MRP Site 1, Naval Stat	Laboratory Control; 24077-000		
24077-006; 001	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD302 0012; 24077-006		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	33.7%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-000; 000		24077-006; 001	3.732	1.761	1.487	14	0.0011	CDF	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	1.81	2.586	0.9326	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	39.69296	39.69296	1	13.93	0.0022	Significant Effect
Error	39.8955	2.849679	14			
Total	79.58846		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	3.001	8.885	0.1704	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.967	0.8408	0.7881	Normal Distribution

Reproduction Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-000; 000	8	4.417	2.688	6.145	5.207	1.667	7.368	0.731	46.81%	0.0%
24077-006; 001	8	1.267	0.2688	2.264	0.9231	0	3.333	0.422	94.23%	71.32%

Reproduction Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-000; 000	1.789	5.538	5.563	7.368	5.667	4.875	2.867	1.667
24077-006; 001	0	2.353	0.375	1.077	3.333	0.7692	2.059	0.1667

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	20-7578-5452	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:02	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-000; 000	18-1601-2962	03 Jan-14 12:00	03 Jan-14 12:00	13d 0h	AECOM	Ecological Risk Asse
24077-010; 002	10-5151-8705	13 Dec-13 09:50	18 Dec-13 11:30	34d 2h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-000; 000	Laboratory Control S	Carr Point MRP Site 1, Naval Stat	Laboratory Control; 24077-000		
24077-010; 002	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD304 0012; 24077-010		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	31.9%	

Unequal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-000; 000		24077-010; 002	4.933	1.86	1.408	8	0.0006	CDF	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.017	2.586	0.5057	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	55.81633	55.81633	1	24.33	0.0002	Significant Effect
Error	32.11471	2.293908	14			
Total	87.93104		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	13.66	8.885	0.0027	Unequal Variances
Distribution	Shapiro-Wilk W Normality	0.9497	0.8408	0.4842	Normal Distribution

Reproduction Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-000; 000	8	4.417	2.688	6.145	5.207	1.667	7.368	0.731	46.81%	0.0%
24077-010; 002	8	0.6812	0.2135	1.149	0.6548	0	1.818	0.1978	82.12%	84.58%

Reproduction Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-000; 000	1.789	5.538	5.563	7.368	5.667	4.875	2.867	1.667
24077-010; 002	0.6667	0.8333	0.1538	0.9231	0.6429	0.4118	0	1.818

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	06-3717-0753	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:02	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-000; 000	18-1601-2962	03 Jan-14 12:00	03 Jan-14 12:00	13d 0h	AECOM	Ecological Risk Asse
24077-012; 003	20-3314-4845	13 Dec-13 10:45	18 Dec-13 11:30	34d 1h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-000; 000	Laboratory Control S	Carr Point MRP Site 1, Naval Stat	Laboratory Control; 24077-000		
24077-012; 003	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD303 0012; 24077-012		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	43.8%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-000; 000		24077-012; 003	1.035	1.761	1.932	14	0.1592	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.476	2.586	0.0861	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	5.154244	5.154244	1	1.071	0.3184	Non-Significant Effect
Error	67.40529	4.814663	14			
Total	72.55953		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.253	8.885	0.7740	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9269	0.8408	0.2179	Normal Distribution

Reproduction Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-000; 000	8	4.417	2.688	6.145	5.207	1.667	7.368	0.731	46.81%	0.0%
24077-012; 003	8	3.282	1.347	5.216	3.113	1.167	8.529	0.8181	70.51%	25.7%

Reproduction Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-000; 000	1.789	5.538	5.563	7.368	5.667	4.875	2.867	1.667
24077-012; 003	1.6	8.529	3.15	3.4	1.167	3.615	1.714	3.077

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	06-3047-7462	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:02	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-000; 000	18-1601-2962	03 Jan-14 12:00	03 Jan-14 12:00	13d 0h	AECOM	Ecological Risk Asse
24077-001; 004	02-3274-4005	04 Dec-13 12:10	06 Dec-13 13:30	43d		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-000; 000	Laboratory Control S	Carr Point MRP Site 1, Naval Stat	Laboratory Control; 24077-000		
24077-001; 004	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD121 0012; 24077-001		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	32.3%	

Unequal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-000; 000		24077-001; 004	1.78	1.86	1.425	8	0.0565	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	1.993	2.586	0.5451	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	7.438597	7.438597	1	3.167	0.0969	Non-Significant Effect
Error	32.88562	2.348973	14			
Total	40.32421		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	10.1	8.885	0.0068	Unequal Variances
Distribution	Shapiro-Wilk W Normality	0.9437	0.8408	0.3964	Normal Distribution

Reproduction Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-000; 000	8	4.417	2.688	6.145	5.207	1.667	7.368	0.731	46.81%	0.0%
24077-001; 004	8	3.053	2.509	3.597	3.059	1.923	4.313	0.23	21.31%	30.88%

Reproduction Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-000; 000	1.789	5.538	5.563	7.368	5.667	4.875	2.867	1.667
24077-001; 004	3.111	1.923	3	2.778	3.063	3.182	4.313	3.056

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	13-9129-5713	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:02	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-000; 000	18-1601-2962	03 Jan-14 12:00	03 Jan-14 12:00	13d 0h	AECOM	Ecological Risk Asse
24077-002; 005	01-7804-1542	05 Dec-13 10:45	06 Dec-13 13:30	42d 1h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-000; 000	Laboratory Control S	Carr Point MRP Site 1, Naval Stat	Laboratory Control; 24077-000		
24077-002; 005	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD120 0012; 24077-002		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	48.0%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-000; 000		24077-002; 005	1.17	1.761	2.119	14	0.1309	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.208	2.586	0.2626	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	7.922517	7.922517	1	1.368	0.2617	Non-Significant Effect
Error	81.0858	5.791843	14			
Total	89.00832		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.71	8.885	0.4960	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9378	0.8408	0.3235	Normal Distribution

Reproduction Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-000; 000	8	4.417	2.688	6.145	5.207	1.667	7.368	0.731	46.81%	0.0%
24077-002; 005	8	3.009	0.7492	5.27	1.98	0	8.143	0.9558	89.84%	31.86%

Reproduction Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-000; 000	1.789	5.538	5.563	7.368	5.667	4.875	2.867	1.667
24077-002; 005	1	4.286	1.4	2.294	8.143	5.286	0	1.667

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	00-8941-1380	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:02	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-000; 000	18-1601-2962	03 Jan-14 12:00	03 Jan-14 12:00	13d 0h	AECOM	Ecological Risk Asse
24077-003; 006	06-6548-1906	05 Dec-13 12:54	06 Dec-13 13:30	41d 23h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-000; 000	Laboratory Control S	Carr Point MRP Site 1, Naval Stat	Laboratory Control; 24077-000		
24077-003; 006	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD112 0012; 24077-003		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	32.7%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-000; 000		24077-003; 006	3.178	1.761	1.443	14	0.0034	CDF	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	1.865	2.586	0.8001	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	27.1111	27.1111	1	10.1	0.0067	Significant Effect
Error	37.57875	2.684196	14			
Total	64.68985		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	3.909	8.885	0.0926	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9784	0.8408	0.9501	Normal Distribution

Reproduction Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-000; 000	8	4.417	2.688	6.145	5.207	1.667	7.368	0.731	46.81%	0.0%
24077-003; 006	8	1.813	0.9391	2.688	1.552	0.4545	3.875	0.3697	57.67%	58.94%

Reproduction Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-000; 000	1.789	5.538	5.563	7.368	5.667	4.875	2.867	1.667
24077-003; 006	3.875	0.4545	1.313	2.222	2.467	1.438	1.071	1.667

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	16-4520-8918	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:01	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-000; 000	18-1601-2962	03 Jan-14 12:00	03 Jan-14 12:00	13d 0h	AECOM	Ecological Risk Asse
24077-005; 007	00-8496-1430	10 Dec-13 09:39	11 Dec-13 12:15	37d 2h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-000; 000	Laboratory Control S	Carr Point MRP Site 1, Naval Stat	Laboratory Control; 24077-000		
24077-005; 007	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD106 0012; 24077-005		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	47.2%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-000; 000		24077-005; 007	1.431	1.761	2.085	14	0.0873	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.562	2.586	0.0564	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	11.46786	11.46786	1	2.046	0.1745	Non-Significant Effect
Error	78.45447	5.60389	14			
Total	89.92233		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.622	8.885	0.5389	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9155	0.8408	0.1425	Normal Distribution

Reproduction Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-000; 000	8	4.417	2.688	6.145	5.207	1.667	7.368	0.731	46.81%	0.0%
24077-005; 007	8	2.724	0.5222	4.925	1.854	0.4444	8.583	0.9309	96.68%	38.34%

Reproduction Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-000; 000	1.789	5.538	5.563	7.368	5.667	4.875	2.867	1.667
24077-005; 007	0.4444	0.8571	1.875	8.583	4.308	1.571	1.833	2.316

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	02-9104-2976	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:01	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-000; 000	18-1601-2962	03 Jan-14 12:00	03 Jan-14 12:00	13d 0h	AECOM	Ecological Risk Asse
24077-007; 008	21-1048-1554	11 Dec-13 13:29	13 Dec-13 08:35	35d 23h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-000; 000	Laboratory Control S	Carr Point MRP Site 1, Naval Stat	Laboratory Control; 24077-000		
24077-007; 008	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD118 0012; 24077-007		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	35.8%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-000; 000		24077-007; 008	2.196	1.761	1.579	14	0.0227	CDF	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	1.704	2.586	1.0000	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	15.51314	15.51314	1	4.823	0.0454	Significant Effect
Error	45.02687	3.216205	14			
Total	60.54002		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.981	8.885	0.3871	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9479	0.8408	0.4566	Normal Distribution

Reproduction Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-000; 000	8	4.417	2.688	6.145	5.207	1.667	7.368	0.731	46.81%	0.0%
24077-007; 008	8	2.447	1.219	3.675	2.552	0.2	4.375	0.5193	60.02%	44.59%

Reproduction Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-000; 000	1.789	5.538	5.563	7.368	5.667	4.875	2.867	1.667
24077-007; 008	4.067	2.667	2.438	1.167	4.375	0.2	1.333	3.333

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	00-0340-0184	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:01	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-000; 000	18-1601-2962	03 Jan-14 12:00	03 Jan-14 12:00	13d 0h	AECOM	Ecological Risk Asse
24077-008; 009	08-1847-2615	12 Dec-13 07:50	13 Dec-13 08:35	35d 4h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-000; 000	Laboratory Control S	Carr Point MRP Site 1, Naval Stat	Laboratory Control; 24077-000		
24077-008; 009	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD124 0012; 24077-008		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	34.2%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-000; 000		24077-008; 009	3.993	1.761	1.51	14	0.0007	CDF	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	1.782	2.586	1.0000	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	46.87046	46.87046	1	15.95	0.0013	Significant Effect
Error	41.14899	2.939213	14			
Total	88.01945		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	2.666	8.885	0.2191	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9623	0.8408	0.7028	Normal Distribution

Reproduction Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-000; 000	8	4.417	2.688	6.145	5.207	1.667	7.368	0.731	46.81%	0.0%
24077-008; 009	8	0.9936	-0.06504	2.052	0.4504	0	3.625	0.4477	127.4%	77.5%

Reproduction Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-000; 000	1.789	5.538	5.563	7.368	5.667	4.875	2.867	1.667
24077-008; 009	0.3125	0.5882	0	0.125	3.625	0.2143	0.9412	2.143

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	04-4583-4973	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:01	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-000; 000	18-1601-2962	03 Jan-14 12:00	03 Jan-14 12:00	13d 0h	AECOM	Ecological Risk Asse
24077-009; 010	18-6710-2589	12 Dec-13 09:15	13 Dec-13 08:35	35d 3h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-000; 000	Laboratory Control S	Carr Point MRP Site 1, Naval Stat	Laboratory Control; 24077-000		
24077-009; 010	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD122 0012; 24077-009		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	32.5%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-000; 000		24077-009; 010	4.765	1.761	1.437	14	0.0002	CDF	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	1.872	2.586	0.7841	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	60.48755	60.48755	1	22.71	0.0003	Significant Effect
Error	37.29489	2.663921	14			
Total	97.78244		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	4.06	8.885	0.0845	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9557	0.8408	0.5855	Normal Distribution

Reproduction Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-000; 000	8	4.417	2.688	6.145	5.207	1.667	7.368	0.731	46.81%	0.0%
24077-009; 010	8	0.528	-0.3298	1.386	0.125	0	3	0.3628	194.3%	88.04%

Reproduction Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-000; 000	1.789	5.538	5.563	7.368	5.667	4.875	2.867	1.667
24077-009; 010	0.6667	3	0	0.3077	0.25	0	0	0

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	11-1964-8204	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 15:58	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-000; 000	18-1601-2962	03 Jan-14 12:00	03 Jan-14 12:00	13d 0h	AECOM	Ecological Risk Asse
24077-011; 011	10-2024-6603	13 Dec-13 10:10	18 Dec-13 11:30	34d 2h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-000; 000	Laboratory Control S	Carr Point MRP Site 1, Naval Stat	Laboratory Control; 24077-000		
24077-011; 011	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD102 0012; 24077-011		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	33.2%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-000; 000		24077-011; 011	4.771	1.771	1.466	13	0.0002	CDF	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	1.915	2.548	0.6327	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	58.20446	58.20446	1	22.76	0.0004	Significant Effect
Error	33.24403	2.557233	13			
Total	91.44849		14			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	7.725	10.79	0.0237	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9581	0.8328	0.6601	Normal Distribution

Reproduction Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-000; 000	8	4.417	2.688	6.145	5.207	1.667	7.368	0.731	46.81%	0.0%
24077-011; 011	7	0.4683	-0.2197	1.156	0	0	2	0.2812	158.9%	89.4%

Reproduction Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-000; 000	1.789	5.538	5.563	7.368	5.667	4.875	2.867	1.667
24077-011; 011	0	0.7778	0	0	0	2	0.5	

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	05-8371-8423	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 15:58	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-000; 000	18-1601-2962	03 Jan-14 12:00	03 Jan-14 12:00	13d 0h	AECOM	Ecological Risk Asse
24077-013; 012	08-9458-1886	17 Dec-13 09:55	18 Dec-13 11:30	30d 2h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-000; 000	Laboratory Control S	Carr Point MRP Site 1, Naval Stat	Laboratory Control; 24077-000		
24077-013; 012	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD115 0012; 24077-013		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	35.7%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-000; 000		24077-013; 012	2.614	1.761	1.577	14	0.0102	CDF	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	1.706	2.586	1.0000	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	21.91811	21.91811	1	6.833	0.0204	Significant Effect
Error	44.90892	3.20778	14			
Total	66.82703		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.997	8.885	0.3818	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9503	0.8408	0.4940	Normal Distribution

Reproduction Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-000; 000	8	4.417	2.688	6.145	5.207	1.667	7.368	0.731	46.81%	0.0%
24077-013; 012	8	2.076	0.8527	3.299	1.792	0.3333	4.056	0.5173	70.48%	53.0%

Reproduction Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-000; 000	1.789	5.538	5.563	7.368	5.667	4.875	2.867	1.667
24077-013; 012	1	0.5714	3.778	4.056	3.286	0.3333	1.583	2

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	05-7880-0004	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 15:58	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-000; 000	18-1601-2962	03 Jan-14 12:00	03 Jan-14 12:00	13d 0h	AECOM	Ecological Risk Asse
24077-014; 013	10-4129-5048	17 Dec-13 11:00	18 Dec-13 11:30	30d 1h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-000; 000	Laboratory Control S	Carr Point MRP Site 1, Naval Stat	Laboratory Control; 24077-000		
24077-014; 013	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD114 0012; 24077-014		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	33.5%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-000; 000		24077-014; 013	2.486	1.761	1.479	14	0.0131	CDF	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	1.819	2.586	0.9105	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	17.44075	17.44075	1	6.18	0.0262	Significant Effect
Error	39.51248	2.82232	14			
Total	56.95323		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	3.121	8.885	0.1563	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9368	0.8408	0.3118	Normal Distribution

Reproduction Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-000; 000	8	4.417	2.688	6.145	5.207	1.667	7.368	0.731	46.81%	0.0%
24077-014; 013	8	2.329	1.35	3.307	2.276	0	3.786	0.4138	50.26%	47.28%

Reproduction Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-000; 000	1.789	5.538	5.563	7.368	5.667	4.875	2.867	1.667
24077-014; 013	3.571	1.813	2.176	2.158	3.786	2.75	0	2.375

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	17-4067-4229	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:05	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-006; 001	07-4145-0866	11 Dec-13 09:06	11 Dec-13 12:15	36d 3h	AECOM	Ecological Risk Asse
24077-001; 004	02-3274-4005	04 Dec-13 12:10	06 Dec-13 13:30	43d		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-006; 001	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD302 0012; 24077-006		
24077-001; 004	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD121 0012; 24077-001		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	66.8%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-006; 001		24077-001; 004	-3.717	1.761	0.846	14	0.9989	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.226	2.586	0.2458	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	12.7653	12.7653	1	13.82	0.0023	Significant Effect
Error	12.93327	0.9238046	14			
Total	25.69856		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	3.367	8.885	0.1317	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9395	0.8408	0.3432	Normal Distribution

Reproduction Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-006; 001	8	1.267	0.2688	2.264	0.9231	0	3.333	0.422	94.23%	0.0%
24077-001; 004	8	3.053	2.509	3.597	3.059	1.923	4.313	0.23	21.31%	-141.0%

Reproduction Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-006; 001	0	2.353	0.375	1.077	3.333	0.7692	2.059	0.1667
24077-001; 004	3.111	1.923	3	2.778	3.063	3.182	4.313	3.056

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	15-7952-2422	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:05	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-006; 001	07-4145-0866	11 Dec-13 09:06	11 Dec-13 12:15	36d 3h	AECOM	Ecological Risk Asse
24077-002; 005	01-7804-1542	05 Dec-13 10:45	06 Dec-13 13:30	42d 1h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-006; 001	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD302 0012; 24077-006		
24077-002; 005	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD120 0012; 24077-002		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	145.0%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-006; 001		24077-002; 005	-1.668	1.761	1.84	14	0.9412	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.543	2.586	0.0622	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	12.14897	12.14897	1	2.782	0.1175	Non-Significant Effect
Error	61.13345	4.366675	14			
Total	73.28242		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	5.131	8.885	0.0466	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9295	0.8408	0.2396	Normal Distribution

Reproduction Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-006; 001	8	1.267	0.2688	2.264	0.9231	0	3.333	0.422	94.23%	0.0%
24077-002; 005	8	3.009	0.7492	5.27	1.98	0	8.143	0.9558	89.84%	-137.6%

Reproduction Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-006; 001	0	2.353	0.375	1.077	3.333	0.7692	2.059	0.1667
24077-002; 005	1	4.286	1.4	2.294	8.143	5.286	0	1.667

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	07-1930-8693	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:05	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-006; 001	07-4145-0866	11 Dec-13 09:06	11 Dec-13 12:15	36d 3h	AECOM	Ecological Risk Asse
24077-003; 006	06-6548-1906	05 Dec-13 12:54	06 Dec-13 13:30	41d 23h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-006; 001	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD302 0012; 24077-006		
24077-003; 006	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD112 0012; 24077-003		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	78.0%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-006; 001		24077-003; 006	-0.9745	1.761	0.988	14	0.8268	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	1.907	2.586	0.7094	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	1.19553	1.19553	1	0.9496	0.3464	Non-Significant Effect
Error	17.6264	1.259029	14			
Total	18.82193		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.303	8.885	0.7361	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9181	0.8408	0.1571	Normal Distribution

Reproduction Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-006; 001	8	1.267	0.2688	2.264	0.9231	0	3.333	0.422	94.23%	0.0%
24077-003; 006	8	1.813	0.9391	2.688	1.552	0.4545	3.875	0.3697	57.67%	-43.16%

Reproduction Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-006; 001	0	2.353	0.375	1.077	3.333	0.7692	2.059	0.1667
24077-003; 006	3.875	0.4545	1.313	2.222	2.467	1.438	1.071	1.667

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	06-7427-0132	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:04	**Analysis:**	Nonparametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-006; 001	07-4145-0866	11 Dec-13 09:06	11 Dec-13 12:15	36d 3h	AECOM	Ecological Risk Asse
24077-005; 007	00-8496-1430	10 Dec-13 09:39	11 Dec-13 12:15	37d 2h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-006; 001	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD302 0012; 24077-006		
24077-005; 007	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD106 0012; 24077-005		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	142.0%	

Wilcoxon Rank Sum Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	Ties	DF	P-Value	P-Type	Decision(α:5%)
24077-006; 001		24077-005; 007	80	NA	0	14	0.9026	Exact	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.967	2.586	0.0042	Outlier Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	8.490297	8.490297	1	2.032	0.1760	Non-Significant Effect
Error	58.50212	4.178722	14			
Total	66.99242		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	4.867	8.885	0.0535	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.8237	0.8408	0.0057	Non-normal Distribution

Reproduction Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-006; 001	8	1.267	0.2688	2.264	0.9231	0	3.333	0.422	94.23%	0.0%
24077-005; 007	8	2.724	0.5222	4.925	1.854	0.4444	8.583	0.9309	96.68%	-115.0%

Reproduction Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-006; 001	0	2.353	0.375	1.077	3.333	0.7692	2.059	0.1667
24077-005; 007	0.4444	0.8571	1.875	8.583	4.308	1.571	1.833	2.316

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	08-3271-1644	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:04	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-006; 001	07-4145-0866	11 Dec-13 09:06	11 Dec-13 12:15	36d 3h	AECOM	Ecological Risk Asse
24077-005; 007	00-8496-1430	10 Dec-13 09:39	11 Dec-13 12:15	37d 2h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-006; 001	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD302 0012; 24077-006		
24077-005; 007	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD106 0012; 24077-005		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	88.1%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-006; 001		24077-005; 007	-0.9839	1.771	1.116	13	0.8284	CDF	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	1.43412	1.43412	1	0.968	0.3431	Non-Significant Effect
Error	19.25937	1.48149	13			
Total	20.69349		14			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.087	9.155	0.9027	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9213	0.8328	0.2014	Normal Distribution

Reproduction Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-006; 001	8	1.267	0.2688	2.264	0.9231	0	3.333	0.422	94.23%	0.0%
24077-005; 007	7	1.886	0.7357	3.037	1.833	0.4444	4.308	0.4703	65.95%	-48.93%

Reproduction Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-006; 001	0	2.353	0.375	1.077	3.333	0.7692	2.059	0.1667
24077-005; 007	0.4444	0.8571	1.875	Outlier	4.308	1.571	1.833	2.316

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	13-6419-0836	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:04	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-006; 001	07-4145-0866	11 Dec-13 09:06	11 Dec-13 12:15	36d 3h	AECOM	Ecological Risk Asse
24077-007; 008	21-1048-1554	11 Dec-13 13:29	13 Dec-13 08:35	35d 23h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-006; 001	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD302 0012; 24077-006		
24077-007; 008	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD118 0012; 24077-007		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	93.0%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-006; 001		24077-007; 008	-1.765	1.761	1.179	14	0.9503	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	1.738	2.586	1.0000	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	5.576975	5.576975	1	3.114	0.0994	Non-Significant Effect
Error	25.07452	1.791037	14			
Total	30.6515		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.515	8.885	0.5974	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9551	0.8408	0.5741	Normal Distribution

Reproduction Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-006; 001	8	1.267	0.2688	2.264	0.9231	0	3.333	0.422	94.23%	0.0%
24077-007; 008	8	2.447	1.219	3.675	2.552	0.2	4.375	0.5193	60.02%	-93.22%

Reproduction Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-006; 001	0	2.353	0.375	1.077	3.333	0.7692	2.059	0.1667
24077-007; 008	4.067	2.667	2.438	1.167	4.375	0.2	1.333	3.333

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	15-3708-0833	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:04	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-006; 001	07-4145-0866	11 Dec-13 09:06	11 Dec-13 12:15	36d 3h	AECOM	Ecological Risk Asse
24077-008; 009	08-1847-2615	12 Dec-13 07:50	13 Dec-13 08:35	35d 4h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-006; 001	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD302 0012; 24077-006		
24077-008; 009	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD124 0012; 24077-008		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	85.6%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-006; 001		24077-008; 009	0.4437	1.761	1.084	14	0.3320	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.214	2.586	0.2572	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.2980789	0.2980789	1	0.1969	0.6640	Non-Significant Effect
Error	21.19664	1.514045	14			
Total	21.49471		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.126	8.885	0.8799	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.8646	0.8408	0.0225	Normal Distribution

Reproduction Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-006; 001	8	1.267	0.2688	2.264	0.9231	0	3.333	0.422	94.23%	0.0%
24077-008; 009	8	0.9936	-0.06504	2.052	0.4504	0	3.625	0.4477	127.4%	21.55%

Reproduction Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-006; 001	0	2.353	0.375	1.077	3.333	0.7692	2.059	0.1667
24077-008; 009	0.3125	0.5882	0	0.125	3.625	0.2143	0.9412	2.143

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	06-5677-2228	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:04	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-006; 001	07-4145-0866	11 Dec-13 09:06	11 Dec-13 12:15	36d 3h	AECOM	Ecological Risk Asse
24077-009; 010	18-6710-2589	12 Dec-13 09:15	13 Dec-13 08:35	35d 3h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-006; 001	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD302 0012; 24077-006		
24077-009; 010	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD122 0012; 24077-009		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	77.4%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-006; 001		24077-009; 010	1.327	1.761	0.980	14	0.1028	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.299	2.586	0.1850	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	2.181942	2.181942	1	1.761	0.2057	Non-Significant Effect
Error	17.34254	1.238753	14			
Total	19.52448		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.353	8.885	0.7002	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.8502	0.8408	0.0137	Normal Distribution

Reproduction Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-006; 001	8	1.267	0.2688	2.264	0.9231	0	3.333	0.422	94.23%	0.0%
24077-009; 010	8	0.528	-0.3298	1.386	0.125	0	3	0.3628	194.3%	58.31%

Reproduction Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-006; 001	0	2.353	0.375	1.077	3.333	0.7692	2.059	0.1667
24077-009; 010	0.6667	3	0	0.3077	0.25	0	0	0

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	01-0101-3579	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:04	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-006; 001	07-4145-0866	11 Dec-13 09:06	11 Dec-13 12:15	36d 3h	AECOM	Ecological Risk Asse
24077-011; 011	10-2024-6603	13 Dec-13 10:10	18 Dec-13 11:30	34d 2h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-006; 001	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD302 0012; 24077-006		
24077-011; 011	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD102 0012; 24077-011		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	73.2%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-006; 001		24077-011; 011	1.526	1.771	0.927	13	0.0755	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.121	2.548	0.3222	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	2.379552	2.379552	1	2.327	0.1511	Non-Significant Effect
Error	13.29168	1.022437	13			
Total	15.67123		14			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	2.574	10.79	0.2697	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9131	0.8328	0.1509	Normal Distribution

Reproduction Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-006; 001	8	1.267	0.2688	2.264	0.9231	0	3.333	0.422	94.23%	0.0%
24077-011; 011	7	0.4683	-0.2197	1.156	0	0	2	0.2812	158.9%	63.03%

Reproduction Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-006; 001	0	2.353	0.375	1.077	3.333	0.7692	2.059	0.1667
24077-011; 011	0	0.7778	0	0	0	2	0.5	

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	15-9325-8139	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:04	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-006; 001	07-4145-0866	11 Dec-13 09:06	11 Dec-13 12:15	36d 3h	AECOM	Ecological Risk Asse
24077-013; 012	08-9458-1886	17 Dec-13 09:55	18 Dec-13 11:30	30d 2h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-006; 001	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD302 0012; 24077-006		
24077-013; 012	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD115 0012; 24077-013		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	92.8%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-006; 001		24077-013; 012	-1.212	1.761	1.176	14	0.8773	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	1.602	2.586	1.0000	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	2.619724	2.619724	1	1.47	0.2455	Non-Significant Effect
Error	24.95657	1.782612	14			
Total	27.57629		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.503	8.885	0.6043	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9162	0.8408	0.1464	Normal Distribution

Reproduction Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-006; 001	8	1.267	0.2688	2.264	0.9231	0	3.333	0.422	94.23%	0.0%
24077-013; 012	8	2.076	0.8527	3.299	1.792	0.3333	4.056	0.5173	70.48%	-63.89%

Reproduction Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-006; 001	0	2.353	0.375	1.077	3.333	0.7692	2.059	0.1667
24077-013; 012	1	0.5714	3.778	4.056	3.286	0.3333	1.583	2

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	16-2574-0318	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:03	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-006; 001	07-4145-0866	11 Dec-13 09:06	11 Dec-13 12:15	36d 3h	AECOM	Ecological Risk Asse
24077-014; 013	10-4129-5048	17 Dec-13 11:00	18 Dec-13 11:30	30d 1h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-006; 001	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD302 0012; 24077-006		
24077-014; 013	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD114 0012; 24077-014		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	82.2%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-006; 001		24077-014; 013	-1.797	1.761	1.041	14	0.9530	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.039	2.586	0.4713	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	4.511471	4.511471	1	3.229	0.0939	Non-Significant Effect
Error	19.56013	1.397152	14			
Total	24.0716		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.04	8.885	0.9601	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9846	0.8408	0.9896	Normal Distribution

Reproduction Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-006; 001	8	1.267	0.2688	2.264	0.9231	0	3.333	0.422	94.23%	0.0%
24077-014; 013	8	2.329	1.35	3.307	2.276	0	3.786	0.4138	50.26%	-83.85%

Reproduction Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-006; 001	0	2.353	0.375	1.077	3.333	0.7692	2.059	0.1667
24077-014; 013	3.571	1.813	2.176	2.158	3.786	2.75	0	2.375

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	08-1620-7754	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:08	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-010; 002	10-5151-8705	13 Dec-13 09:50	18 Dec-13 11:30	34d 2h	AECOM	Ecological Risk Asse
24077-001; 004	02-3274-4005	04 Dec-13 12:10	06 Dec-13 13:30	43d		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-010; 002	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD304 0012; 24077-010		
24077-001; 004	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD121 0012; 24077-001		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	78.4%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-010; 002		24077-001; 004	-7.819	1.761	0.534	14	1.0000	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.149	2.586	0.3251	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	22.50224	22.50224	1	61.14	<0.0001	Significant Effect
Error	5.15248	0.3680342	14			
Total	27.65472		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.352	8.885	0.7008	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9016	0.8408	0.0854	Normal Distribution

Reproduction Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-010; 002	8	0.6812	0.2135	1.149	0.6548	0	1.818	0.1978	82.12%	0.0%
24077-001; 004	8	3.053	2.509	3.597	3.059	1.923	4.313	0.23	21.31%	-348.2%

Reproduction Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-010; 002	0.6667	0.8333	0.1538	0.9231	0.6429	0.4118	0	1.818
24077-001; 004	3.111	1.923	3	2.778	3.063	3.182	4.313	3.056

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	14-6119-0093	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:08	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-010; 002	10-5151-8705	13 Dec-13 09:50	18 Dec-13 11:30	34d 2h	AECOM	Ecological Risk Asse
24077-002; 005	01-7804-1542	05 Dec-13 10:45	06 Dec-13 13:30	42d 1h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-010; 002	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD304 0012; 24077-010		
24077-002; 005	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD120 0012; 24077-002		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	271.0%	

Unequal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-010; 002		24077-002; 005	-2.385	1.895	1.849	7	0.9757	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.722	2.586	0.0233	Outlier Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	21.68146	21.68146	1	5.689	0.0318	Significant Effect
Error	53.35266	3.810905	14			
Total	75.03413		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	23.35	8.885	0.0005	Unequal Variances
Distribution	Shapiro-Wilk W Normality	0.9165	0.8408	0.1482	Normal Distribution

Reproduction Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-010; 002	8	0.6812	0.2135	1.149	0.6548	0	1.818	0.1978	82.12%	0.0%
24077-002; 005	8	3.009	0.7492	5.27	1.98	0	8.143	0.9558	89.84%	-341.8%

Reproduction Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-010; 002	0.6667	0.8333	0.1538	0.9231	0.6429	0.4118	0	1.818
24077-002; 005	1	4.286	1.4	2.294	8.143	5.286	0	1.667

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	03-6198-5039	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:07	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-010; 002	10-5151-8705	13 Dec-13 09:50	18 Dec-13 11:30	34d 2h	AECOM	Ecological Risk Asse
24077-002; 005	01-7804-1542	05 Dec-13 10:45	06 Dec-13 13:30	42d 1h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-010; 002	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD304 0012; 24077-010		
24077-002; 005	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD120 0012; 24077-002		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	210.0%	

Unequal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-010; 002		24077-002; 005	-2.17	1.943	1.428	6	0.9635	CDF	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	9.495485	9.495485	1	5.313	0.0383	Significant Effect
Error	23.23546	1.787343	13			
Total	32.73095		14			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	11.21	9.155	0.0055	Unequal Variances
Distribution	Shapiro-Wilk W Normality	0.9291	0.8328	0.2642	Normal Distribution

Reproduction Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-010; 002	8	0.6812	0.2135	1.149	0.6548	0	1.818	0.1978	82.12%	0.0%
24077-002; 005	7	2.276	0.544	4.008	1.667	0	5.286	0.7079	82.28%	-234.1%

Reproduction Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-010; 002	0.6667	0.8333	0.1538	0.9231	0.6429	0.4118	0	1.818
24077-002; 005	1	4.286	1.4	2.294	Outlier	5.286	0	1.667

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	04-1931-6699	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:07	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-010; 002	10-5151-8705	13 Dec-13 09:50	18 Dec-13 11:30	34d 2h	AECOM	Ecological Risk Asse
24077-003; 006	06-6548-1906	05 Dec-13 12:54	06 Dec-13 13:30	41d 23h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-010; 002	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD304 0012; 24077-010		
24077-003; 006	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD112 0012; 24077-003		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	108.0%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-010; 002		24077-003; 006	-2.7	1.761	0.739	14	0.9914	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.545	2.586	0.0616	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	5.126605	5.126605	1	7.29	0.0173	Significant Effect
Error	9.845616	0.7032583	14			
Total	14.97222		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	3.494	8.885	0.1209	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9408	0.8408	0.3584	Normal Distribution

Reproduction Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-010; 002	8	0.6812	0.2135	1.149	0.6548	0	1.818	0.1978	82.12%	0.0%
24077-003; 006	8	1.813	0.9391	2.688	1.552	0.4545	3.875	0.3697	57.67%	-166.2%

Reproduction Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-010; 002	0.6667	0.8333	0.1538	0.9231	0.6429	0.4118	0	1.818
24077-003; 006	3.875	0.4545	1.313	2.222	2.467	1.438	1.071	1.667

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	07-7656-6905	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:07	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-010; 002	10-5151-8705	13 Dec-13 09:50	18 Dec-13 11:30	34d 2h	AECOM	Ecological Risk Asse
24077-005; 007	00-8496-1430	10 Dec-13 09:39	11 Dec-13 12:15	37d 2h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-010; 002	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD304 0012; 24077-010		
24077-005; 007	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD106 0012; 24077-005		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	126.0%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-010; 002		24077-005; 007	-2.478	1.771	0.861	13	0.9861	CDF	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	5.42259	5.42259	1	6.141	0.0277	Significant Effect
Error	11.47858	0.8829677	13			
Total	16.90117		14			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	4.946	9.155	0.0546	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9005	0.8328	0.0968	Normal Distribution

Reproduction Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-010; 002	8	0.6812	0.2135	1.149	0.6548	0	1.818	0.1978	82.12%	0.0%
24077-005; 007	7	1.886	0.7357	3.037	1.833	0.4444	4.308	0.4703	65.95%	-176.9%

Reproduction Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-010; 002	0.6667	0.8333	0.1538	0.9231	0.6429	0.4118	0	1.818
24077-005; 007	0.4444	0.8571	1.875	Outlier	4.308	1.571	1.833	2.316

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	18-8757-8175	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:07	**Analysis:**	Nonparametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-010; 002	10-5151-8705	13 Dec-13 09:50	18 Dec-13 11:30	34d 2h	AECOM	Ecological Risk Asse
24077-005; 007	00-8496-1430	10 Dec-13 09:39	11 Dec-13 12:15	37d 2h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-010; 002	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD304 0012; 24077-010		
24077-005; 007	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD106 0012; 24077-005		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	246.0%	

Wilcoxon Rank Sum Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	Ties	DF	P-Value	P-Type	Decision(α:5%)
24077-010; 002		24077-005; 007	92	NA	0	14	0.9965	Exact	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	3.187	2.586	0.0005	Outlier Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	16.68403	16.68403	1	4.605	0.0499	Significant Effect
Error	50.72133	3.622952	14			
Total	67.40536		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	22.15	8.885	0.0006	Unequal Variances
Distribution	Shapiro-Wilk W Normality	0.7802	0.8408	0.0015	Non-normal Distribution

Reproduction Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-010; 002	8	0.6812	0.2135	1.149	0.6548	0	1.818	0.1978	82.12%	0.0%
24077-005; 007	8	2.724	0.5222	4.925	1.854	0.4444	8.583	0.9309	96.68%	-299.8%

Reproduction Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-010; 002	0.6667	0.8333	0.1538	0.9231	0.6429	0.4118	0	1.818
24077-005; 007	0.4444	0.8571	1.875	8.583	4.308	1.571	1.833	2.316

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	14-9111-4969	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:07	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-010; 002	10-5151-8705	13 Dec-13 09:50	18 Dec-13 11:30	34d 2h	AECOM	Ecological Risk Asse
24077-007; 008	21-1048-1554	11 Dec-13 13:29	13 Dec-13 08:35	35d 23h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-010; 002	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD304 0012; 24077-010		
24077-007; 008	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD118 0012; 24077-007		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	144.0%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-010; 002		24077-007; 008	-3.178	1.761	0.979	14	0.9966	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.093	2.586	0.3943	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	12.47757	12.47757	1	10.1	0.0067	Significant Effect
Error	17.29374	1.235267	14			
Total	29.77131		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	6.894	8.885	0.0208	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9759	0.8408	0.9224	Normal Distribution

Reproduction Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-010; 002	8	0.6812	0.2135	1.149	0.6548	0	1.818	0.1978	82.12%	0.0%
24077-007; 008	8	2.447	1.219	3.675	2.552	0.2	4.375	0.5193	60.02%	-259.3%

Reproduction Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-010; 002	0.6667	0.8333	0.1538	0.9231	0.6429	0.4118	0	1.818
24077-007; 008	4.067	2.667	2.438	1.167	4.375	0.2	1.333	3.333

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	04-7848-1371	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:07	**Analysis:**	Nonparametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-010; 002	10-5151-8705	13 Dec-13 09:50	18 Dec-13 11:30	34d 2h	AECOM	Ecological Risk Asse
24077-008; 009	08-1847-2615	12 Dec-13 07:50	13 Dec-13 08:35	35d 4h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-010; 002	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD304 0012; 24077-010		
24077-008; 009	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD124 0012; 24077-008		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	127.0%	

Wilcoxon Rank Sum Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	Ties	DF	P-Value	P-Type	Decision(α:5%)
24077-010; 002		24077-008; 009	67.5	NA	1	14	0.4927	Exact	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.782	2.586	0.0160	Outlier Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.390415	0.390415	1	0.4074	0.5336	Non-Significant Effect
Error	13.41585	0.958275	14			
Total	13.80627		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	5.124	8.885	0.0468	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.8399	0.8408	0.0097	Non-normal Distribution

Reproduction Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-010; 002	8	0.6812	0.2135	1.149	0.6548	0	1.818	0.1978	82.12%	0.0%
24077-008; 009	8	0.9936	-0.06504	2.052	0.4504	0	3.625	0.4477	127.4%	-45.86%

Reproduction Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-010; 002	0.6667	0.8333	0.1538	0.9231	0.6429	0.4118	0	1.818
24077-008; 009	0.3125	0.5882	0	0.125	3.625	0.2143	0.9412	2.143

CETIS Analytical Report

Report Date:	10 Mar-14 08:48 (p 1 of 1)
Test Code:	24077Lp | 20-9805-5845

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	08-9783-2401	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:07	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-010; 002	10-5151-8705	13 Dec-13 09:50	18 Dec-13 11:30	34d 2h	AECOM	Ecological Risk Asse
24077-008; 009	08-1847-2615	12 Dec-13 07:50	13 Dec-13 08:35	35d 4h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-010; 002	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD304 0012; 24077-010		
24077-008; 009	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD124 0012; 24077-008		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	87.5%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-010; 002		24077-008; 009	0.1886	1.771	0.596	13	0.4267	CDF	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.01505077	0.01505077	1	0.03556	0.8533	Non-Significant Effect
Error	5.502595	0.4232765	13			
Total	5.517646		14			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.764	9.155	0.4746	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.8621	0.8328	0.0259	Normal Distribution

Reproduction Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-010; 002	8	0.6812	0.2135	1.149	0.6548	0	1.818	0.1978	82.12%	0.0%
24077-008; 009	7	0.6177	-0.06939	1.305	0.3125	0	2.143	0.2808	120.3%	9.32%

Reproduction Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-010; 002	0.6667	0.8333	0.1538	0.9231	0.6429	0.4118	0	1.818
24077-008; 009	0.3125	0.5882	0	0.125	Outlier	0.2143	0.9412	2.143

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	20-8394-3175	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:07	**Analysis:**	Nonparametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-010; 002	10-5151-8705	13 Dec-13 09:50	18 Dec-13 11:30	34d 2h	AECOM	Ecological Risk Asse
24077-009; 010	18-6710-2589	12 Dec-13 09:15	13 Dec-13 08:35	35d 3h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-010; 002	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD304 0012; 24077-010		
24077-009; 010	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD122 0012; 24077-009		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	107.0%	

Wilcoxon Rank Sum Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	Ties	DF	P-Value	P-Type	Decision(α:5%)
24077-010; 002		24077-009; 010	54.5	NA	2	14	0.0812	Exact	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	3.096	2.586	0.0013	Outlier Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.09384538	0.09384538	1	0.1374	0.7164	Non-Significant Effect
Error	9.561757	0.6829826	14			
Total	9.655602		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	3.365	8.885	0.1319	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.7243	0.8408	0.0003	Non-normal Distribution

Reproduction Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-010; 002	8	0.6812	0.2135	1.149	0.6548	0	1.818	0.1978	82.12%	0.0%
24077-009; 010	8	0.528	-0.3298	1.386	0.125	0	3	0.3628	194.3%	22.48%

Reproduction Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-010; 002	0.6667	0.8333	0.1538	0.9231	0.6429	0.4118	0	1.818
24077-009; 010	0.6667	3	0	0.3077	0.25	0	0	0

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	08-3203-8327	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:07	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-010; 002	10-5151-8705	13 Dec-13 09:50	18 Dec-13 11:30	34d 2h	AECOM	Ecological Risk Asse
24077-009; 010	18-6710-2589	12 Dec-13 09:15	13 Dec-13 08:35	35d 3h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-010; 002	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD304 0012; 24077-010		
24077-009; 010	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD122 0012; 24077-009		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	59.9%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-010; 002		24077-009; 010	2.197	1.771	0.408	13	0.0234	CDF	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.9570296	0.9570296	1	4.826	0.0468	Significant Effect
Error	2.578257	0.1983275	13			
Total	3.535287		14			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	4.846	10.79	0.0728	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9115	0.8328	0.1428	Normal Distribution

Reproduction Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-010; 002	8	0.6812	0.2135	1.149	0.6548	0	1.818	0.1978	82.12%	0.0%
24077-009; 010	7	0.1749	-0.06012	0.4099	0	0	0.6667	0.09605	145.3%	74.32%

Reproduction Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-010; 002	0.6667	0.8333	0.1538	0.9231	0.6429	0.4118	0	1.818
24077-009; 010	0.6667	Outlier	0	0.3077	0.25	0	0	0

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	09-4997-0550	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:07	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-010; 002	10-5151-8705	13 Dec-13 09:50	18 Dec-13 11:30	34d 2h	AECOM	Ecological Risk Asse
24077-011; 011	10-2024-6603	13 Dec-13 10:10	18 Dec-13 11:30	34d 2h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-010; 002	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD304 0012; 24077-010		
24077-011; 011	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD102 0012; 24077-011		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	87.6%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-010; 002		24077-011; 011	0.632	1.771	0.597	13	0.2692	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.441	2.548	0.0859	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.169317	0.169317	1	0.3994	0.5383	Non-Significant Effect
Error	5.510895	0.423915	13			
Total	5.680212		14			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.768	9.155	0.4727	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.844	0.8328	0.0143	Normal Distribution

Reproduction Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-010; 002	8	0.6812	0.2135	1.149	0.6548	0	1.818	0.1978	82.12%	0.0%
24077-011; 011	7	0.4683	-0.2197	1.156	0	0	2	0.2812	158.9%	31.26%

Reproduction Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-010; 002	0.6667	0.8333	0.1538	0.9231	0.6429	0.4118	0	1.818
24077-011; 011	0	0.7778	0	0	0	2	0.5	

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	11-1691-4557	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:07	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-010; 002	10-5151-8705	13 Dec-13 09:50	18 Dec-13 11:30	34d 2h	AECOM	Ecological Risk Asse
24077-013; 012	08-9458-1886	17 Dec-13 09:55	18 Dec-13 11:30	30d 2h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-010; 002	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD304 0012; 24077-010		
24077-013; 012	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD115 0012; 24077-013		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	143.0%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-010; 002		24077-013; 012	-2.518	1.761	0.975	14	0.9877	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	1.85	2.586	0.8344	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	7.780496	7.780496	1	6.342	0.0246	Significant Effect
Error	17.17578	1.226841	14			
Total	24.95628		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	6.84	8.885	0.0213	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9586	0.8408	0.6366	Normal Distribution

Reproduction Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-010; 002	8	0.6812	0.2135	1.149	0.6548	0	1.818	0.1978	82.12%	0.0%
24077-013; 012	8	2.076	0.8527	3.299	1.792	0.3333	4.056	0.5173	70.48%	-204.7%

Reproduction Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-010; 002	0.6667	0.8333	0.1538	0.9231	0.6429	0.4118	0	1.818
24077-013; 012	1	0.5714	3.778	4.056	3.286	0.3333	1.583	2

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	14-0693-2240	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:07	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-010; 002	10-5151-8705	13 Dec-13 09:50	18 Dec-13 11:30	34d 2h	AECOM	Ecological Risk Asse
24077-014; 013	10-4129-5048	17 Dec-13 11:00	18 Dec-13 11:30	30d 1h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-010; 002	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD304 0012; 24077-010		
24077-014; 013	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD114 0012; 24077-014		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	88.2%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-010; 002		24077-014; 013	-5.838	1.771	0.601	13	1.0000	CDF	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	14.63721	14.63721	1	34.09	<0.0001	Significant Effect
Error	5.582204	0.4294003	13			
Total	20.21941		14			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.806	9.155	0.4569	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9057	0.8328	0.1162	Normal Distribution

Reproduction Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-010; 002	8	0.6812	0.2135	1.149	0.6548	0	1.818	0.1978	82.12%	0.0%
24077-014; 013	7	2.661	1.966	3.357	2.375	1.813	3.786	0.2842	28.25%	-290.7%

Reproduction Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-010; 002	0.6667	0.8333	0.1538	0.9231	0.6429	0.4118	0	1.818
24077-014; 013	3.571	1.813	2.176	2.158	3.786	2.75	Outlier	2.375

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	19-3780-5569	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:07	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-010; 002	10-5151-8705	13 Dec-13 09:50	18 Dec-13 11:30	34d 2h	AECOM	Ecological Risk Asse
24077-014; 013	10-4129-5048	17 Dec-13 11:00	18 Dec-13 11:30	30d 1h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-010; 002	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD304 0012; 24077-010		
24077-014; 013	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD114 0012; 24077-014		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	119.0%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-010; 002		24077-014; 013	-3.592	1.761	0.808	14	0.9985	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.628	2.586	0.0400	Outlier Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	10.85584	10.85584	1	12.9	0.0029	Significant Effect
Error	11.77935	0.8413818	14			
Total	22.63519		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	4.377	8.885	0.0701	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9061	0.8408	0.1006	Normal Distribution

Reproduction Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-010; 002	8	0.6812	0.2135	1.149	0.6548	0	1.818	0.1978	82.12%	0.0%
24077-014; 013	8	2.329	1.35	3.307	2.276	0	3.786	0.4138	50.26%	-241.8%

Reproduction Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-010; 002	0.6667	0.8333	0.1538	0.9231	0.6429	0.4118	0	1.818
24077-014; 013	3.571	1.813	2.176	2.158	3.786	2.75	0	2.375

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	13-1138-5540	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:11	**Analysis:**	Nonparametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-012; 003	20-3314-4845	13 Dec-13 10:45	18 Dec-13 11:30	34d 1h	AECOM	Ecological Risk Asse
24077-001; 004	02-3274-4005	04 Dec-13 12:10	06 Dec-13 13:30	43d		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-012; 003	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD303 0012; 24077-012		
24077-001; 004	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD121 0012; 24077-001		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	45.6%	

Wilcoxon Rank Sum Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	Ties	DF	P-Value	P-Type	Decision(α:5%)
24077-012; 003		24077-001; 004	67	NA	0	14	0.4796	Exact	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	3.196	2.586	0.0004	Outlier Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.2089249	0.2089249	1	0.07232	0.7919	Non-Significant Effect
Error	40.44306	2.88879	14			
Total	40.65198		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	12.66	8.885	0.0034	Unequal Variances
Distribution	Shapiro-Wilk W Normality	0.7497	0.8408	0.0006	Non-normal Distribution

Reproduction Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-012; 003	8	3.282	1.347	5.216	3.113	1.167	8.529	0.8181	70.51%	0.0%
24077-001; 004	8	3.053	2.509	3.597	3.059	1.923	4.313	0.23	21.31%	6.96%

Reproduction Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-012; 003	1.6	8.529	3.15	3.4	1.167	3.615	1.714	3.077
24077-001; 004	3.111	1.923	3	2.778	3.063	3.182	4.313	3.056

CETIS Analytical Report

Report Date:	10 Mar-14 08:49 (p 1 of 1)
Test Code:	24077Lp | 20-9805-5845

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	21-3653-6214	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:11	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-012; 003	20-3314-4845	13 Dec-13 10:45	18 Dec-13 11:30	34d 1h	AECOM	Ecological Risk Asse
24077-001; 004	02-3274-4005	04 Dec-13 12:10	06 Dec-13 13:30	43d		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-012; 003	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD303 0012; 24077-012		
24077-001; 004	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD121 0012; 24077-001		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	30.1%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-012; 003		24077-001; 004	-1.212	1.771	0.761	13	0.8765	CDF	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	1.013956	1.013956	1	1.47	0.2470	Non-Significant Effect
Error	8.969117	0.6899321	13			
Total	9.983073		14			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	2.366	9.155	0.2846	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9582	0.8328	0.6608	Normal Distribution

Reproduction Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-012; 003	7	2.532	1.606	3.457	3.077	1.167	3.615	0.3782	39.52%	0.0%
24077-001; 004	8	3.053	2.509	3.597	3.059	1.923	4.313	0.23	21.31%	-20.58%

Reproduction Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-012; 003	1.6	Outlier	3.15	3.4	1.167	3.615	1.714	3.077
24077-001; 004	3.111	1.923	3	2.778	3.063	3.182	4.313	3.056

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	06-9039-6727	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:11	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-012; 003	20-3314-4845	13 Dec-13 10:45	18 Dec-13 11:30	34d 1h	AECOM	Ecological Risk Asse
24077-002; 005	01-7804-1542	05 Dec-13 10:45	06 Dec-13 13:30	42d 1h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-012; 003	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD303 0012; 24077-012		
24077-002; 005	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD120 0012; 24077-002		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	67.5%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-012; 003		24077-002; 005	0.2164	1.761	2.216	14	0.4159	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.159	2.586	0.3140	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.2963718	0.2963718	1	0.04681	0.8318	Non-Significant Effect
Error	88.64324	6.33166	14			
Total	88.93961		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.365	8.885	0.6918	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.8631	0.8408	0.0214	Normal Distribution

Reproduction Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-012; 003	8	3.282	1.347	5.216	3.113	1.167	8.529	0.8181	70.51%	0.0%
24077-002; 005	8	3.009	0.7492	5.27	1.98	0	8.143	0.9558	89.84%	8.3%

Reproduction Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-012; 003	1.6	8.529	3.15	3.4	1.167	3.615	1.714	3.077
24077-002; 005	1	4.286	1.4	2.294	8.143	5.286	0	1.667

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	10-6996-6196	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:10	**Analysis:**	Nonparametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-012; 003	20-3314-4845	13 Dec-13 10:45	18 Dec-13 11:30	34d 1h	AECOM	Ecological Risk Asse
24077-003; 006	06-6548-1906	05 Dec-13 12:54	06 Dec-13 13:30	41d 23h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-012; 003	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD303 0012; 24077-012		
24077-003; 006	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD112 0012; 24077-003		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	48.2%	

Wilcoxon Rank Sum Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	Ties	DF	P-Value	P-Type	Decision(α:5%)
24077-012; 003		24077-003; 006	53	NA	0	14	0.0652	Exact	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	3.025	2.586	0.0025	Outlier Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	8.623241	8.623241	1	2.675	0.1242	Non-Significant Effect
Error	45.13619	3.224014	14			
Total	53.75943		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	4.896	8.885	0.0527	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.8219	0.8408	0.0054	Non-normal Distribution

Reproduction Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-012; 003	8	3.282	1.347	5.216	3.113	1.167	8.529	0.8181	70.51%	0.0%
24077-003; 006	8	1.813	0.9391	2.688	1.552	0.4545	3.875	0.3697	57.67%	44.74%

Reproduction Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-012; 003	1.6	8.529	3.15	3.4	1.167	3.615	1.714	3.077
24077-003; 006	3.875	0.4545	1.313	2.222	2.467	1.438	1.071	1.667

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	17-4264-0820	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:10	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-012; 003	20-3314-4845	13 Dec-13 10:45	18 Dec-13 11:30	34d 1h	AECOM	Ecological Risk Asse
24077-003; 006	06-6548-1906	05 Dec-13 12:54	06 Dec-13 13:30	41d 23h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-012; 003	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD303 0012; 24077-012		
24077-003; 006	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD112 0012; 24077-003		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	37.1%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-012; 003		24077-003; 006	1.354	1.771	0.94	13	0.0993	CDF	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	1.927723	1.927723	1	1.834	0.1987	Non-Significant Effect
Error	13.66225	1.050943	13			
Total	15.58998		14			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.092	10.79	0.9305	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9528	0.8328	0.5702	Normal Distribution

Reproduction Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-012; 003	7	2.532	1.606	3.457	3.077	1.167	3.615	0.3782	39.52%	0.0%
24077-003; 006	8	1.813	0.9391	2.688	1.552	0.4545	3.875	0.3697	57.67%	28.38%

Reproduction Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-012; 003	1.6	Outlier	3.15	3.4	1.167	3.615	1.714	3.077
24077-003; 006	3.875	0.4545	1.313	2.222	2.467	1.438	1.071	1.667

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	12-5329-6801	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:10	**Analysis:**	Nonparametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-012; 003	20-3314-4845	13 Dec-13 10:45	18 Dec-13 11:30	34d 1h	AECOM	Ecological Risk Asse
24077-005; 007	00-8496-1430	10 Dec-13 09:39	11 Dec-13 12:15	37d 2h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-012; 003	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD303 0012; 24077-012		
24077-005; 007	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD106 0012; 24077-005		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	66.5%	

Wilcoxon Rank Sum Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	Ties	DF	P-Value	P-Type	Decision(α:5%)
24077-012; 003		24077-005; 007	61	NA	0	14	0.2527	Exact	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.447	2.586	0.0983	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	1.245739	1.245739	1	0.2028	0.6594	Non-Significant Effect
Error	86.01191	6.143708	14			
Total	87.25765		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.295	8.885	0.7419	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.7808	0.8408	0.0015	Non-normal Distribution

Reproduction Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-012; 003	8	3.282	1.347	5.216	3.113	1.167	8.529	0.8181	70.51%	0.0%
24077-005; 007	8	2.724	0.5222	4.925	1.854	0.4444	8.583	0.9309	96.68%	17.01%

Reproduction Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-012; 003	1.6	8.529	3.15	3.4	1.167	3.615	1.714	3.077
24077-005; 007	0.4444	0.8571	1.875	8.583	4.308	1.571	1.833	2.316

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	18-1382-1721	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:11	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-012; 003	20-3314-4845	13 Dec-13 10:45	18 Dec-13 11:30	34d 1h	AECOM	Ecological Risk Asse
24077-007; 008	21-1048-1554	11 Dec-13 13:29	13 Dec-13 08:35	35d 23h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-012; 003	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD303 0012; 24077-012		
24077-007; 008	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD118 0012; 24077-007		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	52.0%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-012; 003		24077-007; 008	0.8609	1.761	1.707	14	0.2019	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.803	2.586	0.0140	Outlier Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	2.783479	2.783479	1	0.7411	0.4038	Non-Significant Effect
Error	52.58432	3.756022	14			
Total	55.36779		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	2.482	8.885	0.2535	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.8836	0.8408	0.0442	Normal Distribution

Reproduction Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-012; 003	8	3.282	1.347	5.216	3.113	1.167	8.529	0.8181	70.51%	0.0%
24077-007; 008	8	2.447	1.219	3.675	2.552	0.2	4.375	0.5193	60.02%	25.42%

Reproduction Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-012; 003	1.6	8.529	3.15	3.4	1.167	3.615	1.714	3.077
24077-007; 008	4.067	2.667	2.438	1.167	4.375	0.2	1.333	3.333

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	14-2288-9341	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:11	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-012; 003	20-3314-4845	13 Dec-13 10:45	18 Dec-13 11:30	34d 1h	AECOM	Ecological Risk Asse
24077-007; 008	21-1048-1554	11 Dec-13 13:29	13 Dec-13 08:35	35d 23h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-012; 003	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD303 0012; 24077-012		
24077-007; 008	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD118 0012; 24077-007		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	46.1%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-012; 003		24077-007; 008	0.1281	1.771	1.168	13	0.4500	CDF	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.02665596	0.02665596	1	0.01642	0.9000	Non-Significant Effect
Error	21.11038	1.623875	13			
Total	21.13703		14			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	2.155	10.79	0.3685	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9578	0.8328	0.6540	Normal Distribution

Reproduction Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-012; 003	7	2.532	1.606	3.457	3.077	1.167	3.615	0.3782	39.52%	0.0%
24077-007; 008	8	2.447	1.219	3.675	2.552	0.2	4.375	0.5193	60.02%	3.34%

Reproduction Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-012; 003	1.6	Outlier	3.15	3.4	1.167	3.615	1.714	3.077
24077-007; 008	4.067	2.667	2.438	1.167	4.375	0.2	1.333	3.333

CETIS Analytical Report

Report Date: 10 Mar-14 08:50 (p 1 of 1)
Test Code: 24077Lp | 20-9805-5845

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	12-2438-6241	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:10	**Analysis:**	Nonparametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-012; 003	20-3314-4845	13 Dec-13 10:45	18 Dec-13 11:30	34d 1h	AECOM	Ecological Risk Asse
24077-008; 009	08-1847-2615	12 Dec-13 07:50	13 Dec-13 08:35	35d 4h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-012; 003	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD303 0012; 24077-012		
24077-008; 009	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD124 0012; 24077-008		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	50.1%	

Wilcoxon Rank Sum Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	Ties	DF	P-Value	P-Type	Decision(α:5%)
24077-012; 003		24077-008; 009	46	NA	0	14	0.0103	Exact	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.912	2.586	0.0064	Outlier Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	20.9389	20.9389	1	6.019	0.0279	Significant Effect
Error	48.70643	3.479031	14			
Total	69.64532		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	3.339	8.885	0.1342	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.8244	0.8408	0.0058	Non-normal Distribution

Reproduction Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-012; 003	8	3.282	1.347	5.216	3.113	1.167	8.529	0.8181	70.51%	0.0%
24077-008; 009	8	0.9936	-0.06504	2.052	0.4504	0	3.625	0.4477	127.4%	69.72%

Reproduction Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-012; 003	1.6	8.529	3.15	3.4	1.167	3.615	1.714	3.077
24077-008; 009	0.3125	0.5882	0	0.125	3.625	0.2143	0.9412	2.143

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	09-1665-3272	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:10	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-012; 003	20-3314-4845	13 Dec-13 10:45	18 Dec-13 11:30	34d 1h	AECOM	Ecological Risk Asse
24077-008; 009	08-1847-2615	12 Dec-13 07:50	13 Dec-13 08:35	35d 4h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-012; 003	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD303 0012; 24077-012		
24077-008; 009	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD124 0012; 24077-008		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	41.7%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-012; 003		24077-008; 009	2.582	1.771	1.055	13	0.0114	CDF	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	8.834005	8.834005	1	6.664	0.0228	Significant Effect
Error	17.23249	1.325576	13			
Total	26.06649		14			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.602	10.79	0.5825	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.898	0.8328	0.0889	Normal Distribution

Reproduction Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-012; 003	7	2.532	1.606	3.457	3.077	1.167	3.615	0.3782	39.52%	0.0%
24077-008; 009	8	0.9936	-0.06504	2.052	0.4504	0	3.625	0.4477	127.4%	60.76%

Reproduction Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-012; 003	1.6	Outlier	3.15	3.4	1.167	3.615	1.714	3.077
24077-008; 009	0.3125	0.5882	0	0.125	3.625	0.2143	0.9412	2.143

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	08-4757-9535	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:10	**Analysis:**	Nonparametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-012; 003	20-3314-4845	13 Dec-13 10:45	18 Dec-13 11:30	34d 1h	AECOM	Ecological Risk Asse
24077-009; 010	18-6710-2589	12 Dec-13 09:15	13 Dec-13 08:35	35d 3h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-012; 003	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD303 0012; 24077-012		
24077-009; 010	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD122 0012; 24077-009		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	48.0%	

Wilcoxon Rank Sum Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	Ties	DF	P-Value	P-Type	Decision(α:5%)
24077-012; 003		24077-009; 010	39	NA	0	14	0.0005	Exact	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	3.035	2.586	0.0023	Outlier Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	30.32791	30.32791	1	9.466	0.0082	Significant Effect
Error	44.85233	3.203738	14			
Total	75.18024		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	5.085	8.885	0.0477	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.7635	0.8408	0.0009	Non-normal Distribution

Reproduction Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-012; 003	8	3.282	1.347	5.216	3.113	1.167	8.529	0.8181	70.51%	0.0%
24077-009; 010	8	0.528	-0.3298	1.386	0.125	0	3	0.3628	194.3%	83.91%

Reproduction Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-012; 003	1.6	8.529	3.15	3.4	1.167	3.615	1.714	3.077
24077-009; 010	0.6667	3	0	0.3077	0.25	0	0	0

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	05-2824-8852	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:10	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-012; 003	20-3314-4845	13 Dec-13 10:45	18 Dec-13 11:30	34d 1h	AECOM	Ecological Risk Asse
24077-009; 010	18-6710-2589	12 Dec-13 09:15	13 Dec-13 08:35	35d 3h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-012; 003	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD303 0012; 24077-012		
24077-009; 010	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD122 0012; 24077-009		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	36.7%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-012; 003		24077-009; 010	3.817	1.771	0.93	13	0.0011	CDF	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	14.99087	14.99087	1	14.57	0.0021	Significant Effect
Error	13.3784	1.029107	13			
Total	28.36927		14			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.052	10.79	0.9672	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9133	0.8328	0.1522	Normal Distribution

Reproduction Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-012; 003	7	2.532	1.606	3.457	3.077	1.167	3.615	0.3782	39.52%	0.0%
24077-009; 010	8	0.528	-0.3298	1.386	0.125	0	3	0.3628	194.3%	79.14%

Reproduction Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-012; 003	1.6	Outlier	3.15	3.4	1.167	3.615	1.714	3.077
24077-009; 010	0.6667	3	0	0.3077	0.25	0	0	0

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	07-5436-7624	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:10	**Analysis:**	Nonparametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-012; 003	20-3314-4845	13 Dec-13 10:45	18 Dec-13 11:30	34d 1h	AECOM	Ecological Risk Asse
24077-011; 011	10-2024-6603	13 Dec-13 10:10	18 Dec-13 11:30	34d 2h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-012; 003	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD303 0012; 24077-012		
24077-011; 011	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD102 0012; 24077-011		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	49.5%	

Wilcoxon Rank Sum Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	Ties	DF	P-Value	P-Type	Decision(α:5%)
24077-012; 003		24077-011; 011	31	NA	0	13	0.0011	Exact	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	3.074	2.548	0.0009	Outlier Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	29.54868	29.54868	1	9.415	0.0090	Significant Effect
Error	40.80147	3.138575	13			
Total	70.35016		14			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	9.676	10.79	0.0133	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.772	0.8328	0.0016	Non-normal Distribution

Reproduction Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-012; 003	8	3.282	1.347	5.216	3.113	1.167	8.529	0.8181	70.51%	0.0%
24077-011; 011	7	0.4683	-0.2197	1.156	0	0	2	0.2812	158.9%	85.73%

Reproduction Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-012; 003	1.6	8.529	3.15	3.4	1.167	3.615	1.714	3.077
24077-011; 011	0	0.7778	0	0	0	2	0.5	

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	04-7579-9737	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:10	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-012; 003	20-3314-4845	13 Dec-13 10:45	18 Dec-13 11:30	34d 1h	AECOM	Ecological Risk Asse
24077-011; 011	10-2024-6603	13 Dec-13 10:10	18 Dec-13 11:30	34d 2h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-012; 003	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD303 0012; 24077-012		
24077-011; 011	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD102 0012; 24077-011		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	33.2%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-012; 003		24077-011; 011	4.379	1.782	0.84	12	0.0004	CDF	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	14.90514	14.90514	1	19.18	0.0009	Significant Effect
Error	9.327533	0.7772944	12			
Total	24.23267		13			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.809	11.07	0.4889	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9613	0.8239	0.7448	Normal Distribution

Reproduction Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-012; 003	7	2.532	1.606	3.457	3.077	1.167	3.615	0.3782	39.52%	0.0%
24077-011; 011	7	0.4683	-0.2197	1.156	0	0	2	0.2812	158.9%	81.51%

Reproduction Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-012; 003	1.6	Outlier	3.15	3.4	1.167	3.615	1.714	3.077
24077-011; 011	0	0.7778	0	0	0	2	0.5	

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	21-2387-1895	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:09	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-012; 003	20-3314-4845	13 Dec-13 10:45	18 Dec-13 11:30	34d 1h	AECOM	Ecological Risk Asse
24077-013; 012	08-9458-1886	17 Dec-13 09:55	18 Dec-13 11:30	30d 2h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-012; 003	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD303 0012; 24077-012		
24077-013; 012	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD115 0012; 24077-013		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	52.0%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-012; 003		24077-013; 012	1.246	1.761	1.705	14	0.1167	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.806	2.586	0.0137	Outlier Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	5.814764	5.814764	1	1.552	0.2333	Non-Significant Effect
Error	52.46636	3.747597	14			
Total	58.28112		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	2.501	8.885	0.2495	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.8686	0.8408	0.0259	Normal Distribution

Reproduction Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-012; 003	8	3.282	1.347	5.216	3.113	1.167	8.529	0.8181	70.51%	0.0%
24077-013; 012	8	2.076	0.8527	3.299	1.792	0.3333	4.056	0.5173	70.48%	36.74%

Reproduction Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-012; 003	1.6	8.529	3.15	3.4	1.167	3.615	1.714	3.077
24077-013; 012	1	0.5714	3.778	4.056	3.286	0.3333	1.583	2

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	12-7551-8781	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:09	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-012; 003	20-3314-4845	13 Dec-13 10:45	18 Dec-13 11:30	34d 1h	AECOM	Ecological Risk Asse
24077-013; 012	08-9458-1886	17 Dec-13 09:55	18 Dec-13 11:30	30d 2h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-012; 003	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD303 0012; 24077-012		
24077-013; 012	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD115 0012; 24077-013		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	46.0%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-012; 003		24077-013; 012	0.6934	1.771	1.165	13	0.2501	CDF	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.7762993	0.7762993	1	0.4807	0.5003	Non-Significant Effect
Error	20.99242	1.614801	13			
Total	21.76872		14			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	2.138	10.79	0.3734	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9392	0.8328	0.3722	Normal Distribution

Reproduction Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-012; 003	7	2.532	1.606	3.457	3.077	1.167	3.615	0.3782	39.52%	0.0%
24077-013; 012	8	2.076	0.8527	3.299	1.792	0.3333	4.056	0.5173	70.48%	18.01%

Reproduction Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-012; 003	1.6	Outlier	3.15	3.4	1.167	3.615	1.714	3.077
24077-013; 012	1	0.5714	3.778	4.056	3.286	0.3333	1.583	2

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	17-8905-2227	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:09	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-012; 003	20-3314-4845	13 Dec-13 10:45	18 Dec-13 11:30	34d 1h	AECOM	Ecological Risk Asse
24077-014; 013	10-4129-5048	17 Dec-13 11:00	18 Dec-13 11:30	30d 1h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-012; 003	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD303 0012; 24077-012		
24077-014; 013	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD114 0012; 24077-014		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	49.2%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-012; 003		24077-014; 013	1.039	1.761	1.615	14	0.1581	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.962	2.586	0.0043	Outlier Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	3.632515	3.632515	1	1.08	0.3162	Non-Significant Effect
Error	47.06992	3.362137	14			
Total	50.70244		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	3.909	8.885	0.0927	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.8425	0.8408	0.0106	Normal Distribution

Reproduction Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-012; 003	8	3.282	1.347	5.216	3.113	1.167	8.529	0.8181	70.51%	0.0%
24077-014; 013	8	2.329	1.35	3.307	2.276	0	3.786	0.4138	50.26%	29.04%

Reproduction Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-012; 003	1.6	8.529	3.15	3.4	1.167	3.615	1.714	3.077
24077-014; 013	3.571	1.813	2.176	2.158	3.786	2.75	0	2.375

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	01-5724-0747	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:09	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-012; 003	20-3314-4845	13 Dec-13 10:45	18 Dec-13 11:30	34d 1h	AECOM	Ecological Risk Asse
24077-014; 013	10-4129-5048	17 Dec-13 11:00	18 Dec-13 11:30	30d 1h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-012; 003	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD303 0012; 24077-012		
24077-014; 013	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD114 0012; 24077-014		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	39.6%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-012; 003		24077-014; 013	0.3586	1.771	1.004	13	0.3628	CDF	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.1542538	0.1542538	1	0.1286	0.7257	Non-Significant Effect
Error	15.59598	1.199691	13			
Total	15.75024		14			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.368	10.79	0.7184	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9617	0.8328	0.7213	Normal Distribution

Reproduction Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-012; 003	7	2.532	1.606	3.457	3.077	1.167	3.615	0.3782	39.52%	0.0%
24077-014; 013	8	2.329	1.35	3.307	2.276	0	3.786	0.4138	50.26%	8.03%

Reproduction Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-012; 003	1.6	Outlier	3.15	3.4	1.167	3.615	1.714	3.077
24077-014; 013	3.571	1.813	2.176	2.158	3.786	2.75	0	2.375

CETIS Analytical Reports
Juvenile Production per Female Amphipod Comparisons

Carr Point MRP Site 1
Naval Station, Newport, Rhode Island

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	01-5952-5803	**Endpoint:**	Offspring/Surviving Female	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:02	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-000; 000	18-1601-2962	03 Jan-14 12:00	03 Jan-14 12:00	13d 0h	AECOM	Ecological Risk Asse
24077-006; 001	07-4145-0866	11 Dec-13 09:06	11 Dec-13 12:15	36d 3h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-000; 000	Laboratory Control S	Carr Point MRP Site 1, Naval Stat	Laboratory Control; 24077-000		
24077-006; 001	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD302 0012; 24077-006		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	44.0%	

Unequal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-000; 000		24077-006; 001	3.231	1.86	4.192	8	0.0060	CDF	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.496	2.586	0.0784	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	212.2569	212.2569	1	10.44	0.0060	Significant Effect
Error	284.6462	20.33187	14			
Total	496.9031		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	10.2	8.885	0.0066	Unequal Variances
Distribution	Shapiro-Wilk W Normality	0.9389	0.8408	0.3357	Normal Distribution

Offspring/Surviving Female Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-000; 000	8	9.529	4.441	14.62	9.617	2.727	20.4	2.152	63.86%	0.0%
24077-006; 001	8	2.244	0.6513	3.837	1.414	0	5	0.6736	84.9%	76.45%

Offspring/Surviving Female Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-000; 000	3.091	12	8.091	14	20.4	11.14	4.778	2.727
24077-006; 001	0	4	0.75	1.4	5	1.429	4.375	1

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	06-1162-7562	**Endpoint:**	Offspring/Surviving Female	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:02	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-000; 000	18-1601-2962	03 Jan-14 12:00	03 Jan-14 12:00	13d 0h	AECOM	Ecological Risk Asse
24077-010; 002	10-5151-8705	13 Dec-13 09:50	18 Dec-13 11:30	34d 2h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-000; 000	Laboratory Control S	Carr Point MRP Site 1, Naval Stat	Laboratory Control; 24077-000		
24077-010; 002	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD304 0012; 24077-010		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	43.4%	

Unequal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-000; 000		24077-010; 002	3.812	1.895	4.133	7	0.0033	CDF	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.579	2.586	0.0518	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	276.684	276.684	1	14.53	0.0019	Significant Effect
Error	266.5606	19.04005	14			
Total	543.2446		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	35.38	8.885	0.0001	Unequal Variances
Distribution	Shapiro-Wilk W Normality	0.9154	0.8408	0.1422	Normal Distribution

Offspring/Surviving Female Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-000; 000	8	9.529	4.441	14.62	9.617	2.727	20.4	2.152	63.86%	0.0%
24077-010; 002	8	1.212	0.3565	2.067	1.222	0	3.333	0.3617	84.43%	87.28%

Offspring/Surviving Female Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-000; 000	3.091	12	8.091	14	20.4	11.14	4.778	2.727
24077-010; 002	1.5	1.111	0.3333	1.333	1.5	0.5833	0	3.333

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	01-7527-6453	**Endpoint:**	Offspring/Surviving Female	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:02	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-000; 000	18-1601-2962	03 Jan-14 12:00	03 Jan-14 12:00	13d 0h	AECOM	Ecological Risk Asse
24077-012; 003	20-3314-4845	13 Dec-13 10:45	18 Dec-13 11:30	34d 1h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-000; 000	Laboratory Control S	Carr Point MRP Site 1, Naval Stat	Laboratory Control; 24077-000		
24077-012; 003	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD303 0012; 24077-012		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	49.9%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-000; 000		24077-012; 003	1.342	1.761	4.758	14	0.1004	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.083	2.586	0.4082	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	52.59703	52.59703	1	1.802	0.2009	Non-Significant Effect
Error	408.6681	29.19058	14			
Total	461.2651		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.735	8.885	0.4845	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9227	0.8408	0.1864	Normal Distribution

Offspring/Surviving Female Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-000; 000	8	9.529	4.441	14.62	9.617	2.727	20.4	2.152	63.86%	0.0%
24077-012; 003	8	5.903	2.04	9.765	4.833	1.4	16.11	1.634	78.28%	38.06%

Offspring/Surviving Female Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-000; 000	3.091	12	8.091	14	20.4	11.14	4.778	2.727
24077-012; 003	2.909	16.11	6.3	5.667	1.4	7.833	3	4

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	15-5873-3307	**Endpoint:**	Offspring/Surviving Female	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:02	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-000; 000	18-1601-2962	03 Jan-14 12:00	03 Jan-14 12:00	13d 0h	AECOM	Ecological Risk Asse
24077-001; 004	02-3274-4005	04 Dec-13 12:10	06 Dec-13 13:30	43d		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-000; 000	Laboratory Control S	Carr Point MRP Site 1, Naval Stat	Laboratory Control; 24077-000		
24077-001; 004	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD121 0012; 24077-001		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	43.5%	

Unequal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-000; 000		24077-001; 004	1.524	1.86	4.143	8	0.0831	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.525	2.586	0.0679	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	46.09832	46.09832	1	2.321	0.1499	Non-Significant Effect
Error	278.0332	19.85951	14			
Total	324.1315		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	13.79	8.885	0.0026	Unequal Variances
Distribution	Shapiro-Wilk W Normality	0.9396	0.8408	0.3445	Normal Distribution

Offspring/Surviving Female Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-000; 000	8	9.529	4.441	14.62	9.617	2.727	20.4	2.152	63.86%	0.0%
24077-001; 004	8	6.134	4.764	7.504	6.438	3.571	8.625	0.5794	26.72%	35.63%

Offspring/Surviving Female Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-000; 000	3.091	12	8.091	14	20.4	11.14	4.778	2.727
24077-001; 004	7	3.571	6	4.167	7	5.833	8.625	6.875

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	05-8355-0209	**Endpoint:**	Offspring/Surviving Female	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:02	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-000; 000	18-1601-2962	03 Jan-14 12:00	03 Jan-14 12:00	13d 0h	AECOM	Ecological Risk Asse
24077-002; 005	01-7804-1542	05 Dec-13 10:45	06 Dec-13 13:30	42d 1h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-000; 000	Laboratory Control S	Carr Point MRP Site 1, Naval Stat	Laboratory Control; 24077-000		
24077-002; 005	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD120 0012; 24077-002		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	52.1%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-000; 000		24077-002; 005	1.293	1.761	4.961	14	0.1085	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	1.998	2.586	0.5380	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	53.05115	53.05115	1	1.672	0.2169	Non-Significant Effect
Error	444.2134	31.72953	14			
Total	497.2646		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.401	8.885	0.6673	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9208	0.8408	0.1739	Normal Distribution

Offspring/Surviving Female Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-000; 000	8	9.529	4.441	14.62	9.617	2.727	20.4	2.152	63.86%	0.0%
24077-002; 005	8	5.887	1.589	10.18	4.667	0	16.29	1.817	87.32%	38.22%

Offspring/Surviving Female Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-000; 000	3.091	12	8.091	14	20.4	11.14	4.778	2.727
24077-002; 005	1.571	8.571	3.111	4.333	16.29	8.222	0	5

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	20-1159-6028	**Endpoint:**	Offspring/Surviving Female	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:02	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-000; 000	18-1601-2962	03 Jan-14 12:00	03 Jan-14 12:00	13d 0h	AECOM	Ecological Risk Asse
24077-003; 006	06-6548-1906	05 Dec-13 12:54	06 Dec-13 13:30	41d 23h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-000; 000	Laboratory Control S	Carr Point MRP Site 1, Naval Stat	Laboratory Control; 24077-000		
24077-003; 006	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD112 0012; 24077-003		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	43.9%	

Unequal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-000; 000		24077-003; 006	2.896	1.86	4.185	8	0.0100	CDF	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.5	2.586	0.0768	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	169.962	169.962	1	8.387	0.0117	Significant Effect
Error	283.6955	20.26396	14			
Total	453.6575		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	10.6	8.885	0.0059	Unequal Variances
Distribution	Shapiro-Wilk W Normality	0.9481	0.8408	0.4597	Normal Distribution

Offspring/Surviving Female Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-000; 000	8	9.529	4.441	14.62	9.617	2.727	20.4	2.152	63.86%	0.0%
24077-003; 006	8	3.01	1.447	4.573	2.595	0.5556	6.2	0.6609	62.1%	68.41%

Offspring/Surviving Female Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-000; 000	3.091	12	8.091	14	20.4	11.14	4.778	2.727
24077-003; 006	6.2	0.5556	2.333	5	3.7	1.769	1.667	2.857

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	04-9390-9277	**Endpoint:**	Offspring/Surviving Female	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:02	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-000; 000	18-1601-2962	03 Jan-14 12:00	03 Jan-14 12:00	13d 0h	AECOM	Ecological Risk Asse
24077-005; 007	00-8496-1430	10 Dec-13 09:39	11 Dec-13 12:15	37d 2h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-000; 000	Laboratory Control S	Carr Point MRP Site 1, Naval Stat	Laboratory Control; 24077-000		
24077-005; 007	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD106 0012; 24077-005		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	49.1%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-000; 000		24077-005; 007	1.711	1.761	4.676	14	0.0546	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.119	2.586	0.3605	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	82.51218	82.51218	1	2.927	0.1092	Non-Significant Effect
Error	394.6883	28.19202	14			
Total	477.2004		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.914	8.885	0.4112	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9283	0.8408	0.2292	Normal Distribution

Offspring/Surviving Female Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-000; 000	8	9.529	4.441	14.62	9.617	2.727	20.4	2.152	63.86%	0.0%
24077-005; 007	8	4.987	1.309	8.665	3.708	0.8	14.71	1.555	88.21%	47.66%

Offspring/Surviving Female Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-000; 000	3.091	12	8.091	14	20.4	11.14	4.778	2.727
24077-005; 007	0.8	1.714	3.75	14.71	7	2.75	3.667	5.5

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	07-2223-8091	**Endpoint:**	Offspring/Surviving Female	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:01	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-000; 000	18-1601-2962	03 Jan-14 12:00	03 Jan-14 12:00	13d 0h	AECOM	Ecological Risk Asse
24077-007; 008	21-1048-1554	11 Dec-13 13:29	13 Dec-13 08:35	35d 23h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-000; 000	Laboratory Control S	Carr Point MRP Site 1, Naval Stat	Laboratory Control; 24077-000		
24077-007; 008	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD118 0012; 24077-007		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	44.5%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-000; 000		24077-007; 008	1.878	1.761	4.242	14	0.0407	CDF	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.336	2.586	0.1591	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	81.80621	81.80621	1	3.526	0.0814	Non-Significant Effect
Error	324.828	23.202	14			
Total	406.6342		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	3.952	8.885	0.0902	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9431	0.8408	0.3891	Normal Distribution

Offspring/Surviving Female Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-000; 000	8	9.529	4.441	14.62	9.617	2.727	20.4	2.152	63.86%	0.0%
24077-007; 008	8	5.006	2.447	7.566	5.389	0.2	8	1.082	61.14%	47.46%

Offspring/Surviving Female Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-000; 000	3.091	12	8.091	14	20.4	11.14	4.778	2.727
24077-007; 008	6.778	4	3.545	1.75	7.778	0.2	8	8

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	20-7637-7564	**Endpoint:**	Offspring/Surviving Female	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:01	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-000; 000	18-1601-2962	03 Jan-14 12:00	03 Jan-14 12:00	13d 0h	AECOM	Ecological Risk Asse
24077-008; 009	08-1847-2615	12 Dec-13 07:50	13 Dec-13 08:35	35d 4h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-000; 000	Laboratory Control S	Carr Point MRP Site 1, Naval Stat	Laboratory Control; 24077-000		
24077-008; 009	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD124 0012; 24077-008		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	43.8%	

Unequal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-000; 000		24077-008; 009	3.558	1.86	4.174	8	0.0037	CDF	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.507	2.586	0.0744	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	255.1401	255.1401	1	12.66	0.0032	Significant Effect
Error	282.1731	20.15522	14			
Total	537.3132		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	11.3	8.885	0.0048	Unequal Variances
Distribution	Shapiro-Wilk W Normality	0.9366	0.8408	0.3090	Normal Distribution

Offspring/Surviving Female Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-000; 000	8	9.529	4.441	14.62	9.617	2.727	20.4	2.152	63.86%	0.0%
24077-008; 009	8	1.542	0.02874	3.056	0.75	0	4.833	0.64	117.4%	83.82%

Offspring/Surviving Female Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-000; 000	3.091	12	8.091	14	20.4	11.14	4.778	2.727
24077-008; 009	0.5	1	0	0.1429	4.833	0.3333	1.778	3.75

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	01-9230-9228	**Endpoint:**	Offspring/Surviving Female	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:01	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-000; 000	18-1601-2962	03 Jan-14 12:00	03 Jan-14 12:00	13d 0h	AECOM	Ecological Risk Asse
24077-009; 010	18-6710-2589	12 Dec-13 09:15	13 Dec-13 08:35	35d 3h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-000; 000	Laboratory Control S	Carr Point MRP Site 1, Naval Stat	Laboratory Control; 24077-000		
24077-009; 010	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD122 0012; 24077-009		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	44.1%	

Unequal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-000; 000		24077-009; 010	3.79	1.86	4.201	8	0.0027	CDF	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.435	2.548	0.0887	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	273.5843	273.5843	1	12.74	0.0034	Significant Effect
Error	279.1278	21.47137	13			
Total	552.712		14			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	11.17	10.79	0.0091	Unequal Variances
Distribution	Shapiro-Wilk W Normality	0.928	0.8328	0.2544	Normal Distribution

Offspring/Surviving Female Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-000; 000	8	9.529	4.441	14.62	9.617	2.727	20.4	2.152	63.86%	0.0%
24077-009; 010	7	0.9683	-0.7158	2.652	0.3333	0	5	0.6882	188.1%	89.84%

Offspring/Surviving Female Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-000; 000	3.091	12	8.091	14	20.4	11.14	4.778	2.727
24077-009; 010	1.111	5	0	0.3333	0.3333	0	0	

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	18-6035-5967	**Endpoint:**	Offspring/Surviving Female	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 15:59	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-000; 000	18-1601-2962	03 Jan-14 12:00	03 Jan-14 12:00	13d 0h	AECOM	Ecological Risk Asse
24077-011; 011	10-2024-6603	13 Dec-13 10:10	18 Dec-13 11:30	34d 2h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-000; 000	Laboratory Control S	Carr Point MRP Site 1, Naval Stat	Laboratory Control; 24077-000		
24077-011; 011	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD102 0012; 24077-011		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	43.3%	

Unequal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-000; 000		24077-011; 011	4.059	1.895	4.128	7	0.0024	CDF	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.418	2.507	0.0799	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	268.1418	268.1418	1	12.24	0.0044	Significant Effect
Error	262.7994	21.89995	12			
Total	530.9413		13			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	51.93	14.2	0.0005	Unequal Variances
Distribution	Shapiro-Wilk W Normality	0.9247	0.8239	0.2564	Normal Distribution

Offspring/Surviving Female Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-000; 000	8	9.529	4.441	14.62	9.617	2.727	20.4	2.152	63.86%	0.0%
24077-011; 011	6	0.6852	-0.2011	1.571	0.3889	0	2	0.3448	123.3%	92.81%

Offspring/Surviving Female Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-000; 000	3.091	12	8.091	14	20.4	11.14	4.778	2.727
24077-011; 011	0	0.7778	0	0	2	1.333		

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	06-6949-2893	**Endpoint:**	Offspring/Surviving Female	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 15:58	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-000; 000	18-1601-2962	03 Jan-14 12:00	03 Jan-14 12:00	13d 0h	AECOM	Ecological Risk Asse
24077-013; 012	08-9458-1886	17 Dec-13 09:55	18 Dec-13 11:30	30d 2h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-000; 000	Laboratory Control S	Carr Point MRP Site 1, Naval Stat	Laboratory Control; 24077-000		
24077-013; 012	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD115 0012; 24077-013		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	42.3%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-000; 000		24077-013; 012	2.577	1.761	4.027	14	0.0110	CDF	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.461	2.586	0.0923	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	138.925	138.925	1	6.643	0.0219	Significant Effect
Error	292.7726	20.91233	14			
Total	431.6976		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	7.729	8.885	0.0150	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9433	0.8408	0.3920	Normal Distribution

Offspring/Surviving Female Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-000; 000	8	9.529	4.441	14.62	9.617	2.727	20.4	2.152	63.86%	0.0%
24077-013; 012	8	3.635	1.805	5.465	4.155	0.6667	6.083	0.7739	60.21%	61.85%

Offspring/Surviving Female Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-000; 000	3.091	12	8.091	14	20.4	11.14	4.778	2.727
24077-013; 012	1.9	1.143	5.231	6.083	5.75	0.6667	3.167	5.143

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	13-0920-7467	**Endpoint:**	Offspring/Surviving Female	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 15:58	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-000; 000	18-1601-2962	03 Jan-14 12:00	03 Jan-14 12:00	13d 0h	AECOM	Ecological Risk Asse
24077-014; 013	10-4129-5048	17 Dec-13 11:00	18 Dec-13 11:30	30d 1h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-000; 000	Laboratory Control S	Carr Point MRP Site 1, Naval Stat	Laboratory Control; 24077-000		
24077-014; 013	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD114 0012; 24077-014		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	42.4%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-000; 000		24077-014; 013	2.322	1.761	4.04	14	0.0179	CDF	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.453	2.586	0.0956	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	113.4828	113.4828	1	5.393	0.0358	Significant Effect
Error	294.5832	21.04166	14			
Total	408.066		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	7.333	8.885	0.0175	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9494	0.8408	0.4806	Normal Distribution

Offspring/Surviving Female Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-000; 000	8	9.529	4.441	14.62	9.617	2.727	20.4	2.152	63.86%	0.0%
24077-014; 013	8	4.202	2.324	6.081	4.161	0	7.571	0.7945	53.48%	55.9%

Offspring/Surviving Female Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-000; 000	3.091	12	8.091	14	20.4	11.14	4.778	2.727
24077-014; 013	6.25	3.222	3.364	4.1	7.571	4.889	0	4.222

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	07-8464-1220	**Endpoint:**	Offspring/Surviving Female	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:05	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-006; 001	07-4145-0866	11 Dec-13 09:06	11 Dec-13 12:15	36d 3h	AECOM	Ecological Risk Asse
24077-001; 004	02-3274-4005	04 Dec-13 12:10	06 Dec-13 13:30	43d		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-006; 001	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD302 0012; 24077-006		
24077-001; 004	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD121 0012; 24077-001		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	69.7%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-006; 001		24077-001; 004	-4.378	1.761	1.565	14	0.9997	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	1.605	2.586	1.0000	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	60.52007	60.52007	1	19.16	0.0006	Significant Effect
Error	44.2122	3.158015	14			
Total	104.7323		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.352	8.885	0.7009	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9506	0.8408	0.4999	Normal Distribution

Offspring/Surviving Female Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-006; 001	8	2.244	0.6513	3.837	1.414	0	5	0.6736	84.9%	0.0%
24077-001; 004	8	6.134	4.764	7.504	6.438	3.571	8.625	0.5794	26.72%	-173.3%

Offspring/Surviving Female Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-006; 001	0	4	0.75	1.4	5	1.429	4.375	1
24077-001; 004	7	3.571	6	4.167	7	5.833	8.625	6.875

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	02-0456-3708	**Endpoint:**	Offspring/Surviving Female	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:05	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-006; 001	07-4145-0866	11 Dec-13 09:06	11 Dec-13 12:15	36d 3h	AECOM	Ecological Risk Asse
24077-002; 005	01-7804-1542	05 Dec-13 10:45	06 Dec-13 13:30	42d 1h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-006; 001	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD302 0012; 24077-006		
24077-002; 005	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD120 0012; 24077-002		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	152.0%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-006; 001		24077-002; 005	-1.879	1.761	3.414	14	0.9594	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.777	2.586	0.0166	Outlier Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	53.0773	53.0773	1	3.532	0.0812	Non-Significant Effect
Error	210.3924	15.02803	14			
Total	263.4697		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	7.279	8.885	0.0178	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.8936	0.8408	0.0635	Normal Distribution

Offspring/Surviving Female Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-006; 001	8	2.244	0.6513	3.837	1.414	0	5	0.6736	84.9%	0.0%
24077-002; 005	8	5.887	1.589	10.18	4.667	0	16.29	1.817	87.32%	-162.3%

Offspring/Surviving Female Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-006; 001	0	4	0.75	1.4	5	1.429	4.375	1
24077-002; 005	1.571	8.571	3.111	4.333	16.29	8.222	0	5

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	03-2908-2613	**Endpoint:**	Offspring/Surviving Female	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:05	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-006; 001	07-4145-0866	11 Dec-13 09:06	11 Dec-13 12:15	36d 3h	AECOM	Ecological Risk Asse
24077-002; 005	01-7804-1542	05 Dec-13 10:45	06 Dec-13 13:30	42d 1h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-006; 001	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD302 0012; 24077-006		
24077-002; 005	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD120 0012; 24077-002		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	106.0%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-006; 001		24077-002; 005	-1.613	1.771	2.368	13	0.9346	CDF	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	17.37253	17.37253	1	2.602	0.1308	Non-Significant Effect
Error	86.80928	6.677637	13			
Total	104.1818		14			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	2.819	9.155	0.2013	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9644	0.8328	0.7679	Normal Distribution

Offspring/Surviving Female Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-006; 001	8	2.244	0.6513	3.837	1.414	0	5	0.6736	84.9%	0.0%
24077-002; 005	7	4.401	1.443	7.36	4.333	0	8.571	1.209	72.68%	-96.12%

Offspring/Surviving Female Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-006; 001	0	4	0.75	1.4	5	1.429	4.375	1
24077-002; 005	1.571	8.571	3.111	4.333	Outlier	8.222	0	5

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	09-4607-9623	**Endpoint:**	Offspring/Surviving Female	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:05	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-006; 001	07-4145-0866	11 Dec-13 09:06	11 Dec-13 12:15	36d 3h	AECOM	Ecological Risk Asse
24077-003; 006	06-6548-1906	05 Dec-13 12:54	06 Dec-13 13:30	41d 23h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-006; 001	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD302 0012; 24077-006		
24077-003; 006	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD112 0012; 24077-003		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	74.1%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-006; 001		24077-003; 006	-0.8117	1.761	1.662	14	0.7847	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	1.749	2.586	1.0000	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	2.347298	2.347298	1	0.6589	0.4305	Non-Significant Effect
Error	49.87449	3.562464	14			
Total	52.22179		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.039	8.885	0.9612	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9085	0.8408	0.1102	Normal Distribution

Offspring/Surviving Female Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-006; 001	8	2.244	0.6513	3.837	1.414	0	5	0.6736	84.9%	0.0%
24077-003; 006	8	3.01	1.447	4.573	2.595	0.5556	6.2	0.6609	62.1%	-34.13%

Offspring/Surviving Female Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-006; 001	0	4	0.75	1.4	5	1.429	4.375	1
24077-003; 006	6.2	0.5556	2.333	5	3.7	1.769	1.667	2.857

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	13-8565-9644	**Endpoint:**	Offspring/Surviving Female	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:05	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-006; 001	07-4145-0866	11 Dec-13 09:06	11 Dec-13 12:15	36d 3h	AECOM	Ecological Risk Asse
24077-005; 007	00-8496-1430	10 Dec-13 09:39	11 Dec-13 12:15	37d 2h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-006; 001	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD302 0012; 24077-006		
24077-005; 007	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD106 0012; 24077-005		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	133.0%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-006; 001		24077-005; 007	-1.618	1.761	2.985	14	0.9360	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.97	2.586	0.0041	Outlier Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	30.0898	30.0898	1	2.619	0.1279	Non-Significant Effect
Error	160.8673	11.49052	14			
Total	190.9571		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	5.33	8.885	0.0421	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.8413	0.8408	0.0102	Normal Distribution

Offspring/Surviving Female Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-006; 001	8	2.244	0.6513	3.837	1.414	0	5	0.6736	84.9%	0.0%
24077-005; 007	8	4.987	1.309	8.665	3.708	0.8	14.71	1.555	88.21%	-122.2%

Offspring/Surviving Female Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-006; 001	0	4	0.75	1.4	5	1.429	4.375	1
24077-005; 007	0.8	1.714	3.75	14.71	7	2.75	3.667	5.5

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	02-9524-4172	**Endpoint:**	Offspring/Surviving Female	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:05	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-006; 001	07-4145-0866	11 Dec-13 09:06	11 Dec-13 12:15	36d 3h	AECOM	Ecological Risk Asse
24077-005; 007	00-8496-1430	10 Dec-13 09:39	11 Dec-13 12:15	37d 2h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-006; 001	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD302 0012; 24077-006		
24077-005; 007	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD106 0012; 24077-005		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	82.3%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-006; 001		24077-005; 007	-1.298	1.771	1.846	13	0.8916	CDF	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	6.835107	6.835107	1	1.685	0.2168	Non-Significant Effect
Error	52.72791	4.055993	13			
Total	59.56302		14			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.254	9.155	0.7658	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9344	0.8328	0.3174	Normal Distribution

Offspring/Surviving Female Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-006; 001	8	2.244	0.6513	3.837	1.414	0	5	0.6736	84.9%	0.0%
24077-005; 007	7	3.597	1.624	5.571	3.667	0.8	7	0.8065	59.31%	-60.29%

Offspring/Surviving Female Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-006; 001	0	4	0.75	1.4	5	1.429	4.375	1
24077-005; 007	0.8	1.714	3.75	Outlier	7	2.75	3.667	5.5

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	03-6631-9163	**Endpoint:**	Offspring/Surviving Female	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:04	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-006; 001	07-4145-0866	11 Dec-13 09:06	11 Dec-13 12:15	36d 3h	AECOM	Ecological Risk Asse
24077-007; 008	21-1048-1554	11 Dec-13 13:29	13 Dec-13 08:35	35d 23h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-006; 001	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD302 0012; 24077-006		
24077-007; 008	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD118 0012; 24077-007		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	100.0%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-006; 001		24077-007; 008	-2.167	1.761	2.245	14	0.9760	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	1.951	2.586	0.6207	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	30.51855	30.51855	1	4.695	0.0480	Significant Effect
Error	91.00702	6.500502	14			
Total	121.5256		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	2.581	8.885	0.2341	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9052	0.8408	0.0974	Normal Distribution

Offspring/Surviving Female Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-006; 001	8	2.244	0.6513	3.837	1.414	0	5	0.6736	84.9%	0.0%
24077-007; 008	8	5.006	2.447	7.566	5.389	0.2	8	1.082	61.14%	-123.1%

Offspring/Surviving Female Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-006; 001	0	4	0.75	1.4	5	1.429	4.375	1
24077-007; 008	6.778	4	3.545	1.75	7.778	0.2	8	8

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	01-3134-5473	**Endpoint:**	Offspring/Surviving Female	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:04	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-006; 001	07-4145-0866	11 Dec-13 09:06	11 Dec-13 12:15	36d 3h	AECOM	Ecological Risk Asse
24077-008; 009	08-1847-2615	12 Dec-13 07:50	13 Dec-13 08:35	35d 4h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-006; 001	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD302 0012; 24077-006		
24077-008; 009	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD124 0012; 24077-008		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	72.9%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-006; 001		24077-008; 009	0.7555	1.761	1.637	14	0.2312	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	1.833	2.586	0.8748	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	1.971405	1.971405	1	0.5708	0.4625	Non-Significant Effect
Error	48.3521	3.453721	14			
Total	50.3235		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.108	8.885	0.8960	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.8578	0.8408	0.0178	Normal Distribution

Offspring/Surviving Female Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-006; 001	8	2.244	0.6513	3.837	1.414	0	5	0.6736	84.9%	0.0%
24077-008; 009	8	1.542	0.02874	3.056	0.75	0	4.833	0.64	117.4%	31.28%

Offspring/Surviving Female Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-006; 001	0	4	0.75	1.4	5	1.429	4.375	1
24077-008; 009	0.5	1	0	0.1429	4.833	0.3333	1.778	3.75

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	20-2422-6149	**Endpoint:**	Offspring/Surviving Female	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:04	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-006; 001	07-4145-0866	11 Dec-13 09:06	11 Dec-13 12:15	36d 3h	AECOM	Ecological Risk Asse
24077-009; 010	18-6710-2589	12 Dec-13 09:15	13 Dec-13 08:35	35d 3h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-006; 001	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD302 0012; 24077-006		
24077-009; 010	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD122 0012; 24077-009		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	76.2%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-006; 001		24077-009; 010	1.321	1.771	1.711	13	0.1047	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.241	2.548	0.2052	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	6.077976	6.077976	1	1.744	0.2094	Non-Significant Effect
Error	45.30678	3.485137	13			
Total	51.38476		14			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.095	10.79	0.9281	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.8428	0.8328	0.0138	Normal Distribution

Offspring/Surviving Female Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-006; 001	8	2.244	0.6513	3.837	1.414	0	5	0.6736	84.9%	0.0%
24077-009; 010	7	0.9683	-0.7158	2.652	0.3333	0	5	0.6882	188.1%	56.86%

Offspring/Surviving Female Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-006; 001	0	4	0.75	1.4	5	1.429	4.375	1
24077-009; 010	1.111	5	0	0.3333	0.3333	0	0	

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	18-5868-5577	**Endpoint:**	Offspring/Surviving Female	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:04	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-006; 001	07-4145-0866	11 Dec-13 09:06	11 Dec-13 12:15	36d 3h	AECOM	Ecological Risk Asse
24077-011; 011	10-2024-6603	13 Dec-13 10:10	18 Dec-13 11:30	34d 2h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-006; 001	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD302 0012; 24077-006		
24077-011; 011	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD102 0012; 24077-011		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	66.7%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-006; 001		24077-011; 011	1.858	1.782	1.496	12	0.0440	CDF	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	1.846	2.507	0.7083	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	8.333198	8.333198	1	3.451	0.0879	Non-Significant Effect
Error	28.97844	2.41487	12			
Total	37.31164		13			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	5.09	14.2	0.0918	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9306	0.8239	0.3113	Normal Distribution

Offspring/Surviving Female Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-006; 001	8	2.244	0.6513	3.837	1.414	0	5	0.6736	84.9%	0.0%
24077-011; 011	6	0.6852	-0.2011	1.571	0.3889	0	2	0.3448	123.3%	69.47%

Offspring/Surviving Female Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-006; 001	0	4	0.75	1.4	5	1.429	4.375	1
24077-011; 011	0	0.7778	0	0	2	1.333		

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	03-9061-1486	**Endpoint:**	Offspring/Surviving Female	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:04	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-006; 001	07-4145-0866	11 Dec-13 09:06	11 Dec-13 12:15	36d 3h	AECOM	Ecological Risk Asse
24077-013; 012	08-9458-1886	17 Dec-13 09:55	18 Dec-13 11:30	30d 2h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-006; 001	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD302 0012; 24077-006		
24077-013; 012	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD115 0012; 24077-013		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	80.5%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-006; 001		24077-013; 012	-1.356	1.761	1.807	14	0.9017	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	1.498	2.586	1.0000	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	7.74172	7.74172	1	1.839	0.1966	Non-Significant Effect
Error	58.95161	4.210829	14			
Total	66.69334		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.32	8.885	0.7236	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.8969	0.8408	0.0718	Normal Distribution

Offspring/Surviving Female Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-006; 001	8	2.244	0.6513	3.837	1.414	0	5	0.6736	84.9%	0.0%
24077-013; 012	8	3.635	1.805	5.465	4.155	0.6667	6.083	0.7739	60.21%	-61.99%

Offspring/Surviving Female Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-006; 001	0	4	0.75	1.4	5	1.429	4.375	1
24077-013; 012	1.9	1.143	5.231	6.083	5.75	0.6667	3.167	5.143

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	17-5540-6138	**Endpoint:**	Offspring/Surviving Female	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:03	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-006; 001	07-4145-0866	11 Dec-13 09:06	11 Dec-13 12:15	36d 3h	AECOM	Ecological Risk Asse
24077-014; 013	10-4129-5048	17 Dec-13 11:00	18 Dec-13 11:30	30d 1h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-006; 001	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD302 0012; 24077-006		
24077-014; 013	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD114 0012; 24077-014		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	81.8%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-006; 001		24077-014; 013	-1.88	1.761	1.835	14	0.9594	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.088	2.586	0.4012	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	15.33667	15.33667	1	3.534	0.0811	Non-Significant Effect
Error	60.7622	4.340158	14			
Total	76.09888		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.391	8.885	0.6742	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9607	0.8408	0.6749	Normal Distribution

Offspring/Surviving Female Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-006; 001	8	2.244	0.6513	3.837	1.414	0	5	0.6736	84.9%	0.0%
24077-014; 013	8	4.202	2.324	6.081	4.161	0	7.571	0.7945	53.48%	-87.25%

Offspring/Surviving Female Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-006; 001	0	4	0.75	1.4	5	1.429	4.375	1
24077-014; 013	6.25	3.222	3.364	4.1	7.571	4.889	0	4.222

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	18-8491-2475	**Endpoint:**	Offspring/Surviving Female	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:08	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-010; 002	10-5151-8705	13 Dec-13 09:50	18 Dec-13 11:30	34d 2h	AECOM	Ecological Risk Asse
24077-001; 004	02-3274-4005	04 Dec-13 12:10	06 Dec-13 13:30	43d		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-010; 002	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD304 0012; 24077-010		
24077-001; 004	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD121 0012; 24077-001		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	99.3%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-010; 002		24077-001; 004	-7.206	1.761	1.203	14	1.0000	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	1.942	2.586	0.6391	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	96.90918	96.90918	1	51.93	<0.0001	Significant Effect
Error	26.12667	1.866191	14			
Total	123.0358		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	2.566	8.885	0.2370	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9761	0.8408	0.9246	Normal Distribution

Offspring/Surviving Female Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-010; 002	8	1.212	0.3565	2.067	1.222	0	3.333	0.3617	84.43%	0.0%
24077-001; 004	8	6.134	4.764	7.504	6.438	3.571	8.625	0.5794	26.72%	-406.2%

Offspring/Surviving Female Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-010; 002	1.5	1.111	0.3333	1.333	1.5	0.5833	0	3.333
24077-001; 004	7	3.571	6	4.167	7	5.833	8.625	6.875

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	15-9313-2146	**Endpoint:**	Offspring/Surviving Female	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:08	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-010; 002	10-5151-8705	13 Dec-13 09:50	18 Dec-13 11:30	34d 2h	AECOM	Ecological Risk Asse
24077-002; 005	01-7804-1542	05 Dec-13 10:45	06 Dec-13 13:30	42d 1h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-010; 002	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD304 0012; 24077-010		
24077-002; 005	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD120 0012; 24077-002		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	290.0%	

Unequal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-010; 002		24077-002; 005	-2.523	1.895	3.511	7	0.9802	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.904	2.586	0.0068	Outlier Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	87.42621	87.42621	1	6.365	0.0244	Significant Effect
Error	192.3069	13.73621	14			
Total	279.7331		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	25.25	8.885	0.0004	Unequal Variances
Distribution	Shapiro-Wilk W Normality	0.8711	0.8408	0.0283	Normal Distribution

Offspring/Surviving Female Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-010; 002	8	1.212	0.3565	2.067	1.222	0	3.333	0.3617	84.43%	0.0%
24077-002; 005	8	5.887	1.589	10.18	4.667	0	16.29	1.817	87.32%	-385.8%

Offspring/Surviving Female Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-010; 002	1.5	1.111	0.3333	1.333	1.5	0.5833	0	3.333
24077-002; 005	1.571	8.571	3.111	4.333	16.29	8.222	0	5

CETIS Analytical Report

Report Date:	10 Mar-14 08:46 (p 1 of 1)
Test Code:	24077Lp | 20-9805-5845

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	12-9400-7643	**Endpoint:**	Offspring/Surviving Female	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:08	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-010; 002	10-5151-8705	13 Dec-13 09:50	18 Dec-13 11:30	34d 2h	AECOM	Ecological Risk Asse
24077-002; 005	01-7804-1542	05 Dec-13 10:45	06 Dec-13 13:30	42d 1h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-010; 002	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD304 0012; 24077-010		
24077-002; 005	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD120 0012; 24077-002		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	197.0%	

Unequal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-010; 002		24077-002; 005	-2.527	1.895	2.391	7	0.9803	CDF	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	37.98018	37.98018	1	7.184	0.0189	Significant Effect
Error	68.72375	5.286442	13			
Total	106.7039		14			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	9.776	9.155	0.0082	Unequal Variances
Distribution	Shapiro-Wilk W Normality	0.9436	0.8328	0.4303	Normal Distribution

Offspring/Surviving Female Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-010; 002	8	1.212	0.3565	2.067	1.222	0	3.333	0.3617	84.43%	0.0%
24077-002; 005	7	4.401	1.443	7.36	4.333	0	8.571	1.209	72.68%	-263.2%

Offspring/Surviving Female Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-010; 002	1.5	1.111	0.3333	1.333	1.5	0.5833	0	3.333
24077-002; 005	1.571	8.571	3.111	4.333	Outlier	8.222	0	5

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	05-4641-5007	**Endpoint:**	Offspring/Surviving Female	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:07	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-010; 002	10-5151-8705	13 Dec-13 09:50	18 Dec-13 11:30	34d 2h	AECOM	Ecological Risk Asse
24077-003; 006	06-6548-1906	05 Dec-13 12:54	06 Dec-13 13:30	41d 23h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-010; 002	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD304 0012; 24077-010		
24077-003; 006	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD112 0012; 24077-003		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	110.0%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-010; 002		24077-003; 006	-2.387	1.761	1.327	14	0.9842	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.191	2.586	0.2794	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	12.93748	12.93748	1	5.698	0.0316	Significant Effect
Error	31.78896	2.27064	14			
Total	44.72644		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	3.339	8.885	0.1343	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9475	0.8408	0.4508	Normal Distribution

Offspring/Surviving Female Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-010; 002	8	1.212	0.3565	2.067	1.222	0	3.333	0.3617	84.43%	0.0%
24077-003; 006	8	3.01	1.447	4.573	2.595	0.5556	6.2	0.6609	62.1%	-148.4%

Offspring/Surviving Female Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-010; 002	1.5	1.111	0.3333	1.333	1.5	0.5833	0	3.333
24077-003; 006	6.2	0.5556	2.333	5	3.7	1.769	1.667	2.857

CETIS Analytical Report

Report Date: 10 Mar-14 08:45 (p 1 of 1)
Test Code: 24077Lp | 20-9805-5845

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	08-4825-9791	**Endpoint:**	Offspring/Surviving Female	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:07	**Analysis:**	Nonparametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-010; 002	10-5151-8705	13 Dec-13 09:50	18 Dec-13 11:30	34d 2h	AECOM	Ecological Risk Asse
24077-005; 007	00-8496-1430	10 Dec-13 09:39	11 Dec-13 12:15	37d 2h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-010; 002	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD304 0012; 24077-010		
24077-005; 007	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD106 0012; 24077-005		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	232.0%	

Wilcoxon Rank Sum Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	Ties	DF	P-Value	P-Type	Decision(α:5%)
24077-010; 002		24077-005; 007	93	NA	0	14	0.9974	Exact	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	3.153	2.586	0.0007	Outlier Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	57.0055	57.0055	1	5.589	0.0331	Significant Effect
Error	142.7817	10.1987	14			
Total	199.7872		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	18.49	8.885	0.0010	Unequal Variances
Distribution	Shapiro-Wilk W Normality	0.7985	0.8408	0.0026	Non-normal Distribution

Offspring/Surviving Female Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-010; 002	8	1.212	0.3565	2.067	1.222	0	3.333	0.3617	84.43%	0.0%
24077-005; 007	8	4.987	1.309	8.665	3.708	0.8	14.71	1.555	88.21%	-311.5%

Offspring/Surviving Female Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-010; 002	1.5	1.111	0.3333	1.333	1.5	0.5833	0	3.333
24077-005; 007	0.8	1.714	3.75	14.71	7	2.75	3.667	5.5

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	09-3375-7759	**Endpoint:**	Offspring/Surviving Female	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:07	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-010; 002	10-5151-8705	13 Dec-13 09:50	18 Dec-13 11:30	34d 2h	AECOM	Ecological Risk Asse
24077-005; 007	00-8496-1430	10 Dec-13 09:39	11 Dec-13 12:15	37d 2h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-010; 002	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD304 0012; 24077-010		
24077-005; 007	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD106 0012; 24077-005		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	123.0%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-010; 002		24077-005; 007	-2.824	1.771	1.496	13	0.9928	CDF	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	21.24447	21.24447	1	7.972	0.0144	Significant Effect
Error	34.64238	2.664798	13			
Total	55.88685		14			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	4.349	9.155	0.0753	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9527	0.8328	0.5682	Normal Distribution

Offspring/Surviving Female Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-010; 002	8	1.212	0.3565	2.067	1.222	0	3.333	0.3617	84.43%	0.0%
24077-005; 007	7	3.597	1.624	5.571	3.667	0.8	7	0.8065	59.31%	-196.9%

Offspring/Surviving Female Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-010; 002	1.5	1.111	0.3333	1.333	1.5	0.5833	0	3.333
24077-005; 007	0.8	1.714	3.75	Outlier	7	2.75	3.667	5.5

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	00-1699-9693	**Endpoint:**	Offspring/Surviving Female	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:07	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-010; 002	10-5151-8705	13 Dec-13 09:50	18 Dec-13 11:30	34d 2h	AECOM	Ecological Risk Asse
24077-007; 008	21-1048-1554	11 Dec-13 13:29	13 Dec-13 08:35	35d 23h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-010; 002	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD304 0012; 24077-010		
24077-007; 008	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD118 0012; 24077-007		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	175.0%	

Unequal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-010; 002		24077-007; 008	-3.325	1.86	2.122	8	0.9948	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.18	2.586	0.2910	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	57.59507	57.59507	1	11.06	0.0050	Significant Effect
Error	72.92149	5.208677	14			
Total	130.5166		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	8.952	8.885	0.0098	Unequal Variances
Distribution	Shapiro-Wilk W Normality	0.9428	0.8408	0.3851	Normal Distribution

Offspring/Surviving Female Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-010; 002	8	1.212	0.3565	2.067	1.222	0	3.333	0.3617	84.43%	0.0%
24077-007; 008	8	5.006	2.447	7.566	5.389	0.2	8	1.082	61.14%	-313.1%

Offspring/Surviving Female Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-010; 002	1.5	1.111	0.3333	1.333	1.5	0.5833	0	3.333
24077-007; 008	6.778	4	3.545	1.75	7.778	0.2	8	8

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	00-0461-0895	**Endpoint:**	Offspring/Surviving Female	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:07	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-010; 002	10-5151-8705	13 Dec-13 09:50	18 Dec-13 11:30	34d 2h	AECOM	Ecological Risk Asse
24077-008; 009	08-1847-2615	12 Dec-13 07:50	13 Dec-13 08:35	35d 4h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-010; 002	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD304 0012; 24077-010		
24077-008; 009	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD124 0012; 24077-008		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	107.0%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-010; 002		24077-008; 009	-0.4494	1.761	1.295	14	0.6700	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.317	2.586	0.1721	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.4365434	0.4365434	1	0.2019	0.6600	Non-Significant Effect
Error	30.26656	2.161897	14			
Total	30.7031		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	3.131	8.885	0.1552	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.8656	0.8408	0.0233	Normal Distribution

Offspring/Surviving Female Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-010; 002	8	1.212	0.3565	2.067	1.222	0	3.333	0.3617	84.43%	0.0%
24077-008; 009	8	1.542	0.02874	3.056	0.75	0	4.833	0.64	117.4%	-27.26%

Offspring/Surviving Female Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-010; 002	1.5	1.111	0.3333	1.333	1.5	0.5833	0	3.333
24077-008; 009	0.5	1	0	0.1429	4.833	0.3333	1.778	3.75

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	20-1801-7043	**Endpoint:**	Offspring/Surviving Female	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:07	**Analysis:**	Nonparametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-010; 002	10-5151-8705	13 Dec-13 09:50	18 Dec-13 11:30	34d 2h	AECOM	Ecological Risk Asse
24077-009; 010	18-6710-2589	12 Dec-13 09:15	13 Dec-13 08:35	35d 3h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-010; 002	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD304 0012; 24077-010		
24077-009; 010	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD122 0012; 24077-009		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	109.0%	

Wilcoxon Rank Sum Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	Ties	DF	P-Value	P-Type	Decision(α:5%)
24077-010; 002		24077-009; 010	44	NA	3	13	0.0844	Exact	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.891	2.548	0.0052	Outlier Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.2214515	0.2214515	1	0.1058	0.7502	Non-Significant Effect
Error	27.22124	2.093942	13			
Total	27.4427		14			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	3.168	9.155	0.1571	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.7439	0.8328	0.0008	Non-normal Distribution

Offspring/Surviving Female Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-010; 002	8	1.212	0.3565	2.067	1.222	0	3.333	0.3617	84.43%	0.0%
24077-009; 010	7	0.9683	-0.7158	2.652	0.3333	0	5	0.6882	188.1%	20.1%

Offspring/Surviving Female Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-010; 002	1.5	1.111	0.3333	1.333	1.5	0.5833	0	3.333
24077-009; 010	1.111	5	0	0.3333	0.3333	0	0	

CETIS Analytical Report

Report Date:	10 Mar-14 08:43 (p 1 of 1)
Test Code:	24077Lp | 20-9805-5845

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	01-0848-2514	**Endpoint:**	Offspring/Surviving Female	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:07	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-010; 002	10-5151-8705	13 Dec-13 09:50	18 Dec-13 11:30	34d 2h	AECOM	Ecological Risk Asse
24077-009; 010	18-6710-2589	12 Dec-13 09:15	13 Dec-13 08:35	35d 3h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-010; 002	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD304 0012; 24077-010		
24077-009; 010	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD122 0012; 24077-009		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	65.9%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-010; 002		24077-009; 010	2.044	1.782	0.798	12	0.0318	CDF	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	2.873682	2.873682	1	4.176	0.0636	Non-Significant Effect
Error	8.257105	0.6880921	12			
Total	11.13079		13			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	5.627	14.2	0.0751	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.8975	0.8239	0.1037	Normal Distribution

Offspring/Surviving Female Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-010; 002	8	1.212	0.3565	2.067	1.222	0	3.333	0.3617	84.43%	0.0%
24077-009; 010	6	0.2963	-0.1563	0.7489	0.1667	0	1.111	0.1761	145.6%	75.55%

Offspring/Surviving Female Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-010; 002	1.5	1.111	0.3333	1.333	1.5	0.5833	0	3.333
24077-009; 010	1.111	Outlier	0	0.3333	0.3333	0	0	

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	21-4610-2272	**Endpoint:**	Offspring/Surviving Female	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:07	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-010; 002	10-5151-8705	13 Dec-13 09:50	18 Dec-13 11:30	34d 2h	AECOM	Ecological Risk Asse
24077-011; 011	10-2024-6603	13 Dec-13 10:10	18 Dec-13 11:30	34d 2h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-010; 002	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD304 0012; 24077-010		
24077-011; 011	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD102 0012; 24077-011		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	75.7%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-010; 002		24077-011; 011	1.023	1.782	0.917	12	0.1631	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.318	2.507	0.1282	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.9508423	0.9508423	1	1.047	0.3263	Non-Significant Effect
Error	10.89291	0.9077423	12			
Total	11.84375		13			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.468	14.2	0.6953	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9175	0.8239	0.2024	Normal Distribution

Offspring/Surviving Female Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-010; 002	8	1.212	0.3565	2.067	1.222	0	3.333	0.3617	84.43%	0.0%
24077-011; 011	6	0.6852	-0.2011	1.571	0.3889	0	2	0.3448	123.3%	43.46%

Offspring/Surviving Female Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-010; 002	1.5	1.111	0.3333	1.333	1.5	0.5833	0	3.333
24077-011; 011	0	0.7778	0	0	2	1.333		

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	06-6255-6916	**Endpoint:**	Offspring/Surviving Female	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:07	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-010; 002	10-5151-8705	13 Dec-13 09:50	18 Dec-13 11:30	34d 2h	AECOM	Ecological Risk Asse
24077-013; 012	08-9458-1886	17 Dec-13 09:55	18 Dec-13 11:30	30d 2h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-010; 002	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD304 0012; 24077-010		
24077-013; 012	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD115 0012; 24077-013		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	124.0%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-010; 002		24077-013; 012	-2.837	1.761	1.505	14	0.9934	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	1.799	2.586	0.9617	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	23.49512	23.49512	1	8.049	0.0132	Significant Effect
Error	40.86608	2.919005	14			
Total	64.3612		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	4.577	8.885	0.0626	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9584	0.8408	0.6325	Normal Distribution

Offspring/Surviving Female Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-010; 002	8	1.212	0.3565	2.067	1.222	0	3.333	0.3617	84.43%	0.0%
24077-013; 012	8	3.635	1.805	5.465	4.155	0.6667	6.083	0.7739	60.21%	-200.0%

Offspring/Surviving Female Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-010; 002	1.5	1.111	0.3333	1.333	1.5	0.5833	0	3.333
24077-013; 012	1.9	1.143	5.231	6.083	5.75	0.6667	3.167	5.143

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	09-6370-9815	**Endpoint:**	Offspring/Surviving Female	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:07	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-010; 002	10-5151-8705	13 Dec-13 09:50	18 Dec-13 11:30	34d 2h	AECOM	Ecological Risk Asse
24077-014; 013	10-4129-5048	17 Dec-13 11:00	18 Dec-13 11:30	30d 1h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-010; 002	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD304 0012; 24077-010		
24077-014; 013	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD114 0012; 24077-014		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	127.0%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-010; 002		24077-014; 013	-3.426	1.761	1.538	14	0.9980	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.491	2.586	0.0800	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	35.77222	35.77222	1	11.74	0.0041	Significant Effect
Error	42.67667	3.048333	14			
Total	78.44889		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	4.825	8.885	0.0547	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9189	0.8408	0.1617	Normal Distribution

Offspring/Surviving Female Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-010; 002	8	1.212	0.3565	2.067	1.222	0	3.333	0.3617	84.43%	0.0%
24077-014; 013	8	4.202	2.324	6.081	4.161	0	7.571	0.7945	53.48%	-246.8%

Offspring/Surviving Female Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-010; 002	1.5	1.111	0.3333	1.333	1.5	0.5833	0	3.333
24077-014; 013	6.25	3.222	3.364	4.1	7.571	4.889	0	4.222

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	18-9503-3916	**Endpoint:**	Offspring/Surviving Female	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:11	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-012; 003	20-3314-4845	13 Dec-13 10:45	18 Dec-13 11:30	34d 1h	AECOM	Ecological Risk Asse
24077-001; 004	02-3274-4005	04 Dec-13 12:10	06 Dec-13 13:30	43d		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-012; 003	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD303 0012; 24077-012		
24077-001; 004	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD121 0012; 24077-001		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	40.1%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-012; 003		24077-001; 004	-1.679	1.771	1.782	13	0.9415	CDF	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	10.65991	10.65991	1	2.821	0.1169	Non-Significant Effect
Error	49.13099	3.779307	13			
Total	59.79089		14			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.882	9.155	0.4271	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9772	0.8328	0.9468	Normal Distribution

Offspring/Surviving Female Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-012; 003	7	4.444	2.365	6.524	4	1.4	7.833	0.8498	50.59%	0.0%
24077-001; 004	8	6.134	4.764	7.504	6.438	3.571	8.625	0.5794	26.72%	-38.02%

Offspring/Surviving Female Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-012; 003	2.909	Outlier	6.3	5.667	1.4	7.833	3	4
24077-001; 004	7	3.571	6	4.167	7	5.833	8.625	6.875

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	20-4584-7490	**Endpoint:**	Offspring/Surviving Female	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:11	**Analysis:**	Nonparametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-012; 003	20-3314-4845	13 Dec-13 10:45	18 Dec-13 11:30	34d 1h	AECOM	Ecological Risk Asse
24077-001; 004	02-3274-4005	04 Dec-13 12:10	06 Dec-13 13:30	43d		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-012; 003	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD303 0012; 24077-012		
24077-001; 004	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD121 0012; 24077-001		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	51.7%	

Wilcoxon Rank Sum Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	Ties	DF	P-Value	P-Type	Decision(α:5%)
24077-012; 003		24077-001; 004	78	NA	0	14	0.8545	Exact	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	3.048	2.586	0.0021	Outlier Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.21419	0.21419	1	0.01782	0.8957	Non-Significant Effect
Error	168.2341	12.01672	14			
Total	168.4483		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	7.949	8.885	0.0139	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.8339	0.8408	0.0080	Non-normal Distribution

Offspring/Surviving Female Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-012; 003	8	5.903	2.04	9.765	4.833	1.4	16.11	1.634	78.28%	0.0%
24077-001; 004	8	6.134	4.764	7.504	6.438	3.571	8.625	0.5794	26.72%	-3.92%

Offspring/Surviving Female Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-012; 003	2.909	16.11	6.3	5.667	1.4	7.833	3	4
24077-001; 004	7	3.571	6	4.167	7	5.833	8.625	6.875

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	13-2765-8812	**Endpoint:**	Offspring/Surviving Female	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:11	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-012; 003	20-3314-4845	13 Dec-13 10:45	18 Dec-13 11:30	34d 1h	AECOM	Ecological Risk Asse
24077-002; 005	01-7804-1542	05 Dec-13 10:45	06 Dec-13 13:30	42d 1h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-012; 003	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD303 0012; 24077-012		
24077-002; 005	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD120 0012; 24077-002		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	72.9%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-012; 003		24077-002; 005	0.006392	1.761	4.304	14	0.4975	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.202	2.586	0.2681	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.0009759989	0.0009759989	1	4.086E-05	0.9950	Non-Significant Effect
Error	334.4143	23.88674	14			
Total	334.4153		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.238	8.885	0.7855	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.8647	0.8408	0.0226	Normal Distribution

Offspring/Surviving Female Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-012; 003	8	5.903	2.04	9.765	4.833	1.4	16.11	1.634	78.28%	0.0%
24077-002; 005	8	5.887	1.589	10.18	4.667	0	16.29	1.817	87.32%	0.26%

Offspring/Surviving Female Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-012; 003	2.909	16.11	6.3	5.667	1.4	7.833	3	4
24077-002; 005	1.571	8.571	3.111	4.333	16.29	8.222	0	5

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	06-0533-7547	**Endpoint:**	Offspring/Surviving Female	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:11	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-012; 003	20-3314-4845	13 Dec-13 10:45	18 Dec-13 11:30	34d 1h	AECOM	Ecological Risk Asse
24077-003; 006	06-6548-1906	05 Dec-13 12:54	06 Dec-13 13:30	41d 23h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-012; 003	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD303 0012; 24077-012		
24077-003; 006	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD112 0012; 24077-003		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	52.6%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-012; 003		24077-003; 006	1.641	1.761	3.104	14	0.0615	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.998	2.586	0.0032	Outlier Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	33.46123	33.46123	1	2.694	0.1230	Non-Significant Effect
Error	173.8964	12.42117	14			
Total	207.3576		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	6.109	8.885	0.0292	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.853	0.8408	0.0151	Normal Distribution

Offspring/Surviving Female Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-012; 003	8	5.903	2.04	9.765	4.833	1.4	16.11	1.634	78.28%	0.0%
24077-003; 006	8	3.01	1.447	4.573	2.595	0.5556	6.2	0.6609	62.1%	49.0%

Offspring/Surviving Female Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-012; 003	2.909	16.11	6.3	5.667	1.4	7.833	3	4
24077-003; 006	6.2	0.5556	2.333	5	3.7	1.769	1.667	2.857

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	16-8685-4620	**Endpoint:**	Offspring/Surviving Female	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:10	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-012; 003	20-3314-4845	13 Dec-13 10:45	18 Dec-13 11:30	34d 1h	AECOM	Ecological Risk Asse
24077-003; 006	06-6548-1906	05 Dec-13 12:54	06 Dec-13 13:30	41d 23h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-012; 003	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD303 0012; 24077-012		
24077-003; 006	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD112 0012; 24077-003		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	42.3%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-012; 003		24077-003; 006	1.35	1.771	1.882	13	0.1001	CDF	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	7.676149	7.676149	1	1.821	0.2002	Non-Significant Effect
Error	54.79328	4.214868	13			
Total	62.46943		14			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.447	9.155	0.6362	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9511	0.8328	0.5422	Normal Distribution

Offspring/Surviving Female Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-012; 003	7	4.444	2.365	6.524	4	1.4	7.833	0.8498	50.59%	0.0%
24077-003; 006	8	3.01	1.447	4.573	2.595	0.5556	6.2	0.6609	62.1%	32.27%

Offspring/Surviving Female Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-012; 003	2.909	Outlier	6.3	5.667	1.4	7.833	3	4
24077-003; 006	6.2	0.5556	2.333	5	3.7	1.769	1.667	2.857

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	04-9566-2849	**Endpoint:**	Offspring/Surviving Female	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:10	**Analysis:**	Nonparametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-012; 003	20-3314-4845	13 Dec-13 10:45	18 Dec-13 11:30	34d 1h	AECOM	Ecological Risk Asse
24077-005; 007	00-8496-1430	10 Dec-13 09:39	11 Dec-13 12:15	37d 2h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-012; 003	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD303 0012; 24077-012		
24077-005; 007	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD106 0012; 24077-005		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	67.3%	

Wilcoxon Rank Sum Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	Ties	DF	P-Value	P-Type	Decision(α:5%)
24077-012; 003		24077-005; 007	61	NA	0	14	0.2527	Exact	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.342	2.586	0.1549	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	3.353444	3.353444	1	0.1648	0.6909	Non-Significant Effect
Error	284.8892	20.34923	14			
Total	288.2426		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.103	8.885	0.9002	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.8074	0.8408	0.0034	Non-normal Distribution

Offspring/Surviving Female Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-012; 003	8	5.903	2.04	9.765	4.833	1.4	16.11	1.634	78.28%	0.0%
24077-005; 007	8	4.987	1.309	8.665	3.708	0.8	14.71	1.555	88.21%	15.51%

Offspring/Surviving Female Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-012; 003	2.909	16.11	6.3	5.667	1.4	7.833	3	4
24077-005; 007	0.8	1.714	3.75	14.71	7	2.75	3.667	5.5

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	04-2106-2492	**Endpoint:**	Offspring/Surviving Female	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:10	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-012; 003	20-3314-4845	13 Dec-13 10:45	18 Dec-13 11:30	34d 1h	AECOM	Ecological Risk Asse
24077-007; 008	21-1048-1554	11 Dec-13 13:29	13 Dec-13 08:35	35d 23h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-012; 003	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD303 0012; 24077-012		
24077-007; 008	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD118 0012; 24077-007		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	58.5%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-012; 003		24077-007; 008	0.4573	1.761	3.451	14	0.3272	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.696	2.586	0.0271	Outlier Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	3.212332	3.212332	1	0.2091	0.6545	Non-Significant Effect
Error	215.0289	15.35921	14			
Total	218.2412		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	2.278	8.885	0.2996	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9044	0.8408	0.0947	Normal Distribution

Offspring/Surviving Female Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-012; 003	8	5.903	2.04	9.765	4.833	1.4	16.11	1.634	78.28%	0.0%
24077-007; 008	8	5.006	2.447	7.566	5.389	0.2	8	1.082	61.14%	15.18%

Offspring/Surviving Female Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-012; 003	2.909	16.11	6.3	5.667	1.4	7.833	3	4
24077-007; 008	6.778	4	3.545	1.75	7.778	0.2	8	8

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	00-3709-2271	**Endpoint:**	Offspring/Surviving Female	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:11	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-012; 003	20-3314-4845	13 Dec-13 10:45	18 Dec-13 11:30	34d 1h	AECOM	Ecological Risk Asse
24077-007; 008	21-1048-1554	11 Dec-13 13:29	13 Dec-13 08:35	35d 23h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-012; 003	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD303 0012; 24077-012		
24077-007; 008	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD118 0012; 24077-007		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	56.0%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-012; 003		24077-007; 008	-0.3999	1.771	2.49	13	0.6521	CDF	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	1.180076	1.180076	1	0.1599	0.6957	Non-Significant Effect
Error	95.9258	7.378908	13			
Total	97.10588		14			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.854	10.79	0.4696	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9272	0.8328	0.2473	Normal Distribution

Offspring/Surviving Female Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-012; 003	7	4.444	2.365	6.524	4	1.4	7.833	0.8498	50.59%	0.0%
24077-007; 008	8	5.006	2.447	7.566	5.389	0.2	8	1.082	61.14%	-12.65%

Offspring/Surviving Female Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-012; 003	2.909	Outlier	6.3	5.667	1.4	7.833	3	4
24077-007; 008	6.778	4	3.545	1.75	7.778	0.2	8	8

CETIS Analytical Report

Report Date: 10 Mar-14 08:47 (p 1 of 1)
Test Code: 24077Lp | 20-9805-5845

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	18-8095-0227	**Endpoint:**	Offspring/Surviving Female	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:10	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-012; 003	20-3314-4845	13 Dec-13 10:45	18 Dec-13 11:30	34d 1h	AECOM	Ecological Risk Asse
24077-008; 009	08-1847-2615	12 Dec-13 07:50	13 Dec-13 08:35	35d 4h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-012; 003	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD303 0012; 24077-012		
24077-008; 009	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD124 0012; 24077-008		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	52.4%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-012; 003		24077-008; 009	2.485	1.761	3.09	14	0.0131	CDF	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	3.011	2.586	0.0029	Outlier Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	76.05105	76.05105	1	6.177	0.0262	Significant Effect
Error	172.374	12.31243	14			
Total	248.425		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	6.514	8.885	0.0244	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.8423	0.8408	0.0105	Normal Distribution

Offspring/Surviving Female Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-012; 003	8	5.903	2.04	9.765	4.833	1.4	16.11	1.634	78.28%	0.0%
24077-008; 009	8	1.542	0.02874	3.056	0.75	0	4.833	0.64	117.4%	73.87%

Offspring/Surviving Female Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-012; 003	2.909	16.11	6.3	5.667	1.4	7.833	3	4
24077-008; 009	0.5	1	0	0.1429	4.833	0.3333	1.778	3.75

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	13-9074-2053	**Endpoint:**	Offspring/Surviving Female	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:10	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-012; 003	20-3314-4845	13 Dec-13 10:45	18 Dec-13 11:30	34d 1h	AECOM	Ecological Risk Asse
24077-008; 009	08-1847-2615	12 Dec-13 07:50	13 Dec-13 08:35	35d 4h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-012; 003	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD303 0012; 24077-012		
24077-008; 009	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD124 0012; 24077-008		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	41.7%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-012; 003		24077-008; 009	2.77	1.771	1.855	13	0.0080	CDF	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	31.44051	31.44051	1	7.673	0.0159	Significant Effect
Error	53.27088	4.09776	13			
Total	84.71139		14			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.543	9.155	0.5812	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9127	0.8328	0.1490	Normal Distribution

Offspring/Surviving Female Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-012; 003	7	4.444	2.365	6.524	4	1.4	7.833	0.8498	50.59%	0.0%
24077-008; 009	8	1.542	0.02874	3.056	0.75	0	4.833	0.64	117.4%	65.3%

Offspring/Surviving Female Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-012; 003	2.909	Outlier	6.3	5.667	1.4	7.833	3	4
24077-008; 009	0.5	1	0	0.1429	4.833	0.3333	1.778	3.75

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	09-8983-3191	**Endpoint:**	Offspring/Surviving Female	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:10	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-012; 003	20-3314-4845	13 Dec-13 10:45	18 Dec-13 11:30	34d 1h	AECOM	Ecological Risk Asse
24077-009; 010	18-6710-2589	12 Dec-13 09:15	13 Dec-13 08:35	35d 3h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-012; 003	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD303 0012; 24077-012		
24077-009; 010	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD122 0012; 24077-009		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	43.9%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-012; 003		24077-009; 010	3.179	1.782	1.949	12	0.0040	CDF	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	42.28663	42.28663	1	10.1	0.0079	Significant Effect
Error	50.22556	4.185463	12			
Total	92.51219		13			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.525	11.07	0.6214	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9022	0.8239	0.1213	Normal Distribution

Offspring/Surviving Female Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-012; 003	7	4.444	2.365	6.524	4	1.4	7.833	0.8498	50.59%	0.0%
24077-009; 010	7	0.9683	-0.7158	2.652	0.3333	0	5	0.6882	188.1%	78.21%

Offspring/Surviving Female Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-012; 003	2.909	Outlier	6.3	5.667	1.4	7.833	3	4
24077-009; 010	1.111	5	0	0.3333	0.3333	0	0	

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	19-5859-5922	**Endpoint:**	Offspring/Surviving Female	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:10	**Analysis:**	Nonparametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-012; 003	20-3314-4845	13 Dec-13 10:45	18 Dec-13 11:30	34d 1h	AECOM	Ecological Risk Asse
24077-009; 010	18-6710-2589	12 Dec-13 09:15	13 Dec-13 08:35	35d 3h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-012; 003	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD303 0012; 24077-012		
24077-009; 010	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD122 0012; 24077-009		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	56.0%	

Wilcoxon Rank Sum Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	Ties	DF	P-Value	P-Type	Decision(α:5%)
24077-012; 003		24077-009; 010	32	NA	0	13	0.0019	Exact	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.935	2.548	0.0035	Outlier Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	90.89559	90.89559	1	6.978	0.0203	Significant Effect
Error	169.3287	13.02528	13			
Total	260.2243		14			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	6.438	10.79	0.0372	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.8175	0.8328	0.0062	Non-normal Distribution

Offspring/Surviving Female Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-012; 003	8	5.903	2.04	9.765	4.833	1.4	16.11	1.634	78.28%	0.0%
24077-009; 010	7	0.9683	-0.7158	2.652	0.3333	0	5	0.6882	188.1%	83.6%

Offspring/Surviving Female Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-012; 003	2.909	16.11	6.3	5.667	1.4	7.833	3	4
24077-009; 010	1.111	5	0	0.3333	0.3333	0	0	

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	12-1832-6410	**Endpoint:**	Offspring/Surviving Female	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:10	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-012; 003	20-3314-4845	13 Dec-13 10:45	18 Dec-13 11:30	34d 1h	AECOM	Ecological Risk Asse
24077-011; 011	10-2024-6603	13 Dec-13 10:10	18 Dec-13 11:30	34d 2h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-012; 003	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD303 0012; 24077-012		
24077-011; 011	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD102 0012; 24077-011		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	39.5%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-012; 003		24077-011; 011	3.849	1.796	1.754	11	0.0014	CDF	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	45.65032	45.65032	1	14.81	0.0027	Significant Effect
Error	33.89723	3.081566	11			
Total	79.54755		12			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	7.088	14.51	0.0484	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9768	0.8138	0.9606	Normal Distribution

Offspring/Surviving Female Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-012; 003	7	4.444	2.365	6.524	4	1.4	7.833	0.8498	50.59%	0.0%
24077-011; 011	6	0.6852	-0.2011	1.571	0.3889	0	2	0.3448	123.3%	84.58%

Offspring/Surviving Female Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-012; 003	2.909	Outlier	6.3	5.667	1.4	7.833	3	4
24077-011; 011	0	0.7778	0	0	2	1.333		

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	19-0610-8996	**Endpoint:**	Offspring/Surviving Female	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:10	**Analysis:**	Nonparametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-012; 003	20-3314-4845	13 Dec-13 10:45	18 Dec-13 11:30	34d 1h	AECOM	Ecological Risk Asse
24077-011; 011	10-2024-6603	13 Dec-13 10:10	18 Dec-13 11:30	34d 2h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-012; 003	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD303 0012; 24077-012		
24077-011; 011	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD102 0012; 24077-011		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	58.2%	

Wilcoxon Rank Sum Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	Ties	DF	P-Value	P-Type	Decision(α:5%)
24077-012; 003		24077-011; 011	22	NA	0	12	0.0007	Exact	Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.976	2.507	0.0013	Outlier Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	93.3279	93.3279	1	7.32	0.0191	Significant Effect
Error	153.0003	12.75003	12			
Total	246.3282		13			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	29.93	14.2	0.0017	Unequal Variances
Distribution	Shapiro-Wilk W Normality	0.7989	0.8239	0.0048	Non-normal Distribution

Offspring/Surviving Female Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-012; 003	8	5.903	2.04	9.765	4.833	1.4	16.11	1.634	78.28%	0.0%
24077-011; 011	6	0.6852	-0.2011	1.571	0.3889	0	2	0.3448	123.3%	88.39%

Offspring/Surviving Female Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-012; 003	2.909	16.11	6.3	5.667	1.4	7.833	3	4
24077-011; 011	0	0.7778	0	0	2	1.333		

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	20-9200-0082	**Endpoint:**	Offspring/Surviving Female	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:09	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-012; 003	20-3314-4845	13 Dec-13 10:45	18 Dec-13 11:30	34d 1h	AECOM	Ecological Risk Asse
24077-013; 012	08-9458-1886	17 Dec-13 09:55	18 Dec-13 11:30	30d 2h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-012; 003	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD303 0012; 24077-012		
24077-013; 012	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD115 0012; 24077-013		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	53.9%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-012; 003		24077-013; 012	1.254	1.761	3.184	14	0.1151	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.923	2.586	0.0059	Outlier Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	20.55954	20.55954	1	1.573	0.2303	Non-Significant Effect
Error	182.9735	13.06954	14			
Total	203.5331		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	4.456	8.885	0.0670	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.8556	0.8408	0.0165	Normal Distribution

Offspring/Surviving Female Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-012; 003	8	5.903	2.04	9.765	4.833	1.4	16.11	1.634	78.28%	0.0%
24077-013; 012	8	3.635	1.805	5.465	4.155	0.6667	6.083	0.7739	60.21%	38.41%

Offspring/Surviving Female Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-012; 003	2.909	16.11	6.3	5.667	1.4	7.833	3	4
24077-013; 012	1.9	1.143	5.231	6.083	5.75	0.6667	3.167	5.143

CETIS Analytical Report

Report Date: 10 Mar-14 08:47 (p 1 of 1)
Test Code: 24077Lp | 20-9805-5845

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	15-6824-6571	**Endpoint:**	Offspring/Surviving Female	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:09	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-012; 003	20-3314-4845	13 Dec-13 10:45	18 Dec-13 11:30	34d 1h	AECOM	Ecological Risk Asse
24077-013; 012	08-9458-1886	17 Dec-13 09:55	18 Dec-13 11:30	30d 2h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-012; 003	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD303 0012; 24077-012		
24077-013; 012	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD115 0012; 24077-013		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	45.7%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-012; 003		24077-013; 012	0.705	1.771	2.032	13	0.2466	CDF	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	2.441959	2.441959	1	0.497	0.4932	Non-Significant Effect
Error	63.8704	4.913107	13			
Total	66.31236		14			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.055	9.155	0.9313	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9247	0.8328	0.2270	Normal Distribution

Offspring/Surviving Female Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-012; 003	7	4.444	2.365	6.524	4	1.4	7.833	0.8498	50.59%	0.0%
24077-013; 012	8	3.635	1.805	5.465	4.155	0.6667	6.083	0.7739	60.21%	18.2%

Offspring/Surviving Female Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-012; 003	2.909	Outlier	6.3	5.667	1.4	7.833	3	4
24077-013; 012	1.9	1.143	5.231	6.083	5.75	0.6667	3.167	5.143

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	19-5467-5472	**Endpoint:**	Offspring/Surviving Female	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:09	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-012; 003	20-3314-4845	13 Dec-13 10:45	18 Dec-13 11:30	34d 1h	AECOM	Ecological Risk Asse
24077-014; 013	10-4129-5048	17 Dec-13 11:00	18 Dec-13 11:30	30d 1h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-012; 003	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD303 0012; 24077-012		
24077-014; 013	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD114 0012; 24077-014		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	54.2%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-012; 003		24077-014; 013	0.936	1.761	3.199	14	0.1826	CDF	Non-Significant Effect

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.909	2.586	0.0066	Outlier Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	11.56307	11.56307	1	0.8761	0.3651	Non-Significant Effect
Error	184.7841	13.19886	14			
Total	196.3472		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	4.227	8.885	0.0765	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.8734	0.8408	0.0307	Normal Distribution

Offspring/Surviving Female Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-012; 003	8	5.903	2.04	9.765	4.833	1.4	16.11	1.634	78.28%	0.0%
24077-014; 013	8	4.202	2.324	6.081	4.161	0	7.571	0.7945	53.48%	28.81%

Offspring/Surviving Female Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-012; 003	2.909	16.11	6.3	5.667	1.4	7.833	3	4
24077-014; 013	6.25	3.222	3.364	4.1	7.571	4.889	0	4.222

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test — **EnviroSystems, Inc.**

Analysis ID:	02-7836-9051	**Endpoint:**	Offspring/Surviving Female	**CETIS Version:**	CETISv1.8.6
Analyzed:	06 Mar-14 16:09	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	04-5462-2428	**Test Type:**	Leptocheirus (28-d)	**Analyst:**	
Start Date:	16 Jan-14 12:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Not Applicable
Ending Date:	13 Feb-14 12:00	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	28d 0h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
24077-012; 003	20-3314-4845	13 Dec-13 10:45	18 Dec-13 11:30	34d 1h	AECOM	Ecological Risk Asse
24077-014; 013	10-4129-5048	17 Dec-13 11:00	18 Dec-13 11:30	30d 1h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
24077-012; 003	Marine Sediment	Carr Point MRP Site 1, Naval Stat	BSBG SD303 0012; 24077-012		
24077-014; 013	Marine Sediment	Carr Point MRP Site 1, Naval Stat	OU09 SD114 0012; 24077-014		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	46.4%	

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
24077-012; 003		24077-014; 013	0.2079	1.771	2.06	13	0.4193	CDF	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.2183789	0.2183789	1	0.04322	0.8385	Non-Significant Effect
Error	65.68098	5.052383	13			
Total	65.89936		14			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.001	9.155	0.9826	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9736	0.8328	0.9074	Normal Distribution

Offspring/Surviving Female Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
24077-012; 003	7	4.444	2.365	6.524	4	1.4	7.833	0.8498	50.59%	0.0%
24077-014; 013	8	4.202	2.324	6.081	4.161	0	7.571	0.7945	53.48%	5.44%

Offspring/Surviving Female Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
24077-012; 003	2.909	Outlier	6.3	5.667	1.4	7.833	3	4
24077-014; 013	6.25	3.222	3.364	4.1	7.571	4.889	0	4.222

YSI Sample Reading Order
Water Quality Measurements:

Study: 24077

Client: AECOM

Project: Carr Point MRP Site 1, Naval Station, Newport, Rhode Island

Reading Number	Field ID	ESI Code	Sample Number
0	Laboratory Control	24077-000	000
1	BSBG SD302 0012	24077-006	001
2	BSBG SD304 0012	24077-010	002
3	BSBG SD303 0012	24077-012	003
4	OU09 SD121 0012	24077-001	004
5	OU09 SD120 0012	24077-002	005
6	OU09 SD112 0012	24077-003	006
7	OU09 SD106 0012	24077-005	007
8	OU09 SD118 0012	24077-007	008
9	OU09 SD124 0012	24077-008	009
10	OU09 SD122 0012	24077-009	010
11	OU09 SD102 0012	24077-011	011
12	OU09 SD115 0012	24077-013	012
13	OU09 SD114 0012	24077-014	013

STUDY: 24077
CLIENT: AECOM
PROJECT: Carr Point MRP Site 1, Naval Station, Newport, Rhode Island
ASSAY: Leptocheirus plumulosus 28 Day Sediment Assay
TASK: Daily Overlying Water Qualities

	Temp	DO	pH	SpCond	Salinity
Mean:	25.3	6.90		31851	19.83
Minimum:	22.5	6.04	7.31	30543	18.94
Maximum:	26.9	7.55	8.38	35045	22.04

LabID	Field ID	Sample Number	Day	DateTime M/D/Y	Temp C	DO mg/L	pH SU	SpCond uS/cm	Salinity ppt
24077-000	Laboratory Control	000	0	1/23/2014 14:18:08	24.3	6.82	8.03	35559	22.41
24077-006	BSB6 SD302 0012	001	0	1/23/2014 14:19:04	24.1	6.63	8.22	35546	22.41
24077-010	BSB6 SD304 0012	002	0	1/23/2014 14:20:14	24.2	7.02	8.03	35456	22.34
24077-012	BSB6 SD303 0012	003	0	1/23/2014 14:21:15	24.3	6.92	8.07	35606	22.44
24077-001	OU09 SD121 0012	004	0	1/23/2014 14:22:39	24.3	6.95	8.16	35383	22.29
24077-002	OU09 SD120 0012	005	0	1/23/2014 14:23:41	24.5	6.86	8.17	35291	22.22
24077-003	OU09 SD112 0012	006	0	1/23/2014 14:24:36	24.7	6.96	8.05	35203	22.16
24077-005	OU09 SD106 0012	007	0	1/23/2014 14:25:08	24.8	6.79	8.16	35666	22.48
24077-007	OU09 SD118 0012	008	0	1/23/2014 14:25:52	24.9	6.88	8.10	35106	22.09
24077-008	OU09 SD124 0012	009	0	1/23/2014 14:26:52	24.9	6.92	8.03	35490	22.35
24077-009	OU09 SD122 0012	010	0	1/23/2014 14:27:28	24.9	6.77	7.94	35294	22.22
24077-011	OU09 SD102 0012	011	0	1/23/2014 14:28:18	25.1	6.74	7.97	35585	22.42
24077-013	OU09 SD115 0012	012	0	1/23/2014 14:29:22	25.1	6.95	8.13	35035	22.03
24077-014	OU09 SD114 0012	013	0	1/23/2014 14:30:26	25.1	6.90	8.28	35045	22.04
24077-000	Laboratory Control	000	1	1/24/2014 14:17:17	24.7	6.84	7.54	32735	20.45
24077-006	BSB6 SD302 0012	001	1	1/24/2014 14:17:38	24.6	6.84	7.94	32645	20.39
24077-010	BSB6 SD304 0012	002	1	1/24/2014 14:18:02	24.6	7.09	7.84	32683	20.41
24077-012	BSB6 SD303 0012	003	1	1/24/2014 14:18:27	24.5	7.16	7.89	32762	20.47
24077-001	OU09 SD121 0012	004	1	1/24/2014 14:18:46	24.5	7.14	7.98	32800	20.50
24077-002	OU09 SD120 0012	005	1	1/24/2014 14:19:17	24.7	7.07	8.02	31652	19.70
24077-003	OU09 SD112 0012	006	1	1/24/2014 14:19:41	25.0	7.04	7.94	31611	19.67
24077-005	OU09 SD106 0012	007	1	1/24/2014 14:20:12	25.2	6.89	8.03	31809	19.80
24077-007	OU09 SD118 0012	008	1	1/24/2014 14:20:42	25.2	7.01	8.03	31683	19.72
24077-008	OU09 SD124 0012	009	1	1/24/2014 14:21:01	25.3	6.98	7.99	32099	20.00
24077-009	OU09 SD122 0012	010	1	1/24/2014 14:21:30	25.3	6.65	7.88	32641	20.37
24077-011	OU09 SD102 0012	011	1	1/24/2014 14:22:25	25.3	6.98	7.99	33155	20.73
24077-013	OU09 SD115 0012	012	1	1/24/2014 14:23:01	25.4	6.99	8.10	33086	20.68
24077-014	OU09 SD114 0012	013	1	1/24/2014 14:23:14	25.4	6.95	8.19	33107	20.69
24077-000	Laboratory Control	000	2	1/25/2014 12:19:50	25.3	6.57	7.84	32302	20.14
24077-006	BSB6 SD302 0012	001	2	1/25/2014 12:20:33	25.1	6.70	8.19	32014	19.94
24077-010	BSB6 SD304 0012	002	2	1/25/2014 12:21:03	25.1	6.83	7.95	32120	20.02
24077-012	BSB6 SD303 0012	003	2	1/25/2014 12:21:40	25.0	7.10	8.02	32199	20.07
24077-001	OU09 SD121 0012	004	2	1/25/2014 12:22:12	24.9	7.09	8.09	32227	20.09
24077-002	OU09 SD120 0012	005	2	1/25/2014 12:27:09	25.0	6.84	8.14	31896	19.87
24077-003	OU09 SD112 0012	006	2	1/25/2014 12:27:34	25.3	6.79	8.00	31888	19.86
24077-005	OU09 SD106 0012	007	2	1/25/2014 12:27:53	25.5	6.82	8.08	31991	19.92
24077-007	OU09 SD118 0012	008	2	1/25/2014 12:29:13	25.6	6.83	8.09	31971	19.91
24077-008	OU09 SD124 0012	009	2	1/25/2014 12:30:57	25.7	6.74	8.02	32157	20.03

LabID	Field ID	Sample Number	Day	DateTime M/D/Y	Temp C	DO mg/L	pH SU	SpCond uS/cm	Salinity ppt
24077-009	OU09 SD122 0012	010	2	1/25/2014 12:35:10	25.6	6.30	7.84	32084	19.98
24077-011	OU09 SD102 0012	011	2	1/25/2014 12:36:39	25.7	6.87	7.99	32483	20.26
24077-013	OU09 SD115 0012	012	2	1/25/2014 12:37:10	25.7	6.84	8.11	32490	20.26
24077-014	OU09 SD114 0012	013	2	1/25/2014 12:38:30	25.7	6.80	8.21	32500	20.27
24077-000	Laboratory Control	000	3	1/26/2014 09:35:24	24.8	6.42	7.67	31637	19.69
24077-006	BSB6 SD302 0012	001	3	1/26/2014 09:36:02	24.5	6.45	8.15	31398	19.53
24077-010	BSB6 SD304 0012	002	3	1/26/2014 09:37:25	24.5	6.53	7.86	31384	19.52
24077-012	BSB6 SD303 0012	003	3	1/26/2014 09:37:55	24.5	6.72	7.93	31654	19.71
24077-001	OU09 SD121 0012	004	3	1/26/2014 09:38:57	24.4	6.86	8.03	31819	19.82
24077-002	OU09 SD120 0012	005	3	1/26/2014 09:39:35	24.6	6.83	8.04	31283	19.45
24077-003	OU09 SD112 0012	006	3	1/26/2014 09:40:10	24.8	6.76	7.92	31291	19.45
24077-005	OU09 SD106 0012	007	3	1/26/2014 09:40:55	25.0	6.79	8.03	31393	19.52
24077-007	OU09 SD118 0012	008	3	1/26/2014 09:41:28	25.1	6.81	8.00	31518	19.61
24077-008	OU09 SD124 0012	009	3	1/26/2014 09:42:11	25.1	6.77	7.95	31640	19.69
24077-009	OU09 SD122 0012	010	3	1/26/2014 09:43:09	25.1	6.51	7.82	31719	19.74
24077-011	OU09 SD102 0012	011	3	1/26/2014 09:44:07	25.2	6.72	7.94	32181	20.06
24077-013	OU09 SD115 0012	012	3	1/26/2014 09:44:47	25.2	6.76	8.06	32361	20.18
24077-014	OU09 SD114 0012	013	3	1/26/2014 09:45:34	25.2	6.74	8.12	32069	19.98
24077-000	Laboratory Control	000	4	1/27/2014 13:22:59	26.3	6.32	7.81	32819	20.48
24077-006	BSB6 SD302 0012	001	4	1/27/2014 13:23:34	26.1	6.38	8.25	32448	20.22
24077-010	BSB6 SD304 0012	002	4	1/27/2014 13:24:06	26.0	6.50	7.93	32356	20.16
24077-012	BSB6 SD303 0012	003	4	1/27/2014 13:24:32	26.0	6.66	7.98	32898	20.54
24077-001	OU09 SD121 0012	004	4	1/27/2014 13:25:06	25.9	6.67	8.06	32933	20.56
24077-002	OU09 SD120 0012	005	4	1/27/2014 13:25:52	26.0	6.57	8.09	32088	19.98
24077-003	OU09 SD112 0012	006	4	1/27/2014 13:26:25	26.1	6.48	7.94	31920	19.86
24077-005	OU09 SD106 0012	007	4	1/27/2014 13:26:58	26.2	6.56	8.07	32092	19.98
24077-007	OU09 SD118 0012	008	4	1/27/2014 13:27:35	26.2	6.64	8.06	32356	20.16
24077-008	OU09 SD124 0012	009	4	1/27/2014 13:28:13	26.3	6.48	7.95	32352	20.16
24077-009	OU09 SD122 0012	010	4	1/27/2014 13:28:49	26.3	6.56	7.95	32415	20.20
24077-011	OU09 SD102 0012	011	4	1/27/2014 13:29:35	26.4	6.42	7.94	32733	20.42
24077-013	OU09 SD115 0012	012	4	1/27/2014 13:30:28	26.4	6.50	8.13	32868	20.51
24077-014	OU09 SD114 0012	013	4	1/27/2014 13:31:58	26.3	6.62	8.16	32562	20.30
24077-000	Laboratory Control	000	5	1/28/2014 09:02:08	25.2	6.89	8.02	32175	20.05
24077-006	BSB6 SD302 0012	001	5	1/28/2014 09:02:48	24.9	6.88	8.38	31706	19.74
24077-010	BSB6 SD304 0012	002	5	1/28/2014 09:03:12	24.8	6.96	8.10	31599	19.67
24077-012	BSB6 SD303 0012	003	5	1/28/2014 09:03:54	24.8	7.11	8.08	32019	19.95
24077-001	OU09 SD121 0012	004	5	1/28/2014 09:04:31	24.7	7.18	8.15	31976	19.93
24077-002	OU09 SD120 0012	005	5	1/28/2014 09:05:09	24.8	7.11	8.19	31835	19.83
24077-003	OU09 SD112 0012	006	5	1/28/2014 09:05:47	24.9	7.06	8.07	31734	19.76
24077-005	OU09 SD106 0012	007	5	1/28/2014 09:06:25	25.0	7.03	8.17	31811	19.81
24077-007	OU09 SD118 0012	008	5	1/28/2014 09:07:17	25.1	7.15	8.16	32073	19.99
24077-008	OU09 SD124 0012	009	5	1/28/2014 09:08:05	25.1	7.04	8.00	31964	19.91
24077-009	OU09 SD122 0012	010	5	1/28/2014 09:08:42	25.1	7.01	8.05	31855	19.84
24077-011	OU09 SD102 0012	011	5	1/28/2014 09:09:00	25.3	6.94	8.04	31980	19.92
24077-013	OU09 SD115 0012	012	5	1/28/2014 09:09:28	25.3	7.03	8.17	32076	19.98
24077-014	OU09 SD114 0012	013	5	1/28/2014 09:10:06	25.2	7.09	8.18	31951	19.90
24077-000	Laboratory Control	000	6	1/29/2014 09:41:35	25.8	6.81	7.81	32443	20.23

LabID	Field ID	Sample Number	Day	DateTime M/D/Y	Temp C	DO mg/L	pH SU	SpCond uS/cm	Salinity ppt
24077-006	BSB6 SD302 0012	001	6	1/29/2014 09:42:07	25.5	6.85	8.23	31867	19.84
24077-010	BSB6 SD304 0012	002	6	1/29/2014 09:42:25	25.4	6.94	7.99	31739	19.75
24077-012	BSB6 SD303 0012	003	6	1/29/2014 09:42:50	25.5	7.03	8.01	32226	20.08
24077-001	OU09 SD121 0012	004	6	1/29/2014 09:43:17	25.3	7.08	8.07	32223	20.08
24077-002	OU09 SD120 0012	005	6	1/29/2014 09:43:43	25.5	6.96	8.11	31859	19.83
24077-003	OU09 SD112 0012	006	6	1/29/2014 09:44:06	25.6	6.94	7.99	31685	19.71
24077-005	OU09 SD106 0012	007	6	1/29/2014 09:44:36	25.6	7.07	8.10	31924	19.87
24077-007	OU09 SD118 0012	008	6	1/29/2014 09:45:02	25.7	7.00	8.07	32184	20.05
24077-008	OU09 SD124 0012	009	6	1/29/2014 09:45:31	25.7	6.98	7.99	32115	20.00
24077-009	OU09 SD122 0012	010	6	1/29/2014 09:45:53	25.7	7.03	7.98	31521	19.60
24077-011	OU09 SD102 0012	011	6	1/29/2014 09:46:12	25.8	6.91	7.97	31678	19.70
24077-013	OU09 SD115 0012	012	6	1/29/2014 09:46:31	25.7	7.04	8.10	31977	19.91
24077-014	OU09 SD114 0012	013	6	1/29/2014 09:46:56	25.8	6.98	8.11	31711	19.73
24077-000	Laboratory Control	000	7	1/30/2014 09:38:15	25.4	6.68	7.88	33383	20.88
24077-006	BSB6 SD302 0012	001	7	1/30/2014 09:38:35	25.2	6.73	8.20	32846	20.52
24077-010	BSB6 SD304 0012	002	7	1/30/2014 09:38:51	25.1	6.83	8.00	32713	20.43
24077-012	BSB6 SD303 0012	003	7	1/30/2014 09:39:14	25.0	6.96	8.02	33237	20.79
24077-001	OU09 SD121 0012	004	7	1/30/2014 09:39:29	24.9	6.99	8.06	33080	20.68
24077-002	OU09 SD120 0012	005	7	1/30/2014 09:39:58	25.0	7.00	8.12	32293	20.14
24077-003	OU09 SD112 0012	006	7	1/30/2014 09:40:18	25.1	6.90	7.98	32149	20.04
24077-005	OU09 SD106 0012	007	7	1/30/2014 09:40:40	25.2	7.03	8.08	32334	20.16
24077-007	OU09 SD118 0012	008	7	1/30/2014 09:40:58	25.3	7.06	8.08	32464	20.25
24077-008	OU09 SD124 0012	009	7	1/30/2014 09:41:15	25.3	6.99	7.99	32371	20.19
24077-009	OU09 SD122 0012	010	7	1/30/2014 09:41:41	25.3	6.94	7.94	32105	20.00
24077-011	OU09 SD102 0012	011	7	1/30/2014 09:42:05	25.5	6.91	7.94	32210	20.07
24077-013	OU09 SD115 0012	012	7	1/30/2014 09:42:20	25.5	6.96	8.07	32467	20.25
24077-014	OU09 SD114 0012	013	7	1/30/2014 09:42:38	25.5	6.97	8.08	32246	20.10
24077-000	Laboratory Control	000	8	1/31/2014 10:22:25	25.9	6.39	7.32	31945	19.88
24077-006	BSB6 SD302 0012	001	8	1/31/2014 10:22:49	25.5	6.71	7.93	31553	19.62
24077-010	BSB6 SD304 0012	002	8	1/31/2014 10:23:13	25.4	6.64	7.82	31601	19.66
24077-012	BSB6 SD303 0012	003	8	1/31/2014 10:23:51	25.6	6.73	7.88	32008	19.93
24077-001	OU09 SD121 0012	004	8	1/31/2014 10:24:20	25.6	6.80	7.97	32048	19.96
24077-002	OU09 SD120 0012	005	8	1/31/2014 10:24:54	25.7	6.86	8.04	31733	19.74
24077-003	OU09 SD112 0012	006	8	1/31/2014 10:25:22	25.7	6.91	7.92	31512	19.59
24077-005	OU09 SD106 0012	007	8	1/31/2014 10:25:44	25.9	6.92	8.02	31688	19.71
24077-007	OU09 SD118 0012	008	8	1/31/2014 10:26:15	26.0	6.90	8.02	32095	19.99
24077-008	OU09 SD124 0012	009	8	1/31/2014 10:26:42	25.9	6.91	7.95	31802	19.78
24077-009	OU09 SD122 0012	010	8	1/31/2014 10:27:05	26.0	6.94	7.93	31067	19.28
24077-011	OU09 SD102 0012	011	8	1/31/2014 10:27:20	26.0	6.90	7.92	31273	19.42
24077-013	OU09 SD115 0012	012	8	1/31/2014 10:27:49	26.0	6.93	8.07	31462	19.55
24077-014	OU09 SD114 0012	013	8	1/31/2014 10:28:22	26.0	6.93	8.05	31464	19.55
24077-000	Laboratory Control	000	9	2/1/2014 09:08:06	26.5	6.37	7.58	32217	20.06
24077-006	BSB6 SD302 0012	001	9	2/1/2014 09:08:23	26.2	6.40	7.98	31797	19.78
24077-010	BSB6 SD304 0012	002	9	2/1/2014 09:08:39	26.1	6.04	7.82	31853	19.82
24077-012	BSB6 SD303 0012	003	9	2/1/2014 09:08:56	26.2	6.34	7.88	32289	20.11
24077-001	OU09 SD121 0012	004	9	2/1/2014 09:09:22	26.2	6.56	7.98	32321	20.14
24077-002	OU09 SD120 0012	005	9	2/1/2014 09:09:42	26.3	6.54	8.05	31637	19.66
24077-003	OU09 SD112 0012	006	9	2/1/2014 09:09:57	26.3	6.58	7.94	31411	19.51

LabID	Field ID	Sample Number	Day	DateTime M/D/Y	Temp C	DO mg/L	pH SU	SpCond uS/cm	Salinity ppt
24077-005	OU09 SD106 0012	007	9	2/1/2014 09:10:17	26.4	6.65	8.02	31512	19.58
24077-007	OU09 SD118 0012	008	9	2/1/2014 09:10:36	26.5	6.61	8.00	31747	19.74
24077-008	OU09 SD124 0012	009	9	2/1/2014 09:11:39	26.5	6.61	7.95	31836	19.80
24077-009	OU09 SD122 0012	010	9	2/1/2014 09:12:02	26.5	6.64	7.94	31561	19.61
24077-011	OU09 SD102 0012	011	9	2/1/2014 09:12:19	26.6	6.51	7.93	31685	19.69
24077-013	OU09 SD115 0012	012	9	2/1/2014 09:12:45	26.5	6.64	8.07	31944	19.87
24077-014	OU09 SD114 0012	013	9	2/1/2014 09:13:14	26.5	6.59	8.01	31884	19.83
24077-000	Laboratory Control	000	10	2/2/2014 08:46:48	26.9	6.36	7.64	32059	19.94
24077-006	BSB6 SD302 0012	001	10	2/2/2014 08:47:45	26.5	6.52	8.09	31725	19.72
24077-010	BSB6 SD304 0012	002	10	2/2/2014 08:48:32	26.5	6.10	7.80	31711	19.71
24077-012	BSB6 SD303 0012	003	10	2/2/2014 08:49:19	26.6	6.62	7.93	32296	20.11
24077-001	OU09 SD121 0012	004	10	2/2/2014 08:49:56	26.6	6.71	8.01	32307	20.12
24077-002	OU09 SD120 0012	005	10	2/2/2014 08:50:35	26.7	6.57	8.08	32220	20.06
24077-003	OU09 SD112 0012	006	10	2/2/2014 08:51:14	26.7	6.60	7.94	31976	19.89
24077-005	OU09 SD106 0012	007	10	2/2/2014 08:52:09	26.8	6.75	8.05	32036	19.93
24077-007	OU09 SD118 0012	008	10	2/2/2014 08:52:55	26.9	6.68	8.01	32184	20.03
24077-008	OU09 SD124 0012	009	10	2/2/2014 08:53:41	26.8	6.73	7.97	32367	20.16
24077-009	OU09 SD122 0012	010	10	2/2/2014 08:54:40	26.9	6.62	7.94	31948	19.87
24077-011	OU09 SD102 0012	011	10	2/2/2014 08:55:46	26.9	6.59	7.94	32190	20.03
24077-013	OU09 SD115 0012	012	10	2/2/2014 08:56:40	26.8	6.63	8.06	32362	20.15
24077-014	OU09 SD114 0012	013	10	2/2/2014 08:57:17	26.9	6.60	8.00	32048	19.93
24077-000	Laboratory Control	000	11	2/3/2014 10:09:09	26.7	6.60	7.70	31877	19.82
24077-006	BSB6 SD302 0012	001	11	2/3/2014 10:09:42	26.3	6.94	8.12	31586	19.63
24077-010	BSB6 SD304 0012	002	11	2/3/2014 10:10:20	26.2	6.42	7.84	31484	19.56
24077-012	BSB6 SD303 0012	003	11	2/3/2014 10:10:56	26.3	6.91	7.97	32159	20.02
24077-001	OU09 SD121 0012	004	11	2/3/2014 10:11:47	26.3	7.05	8.06	32295	20.12
24077-002	OU09 SD120 0012	005	11	2/3/2014 10:12:14	26.4	7.05	8.13	32176	20.03
24077-003	OU09 SD112 0012	006	11	2/3/2014 10:12:56	26.4	6.99	8.00	32013	19.92
24077-005	OU09 SD106 0012	007	11	2/3/2014 10:13:27	26.6	7.04	8.13	32010	19.92
24077-007	OU09 SD118 0012	008	11	2/3/2014 10:13:48	26.6	7.01	8.07	32096	19.97
24077-008	OU09 SD124 0012	009	11	2/3/2014 10:14:31	26.6	6.97	8.01	32312	20.12
24077-009	OU09 SD122 0012	010	11	2/3/2014 10:14:59	26.6	6.97	7.98	32016	19.92
24077-011	OU09 SD102 0012	011	11	2/3/2014 10:15:22	26.6	6.91	7.99	32412	20.19
24077-013	OU09 SD115 0012	012	11	2/3/2014 10:15:57	26.6	6.97	8.10	32452	20.22
24077-014	OU09 SD114 0012	013	11	2/3/2014 10:16:23	26.7	6.88	8.07	32193	20.04
24077-000	Laboratory Control	000	12	2/4/2014 08:40:14	25.7	6.99	7.61	32199	20.06
24077-006	BSB6 SD302 0012	001	12	2/4/2014 08:40:43	25.4	7.17	7.97	31951	19.90
24077-010	BSB6 SD304 0012	002	12	2/4/2014 08:41:11	25.3	6.26	7.74	31871	19.84
24077-012	BSB6 SD303 0012	003	12	2/4/2014 08:41:40	25.5	7.10	7.92	32470	20.25
24077-001	OU09 SD121 0012	004	12	2/4/2014 08:42:01	25.5	7.23	7.95	32557	20.31
24077-002	OU09 SD120 0012	005	12	2/4/2014 08:42:23	25.5	7.20	8.01	31418	19.53
24077-003	OU09 SD112 0012	006	12	2/4/2014 08:42:55	25.6	7.13	7.90	31274	19.43
24077-005	OU09 SD106 0012	007	12	2/4/2014 08:43:20	25.7	7.31	8.01	31231	19.40
24077-007	OU09 SD118 0012	008	12	2/4/2014 08:43:56	25.8	7.14	7.96	31277	19.43
24077-008	OU09 SD124 0012	009	12	2/4/2014 08:44:20	25.8	7.09	7.90	31443	19.54
24077-009	OU09 SD122 0012	010	12	2/4/2014 08:44:39	25.8	7.03	7.89	32223	20.08
24077-011	OU09 SD102 0012	011	12	2/4/2014 08:45:13	25.8	7.06	7.92	32693	20.40
24077-013	OU09 SD115 0012	012	12	2/4/2014 08:45:37	25.8	7.07	8.01	32750	20.44

LabID	Field ID	Sample Number	Day	DateTime M/D/Y	Temp C	DO mg/L	pH SU	SpCond uS/cm	Salinity ppt
24077-014	OU09 SD114 0012	013	12	2/4/2014 08:46:20	25.8	7.09	7.97	32618	20.35
24077-000	Laboratory Control	000	13	2/5/2014 08:28:46	26.2	6.58	7.59	32249	20.09
24077-006	BSB6 SD302 0012	001	13	2/5/2014 08:29:37	25.9	6.84	8.02	31891	19.85
24077-010	BSB6 SD304 0012	002	13	2/5/2014 08:30:11	25.8	6.92	7.92	32123	20.01
24077-012	BSB6 SD303 0012	003	13	2/5/2014 08:30:40	25.9	6.92	7.95	32473	20.25
24077-001	OU09 SD121 0012	004	13	2/5/2014 08:31:01	25.8	6.97	7.99	32577	20.32
24077-002	OU09 SD120 0012	005	13	2/5/2014 08:32:06	25.9	6.96	8.05	31797	19.78
24077-003	OU09 SD112 0012	006	13	2/5/2014 08:32:39	25.9	6.92	7.92	31729	19.73
24077-005	OU09 SD106 0012	007	13	2/5/2014 08:33:10	26.0	7.01	8.04	31637	19.67
24077-007	OU09 SD118 0012	008	13	2/5/2014 08:33:38	26.1	6.82	7.96	31664	19.69
24077-008	OU09 SD124 0012	009	13	2/5/2014 08:34:02	26.2	6.89	7.94	31869	19.83
24077-009	OU09 SD122 0012	010	13	2/5/2014 08:34:29	26.2	6.82	7.91	32201	20.05
24077-011	OU09 SD102 0012	011	13	2/5/2014 08:34:57	26.2	6.83	7.94	32635	20.35
24077-013	OU09 SD115 0012	012	13	2/5/2014 08:35:25	26.2	6.83	8.00	32817	20.48
24077-014	OU09 SD114 0012	013	13	2/5/2014 08:36:00	26.1	6.87	7.97	32657	20.37
24077-000	Laboratory Control	000	14	2/6/2014 08:46:22	25.2	7.06	7.62	31989	19.93
24077-006	BSB6 SD302 0012	001	14	2/6/2014 08:46:59	24.8	7.27	8.03	31672	19.72
24077-010	BSB6 SD304 0012	002	14	2/6/2014 08:47:25	24.7	7.31	7.93	31939	19.90
24077-012	BSB6 SD303 0012	003	14	2/6/2014 08:47:42	24.9	7.27	7.85	32175	20.06
24077-001	OU09 SD121 0012	004	14	2/6/2014 08:48:04	24.9	7.30	7.99	32275	20.13
24077-002	OU09 SD120 0012	005	14	2/6/2014 08:48:24	24.9	7.29	8.04	31557	19.64
24077-003	OU09 SD112 0012	006	14	2/6/2014 08:48:48	25.0	7.12	7.91	31391	19.52
24077-005	OU09 SD106 0012	007	14	2/6/2014 08:49:14	25.1	7.37	8.04	31337	19.48
24077-007	OU09 SD118 0012	008	14	2/6/2014 08:49:31	25.3	7.14	7.98	31312	19.46
24077-008	OU09 SD124 0012	009	14	2/6/2014 08:49:49	25.3	7.23	7.95	31483	19.58
24077-009	OU09 SD122 0012	010	14	2/6/2014 08:50:15	25.3	7.15	7.93	31650	19.69
24077-011	OU09 SD102 0012	011	14	2/6/2014 08:50:38	25.4	7.19	7.96	32021	19.95
24077-013	OU09 SD115 0012	012	14	2/6/2014 08:51:01	25.3	7.17	8.01	32160	20.04
24077-014	OU09 SD114 0012	013	14	2/6/2014 08:51:28	25.3	7.09	7.98	32085	19.99
24077-000	Laboratory Control	000	15	2/7/2014 08:53:07	25.1	6.99	7.65	31331	19.48
24077-006	BSB6 SD302 0012	001	15	2/7/2014 08:53:43	24.7	7.20	7.99	31226	19.41
24077-010	BSB6 SD304 0012	002	15	2/7/2014 08:54:06	24.7	7.28	7.94	31404	19.53
24077-012	BSB6 SD303 0012	003	15	2/7/2014 08:54:37	24.8	7.21	7.96	31602	19.67
24077-001	OU09 SD121 0012	004	15	2/7/2014 08:55:04	24.7	7.28	7.98	31493	19.59
24077-002	OU09 SD120 0012	005	15	2/7/2014 08:55:31	24.8	7.26	8.04	30956	19.23
24077-003	OU09 SD112 0012	006	15	2/7/2014 08:55:55	24.9	7.24	7.95	30946	19.22
24077-005	OU09 SD106 0012	007	15	2/7/2014 08:56:22	25.0	7.29	8.04	30808	19.12
24077-007	OU09 SD118 0012	008	15	2/7/2014 08:56:46	25.2	7.16	8.00	30887	19.17
24077-008	OU09 SD124 0012	009	15	2/7/2014 08:57:22	25.2	7.10	7.95	30997	19.25
24077-009	OU09 SD122 0012	010	15	2/7/2014 08:57:59	25.4	7.10	7.96	30942	19.21
24077-011	OU09 SD102 0012	011	15	2/7/2014 08:58:26	25.4	7.15	7.96	31043	19.27
24077-013	OU09 SD115 0012	012	15	2/7/2014 08:58:45	25.3	7.10	8.01	31457	19.56
24077-014	OU09 SD114 0012	013	15	2/7/2014 08:59:23	25.4	7.03	7.98	31534	19.61
24077-000	Laboratory Control	000	16	2/8/2014 09:00:01	25.9	6.73	7.81	32098	19.99
24077-006	BSB6 SD302 0012	001	16	2/8/2014 09:00:23	25.5	6.82	8.06	32008	19.93
24077-010	BSB6 SD304 0012	002	16	2/8/2014 09:00:38	25.3	6.91	8.00	32074	19.98
24077-012	BSB6 SD303 0012	003	16	2/8/2014 09:00:48	25.4	6.92	8.00	32235	20.09

LabID	Field ID	Sample Number	Day	DateTime M/D/Y	Temp C	DO mg/L	pH SU	SpCond uS/cm	Salinity ppt
24077-001	OU09 SD121 0012	004	16	2/8/2014 09:01:10	25.2	6.99	8.01	32113	20.01
24077-002	OU09 SD120 0012	005	16	2/8/2014 09:01:33	25.2	6.99	8.07	31694	19.72
24077-003	OU09 SD112 0012	006	16	2/8/2014 09:01:44	25.3	6.94	8.00	31729	19.75
24077-005	OU09 SD106 0012	007	16	2/8/2014 09:02:13	25.4	7.02	8.04	31632	19.68
24077-007	OU09 SD118 0012	008	16	2/8/2014 09:02:37	25.6	6.91	8.01	31658	19.69
24077-008	OU09 SD124 0012	009	16	2/8/2014 09:02:51	25.7	6.87	7.97	31732	19.74
24077-009	OU09 SD122 0012	010	16	2/8/2014 09:03:08	25.8	6.79	7.94	32051	19.96
24077-011	OU09 SD102 0012	011	16	2/8/2014 09:03:30	25.8	6.40	7.89	32254	20.10
24077-013	OU09 SD115 0012	012	16	2/8/2014 09:03:46	25.8	6.81	7.99	32481	20.25
24077-014	OU09 SD114 0012	013	16	2/8/2014 09:04:07	25.8	6.77	7.96	32403	20.20
24077-000	Laboratory Control	000	17	2/9/2014 08:18:48	26.3	6.47	7.67	31446	19.53
24077-006	BSB6 SD302 0012	001	17	2/9/2014 08:19:39	25.9	6.75	8.00	31271	19.42
24077-010	BSB6 SD304 0012	002	17	2/9/2014 08:20:33	25.7	6.78	7.92	31218	19.39
24077-012	BSB6 SD303 0012	003	17	2/9/2014 08:21:11	25.8	6.85	7.97	31439	19.54
24077-001	OU09 SD121 0012	004	17	2/9/2014 08:21:51	25.7	6.91	7.97	31340	19.47
24077-002	OU09 SD120 0012	005	17	2/9/2014 08:22:38	25.7	6.76	8.03	31689	19.71
24077-003	OU09 SD112 0012	006	17	2/9/2014 08:23:22	25.7	6.83	7.94	31595	19.65
24077-005	OU09 SD106 0012	007	17	2/9/2014 08:23:57	25.9	6.84	7.98	31492	19.57
24077-007	OU09 SD118 0012	008	17	2/9/2014 08:24:21	26.0	6.81	7.98	31553	19.61
24077-008	OU09 SD124 0012	009	17	2/9/2014 08:24:43	26.1	6.75	7.95	31683	19.70
24077-009	OU09 SD122 0012	010	17	2/9/2014 08:25:25	26.1	6.82	7.92	30995	19.23
24077-011	OU09 SD102 0012	011	17	2/9/2014 08:25:57	26.1	6.87	7.93	31183	19.36
24077-013	OU09 SD115 0012	012	17	2/9/2014 08:26:35	26.1	6.72	7.97	31301	19.44
24077-014	OU09 SD114 0012	013	17	2/9/2014 08:27:04	26.1	6.79	7.95	31336	19.46
24077-000	Laboratory Control	000	18	2/10/2014 09:09:15	26.0	6.27	7.31	32275	20.11
24077-006	BSB6 SD302 0012	001	18	2/10/2014 09:09:52	25.7	6.63	7.91	32206	20.07
24077-010	BSB6 SD304 0012	002	18	2/10/2014 09:10:22	25.5	6.73	7.87	32177	20.05
24077-012	BSB6 SD303 0012	003	18	2/10/2014 09:10:55	25.6	6.60	7.93	32479	20.25
24077-001	OU09 SD121 0012	004	18	2/10/2014 09:11:14	25.5	6.76	7.94	32439	20.23
24077-002	OU09 SD120 0012	005	18	2/10/2014 09:11:37	25.6	6.92	8.00	31806	19.79
24077-003	OU09 SD112 0012	006	18	2/10/2014 09:12:04	25.6	6.74	7.91	31637	19.68
24077-005	OU09 SD106 0012	007	18	2/10/2014 09:12:26	25.9	6.74	7.98	31527	19.60
24077-007	OU09 SD118 0012	008	18	2/10/2014 09:12:58	26.0	6.70	7.97	31643	19.67
24077-008	OU09 SD124 0012	009	18	2/10/2014 09:13:24	26.0	6.72	7.92	31802	19.78
24077-009	OU09 SD122 0012	010	18	2/10/2014 09:13:52	26.1	6.78	7.93	31495	19.57
24077-011	OU09 SD102 0012	011	18	2/10/2014 09:14:27	26.1	6.77	7.96	31843	19.81
24077-013	OU09 SD115 0012	012	18	2/10/2014 09:15:02	26.1	6.67	7.96	31890	19.84
24077-014	OU09 SD114 0012	013	18	2/10/2014 09:15:27	26.1	6.76	7.95	32077	19.97
24077-000	Laboratory Control	000	19	2/11/2014 09:50:45	24.4	7.06	7.71	32031	19.97
24077-006	BSB6 SD302 0012	001	19	2/11/2014 09:51:09	24.4	7.18	7.98	31928	19.90
24077-010	BSB6 SD304 0012	002	19	2/11/2014 09:51:35	24.4	7.21	7.91	31959	19.92
24077-012	BSB6 SD303 0012	003	19	2/11/2014 09:52:01	24.5	7.19	7.93	32169	20.06
24077-001	OU09 SD121 0012	004	19	2/11/2014 09:52:39	24.5	7.16	7.97	32144	20.04
24077-002	OU09 SD120 0012	005	19	2/11/2014 09:53:13	24.6	7.23	7.98	32020	19.96
24077-003	OU09 SD112 0012	006	19	2/11/2014 09:53:31	24.6	7.01	8.00	31671	19.72
24077-005	OU09 SD106 0012	007	19	2/11/2014 09:53:54	24.9	7.11	7.95	31735	19.76
24077-007	OU09 SD118 0012	008	19	2/11/2014 09:54:19	25.0	7.06	7.95	31731	19.75
24077-008	OU09 SD124 0012	009	19	2/11/2014 09:54:56	25.0	6.98	7.89	31861	19.84

LabID	Field ID	Sample Number	Day	DateTime M/D/Y	Temp C	DO mg/L	pH SU	SpCond uS/cm	Salinity ppt
24077-009	OU09 SD122 0012	010	19	2/11/2014 09:55:40	25.0	7.13	7.92	31632	19.68
24077-011	OU09 SD102 0012	011	19	2/11/2014 09:56:09	25.1	7.14	7.85	31942	19.90
24077-013	OU09 SD115 0012	012	19	2/11/2014 09:56:34	25.0	7.04	7.97	32074	19.99
24077-014	OU09 SD114 0012	013	19	2/11/2014 09:57:05	25.0	6.92	7.90	32157	20.04
24077-000	Laboratory Control	000	20	2/12/2014 12:21:36	25.8	6.77	7.42	32733	20.43
24077-006	BSB6 SD302 0012	001	20	2/12/2014 12:22:02	25.8	6.92	7.95	32738	20.43
24077-010	BSB6 SD304 0012	002	20	2/12/2014 12:22:15	25.8	6.83	7.91	32650	20.37
24077-012	BSB6 SD303 0012	003	20	2/12/2014 12:22:33	26.0	6.83	7.91	32931	20.56
24077-001	OU09 SD121 0012	004	20	2/12/2014 12:22:53	25.8	7.01	7.93	33172	20.73
24077-002	OU09 SD120 0012	005	20	2/12/2014 12:23:17	25.8	7.03	7.99	32997	20.61
24077-003	OU09 SD112 0012	006	20	2/12/2014 12:23:39	26.0	6.62	7.86	32457	20.23
24077-005	OU09 SD106 0012	007	20	2/12/2014 12:24:00	26.1	6.95	7.97	32550	20.30
24077-007	OU09 SD118 0012	008	20	2/12/2014 12:24:19	26.1	6.90	7.96	32597	20.33
24077-008	OU09 SD124 0012	009	20	2/12/2014 12:24:42	26.2	6.84	7.90	32570	20.31
24077-009	OU09 SD122 0012	010	20	2/12/2014 12:25:07	26.2	6.94	7.92	32338	20.15
24077-011	OU09 SD102 0012	011	20	2/12/2014 12:25:32	26.1	7.07	7.98	32644	20.36
24077-013	OU09 SD115 0012	012	20	2/12/2014 12:25:53	26.0	6.91	7.96	32834	20.49
24077-014	OU09 SD114 0012	013	20	2/12/2014 12:26:15	26.0	6.81	7.95	32650	20.37
24077-000	Laboratory Control	000	21	2/13/2014 08:59:48	25.7	6.71	7.59	31296	19.44
24077-006	BSB6 SD302 0012	001	21	2/13/2014 09:00:24	25.7	6.88	7.89	31171	19.36
24077-010	BSB6 SD304 0012	002	21	2/13/2014 09:00:54	25.4	6.89	7.80	31244	19.41
24077-012	BSB6 SD303 0012	003	21	2/13/2014 09:01:31	25.8	6.87	7.93	31306	19.45
24077-001	OU09 SD121 0012	004	21	2/13/2014 09:02:07	25.6	7.00	7.98	31681	19.71
24077-002	OU09 SD120 0012	005	21	2/13/2014 09:02:32	25.6	6.96	7.98	31046	19.27
24077-003	OU09 SD112 0012	006	21	2/13/2014 09:03:00	25.7	6.62	7.83	30595	18.96
24077-005	OU09 SD106 0012	007	21	2/13/2014 09:03:27	25.9	6.80	7.93	30715	19.04
24077-007	OU09 SD118 0012	008	21	2/13/2014 09:03:54	25.9	6.92	7.95	30741	19.06
24077-008	OU09 SD124 0012	009	21	2/13/2014 09:04:19	25.9	6.83	7.90	30778	19.08
24077-009	OU09 SD122 0012	010	21	2/13/2014 09:04:55	26.0	6.92	7.92	30696	19.03
24077-011	OU09 SD102 0012	011	21	2/13/2014 09:05:20	26.0	7.00	7.96	30858	19.14
24077-013	OU09 SD115 0012	012	21	2/13/2014 09:05:40	25.8	6.86	7.95	30953	19.21
24077-014	OU09 SD114 0012	013	21	2/13/2014 09:06:04	25.9	6.70	7.89	30917	19.18
24077-000	Laboratory Control	000	22	2/14/2014 08:42:20	24.9	6.66	7.58	31000	19.25
24077-006	BSB6 SD302 0012	001	22	2/14/2014 08:42:52	25.0	6.75	7.90	30543	18.94
24077-010	BSB6 SD304 0012	002	22	2/14/2014 08:43:17	24.9	6.75	7.90	30644	19.01
24077-012	BSB6 SD303 0012	003	22	2/14/2014 08:43:59	25.1	6.84	8.01	31045	19.28
24077-001	OU09 SD121 0012	004	22	2/14/2014 08:44:29	25.2	6.71	7.95	30842	19.14
24077-002	OU09 SD120 0012	005	22	2/14/2014 08:44:59	25.2	6.74	7.98	31146	19.35
24077-003	OU09 SD112 0012	006	22	2/14/2014 08:45:30	25.2	6.55	7.90	30816	19.12
24077-005	OU09 SD106 0012	007	22	2/14/2014 08:46:05	25.2	6.61	7.93	30802	19.11
24077-007	OU09 SD118 0012	008	22	2/14/2014 08:46:32	25.3	6.73	7.97	30917	19.19
24077-008	OU09 SD124 0012	009	22	2/14/2014 08:46:51	25.2	6.64	7.94	30894	19.18
24077-009	OU09 SD122 0012	010	22	2/14/2014 08:47:16	25.3	6.74	7.98	30942	19.21
24077-011	OU09 SD102 0012	011	22	2/14/2014 08:47:48	25.3	6.83	7.98	31006	19.25
24077-013	OU09 SD115 0012	012	22	2/14/2014 08:48:50	25.2	6.63	8.00	30888	19.17
24077-014	OU09 SD114 0012	013	22	2/14/2014 08:49:21	25.1	6.52	7.94	31215	19.40
24077-000	Laboratory Control	000	23	2/15/2014 08:59:25	24.9	6.78	7.40	31098	19.32

LabID	Field ID	Sample Number	Day	DateTime M/D/Y	Temp C	DO mg/L	pH SU	SpCond uS/cm	Salinity ppt
24077-006	BSB6 SD302 0012	001	23	2/15/2014 08:59:49	25.0	6.86	7.84	30688	19.04
24077-010	BSB6 SD304 0012	002	23	2/15/2014 09:00:10	24.8	6.90	7.87	30755	19.09
24077-012	BSB6 SD303 0012	003	23	2/15/2014 09:00:40	25.0	6.92	7.99	31216	19.40
24077-001	OU09 SD121 0012	004	23	2/15/2014 09:00:56	25.1	6.85	7.95	30865	19.16
24077-002	OU09 SD120 0012	005	23	2/15/2014 09:01:27	25.1	6.86	7.99	31577	19.65
24077-003	OU09 SD112 0012	006	23	2/15/2014 09:01:48	25.2	6.63	7.91	31199	19.39
24077-005	OU09 SD106 0012	007	23	2/15/2014 09:02:10	25.1	6.74	7.95	31260	19.43
24077-007	OU09 SD118 0012	008	23	2/15/2014 09:02:30	25.2	6.86	7.97	31403	19.52
24077-008	OU09 SD124 0012	009	23	2/15/2014 09:02:42	25.2	6.76	7.96	31320	19.47
24077-009	OU09 SD122 0012	010	23	2/15/2014 09:03:01	25.3	6.86	7.98	31307	19.46
24077-011	OU09 SD102 0012	011	23	2/15/2014 09:03:17	25.2	6.96	8.00	31388	19.51
24077-013	OU09 SD115 0012	012	23	2/15/2014 09:03:34	25.2	6.81	8.01	31531	19.61
24077-014	OU09 SD114 0012	013	23	2/15/2014 09:03:48	25.0	6.84	7.98	31486	19.58
24077-000	Laboratory Control	000	24	2/16/2014 08:54:39	23.3	6.61	7.53	31655	19.73
24077-006	BSB6 SD302 0012	001	24	2/16/2014 08:55:57	23.3	7.07	7.93	31168	19.39
24077-010	BSB6 SD304 0012	002	24	2/16/2014 08:57:12	23.2	7.11	7.88	31344	19.52
24077-012	BSB6 SD303 0012	003	24	2/16/2014 08:57:48	23.4	7.10	7.95	31746	19.79
24077-001	OU09 SD121 0012	004	24	2/16/2014 08:58:28	23.5	7.03	7.89	31379	19.54
24077-002	OU09 SD120 0012	005	24	2/16/2014 08:59:01	23.6	6.94	7.92	31899	19.89
24077-003	OU09 SD112 0012	006	24	2/16/2014 08:59:37	23.6	6.86	7.83	31556	19.66
24077-005	OU09 SD106 0012	007	24	2/16/2014 09:00:06	23.5	6.95	7.89	31617	19.70
24077-007	OU09 SD118 0012	008	24	2/16/2014 09:00:49	23.6	7.01	7.91	31726	19.77
24077-008	OU09 SD124 0012	009	24	2/16/2014 09:01:38	23.5	6.95	7.87	31714	19.76
24077-009	OU09 SD122 0012	010	24	2/16/2014 09:02:27	23.6	7.03	7.90	31770	19.80
24077-011	OU09 SD102 0012	011	24	2/16/2014 09:03:17	23.5	7.12	7.93	31920	19.91
24077-013	OU09 SD115 0012	012	24	2/16/2014 09:03:54	23.4	6.98	7.91	32090	20.02
24077-014	OU09 SD114 0012	013	24	2/16/2014 09:04:30	23.4	6.93	7.89	31838	19.85
24077-000	Laboratory Control	000	25	2/17/2014 10:21:55	22.6	7.28	7.73	31539	19.66
24077-006	BSB6 SD302 0012	001	25	2/17/2014 10:22:15	22.6	7.55	7.96	31028	19.31
24077-010	BSB6 SD304 0012	002	25	2/17/2014 10:22:44	22.5	7.46	7.93	31310	19.50
24077-012	BSB6 SD303 0012	003	25	2/17/2014 10:23:12	22.7	7.53	8.00	31731	19.79
24077-001	OU09 SD121 0012	004	25	2/17/2014 10:23:40	22.8	7.42	7.95	31295	19.49
24077-002	OU09 SD120 0012	005	25	2/17/2014 10:24:51	22.8	7.38	7.97	31765	19.81
24077-003	OU09 SD112 0012	006	25	2/17/2014 10:25:24	22.9	7.26	7.87	31441	19.59
24077-005	OU09 SD106 0012	007	25	2/17/2014 10:25:56	22.9	7.42	7.96	31528	19.65
24077-007	OU09 SD118 0012	008	25	2/17/2014 10:26:22	22.9	7.48	7.96	31673	19.74
24077-008	OU09 SD124 0012	009	25	2/17/2014 10:26:50	22.9	7.41	7.92	31633	19.72
24077-009	OU09 SD122 0012	010	25	2/17/2014 10:27:13	23.0	7.46	7.94	31419	19.57
24077-011	OU09 SD102 0012	011	25	2/17/2014 10:27:37	22.9	7.54	7.97	31613	19.70
24077-013	OU09 SD115 0012	012	25	2/17/2014 10:28:02	22.8	7.37	7.94	31805	19.84
24077-014	OU09 SD114 0012	013	25	2/17/2014 10:28:27	22.8	7.38	7.94	31490	19.62
24077-000	Laboratory Control	000	26	2/18/2014 11:55:35	24.7	6.88	7.53	31479	19.58
24077-006	BSB6 SD302 0012	001	26	2/18/2014 11:56:15	24.7	7.08	7.93	30828	19.14
24077-010	BSB6 SD304 0012	002	26	2/18/2014 11:56:42	24.7	7.03	7.86	31121	19.34
24077-012	BSB6 SD303 0012	003	26	2/18/2014 11:57:09	24.8	7.16	7.95	31388	19.52
24077-001	OU09 SD121 0012	004	26	2/18/2014 11:57:33	24.9	7.11	7.90	31066	19.30
24077-002	OU09 SD120 0012	005	26	2/18/2014 11:57:53	24.9	7.00	7.91	31684	19.72
24077-003	OU09 SD112 0012	006	26	2/18/2014 11:58:11	25.0	6.80	7.82	31146	19.35

LabID	Field ID	Sample Number	Day	DateTime M/D/Y	Temp C	DO mg/L	pH SU	SpCond uS/cm	Salinity ppt
24077-005	OU09 SD106 0012	007	26	2/18/2014 11:58:37	25.0	7.01	7.89	31292	19.45
24077-007	OU09 SD118 0012	008	26	2/18/2014 11:58:59	25.0	7.08	7.91	31440	19.55
24077-008	OU09 SD124 0012	009	26	2/18/2014 11:59:28	25.0	7.01	7.88	31436	19.55
24077-009	OU09 SD122 0012	010	26	2/18/2014 12:00:05	25.1	7.01	7.87	31183	19.38
24077-011	OU09 SD102 0012	011	26	2/18/2014 12:00:21	25.2	7.06	7.89	31214	19.40
24077-013	OU09 SD115 0012	012	26	2/18/2014 12:00:42	25.1	6.97	7.88	31205	19.39
24077-014	OU09 SD114 0012	013	26	2/18/2014 12:01:18	25.0	6.94	7.86	31145	19.35
24077-000	Laboratory Control	000	27	2/19/2014 09:34:47	23.0	7.06	7.45	32364	20.22
24077-006	BSB6 SD302 0012	001	27	2/19/2014 09:35:21	23.0	7.33	7.85	31677	19.75
24077-010	BSB6 SD304 0012	002	27	2/19/2014 09:35:41	22.9	7.21	7.80	32100	20.04
24077-012	BSB6 SD303 0012	003	27	2/19/2014 09:36:08	23.1	7.31	7.90	32208	20.11
24077-001	OU09 SD121 0012	004	27	2/19/2014 09:36:35	23.2	7.26	7.85	31923	19.91
24077-002	OU09 SD120 0012	005	27	2/19/2014 09:37:04	23.2	7.14	7.91	32417	20.25
24077-003	OU09 SD112 0012	006	27	2/19/2014 09:37:27	23.3	7.08	7.82	31986	19.95
24077-005	OU09 SD106 0012	007	27	2/19/2014 09:37:52	23.3	7.19	7.89	32149	20.07
24077-007	OU09 SD118 0012	008	27	2/19/2014 09:38:18	23.4	7.19	7.91	32292	20.16
24077-008	OU09 SD124 0012	009	27	2/19/2014 09:38:34	23.3	7.13	7.88	32319	20.18
24077-009	OU09 SD122 0012	010	27	2/19/2014 09:38:57	23.5	7.15	7.89	31990	19.95
24077-011	OU09 SD102 0012	011	27	2/19/2014 09:39:21	23.3	7.28	7.92	32037	19.99
24077-013	OU09 SD115 0012	012	27	2/19/2014 09:39:38	23.2	7.09	7.90	32172	20.08
24077-014	OU09 SD114 0012	013	27	2/19/2014 09:40:06	23.1	7.17	7.89	31985	19.96
24077-000	Laboratory Control	000	28	2/20/2014 12:21:27	25.5	6.63	7.43	31641	19.68
24077-006	BSB6 SD302 0012	001	28	2/20/2014 12:21:46	25.4	7.01	7.83	31095	19.31
24077-010	BSB6 SD304 0012	002	28	2/20/2014 12:22:04	25.3	6.93	7.82	31320	19.47
24077-012	BSB6 SD303 0012	003	28	2/20/2014 12:22:25	25.3	7.07	7.94	31468	19.57
24077-001	OU09 SD121 0012	004	28	2/20/2014 12:23:52	25.2	6.96	7.92	31196	19.38
24077-002	OU09 SD120 0012	005	28	2/20/2014 12:24:16	25.2	6.91	7.97	32396	20.21
24077-003	OU09 SD112 0012	006	28	2/20/2014 12:24:41	25.2	6.71	7.84	31859	19.84
24077-005	OU09 SD106 0012	007	28	2/20/2014 12:25:06	25.2	7.00	8.00	32000	19.93
24077-007	OU09 SD118 0012	008	28	2/20/2014 12:25:40	25.3	7.00	7.99	32087	19.99
24077-008	OU09 SD124 0012	009	28	2/20/2014 12:26:13	25.2	6.94	7.96	32096	20.00
24077-009	OU09 SD122 0012	010	28	2/20/2014 12:26:28	25.2	6.97	7.95	31419	19.53
24077-011	OU09 SD102 0012	011	28	2/20/2014 12:26:40	25.2	7.10	7.98	31518	19.60
24077-013	OU09 SD115 0012	012	28	2/20/2014 12:26:51	25.2	6.91	7.96	31699	19.73
24077-014	OU09 SD114 0012	013	28	2/20/2014 12:27:23	25.1	7.04	8.00	31608	19.67

STUDY: 24077
CLIENT: AECOM
PROJECT: Carr Point MRP Site 1, Naval Station, Newport, Rhode Island
ASSAY: Leptocheirus plumulosus 28 Day Sediment Assay
TASK: Overlying Water Ammonia Summary
METHOD: SM 4500-NH3 G

Sample LAB ID	Field ID	Sample Number	Day	LAB ID	Ammonia Total	Ammonia Unionized	QLIMIT	UNITS	SAMPLED	ANALYZED
24077-000	Laboratory Control	000	00	24077-114	ND	0.0027	0.1	mg/L as N	01/23/14 1200	01/30/14
24077-006	BSB6 SD302 0012	001	00	24077-115	ND	0.0041	0.1	mg/L as N	01/23/14 1200	01/30/14
24077-010	BSB6 SD304 0012	002	00	24077-116	ND	0.0027	0.1	mg/L as N	01/23/14 1200	01/30/14
24077-012	BSB6 SD303 0012	003	00	24077-117	ND	0.0030	0.1	mg/L as N	01/23/14 1200	01/30/14
24077-001	OU09 SD121 0012	004	00	24077-118	ND	0.0036	0.1	mg/L as N	01/23/14 1200	01/30/14
24077-002	OU09 SD120 0012	005	00	24077-119	ND	0.0037	0.1	mg/L as N	01/23/14 1200	01/30/14
24077-003	OU09 SD112 0012	006	00	24077-120	ND	0.0029	0.1	mg/L as N	01/23/14 1200	01/30/14
24077-005	OU09 SD106 0012	007	00	24077-121	ND	0.0037	0.1	mg/L as N	01/23/14 1200	01/30/14
24077-007	OU09 SD118 0012	008	00	24077-122	ND	0.0033	0.1	mg/L as N	01/23/14 1200	01/30/14
24077-008	OU09 SD124 0012	009	00	24077-123	ND	0.0028	0.1	mg/L as N	01/23/14 1200	01/30/14
24077-009	OU09 SD122 0012	010	00	24077-124	ND	0.0023	0.1	mg/L as N	01/23/14 1200	01/30/14
24077-011	OU09 SD102 0012	011	00	24077-125	ND	0.0025	0.1	mg/L as N	01/23/14 1200	01/30/14
24077-013	OU09 SD115 0012	012	00	24077-126	ND	0.0036	0.1	mg/L as N	01/23/14 1200	01/30/14
24077-014	OU09 SD114 0012	013	00	24077-127	ND	0.0049	0.1	mg/L as N	01/23/14 1200	01/30/14
24077-000	Laboratory Control	000	07	24077-214	ND	0.0021	0.1	mg/L as N	01/28/14 1000	02/04/14
24077-006	BSB6 SD302 0012	001	07	24077-215	ND	0.0042	0.1	mg/L as N	01/28/14 1000	02/04/14
24077-010	BSB6 SD304 0012	002	07	24077-216	ND	0.0027	0.1	mg/L as N	01/28/14 1000	02/04/14
24077-012	BSB6 SD303 0012	003	07	24077-217	ND	0.0028	0.1	mg/L as N	01/28/14 1000	02/04/14
24077-001	OU09 SD121 0012	004	07	24077-218	ND	0.0030	0.1	mg/L as N	01/28/14 1000	02/04/14
24077-002	OU09 SD120 0012	005	07	24077-219	ND	0.0035	0.1	mg/L as N	01/28/14 1000	02/04/14
24077-003	OU09 SD112 0012	006	07	24077-220	ND	0.0026	0.1	mg/L as N	01/28/14 1000	02/04/14
24077-005	OU09 SD106 0012	007	07	24077-221	ND	0.0032	0.1	mg/L as N	01/28/14 1000	02/04/14
24077-007	OU09 SD118 0012	008	07	24077-222	ND	0.0033	0.1	mg/L as N	01/28/14 1000	02/04/14
24077-008	OU09 SD124 0012	009	07	24077-223	ND	0.0027	0.1	mg/L as N	01/28/14 1000	02/04/14
24077-009	OU09 SD122 0012	010	07	24077-224	ND	0.0024	0.1	mg/L as N	01/28/14 1000	02/04/14
24077-011	OU09 SD102 0012	011	07	24077-225	ND	0.0024	0.1	mg/L as N	01/28/14 1000	02/04/14
24077-013	OU09 SD115 0012	012	07	24077-226	ND	0.0032	0.1	mg/L as N	01/28/14 1000	02/04/14
24077-014	OU09 SD114 0012	013	07	24077-227	ND	0.0033	0.1	mg/L as N	01/28/14 1000	02/04/14

TASK: Overlying Water Ammonia Summary
METHOD: SM 4500-NH3 G

Sample LAB ID	Field ID	Sample Number	Day	LAB ID	Ammonia Total	Ammonia Unionized	QLIMIT	UNITS	SAMPLED	ANALYZED
24077-000	Laboratory Control	000	14	24077-314	ND	0.0012	0.1	mg/L as N	02/06/14 1000	02/14/14 1023
24077-006	BSB6 SD302 0012	001	14	24077-315	ND	0.0028	0.1	mg/L as N	02/06/14 1000	02/14/14 1023
24077-010	BSB6 SD304 0012	002	14	24077-316	ND	0.0023	0.1	mg/L as N	02/06/14 1000	02/14/14 1024
24077-012	BSB6 SD303 0012	003	14	24077-317	ND	0.0019	0.1	mg/L as N	02/06/14 1000	02/14/14 1025
24077-001	OU09 SD121 0012	004	14	24077-318	ND	0.0026	0.1	mg/L as N	02/06/14 1000	02/14/14 1026
24077-002	OU09 SD120 0012	005	14	24077-319	ND	0.0029	0.1	mg/L as N	02/06/14 1000	02/14/14 1027
24077-003	OU09 SD112 0012	006	14	24077-320	ND	0.0022	0.1	mg/L as N	02/06/14 1000	02/14/14 1028
24077-005	OU09 SD106 0012	007	14	24077-321	ND	0.0029	0.1	mg/L as N	02/06/14 1000	02/14/14 1034
24077-007	OU09 SD118 0012	008	14	24077-322	ND	0.0026	0.1	mg/L as N	02/06/14 1000	02/14/14 1036
24077-008	OU09 SD124 0012	009	14	24077-323	ND	0.0025	0.1	mg/L as N	02/06/14 1000	02/14/14 1037
24077-009	OU09 SD122 0012	010	14	24077-324	ND	0.0023	0.1	mg/L as N	02/06/14 1000	02/14/14 1038
24077-011	OU09 SD102 0012	011	14	24077-325	ND	0.0025	0.1	mg/L as N	02/06/14 1000	02/14/14 1039
24077-013	OU09 SD115 0012	012	14	24077-326	ND	0.0028	0.1	mg/L as N	02/06/14 1000	02/14/14 1039
24077-014	OU09 SD114 0012	013	14	24077-327	ND	0.0026	0.1	mg/L as N	02/06/14 1000	02/14/14 1040
24077-000	Laboratory Control	000	21	24077-414	ND	0.0011	0.1	mg/L as N	02/13/14 1000	02/14/14 1111
24077-006	BSB6 SD302 0012	001	21	24077-415	ND	0.0022	0.1	mg/L as N	02/13/14 1000	02/14/14 1112
24077-010	BSB6 SD304 0012	002	21	24077-416	ND	0.0018	0.1	mg/L as N	02/13/14 1000	02/14/14 1113
24077-012	BSB6 SD303 0012	003	21	24077-417	ND	0.0024	0.1	mg/L as N	02/13/14 1000	02/14/14 1114
24077-001	OU09 SD121 0012	004	21	24077-418	ND	0.0027	0.1	mg/L as N	02/13/14 1000	02/14/14 1117
24077-002	OU09 SD120 0012	005	21	24077-419	ND	0.0027	0.1	mg/L as N	02/13/14 1000	02/14/14 1118
24077-003	OU09 SD112 0012	006	21	24077-420	ND	0.0019	0.1	mg/L as N	02/13/14 1000	02/14/14 1119
24077-005	OU09 SD106 0012	007	21	24077-421	ND	0.0024	0.1	mg/L as N	02/13/14 1000	02/14/14 1120
24077-007	OU09 SD118 0012	008	21	24077-422	ND	0.0026	0.1	mg/L as N	02/13/14 1000	02/14/14 1121
24077-008	OU09 SD124 0012	009	21	24077-423	ND	0.0023	0.1	mg/L as N	02/13/14 1000	02/14/14 1122
24077-009	OU09 SD122 0012	010	21	24077-424	ND	0.0024	0.1	mg/L as N	02/13/14 1000	02/14/14 1122
24077-011	OU09 SD102 0012	011	21	24077-425	ND	0.0026	0.1	mg/L as N	02/13/14 1000	02/14/14 1150
24077-013	OU09 SD115 0012	012	21	24077-426	ND	0.0025	0.1	mg/L as N	02/13/14 1000	02/14/14 1151
24077-014	OU09 SD114 0012	013	21	24077-427	ND	0.0022	0.1	mg/L as N	02/13/14 1000	02/14/14 1202
24077-000	Laboratory Control	000	28	24077-514	ND	0.0008	0.1	mg/L as N	02/20/14 1200	02/26/14 1120
24077-006	BSB6 SD302 0012	001	28	24077-515	ND	0.0019	0.1	mg/L as N	02/20/14 1200	02/26/14 1121
24077-010	BSB6 SD304 0012	002	28	24077-516	ND	0.0018	0.1	mg/L as N	02/20/14 1200	02/26/14 1122
24077-012	BSB6 SD303 0012	003	28	24077-517	ND	0.0024	0.1	mg/L as N	02/20/14 1200	02/26/14 1123

TASK: Overlying Water Ammonia Summary
METHOD: SM 4500-NH3 G

Sample LAB ID	Field ID	Sample Number	Day	LAB ID	Ammonia Total	Ammonia Unionized	QLIMIT	UNITS	SAMPLED	ANALYZED
24077-001	OU09 SD121 0012	004	28	24077-518	ND	0.0023	0.1	mg/L as N	02/20/14 1200	02/26/14 1124
24077-002	OU09 SD120 0012	005	28	24077-519	ND	0.0025	0.1	mg/L as N	02/20/14 1200	02/26/14 1125
24077-003	OU09 SD112 0012	006	28	24077-520	ND	0.0019	0.1	mg/L as N	02/20/14 1200	02/26/14 1125
24077-005	OU09 SD106 0012	007	28	24077-521	ND	0.0027	0.1	mg/L as N	02/20/14 1200	02/26/14 1129
24077-007	OU09 SD118 0012	008	28	24077-522	ND	0.0027	0.1	mg/L as N	02/20/14 1200	02/26/14 1130
24077-008	OU09 SD124 0012	009	28	24077-523	ND	0.0025	0.1	mg/L as N	02/20/14 1200	02/26/14 1131
24077-009	OU09 SD122 0012	010	28	24077-524	ND	0.0024	0.1	mg/L as N	02/20/14 1200	02/26/14 1131
24077-011	OU09 SD102 0012	011	28	24077-525	ND	0.0026	0.1	mg/L as N	02/20/14 1200	02/26/14 1132
24077-013	OU09 SD115 0012	012	28	24077-526	ND	0.0025	0.1	mg/L as N	02/20/14 1200	02/26/14 1133
24077-014	OU09 SD114 0012	013	28	24077-527	ND	0.0027	0.1	mg/L as N	02/20/14 1200	02/26/14 1134

STUDY: 24077
CLIENT: AECOM
PROJECT: Carr Point MRP Site 1, Naval Station, Newport, Rhode Island
ASSAY: Leptocheirus plumulosus 28 Day Sediment Assay
TASK: Pore Water Ammonia Summary
METHOD: SM 4500-NH3 G

Sample LAB ID	Field ID	Sample Number	Day	LAB ID	Ammonia Total	Ammonia Unionized	QLIMIT	UNITS	SAMPLED	ANALYZED
24077-000	Laboratory Control	000	00	24077-100	0.4	0.0020	0.1	mg/L as N	01/23/14 1200	01/30/14
24077-006	BSB6 SD302 0012	001	00	24077-101	0.44	0.0177	0.1	mg/L as N	01/23/14 1200	01/30/14
24077-010	BSB6 SD304 0012	002	00	24077-102	ND	0.0019	0.1	mg/L as N	01/23/14 1200	01/30/14
24077-012	BSB6 SD303 0012	003	00	24077-103	1.1	0.0184	0.1	mg/L as N	01/23/14 1200	01/30/14
24077-001	OU09 SD121 0012	004	00	24077-104	0.2	0.0064	0.1	mg/L as N	01/23/14 1200	01/30/14
24077-002	OU09 SD120 0012	005	00	24077-105	1.9	0.0202	0.1	mg/L as N	01/23/14 1200	01/30/14
24077-003	OU09 SD112 0012	006	00	24077-106	0.27	0.0045	0.1	mg/L as N	01/23/14 1200	01/30/14
24077-005	OU09 SD106 0012	007	00	24077-107	0.19	0.0058	0.1	mg/L as N	01/23/14 1200	01/30/14
24077-007	OU09 SD118 0012	008	00	24077-108	0.7	0.0047	0.1	mg/L as N	01/23/14 1200	01/30/14
24077-008	OU09 SD124 0012	009	00	24077-109	ND	0.0018	0.1	mg/L as N	01/23/14 1200	01/30/14
24077-009	OU09 SD122 0012	010	00	24077-110	ND	0.0014	0.1	mg/L as N	01/23/14 1200	01/30/14
24077-011	OU09 SD102 0012	011	00	24077-111	0.42	0.0057	0.1	mg/L as N	01/23/14 1200	01/30/14
24077-013	OU09 SD115 0012	012	00	24077-112	0.61	0.0137	0.1	mg/L as N	01/23/14 1200	01/30/14
24077-014	OU09 SD114 0012	013	00	24077-113	0.46	0.0088	0.1	mg/L as N	01/23/14 1200	01/30/14
24077-000	Laboratory Control	000	07	24077-200	ND	0.0004	0.1	mg/L as N	01/28/14 1000	02/04/14
24077-006	BSB6 SD302 0012	001	07	24077-201	ND	0.0019	0.1	mg/L as N	01/28/14 1000	02/04/14
24077-010	BSB6 SD304 0012	002	07	24077-202	ND	0.0014	0.1	mg/L as N	01/28/14 1000	02/04/14
24077-012	BSB6 SD303 0012	003	07	24077-203	0.15	0.0032	0.1	mg/L as N	01/28/14 1000	02/04/14
24077-001	OU09 SD121 0012	004	07	24077-204	ND	0.0015	0.1	mg/L as N	01/28/14 1000	02/04/14
24077-002	OU09 SD120 0012	005	07	24077-205	0.33	0.0035	0.1	mg/L as N	01/28/14 1000	02/04/14
24077-003	OU09 SD112 0012	006	07	24077-206	ND	0.0014	0.1	mg/L as N	01/28/14 1000	02/04/14
24077-005	OU09 SD106 0012	007	07	24077-207	ND	0.0018	0.1	mg/L as N	01/28/14 1000	02/04/14
24077-007	OU09 SD118 0012	008	07	24077-208	0.13	0.0010	0.1	mg/L as N	01/28/14 1000	02/04/14
24077-008	OU09 SD124 0012	009	07	24077-209	ND	0.0018	0.1	mg/L as N	01/28/14 1000	02/04/14
24077-009	OU09 SD122 0012	010	07	24077-210	ND	0.0015	0.1	mg/L as N	01/28/14 1000	02/04/14
24077-011	OU09 SD102 0012	011	07	24077-211	0.12	0.0033	0.1	mg/L as N	01/28/14 1000	02/04/14
24077-013	OU09 SD115 0012	012	07	24077-212	ND	0.0008	0.1	mg/L as N	01/28/14 1000	02/04/14
24077-014	OU09 SD114 0012	013	07	24077-213	ND	0.0007	0.1	mg/L as N	01/28/14 1000	02/04/14

TASK: Pore Water Ammonia Summary
METHOD: SM 4500-NH3 G

Sample LAB ID	Field ID	Sample Number	Day	LAB ID	Ammonia Total	Ammonia Unionized	QLIMIT	UNITS	SAMPLED	ANALYZED
24077-000	Laboratory Control	000	14	24077-300	ND	0.0004	0.1	mg/L as N	02/06/14 1000	02/13/14 1034
24077-006	BSB6 SD302 0012	001	14	24077-301	ND	0.0020	0.1	mg/L as N	02/06/14 1000	02/14/14 1005
24077-010	BSB6 SD304 0012	002	14	24077-302	ND	0.0018	0.1	mg/L as N	02/06/14 1000	02/14/14 1007
24077-012	BSB6 SD303 0012	003	14	24077-303	ND	0.0017	0.1	mg/L as N	02/06/14 1000	02/14/14 1008
24077-001	OU09 SD121 0012	004	14	24077-304	ND	0.0019	0.1	mg/L as N	02/06/14 1000	02/14/14 1012
24077-002	OU09 SD120 0012	005	14	24077-305	ND	0.0004	0.1	mg/L as N	02/06/14 1000	02/14/14 1013
24077-003	OU09 SD112 0012	006	14	24077-306	ND	0.0012	0.1	mg/L as N	02/06/14 1000	02/14/14 1013
24077-005	OU09 SD106 0012	007	14	24077-307	ND	0.0014	0.1	mg/L as N	02/06/14 1000	02/14/14 1014
24077-007	OU09 SD118 0012	008	14	24077-308	ND	0.0005	0.1	mg/L as N	02/06/14 1000	02/14/14 1015
24077-008	OU09 SD124 0012	009	14	24077-309	ND	0.0018	0.1	mg/L as N	02/06/14 1000	02/14/14 1016
24077-009	OU09 SD122 0012	010	14	24077-310	ND	0.0018	0.1	mg/L as N	02/06/14 1000	02/14/14 1017
24077-011	OU09 SD102 0012	011	14	24077-311	ND	0.0018	0.1	mg/L as N	02/06/14 1000	02/14/14 1017
24077-013	OU09 SD115 0012	012	14	24077-312	ND	0.0018	0.1	mg/L as N	02/06/14 1000	02/14/14 1018
24077-014	OU09 SD114 0012	013	14	24077-313	ND	0.0009	0.1	mg/L as N	02/06/14 1000	02/14/14 1019
24077-000	Laboratory Control	000	21	24077-400	0.36	0.0007	0.1	mg/L as N	02/13/14 1000	02/14/14 1050
24077-006	BSB6 SD302 0012	001	21	24077-401	ND	0.0006	0.1	mg/L as N	02/13/14 1000	02/14/14 1051
24077-010	BSB6 SD304 0012	002	21	24077-402	ND	0.0012	0.1	mg/L as N	02/13/14 1000	02/14/14 1052
24077-012	BSB6 SD303 0012	003	21	24077-403	ND	0.0011	0.1	mg/L as N	02/13/14 1000	02/14/14 1055
24077-001	OU09 SD121 0012	004	21	24077-404	ND	0.0010	0.1	mg/L as N	02/13/14 1000	02/14/14 1056
24077-002	OU09 SD120 0012	005	21	24077-405	0.32	0.0037	0.1	mg/L as N	02/13/14 1000	02/14/14 1100
24077-003	OU09 SD112 0012	006	21	24077-406	ND	0.0007	0.1	mg/L as N	02/13/14 1000	02/14/14 1102
24077-005	OU09 SD106 0012	007	21	24077-407	ND	0.0005	0.1	mg/L as N	02/13/14 1000	02/14/14 1103
24077-007	OU09 SD118 0012	008	21	24077-408	ND	0.0003	0.1	mg/L as N	02/13/14 1000	02/14/14 1106
24077-008	OU09 SD124 0012	009	21	24077-409	ND	0.0011	0.1	mg/L as N	02/13/14 1000	02/14/14 1107
24077-009	OU09 SD122 0012	010	21	24077-410	ND	0.0012	0.1	mg/L as N	02/13/14 1000	02/14/14 1108
24077-011	OU09 SD102 0012	011	21	24077-411	ND	0.0010	0.1	mg/L as N	02/13/14 1000	02/14/14 1109
24077-013	OU09 SD115 0012	012	21	24077-412	0.22	0.0020	0.1	mg/L as N	02/13/14 1000	02/14/14 1110
24077-014	OU09 SD114 0012	013	21	24077-413	0.26	0.0026	0.1	mg/L as N	02/13/14 1000	02/14/14 1111
24077-000	Laboratory Control	000	28	24077-500	ND	0.0003	0.1	mg/L as N	02/20/14 1200	02/26/14 1059
24077-006	BSB6 SD302 0012	001	28	24077-501	ND	0.0011	0.1	mg/L as N	02/20/14 1200	02/26/14 1100
24077-010	BSB6 SD304 0012	002	28	24077-502	ND	0.0012	0.1	mg/L as N	02/20/14 1200	02/26/14 1101
24077-012	BSB6 SD303 0012	003	28	24077-503	ND	0.0015	0.1	mg/L as N	02/20/14 1200	02/26/14 1102

TASK: Pore Water Ammonia Summary
METHOD: SM 4500-NH3 G

Sample LAB ID	Field ID	Sample Number	Day	LAB ID	Ammonia Total	Ammonia Unionized	QLIMIT	UNITS	SAMPLED	ANALYZED
24077-001	OU09 SD121 0012	004	28	24077-504	ND	0.0013	0.1	mg/L as N	02/20/14 1200	02/26/14 1103
24077-002	OU09 SD120 0012	005	28	24077-505	ND	0.0009	0.1	mg/L as N	02/20/14 1200	02/26/14 1103
24077-003	OU09 SD112 0012	006	28	24077-506	ND	0.0009	0.1	mg/L as N	02/20/14 1200	02/26/14 1107
24077-005	OU09 SD106 0012	007	28	24077-507	ND	0.0008	0.1	mg/L as N	02/20/14 1200	02/26/14 1108
24077-007	OU09 SD118 0012	008	28	24077-508	ND	0.0004	0.1	mg/L as N	02/20/14 1200	02/26/14 1109
24077-008	OU09 SD124 0012	009	28	24077-509	ND	0.0012	0.1	mg/L as N	02/20/14 1200	02/26/14 1109
24077-009	OU09 SD122 0012	010	28	24077-510	ND	0.0014	0.1	mg/L as N	02/20/14 1200	02/26/14 1110
24077-011	OU09 SD102 0012	011	28	24077-511	ND	0.0017	0.1	mg/L as N	02/20/14 1200	02/26/14 1111
24077-013	OU09 SD115 0012	012	28	24077-512	ND	0.0008	0.1	mg/L as N	02/20/14 1200	02/26/14 1112
24077-014	OU09 SD114 0012	013	28	24077-513	ND	0.0008	0.1	mg/L as N	02/20/14 1200	02/26/14 1118

Study: 24077

Client: AECOM

Project: Carr Point MRP Site 1, Naval Station, Newport, Rhode Island

Day 0 Pore Water Quality

Field ID	ESI Code	Sample Number	Temperature	pH value
Laboratory Control	24077-000	000	23	7.00
BSBG SD302 0012	24077-006	001		7.93
BSBG SD304 0012	24077-010	002		7.90
BSBG SD303 0012	24077-012	003		7.54
OU09 SD121 0012	24077-001	004		7.83
OU09 SD120 0012	24077-002	005		7.34
OU09 SD112 0012	24077-003	006		7.54
OU09 SD106 0012	24077-005	007		7.81
OU09 SD118 0012	24077-007	008		7.14
OU09 SD124 0012	24077-008	009		7.88
OU09 SD122 0012	24077-009	010		7.77
OU09 SD102 0012	24077-011	011		7.45
OU09 SD115 0012	24077-013	012		7.67
OU09 SD114 0012	24077-014	013		7.60

Date: 1/23/14 **pH Meter ID:** 470

Initial: RS

Day 7 Pore Water Quality

Field ID	ESI Code	Sample Number	Temperature	pH value
Laboratory Control	24077-000	000	24	7.18
BSBG SD302 0012	24077-006	001		7.88
BSBG SD304 0012	24077-010	002		7.74
BSBG SD303 0012	24077-012	003		7.61
OU09 SD121 0012	24077-001	004		7.78
OU09 SD120 0012	24077-002	005		7.31
OU09 SD112 0012	24077-003	006		7.74
OU09 SD106 0012	24077-005	007		7.86
OU09 SD118 0012	24077-007	008		7.16
OU09 SD124 0012	24077-008	009		7.86
OU09 SD122 0012	24077-009	010		7.78
OU09 SD102 0012	24077-011	011		7.73
OU09 SD115 0012	24077-013	012		7.50
OU09 SD114 0012	24077-014	013		7.40

Date: 1/30/14 **pH Meter ID:** 470

Initial: RS

Study: 24077

Client: AECOM

Project: Carr Point MRP Site 1, Naval Station, Newport, Rhode Island

Day 14 Pore Water Quality

Field ID	ESI Code	Sample Number	Temperature	pH value
Laboratory Control	24077-000	000	23	7.20
BSBG SD302 0012	24077-006	001		7.93
BSBG SD304 0012	24077-010	002		7.89
BSBG SD303 0012	24077-012	003		7.86
OU09 SD121 0012	24077-001	004		7.90
OU09 SD120 0012	24077-002	005		7.23
OU09 SD112 0012	24077-003	006		7.69
OU09 SD106 0012	24077-005	007		7.76
OU09 SD118 0012	24077-007	008		7.80
OU09 SD124 0012	24077-008	009		7.87
OU09 SD122 0012	24077-009	010		7.87
OU09 SD102 0012	24077-011	011		7.87
OU09 SD115 0012	24077-013	012		7.87
OU09 SD114 0012	24077-014	013	✓	7.58

Date: 2/06/14 **pH Meter ID:** 470

Initial: ND

Day 21 Pore Water Quality

Field ID	ESI Code	Sample Number	Temperature	pH value
Laboratory Control	24077-000	000	23°c	6.62
BSBG SD302 0012	24077-006	001		7.39
BSBG SD304 0012	24077-010	002		7.70
BSBG SD303 0012	24077-012	003		7.66
OU09 SD121 0012	24077-001	004		7.60
OU09 SD120 0012	24077-002	005		7.38
OU09 SD112 0012	24077-003	006		7.49
OU09 SD106 0012	24077-005	007		7.29
OU09 SD118 0012	24077-007	008		7.11
OU09 SD124 0012	24077-008	009		7.64
OU09 SD122 0012	24077-009	010		7.69
OU09 SD102 0012	24077-011	011		7.61
OU09 SD115 0012	24077-013	012		7.28
OU09 SD114 0012	24077-014	013	↓	7.32

Date: 02/13/14 **pH Meter ID:** 1097

Initial: JTP

Study: 24077

Client: AECOM

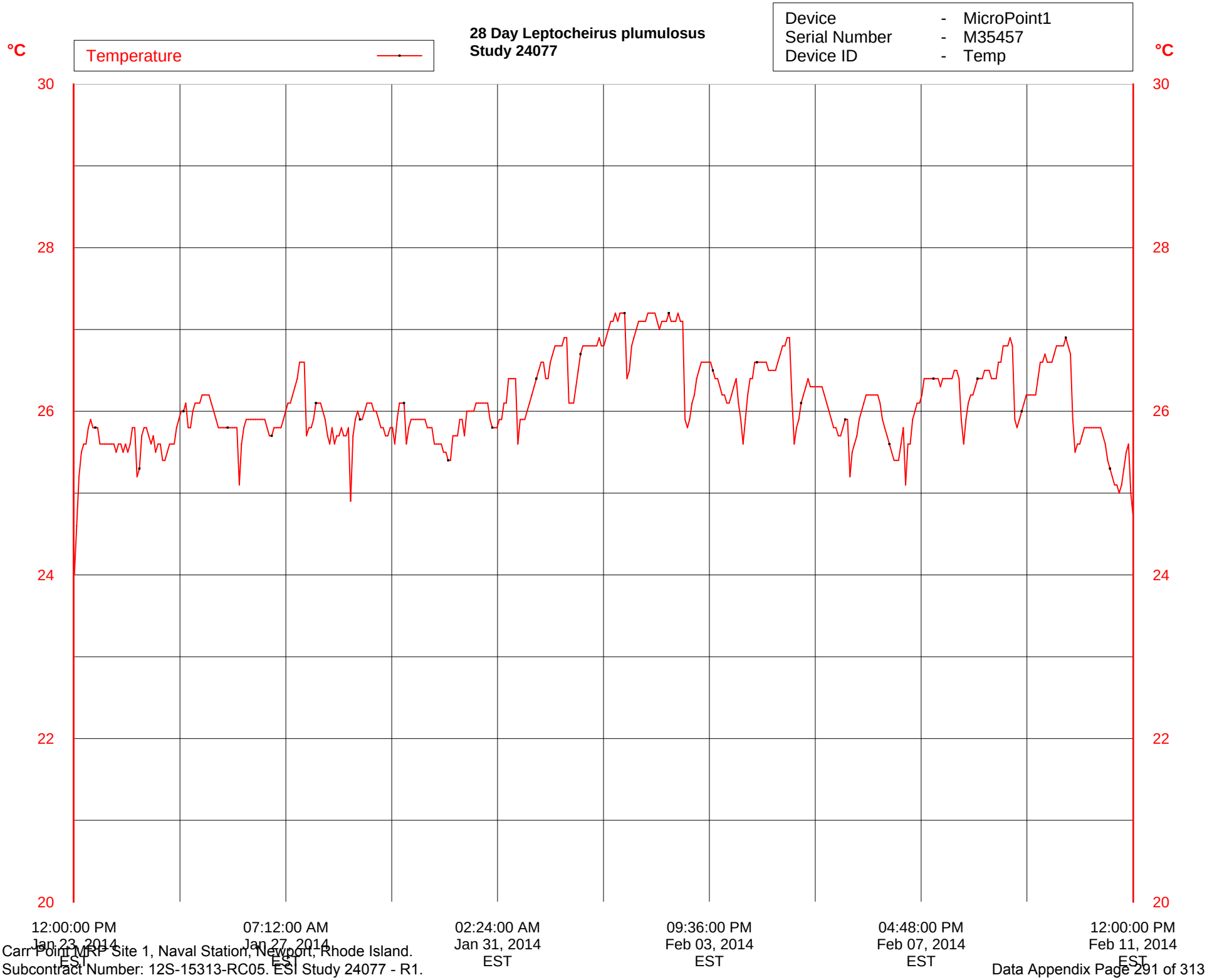
Project: Carr Point MRP Site 1, Naval Station, Newport, Rhode Island

Day 28 Pore Water Quality

Field ID	ESI Code	Sample Number	Temperature	pH value
Laboratory Control	24077-000	000	2.4	7.06
BSBG SD302 0012	24077-006	001		7.64
BSBG SD304 0012	24077-010	002		7.67
BSBG SD303 0012	24077-012	003		7.76
OU09 SD121 0012	24077-001	004		7.71
OU09 SD120 0012	24077-002	005		7.54
OU09 SD112 0012	24077-003	006		7.55
OU09 SD106 0012	24077-005	007		7.51
OU09 SD118 0012	24077-007	008		7.19
OU09 SD124 0012	24077-008	009		7.68
OU09 SD122 0012	24077-009	010		7.75
OU09 SD102 0012	24077-011	011		7.83
OU09 SD115 0012	24077-013	012		7.49
OU09 SD114 0012	24077-014	013		7.50

Date: 2/20/14 **pH Meter ID:** 1097

Initial: RS


28 Day Leptocheirus plumulosus
Study 24077
Device - MicroPoint1
Serial Number - M35457
Device ID - Temp
Temperature
°C
°C
30
28
26
24
22
20
12:00:00 PM
Jan 23, 2014
EST
07:12:00 AM
Jan 27, 2014
EST
02:24:00 AM
Jan 31, 2014
EST
09:36:00 PM
Feb 03, 2014
EST
04:48:00 PM
Feb 07, 2014
EST
12:00:00 PM
Feb 11, 2014
EST

Report Name:	MicroPoint1 Statistics
Report Date:	Mar 07, 2014 02:48:44 PM EST
File Name:	P:\TELATEMP\M35457 11-19-13 to 02-27-2014.csv
Title:	28 Day Leptocheirus plumulosus Study 24077
Device:	MicroPoint1 - Temperature Recorder
Hardware Revision:	REV2 (64K)
Serial Number:	M35457
Device ID:	Temp
Data Start Date:	Jan 23, 2014 12:08:00 PM EST
Data End Date:	Feb 11, 2014 11:08:00 AM EST
Reading Rate:	1 Hour
Readings:	1531 to 1986 of 2374
Last Calibration Date:	Aug 28, 2013
Next Calibration Date:	Aug 28, 2014

Channel 1 - Temperature

Minimum	.....	24 °C
Maximum	.....	27.2 °C
Average	.....	26.10461 °C
Standard Deviation	.....	0.4999348 °C
Mean Kinetic Temperature	.....	26.11773 °C

Report Name:	MicroPoint1 Data Table
Report Date:	Mar 07, 2014 02:49:04 PM EST
File Name:	P:\TELATEMP\M35457 11-19-13 to 02-27-2014.csv
Title:	28 Day Leptocheirus plumulosus Study 24077
Device:	MicroPoint1 - Temperature Recorder
Hardware Revision:	REV2 (64K)
Serial Number:	M35457
Device ID:	Temp
Data Start Date:	Jan 23, 2014 12:08:00 PM EST
Data End Date:	Feb 11, 2014 11:08:00 AM EST
Reading Rate:	1 Hour
Readings:	1531 to 1986 of 2374
Last Calibration Date:	Aug 28, 2013
Next Calibration Date:	Aug 28, 2014

Reading	Date and Time (EST)	Temperature	Annotation
1531	Jan 23, 2014 12:08:00 PM	24.000 °C	
1532	Jan 23, 2014 01:08:00 PM	24.600 °C	
1533	Jan 23, 2014 02:08:00 PM	25.200 °C	
1534	Jan 23, 2014 03:08:00 PM	25.500 °C	
1535	Jan 23, 2014 04:08:00 PM	25.600 °C	
1536	Jan 23, 2014 05:08:00 PM	25.600 °C	
1537	Jan 23, 2014 06:08:00 PM	25.800 °C	
1538	Jan 23, 2014 07:08:00 PM	25.900 °C	
1539	Jan 23, 2014 08:08:00 PM	25.800 °C	
1540	Jan 23, 2014 09:08:00 PM	25.800 °C	
1541	Jan 23, 2014 10:08:00 PM	25.800 °C	
1542	Jan 23, 2014 11:08:00 PM	25.600 °C	
1543	Jan 24, 2014 12:08:00 AM	25.600 °C	
1544	Jan 24, 2014 01:08:00 AM	25.600 °C	
1545	Jan 24, 2014 02:08:00 AM	25.600 °C	
1546	Jan 24, 2014 03:08:00 AM	25.600 °C	
1547	Jan 24, 2014 04:08:00 AM	25.600 °C	
1548	Jan 24, 2014 05:08:00 AM	25.600 °C	
1549	Jan 24, 2014 06:08:00 AM	25.500 °C	
1550	Jan 24, 2014 07:08:00 AM	25.600 °C	
1551	Jan 24, 2014 08:08:00 AM	25.600 °C	
1552	Jan 24, 2014 09:08:00 AM	25.500 °C	
1553	Jan 24, 2014 10:08:00 AM	25.600 °C	
1554	Jan 24, 2014 11:08:00 AM	25.500 °C	
1555	Jan 24, 2014 12:08:00 PM	25.600 °C	
1556	Jan 24, 2014 01:08:00 PM	25.800 °C	
1557	Jan 24, 2014 02:08:00 PM	25.800 °C	
1558	Jan 24, 2014 03:08:00 PM	25.200 °C	
1559	Jan 24, 2014 04:08:00 PM	25.300 °C	
1560	Jan 24, 2014 05:08:00 PM	25.700 °C	
1561	Jan 24, 2014 06:08:00 PM	25.800 °C	
1562	Jan 24, 2014 07:08:00 PM	25.800 °C	
1563	Jan 24, 2014 08:08:00 PM	25.700 °C	
1564	Jan 24, 2014 09:08:00 PM	25.600 °C	
1565	Jan 24, 2014 10:08:00 PM	25.700 °C	
1566	Jan 24, 2014 11:08:00 PM	25.500 °C	
1567	Jan 25, 2014 12:08:00 AM	25.600 °C	
1568	Jan 25, 2014 01:08:00 AM	25.600 °C	
1569	Jan 25, 2014 02:08:00 AM	25.400 °C	
1570	Jan 25, 2014 03:08:00 AM	25.400 °C	
1571	Jan 25, 2014 04:08:00 AM	25.500 °C	
1572	Jan 25, 2014 05:08:00 AM	25.600 °C	
1573	Jan 25, 2014 06:08:00 AM	25.600 °C	
1574	Jan 25, 2014 07:08:00 AM	25.600 °C	
1575	Jan 25, 2014 08:08:00 AM	25.800 °C	
1576	Jan 25, 2014 09:08:00 AM	25.900 °C	
1577	Jan 25, 2014 10:08:00 AM	26.000 °C	
1578	Jan 25, 2014 11:08:00 AM	26.000 °C	
1579	Jan 25, 2014 12:08:00 PM	26.100 °C	
1580	Jan 25, 2014 01:08:00 PM	25.800 °C	
1581	Jan 25, 2014 02:08:00 PM	25.800 °C	
1582	Jan 25, 2014 03:08:00 PM	26.000 °C	
1583	Jan 25, 2014 04:08:00 PM	26.100 °C	
1584	Jan 25, 2014 05:08:00 PM	26.100 °C	
1585	Jan 25, 2014 06:08:00 PM	26.100 °C	
1586	Jan 25, 2014 07:08:00 PM	26.200 °C	
1587	Jan 25, 2014 08:08:00 PM	26.200 °C	
1588	Jan 25, 2014 09:08:00 PM	26.200 °C	
1589	Jan 25, 2014 10:08:00 PM	26.200 °C	
1590	Jan 25, 2014 11:08:00 PM	26.200 °C	
1591	Jan 26, 2014 12:08:00 AM	26.000 °C	

1592	Jan 26, 2014 01:08:00 AM	25.900	°C
1593	Jan 26, 2014 02:08:00 AM	25.800	°C
1594	Jan 26, 2014 03:08:00 AM	25.800	°C
1595	Jan 26, 2014 04:08:00 AM	25.800	°C
1596	Jan 26, 2014 05:08:00 AM	25.800	°C
1597	Jan 26, 2014 06:08:00 AM	25.800	°C
1598	Jan 26, 2014 07:08:00 AM	25.800	°C
1599	Jan 26, 2014 08:08:00 AM	25.800	°C
1600	Jan 26, 2014 09:08:00 AM	25.800	°C
1601	Jan 26, 2014 10:08:00 AM	25.800	°C
1602	Jan 26, 2014 11:08:00 AM	25.100	°C
1603	Jan 26, 2014 12:08:00 PM	25.600	°C
1604	Jan 26, 2014 01:08:00 PM	25.800	°C
1605	Jan 26, 2014 02:08:00 PM	25.900	°C
1606	Jan 26, 2014 03:08:00 PM	25.900	°C
1607	Jan 26, 2014 04:08:00 PM	25.900	°C
1608	Jan 26, 2014 05:08:00 PM	25.900	°C
1609	Jan 26, 2014 06:08:00 PM	25.900	°C
1610	Jan 26, 2014 07:08:00 PM	25.900	°C
1611	Jan 26, 2014 08:08:00 PM	25.900	°C
1612	Jan 26, 2014 09:08:00 PM	25.900	°C
1613	Jan 26, 2014 10:08:00 PM	25.900	°C
1614	Jan 26, 2014 11:08:00 PM	25.800	°C
1615	Jan 27, 2014 12:08:00 AM	25.700	°C
1616	Jan 27, 2014 01:08:00 AM	25.700	°C
1617	Jan 27, 2014 02:08:00 AM	25.800	°C
1618	Jan 27, 2014 03:08:00 AM	25.800	°C
1619	Jan 27, 2014 04:08:00 AM	25.800	°C
1620	Jan 27, 2014 05:08:00 AM	25.800	°C
1621	Jan 27, 2014 06:08:00 AM	25.900	°C
1622	Jan 27, 2014 07:08:00 AM	26.000	°C
1623	Jan 27, 2014 08:08:00 AM	26.100	°C
1624	Jan 27, 2014 09:08:00 AM	26.100	°C
1625	Jan 27, 2014 10:08:00 AM	26.200	°C
1626	Jan 27, 2014 11:08:00 AM	26.300	°C
1627	Jan 27, 2014 12:08:00 PM	26.400	°C
1628	Jan 27, 2014 01:08:00 PM	26.600	°C
1629	Jan 27, 2014 02:08:00 PM	26.600	°C
1630	Jan 27, 2014 03:08:00 PM	26.600	°C
1631	Jan 27, 2014 04:08:00 PM	25.700	°C
1632	Jan 27, 2014 05:08:00 PM	25.800	°C
1633	Jan 27, 2014 06:08:00 PM	25.800	°C
1634	Jan 27, 2014 07:08:00 PM	25.900	°C
1635	Jan 27, 2014 08:08:00 PM	26.100	°C
1636	Jan 27, 2014 09:08:00 PM	26.100	°C
1637	Jan 27, 2014 10:08:00 PM	26.100	°C
1638	Jan 27, 2014 11:08:00 PM	26.000	°C
1639	Jan 28, 2014 12:08:00 AM	25.900	°C
1640	Jan 28, 2014 01:08:00 AM	25.700	°C
1641	Jan 28, 2014 02:08:00 AM	25.600	°C
1642	Jan 28, 2014 03:08:00 AM	25.800	°C
1643	Jan 28, 2014 04:08:00 AM	25.600	°C
1644	Jan 28, 2014 05:08:00 AM	25.700	°C
1645	Jan 28, 2014 06:08:00 AM	25.700	°C
1646	Jan 28, 2014 07:08:00 AM	25.800	°C
1647	Jan 28, 2014 08:08:00 AM	25.700	°C
1648	Jan 28, 2014 09:08:00 AM	25.700	°C
1649	Jan 28, 2014 10:08:00 AM	25.800	°C
1650	Jan 28, 2014 11:08:00 AM	24.900	°C
1651	Jan 28, 2014 12:08:00 PM	25.700	°C
1652	Jan 28, 2014 01:08:00 PM	25.900	°C
1653	Jan 28, 2014 02:08:00 PM	26.000	°C
1654	Jan 28, 2014 03:08:00 PM	25.900	°C
1655	Jan 28, 2014 04:08:00 PM	25.900	°C
1656	Jan 28, 2014 05:08:00 PM	26.000	°C
1657	Jan 28, 2014 06:08:00 PM	26.100	°C
1658	Jan 28, 2014 07:08:00 PM	26.100	°C
1659	Jan 28, 2014 08:08:00 PM	26.100	°C
1660	Jan 28, 2014 09:08:00 PM	26.000	°C
1661	Jan 28, 2014 10:08:00 PM	26.000	°C
1662	Jan 28, 2014 11:08:00 PM	25.900	°C
1663	Jan 29, 2014 12:08:00 AM	25.800	°C
1664	Jan 29, 2014 01:08:00 AM	25.800	°C
1665	Jan 29, 2014 02:08:00 AM	25.700	°C
1666	Jan 29, 2014 03:08:00 AM	25.700	°C
1667	Jan 29, 2014 04:08:00 AM	25.800	°C
1668	Jan 29, 2014 05:08:00 AM	25.600	°C
1669	Jan 29, 2014 06:08:00 AM	25.600	°C

1670	Jan 29, 2014 07:08:00 AM	25.900	°C
1671	Jan 29, 2014 08:08:00 AM	26.100	°C
1672	Jan 29, 2014 09:08:00 AM	26.100	°C
1673	Jan 29, 2014 10:08:00 AM	26.100	°C
1674	Jan 29, 2014 11:08:00 AM	25.600	°C
1675	Jan 29, 2014 12:08:00 PM	25.800	°C
1676	Jan 29, 2014 01:08:00 PM	25.900	°C
1677	Jan 29, 2014 02:08:00 PM	25.900	°C
1678	Jan 29, 2014 03:08:00 PM	25.900	°C
1679	Jan 29, 2014 04:08:00 PM	25.900	°C
1680	Jan 29, 2014 05:08:00 PM	25.900	°C
1681	Jan 29, 2014 06:08:00 PM	25.900	°C
1682	Jan 29, 2014 07:08:00 PM	25.900	°C
1683	Jan 29, 2014 08:08:00 PM	25.800	°C
1684	Jan 29, 2014 09:08:00 PM	25.800	°C
1685	Jan 29, 2014 10:08:00 PM	25.800	°C
1686	Jan 29, 2014 11:08:00 PM	25.600	°C
1687	Jan 30, 2014 12:08:00 AM	25.600	°C
1688	Jan 30, 2014 01:08:00 AM	25.600	°C
1689	Jan 30, 2014 02:08:00 AM	25.600	°C
1690	Jan 30, 2014 03:08:00 AM	25.500	°C
1691	Jan 30, 2014 04:08:00 AM	25.500	°C
1692	Jan 30, 2014 05:08:00 AM	25.400	°C
1693	Jan 30, 2014 06:08:00 AM	25.400	°C
1694	Jan 30, 2014 07:08:00 AM	25.700	°C
1695	Jan 30, 2014 08:08:00 AM	25.700	°C
1696	Jan 30, 2014 09:08:00 AM	25.700	°C
1697	Jan 30, 2014 10:08:00 AM	25.900	°C
1698	Jan 30, 2014 11:08:00 AM	25.900	°C
1699	Jan 30, 2014 12:08:00 PM	25.700	°C
1700	Jan 30, 2014 01:08:00 PM	26.000	°C
1701	Jan 30, 2014 02:08:00 PM	26.000	°C
1702	Jan 30, 2014 03:08:00 PM	26.000	°C
1703	Jan 30, 2014 04:08:00 PM	26.000	°C
1704	Jan 30, 2014 05:08:00 PM	26.100	°C
1705	Jan 30, 2014 06:08:00 PM	26.100	°C
1706	Jan 30, 2014 07:08:00 PM	26.100	°C
1707	Jan 30, 2014 08:08:00 PM	26.100	°C
1708	Jan 30, 2014 09:08:00 PM	26.100	°C
1709	Jan 30, 2014 10:08:00 PM	26.100	°C
1710	Jan 30, 2014 11:08:00 PM	25.900	°C
1711	Jan 31, 2014 12:08:00 AM	25.800	°C
1712	Jan 31, 2014 01:08:00 AM	25.800	°C
1713	Jan 31, 2014 02:08:00 AM	25.800	°C
1714	Jan 31, 2014 03:08:00 AM	25.900	°C
1715	Jan 31, 2014 04:08:00 AM	25.900	°C
1716	Jan 31, 2014 05:08:00 AM	26.100	°C
1717	Jan 31, 2014 06:08:00 AM	26.100	°C
1718	Jan 31, 2014 07:08:00 AM	26.400	°C
1719	Jan 31, 2014 08:08:00 AM	26.400	°C
1720	Jan 31, 2014 09:08:00 AM	26.400	°C
1721	Jan 31, 2014 10:08:00 AM	26.400	°C
1722	Jan 31, 2014 11:08:00 AM	25.600	°C
1723	Jan 31, 2014 12:08:00 PM	25.900	°C
1724	Jan 31, 2014 01:08:00 PM	25.900	°C
1725	Jan 31, 2014 02:08:00 PM	25.900	°C
1726	Jan 31, 2014 03:08:00 PM	26.000	°C
1727	Jan 31, 2014 04:08:00 PM	26.100	°C
1728	Jan 31, 2014 05:08:00 PM	26.200	°C
1729	Jan 31, 2014 06:08:00 PM	26.300	°C
1730	Jan 31, 2014 07:08:00 PM	26.400	°C
1731	Jan 31, 2014 08:08:00 PM	26.500	°C
1732	Jan 31, 2014 09:08:00 PM	26.600	°C
1733	Jan 31, 2014 10:08:00 PM	26.600	°C
1734	Jan 31, 2014 11:08:00 PM	26.400	°C
1735	Feb 01, 2014 12:08:00 AM	26.400	°C
1736	Feb 01, 2014 01:08:00 AM	26.600	°C
1737	Feb 01, 2014 02:08:00 AM	26.700	°C
1738	Feb 01, 2014 03:08:00 AM	26.800	°C
1739	Feb 01, 2014 04:08:00 AM	26.800	°C
1740	Feb 01, 2014 05:08:00 AM	26.800	°C
1741	Feb 01, 2014 06:08:00 AM	26.800	°C
1742	Feb 01, 2014 07:08:00 AM	26.900	°C
1743	Feb 01, 2014 08:08:00 AM	26.900	°C
1744	Feb 01, 2014 09:08:00 AM	26.100	°C
1745	Feb 01, 2014 10:08:00 AM	26.100	°C
1746	Feb 01, 2014 11:08:00 AM	26.400	°C
1747	Feb 01, 2014 12:08:00 PM	26.300	°C

1748	Feb 01, 2014 01:08:00 PM	26.500	°C
1749	Feb 01, 2014 02:08:00 PM	26.700	°C
1750	Feb 01, 2014 03:08:00 PM	26.800	°C
1751	Feb 01, 2014 04:08:00 PM	26.800	°C
1752	Feb 01, 2014 05:08:00 PM	26.800	°C
1753	Feb 01, 2014 06:08:00 PM	26.800	°C
1754	Feb 01, 2014 07:08:00 PM	26.800	°C
1755	Feb 01, 2014 08:08:00 PM	26.800	°C
1756	Feb 01, 2014 09:08:00 PM	26.800	°C
1757	Feb 01, 2014 10:08:00 PM	26.900	°C
1758	Feb 01, 2014 11:08:00 PM	26.800	°C
1759	Feb 02, 2014 12:08:00 AM	26.800	°C
1760	Feb 02, 2014 01:08:00 AM	26.900	°C
1761	Feb 02, 2014 02:08:00 AM	27.000	°C
1762	Feb 02, 2014 03:08:00 AM	27.100	°C
1763	Feb 02, 2014 04:08:00 AM	27.100	°C
1764	Feb 02, 2014 05:08:00 AM	27.200	°C
1765	Feb 02, 2014 06:08:00 AM	27.100	°C
1766	Feb 02, 2014 07:08:00 AM	27.200	°C
1767	Feb 02, 2014 08:08:00 AM	27.200	°C
1768	Feb 02, 2014 09:08:00 AM	27.200	°C
1769	Feb 02, 2014 10:08:00 AM	26.400	°C
1770	Feb 02, 2014 11:08:00 AM	26.500	°C
1771	Feb 02, 2014 12:08:00 PM	26.800	°C
1772	Feb 02, 2014 01:08:00 PM	26.900	°C
1773	Feb 02, 2014 02:08:00 PM	27.000	°C
1774	Feb 02, 2014 03:08:00 PM	27.100	°C
1775	Feb 02, 2014 04:08:00 PM	27.100	°C
1776	Feb 02, 2014 05:08:00 PM	27.100	°C
1777	Feb 02, 2014 06:08:00 PM	27.100	°C
1778	Feb 02, 2014 07:08:00 PM	27.200	°C
1779	Feb 02, 2014 08:08:00 PM	27.200	°C
1780	Feb 02, 2014 09:08:00 PM	27.200	°C
1781	Feb 02, 2014 10:08:00 PM	27.200	°C
1782	Feb 02, 2014 11:08:00 PM	27.100	°C
1783	Feb 03, 2014 12:08:00 AM	27.000	°C
1784	Feb 03, 2014 01:08:00 AM	27.100	°C
1785	Feb 03, 2014 02:08:00 AM	27.100	°C
1786	Feb 03, 2014 03:08:00 AM	27.100	°C
1787	Feb 03, 2014 04:08:00 AM	27.200	°C
1788	Feb 03, 2014 05:08:00 AM	27.100	°C
1789	Feb 03, 2014 06:08:00 AM	27.100	°C
1790	Feb 03, 2014 07:08:00 AM	27.100	°C
1791	Feb 03, 2014 08:08:00 AM	27.200	°C
1792	Feb 03, 2014 09:08:00 AM	27.100	°C
1793	Feb 03, 2014 10:08:00 AM	27.100	°C
1794	Feb 03, 2014 11:08:00 AM	25.900	°C
1795	Feb 03, 2014 12:08:00 PM	25.800	°C
1796	Feb 03, 2014 01:08:00 PM	25.900	°C
1797	Feb 03, 2014 02:08:00 PM	26.100	°C
1798	Feb 03, 2014 03:08:00 PM	26.200	°C
1799	Feb 03, 2014 04:08:00 PM	26.400	°C
1800	Feb 03, 2014 05:08:00 PM	26.500	°C
1801	Feb 03, 2014 06:08:00 PM	26.600	°C
1802	Feb 03, 2014 07:08:00 PM	26.600	°C
1803	Feb 03, 2014 08:08:00 PM	26.600	°C
1804	Feb 03, 2014 09:08:00 PM	26.600	°C
1805	Feb 03, 2014 10:08:00 PM	26.600	°C
1806	Feb 03, 2014 11:08:00 PM	26.500	°C
1807	Feb 04, 2014 12:08:00 AM	26.400	°C
1808	Feb 04, 2014 01:08:00 AM	26.400	°C
1809	Feb 04, 2014 02:08:00 AM	26.300	°C
1810	Feb 04, 2014 03:08:00 AM	26.200	°C
1811	Feb 04, 2014 04:08:00 AM	26.200	°C
1812	Feb 04, 2014 05:08:00 AM	26.100	°C
1813	Feb 04, 2014 06:08:00 AM	26.100	°C
1814	Feb 04, 2014 07:08:00 AM	26.200	°C
1815	Feb 04, 2014 08:08:00 AM	26.300	°C
1816	Feb 04, 2014 09:08:00 AM	26.400	°C
1817	Feb 04, 2014 10:08:00 AM	26.100	°C
1818	Feb 04, 2014 11:08:00 AM	25.900	°C
1819	Feb 04, 2014 12:08:00 PM	25.600	°C
1820	Feb 04, 2014 01:08:00 PM	25.900	°C
1821	Feb 04, 2014 02:08:00 PM	26.200	°C
1822	Feb 04, 2014 03:08:00 PM	26.400	°C
1823	Feb 04, 2014 04:08:00 PM	26.400	°C
1824	Feb 04, 2014 05:08:00 PM	26.400	°C
1825	Feb 04, 2014 06:08:00 PM	26.600	°C

1826	Feb 04, 2014 07:08:00 PM	26.600	°C
1827	Feb 04, 2014 08:08:00 PM	26.600	°C
1828	Feb 04, 2014 09:08:00 PM	26.600	°C
1829	Feb 04, 2014 10:08:00 PM	26.600	°C
1830	Feb 04, 2014 11:08:00 PM	26.500	°C
1831	Feb 05, 2014 12:08:00 AM	26.500	°C
1832	Feb 05, 2014 01:08:00 AM	26.500	°C
1833	Feb 05, 2014 02:08:00 AM	26.500	°C
1834	Feb 05, 2014 03:08:00 AM	26.600	°C
1835	Feb 05, 2014 04:08:00 AM	26.700	°C
1836	Feb 05, 2014 05:08:00 AM	26.800	°C
1837	Feb 05, 2014 06:08:00 AM	26.800	°C
1838	Feb 05, 2014 07:08:00 AM	26.900	°C
1839	Feb 05, 2014 08:08:00 AM	26.900	°C
1840	Feb 05, 2014 09:08:00 AM	26.200	°C
1841	Feb 05, 2014 10:08:00 AM	25.600	°C
1842	Feb 05, 2014 11:08:00 AM	25.800	°C
1843	Feb 05, 2014 12:08:00 PM	25.900	°C
1844	Feb 05, 2014 01:08:00 PM	26.100	°C
1845	Feb 05, 2014 02:08:00 PM	26.200	°C
1846	Feb 05, 2014 03:08:00 PM	26.300	°C
1847	Feb 05, 2014 04:08:00 PM	26.400	°C
1848	Feb 05, 2014 05:08:00 PM	26.300	°C
1849	Feb 05, 2014 06:08:00 PM	26.300	°C
1850	Feb 05, 2014 07:08:00 PM	26.300	°C
1851	Feb 05, 2014 08:08:00 PM	26.300	°C
1852	Feb 05, 2014 09:08:00 PM	26.300	°C
1853	Feb 05, 2014 10:08:00 PM	26.300	°C
1854	Feb 05, 2014 11:08:00 PM	26.200	°C
1855	Feb 06, 2014 12:08:00 AM	26.100	°C
1856	Feb 06, 2014 01:08:00 AM	26.000	°C
1857	Feb 06, 2014 02:08:00 AM	25.900	°C
1858	Feb 06, 2014 03:08:00 AM	25.800	°C
1859	Feb 06, 2014 04:08:00 AM	25.800	°C
1860	Feb 06, 2014 05:08:00 AM	25.700	°C
1861	Feb 06, 2014 06:08:00 AM	25.700	°C
1862	Feb 06, 2014 07:08:00 AM	25.800	°C
1863	Feb 06, 2014 08:08:00 AM	25.900	°C
1864	Feb 06, 2014 09:08:00 AM	25.900	°C
1865	Feb 06, 2014 10:08:00 AM	25.200	°C
1866	Feb 06, 2014 11:08:00 AM	25.500	°C
1867	Feb 06, 2014 12:08:00 PM	25.600	°C
1868	Feb 06, 2014 01:08:00 PM	25.700	°C
1869	Feb 06, 2014 02:08:00 PM	25.900	°C
1870	Feb 06, 2014 03:08:00 PM	26.000	°C
1871	Feb 06, 2014 04:08:00 PM	26.100	°C
1872	Feb 06, 2014 05:08:00 PM	26.200	°C
1873	Feb 06, 2014 06:08:00 PM	26.200	°C
1874	Feb 06, 2014 07:08:00 PM	26.200	°C
1875	Feb 06, 2014 08:08:00 PM	26.200	°C
1876	Feb 06, 2014 09:08:00 PM	26.200	°C
1877	Feb 06, 2014 10:08:00 PM	26.200	°C
1878	Feb 06, 2014 11:08:00 PM	26.100	°C
1879	Feb 07, 2014 12:08:00 AM	25.900	°C
1880	Feb 07, 2014 01:08:00 AM	25.800	°C
1881	Feb 07, 2014 02:08:00 AM	25.700	°C
1882	Feb 07, 2014 03:08:00 AM	25.600	°C
1883	Feb 07, 2014 04:08:00 AM	25.500	°C
1884	Feb 07, 2014 05:08:00 AM	25.400	°C
1885	Feb 07, 2014 06:08:00 AM	25.400	°C
1886	Feb 07, 2014 07:08:00 AM	25.400	°C
1887	Feb 07, 2014 08:08:00 AM	25.600	°C
1888	Feb 07, 2014 09:08:00 AM	25.800	°C
1889	Feb 07, 2014 10:08:00 AM	25.100	°C
1890	Feb 07, 2014 11:08:00 AM	25.600	°C
1891	Feb 07, 2014 12:08:00 PM	25.600	°C
1892	Feb 07, 2014 01:08:00 PM	25.900	°C
1893	Feb 07, 2014 02:08:00 PM	26.000	°C
1894	Feb 07, 2014 03:08:00 PM	26.100	°C
1895	Feb 07, 2014 04:08:00 PM	26.100	°C
1896	Feb 07, 2014 05:08:00 PM	26.200	°C
1897	Feb 07, 2014 06:08:00 PM	26.400	°C
1898	Feb 07, 2014 07:08:00 PM	26.400	°C
1899	Feb 07, 2014 08:08:00 PM	26.400	°C
1900	Feb 07, 2014 09:08:00 PM	26.400	°C
1901	Feb 07, 2014 10:08:00 PM	26.400	°C
1902	Feb 07, 2014 11:08:00 PM	26.400	°C
1903	Feb 08, 2014 12:08:00 AM	26.400	°C

1904	Feb 08, 2014 01:08:00 AM	26.300	°C
1905	Feb 08, 2014 02:08:00 AM	26.400	°C
1906	Feb 08, 2014 03:08:00 AM	26.400	°C
1907	Feb 08, 2014 04:08:00 AM	26.400	°C
1908	Feb 08, 2014 05:08:00 AM	26.400	°C
1909	Feb 08, 2014 06:08:00 AM	26.400	°C
1910	Feb 08, 2014 07:08:00 AM	26.500	°C
1911	Feb 08, 2014 08:08:00 AM	26.500	°C
1912	Feb 08, 2014 09:08:00 AM	26.400	°C
1913	Feb 08, 2014 10:08:00 AM	25.900	°C
1914	Feb 08, 2014 11:08:00 AM	25.600	°C
1915	Feb 08, 2014 12:08:00 PM	25.900	°C
1916	Feb 08, 2014 01:08:00 PM	26.100	°C
1917	Feb 08, 2014 02:08:00 PM	26.200	°C
1918	Feb 08, 2014 03:08:00 PM	26.200	°C
1919	Feb 08, 2014 04:08:00 PM	26.300	°C
1920	Feb 08, 2014 05:08:00 PM	26.400	°C
1921	Feb 08, 2014 06:08:00 PM	26.400	°C
1922	Feb 08, 2014 07:08:00 PM	26.400	°C
1923	Feb 08, 2014 08:08:00 PM	26.500	°C
1924	Feb 08, 2014 09:08:00 PM	26.500	°C
1925	Feb 08, 2014 10:08:00 PM	26.500	°C
1926	Feb 08, 2014 11:08:00 PM	26.400	°C
1927	Feb 09, 2014 12:08:00 AM	26.400	°C
1928	Feb 09, 2014 01:08:00 AM	26.400	°C
1929	Feb 09, 2014 02:08:00 AM	26.600	°C
1930	Feb 09, 2014 03:08:00 AM	26.600	°C
1931	Feb 09, 2014 04:08:00 AM	26.800	°C
1932	Feb 09, 2014 05:08:00 AM	26.800	°C
1933	Feb 09, 2014 06:08:00 AM	26.800	°C
1934	Feb 09, 2014 07:08:00 AM	26.900	°C
1935	Feb 09, 2014 08:08:00 AM	26.800	°C
1936	Feb 09, 2014 09:08:00 AM	25.900	°C
1937	Feb 09, 2014 10:08:00 AM	25.800	°C
1938	Feb 09, 2014 11:08:00 AM	25.900	°C
1939	Feb 09, 2014 12:08:00 PM	26.000	°C
1940	Feb 09, 2014 01:08:00 PM	26.100	°C
1941	Feb 09, 2014 02:08:00 PM	26.200	°C
1942	Feb 09, 2014 03:08:00 PM	26.200	°C
1943	Feb 09, 2014 04:08:00 PM	26.200	°C
1944	Feb 09, 2014 05:08:00 PM	26.200	°C
1945	Feb 09, 2014 06:08:00 PM	26.200	°C
1946	Feb 09, 2014 07:08:00 PM	26.400	°C
1947	Feb 09, 2014 08:08:00 PM	26.600	°C
1948	Feb 09, 2014 09:08:00 PM	26.600	°C
1949	Feb 09, 2014 10:08:00 PM	26.700	°C
1950	Feb 09, 2014 11:08:00 PM	26.600	°C
1951	Feb 10, 2014 12:08:00 AM	26.600	°C
1952	Feb 10, 2014 01:08:00 AM	26.600	°C
1953	Feb 10, 2014 02:08:00 AM	26.700	°C
1954	Feb 10, 2014 03:08:00 AM	26.800	°C
1955	Feb 10, 2014 04:08:00 AM	26.800	°C
1956	Feb 10, 2014 05:08:00 AM	26.800	°C
1957	Feb 10, 2014 06:08:00 AM	26.800	°C
1958	Feb 10, 2014 07:08:00 AM	26.900	°C
1959	Feb 10, 2014 08:08:00 AM	26.800	°C
1960	Feb 10, 2014 09:08:00 AM	26.700	°C
1961	Feb 10, 2014 10:08:00 AM	25.900	°C
1962	Feb 10, 2014 11:08:00 AM	25.500	°C
1963	Feb 10, 2014 12:08:00 PM	25.600	°C
1964	Feb 10, 2014 01:08:00 PM	25.600	°C
1965	Feb 10, 2014 02:08:00 PM	25.700	°C
1966	Feb 10, 2014 03:08:00 PM	25.800	°C
1967	Feb 10, 2014 04:08:00 PM	25.800	°C
1968	Feb 10, 2014 05:08:00 PM	25.800	°C
1969	Feb 10, 2014 06:08:00 PM	25.800	°C
1970	Feb 10, 2014 07:08:00 PM	25.800	°C
1971	Feb 10, 2014 08:08:00 PM	25.800	°C
1972	Feb 10, 2014 09:08:00 PM	25.800	°C
1973	Feb 10, 2014 10:08:00 PM	25.800	°C
1974	Feb 10, 2014 11:08:00 PM	25.700	°C
1975	Feb 11, 2014 12:08:00 AM	25.600	°C
1976	Feb 11, 2014 01:08:00 AM	25.400	°C
1977	Feb 11, 2014 02:08:00 AM	25.300	°C
1978	Feb 11, 2014 03:08:00 AM	25.200	°C
1979	Feb 11, 2014 04:08:00 AM	25.100	°C
1980	Feb 11, 2014 05:08:00 AM	25.000	°C
1981	Feb 11, 2014 06:08:00 AM	25.000	°C

1982	Feb 11, 2014 07:08:00 AM	25.100	°C
1983	Feb 11, 2014 08:08:00 AM	25.300	°C
1984	Feb 11, 2014 09:08:00 AM	25.500	°C
1985	Feb 11, 2014 10:08:00 AM	25.600	°C
1986	Feb 11, 2014 11:08:00 AM	25.000	°C

Pre-Assay Monitoring
Leptocheirus plumulosus 28 Day Sediment Evaluation

Study: 24077	Client: AECOM	Project: Carr Point MRP Site 1, Naval Station, Newport, Rhode Island

Day	Date	Renew	Pore Water Ammonia Check	Initial	Notes
0	01/13/14	✓		ND/JTP	
1	01/14/14	✓		ND/JTP	
2	01/15/14	✓	✓	JTP	
3	01/16/14	✓		RS	
4	01/17/14	✓	✓	JTP	
5	1/18/14	✓		CS/RS	
6	1/19	✓		UB	
7	1/20	✓		JTP	
8	1/21	✓		ND/JTP	
9	1/22	✓		ND	
10					
11					
12					
13					
14					

	Overlying Salinity: 20ppt	Temperature: 25°C

01/15/14 JTP

Lab	pre-assay x5	pore NH_3 mg/L
	2	≈10
001	2	≈10
002	.5	≈2.5
003	4	≈20
004	2	≈10
005	>8	≈>40
006	4	≈ 20
007	2	≈10
008	1	≈ 5
009	.25	≈1.25
010	≈0	≈0
011	.5	≈2.5
012	1	≈5
013	1	≈5

01/17/14 JTP

Lab	x5	mg/L
	1	5
001	1	5
002	.25	1.25
003	.5	2.5
004	.25	1.25
005	4	20
006	1	5
007	1	5
008	.5	2.5
009	.25	1.25
010	0	0
011	.25	1.25
012	1	5
013	1	5

Test Sediment Preparation Notes

Study: 24077

Client: AECOM

Project: Carr Point MRP Site 1, Naval Station, Newport, Rhode Island

Field ID	ESI Code	Sample Number	Salinity	Notes	Date Initials
BSBG SD304 0012	24077-010	002	≈30 PPT	Both buckets sieved, 1 gal. excluded large rocks	01/07/14 JTP
BSBG SD303 0012	24077-012	003	~35PPT	2.5L excluded solid mass large rocks and smaller rocks Both buckets combined	01/07/14 MG
OU09 SD121 0012	24077-001	004	≈33 PPT	≈200 mL excluded. Some mussel shells, small rocks. granular.	01/07/14 JTP
OU09 SD120 0012	24077-002	005	N/A	2 L excluded: bivalves, rocks, shells. Gray, granular sand. Low Moisture.	01/07/14 ND
OU09 SD112 0012	24077-003	006	~28PPT	400 mL solid Bivalves and small rocks	01/07/14 MG
OU09 SD106 0012	24077-005	007	~35PPT	1L excluded, small rocks, snails, shells	01/07/14 TG
OU09 SD118 0012	24077-007	008	≈ 30ppt	300mL excluded: small rocks. Granular Sand.	1/07/14 ND
OU09 SD124 0012	24077-008	009	30PPT	Both buckets sieved, 4 L excluded, small and medium sized rocks.	1/07/14 TG
OU09 SD122 0012	24077-009	010	≈34PPT	Both buckets sieved, ≈1 gallon sieved and recovered between the two. More than one gallon large rocks excluded. Granular	01/07/14 JTP
OU09 SD102 0012	24077-011	011	~20 PPT	≈1 gallon large rocks excluded. Both buckets sieved. Some clay like material. Granular	01/07/14 JTP/MG
OU09 SD115 0012	24077-013	012	≈ 30ppt	≈500 mL excluded: shells, rocks, and bi-valves. Granular Mud.	1/07/14 ND
OU09 SD114 0012	24077-014	013	~30PPT	500mL removed: shells/small rocks	
*BSBG SD302 0012 *BSBG SD307 0012	24077-006 ✓ 24077-015	001	N/A	>1L excluded, shells/small rocks	1/07/14 TG + JTP

*Note: Only one sample will be used in testing as Sample Number 001. Based on visual inspection a determination will be made as to whether BSBG SD302 0012 (24077-006) or BSBG SD307 0012 (24077-015) better resembles the other project samples. If there is not a discernible difference, then BSBG SD302 0012 (24077-006) will be used in testing. Please circle the sample to be analyzed and indicate the rationale.

P:\GENERAL PROJECTS\RPT-active\ERA 24077 AECOM Carr Point\LabForms\Test Sediment Preparation Notes.wpd

SAMPLE RECEIPT AND CONDITION DOCUMENTATION

STUDY NO:	24077		
SDG No:			
Project:	Carr Point MRP Site 1, Naval Station, Newport, Rhode Island		
Delivered via:	**ESI**		
Date and Time Received:	12/06/13 1330	Date and TIme Logged into Lab:	12/06/13 1630
Received By:	MW	Logged into Lab by:	RAM RAM
Air bill / Way bill:	No	Air bill included in folder if received?	NA
Cooler on ice/packs:	Yes	Custody Seals present?	NA
Cooler Blank Temp (C) at arrival:	6C	Custody Seals intact?	NA
Number of COC Pages:	1		
COC Serial Number(s):			
COC Complete:	Yes	Does the info on the COC match the samples?	Yes
Sampled Date:	Yes	Were samples received within holding time?	Yes
Field ID complete:	Yes	Were all samples properly labeled?	Yes
Sampled Time:	Yes	Were proper sample containers used?	Yes
Analysis request:	Yes	Were samples received intact? (none broken or leaking)	Yes
COC Signed and dated:	Yes	Were sample volumes sufficient for requested analysis?	Yes
Were all samples received?	Yes	Were VOC vials free of headspace?	NA
Client notification/authorization:	Not required		

Field ID	Lab ID	Mx	Analysis Requested	Bottle	Req'd Pres'n	Verified Pres'n
OU09 SD121 0012	24077-001	S	HOLD	2x1 gallon P	4C	
OU09 SD120 0012	24077-002	S	HOLD	2x1 gallon P	4C	
OU09 SD112 0012	24077-003	S	HOLD	2x1 gallon P	4C	
OU09 SD113 0012	24077-004	S	HOLD	1 gallon P	4C	

Notes and qualifications:

Hold samples until notified by client to proceed with toxicity testing. (see project documentation)

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AECOM

CHAIN OF CUSTODY RECORD

24077

Client/Project Name: Navy/ Carr Point

Project Location: Portsmouth, RI

Analysis Requested

Container Type: P – Plastic; A – Amber Glass; G – Clear Glass; V – VOA Vial; O – Other; E – Encore

Preservation: 1 – HCl, 4°; 2 – H2SO4, 4°; 3 – HNO3, 4°; 4 – NaOH, 4°; 5 – NaOH/ZnAc, 4°; 6 – Na2S2O3, 4°; 7 – 4°; 8-DI/MeOH, 4°

Project Number: 60250336

Field Logbook No.:

Sampler (Print Name)/(Affiliation): Helen Jones / Res Con

Chain of Custody Tape Nos.:

Signature: Helen Jones

Send Results/Report to: Constance Lapite / AECOM

TAT: See remarks

Matrix Codes: DW – Drinking Water; WW – Wastewater; GW – Groundwater; SW – Surface Water; ST – Storm Water; W – Water; S – Soil; SL – Sludge; SD – Sediment; SO – Solid; A – Air; L – Liquid; P – Product

	Field Sample No./Identification	Date	Time	COMP	GRAB	Matrix	Field Filtered	28d Leptocheirus -- 2 x 1Gallon P (7)	Remarks
001	OU09 SD121 0012	12/4/13	1210		x	SD	NA	x	HOLD
002	OU09 SD120 0012	12/5/13	1045		x	SD	NA	x	HOLD
003	OU09 SD112 0012	12/5/13	1254		x	SD	NA	x	HOLD
004	OU09 SD113 0012	12/5/13	1537		x	SD	NA	x	HOLD (1 bucket)
					x	SD	NA	x	HOLD
					x	SD	NA	x	HOLD
					x	SD	NA	x	HOLD
					x	SD	NA	x	HOLD
					x	SD	NA	x	HOLD
					x	SD	NA	x	HOLD

Relinquished by: (Print Name)/(Affiliation)	Date	Received by: (Print Name)/(Affiliation)	Date
Helen Jones / Res Con Signature: Helen Jones	12/6/13 Time: 1330	Signature: Matt White / ESI	12/6/13 Time: 13:30
Relinquished by: (Print Name)/(Affiliation) Signature:	Date: Time:	Received by: (Print Name)/(Affiliation) Signature:	Date: Time:
Relinquished by: (Print Name)/(Affiliation) Signature:	Date: Time:	Received by: (Print Name)/(Affiliation) Signature:	Date: Time:

Analytical Laboratory (Destination):

EnviroSystems, Inc.
PO Box 778 / 1 Lafayette Road
Hampton, NH 03843-0778
603-926-3345

Sample Shipped Via: UPS FedEx Courier Other

Temp blank: Yes No

Temperature blanks were 6°C at receipt. RAM 12/06/13

SAMPLE RECEIPT AND CONDITION DOCUMENTATION

STUDY NO:	24077		
SDG No:			
Project:	Carr Point MRP Site 1, Naval Station, Newport, Rhode Island		
Delivered via:	**ESI**		
Date and Time Received:	12/11/13 1215	Date and TIme Logged into Lab:	12/11/13 1600
Received By:	DW	Logged into Lab by:	RAM RAM
Air bill / Way bill:	No	Air bill included in folder if received?	NA
Cooler on ice/packs:	Yes	Custody Seals present?	NA
Cooler Blank Temp (C) at arrival:	7C	Custody Seals intact?	NA
Number of COC Pages:	1		
COC Serial Number(s):			
COC Complete:	Yes	Does the info on the COC match the samples?	Yes
Sampled Date:	Yes	Were samples received within holding time?	Yes
Field ID complete:	Yes	Were all samples properly labeled?	Yes
Sampled Time:	Yes	Were proper sample containers used?	Yes
Analysis request:	Yes	Were samples received intact? (none broken or leaking)	Yes
COC Signed and dated:	Yes	Were sample volumes sufficient for requested analysis?	Yes
Were all samples received?	Yes	Were VOC vials free of headspace?	NA
Client notification/authorization:	Not required		

Field ID	Lab ID	Mx	Analysis Requested	Bottle	Req'd Pres'n	Verified Pres'n
OU09 SD106 0012	24077-005	S	HOLD	2x1 gallon P	4C	
BSB6 SD302 0012	24077-006	S	HOLD	2x1 gallon P	4C	

Notes and qualifications:

Hold samples until notified by client to proceed with toxicity testing. (see project documentation)

AECOM

CHAIN OF CUSTODY RECORD

24077

Page 1 of ___

Client/Project Name:	Project Location:
Navy/ Carr Point	Portsmouth, RI

Analysis Requested

Container Type	Preservation
P – Plastic	1 – HCl, 4°
A – Amber Glass	2 – H2SO4, 4°
G – Clear Glass	3 – HNO3, 4°
V – VOA Vial	4 – NaOH, 4°
O – Other	5 – NaOH/ZnAc, 4°
E – Encore	6 – Na2S2O3, 4°
	7 – 4°
	8-DI/MeOH, 4°

Project Number: 60250336

Field Logbook No.:

Sampler (Print Name)/(Affiliation): Helen Jones / Res Corp

Chain of Custody Tape Nos.:

Signature: Helen A. J

Send Results/Report to: Constance Lapite / AECOM

TAT: See remarks

Matrix Codes:

DW – Drinking Water	S – Soil
WW – Wastewater	SL – Sludge
GW – Groundwater	SD – Sediment
SW – Surface Water	SO – Solid
ST – Storm Water	A – Air
W – Water	L – Liquid
	P – Product

	Field Sample No./Identification	Date	Time	COMP	GRAB	Matrix	Field Filtered	28d Leptocheirus -- 2 x 1Gallon P (7)	Remarks
SOS	0409 SD106 0012	12/11/13	0939	~~x~~	x	SD	NA	x	HOLD
0060	BSB6 ~~0409~~ SD302 0012	12/11/13	0906		x	SD	NA	x	HOLD
					x	SD	NA	x	HOLD
					x	SD	NA	x	HOLD
					x	SD	NA	x	HOLD
					x	SD	NA	x	HOLD
					x	SD	NA	x	HOLD
					x	SD	NA	x	HOLD
					x	SD	NA	x	HOLD
					x	SD	NA	x	HOLD

Relinquished by: (Print Name)/(Affiliation)	Date:	Received by: (Print Name)/(Affiliation)	Date:
Helen Jones / Res Corp Signature: Helen A. J	12/11/13 Time: 1215	Signature: D White	12/11/13 Time: 1215
Relinquished by: (Print Name)/(Affiliation) Signature:	Date: Time:	Received by: (Print Name)/(Affiliation) Signature:	Date: Time:
Relinquished by: (Print Name)/(Affiliation) Signature:	Date: Time:	Received by: (Print Name)/(Affiliation) Signature:	Date: Time:

Analytical Laboratory (Destination):

EnviroSystems, Inc.
PO Box 778 / 1 Lafayette Road
Hampton, NH 03843-0778
603-926-3345

Sample Shipped Via: UPS FedEx Courier Other

Temp blank: Yes No

* Temp blanks were both at 7°C. 12/11/13 JTP

SAMPLE RECEIPT AND CONDITION DOCUMENTATION

STUDY NO:	24077		
SDG No:			
Project:	Carr Point MRP Site 1, Naval Station, Newport, Rhode Island		
Delivered via:	**ESI**		
Date and Time Received:	12/13/13 0835	Date and TIme Logged into Lab:	12/13/13 1330
Recieved By:	DW	Logged into Lab by:	RAM
Air bill / Way bill:	No	Air bill included in folder if received?	NA
Cooler on ice/packs:	Yes	Custody Seals present?	NA
Cooler Blank Temp (C) at arrival:	0C	Custody Seals intact?	NA
Number of COC Pages:	1		
COC Serial Number(s):			
COC Complete:	Yes	Does the info on the COC match the samples?	Yes
Sampled Date:	Yes	Were samples received within holding time?	Yes
Field ID complete:	Yes	Were all samples properly labeled?	Yes
Sampled Time:	Yes	Were proper sample containers used?	Yes
Analysis request:	Yes	Were samples received intact? (none broken or leaking)	Yes
COC Signed and dated:	Yes	Were sample volumes sufficient for requested analysis?	Yes
Were all samples received?	Yes	Were VOC vials free of headspace?	NA
Client notification/authorization:	Not required		

Field ID	Lab ID	Mx	Analysis Requested	Bottle	Req'd Pres'n	Verified Pres'n
OU09 SD118 0012	24077-007	S	HOLD	2x1 gallon P	4C	
OU09 SD124 0012	24077-008	S	HOLD	2x1 gallon P	4C	
OU09 SD122 0012	24077-009	S	HOLD	2x1 gallon P	4C	

Notes and qualifications:

Hold samples until notified by client to proceed with toxicity testing. (see project documentation)
Date samples were relinquished and received was 12/13/13. It was incorrectly denoted on the chain of custody.

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24077

AECOM

CHAIN OF CUSTODY RECORD

Client/Project Name:	Project Location:
Navy/ Carr Point	Portsmouth, RI

Analysis Requested

Container Type	Preservation
P – Plastic	1 – HCl, 4°
A – Amber Glass	2 – H2SO4, 4°
G – Clear Glass	3 – HNO3, 4°
V – VOA Vial	4 – NaOH, 4°
O – Other	5 – NaOH/ZnAc, 4°
E – Encore	6 – Na2S2O3, 4°
	7 – 4°
	8-DI/MeOH, 4°

Project Number:	Field Logbook No.:
60250336	
Sampler (Print Name)/(Affiliation): Helen Jones / Res Con	Chain of Custody Tape Nos.:
Signature: Helen A. J	Send Results/Report to: Constance Lapite / AECOM — TAT: See remarks

Matrix Codes:

DW – Drinking Water	S – Soil
WW – Wastewater	SL – Sludge
GW – Groundwater	SD – Sediment
SW – Surface Water	SO – Solid
ST – Storm Water	A – Air
W – Water	L – Liquid
	P – Product

	Field Sample No./Identification	Date	Time	COMP	GRAB	Matrix	Field Filtered	28d Leptocheirus -- 2 x 1Gallon P (7)	Remarks
007	0109 SD118 0012	12/11/13	1329		x	SD	NA	x	HOLD
008	0109 SD124 0012	12/12/13	0750		x	SD	NA	x	HOLD
009	0109 SD122 0012	12/12/13	0915		x	SD	NA	x	HOLD
	~~FB SD12~~				x	SD	NA	x	HOLD
					x	SD	NA	x	HOLD
					x	SD	NA	x	HOLD
					x	SD	NA	x	HOLD
					x	SD	NA	x	HOLD
					x	SD	NA	x	HOLD
					x	SD	NA	x	HOLD
					x	SD	NA	x	HOLD

Relinquished by: (Print Name)/(Affiliation)	Date	Received by: (Print Name)/(Affiliation)	Date
Helen Jones / Res Con Signature: Helen A. J	12/13/12 Time: 0835	Signature: D C White	11-13-13 Time: 0835
Relinquished by: (Print Name)/(Affiliation) Signature:	Date: Time:	Received by: (Print Name)/(Affiliation) Signature:	Date: Time:
Relinquished by: (Print Name)/(Affiliation) Signature:	Date: Time:	Received by: (Print Name)/(Affiliation) Signature:	Date: Time:

Analytical Laboratory (Destination):

EnviroSystems, Inc.
PO Box 778 / 1 Lafayette Road
Hampton, NH 03843-0778
603-926-3345

Sample Shipped Via: UPS FedEx Courier Other

Temp blank: Yes No

SAMPLE RECEIPT AND CONDITION DOCUMENTATION

STUDY NO:	24077		
SDG No:			
Project:	Carr Point MRP Site 1, Naval Station, Newport, Rhode Island		
Delivered via:	**ESI**		
Date and Time Received:	12/18/13 1130	Date and TIme Logged into Lab:	12/18/13 1530
Recieved By:	MW	Logged into Lab by:	RAM RAM
Air bill / Way bill:	No	Air bill included in folder if received?	NA
Cooler on ice/packs:	Yes	Custody Seals present?	NA
Cooler Blank Temp (C) at arrival:	2C	Custody Seals intact?	NA
Number of COC Pages:	1		
COC Serial Number(s):			
COC Complete:	Yes	Does the info on the COC match the samples?	Yes
Sampled Date:	Yes	Were samples received within holding time?	Yes
Field ID complete:	Yes	Were all samples properly labeled?	Yes
Sampled Time:	Yes	Were proper sample containers used?	Yes
Analysis request:	Yes	Were samples received intact? (none broken or leaking)	Yes
COC Signed and dated:	Yes	Were sample volumes sufficient for requested analysis?	Yes
Were all samples received?	Yes	Were VOC vials free of headspace?	NA
Client notification/authorization:	Not required		

Field ID	Lab ID	Mx	Analysis Requested	Bottle	Req'd Pres'n	Verified Pres'n
BSB6 SD304 0012	24077-010	S	HOLD	2x1 gallon P	4C	
OU09 SD102 0012	24077-011	S	HOLD	2x1 gallon P	4C	
BSB6 SD303 0012	24077-012	S	HOLD	2x1 gallon P	4C	
OU09 SD115 0012	24077-013	S	HOLD	2x1 gallon P	4C	
OU09 SD114 0012	24077-014	S	HOLD	2x1 gallon P	4C	
BSB6 SD307 0012	24077-015	S	HOLD	2x1 gallon P	4C	

Notes and qualifications:

Hold samples until notified by client to proceed with toxicity testing. (see project documentation)

24077

AECOM

CHAIN OF CUSTODY RECORD

Client/Project Name:	Project Location:	Analysis Requested
Navy/ Carr Point	Portsmouth, RI	

Container Type: P – Plastic; A – Amber Glass; G – Clear Glass; V – VOA Vial; O – Other; E – Encore

Preservation: 1 – HCl, 4°; 2 – H2SO4, 4°; 3 – HNO3, 4°; 4 – NaOH, 4°; 5 – NaOH/ZnAc, 4°; 6 – Na2S2O3, 4°; 7 – 4°; 8-DI/MeOH, 4°

Project Number: 60250336

Field Logbook No.:

Sampler (Print Name)/(Affiliation): Helen Jones / Res Con

Chain of Custody Tape Nos.:

Signature: Helen ed. Jones

Send Results/Report to: Constance Lapite / AECOM

TAT: See remarks

Matrix Codes: DW – Drinking Water; WW – Wastewater; GW – Groundwater; SW – Surface Water; ST – Storm Water; W – Water; S – Soil; SL – Sludge; SD – Sediment; SO – Solid; A – Air; L – Liquid; P – Product

	Field Sample No./Identification	Date	Time	COMP	GRAB	Matrix	Field Filtered	28d Leptocheirus -- 2 x 1Gallon P (7)	Remarks
010	BSB6 S03040012	12/13/13	0950		x	SD	NA	x	HOLD
011	OU09 SD102 0012	12/13/13	1010		x	SD	NA	x	HOLD
012	BSB6SD030 30012	12/13/13	1045		x	SD	NA	x	HOLD
013	OU09SD115 0012	12/17/13	0955		x	SD	NA	x	HOLD
014	OU09SD114 0012	12/17/13	1100		x	SD	NA	x	HOLD
015	BSB6SD307 0012	12/17/13	1235		x	SD	NA	x	HOLD
					x	SD	NA	x	HOLD
					x	SD	NA	x	HOLD
					x	SD	NA	x	HOLD
					x	SD	NA	x	HOLD

Relinquished by: (Print Name)/(Affiliation)	Date/Time	Received by: (Print Name)/(Affiliation)	Date/Time
Helen Jones / Res Con Signature: Helen ed. Jones	Date: 12/18/13 Time: 11:30	Matt White Signature:	Date: 12/18/13 Time: 11:30
Relinquished by: (Print Name)/(Affiliation) Signature:	Date: Time:	Received by: (Print Name)/(Affiliation) Signature:	Date: Time:
Relinquished by: (Print Name)/(Affiliation) Signature:	Date: Time:	Received by: (Print Name)/(Affiliation) Signature:	Date: Time:

Analytical Laboratory (Destination):

EnviroSystems, Inc.
PO Box 778 / 1 Lafayette Road
Hampton, NH 03843-0778
603-926-3345

Sample Shipped Via: UPS FedEx Courier Other

Temp blank: Yes (circled) No 2°C

Subject: RE: Samples Received for the Assessment at Carr Point
From: "Archer, Christine" <Christine.Archer@aecom.com>
Date: 12/20/2013 10:42 AM
To: Renee McIsaac <r.mcisaac@envirosystems.com>
CC: Kenneth Simon <ksimon@envirosystems.com>, "Lapite, Constance" <Constance.Lapite@aecom.com>

Thanks Renee-
Field IDs look OK except that the four Reference samples should be "BSBG" not "BSB6"
You are correct that we want to test all of the Site samples (OU09 samples) except SD113.
For the Ref locations, we would like to run SD303, SD304, and either SD302 or SD307.
If there is no visual difference between SD302 & SD307, please pick SD302.
Let me know if there are any questions.
Thank you & enjoy the holidays.

- Christine
Direct line 603.622.1556
Mobile 603.205.2131

From: Renee McIsaac [mailto:r.mcisaac@envirosystems.com]
Sent: Thursday, December 19, 2013 10:02 AM
To: Archer, Christine
Cc: Kenneth Simon; Lapite, Constance
Subject: Re: Samples Received for the Assessment at Carr Point

Hello Christine,

I have corrected the project name and compiled the complete sample list for you to review. Can you please review the Field ID's, I think in a couple of cases I was not sure of what was written on the chain.
Based on your previous e-mail, it looks like all the project site samples will be run with the exception of OU09 SD113 0012 (24077-004).
With respect to the reference site samples, I am not sure which ones resemble the project site, but could make a visual inspection.

Thanks,

Renée McIsaac
ERA Project Manager

EnviroSystems, Inc.
Specialists in Environmental Toxicology and Chemistry

P.O. Box 778
Hampton, NH 03843-0778
Voice: 603-926-3345 Ext. 212 / Fax: 603-926-3521

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material or of the attachments, is prohibited. If you receive this transmission in error, please notify us by return e-mail immediately.
On 12/18/2013 4:25 PM, Archer, Christine wrote:

Hi Renee-
You should be receiving the last of the tox samples today (I think a courier picked them up).
Can you send out an updated project receipt doc when you get them checked in?

Please update the project name to -
"Carr Point MRP Site 1, Naval Station, Newport, Rhode Island"
The Storage Area has now been separated out into a separate are which currently does not have a tox program.

We were not able to collect samples from as many locations as we had planned so we will be testing most of the samples you have in house. I believe we have collected from 4 Reference locations & we'll only test 3 (these are the BSBG samples). We also provided a partial Site sample from SD113 (only 1 gallon instead of 2) & I don't think we'll test that.

We will plan to test 10 Site samples (OU09 samples) and 3 Reference samples (BSBG samples).

Note that the samples are to be dry sieved with a #10 (2 mm) sieve prior to testing. EPA is very concerned that using water during the sieving process will have an impact on the tox results so the sediments will need to be pushed through the sieve without any water.

The tests can begin as soon after the holidays as you'd like. As far as the selection of the 3 reference locations – please take a look at the Site samples & the Reference area samples & see if there is one Reference sample that stands out as visually different from the Site samples & should be dropped [let me know what you recommend dropping]. If they are all similar to the Site samples let me know & I'll pick the 3 to test based onsampling locations.

I'll be in the office this week & several days over the next two weeks so if questions come up, please let me know.
Thank you.

Christine Archer
Ecological Risk Assessor
Environment
D 603.622.1556 M 603.205.2131
christine.archer@aecom.com
Internal Cisco Extension: 1081556

AECOM
1000 Elm Street, Suite 802, Manchester, NH 03101
www.aecom.com
Please consider the environment before printing this e-mail

From: Renee McIsaac [mailto:r.mcisaac@envirosystems.com]
Sent: Friday, December 13, 2013 2:19 PM
To: Lapite, Constance; Archer, Christine
Cc: Kenneth Simon
Subject: Samples Received for the Assessment at Carr Point

Hello,

We have received a total of 9 samples for the project located at Carr Point, Newport, Rhode Island.
(I have attached documentation of their receipt.)

All samples were received in good condition.

I have the project name listed as "Carr Point Storage Area and Shooting Range, Naval Station, Newport, Rhode Island", please let me know if this is acceptable.

Please let me know if you have any questions.

Thanks,

Renée McIsaac
ERA Project Manager

EnviroSystems, Inc.
Specialists in Environmental Toxicology and Chemistry

P.O. Box 778
Hampton, NH 03843-0778
Voice: 603-926-3345 Ext. 212 / Fax: 603-926-3521

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ATTACHMENT L

REFINED FOOD WEB MODEL

L-1 TERRESTRIAL RECEPTORS

L-2 SEMI-AQUATIC RECEPTORS

ATTACHMENT L-1
REFINED FOOD CHAIN MODEL - UPLAND EXPOSURE AREA
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ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

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Table 3 TOXICITY REFERENCE VALUES FOR FOR TIER 2, STEP 3A
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ATTACHMENT L-1 TABLE 1
EXPOSURE PARAMETERS FOR TERRESTRIAL ECOLOGICAL RECEPTORS IN TIER 2, STEP 3A
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

Receptor Species	Minimum Body Weight (kg)	Maximum Body Weight (kg)	Average Body Weight (kg)	Food Ingestion Rate (kg_{dw}/day)	Dietary Assumptions for Use in Tier 2, Step 3A (%; kg_{ww}/day)			Incidental Soil/Sediment Ingestion (%; kg_{dw}/day)	Average Home Range (acres)
					Terrestrial Plants	Soil Invertebrates	Small Mammals		
BIRDS									
Bobwhite quail *(Colinus virginianus)*	0.154 [a]	0.194 [a]	0.170 [a]	0.0085 [b]	86% 0.0490	14% 0.0075	-- [c]	6.1% [d] 0.00052	24.7 [e]
American robin *(Turdus migratorius)*	0.0773 [a]	0.0862 [a]	0.081 [a]	0.0120 [b]	63% 0.0502	37% 0.0277	-- [c]	0.9% [d] 0.00011	1.2 [e]
MAMMALS									
Meadow vole *(Microtus pennsylvanicus)*	0.0170 [a]	0.0524 [a]	0.033 [a]	0.0077 [b]	99% 0.0510	1% 0.00048	-- [c]	1.2% [d] 0.000093	0.0659 [e]
Short-tailed shrew *(Blarina brevicauda)*	0.0150 [a]	0.0192 [a]	0.0168 [a]	0.0022 [b]	5% 0.00072	87% 0.0117	8% 0.00054 [c]	0.9% [d] 0.000019	0.9637 [e]

General Notes:

Food ingestion rates are wet weight for food items and dry weight for sediment ingestion. As needed, rate may be converted.

See individual organism notes for source, units, and conversion.

Moisture content of food items assumed to be as follows: 68% for Small Mammals, 84% for Soil Invertebrates (earthworms), and 85% for Terrestrial Plants (dicots) (USEPA, 1993).

BW - Body Weight
DW - Dry Weight
FIR - Food Ingestion Rate
g - grams
kg - kilograms
L - liters
WIR - Water Ingestion Rate
WW - Wet Weight

Notes for Bobwhite quail
[a] Range and average of adult body weights listed by USEPA (1993b).
[b] Food ingestion rate calculated using algorithm for quail developed by Nagy, 2001 [FIR (gdw/day) = $0.088*BW^{0.891}$] using average body weight.
[c] Average diet over the course of a year for adult quail in the southeastern United States (USEPA, 1993b).
[d] In the absence of data for quail, the incidental soil ingestion rate is based on 50th percentile value for mourning dove (USEPA, 2007).
[e] Home range listed by USEPA (1993b) ranges from 8.9 to 41.3 acres with an average of 24.7 acres.

Notes for American robin
[a] Range and average of adult body weights listed by USEPA (1993).
[b] Food ingestion rate calculated using algorithm for insectivorous birds developed by Nagy, 2001 [FIR (g_{dw}/day) = $0.540*BW^{0.705}$] using average body weight.
[c] Average diet over the course of a year for adult robin in the eastern United States (USEPA, 1993).
[d] In the absence of data for the robin, the incidental soil ingestion rate is based on 50th percentile value for shrew (consuming 100% earthworms; USEPA, 2007a).
[e] Home range listed by USEPA (1993) ranges from 0.37 to 2 acres with an average of 1.2 acres.

ATTACHMENT L-1 TABLE 1
EXPOSURE PARAMETERS FOR TERRESTRIAL ECOLOGICAL RECEPTORS IN TIER 2, STEP 3A
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

Notes for Meadow vole
[a] Range and average of adult body weights listed by USEPA (1993).
[b] Food ingestion rate calculated using algorithm for herbivorous mammals developed by Nagy, 2001 [FIR (gdw/day) = $0.859*BW^{0.628}$] using average body weight.
[c] Average diet over the course of a year for meadow vole based on bluegrass habitat in Illinois (USEPA, 1993).
[d] The incidental soil ingestion rate is based on 50th percentile value for vole (USEPA, 2007a).
[e] Home range listed by USEPA (1993) ranges from 0.000494 to 0.2051 acres with an average of 0.0659 acres.

Notes for Short-tailed shrew
[a] Range and average of adult body weights listed by USEPA (1993).
[b] Food ingestion rate calculated using algorithm for insectivorous mammals developed by Nagy, 2001 [FIR (gdw/day) = $0.373*BW^{0.622}$] using average body weight.
[c] Dietary composition for shrew in New York (June to October; USEPA, 1993). The percent allotted to 'other' was assigned to soil invertebrates.
[d] The incidental soil ingestion rate is based on 50th percentile value for shrew (USEPA, 2007a).
[e] Single home range value was listed by USEPA (1993).

ATTACHMENT L-1 TABLE 2
TERRESTRIAL MEDIA AND TISSUE CONCENTRATIONS FOR TIER 2, STEP 3A
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

	Measured Media Concentrations (a)	**Estimated Terrestrial Plant Tissue**			**Estimated Soil Invertebrate Tissue**			**Estimated Small Mammal Tissue**		
COPC	Refined Maximum Soil EPC (mg/kg_{dw})	Soil-to-Plant Uptake Factor		Refined Maximum Plant Tissue EPC (mg/kg_{ww})	Soil-to-Invertebrate Uptake Factor		Refined Maximum Invertebrate Tissue EPC (mg/kg_{ww})	Soil-to-Small Mammal Uptake Factor		Refined Maximum Small Mammal Tissue EPC (mg/kg_{ww})
Inorganics										
ANTIMONY	92.5	Eco-SSL regression	(c)	0.41	1	(h)	14.8	0.05	(i,k)	0.24
ARSENIC	24.8	0.03752	(c)	0.14	Eco-SSL regression	(h)	0.37	Eco-SSL regression	(i)	0.035
CADMIUM	0.33	Eco-SSL regression	(c)	0.051	Eco-SSL regression	(h)	0.55	Eco-SSL regression	(i)	0.054
COPPER	81.4	Eco-SSL regression	(c)	1.7	0.515	(h)	6.7	Eco-SSL regression	(i)	4.7
LEAD	3187	Eco-SSL regression	(c)	3.7	Eco-SSL regression	(h)	86.4	Eco-SSL regression	(i)	12.2
MERCURY	0.0754	0.652	(b)	0.0074	Regression	(g)	0.072	0.0543	(l)	0.0013
SELENIUM	0.41	Eco-SSL regression	(c)	0.029	Eco-SSL regression	(h)	0.078	Eco-SSL regression	(i)	0.15
THALLIUM	0.068	1	(d)	0.010	1	(d)	0.011	0.1124	(l)	0.0024
ZINC	166	Eco-SSL regression	(c)	12.3	Eco-SSL regression	(h)	73.2	Eco-SSL regression	(i)	36.0
Organics										
TOTAL LMW PAHs	28.9	Eco-SSL regression	(c)	0.18	3.04	(h)	14.1	0	(i,j)	0
TOTAL HMW PAHs	75.5	Eco-SSL regression	(c)	1.6	2.6	(h)	31.4	0	(i,j)	0
TOTAL PCBs	270	0.00865	(e)	0.35	6.7	(g)	288	1	(d)	86.4
4,4-DDT	19.0	0.00378	(e)	0.011	Eco-SSL regression	(h)	17.3	Eco-SSL regression	(i,k)	8.2
ENDOSULFAN SULFATE	12.0	0.231	(e,f)	0.42	1	(d)	1.92	1	(d)	3.84

Notes:
Refined maximum EPCs represent UCLs or maximum detected concentrations if UCLs could not be calculated.
Unless otherwise noted, uptake factors derive tissue concentrations on a dry weight basis. Concentrations are adjusted to a wet weight basis using moisture content below.
Moisture content of food items assumed to be as follows: 68% for Small Mammals, 84% for Soil Invertebrates (earthworms), and 85% for Terrestrial Plants (dicots) (USEPA, 1993).

COPC - Chemical of Potential Concern.
EPC - Exposure Point Concentration.
dw - Dry Weight.
HMW - High Molecular Weight.
LMW - Low Molecular Weight.
PAHs - Polycyclic Aromatic Hydrocarbons.
PCBs - Polychlorinated Biphenyls.
UCL - Upper Confidence Limit.
USEPA - United States Environmental Protection Agency.
ww - Wet Weight.

ATTACHMENT L-1 TABLE 2
TERRESTRIAL MEDIA AND TISSUE CONCENTRATIONS FOR TIER 2, STEP 3A
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

(a) Media EPCs presented in Appendix J.
(b) Soil-to-plant uptake factors from Bechtel Jacobs (1998; values from Table D-1; mercury values from Table 6). Value for BERA is median uptake factor.
(c) Soil-to-plant uptake factors and regression equations recommended by USEPA in development of Ecological Soil Screening Levels (USEPA, 2007a)

antimony	ln(tissue concentration) = 0.938 * ln(soil concentration) - 3.233
cadmium	ln(tissue concentration) = 0.546 * ln(soil concentration) - 0.475
copper	ln(tissue concentration) = 0.394 * ln(soil concentration) + 0.668
lead	ln(tissue concentration) = 0.561 * ln(soil concentration) - 1.328
selenium	ln(tissue concentration) = 1.104 * ln(soil concentration) - 0.677
zinc	ln(tissue concentration) = 0.554 * ln(soil concentration) + 1.575
Total LMW PAHs	ln(tissue concentration) = 0.4544 * ln(soil concentration) - 1.3205
Total HMW PAHs	ln(tissue concentration) = 0.9469 * ln(soil concentration) - 1.7026

(d) Default value of 1 assigned to parameters without uptake factors
(e) Values identified using the Risk Assessment Information System (http://rais.ornl.gov/cgi-bin/tools/TOX_search?select=chem_spef; accessed September 22, 2012).
(f) Value for endosulfan used as a surrogate due to structural similarity.
(g) Soil-to-earthworm uptake factors from Sample, et al (1998a) - iron from Table C.1, mercury from Table 4, PCBs from Table 11. Value for Tier 2 Step 3A is median uptake factor.
(h) Soil-to-invertebrate uptake factors and regression equations recommended by USEPA in development of Ecological Soil Screening Levels (USEPA, 2007a)

arsenic	ln(tissue concentration) = 0.706 * ln(soil concentration) - 1.421
cadmium	ln(tissue concentration) = 0.795 * ln(soil concentration) + 2.114
lead	ln(tissue concentration) = 0.807 * ln(soil concentration) - 0.218
manganese	ln(tissue concentration) = 0.682 * ln(soil concentration) - 0.809
selenium	ln(tissue concentration) = 0.733 * ln(soil concentration) - 0.075
zinc	ln(tissue concentration) = 0.328 * ln(soil concentration) + 4.449

(i) Soil-to-mammal uptake factors and regression equations recommended by USEPA in development of Ecological Soil Screening Levels (USEPA, 2007a)

arsenic	ln(tissue concentration) = 0.8188 * ln(soil concentration) - 4.8471
cadmium	ln(tissue concentration) = 0.4723 * ln(soil concentration) - 1.2571
cobalt	ln(tissue concentration) = 1.307 * ln(soil concentration) - 4.4669
copper	ln(tissue concentration) = 0.1444 * ln(soil concentration) + 2.042
lead	ln(tissue concentration) = 0.4422 * ln(soil concentration) + 0.0761
nickel	ln(tissue concentration) = 0.4658 * ln(soil concentration) - 0.2462
selenium	ln(tissue concentration) = 0.3764 * ln(soil concentration) - 0.4158
zinc	ln(tissue concentration) = 0.0706 * ln(soil concentration) + 4.3632
4,4'-DDT	ln(tissue concentration) = 0.7254 * ln(worm concentration) + 1.1788

(j) Assumes negligible uptake.
(k) Uptake factor is multiplied by concentration in the small mammal diet (assumed to be 100% earthworms).
(l) Soil-to-mammal uptake factor from Sample, et al (1998b) - values for general mammals from Table 7. Value for Tier 2 Step 3A is median uptake factor.

ATTACHMENT L-1 TABLE 3
TOXICITY REFERENCE VALUES FOR FOR TIER 2, STEP 3A
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

COPC	TRV (mg/kg $_{bw}$/day)	Endpoint	Effect	Chronic/ Subchronic	Species	Primary Reference	Source of Reference
Inorganics							
ANTIMONY	0.059	NOAEL	reproduction & growth	chronic	mammals	USEPA, 2005a	
ANTIMONY	2.76	LOAEL	reproduction & growth	chronic	mammals	USEPA, 2005a	
ARSENIC	2.24	NOAEL	reproduction & growth	chronic	birds	USEPA, 2005b	
ARSENIC	4.51	LOAEL	reproduction & growth	chronic	birds	USEPA, 2005b	
ARSENIC	1.04	NOAEL	reproduction & growth	chronic	mammals	USEPA, 2005b	
ARSENIC	4.55	LOAEL	reproduction & growth	chronic	mammals	USEPA, 2005b	
CADMIUM	1.47	NOAEL	reproduction & growth	chronic	birds	USEPA, 2005c	
CADMIUM	6.35	LOAEL	reproduction & growth	chronic	birds	USEPA, 2005c	
CADMIUM	0.77	NOAEL	reproduction & growth	chronic	mammals	USEPA, 2005c	
CADMIUM	6.9	LOAEL	reproduction & growth	chronic	mammals	USEPA, 2005c	
COPPER	4.05	NOAEL	reproduction & growth	chronic	birds	USEPA, 2007b	
COPPER	34.87	LOAEL	reproduction & growth	chronic	birds	USEPA, 2007b	
COPPER	5.6	NOAEL	reproduction & growth	chronic	mammals	USEPA, 2007b	
COPPER	82.7	LOAEL	reproduction & growth	chronic	mammals	USEPA, 2007b	
LEAD	1.63	NOAEL	reproduction & growth	chronic	birds	USEPA, 2005d	
LEAD	44.6	LOAEL	reproduction & growth	chronic	birds	USEPA, 2005d	
LEAD	4.7	NOAEL	reproduction & growth	chronic	mammals	USEPA, 2005d	
LEAD	186.4	LOAEL	reproduction & growth	chronic	mammals	USEPA, 2005d	
MERCURY	0.0064	estimated NOAEL	reproductive	chronic	mallard duck	Heinz, 1979	Sample et al., 1996
MERCURY	0.064	LOAEL	reproductive	chronic	mallard duck	Heinz, 1979	Sample et al., 1996
MERCURY	0.032	NOAEL	reproductive	chronic	rat	Verschuuren et al., 1976	Sample et al., 1996
MERCURY	0.16	LOAEL	reproductive	chronic	rat	Verschuuren et al., 1976	Sample et al., 1996
SELENIUM	0.29	NOAEL	reproduction & growth	chronic	birds	USEPA, 2007c	
SELENIUM	0.819	LOAEL	reproduction & growth	chronic	birds	USEPA, 2007c	
SELENIUM	0.143	NOAEL	reproduction & growth	chronic	mammals	USEPA, 2007c	
SELENIUM	0.661	LOAEL	reproduction & growth	chronic	mammals	USEPA, 2007c	
THALLIUM	0.0074	NOAEL	reproduction	subchronic	rat	Formigli, et al., 1986	Sample et al., 1996
THALLIUM	0.074	LOAEL	reproduction	subchronic	rat	Formigli, et al., 1986	Sample et al., 1996
ZINC	75.4	NOAEL	reproduction & growth	chronic	mammals	USEPA, 2007d	
ZINC	297.58	LOAEL	reproduction & growth	chronic	mammals	USEPA, 2007d	
ZINC	66.1	NOAEL	reproduction & growth	chronic	birds	USEPA, 2007d	
ZINC	171.44	LOAEL	reproduction & growth	chronic	birds	USEPA, 2007d	
Organics							
TOTAL LMW PAHs	65.6	NOAEL	reproduction & growth	chronic	mammals	USEPA, 2007e	
TOTAL LMW PAHs	356	LOAEL	reproduction & growth	chronic	mammals	USEPA, 2007e	
TOTAL HMW PAHs	0.615	NOAEL	reproduction & growth	chronic	mammals	USEPA, 2007e	
TOTAL HMW PAHs	38.4	LOAEL	reproduction & growth	chronic	mammals	USEPA, 2007e	
TOTAL LMW PAHs / HMW PAHs	2	NOAEL	systemic	chronic	nestling/starlings	Trust et al., 1994	
TOTAL LMW PAHs / HMW PAHs	20	LOAEL	systemic	chronic	nestling/starlings	Trust et al., 1994	
4,4-DDT	0.147	NOAEL	reproduction & growth	chronic	mammals	USEPA, 2007f	
4,4-DDT	5.56	LOAEL	reproduction & growth	chronic	mammals	USEPA, 2007f	
4,4-DDT	0.227	NOAEL	reproduction & growth	chronic	birds	USEPA, 2007f	
4,4-DDT	2.7	LOAEL	reproduction & growth	chronic	birds	USEPA, 2007f	
ENDOSULFAN	0.15	NOAEL	reproduction	subchronic	rat	Dikshith et al., 1984	Sample et al., 1996
ENDOSULFAN	1.5	estimated LOAEL	reproduction	subchronic	rat	Dikshith et al., 1984	Sample et al., 1996
ENDOSULFAN	10	NOAEL	reproduction	chronic	gray partridge	Abiola, 1992	Sample et al., 1996
ENDOSULFAN	100	estimated LOAEL	reproduction	chronic	gray partridge	Abiola, 1992	Sample et al., 1996
TOTAL PCBs	0.18	estimated NOAEL	reproduction	chronic	pheasant	Dahlgren et al., 1972	Sample et al., 1996
TOTAL PCBs	1.8	LOAEL	reproduction	chronic	pheasant	Dahlgren et al., 1972	Sample et al., 1996
TOTAL PCBs	0.068	estimated NOAEL	reproduction	chronic	mouse	McCoy et al., 1995	Sample et al., 1996
TOTAL PCBs	0.68	LOAEL	reproduction	chronic	mouse	McCoy et al., 1995	Sample et al., 1996

Notes:
COPC - Chemical of Potential Concern.
HMW - High Molecular Weight.
LMW - Low Molecular Weight.
LOAEL - Lowest Observed Adverse Effects Level.
NOAEL - No Observed Adverse Effects Level.
PAHs - Polycyclic Aromatic Hydrocarbons.
PCBs - Polychlorinated Biphenyls.
USEPA - United States Environmental Protection Agency.
The avian NOAELs and LOAELs for the HMW and LMW PAHs are based on 7,12-dimethylbenz(a)anthracene.
Avian TRVs are not available for antimony and thallium.
NOAELs were estimated if a NOAEL was not identified in the literature. The LOAEL was divided by 10 to derive an estimated NOAEL.
If only a NOAEL was available, the value was multiplied by 10 to estimate the LOAEL.
Endosulfan used as a surrogate for endosulfan sulfate.

ATTACHMENT L-1 TABLE 4
POTENTIAL RISKS TO THE BOBWHITE QUAIL - TIER 2, STEP 3A
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

$$\text{Total Daily Dose} = \frac{\Sigma([IR_f \times C_f] + [IR_s \times C_s] \times ED \times AUF}{\text{Average Body Weight (kg)}}$$

Where:
IR_f = Ingestion rate of food (kg/day)
IR_s = Incidental ingestion rate of soil or sediment (kg/day)
C_f = Concentration of COPC in food (mg/kg)
C_s= Concentration of COPC in sediment or soil (mg/kg)
ED = Exposure duration (fraction of time receptor spends within exposure area)
AUF = Area use factor (ratio of the receptor's home range, etc,... relative to

ASSUMPTIONS FOR THE BOBWHITE QUAIL	
Average Body Weight (kg)	0.170
Exposure Duration	1.0
Area Use Factor (a)	0.16
Soil Consumption Rate (kg_{dw}/day)	0.00052
Terrestrial Plant Consumption Rate (kg_{ww}/day)	0.0490
Soil Invt. Consumption Rate (kg_{ww}/day)	0.0075

Notes:
COPC - Chemical of Potential Concern.
dw - Dry Weight.
EPC - Exposure Point Concentration.
HMW - High Molecular Weight.
HQ - Hazard Quotient (Dose/TRV).
LOAEL - Low Observed Adverse Effects Level.
LMW - Low Molecular Weight.
NC - Not Calculated.
NOAEL - No Observed Adverse Effects Level.
NV - No Value.
PAHs - Polycyclic Aromatic Hydrocarbons.
TRV - Toxicity Reference Value.
ww - Wet Weight.

HQs above 1 are bolded and highlighted.
Refined EPCs for BERA are the 95% upper confidence limit (UCL) on the arithmetic mean (or the maximum detected concentration of a UCL could not be calculated).
(a) The AUF is based on the quail home range (24.7 acres) and 4 acres of potential terrestrial habitat at MRP Site 1.

SUPPORTING CALCULATIONS

FOOD WEB MODEL - REFINED MAXIMUM EPCs	Media Concentrations			Potential Daily Dose (mg/kg_{dw}/day)							
COPC	Soil (mg/kg_{dw})	Terrestrial Plant (mg/kg_{ww})	Soil Invertebrate (mg/kg_{ww})	Soil	Terrestrial Plant	Soil Invertebrate	Total	NOAEL-based TRV (mg/kg_{dw}/day)	NOAEL-based HQ	LOAEL-based TRV (mg/kg_{bw}/day)	LOAEL-based HQ
Inorganics											
ANTIMONY	9.2E+01	4.1E-01	1.5E+01	4.6E-02	1.9E-02	1.1E-01	1.7E-01	NV	NC	NV	NC
LEAD	3.2E+03	3.7E+00	8.6E+01	1.6E+00	1.7E-01	6.2E-01	2.4E+00	1.6E+00	**1.5E+00**	4.5E+01	5.3E-02
MERCURY	7.5E-02	7.4E-03	7.2E-02	3.7E-05	3.4E-04	5.2E-04	9.0E-04	6.4E-03	1.4E-01	6.4E-02	1.4E-02
THALLIUM	6.8E-02	1.0E-02	1.1E-02	3.4E-05	4.7E-04	7.7E-05	5.9E-04	NV	NC	NV	NC
Organics											
TOTAL HMW PAHs	7.5E+01	1.6E+00	3.1E+01	3.7E-02	7.7E-02	2.2E-01	3.4E-01	2.0E+00	1.7E-01	2.0E+01	1.7E-02
TOTAL PCBs	2.7E+02	3.5E-01	2.9E+02	1.3E-01	1.6E-02	2.1E+00	2.2E+00	1.8E-01	**1.2E+01**	1.8E+00	**1.2E+00**

ATTACHMENT L-1 TABLE 5
POTENTIAL RISKS TO THE AMERICAN ROBIN - TIER 2, STEP 3A
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

$$\text{Total Daily Dose} = \frac{\Sigma([IR_f \times C_f] + [IR_s \times C_s] \times ED \times AUF}{\text{Average Body Weight (kg)}}$$

Where:
IR_f = Ingestion rate of food (kg/day)
IR_s = Incidental ingestion rate of soil or sediment (kg/day)
C_f = Concentration of COPC in food (mg/kg)
C_s= Concentration of COPC in sediment or soil (mg/kg)
ED = Exposure duration (fraction of time receptor spends within exposure area)
AUF = Area use factor (ratio of the receptor's home range, etc,... relative to

ASSUMPTIONS FOR THE AMERICAN ROBIN	
Average Body Weight (kg)	0.081
Exposure Duration (a)	0.67
Area Use Factor	1
Soil Consumption Rate (kg_{dw}/day)	0.00011
Terrestrial Plant Consumption Rate (kg_{ww}/day)	0.0502
Soil Invt. Consumption Rate (kg_{ww}/day)	0.0277

Notes:
COPC - Chemical of Potential Concern.
dw - Dry Weight.
EPC - Exposure Point Concentration.
HMW - High Molecular Weight.
HQ - Hazard Quotient (Dose/TRV).
LOAEL - Low Observed Adverse Effects Level.
LMW - Low Molecular Weight.
NC - Not Calculated.
NOAEL - No Observed Adverse Effects Level.
NV - No Value.
PAHs - Polycyclic Aromatic Hydrocarbons.
TRV - Toxicity Reference Value.
ww - Wet Weight.

HQs above 1 are bolded and highlighted.
Refined maximum EPCs for BERA are the 95% upper confidence limit (UCL) on the arithmetic mean (or the maximum detected concentration of a UCL could not be calculated).
(a) ED assumes that robin migrates out of the area for the winter months (November through February).

SUPPORTING CALCULATIONS

FOOD WEB MODEL - REFINED MAXIMUM EPCs	Media Concentrations			Potential Daily Dose (mg/kg_{dw}/day)							
COPC	Soil (mg/kg_{dw})	Terrestrial Plant (mg/kg_{ww})	Soil Invertebrate (mg/kg_{ww})	Soil	Terrestrial Plant	Soil Invertebrate	Total	NOAEL-based TRV (mg/kg_{dw}/day)	NOAEL-based HQ	LOAEL-based TRV (mg/kg_{bw}/day)	LOAEL-based HQ
Inorganics											
ANTIMONY	9.2E+01	4.1E-01	1.5E+01	8.2E-02	1.7E-01	3.4E+00	3.6E+00	NV	NC	NV	NC
COPPER	8.1E+01	1.7E+00	6.7E+00	7.2E-02	6.8E-01	1.5E+00	2.3E+00	4.1E+00	5.6E-01	3.5E+01	6.5E-02
LEAD	3.2E+03	3.7E+00	8.6E+01	2.8E+00	1.5E+00	2.0E+01	2.4E+01	1.6E+00	**1.5E+01**	4.5E+01	5.4E-01
MERCURY	7.5E-02	7.4E-03	7.2E-02	6.7E-05	3.0E-03	1.6E-02	2.0E-02	6.4E-03	**3.1E+00**	6.4E-02	3.1E-01
THALLIUM	6.8E-02	1.0E-02	1.1E-02	6.0E-05	4.2E-03	2.5E-03	6.7E-03	NV	NC	NV	NC
ZINC	1.7E+02	1.2E+01	7.3E+01	1.5E-01	5.1E+00	1.7E+01	2.2E+01	6.6E+01	3.3E-01	1.7E+02	1.3E-01
Organics											
TOTAL LMW PAHs	2.9E+01	1.8E-01	1.4E+01	2.6E-02	7.6E-02	3.2E+00	3.3E+00	2.0E+00	**1.7E+00**	2.0E+01	1.7E-01
TOTAL HMW PAHs	7.5E+01	1.6E+00	3.1E+01	6.7E-02	6.8E-01	7.1E+00	7.9E+00	2.0E+00	**3.9E+00**	2.0E+01	3.9E-01
TOTAL PCBs	2.7E+02	3.5E-01	2.9E+02	2.4E-01	1.4E-01	6.6E+01	6.6E+01	1.8E-01	**3.7E+02**	1.8E+00	**3.7E+01**
4,4-DDT	1.9E+01	1.1E-02	1.7E+01	1.7E-02	4.5E-03	3.9E+00	4.0E+00	2.3E-01	**1.7E+01**	2.7E+00	**1.5E+00**

ATTACHMENT L-1 TABLE 6
POTENTIAL RISKS TO THE MEADOW VOLE - TIER 2, STEP 3A
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

ASSUMPTIONS FOR THE MEADOW VOLE	
Average Body Weight (kg)	0.033
Exposure Duration	1
Area Use Factor	1
Soil Consumption Rate (kg_{dw}/day)	0.000093
Terrestrial Plant Consumption Rate (kg_{ww}/day)	0.0510
Soil Invt. Consumption Rate (kg_{ww}/day)	0.00048

$$\text{Total Daily Dose} = \frac{\Sigma([IR_f \times C_f] + [IR_s \times C_s] \times ED \times AUF}{\text{Average Body Weight}}$$

Where:
IR_f = Ingestion rate of food (kg/day)
IR_s = Incidental ingestion rate of soil or sediment (kg/day)
C_f = Concentration of COPC in food (mg/kg)
C_s= Concentration of COPC in sediment or soil (mg/kg)
ED = Exposure duration (fraction of time receptor spends within exposure area)
AUF = Area use factor (ratio of the receptor's home range, etc,... relative to the size of exposure area)

Notes:
COPC - Chemical of Potential Concern.
dw - Dry Weight.
EPC - Exposure Point Concentration.
HMW - High Molecular Weight.
HQ - Hazard Quotient (Dose/TRV).
LOAEL - Low Observed Adverse Effects Level.
LMW - Low Molecular Weight.
NC - Not Calculated.
NOAEL - No Observed Adverse Effects Level.
NV - No Value.
PAHs - Polycyclic Aromatic Hydrocarbons.
TRV - Toxicity Reference Value.
ww - Wet Weight.

HQs above 1 are bolded and highlighted.
Refined maximum EPCs for BERA are the 95% upper confidence limit (UCL) on the arithmetic mean (or the maximum detected concentration of a UCL could not be calculated).

SUPPORTING CALCULATIONS

FOOD WEB MODEL - REFINED MAXIMUM EPCs	Media Concentrations			Potential Daily Dose (mg/kg_{bw}/day)							
COPC	Soil (mg/kg_{dw})	Terrestrial Plant (mg/kg_{ww})	Soil Invertebrate (mg/kg_{ww})	Soil	Terrestrial Plant	Soil Invertebrate	Total	NOAEL-based TRV (mg/kg_{dw}/day)	NOAEL-based HQ	LOAEL-based TRV (mg/kg_{dw}/day)	LOAEL-based HQ
Inorganics											
ANTIMONY	9.2E+01	4.1E-01	1.5E+01	2.6E-01	6.4E-01	2.2E-01	1.1E+00	5.9E-02	**1.9E+01**	2.8E+00	4.0E-01
ARSENIC	2.5E+01	1.4E-01	3.7E-01	7.0E-02	2.2E-01	5.5E-03	2.9E-01	1.0E+00	2.8E-01	4.6E+00	6.4E-02
COPPER	8.1E+01	1.7E+00	6.7E+00	2.3E-01	2.6E+00	9.8E-02	2.9E+00	5.6E+00	5.1E-01	8.3E+01	3.5E-02
LEAD	3.2E+03	3.7E+00	8.6E+01	8.9E+00	5.7E+00	1.3E+00	1.6E+01	4.7E+00	**3.4E+00**	1.9E+02	8.5E-02
MERCURY	7.5E-02	7.4E-03	7.2E-02	2.1E-04	1.1E-02	1.1E-03	1.3E-02	3.2E-02	4.0E-01	1.6E-01	7.9E-02
SELENIUM	4.1E-01	2.9E-02	7.8E-02	1.2E-03	4.4E-02	1.1E-03	4.7E-02	1.4E-01	3.3E-01	6.6E-01	7.1E-02
THALLIUM	6.8E-02	1.0E-02	1.1E-02	1.9E-04	1.6E-02	1.6E-04	1.6E-02	7.4E-03	**2.2E+00**	7.4E-02	2.2E-01
ZINC	1.7E+02	1.2E+01	7.3E+01	4.7E-01	1.9E+01	1.1E+00	2.1E+01	7.5E+01	2.7E-01	3.0E+02	6.9E-02
Organics											
TOTAL HMW PAHs	7.5E+01	1.6E+00	3.1E+01	2.1E-01	2.5E+00	4.6E-01	3.2E+00	6.2E-01	**5.2E+00**	3.8E+01	8.3E-02
TOTAL PCBs	2.7E+02	3.5E-01	2.9E+02	7.6E-01	5.4E-01	4.2E+00	5.5E+00	6.8E-02	**8.1E+01**	6.8E-01	**8.1E+00**
4,4-DDT	1.9E+01	1.1E-02	1.7E+01	5.3E-02	1.7E-02	2.5E-01	3.2E-01	1.5E-01	**2.2E+00**	5.6E+00	5.8E-02
ENDOSULFAN SULFATE	1.2E+01	4.2E-01	1.9E+00	3.4E-02	6.4E-01	2.8E-02	7.0E-01	1.5E-01	**4.7E+00**	1.5E+00	4.7E-01

ATTACHMENT L-1 TABLE 7
POTENTIAL RISKS TO THE SHORT-TAILED SHREW - TIER 2, STEP 3A
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

ASSUMPTIONS FOR THE SHORT-TAILED SHREW	
Average Body Weight (kg)	0.017
Exposure Duration	1
Area Use Factor	1
Soil Consumption Rate (kg_{dw}/day)	0.000019
Terrestrial Plant Consumption Rate (kg_{ww}/day)	0.00072
Soil Invt. Consumption Rate (kg_{ww}/day)	0.0117
Small Mammals Consumption Rate (kg_{ww}/day)	0.00054

$$\text{Total Daily Dose} = \frac{\Sigma([IR_f \times C_f] + [IR_s \times C_s] \times ED \times AUF}{\text{Average Body Weight}}$$

Where:
IR_f = Ingestion rate of food (kg/day)
IR_s = Incidental ingestion rate of soil or sediment (kg/day)
C_f = Concentration of COPC in food (mg/kg)
C_s = Concentration of COPC in sediment or soil (mg/kg)
ED = Exposure duration (fraction of time receptor spends within exposure area)
AUF = Area use factor (ratio of the receptor's home range, etc,... relative to the size of exposure area)

Notes:
COPC - Chemical of Potential Concern.
dw - Dry Weight.
EPC - Exposure Point Concentration.
HMW - High Molecular Weight.
HQ - Hazard Quotient (Dose/TRV).
LOAEL - Low Observed Adverse Effects Level.
LMW - Low Molecular Weight.
NC - Not Calculated.
NOAEL - No Observed Adverse Effects Level.
NV - No Value.
PAHs - Polycyclic Aromatic Hydrocarbons.
TRV - Toxicity Reference Value.
ww - Wet Weight.

HQs above 1 are bolded and highlighted.
Refined maximum EPCs for BERA are the 95% upper confidence limit (UCL) on the arithmetic mean (or the maximum detected concentration of a UCL could not be calculated).

SUPPORTING CALCULATIONS

FOOD WEB MODEL - REFINED MAXIMUM EPCs	Media Concentrations				Potential Daily Dose (mg/kg_{bw}/day)								
COPC	Soil (mg/kg_{dw})	Terrestrial Plant (mg/kg_{ww})	Soil Invertebrate (mg/kg_{ww})	Small Mammal (mg/kg_{ww})	Soil	Terrestrial Plant	Soil Invertebrate	Small Mammal	Total	NOAEL-based TRV (mg/kg_{dw}/day)	NOAEL-based HQ	LOAEL-based TRV (mg/kg_{dw}/day)	LOAEL-based HQ
Inorganics													
ANTIMONY	9.2E+01	4.1E-01	1.5E+01	2.4E-01	1.1E-01	1.8E-02	1.0E+01	7.6E-03	1.0E+01	5.9E-02	**1.8E+02**	2.8E+00	**3.8E+00**
ARSENIC	2.5E+01	1.4E-01	3.7E-01	3.5E-02	2.9E-02	6.0E-03	2.6E-01	1.1E-03	3.0E-01	1.0E+00	2.8E-01	4.6E+00	6.5E-02
CADMIUM	3.3E-01	5.1E-02	5.5E-01	5.4E-02	3.8E-04	2.2E-03	3.8E-01	1.7E-03	3.9E-01	7.7E-01	5.0E-01	6.9E+00	5.6E-02
COPPER	8.1E+01	1.7E+00	6.7E+00	4.7E+00	9.4E-02	7.1E-02	4.7E+00	1.5E-01	5.0E+00	5.6E+00	8.9E-01	8.3E+01	6.0E-02
LEAD	3.2E+03	3.7E+00	8.6E+01	1.2E+01	3.7E+00	1.6E-01	6.0E+01	3.9E-01	6.5E+01	4.7E+00	**1.4E+01**	1.9E+02	3.5E-01
MERCURY	7.5E-02	7.4E-03	7.2E-02	1.3E-03	8.7E-05	3.2E-04	5.1E-02	4.2E-05	5.1E-02	3.2E-02	**1.6E+00**	1.6E-01	3.2E-01
THALLIUM	6.8E-02	1.0E-02	1.1E-02	2.4E-03	7.8E-05	4.4E-04	7.6E-03	7.8E-05	8.2E-03	7.4E-03	**1.1E+00**	7.4E-02	1.1E-01
ZINC	1.7E+02	1.2E+01	7.3E+01	3.6E+01	1.9E-01	5.3E-01	5.1E+01	1.2E+00	5.3E+01	7.5E+01	7.0E-01	3.0E+02	1.8E-01
Organics													
TOTAL HMW PAHs	7.5E+01	1.6E+00	3.1E+01	0.0E+00	8.7E-02	7.0E-02	2.2E+01	0.0E+00	2.2E+01	6.2E-01	**3.6E+01**	3.8E+01	5.7E-01
TOTAL PCBs	2.7E+02	3.5E-01	2.9E+02	8.6E+01	3.1E-01	1.5E-02	2.0E+02	2.8E+00	2.0E+02	6.8E-02	**3.0E+03**	6.8E-01	**3.0E+02**
4,4-DDT	1.9E+01	1.1E-02	1.7E+01	8.2E+00	2.2E-02	4.6E-04	1.2E+01	2.6E-01	1.2E+01	1.5E-01	**8.4E+01**	5.6E+00	**2.2E+00**
ENDOSULFAN SULFATE	1.2E+01	4.2E-01	1.9E+00	3.8E+00	1.4E-02	1.8E-02	1.3E+00	1.2E-01	1.5E+00	1.5E-01	**1.0E+01**	1.5E+00	1.0E+00

ATTACHMENT L-1 TABLE 8
SUMMARY OF POTENTIAL RISKS TO TERRESTRIAL WILDLIFE IN TIER 2, STEP 3A
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

	NOAEL-based HQ - Refined Maximum EPCs				LOAEL-based HQ - Refined Maximum EPCs			
COPC	**Bobwhite Quail**	**American robin**	**Meadow vole**	**Short-tailed shrew**	**Bobwhite Quail**	**American robin**	**Meadow vole**	**Short-tailed shrew**
Inorganics								
ANTIMONY	NC	NC	**1.9E+01**	**1.8E+02**	NC	NC	4.0E-01	**3.8E+00**
ARSENIC	nCOPC	nCOPC	2.8E-01	2.8E-01	nCOPC	nCOPC	6.4E-02	6.5E-02
CADMIUM	nCOPC	nCOPC	nCOPC	5.0E-01	nCOPC	nCOPC	nCOPC	5.6E-02
COPPER	nCOPC	5.6E-01	5.1E-01	8.9E-01	nCOPC	6.5E-02	3.5E-02	6.0E-02
LEAD	**1.5E+00**	**1.5E+01**	**3.4E+00**	**1.4E+01**	5.3E-02	5.4E-01	8.5E-02	3.5E-01
MERCURY	1.4E-01	**3.1E+00**	4.0E-01	**1.6E+00**	1.4E-02	3.1E-01	7.9E-02	3.2E-01
SELENIUM	nCOPC	nCOPC	3.3E-01	nCOPC	nCOPC	nCOPC	7.1E-02	nCOPC
THALLIUM	NC	NC	**2.2E+00**	**1.1E+00**	NC	NC	2.2E-01	1.1E-01
ZINC	nCOPC	3.3E-01	2.7E-01	7.0E-01	nCOPC	1.3E-01	6.9E-02	1.8E-01
Organics								
TOTAL LMW PAHs	nCOPC	**1.7E+00**	nCOPC	nCOPC	nCOPC	1.7E-01	nCOPC	nCOPC
TOTAL HMW PAHs	1.7E-01	**3.9E+00**	**5.2E+00**	**3.6E+01**	1.7E-02	3.9E-01	8.3E-02	5.7E-01
TOTAL PCBs	**1.2E+01**	**3.7E+02**	**8.1E+01**	**3.0E+03**	**1.2E+00**	**3.7E+01**	**8.1E+00**	**3.0E+02**
4,4-DDT	nCOPC	**1.7E+01**	**2.2E+00**	**8.4E+01**	nCOPC	**1.5E+00**	5.8E-02	**2.2E+00**
ENDOSULFAN SULFATE	nCOPC	nCOPC	**4.7E+00**	**1.0E+01**	nCOPC	nCOPC	4.7E-01	1.0E+00

Notes:
Refined maximum EPCs for BERA are the 95% upper confidence limit (UCL) on the arithmetic mean (or the maximum detected concentration of a UCL could not be calculated).
Potential risk is calculated using the refined maximum EPC and both NOAEL- and LOAEL-based TRVs.
HQs above 1 are bolded and highlighted.

COPC - Chemical of Potential Concern.
HMW - High Molecular Weight.
HQ - Hazard Quotient.
LOAEL - Low Observed Adverse Effect Level.
LMW - Low Molecular Weight.
NC - Not calculated.
PAH - Polycyclic Aromatic Hydrocarbon.
TRV - Toxicity Reference Value.
nCOPC - Not retained as a wildlife COPC in this medium.

ATTACHMENT L-1 TABLE 9
REFERENCES CITED
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

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ATTACHMENT L-1 TABLE 9
REFERENCES CITED
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

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ATTACHMENT L-2
REFINED FOOD CHAIN MODEL -NARRAGANSETT BAY
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ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

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ATTACHMENT L-2 TABLE 1
EXPOSURE PARAMETERS FOR SEMI-AQUATIC ECOLOGICAL RECEPTORS IN TIER 2, STEP 3A
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

Receptor Species	Minimum Body Weight (kg)	Maximum Body Weight (kg)	Average Body Weight (kg)	Food Ingestion Rate (kg_{dw}/day)	Dietary Assumptions for Use in Tier 2, Step 3A (%; kg_{ww}/day)					Incidental Soil/Sediment Ingestion (%; kg_{dw}/day)	Average Home Range (acres)
					Terrestrial Plants	Shellfish	Soil Invertebrates	Small Mammals	Fish		
BIRDS											
Herring gull *(Larus argentatus)*	0.951 [a]	1.232 [a]	1.092 [a]	0.1132 [b]	--	68% 0.4277	--	--	32% [c] 0.1449	8.2% [d] 0.0093	10 km [e] radius
MAMMALS											
Raccoon *(Procyon lotor)*	3.67 [a]	7.60 [a]	5.78 [a]	0.1535 [b]	59% 0.6037	2% 0.0171	15% 0.1439	17% 0.0815	7% [c] 0.0430	9.4% [d] 0.014	1558 [e]

General Notes:

Food ingestion rates are wet weight for food items and dry weight for sediment ingestion. As needed, rate may be converted.

See individual organism notes for source, units, and conversion.

Moisture content of food items assumed to be as follows: 75% for Fish (bony fish), 68% for Small Mammals, 84% for Soil Invertebrates (earthworms), and 85% for Terrestrial Plants (dicots) (USEPA, 1993).

BW - Body Weight. g - grams
DW - Dry Weight. kg - kilogram.
FIR - Food Ingestion Rate. WW - Wet Weight.

Notes for Herring gull
[a] Range and average of adult body weights listed by USEPA (1993).
[b] Food ingestion rate calculated using algorithm for gulls developed by Nagy, 2001 [FIR (g_{dw}/day) = $0.522*BW^{0.769}$] using average body weight.
[c] Dietary composition for adult herring gulls in coastal regions of the United States (USEPA, 1993). The percent allotted to 'small mammals' and 'garbage' were assigned to fish.
[d] The incidental sediment ingestion rate is based on the value identified by Beyer (1994) for the Canada goose.
[e] Foraging range listed by USEPA (1993) ranges from 3 to 50 km with an average of 10 km.

Notes for Raccoon
[a] Range and average of adult body weights listed by USEPA (1993).
[b] Food ingestion rate calculated using algorithm for omnivorous mammals developed by Nagy, 2001 [FIR (g_{dw}/day) = $0.432*BW^{0.678}$] using average body weight.
[c] Dietary composition for raccoon in New York (June to October; USEPA, 1993). The percent allotted to small mammals includes birds and carrion. The percent allotted to fish includes amphibians and reptiles.
[d] The incidental soil ingestion rate is based on the value identified by Beyer (1994) for raccoons.
[e] Home range listed by USEPA (1993) ranges from 96 to 6325 acres with an average of 1558 acres.

ATTACHMENT L-2 TABLE 2
AQUATIC MEDIA AND TISSUE CONCENTRATIONS FOR TIER 2, STEP 3A
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

	Measured Media Concentrations (a)			Estimated Fish Tissue (c)			Estimated Terrestrial Plant Tissue			Estimated Soil Invertebrate Tissue			Estimated Small Mammal Tissue		
COPC	Refined Maximum Sediment EPC (mg/kg_{dw})	Refined Maximum Soil EPC (mg/kg_{dw})	Refined Maximum Shellfish Tissue EPC (mg/kg_{ww})	Sediment-to-Fish Uptake Factor [(mg COPEC/kg $fish_{dw}$)/ (mg COPEC/kg $sediment_{dw}$)]		Refined Maximum Fish Tissue EPC (mg/kg_{ww})	Soil-to-Plant Uptake Factor [(mg COPEC/kg $plant_{dw}$)/ (mg COPEC/kg $soil_{dw}$)]		Refined Maximum Plant Tissue EPC (mg/kg_{ww})	Soil-to-Invertebrate Uptake Factor [(mg COPEC/kg $invertebrate_{dw}$)/ (mg COPEC/kg $soil_{dw}$)]		Refined Maximum Soil Invertebrate Tissue EPC (mg/kg_{ww})	Soil-to-Small Mammal Uptake Factor [(mg COPEC/kg $mammal_{dw}$)/ (mg COPEC/kg $soil_{dw}$)]		Refined Maximum Small Mammal Tissue EPC (mg/kg_{ww})
Inorganics															
ANTIMONY	6.3	92.5	0.013	1	(b,c)	1.6	Eco-SSL regression	(e)	0.41	1	(g)	14.8	0.050	(k,i)	0.24
COPPER	70.5	81.4	1.2	1	(b,c)	17.6	Eco-SSL regression	(e)	1.7	0.52	(g)	6.7	Eco-SSL regression	(h)	4.7
LEAD	595	3187	3.7	1	(b,c)	149	Eco-SSL regression	(e)	3.7	Eco-SSL regression	(g)	86.4	Eco-SSL regression	(h)	12.2
MERCURY	0.048	0.075	0.020	1	(b,c)	0.012	0.65	(d)	0.0074	Regression	(f)	0.072	0.054	(j)	0.0013
VANADIUM	13.9	19.8	0.23	1	(b,c)	3.5	0.0049	(e)	0.014	0.042	(g)	0.13	0.012	(h)	0.078

Notes:
Refined EPCs for BERA are the 95% upper confidence limit (UCL) on the arithmetic mean (or the maximum detected concentration of a UCL could not be calculated).
Moisture content of food items assumed to be as follows: 75% for Fish (bony fish), 68% for Small Mammals,
84% for Soil Invertebrates (earthworms), and 85% for Terrestrial Plants (dicots) (USEPA, 1993).
COPC - Chemical of Potential Concern.
EPC - Exposure Point Concentration.
dw - Dry Weight.
ND - Not Detected.
USEPA - United States Environmental Protection Agency.
ww - Wet Weight.

(a) Media EPCs presented in Appendix J.
(b) Fish biota sediment accumulation factors (BSAFs) obtained from Appendix C-1 of *The Incidence and Severity of Sediment Contamination in Surface Waters of the United States, National Sediment Quality Survey: Second Edition* (USEPA, 2004). A default value of 1 is assigned to parameters without uptake factors.
(c) Default value of 1 assigned to parameters without uptake factors
(d) Soil-to-plant uptake factors from Bechtel Jacobs (1998; mercury value from Table 6). Value for BERA is median uptake factor.
(e) Soil-to-plant uptake factors and regression equations recommended by USEPA in development of Ecological Soil Screening Levels (USEPA, 2007a)
antimony ln(tissue concentration) = 0.938 * ln(soil concentration) - 3.233
copper ln(tissue concentration) = 0.394 * ln(soil concentration) + 0.668
lead ln(tissue concentration) = 0.561 * ln(soil concentration) - 1.328
(f) Soil-to-earthworm uptake factors from Sample, et al (1998a) - mercury from Table 4. Value for Tier 2 Step 3A is median uptake factor.
(g) Soil-to-invertebrate uptake factors and regression equations recommended by USEPA in development of Ecological Soil Screening Levels (USEPA, 2007a)
lead ln(tissue concentration) = 0.807 * ln(soil concentration) - 0.218
(h) Soil-to-mammal uptake factors and regression equations recommended by USEPA in development of Ecological Soil Screening Levels (USEPA, 2007a)
copper ln(tissue concentration) = 0.1444 * ln(soil concentration) + 2.042
lead ln(tissue concentration) = 0.4422 * ln(soil concentration) + 0.0761
(i) Uptake factor is multiplied by concentration in the small mammal diet (assumed to be 100% earthworms).
(j) Soil-to-mammal uptake factor from Sample, et al (1998b) - values for general mammals from Table 7. Value for Tier 2 Step 3A is median uptake factor.
(k) Uptake factor is multiplied by concentration in the small mammal diet (assumed to be 100% earthworms).

ATTACHMENT L-2 TABLE 3
TOXICITY REFERENCE VALUES FOR FOR TIER 2, STEP 3A
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

COPC	TRV (mg/kg $_{bw}$/day)	Endpoint	Effect	Chronic/ Subchronic	Species	Primary Reference	Source of Reference
Inorganics							
ANTIMONY	0.059	NOAEL	reproduction & growth	chronic	mammals	USEPA, 2005a	
ANTIMONY	2.76	LOAEL	reproduction & growth	chronic	mammals	USEPA, 2005a	
COPPER	4.05	NOAEL	reproduction & growth	chronic	birds	USEPA, 2007b	
COPPER	34.87	LOAEL	reproduction & growth	chronic	birds	USEPA, 2007b	
COPPER	5.6	NOAEL	reproduction & growth	chronic	mammals	USEPA, 2007b	
COPPER	82.7	LOAEL	reproduction & growth	chronic	mammals	USEPA, 2007b	
LEAD	1.63	NOAEL	reproduction & growth	chronic	birds	USEPA, 2005b	
LEAD	44.6	LOAEL	reproduction & growth	chronic	birds	USEPA, 2005b	
LEAD	4.7	NOAEL	reproduction & growth	chronic	mammals	USEPA, 2005b	
LEAD	186.4	LOAEL	reproduction & growth	chronic	mammals	USEPA, 2005b	
MERCURY	0.0064	estimated NOAEL	reproductive	chronic	mallard duck	Heinz, 1979	Sample et al., 1996
MERCURY	0.064	LOAEL	reproductive	chronic	mallard duck	Heinz, 1979	Sample et al., 1996
MERCURY	0.032	NOAEL	reproductive	chronic	rat	Verschuuren et al., 1976	Sample et al., 1996
MERCURY	0.16	LOAEL	reproductive	chronic	rat	Verschuuren et al., 1976	Sample et al., 1996
VANADIUM	0.344	NOAEL	reproduction & growth	chronic	birds	USEPA, 2005e	
VANADIUM	1.686	LOAEL	reproduction & growth	chronic	birds	USEPA, 2005e	
VANADIUM	4.16	NOAEL	reproduction & growth	chronic	mammals	USEPA, 2005e	
VANADIUM	9.436	LOAEL	reproduction & growth	chronic	mammals	USEPA, 2005e	

Notes:
COPC - Chemical of Potential Concern.
LOAEL - Lowest Observed Adverse Effects Level.
NOAEL - No Observed Adverse Effects Level.
USEPA - United States Environmental Protection Agency.

Avian TRVs were not available for antimony.

ATTACHMENT L-2 TABLE 4
POTENTIAL RISKS TO THE HERRING GULL - FOR TIER 2, STEP 3A
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

ASSUMPTIONS FOR THE HERRING GULL	
Average Body Weight (kg)	1.092
Exposure Duration	1
Area Use Factor (a)	0.050
Sediment Consumption Rate (kg_{dw}/day)	0.0093
Fish Consumption Rate (kg_{ww}/day)	0.1449
Shellfish Consumption Rate (kg_{ww}/day)	0.4277

$$\text{Total Daily Dose} = \frac{\Sigma([IR_f \times C_f] + [IR_s \times C_s] \times ED \times AUF}{\text{Average Body Weight (kg)}}$$

Where:
IR_f = Ingestion rate of food (kg/day)
IR_s = Incidental ingestion rate of soil or sediment (kg/day)
C_f = Concentration of COPEC in food (mg/kg)
C_s= Concentration of COPEC in sediment or soil (mg/kg)
ED = Exposure duration (fraction of time receptor spends within exposure area)
AUF = Area use factor (ratio of the receptor's home range, etc,... relative to

Notes:
COPC - Chemical of Potential Concern.
dw - Dry Weight.
EPC - Exposure Point Concentration.
HQ - Hazard Quotient (Dose/TRV).
LOAEL - Lowest Observed Adverse Effects Level.
NC - Not Calculated.
NOAEL - No Observed Adverse Effects Level.
NV - No Value.

HQs above 1 are bolded and highlighted.
Refined EPCs for BERA are the 95% upper confidence limit (UCL) on the arithmetic mean (or the maximum detected concentration of a UCL could not be calculated).
(a) The AUF based on the gull home range (~77,000 acres based on a foraging distance of 10 km) and 17 acres of MRP Site 1 aquatic habitat is equal to 0.00022. An AUF of 0.05 was assumed due to the presence of shellfish and relatively shallow water for foraging and the potential presence of diving ducks in the winter.

SUPPORTING CALCULATIONS

FOOD WEB MODEL - REFINED MAXIMUM EPCs	Media Concentrations			Potential Daily Dose (mg/kg_{dw}/day)							
COPC	Sediment (mg/kg_{dw})	Shellfish (mg/kg_{ww})	Fish (mg/kg_{ww})	Sediment	Shellfish	Fish	Total	NOAEL-based TRV (mg/kg_{dw}/day)	NOAEL-based HQ	LOAEL-based TRV (mg/kg_{dw}/day)	LOAEL-based HQ
Inorganics											
ANTIMONY	6.3E+00	1.3E-02	1.6E+00	2.7E-03	2.6E-04	1.0E-02	1.3E-02	NV	NC	NV	NC
COPPER	7.1E+01	1.2E+00	1.8E+01	3.0E-02	2.4E-02	1.2E-01	1.7E-01	4.1E+00	4.2E-02	3.5E+01	4.9E-03
LEAD	6.0E+02	3.7E+00	1.5E+02	2.5E-01	7.2E-02	9.9E-01	1.3E+00	1.6E+00	8.1E-01	4.5E+01	2.9E-02
MERCURY	4.8E-02	2.0E-02	1.2E-02	2.0E-05	3.9E-04	7.9E-05	4.9E-04	6.4E-03	7.7E-02	6.4E-02	7.7E-03
VANADIUM	1.4E+01	2.3E-01	3.5E+00	5.9E-03	4.5E-03	2.3E-02	3.3E-02	3.4E-01	9.8E-02	1.7E+00	2.0E-02

ATTACHMENT L-2 TABLE 5
POTENTIAL RISKS TO THE RACCOON - FOR TIER 2, STEP 3A
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

ASSUMPTIONS FOR THE RACCOON	
Average Body Weight (kg)	5.8
Exposure Duration	1
Area Use Factor (a)	0.050
Sediment Consumption Rate (kg_{dw}/day)	0.0144
Fish Consumption Rate (kg_{ww}/day)	0.0430
Shellfish Consumption Rate (kg_{ww}/day)	0.0171
Terrestrial Plant Consumption Rate (kg_{ww}/day)	0.6037
Soil Invt. Consumption Rate (kg_{ww}/day)	0.1439
Small Mammal Consumption Rate (kg_{ww}/day)	0.0815

$$\text{Total Daily Dose} = \frac{\Sigma([IR_f \times C_f] + [IR_s \times C_s]) \times ED \times AUF}{\text{Average Body Weight}}$$

Where:
IR_f = Ingestion rate of food (kg/day)
IR_s = Incidental ingestion rate of soil or sediment (kg/day)
C_f = Concentration of COPEC in food (mg/kg)
C_s = Concentration of COPEC in sediment or soil (mg/kg)
ED = Exposure duration (fraction of time receptor spends within exposure area)
AUF = Area use factor (ratio of the receptor's home range, etc,... relative

Notes:
COPC - Chemical of Potential Concern.
dw - Dry Weight.
EPC - Exposure Point Concentration.
HQ - Hazard Quotient (Dose/TRV).
LOAEL - Lowest Observed Adverse Effects Level.
NOAEL - No Observed Adverse Effects Level.
NV - No Value.

HQs above 1 are bolded and highlighted.
Refined EPCs for BERA are the 95% upper confidence limit (UCL) on the arithmetic mean (or the maximum detected concentration of a UCL could not be calculated).
(a) The AUF based on the raccoon home range (1558 acres) and a combined total of 21 acres for MRP Site 1 terrestrial and aquatic habitat is equal to 0.013. An AUF of 0.05 was assumed due to the presence of shellfish and relatively shallow water for foraging.

SUPPORTING CALCULATIONS

FOOD WEB MODEL - REFINED MAXIMUM EPCs	Media Concentrations						Potential Daily Dose (mg/kg_{bw}/day)										
COPC	Sediment (mg/kg_{dw})	Shellfish (mg/kg_{ww})	Fish (mg/kg_{ww})	Terrestrial Plant (mg/kg_{ww})	Soil Invertebrate (mg/kg_{ww})	Small Mammal (mg/kg_{ww})	Sediment	Shellfish	Fish	Terrestrial Plant	Soil Invertebrate	Small Mammal	Total	NOAEL-based TRV (mg/kg_{dw}/day)	NOAEL-based HQ	LOAEL-based TRV (mg/kg_{dw}/day)	LOAEL-based HQ
Inorganics																	
ANTIMONY	6.3E+00	1.3E-02	1.6E+00	4.1E-01	1.5E+01	2.4E-01	7.9E-04	1.9E-06	5.9E-04	2.2E-03	1.8E-02	1.7E-04	2.2E-02	5.9E-02	3.7E-01	2.8E+00	8.0E-03
LEAD	6.0E+02	3.7E+00	1.5E+02	3.7E+00	8.6E+01	1.2E+01	7.4E-02	5.4E-04	5.5E-02	1.9E-02	1.1E-01	8.6E-03	2.7E-01	4.7E+00	5.7E-02	1.9E+02	1.4E-03

ATTACHMENT L-2 TABLE 6
SUMMARY OF POTENTIAL RISKS TO SEMI-AQUATIC WILDLIFE IN TIER 2, STEP 3A
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

	NOAEL-based HQ - Refined Maximum EPC		LOAEL-based HQ - Refined Maximum EPC	
COPC	**Herring Gull**	**Raccoon**	**Herring Gull**	**Raccoon**
Inorganics				
ANTIMONY	NC	3.7E-01	NC	8.0E-03
COPPER	4.2E-02	nCOPC	4.9E-03	nCOPC
LEAD	8.1E-01	5.7E-02	2.9E-02	1.4E-03
MERCURY	7.7E-02	nCOPC	7.7E-03	nCOPC
VANADIUM	9.8E-02	nCOPC	2.0E-02	nCOPC

Notes:
Refined EPCs for BERA are the 95% upper confidence limit (UCL) on the arithmetic mean (or the maximum detected concentration of a UCL could not be calculated).
Potential risk is calculated using the refined maximum EPCs and both NOAEL- and LOAEL-based TRVs.
HQs above 1 are bolded and highlighted.

COPC - Chemical of Potential Concern.
EPC - Exposure Point Concentration.
HQ - Hazard Quotient.
LOAEL - Low Observed Adverse Effect Level.
NC - Not Calculated. Avian TRV not available.
nCOPC - Not retained as a refined wildlife COPC in this medium.
NOAEL - No Observed Adverse Effects Level.
TRV - Toxicity Reference Value.

ATTACHMENT L-2 TABLE 7
REFERENCES CITED
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

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Verschuuren, H. G., R. Kroes, E. M. Den Tonkelaar, J. M. Berkvens, P. W. Helleman, A. G. Rauws, P. L. Schuller, and G. J. Van Esch. 1976. Toxicity of Methyl Mercury Chloride in Rats. II. Reproduction Study. Toxicol. 6: 97-106.

ATTACHMENT M

REFINED LEAD PELLET EVALUATION

ATTACHMENT M TABLE 1
PELLET COUNTS AND PERCENTAGES IN SHORELINE SOIL AND SURFACE SEDIMENT
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

Location ID	Wt. of 2-4 mm Sample (minus lead shot) (g)	Wt. of 2-4 mm Sub-sample (g)	# of 2-4 mm Particles in Sub-sample (minus lead shot)	# of 2-4 mm Particles in Total Sample (minus lead shot) [a]	# of 2-4 mm Lead Pellets in Total Sample	Total # of 2-4 mm Particles and Lead Shot in Total Sample	Percentage of 2-4 mm Sample That is Lead Shot
SHORELINE SOIL							
SB210	158.8	3.94	142	5723	0	5723	0.0%
SB222	412.0	5.1	188	15187	120	15307	0.78%
SS224	432.3	8.4	338	17395	52	17447	0.30%
SS225	228.7	7.31	321	10043	0	10043	0.0%
SS226	177.7	6.47	268	7361	0	7361	0.0%
SS227	274.8	8.21	352	11782	0	11782	0.0%
SS301	474.3	8.57	260	14389	29	14418	0.20%
				TOTAL COUNT	201	82082	
TARGET AREA							
SD101	437.3	6.93	245	15460	50	15510	0.32%
SD102	397.9	3.4	164	19193	127	19320	0.66%
SD103	328.5	5.02	189	12368	268	12636	2.1%
SD115	97.7	4.38	157	3502	119	3621	3.3%
SD116	165.2	4.65	157	5578	30	5608	0.53%
SD117	8.8	2.46	83	297	0	297	0.0%
SD118	205.0	5.05	173	7023	7	7030	0.10%
SD122	368.4	8.38	317	13936	2	13938	0.014%
SD123	435.8	4.64	170	15967	2	15969	0.013%
SD124	460.5	4.98	215	19881	0	19881	0.0%
SD128	167.0	7.85	301	6403	25	6428	0.39%
SD129	377.7	4.33	200	17446	6	17452	0.03%
SD130	402.6	5.88	237	16227	37	16264	0.23%
SD133	1.55	1.55	119	119	0	119	0.0%
				TOTAL COUNT	673	154072	
OVERSHOOT AREA [300-600 ft]							
SD104	212	4.2	167	8430	5	8435	0.059%
SD106	197.6	4.39	179	8057	0	8057	0.0%
SD111	137.0	4.63	193	5711	0	5711	0.0%
SD112	132.4	3.43	146	5636	12	5648	0.21%
SD113	8.9	2.57	104	360	139	499	27.8%
SD114	26.6	2.75	163	1577	84	1661	5.1%
SD119	265.4	4.42	186	11168	183	11351	1.6%
SD120	308.3	5.79	153	8147	504	8651	5.8%
SD121	68.5	6.26	183	2002	17	2019	0.84%
SD125	25.1	4.1	137	839	108	947	11.4%
SD126	112.2	3.1	175	6334	0	6334	0.0%
SD131	160.2	7.99	218	4371	0	4371	0.0%
SD132	242.5	4.56	190	10104	184	10288	1.8%
				TOTAL COUNT	1236	73971	
OVERSHOOT AREA [beyond 600 ft]							
SD105	72.9	4.19	164	2853	0	2853	0.0%
SD107	166.7	4.18	142	5663	0	5663	0.0%
SD108	65.3	3.74	166	2898	0	2898	0.0%
SD109	37.1	3.52	155	1634	0	1634	0.0%
SD110	183.6	3.14	177	10349	0	10349	0.0%
				TOTAL COUNT	0	23398	

Notes:
All samples were from 0-1 ft sampling horizon.
Sediment samples were sieved in the field to retain material > 2 mm. In the laboratory, all lead pellets in each sample between 2 and 4 mm were counted.
Due to the large number of non-lead particles within the 2-4 mm fraction, a sub-sample of the non-lead material from each sample was counted and the full count of non-lead material was estimated.
[a] Calculated based on count of particles in the sub-sample.
# of 2-4 mm non-lead particles in total sample = [(weight of 2-4 mm sample minus lead shot) X (# of 2-4 mm particles in sub-sample minu lead shot)]/weight of 2-4 mm sub-sample

ATTACHMENT M TABLE 2
REFINED PELLET EVALUATION - MOURNING DOVE EXPOSED TO SHORELINE SOIL
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

Revised Model for Estimating Probability of Ingesting *N* Lead Particles by Birds

Species: Mourning Dove
Area: Shoreline Soil
Revised: 3/10/09

	Parameter	Parameter code									
				ENTER PARAMETER ESTIMATES ONLY IN BLUE CELLS							
Estimate particle ingestion rate using mean number of grit particles in gizzards divided by estimated retention time in days	Mean # grit-sized particles/gizzard	G	14	95 UCL from Table 5 in USEPA 2011							
	Mean particle retention time (i.e., mean # days particle retained in gizzard)	RT	6	McConnell, 1967							
	Daily particle ingestion rate (i.e., mean # particles ingested/day)	$DPIR = G/RT$	2		Alternative estimate of $DPIR$		0				
Choose number of days of exposure period to consider—ranging from 1 (if interested in daily risk) to the maximum number of days/year at site of concern—to estimate particle ingestion rate for total exposure period	# days in exposure period	D	1								
	Exposure period particle ingestion rate (i.e., mean # particles ingested/exposure period)	$EPPIR = DPIR \times D$	2.33333333								
	Rounded-up particle ingestion rate/exposure period (T)	T = Roundup ($EPPIR$)	3								
Proportion of grit-sized particles available on-site that are lead	# Lead particles per unit area	L_{ON}	201	Sum of lead pellets in 7 shoreline samples.							
	Total # grit-sized particles per unit area	T_{ON}	82,082	Sum of grit sized particles in 7 shoreline samples.							
	Prop of lead particles on-site	$P_{ON} = L_{ON}/T_{ON}$	0.00245	Alternative method of estimating P_{ON}			0				
Proportion of grit-sized particles available off-site that are lead	# Lead particles per unit area	L_{OFF}	0								
	Total # grit-sized particles per unit area	T_{OFF}	1,000,000								
	Prop of lead particles off-site	$P_{OFF} = L_{OFF}/T_{OFF}$	0	Alternative method of estimating P_{OFF}			0				
	Prop of foraging time on-site	F	0.00151376	Foraging range for mourning dove is 218 hectares (Mirarchi & Baskett, 1994) and shoreline area is assumed to be approximately 700 ft by 50 ft which equals 0.33 hectares.							
	Proportion of lead particles from all foraging sites	$P = P_{ON} \times F + P_{OFF} \times (1 - F)$	3.7069E-06								
	# of lead particles ingested/ exposure period	N	0	1	2	3	4	5	6	7	8
Calculate components of the probability mass function for each # of ingested lead particles	P^N		1.00000000	0.00000371	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
	$(1 - P)^{T-N}$		0.99998888	0.99999259	0.99999629	1.00000000	1.00000371	1.00000741	1.00001112	1.00001483	1.00001853
	$T!/(N! \times (T - N)!)$ (see note on FACTORIAL worksheet)		1	3	3	1	0	0	0	0	0
Probability of ingesting N lead particles during exposure period	$Pr(N) = [T!/(N! \times (T - N)!)] \times P^N \times (1 - P)^{T-N}$	$Pr(N)$	0.99998888	0.00001112	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
Same probabilities as previous line expressed in scientific notation			9.9999E-01	1.1121E-05	4.1223E-11	5.0936E-17	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
Peddicord and LaKind calculates prob of ingesting ≥1 lead particle as 1 minus probability of consuming 0 lead particles		$1 - Pr(0)$	0.00001112								

T = the total number of grit-sized particles ingested during the specified exposure period.
N = the number of lead particles ingested during the specified exposure period.
Pr = Probability of ingesting N lead particles during an exposure period.

Equation 7 from USEPA. 2011. Assessment of Methods for Estimating Risk to Birds from Ingestion of Contaminated Grit Particles. EPA/600/R-11/023.

$$Pr(N) = \frac{T!}{N! \times (T-N)!} \times P^N \times (1-P)^{T-N} \qquad \text{(Eq. 7)}$$

where

N = the number of lead particles ingested during exposure period,

T = the total number of grit-sized particles ingested during exposure period, and

P = the proportion of the total number of lead and grit-sized soil particles at the surface that are lead particles.

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ATTACHMENT M TABLE 3
REFINED PELLET EVALUATION - BOBWHITE QUAIL EXPOSED TO SHORELINE SOIL
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

Revised Model for Estimating Probability of Ingesting *N* Lead Particles by Birds

Species: Bobwhite Quail
Area: Shoreline Soil
Revised: 3/10/09

	Parameter	Parameter code			ENTER PARAMETER ESTIMATES ONLY IN BLUE CELLS						
Estimate particle ingestion rate using mean number of grit particles in gizzards divided by estimated retention time in days	Mean # grit-sized particles/gizzard	*G*	69	95 UCL from Table 5 in USEPA 2011							
	Mean particle retention time (i.e., mean # days particle retained in gizzard)	*RT*	14	Kerr, et al., 2010							
	Daily particle ingestion rate (i.e., mean # particles ingested/day)	*DPIR* = *G*/*RT*	5		Alternative estimate of *DPIR*		0				
Choose number of days of exposure period to consider—ranging from 1 (if interested in daily risk) to the maximum number of days/year at site of concern—to estimate particle ingestion rate for total exposure period	# days in exposure period	*D*	1								
	Exposure period particle ingestion rate (i.e., mean # particles ingested/exposure period)	*EPPIR* = *DPIR* × *D*	4.92857143								
	Rounded-up particle ingestion rate/exposure period (*T*)	***T*** = Roundup (*EPPIR*)	**5**								
Proportion of grit-sized particles available on-site that are lead	# Lead particles per unit area	L_{ON}	201	Sum of lead pellets in 7 shoreline samples.							
	Total # grit-sized particles per unit area	T_{ON}	82,082	Sum of grit sized particles in 7 shoreline samples.							
	Prop of lead particles on-site	$P_{ON} = L_{ON}/T_{ON}$	0.00245		Alternative method of estimating P_{ON}		0				
Proportion of grit-sized particles available off-site that are lead	# Lead particles per unit area	L_{OFF}	0								
	Total # grit-sized particles per unit area	T_{OFF}	1,000,000								
	Prop of lead particles off-site	$P_{OFF} = L_{OFF}/T_{OFF}$	0		Alternative method of estimating P_{OFF}		0				
	Prop of foraging time on-site	*F*	0.033	Foraging range for quail is 10 hectares and shoreline area is assumed to be approximately 700 ft by 50 ft which equals 0.33 hectares.							
	Proportion of lead particles from all foraging sites	***P*** = $P_{ON} \times F + P_{OFF} \times (1 - F)$	**8.081E-05**								
	# of lead particles ingested/ exposure period	***N***	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Calculate components of the probability mass function for each # of ingested lead particles	P^N		1.00000000	0.00008081	0.00000001	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
	$(1 - P)^{T-N}$		0.99959602	0.99967680	0.99975759	0.99983839	0.99991919	1.00000000	1.00008082	1.00016164	1.00024247
	$T!/(N! \times (T - N)!)$ (see note on FACTORIAL worksheet)		1	5	10	10	5	1	0	0	0
Probability of ingesting *N* lead particles during exposure period	$Pr(N) = [T!/(N! \times (T - N)!)] \times P^N \times (1 - P)^{T-N}$	$Pr(N)$	0.99959602	0.00040392	0.00000007	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
Same probabilities as previous line expressed in scientific notation			9.9960E-01	4.0392E-04	6.5287E-08	5.2762E-12	2.1320E-16	3.4461E-21	0.0000E+00	0.0000E+00	0.0000E+00
Peddicord and LaKind calculates prob of ingesting ≥1 lead particle as 1 minus probability of consuming 0 lead particles		$1 - Pr(0)$	0.00040398								

T = the total number of grit-sized particles ingested during the specified exposure period.
N = the number of lead particles ingested during the specified exposure period.
Pr = Probability of ingesting N lead particles during an exposure period.

Equation 7 from USEPA. 2011. Assessment of Methods for Estimating Risk to Birds from Ingestion of Contaminated Grit Particles. EPA/600/R-11/023.

$$Pr(N) = \frac{T!}{N! \times (T-N)!} \times P^N \times (1-P)^{T-N} \qquad \text{(Eq. 7)}$$

where

N = the number of lead particles ingested during exposure period,

T = the total number of grit-sized particles ingested during exposure period, and

P = the proportion of the total number of lead and grit-sized soil particles at the surface that are lead particles.

Kerr R, S Holladay, T Jarrett, B Selcer, B Meldrum, S Williams, L Tannenbaum, J Holladay, J Williams, and R Gogal. 2010. Lead pellet retention time and associated toxicity in northern bobwhite quail (Colinus virginianus). Environ Toxicol Chem. 29(12):2869-74. doi: 10.1002/etc.355.

ATTACHMENT M TABLE 4
REFINED PELLET EVALUATION - LESSER SCAUP IN TARGET AREA
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

Revised Model for Estimating Probability of Ingesting *N* Lead Particles by Birds

Species: Lesser scaup
Area: Target Area
Revised: 3/10/09

	Parameter	Parameter code									
				ENTER PARAMETER ESTIMATES ONLY IN BLUE CELLS							
Estimate particle ingestion rate using mean number of grit particles in gizzards divided by estimated retention time in days	Mean # grit-sized particles/gizzard	G	1286	Estimated based on grit count for Canada goose (count of 1419; VerCauteren, et al., 2003) scaled to volume of mallard grit samples. Volume of grit sample for geese (2.45 mL) was similar to mallard (2.22 mL; Havera and Anderson, 1999).							
	Mean particle retention time (i.e., mean # days particle retained in gizzard)	RT	21	Chasko, et al., 1984							
	Daily particle ingestion rate (i.e., mean # particles ingested/day)	$DPIR = G/RT$	61		Alternative estimate of $DPIR$		0				
Choose number of days of exposure period to consider—ranging from 1 (if interested in daily risk) to the maximum number of days/year at site of concern—to estimate particle ingestion rate for total exposure period	# days in exposure period	D	1								
	Exposure period particle ingestion rate (i.e., mean # particles ingested/exposure period)	$EPPIR = DPIR \times D$	61.2279883								
	Rounded-up particle ingestion rate/exposure period (T)	T = Roundup ($EPPIR$)	62								
Proportion of grit-sized particles available on-site that are lead	# Lead particles per unit area	L_{ON}	673	Sum of lead pellets in 14 Target Area samples.							
	Total # grit-sized particles per unit area	T_{ON}	154,072	Sum of grit sized particles in 14 Target Area samples.							
	Prop of lead particles on-site	$P_{ON} = L_{ON}/T_{ON}$	0.00437		Alternative method of estimating P_{ON}		0				
Proportion of grit-sized particles available off-site that are lead	# Lead particles per unit area	L_{OFF}	0								
	Total # grit-sized particles per unit area	T_{OFF}	1,000,000								
	Prop of lead particles off-site	$P_{OFF} = L_{OFF}/T_{OFF}$	0		Alternative method of estimating P_{OFF}		0				
	Prop of foraging time on-site	F	0.05555556	Home range for lesser scaup is 90 hectares (USEPA, 1993; assumed to be representative of foraging range) and Target Area is assumed to be approximately 5 hectares.							
	Proportion of lead particles from all foraging sites	$P = P_{ON} \times F + P_{OFF} \times (1 - F)$	0.00024267								
	# of lead particles ingested/ exposure period	N	0	1	2	3	4	5	6	7	8
Calculate components of the probability mass function for each # of ingested lead particles	P^N		1.00000000	0.00024267	0.00000006	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
	$(1 - P)^{T-N}$		0.98506522	0.98530432	0.98554349	0.98578271	0.98602199	0.98626132	0.98650072	0.98674017	0.98697968
	$T!/(N! \times (T - N)!)$ (see note on FACTORIAL worksheet)		1	62	1891	37820	557845	6471002	61474519	491796152	3381098545
Probability of ingesting N lead particles during exposure period	$Pr(N) = [T!/(N! \times (T - N)!)] \times P^N \times (1 - P)^{T-N}$	$Pr(N)$	0.98506522	0.01482450	0.00010975	0.00000053	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
Same probabilities as previous line expressed in scientific notation			9.8507E-01	1.4824E-02	1.0975E-04	5.3279E-07	1.9075E-09	5.3710E-12	1.2385E-14	2.4050E-17	4.0134E-20
Peddicord and LaKind calculates prob of ingesting ≥1 lead particle as 1 minus probability of consuming 0 lead particles		$1 - Pr(0)$	0.01493478								

T = the total number of grit-sized particles ingested during the specified exposure period.
N = the number of lead particles ingested during the specified exposure period.
Pr = Probability of ingesting N lead particles during an exposure period.

Equation 7 from USEPA. 2011. Assessment of Methods for Estimating Risk to Birds from Ingestion of Contaminated Grit Particles. EPA/600/R-11/023.

$$Pr(N) = \frac{T!}{N! \times (T-N)!} \times P^N \times (1-P)^{T-N} \qquad \text{(Eq. 7)}$$

where

N = the number of lead particles ingested during exposure period,

T = the total number of grit-sized particles ingested during exposure period, and

P = the proportion of the total number of lead and grit-sized soil particles at the surface that are lead particles.

Chasko, G.G., T.R. Hoehn and P. Howell-Heller. 1984. Toxicity of lead shot to wild black ducks and mallards fed natural foods. Bull. Environ. Contam. Toxicol. 32(4):417-428.
Havera, S.P. and W.L. Anderson. 1999. Food Contents of Mallard Gizzards With and Without Ingested Lead or Steel Shot. Transactions of the Illinois State Academy of Science. Volume 92, 1 and 2, pp. 89-94.
VerCauteren, K.C., M.J. Lavelle, and J.K. Shively. 2003. Characteristics of grit in Canada goose gizzards. USDA National Wildlife Research Center - Staff Publications. Paper 280. http://digitalcommons.unl.edu/icwdm_usdanwrc/280

ATTACHMENT M TABLE 5
REFINED PELLET EVALUATION - LESSER SCAUP IN OVERSHOOT AREA
ECOLOGICAL RISK ASSESSMENT
CARR POINT - MRP SITE 1

Revised Model for Estimating Probability of Ingesting *N* Lead Particles by Birds

Species: Lesser scaup
Area: Overshoot Area
Revised: 3/10/09

	Parameter	Parameter code			ENTER PARAMETER ESTIMATES ONLY IN BLUE CELLS						
Estimate particle ingestion rate using mean number of grit particles in gizzards divided by estimated retention time in days	Mean # grit-sized particles/gizzard	G	1286	Estimated based on grit count for Canada goose (count of 1419; VerCauteren, et al., 2003) scaled to volume of mallard grit samples. Volume of grit sample for geese (2.45 mL) was similar to mallard (2.22 mL; Havera and Anderson, 1999).							
	Mean particle retention time (i.e., mean # days particle retained in gizzard)	RT	21	Chasko, et al., 1984							
	Daily particle ingestion rate (i.e., mean # particles ingested/day)	$DPIR = G/RT$	61		Alternative estimate of $DPIR$		0				
Choose number of days of exposure period to consider—ranging from 1 (if interested in daily risk) to the maximum number of days/year at site of concern—to estimate particle ingestion rate for total exposure period	# days in exposure period	D	1								
	Exposure period particle ingestion rate (i.e., mean # particles ingested/exposure period)	$EPPIR = DPIR \times D$	61.2279883								
	Rounded-up particle ingestion rate/exposure period (T)	T = Roundup ($EPPIR$)	62								
Proportion of grit-sized particles available on-site that are lead	# Lead particles per unit area	L_{ON}	1,236	Sum of lead pellets in 13 Overshoot Area samples.							
	Total # grit-sized particles per unit area	T_{ON}	73,971	Sum of grit sized particles in 13 Overshoot Area samples.							
	Prop of lead particles on-site	$P_{ON} = L_{ON}/T_{ON}$	0.01671		Alternative method of estimating P_{ON}		0				
Proportion of grit-sized particles available off-site that are lead	# Lead particles per unit area	L_{OFF}	0								
	Total # grit-sized particles per unit area	T_{OFF}	1,000,000								
	Prop of lead particles off-site	$P_{OFF} = L_{OFF}/T_{OFF}$	0		Alternative method of estimating P_{OFF}		0				
	Prop of foraging time on-site	F	0.07555556	Home range for lesser scaup is 90 hectares (USEPA, 1993; assumed to be representative of foraging range) and Overshoot Area within 300-600 ft of shore is assumed to be approximately 6.8 hectares.							
	Proportion of lead particles from all foraging sites	$P = P_{ON} \times F + P_{OFF} \times (1 - F)$	**0.00126247**								
	# of lead particles ingested/ exposure period	N	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Calculate components of the probability mass function for each # of ingested lead particles	P^N		1.00000000	0.00126247	0.00000159	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
	$(1 - P)^{T-N}$		0.92466589	0.92583474	0.92700506	0.92817685	0.92935013	0.93052490	0.93170115	0.93287888	0.93405810
	$T!/(N! \times (T - N)!)$ (see note on FACTORIAL worksheet)		1	62	1891	37820	557845	6471002	61474519	491796152	3381098545
Probability of ingesting N lead particles during exposure period	$Pr(N) = [T!/(N! \times (T - N)!)] \times P^N \times (1 - P)^{T-N}$	$Pr(N)$	0.92466589	0.07246819	0.00279395	0.00007063	0.00000132	0.00000002	0.00000000	0.00000000	0.00000000
Same probabilities as previous line expressed in scientific notation			9.2467E-01	7.2468E-02	2.7939E-03	7.0635E-05	1.3170E-06	1.9311E-08	2.3190E-10	2.3451E-12	2.0380E-14
Peddicord and LaKind calculates prob of ingesting ≥1 lead particle as 1 minus probability of consuming 0 lead particles		$1 - Pr(0)$	0.07533411								

T = the total number of grit-sized particles ingested during the specified exposure period.
N = the number of lead particles ingested during the specified exposure period.
Pr = Probability of ingesting N lead particles during an exposure period.

Equation 7 from USEPA. 2011. Assessmentt of Methods for Estimating Risk to Birds from Ingestion of Contaminated Grit Particles. EPA/600/R-11/023.

$$Pr(N) = \frac{T!}{N! \times (T-N)!} \times P^N \times (1-P)^{T-N} \qquad \text{(Eq. 7)}$$

where

N = the number of lead particles ingested during exposure period,

T = the total number of grit-sized particles ingested during exposure period, and

P = the proportion of the total number of lead and grit-sized soil particles at the surface that are lead particles.

Chasko, G.G., T.R. Hoehn and P. Howell-Heller. 1984. Toxicity of lead shot to wild black ducks and mallards fed natural foods. Bull. Environ. Contam. Toxicol. 32(4):417-428.
Havera, S.P. and W.L. Anderson. 1999. Food Contents of Mallard Gizzards With and Without Ingested Lead or Steel Shot. Transactions of the Illinois State Academy of Science. Volume 92, 1 and 2, pp. 89-94.
VerCauteren, K.C., M.J. Lavelle, and J.K. Shively. 2003. Characteristics of grit in Canada goose gizzards. USDA National Wildlife Research Center - Staff Publications. Paper 280. http://digitalcommons.unl.edu/icwdm_usdanwrc/280

Factorial Worksheet

The probability mass function includes factorials in a term expressed as $T! / (N! \times (T - N)!)$
where:
T = the total number of grit-sized particles ingested during the specified exposure period, and
N = the number of lead particles ingested during the specified exposure period.

Excel only calculates factorials up to 170!
For species with high grit ingestion and exposure periods of many days, T can easily exceed 170.

The formulas for N = 0 through 8 have been simplified because algebraically many of the values in the numerator and denominator cancel.

N	$T! / (N! \times (T - N)!)$	
0	$T! / (0! \times (T - 0)!) = T! / (1 \times T!) = 1$	Note: 0! = 1
1	$T! / (1! \times (T - 1)!) = T / 1 = T$	
2	$T! / (2! \times (T - 2)!) = (T \times (T - 1)) / (1 \times 2)$	
3	$T! / (3! \times (T - 3)!) = (T \times (T - 1) \times (T - 2)) / (1 \times 2 \times 3)$	
4	$T! / (4! \times (T - 4)!) = (T \times (T - 1) \times (T - 2) \times (T - 3)) / (1 \times 2 \times 3 \times 4)$	
5	$T! / (5! \times (T - 5)!) = (T \times (T - 1) \times (T - 2) \times (T - 3) \times (T - 4)) / (1 \times 2 \times 3 \times 4 \times 5)$	
6	$T! / (6! \times (T - 6)!) = (T \times (T - 1) \times (T - 2) \times (T - 3) \times (T - 4) \times (T - 5)) / (1 \times 2 \times 3 \times 4 \times 5 \times 6)$	
7	$T! / (7! \times (T - 7)!) = (T \times (T - 1) \times (T - 2) \times (T - 3) \times (T - 4) \times (T - 5) \times (T - 6)) / (1 \times 2 \times 3 \times 4 \times 5 \times 6 \times 7)$	
8	$T! / (8! \times (T - 8)!) = (T \times (T - 1) \times (T - 2) \times (T - 3) \times (T - 4) \times (T - 5) \times (T - 6) \times (T - 7)) / (1 \times 2 \times 3 \times 4 \times 5 \times 6 \times 7 \times 8)$	

Example if T=20:

N	$T! / (N! \times (T - N)!)$	
0	20! / (0! × (20)!) =	1
1	20! / (1! × (19)!) = 20 / 1 =	20
2	20! / (2! × (18)!) = (20 × 19) / 2 =	190
3	20! / (3! × (17)!) = (20 × 19 × 18) / 6 =	1140
4	20! / (4! × (16)!) = (20 × 19 × 18 × 17) / 24 =	4845
5	20! / (5! × (15)!) = (20 × 19 × 18 × 17 × 16) / 120 =	15504
6	20! / (6! × (14)!) = (20 × 19 × 18 × 17 × 16 × 15) / 720 =	38760
7	20! / (7! × (13)!) = (20 × 19 × 18 × 17 × 16 × 15 × 14) / 5040 =	77520
8	20! / (8! × (12)!) = (20 × 19 × 18 × 17 × 16 × 15 × 14 × 13) / 40320 =	125970

Appendix C

GPR Survey

Northeast Geophysical Services
4 Union Street, Suite 3, Bangor, ME 04401
Phone: 207-942-2700 Fax: 207-942-8798

UTILITY MAPPING AND CLEARANCE SURVEYS AT THE FORMER CARR POINT SHOOTING RANGE AND FORMER CARR POINT DRUM STORAGE AREA SITES, NAVAL STATION NEWPORT, PORTSMOUTH, RI

For:

Resolution Consultants

April, 2014

Northeast Geophysical Services
4 Union Street, Suite 3, Bangor, ME 04401

April, 2014

UTILITY MAPPING AND CLEARANCE SURVEYS AT THE FORMER CARR POINT SHOOTING RANGE AND FORMER CARR POINT DRUM STORAGE AREA SITES, NAVAL STATION NEWPORT, PORTSMOUTH, RI

INTRODUCTION

At the request of Resolution Consultants utility mapping and clearance surveys were conducted at the Former Carr Point Shooting Range and adjacent Former Carr Point Drum Storage Area sites, Naval Station Newport, Portsmouth, RI. The objectives of the surveys were to detect and map underground utilities and to provide utility clearance for several proposed soil borings and monitoring wells at the sites. The surveys were conducted on November 18 – 22, 2013 and March 19 – 21, 2014 by Mike Scully of Northeast Geophysical Services (NGS). This report summarizes the site conditions, methods used, and the results of the geophysical surveys.

SITE LOCATION AND CONDITIONS

The project sites are located just south of Carr Point, a small promontory into Narragansett Bay, in the town of Portsmouth, RI. The site is bounded by Narragansett Bay to the northwest and by Defense Highway to the southeast. The site is owned by the U.S. Navy and is part of Naval Station Newport in Newport, Rhode Island. Figures 1 and 2 show the general layout of the survey sites. Figure 1 shows the northerly site which is the Former Shooting Range Site. As the name implies this area was formerly used as a shooting range. It is now being used as an RV park with spaces and services for six campers. Electrical and water services are provided via underground lines with access posts at each site. The site is mainly wide open lawn area with a few planted trees near the camp sites. A chain link fence runs along the top of the slope that drops down to the bay shore. This slope is generally very densely vegetated. A chain link fence with a locked gate also separates this site from the Former Drum Storage Area to the southwest.

Figure 2 shows the southerly site which is the Former Drum Storage Area. Approximately the northerly one third of this area is wide open gravel and pavement-covered area that is currently being used for boat and RV storage. The central portion of the site includes the former drum storage area, several concrete storage bins, and a railroad siding. The former drum storage area as well as the southerly end of the site is mainly very densely overgrown. It also appears that a lot of what appears to be demolition debris has been dumped within the former drum storage area. There is a relatively open area along the southeasterly side of the site.

METHODS AND INSTRUMENTATION

The following instruments were used at these sites to conduct the utility mapping and clearance surveys:

EM-61 Metal Detector

A Geonics EM61-MK2 metal detector was used for the metal detection surveys. The EM61 is a portable time-domain instrument with a coincident transmitter/receiver coil and second parallel receiver coil for depth to target estimation and rejection of surface metal response. The instrument measures the secondary electromagnetic field response in milli-volts (mV). The EM61 is designed specifically to locate medium to large buried metal objects such as drums and storage tanks while being relatively insensitive to above-surface metallic objects such as fences, buildings and power lines. The technique is sensitive to conductive metal up to a depth of approximately 12 feet. The size and burial depth of the metal determine the strength of the response. EM data is digitally recorded on an Allegro CX field computer. Readings can be triggered automatically (by time), manually or, if the wheel mode is used, readings can be recorded at regular intervals controlled by the rotation of the wheels. For the utility mapping and clearance surveys the EM readings were not recorded and any high metal responses were marked on the ground with paint and/or flags. The wheel mode was used for the grid survey within the storage area. There the readings were recorded every 0.62 feet along traverses spaced five feet apart.

Ground Penetrating Radar (GPR)

Ground penetrating radar utilizes high frequency radio waves to probe the subsurface. Radar waves are transmitted into the ground from an antenna that is pulled across the ground surface. In the subsurface, radar waves are reflected at interfaces of materials with contrasting dielectric properties. The returning signal is intercepted by a receiver and converted to a digital graphic image. The horizontal axis of the image is distance along the traverse. The vertical axis is two-way travel time of the radar pulses, in nanoseconds (ns) which can be converted to depth.

Tanks, pipelines and other objects with rounded tops (boulders, tree roots, or segments of old foundations, for example) may show up on the profiles as hyperbola-shaped reflections. Underground storage tanks (USTs) and pipelines usually appear on more than one survey line as hyperbolic reflectors on lines perpendicular to the tank or pipe axis and as horizontal reflectors on lines along the axis. The GPR instrument used here was a GSSI, SIR-3000. A 400-MHz antenna was used with a time range set for 80 nanoseconds. At this setting the depth surveyed is approximately 12 feet. GPR profiles were recorded for all of the proposed boring locations that were accessible to the equipment.

Utility and Pipe Locator: A Radiodetection RD7000 was used to help locate underground utilities at the site and to clear planned boring locations. This instrument uses passive and transmitted electromagnetic frequencies to locate and trace buried pipes and utilities. The passive frequencies include power and radio while the transmitted frequencies include 8, 33, 65 and 83 kHz. This instrument is generally used in a sweeping fashion in multiple directions across an area of interest and any signal detections are marked on the ground. The instrument does not record data.

Field Survey Procedures

For the accessible proposed boring locations a minimum 10-foot by 10-foot area was surveyed around each location using all three instruments. GPR records were recorded and saved for each location where the instrument was used. The EM and utility locator instruments were used in a scanning fashion and any anomalies or signals detected were marked on the ground. The proposed borings along the shoreline were cleared using the utility and pipe locator only as they were inaccessible to the EM and GPR instruments. Several proposed borings within the former storage area were not cleared because the locations are so densely overgrown that a person cannot even walk to them. Plans are to have these areas cleared of vegetation in the near future. A field survey grid was established within the former storage area over an area where a drain pipe and drain pit are suspected to have been located. The established grid was 80 feet wide by 200 feet long as shown on Figures 2 and 3. EM readings and GPR profiles were recorded along lines spaced five feet apart over the accessible portions of the grid area.

SURVEY RESULTS

Former Shooting Range Site:

Figure 1 shows the results of the geophysical surveys at the Former Shooting Range Site. Thirty one soil boring locations and four monitoring well locations were cleared for underground utilities at all of these locations. Seven of the boring locations that occur along the shoreline were cleared using the utility locator only. All of the other locations were cleared using all three instruments as described above. A few of the pre-marked boring locations were moved a few feet to avoid detected anomalies or mapped underground utilities. These included SB206, SB207, SB216 and SB220. The relocated borings were marked on the ground by NGS and discussed with the Resolution Consultants field manager.

The mapped underground utility lines within the Former Shooting Range site are shown on Figure 1. All three instruments described above were useful in mapping out these underground lines. The detected utilities were marked on the ground as they were traced and later several locations along each line were located using GPS. Water and electric lines to the six RV sites were traced and marked as shown. The water line (blue) runs from a valve within the Former Storage Area westerly and then northerly to each RV site as shown. The electric line (red) runs from a panel box next to a utility pole to the northerly RV site and then south to the other sites. Another water line was traced from the southerly fence northeasterly to a gate in the road at the north end of the site. The identification of this line was confirmed with Navy facilities personnel.

An underground surface drainage line was traced from a concrete inlet structure near the railroad line northwesterly to an outlet on the slope down to the shore of Narragansett Bay. No other tributary drains were detected running into this line. An apparently abandoned drain line was also detected that runs into and out of a small manhole at the north end of the site. This drain appears to have originated near a former building location (Building 233) and runs northerly, through the manhole, and into the thick vegetation where it could not be traced further.

Two abandoned electric lines were also located as shown on the figure. One occurs near the northerly RV site. Navy facilities personnel confirmed that this is an abandoned line that originally fed the RV sites from the former building 233. The other abandoned electric line occurs on the southeast side of the site. This line is marked by a concrete post that is marked "2300 V" and apparently ran from the nearby utility pole, across Defense Highway, and up to the tank farm to the southeast of the site. This interpretation was also supported by Navy facilities personnel.

Former Drum Storage Area Site:

Figures 2 and 3 show the results of the geophysical surveys at the Drum Storage Area Site. Fifteen soil boring locations and one monitoring well location were cleared for underground utilities at the locations marked with orange symbols on Figure 2. All three geophysical instruments were used to clear the boring locations in the same manner as described above for the Former Shooting Range site. All of the locations were pre-marked at the site by Resolution Consultants personnel a few days prior to the geophysical surveys. Several of the borings were marked in locations that were up to several feet from the original proposed locations due to practical access issues. The original proposed locations are shown in black and the cleared locations are shown in orange. There are also six proposed boring locations at the southern end of the site that could not be marked or surveyed due to the extremely thick overgrowth in that area. Plans are to have this area cleared so that the borings can be marked and surveyed at a later date.

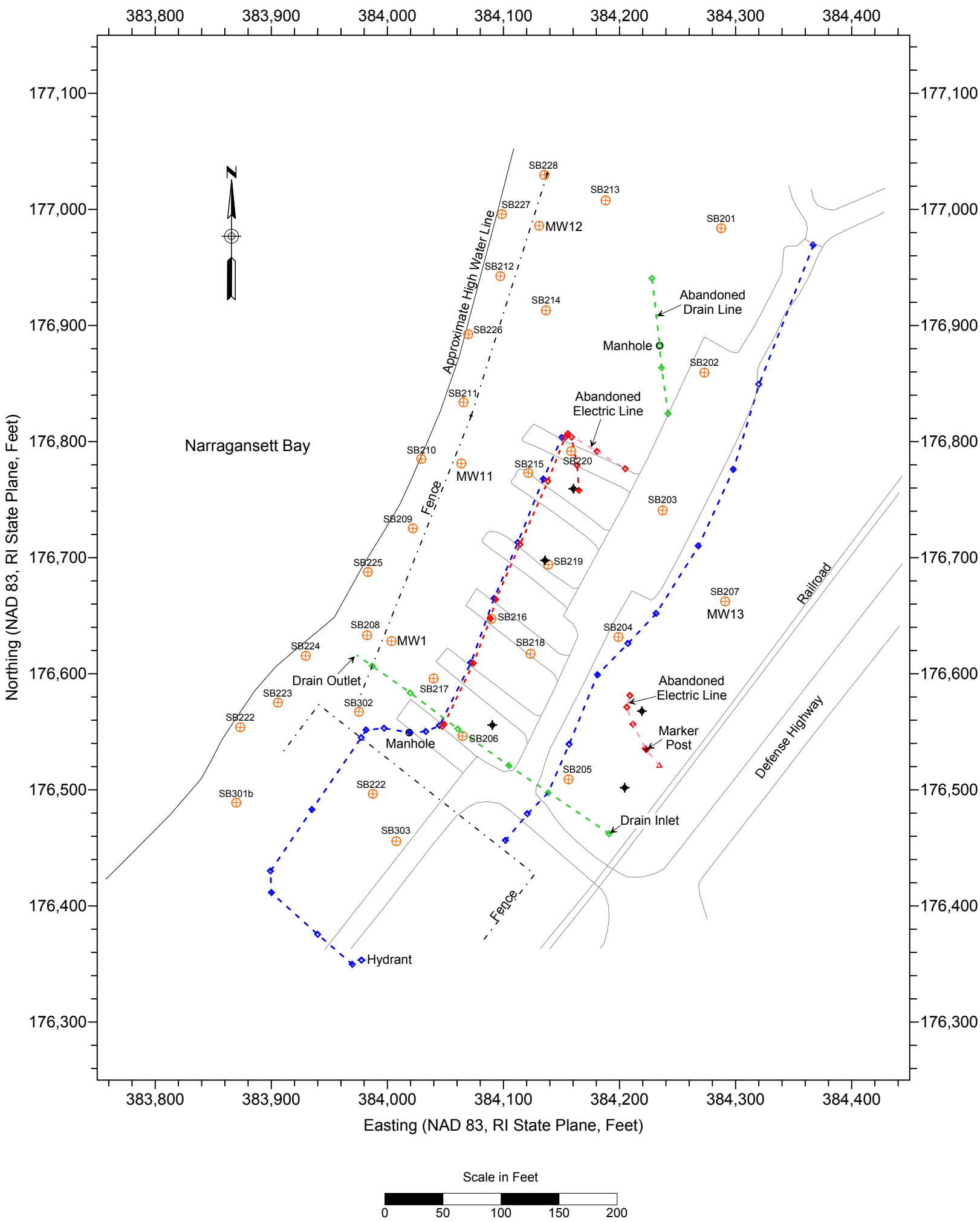
The mapped underground utility lines within the Former Drum Storage Area site are shown on Figure 2. All three instruments described above were useful in mapping out these underground lines. The detected utilities were marked on the ground as they were traced and later several locations along each line were located using GPS. Two sections of water line (blue) were added to the water lines previously mapped for the Former Shooting Range site. These water lines generally showed up quite well using the GPR instrument although there is some uncertainty as to how the lines are fed from the main line on the far side of Defense Highway.

A long drain line crosses the site southeast to northwest from an inlet structure on the far side of Defense Highway to an outfall at the shore. This line was detected with both the EM and GPR instruments. No other tributary drains were detected running into this line. Four other smaller sections of underground drain lines, or possible drain lines are shown on Figure 2. At the southwest corner of the former drum storage area the drain to the former oil/water separator was found using GPR. It runs under the old boat that is parked there (the Alice May), under the fence and into the overgrown area to the southwest. Once the vegetation is cleared there the remainder of this line should be easily mapped. Two lines occur near the southeast corner of the former drum storage area. One of these appears to be a drain that crosses the paved road and runs into a ditch on the south side of the fence. The other line is smaller and is associated with a cut in the pavement there. This one may not be a drain line but some other sort of pipe or conduit. Lastly a buried pipeline of some sort was detected that crosses the paved entrance into the drum storage area near boring SB308.

Neither of the suspected drain lines from the north and south ends of the former drum storage area were detected during the main utility mapping effort. The southerly drain line was mostly inaccessible due to the thick vegetation on either side of the paved roadway. An 80-foot by 200-foot survey grid was established over the area where the northerly drain line and drain pit are thought to have been located as shown on Figures 2 and 3. EM readings and GPR profiles were recorded on lines spaced 5 feet apart over the entire grid area except where parked RV's prevented it. The EM results are shown on Figure 3. The plot on the left shows the EM bottom coil readings which tends to indicate total metal under the instrument. The plot on the right shows the "differential channel" which is simply the top coil readings minus the bottom coil readings. This tends to filter out the very near surface metal and just show buried metal. Comparing the two plots reveals that most of the metal detected in the area is likely surface metal debris and not likely related to a buried pipe or drain pit structure. Examination of the GPR profiles did not reveal any convincing evidence of a drain line or pit within the grid area. Based on these results it is possible that either the drain pipe and pit are too deep to be detected, are made of materials that are difficult to detect (e.g. clay tile), were excavated and removed from the area, or they were originally installed in some other location.

LIMITATIONS OF THE SURVEYS

The EM61 metal detection survey provides an indication of where buried metal exists at the site surveyed. The Ground Penetrating Radar survey produces reflectors at interfaces of materials with contrasting dielectric properties. Both of these instruments provide indirect measurements of subsurface conditions. The actual cause of the features depicted on the figures can only be conclusively determined by direct observation.



EXPLANATION

- Water Line
- Drain Line
- Electric Line
- Abandoned Electric Line
- Chain-link Fence
- Utility Pole
- Manhole
- Cleared Proposed Boring/Well Location

FIGURE 1

UTILITY SURVEY LOCATION MAP

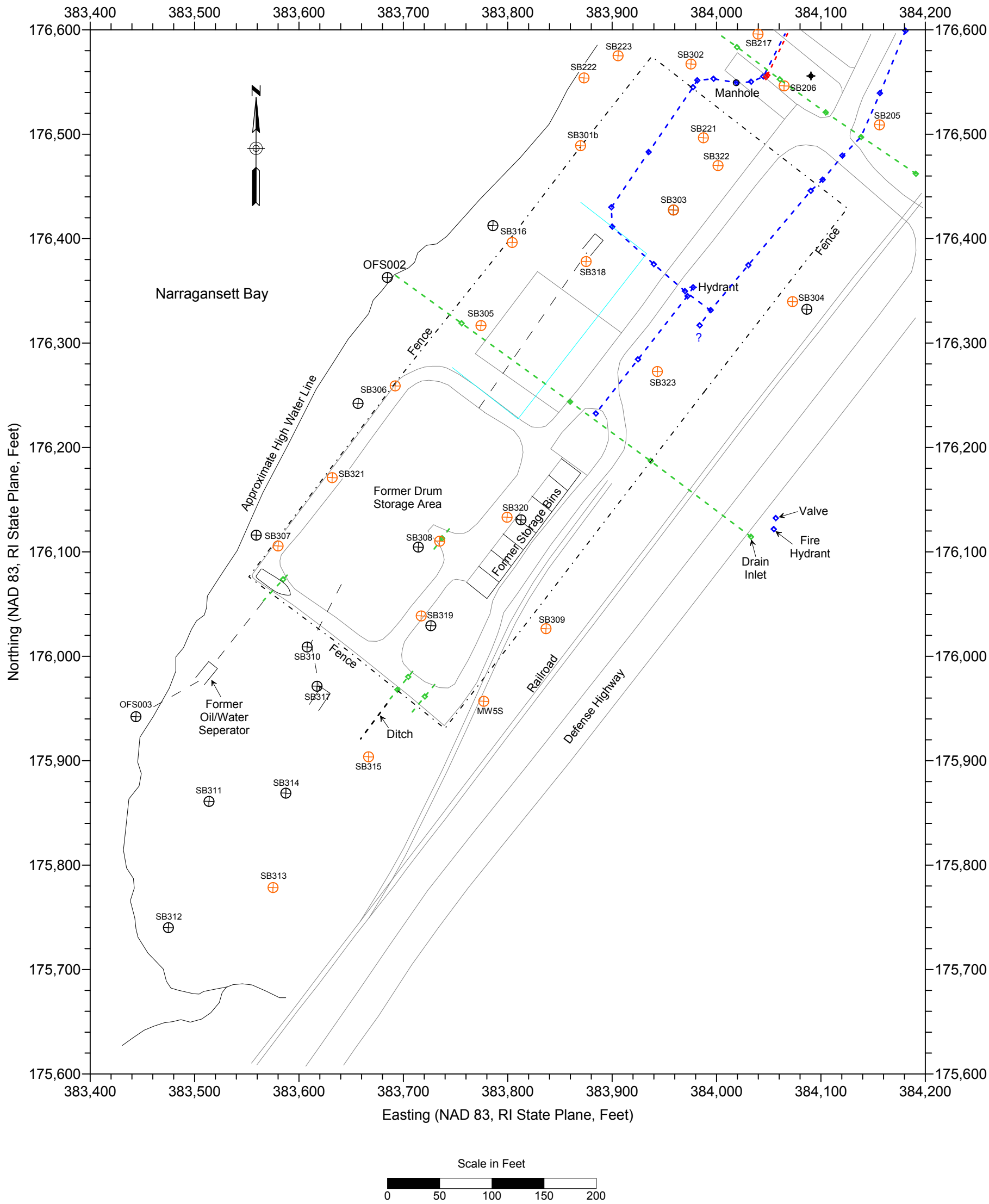
FORMER CARR POINT SHOOTING RANGE SITE

NAVSTA NEWPORT, NEWPORT, RI

For:

Resolution Consultants

Surveyed: 11/18-22/2013 by:
Northeast Geophysical Services



EXPLANATION

- Water Line
- Drain Line
- Electric Line
- Suspected Former Drain Line
- Chain-link Fence
- Utility Pole
- Manhole
- Cleared Proposed Boring/Well Location
- Uncleared Proposed Boring/Well Location
- Outline of EM & GPR Survey Grid (Figure 3)

FIGURE 2

UTILITY SURVEY LOCATION MAP

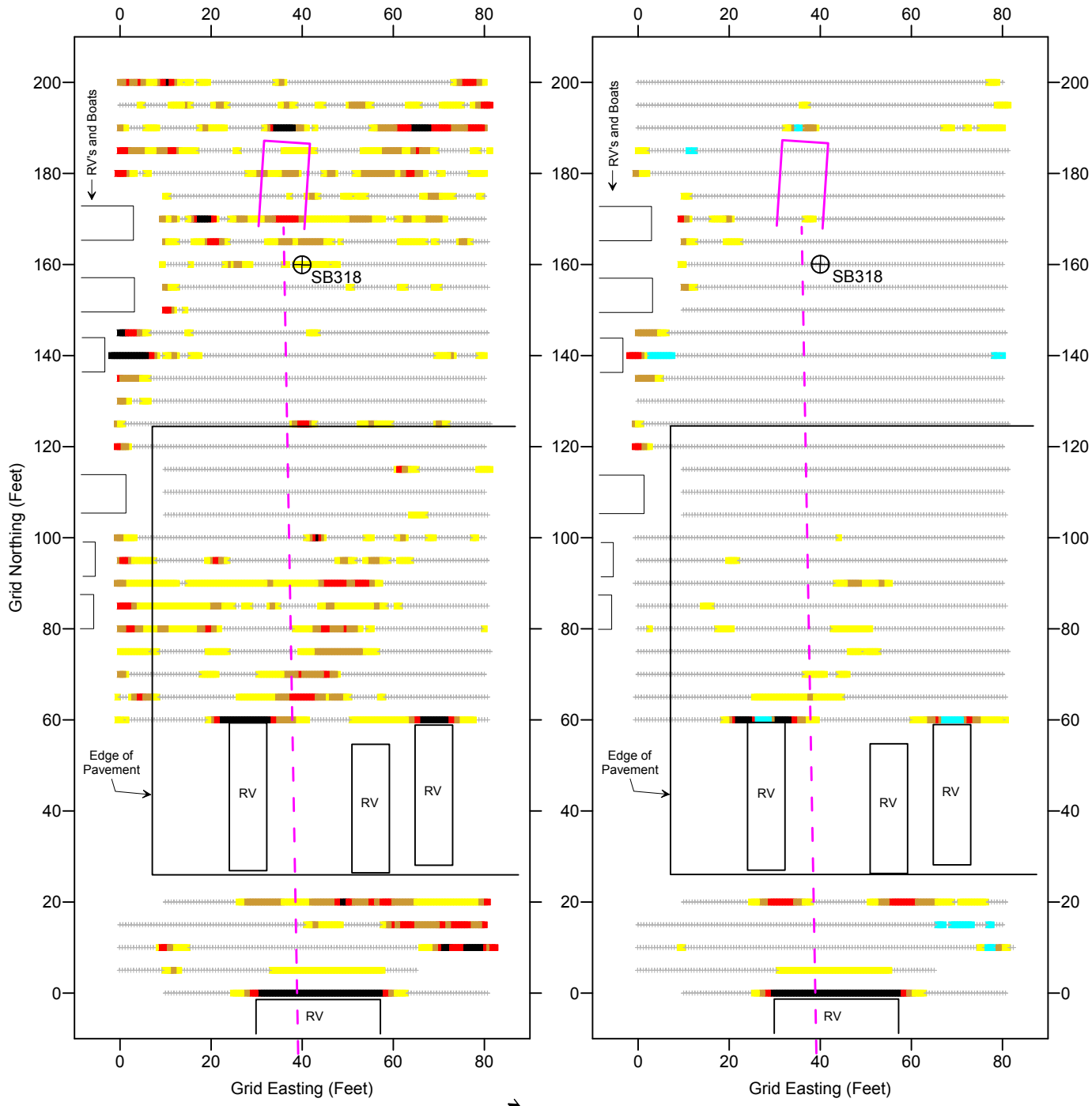
FORMER CARR POINT DRUM STORAGE AREA SITE

NAVSTA NEWPORT, NEWPORT, RI

For:

Resolution Consultants

Surveyed: 03/20-21/2014 by:
Northeast Geophysical Services



EXPLANATION

EM61 Metal Detector Readings
Metallic Response in Millivolts

- -10,000 mV to -10 mV
- -10 mV to 30 mV
- 30 mV to 60 mV
- 60 mV to 120 mV
- 120 mV to 240 mV
- 240 mV to 12,000 mV

Suspected Drain Line

Suspected Drain Pit

FIGURE 3

NORTH DRAIN GRID SURVEY RESULTS MAP

FORMER CARR POINT DRUM STORAGE AREA SITE

NAVSTA NEWPORT, NEWPORT, RI

Surveyed: 03/20-21/2014 by:
Northeast Geophysical Services

Appendix D

Geologic Logs

Appendix D-1

Well Construction Logs

Resolution Consultants

Well Construction Log

BORING #: MW-01D

Client: Department of the Navy, Naval Facilities Engineering Command, Mid-Atlantic		**Logged By:** RACHEL MACPHEE
Location: Former Carr Point Shooting Range	**Northing:** **Easting:**	**Drilling Company:** GEOSEARCH, INC.
Project #: 60266526	**Ground Elevation (msl):**	**Well Screen Interval (ft):**
Start Date: 12/4/2013	**Drilling Method:** HSA	**Water Level (ft):**
Finish Date: 12/4/2013		**Total Depth (ft):** 32.0

Depth (ft bgs)	Recovery Length (inches)	PID (ppm)	USCS Code	Graphic	Soil and Rock Description Classification Scheme: USCS	Well Construction
0						
2	6/24	0.0	SW		SAND, trace silt, SW, non plastic , loose, dry to moist, none subrounded 2.0	
4	12/24	0.0	SP-SM		silty SAND, trace gravel, SPSM, non plastic , loose, dry to moist, subrounded , poorly graded, horizontal 4.0	
6	20/24	0.2	SP-SM		silty SAND, trace gravel, SPSM, non plastic , loose, dry to, subrounded , poorly graded 6.0	
8	6/24	0.0	SP-SM		silty SAND, trace fine gravel, SPSM, non plastic , loose, slightly moist to moist, none , subangular , poorly graded 8.0	
10	15/24	0.0	SM		silty SAND, some gravel some medium to coarse sand, 7.5YR 3/2 dark brown, dry 10.0	
12	15/24	0.2	SM		silty SAND, with gravel some medium to coarse sand, 10YR 3/3 dark brown, dry to moist 12.0	2" PVC
14	18/24	0.5	SM		silty SAND, trace medium to coarse sand, 10YR 3/3 dark brown, moist to wet 14.0	
16	9/24	0.0	SM		silty SAND, and gravel some medium to coarse sand, 2.5YR 3/1 dark reddish gray, moist to saturated 16.0	
18	18/24	0.0	SM		silty SAND, some gravel trace medium to coarse sand, 10BG 3/1 very dark greenish gray, moist to wet, BAND OF CRUSHED ROCK/COARSE SAND AT 4 INCHES INTO SPOON GLEY 4/10B 18.0	
20	10/24	0.0	SM		silty SAND, trace fines and rock fragments, SPSM, 10YR 3/1 very dark gray, non plastic loose to medium stiff, moist to wet, weak angular ,, More weathered shale at 18' bgs, brittle 20.0	

Remarks: Boring Terminated (ft): 32.0

(Continued Next Page)

Resolution Consultants

Well Construction Log

BORING #: MW-01D

Client: Department of the Navy, Naval Facilities Engineering Command, Mid-Atlantic		**Logged By:** RACHEL MACPHEE
Location: Former Carr Point Shooting Range	**Northing:** **Easting:**	**Drilling Company:** GEOSEARCH, INC.
Project #: 60266526	**Ground Elevation (msl):**	**Well Screen Interval (ft):**
Start Date: 12/4/2013	**Drilling Method:** HSA	**Water Level (ft):**
Finish Date: 12/4/2013		**Total Depth (ft):** 32.0

Depth (ft bgs)	Recovery Length (inches)	PID (ppm)	USCS Code	Graphic	Soil and Rock Description Classification Scheme: USCS	Well Construction
20						2" PVC *(continued)*
22	15/24	0.0	SM		silty SAND, SPSM, 10BG 3/1 very dark greenish gray, low plasticity , medium stiff, moist, weak , angular 22.0	Bentonite Grout
24	22/24	0.0	SM		silty SAND, gravel with rock fragments, SM, 10BG 3/1 very dark greenish gray, low plasticity , fine to medium, dry, weak , angular, beginning to see phillite fragments within silty sand matrix, angular 24.0	#2 Sand
26	10/24	0.0	SM		silty SAND, trace gravel with rock fragments, SM, 10Y 3/1 very dark greenish gray, fine to medium, wet, subangular, , phillite fragments bound within matrix 26.0	2" PVC Screen
28	7/24	0.0	SM		silty SAND, trace gravel with rock fragments, SM, 10GY 3/1 very dark greenish gray, fine to medium, dry to slightly moist, weak , angular, phillite fragments within matrix 28.0	
30	6/24	0.0	SM		silty SAND, and gravel with rock fragments, SM, 5BG 3/1 very dark greenish gray, fine to medium, dry, strong , subangular, interbedded, laminated 30.0	
32	9/24	0.0	SM		silty SAND, and gravel with rock fragments, SM, 10BG 3/1 very dark greenish gray, fine to medium, dry to moist, strong, horizontal, , sand at top of spoon grading to highly weathered phillite, strongly laminated 32.0	End of boring at 32.0 ft. bgs.

End of boring at 32.0 ft. bgs.

Remarks: Boring Terminated (ft): 32.0

Resolution Consultants

Well Construction Log

BORING #: MW-11

Client: Department of the Navy, Naval Facilities Engineering Command, Mid-Atlantic		**Logged By:** RACHEL MACPHEE
Location: Former Carr Point Shooting Range	**Northing:** **Easting:**	**Drilling Company:** GEOSEARCH, INC.
Project #: 60266526	**Ground Elevation (msl):**	**Well Screen Interval (ft):**
Start Date: 12/3/2013	**Drilling Method:** HSA	**Water Level (ft):**
Finish Date: 12/3/2013		**Total Depth (ft):** 18.0

Depth (ft bgs)	Recovery Length (inches)	PID (ppm)	USCS Code	Graphic	Soil and Rock Description Classification Scheme: USCS	Well Construction
0						
2	17/24	0.0	SW		well-graded SAND, some organics trace gravel, 10YR 3/3 dark brown, dry 2.0	2" PVC
4	13/24	0.0	SM		silty SAND, trace organics, dry 4.0	Bentonite Grout
6	8/24	0.0	SM		silty SAND, some medium to coarse sand trace gravel, 10YR 3/4 dark yellowish brown, dry 6.0	#2 Sand
8	12/24	0.0	SM		silty SAND, some medium to coarse sand and gravel, 10YR 2/1 black, dry 8.0	
10	14/24	0.0	SM		silty SAND, with gravel, 10YR 3/1 very dark gray, dry 10.0	
12	16/24	0.0	SM		silty SAND, little medium to coarse sand and gravel, 7.5YR 2.5/1 black, dry 12.0	
14	2/8	0.0	SM		silty SAND, some fine to medium sand and gravel, 10YR 2/2 very dark brown, moist to wet 14.0	2" PVC Screen
16	NA	0.0	NA		OBSTRUCTION, no recovery 16.0	
18	24/24	0.0	SM		silty SAND, with medium to coarse sand, SP, 7.5YR 2.5/1 black, hard, moist to wet, angular poorly graded 18.0	

End of boring at 18.0 ft. bgs.

End of boring at 18.0 ft. bgs.

Remarks: Boring Terminated (ft): 18.0

Resolution Consultants

Well Construction Log

BORING #: MW-12

Client: Department of the Navy, Naval Facilities Engineering Command, Mid-Atlantic		**Logged By:** RACHEL MACPHEE
Location: Former Carr Point Shooting Range	**Northing:** **Easting:**	**Drilling Company:** GEOSEARCH, INC.
Project #: 60266526	**Ground Elevation (msl):**	**Well Screen Interval (ft):**
Start Date:	**Drilling Method:** HSA	**Water Level (ft):**
Finish Date:		**Total Depth (ft):** 18.0

Depth (ft bgs)	Recovery Length (inches)	PID (ppm)	USCS Code	Graphic	Soil and Rock Description Classification Scheme: USCS	Well Construction
0	12/24	2.3	SM		0.3 silty SAND, and organics, SM, 5R 3/2 dusky red, dry no, TOP SOIL	
	12/24	3.6	SM		silty SAND, some medium to coarse sand trace gravel, 10YR 3/4 dark yellowish brown, dry	
2					2.0	2" PVC
	14/24	3.2	SM		silty SAND, little medium to coarse sand trace fine gravel, 10YR 3/2 very dark grayish brown, dry	
4					4.0	
	10/24	0.0	SM		silty SAND, little medium to coarse sand trace gravel, 10YR 3/3 dark brown, dry	Bentonite Grout
6					6.0	
	12/24	0.0	SM		silty SAND, some silt trace gravel, 10YR 3/4 dark yellowish brown, dry to moist, 1" QUARTZ ROCK AT 6.8'	#2 Sand
8					8.0	
	20/24	0.0	SM		silty SAND, little medium to coarse sand little gravel, 10YR 4/3 brown, dry to moist	
10					10.0	
	10/24	0.0	SM		silty SAND, trace medium to coarse sand little gravel, 10YR 3/4 dark yellowish brown, dry to moist	
12					12.0	
	9/24	0.0	SM		silty SAND, some medium to coarse sand little gravel, 10YR 3/1 very dark gray, moist to wet	2" PVC Screen
14					14.0	
	8/24	0.0	SM		silty SAND, little medium to coarse sand little gravel, 10YR 3/2 very dark grayish brown, moist to wet	
16					16.0	
	22/24	0.0	SM		silty SAND, little medium to coarse sand trace gravel, 10YR 3/2 very dark grayish brown, moist to wet	
18					18.0	

End of boring at 18.0 ft. bgs.

End of boring at 18.0 ft. bgs.

Remarks: Boring Terminated (ft): 18.0

Resolution Consultants

Well Construction Log

BORING #: MW-12D

Client: Department of the Navy, Naval Facilities Engineering Command, Mid-Atlantic		**Logged By:** RACHEL MACPHEE
Location: Former Carr Point Shooting Range	**Northing:** **Easting:**	**Drilling Company:** GEOSEARCH, INC.
Project #: 60266526	**Ground Elevation (msl):**	**Well Screen Interval (ft):**
Start Date: 12/2/2013	**Drilling Method:** HSA	**Water Level (ft):**
Finish Date: 12/2/2013		**Total Depth (ft):** 44.0

Depth (ft bgs)	Recovery Length (inches)	PID (ppm)	USCS Code	Graphic	Soil and Rock Description Classification Scheme: USCS	Well Construction
0	12/24	2.3	SM		0.3 silty SAND, and organics, SM, 5R 3/2 dusky red, dry no, TOP SOIL	
	12/24	3.6	SM		silty SAND, some medium to coarse sand trace gravel, 10YR 3/4 dark yellowish brown, dry	
2					2.0	
	14/24	3.2	SM		silty SAND, little medium to coarse sand trace fine gravel, 10YR 3/2 very dark grayish brown, dry	
4					4.0	
	10/24	0.0	SM		silty SAND, little medium to coarse sand trace gravel, 10YR 3/3 dark brown, dry	
6					6.0	
	12/24	0.0	SM		silty SAND, some silt trace gravel, 10YR 3/4 dark yellowish brown, dry to moist, 1" QUARTZ ROCK AT 6.8'	
8					8.0	
	20/24	0.0	SM		silty SAND, little medium to coarse sand little gravel, 10YR 4/3 brown, dry to moist	
10					10.0	
	10/24	0.0	SM		silty SAND, trace medium to coarse sand little gravel, 10YR 3/4 dark yellowish brown, dry to moist	
12					12.0	
	9/24	0.0	SM		silty SAND, some medium to coarse sand little gravel, 10YR 3/1 very dark gray, moist to wet	
14					14.0	
	8/24	0.0	SM		silty SAND, little medium to coarse sand little gravel, 10YR 3/2 very dark grayish brown, moist to wet	
16					16.0	2" PVC
	22/24	0.0	SM		silty SAND, little medium to coarse sand trace gravel, 10YR 3/2 very dark grayish brown, moist to wet	
18					18.0	
	10/24	0.0	SM		silty SAND, some medium to coarse sand little gravel, 7.5R 2.5/1 reddish black, moist to wet	
20					20.0	
	8/24	0.0	SM		silty SAND, and gravel, 10YR 3/1 very dark gray, moist to wet, angular	
22					22.0	

Remarks: Boring Terminated (ft): 44.0

(Continued Next Page)

Resolution Consultants

Well Construction Log

BORING #: MW-12D

Client: Department of the Navy, Naval Facilities Engineering Command, Mid-Atlantic		**Logged By:** RACHEL MACPHEE
Location: Former Carr Point Shooting Range	**Northing:** **Easting:**	**Drilling Company:** GEOSEARCH, INC.
Project #: 60266526	**Ground Elevation (msl):**	**Well Screen Interval (ft):**
Start Date: 12/2/2013	**Drilling Method:** HSA	**Water Level (ft):**
Finish Date: 12/2/2013		**Total Depth (ft):** 44.0

Depth (ft bgs)	Recovery Length (inches)	PID (ppm)	USCS Code	Graphic	Soil and Rock Description Classification Scheme: USCS	Well Construction
22						
24	10/24'	0.0	SM		silty SAND, and gravel, 10YR 3/1 very dark gray, moist to wet, angular (24.0)	2" PVC *(continued)*
26	13/24'	0.0	GP		sandy GRAVEL, some silt, 10YR 3/1 very dark gray, moist to wet, angular (26.0)	
28	19/24'	0.0	SM		sandy SILT, with gravel, SM, 7.5YR 3/1 very dark gray, moist, angular (28.0)	
30	23/24'	0.0	SM		silty SAND, with gravel, SM, 7.5YR 3/1 very dark gray, dry to moist, angular (30.0)	
32	16/24'	0.0	SM		sandy SILT, with, SMSC, 7.5YR 5/1 gray, loose, dry, weak (32.0)	
34	NA	0.0	NA		OBSTRUCTION (34.0)	Bentonite Grout
36	15/24	0.0	SM		silty SAND, some fine to medium sand trace gravel, 7.5YR 2.5/1 black, dry to moist (36.0)	#2 Sand
38	19/24	0.0	SM		silty SAND, some medium to coarse sand trace gravel, 7.5YR 2.5/1 black (38.0)	2" PVC Screen
40	18/24	0.0	SM		silty SAND, trace clay, SP, 7.5YR 4/1 dark gray, dense, dry to moist, strong (40.0)	
42	3/34'	0.0	SM		silty SAND, SP, 7.5YR 4/1 dark gray, hard, dry, strong, noticable lamination (42.0)	
44	4/24'	0.0	BEDROCK		PHILLITE, bedrock, very weathered, gray, see photos (44.0)	

End of boring at 44.0 ft. bgs.

End of boring at 44.0 ft. bgs.

Remarks: Boring Terminated (ft): 44.0

Resolution Consultants

Well Construction Log

BORING #: MW-13

Client: Department of the Navy, Naval Facilities Engineering Command, Mid-Atlantic		**Logged By:** RACHEL MACPHEE
Location: Former Carr Point Shooting Range	**Northing:** **Easting:**	**Drilling Company:** GEOSEARCH, INC.
Project #: 60266526	**Ground Elevation (msl):**	**Well Screen Interval (ft):**
Start Date: 12/4/2013	**Drilling Method:** HSA	**Water Level (ft):**
Finish Date: 12/4/2013		**Total Depth (ft):** 15.0

Depth (ft bgs)	Recovery Length (inches)	PID (ppm)	USCS Code	Graphic	Soil and Rock Description Classification Scheme: USCS	Well Construction
0	NA	NA	SM		silty SAND, SM, low plasticity , loose, dry to moist, none, , hand clear to 5' bgs due to moving outside utility clearance, no spoons collected	2" PVC
2						Bentonite Grout
4						#2 Sand
5.0	17/24	0.0	SM		silty SAND, trace fine gravel, SM, 10YR 3/1 very dark gray, non plastic , loose, moist to wet, subrounded	
6						
7.0	18/24	0.0	SM		silty SAND, SM, 10YR 3/1 very dark gray, low plasticity , loose medium to coarse, wet, none , subrounded , well graded	
8						
9.0	20/24	0.0	SM		silty SAND, some fine gravel, SM, 10YR 5/2 grayish brown, low plasticity , dense fine to medium sand, moist, none , subangular , well graded	
10						2" PVC Screen
11.0	22/24	0.0	SM		silty SAND, some fine gravel, SM, 10YR 3/2 very dark grayish brown, non plastic , medium to coarse, wet, none , subangular , well graded	
12						
13.0	9/24	0.0	SM		silty SAND, medium to coarse sand and fine gravel, SM, 10YR 3/1 very dark gray, non plastic , loose to hard, moist to wet, none , subangular , well graded	
14						
15.0						

End of boring at 15.0 ft. bgs.

End of boring at 15.0 ft. bgs.

Remarks: Boring Terminated (ft): 15.0

Appendix **D**-2

Soil **L**ogs

Resolution Consultants

Boring Log

BORING #: CRP-SB201

Client: Department of the Navy, Naval Facilities Engineering Command, Mid-Atlantic		**Logged By:** RACHEL MACPHEE
Project: NS NEWPORT, RI	**Location:** Portsmouth, RI	**Drilling Company:** GEOSEARCH, INC.
Project #: 60250336	**Northing:** 176987.73 **Easting:** 384287.19	**Drilling Method:** Geoprobe
Start Date: 12/9/2013	**Water Surface Elevation (ft MLLW):** NA	**Surface Sample Method:** Hand Auger
Finish Date: 12/9/2013		

Depth (ft bgs)	Recovery Length (feet)	PID (ppm)	USCS Code	Graphic	Soil and Rock Description Classification Scheme: USCS
0					
2	4.5	0.0	SM		silty SAND, some gravel, dry, 0-0.25 WOOD CHIPS AND TOP SOIL, 10YR2/1 AND 4/3
4					
5					
6	5	0.0	SM		silty SAND and gravel, 10YR 2/1 black, dry, RED AND GRAY MOTTLES
8					
10					
10	4	0.0	SM		silty SAND and gravel, 10YR 2/2 very dark brown, dry, RED, ORANGE AND GRAY MOTTLES
12					
12					

Remarks: **Boring Depth (ft bgs):** 12

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250 Apollo Drive
Chelmsford, MA 01824

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Boring Log

BORING #: CRP-SB202

Client: Department of the Navy, Naval Facilities Engineering Command, Mid-Atlantic		**Logged By:** RACHEL MACPHEE
Project: NS NEWPORT, RI	**Location:** Portsmouth, RI	**Drilling Company:** GEOSEARCH, INC.
Project #: 60250336	**Northing:** 176860.22 **Easting:** 384272.72	**Drilling Method:** Geoprobe
Start Date: 12/10/2013	**Water Surface Elevation (ft MLLW):** NA	**Surface Sample Method:** Hand Auger
Finish Date: 12/10/2013		

Depth (ft bgs)	Recovery Length (feet)	PID (ppm)	USCS Code	Graphic	Soil and Rock Description Classification Scheme: USCS
0					
2	5	0.0	SM		silty SAND, some gravel, 10YR 3/3 dark brown, dry, 0-0.25 ASPHALT 0.25-0.5 10YR 5/8
4					
5					
6	2.5	0.0	SM		silty SAND, some gravel, 10YR 3/3 dark brown, dry, 4 INCH BAND OF CRUSHED GRAVEL AT 7 FEET
8					

Remarks: **Boring Depth (ft bgs):** 8

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Resolution Consultants

Boring Log

BORING #: CRP-SB203

Client: Department of the Navy, Naval Facilities Engineering Command, Mid-Atlantic		**Logged By:** RACHEL MACPHEE
Project: NS NEWPORT, RI	**Location:** Portsmouth, RI	**Drilling Company:** GEOSEARCH, INC.
Project #: 60250336	**Northing:** 176742.41 **Easting:** 384232.75	**Drilling Method:** Geoprobe
Start Date: 12/10/2013	**Water Surface Elevation (ft MLLW):** NA	**Surface Sample Method:** Hand Auger
Finish Date: 12/10/2013		

Depth (ft bgs)	Recovery Length (feet)	PID (ppm)	USCS Code	Graphic	Soil and Rock Description Classification Scheme: USCS
0					
2	4.5	0.0	SM		silty SAND, with fine to coarse gravel, non plastic, hard, dry, subangular, well graded, broken asphalt pieces in the initial 0.5' bgs,
4					
5					
6	3	0.0	SM		silty SAND, some clay trace fine gravel, low plasticity, dense, dry, none, subangular, well graded
8					

Remarks: **Boring Depth (ft bgs):** 8

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Boring Log

BORING #: CRP-SB204

Client: Department of the Navy, Naval Facilities Engineering Command, Mid-Atlantic		**Logged By:** RACHEL MACPHEE
Project: NS NEWPORT, RI	**Location:** Portsmouth, RI	**Drilling Company:**
Project #: 60250336	**Northing:** 176634.08 **Easting:** 384194.16	**Drilling Method:** Geoprobe
Start Date: 12/11/2013	**Water Surface Elevation (ft MLLW):** 10	**Surface Sample Method:** Hand Auger
Finish Date: 12/11/2013		

Depth (ft bgs)	Recovery Length (feet)	PID (ppm)	USCS Code	Graphic	Soil and Rock Description Classification Scheme: USCS
0	4	0.0	SM		silty SAND and medium sand, 10YR 3/1 very dark gray, non plastic, loose, wet, none, subangular, well graded, fine gravel at bottom
5	3.5	0.0	SM		silty SAND and medium sand, 10YR 5/3 brown, non plastic, loose, moist, angular, well graded
10	2	0.0	SM		silty SAND and coarse sand, 10YR 3/1 very dark gray, non plastic, wet
12					

Remarks: **Boring Depth (ft bgs):** 12

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Boring Log

BORING #: CRP-SB205

Client: Department of the Navy, Naval Facilities Engineering Command, Mid-Atlantic		**Logged By:** RACHEL MACPHEE
Project: NS NEWPORT, RI	**Location:** Portsmouth, RI	**Drilling Company:** GEOSEARCH, INC.
Project #: 60250336	**Northing:** 176513.36 **Easting:** 384151.47	**Drilling Method:** Geoprobe
Start Date: 12/11/2013	**Water Surface Elevation (ft MLLW):** NA	**Surface Sample Method:** Hand Auger
Finish Date: 12/11/2013		

Depth (ft bgs)	Recovery Length (feet)	PID (ppm)	USCS Code	Graphic	Soil and Rock Description Classification Scheme: USCS
0					
2	4	0.0	SM		silty SAND, fine to coarse sand, 10YR 4/3 brown, non plastic, loose to medium dense, dry, well graded, some lamination at bottom of sleeve ~4.5' bgs, increasing silt/ clay fraction
4					
5					
6	3.5	0.0	SM		silty SAND, with coarse sand, 10YR 3/1 very dark gray, non plastic, loose, dry to moist, none, subangular, well graded, some fine gravel at 8' bgs, increasing silt content at 9' bgs
8					

Remarks: **Boring Depth (ft bgs):** 8

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Boring Log

BORING #: CRP-SB206

Client: Department of the Navy, Naval Facilities Engineering Command, Mid-Atlantic		**Logged By:** RACHEL MACPHEE
Project: NS NEWPORT, RI	**Location:** Portsmouth, RI	**Drilling Company:** GEOSEARCH, INC.
Project #: 60250336	**Northing:** 176547.45 **Easting:** 384061.13	**Drilling Method:** Geoprobe
Start Date: 12/10/2013	**Water Surface Elevation (ft MLLW):** NA	**Surface Sample Method:** Hand Auger
Finish Date: 12/10/2013		

Depth (ft bgs)	Recovery Length (feet)	PID (ppm)	USCS Code	Graphic	Soil and Rock Description Classification Scheme: USCS
0					
2	5	0.0	SM		silty SAND, some clay, non plastic, loose to medium dense, dry to moist, well graded, rock fragments at top ~2' bgs, transitions to silty sand
4					
5					
6	4.5	0.0	SM		silty SAND, with fine to coarse sand, non plastic, loose to medium stiff, dry, well graded
8					
10					
10					

Remarks: **Boring Depth (ft bgs):** 10

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Chelmsford, MA 01824

Resolution Consultants

Boring Log

BORING #: CRP-SB208

Client: Department of the Navy, Naval Facilities Engineering Command, Mid-Atlantic		**Logged By:** RACHEL MACPHEE
Project: NS NEWPORT, RI	**Location:** Portsmouth, RI	**Drilling Company:** GEOSEARCH, INC.
Project #: 60250336	**Northing:** 176631.95 **Easting:** 383990.94	**Drilling Method:** Geoprobe
Start Date: 12/9/2013	**Water Surface Elevation (ft MLLW):** NA	**Surface Sample Method:** Hand Auger
Finish Date: 12/9/2013		

Depth (ft bgs)	Recovery Length (feet)	PID (ppm)	USCS Code	Graphic	Soil and Rock Description Classification Scheme: USCS
0	5	0.0	SM		silty SAND, little organics some gravel, 7.5R 3/2 dusky red, dry, top soil
1					
2	4.5	0.0	SM		silty SAND and gravel trace organics, 10YR 3/2 very dark grayish brown
4					
6					
6	3	0.0	SM		silty SAND, some gravel, 10YR 3/3 dark brown, dry to moist
8					
8					

Remarks: **Boring Depth (ft bgs):** 8

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Resolution Consultants

Boring Log

BORING #: CRP-SB209

Client: Department of the Navy, Naval Facilities Engineering Command, Mid-Atlantic		**Logged By:** RACHEL MACPHEE
Project: NS NEWPORT, RI	**Location:** Portsmouth, RI	**Drilling Company:** GEOSEARCH, INC.
Project #: 60250336	**Northing:** 176727.16 **Easting:** 384024.41	**Drilling Method:** Geoprobe
Start Date: 12/9/2013	**Water Surface Elevation (ft MLLW):** NA	**Surface Sample Method:** Hand Auger
Finish Date: 12/9/2013		

Depth (ft bgs)	Recovery Length (feet)	PID (ppm)	USCS Code	Graphic	Soil and Rock Description Classification Scheme: USCS
0	5	0.0	SM		silty SAND, some fine to medium gravel, 10YR 4/1 dark gray, non plastic, loose to medium stiff, dry, subangular,, transitioning to sandy silt, light brown, cohesive, slightly plastic
5	4.5	0.0	SM		sandy SILT, 10YR 5/2 grayish brown, low plasticity, medium stiff, dry, weak,, angular rock fragments with coarse sand at 7'-8' bgs, some evidence of compaction due to an obstruction
10	3.5	0.0	SM		silty SAND, with fine to coarse sand, SM, 10YR 4/1 dark gray, non plastic, loose to medium dense, dry, weak, subangular, increasing fine particles (silt/ clay), low to medium plasticity
12					

Remarks: **Boring Depth (ft bgs):** 12

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Resolution Consultants

Boring Log

BORING #: CRP-SB210

Client: Department of the Navy, Naval Facilities Engineering Command, Mid-Atlantic		**Logged By:** RACHEL MACPHEE
Project: NS NEWPORT, RI	**Location:** Portsmouth, RI	**Drilling Company:** GEOSEARCH, INC.
Project #: 60250336	**Northing:** 176786.67 **Easting:** 384022.97	**Drilling Method:** Hand Auger
Start Date: 12/6/2013	**Water Surface Elevation (ft MLLW):** NA	**Surface Sample Method:** Hand Auger
Finish Date: 12/6/2013		

Depth (ft bgs)	Recovery Length (feet)	PID (ppm)	USCS Code	Graphic	Soil and Rock Description Classification Scheme: USCS
0					
	1	0.0	SWSM		silty SAND and gravel some organics, moist
				1	

Remarks: **Boring Depth (ft bgs):** 1

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Boring Log

BORING #: CRP-SB211

Client: Department of the Navy, Naval Facilities Engineering Command, Mid-Atlantic		**Logged By:** RACHEL MACPHEE
Project: NS NEWPORT, RI	**Location:** Portsmouth, RI	**Drilling Company:** GEOSEARCH, INC.
Project #: 60250336	**Northing:** 176837.94 **Easting:** 384073.22	**Drilling Method:** Geoprobe
Start Date: 12/9/2013	**Water Surface Elevation (ft MLLW):** NA	**Surface Sample Method:** Hand Auger
Finish Date: 12/9/2013		

Depth (ft bgs)	Recovery Length (feet)	PID (ppm)	USCS Code	Graphic	Soil and Rock Description Classification Scheme: USCS
0					
2	3	0.0	SM		silty SAND, some gravel trace medium to coarse sand, 10YR 4/1 dark gray, 0-0.5 top soil
4					
5					
6	4	0.0	SM		silty SAND, some gravel, dry to moist, 10yr3/3-10yr3/1
8					
10					
12	2.5	0.0	SM		silty SAND, little medium to coarse sand some gravel, 10YR 3/1 very dark gray, dry to moist
12					

Remarks: **Boring Depth (ft bgs):** 12

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Boring Log

BORING #: CRP-SB212

Client: Department of the Navy, Naval Facilities Engineering Command, Mid-Atlantic		**Logged By:** RACHEL MACPHEE
Project: NS NEWPORT, RI	**Location:** Portsmouth, RI	**Drilling Company:** GEOSEARCH, INC.
Project #: 60250336	**Northing:** 176945.66 **Easting:** 384104.00	**Drilling Method:** Geoprobe
Start Date: 12/9/2013	**Water Surface Elevation (ft MLLW):** NA	**Surface Sample Method:** Hand Auger
Finish Date: 12/9/2013		

Depth (ft bgs)	Recovery Length (feet)	PID (ppm)	USCS Code	Graphic	Soil and Rock Description Classification Scheme: USCS
0					
2	3.5	0.0	SM		silty SAND, some gravel, 10YR 3/2 very dark grayish brown, 0-0.5 TOP SOIL
4					
5					
6	3	0.0	SM		silty SAND, some gravel, dry to moist, 10YR3/2 AND10YR2/1
8					

Remarks: **Boring Depth (ft bgs):** 8

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Boring Log

BORING #: CRP-SB213

Client: Department of the Navy, Naval Facilities Engineering Command, Mid-Atlantic		**Logged By:** RACHEL MACPHEE
Project: NS NEWPORT, RI	**Location:** Portsmouth, RI	**Drilling Company:** GEOSEARCH, INC.
Project #: 60250336	**Northing:** 177005.86 **Easting:** 384195.22	**Drilling Method:** Geoprobe
Start Date: 12/9/2013	**Water Surface Elevation (ft MLLW):** NA	**Surface Sample Method:** Hand Auger
Finish Date: 12/9/2013		

Depth (ft bgs)	Recovery Length (feet)	PID (ppm)	USCS Code	Graphic	Soil and Rock Description Classification Scheme: USCS
0					
2	3	0.0	SM		silty SAND, some gravel, 10YR 3/3 dark brown, dry, 0-0.25 WOOD CHIPS, 0.25-0.5 TOP SOIL
4					
5					
6	3.5	0.0	SM		silty SAND and gravel, 10YR 3/2 very dark grayish brown, dry
8					

Remarks: **Boring Depth (ft bgs):** 8

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Boring Log

BORING #: CRP-SB214

Client: Department of the Navy, Naval Facilities Engineering Command, Mid-Atlantic		**Logged By:** RACHEL MACPHEE
Project: NS NEWPORT, RI	**Location:** Portsmouth, RI	**Drilling Company:** GEOSEARCH, INC.
Project #: 60250336	**Northing:** 176917.17 **Easting:** 384139.84	**Drilling Method:** Geoprobe
Start Date: 12/11/2013	**Water Surface Elevation (ft MLLW):** NA	**Surface Sample Method:** Hand Auger
Finish Date: 12/11/2013		

Depth (ft bgs)	Recovery Length (feet)	PID (ppm)	USCS Code	Graphic	Soil and Rock Description Classification Scheme: USCS
0					
2	3.5	0.0	SM		silty SAND, some gravel, trace medium to coarse sand, 10YR 3/3 dark brown, dry, 0-0.25 top soil 0.25-1.5 f-c sand, some gravel, some silt 10yr4/2
4					
5					
6	3.5	0.0	SM		silty SAND and gravel some medium to coarse sand, 10YR 3/3 dark brown, dry
8					

Remarks: **Boring Depth (ft bgs):** 8

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Boring Log

BORING #: CRP-SB215

Client: Department of the Navy, Naval Facilities Engineering Command, Mid-Atlantic		**Logged By:** RACHEL MACPHEE
Project: NS NEWPORT, RI	**Location:** Portsmouth, RI	**Drilling Company:** GEOSEARCH, INC.
Project #: 60250336	**Northing:** 176780.47 **Easting:** 384129.13	**Drilling Method:** Geoprobe
Start Date: 12/11/2013	**Water Surface Elevation (ft MLLW):** 11	**Surface Sample Method:** Hand Auger
Finish Date: 12/11/2013		

Depth (ft bgs)	Recovery Length (feet)	PID (ppm)	USCS Code	Graphic	Soil and Rock Description Classification Scheme: USCS
0	4.5	0.0	SM		silty SAND and gravel, 10YR 3/3 dark brown, dry, transitioning to silty very fine sand, trace gravel at 3feet. 0-0.25 top soil
5	4.5	0.0	SM		silty SAND, some gravel, 10YR 3/3 dark brown, dry
10	3	0.0	SM		silty SAND, some gravel, moist to wet, color change at 11feet 10yr5/6 to 10yr2/1
12					

Remarks: **Boring Depth (ft bgs):** 12

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Boring Log

BORING #: CRP-SB216

Client: Department of the Navy, Naval Facilities Engineering Command, Mid-Atlantic		**Logged By:** RACHEL MACPHEE
Project: NS NEWPORT, RI	**Location:** Portsmouth, RI	**Drilling Company:** GEOSEARCH, INC.
Project #: 60250336	**Northing:** 176648.98 **Easting:** 384077.72	**Drilling Method:** Geoprobe
Start Date: 12/11/2013	**Water Surface Elevation (ft MLLW):** NA	**Surface Sample Method:** Hand Auger
Finish Date: 12/11/2013		

Depth (ft bgs)	Recovery Length (feet)	PID (ppm)	USCS Code	Graphic	Soil and Rock Description Classification Scheme: USCS
0					
2	5	0.0	SM		silty SAND, 10YR 4/1 dark gray, non plastic, medium dense fine to medium sand, dry, poorly graded, color change to 10YR 4/6 at 2.5' bgs
4					
5					
6	3	0.0	SM		silty SAND, with coarse sand, 10YR 4/1 dark gray, medium dense fine to coarse grained sand, dry, well graded, color change to 10YR 4/2 at 6' bgs
8					

Remarks: **Boring Depth (ft bgs):** 8

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Boring Log

BORING #: CRP-SB217

Client: Department of the Navy, Naval Facilities Engineering Command, Mid-Atlantic		**Logged By:** RACHEL MACPHEE
Project: NS NEWPORT, RI	**Location:** Portsmouth, RI	**Drilling Company:** GEOSEARCH, INC.
Project #: 60250336	**Northing:** 176597.42 **Easting:** 384042.25	**Drilling Method:** Geoprobe
Start Date: 12/10/2013	**Water Surface Elevation (ft MLLW):** NA	**Surface Sample Method:** Hand Auger
Finish Date: 12/10/2013		

Depth (ft bgs)	Recovery Length (feet)	PID (ppm)	USCS Code	Graphic	Soil and Rock Description Classification Scheme: USCS
0					
2	3	0.0	SM		sandy SILT, some fine to medium sand, little gravel, dry, 0-1 top soil. crushed white gravel at 1 foot
4					
5					
6	3	0.0	SM		silty SAND, some gravel, 10YR 3/3 dark brown, dry
8					
8					

Remarks: **Boring Depth (ft bgs):** 8

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Boring Log

BORING #: CRP-SB218

Client: Department of the Navy, Naval Facilities Engineering Command, Mid-Atlantic		**Logged By:** RACHEL MACPHEE
Project: NS NEWPORT, RI	**Location:** Portsmouth, RI	**Drilling Company:** GEOSEARCH, INC.
Project #: 60250336	**Northing:** 176621.86 **Easting:** 384120.84	**Drilling Method:** Geoprobe
Start Date: 12/11/2013	**Water Surface Elevation (ft MLLW):** NA	**Surface Sample Method:** Hand Auger
Finish Date: 12/11/2013		

Depth (ft bgs)	Recovery Length (feet)	PID (ppm)	USCS Code	Graphic	Soil and Rock Description Classification Scheme: USCS
0					
1					silty SAND, with medium sand trace fine gravel, 5Y 3/1 very dark gray, non plastic, medium dense, dry, none, subangular, well graded, some angular gravel pieces
2	4	0.0	SM		
4					
5					

Remarks: **Boring Depth (ft bgs):** 5

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Boring Log

BORING #: CRP-SB219

Client: Department of the Navy, Naval Facilities Engineering Command, Mid-Atlantic		**Logged By:** RACHEL MACPHEE
Project: NS NEWPORT, RI	**Location:** Portsmouth, RI	**Drilling Company:** GEOSEARCH, INC.
Project #: 60250336	**Northing:** 176691.88 **Easting:** 384146.06	**Drilling Method:** Geoprobe
Start Date: 12/11/2013	**Water Surface Elevation (ft MLLW):** NA	**Surface Sample Method:** Hand Auger
Finish Date: 12/11/2013		

Depth (ft bgs)	Recovery Length (feet)	PID (ppm)	USCS Code	Graphic	Soil and Rock Description Classification Scheme: USCS
0					
2	4.5	0.0	SM		silty SAND, with medium sand, 10YR 4/3 brown, non plastic, fine to medium, dry to moist, well graded, crushed rock/asphalt at 2' bgs, transition to silty sand below
4					
5					

Remarks: **Boring Depth (ft bgs):** 5

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Boring Log

BORING #: CRP-SB220

Client: Department of the Navy, Naval Facilities Engineering Command, Mid-Atlantic		**Logged By:** RACHEL MACPHEE
Project: NS NEWPORT, RI	**Location:** Portsmouth, RI	**Drilling Company:** GEOSEARCH, INC.
Project #: 60250336	**Northing:** 176797.69 **Easting:** 384168.66	**Drilling Method:** Geoprobe
Start Date: 12/11/2013	**Water Surface Elevation (ft MLLW):** NA	**Surface Sample Method:** Hand Auger
Finish Date: 12/11/2013		

Depth (ft bgs)	Recovery Length (feet)	PID (ppm)	USCS Code	Graphic	Soil and Rock Description Classification Scheme: USCS
0					
1					silty SAND and gravel, 10YR 3/3 dark brown, dry, 0-0.25 top soil, 0.25inch band of homogeneous f-c sand, trace gravel at ~3feet, 0.25inch band of homogeneous sandy silt at ~3.25feet
2	4	0.0	SM		
4					
5					

Remarks: **Boring Depth (ft bgs):** 5

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Boring Log

BORING #: CRP-SB221

Client: Department of the Navy, Naval Facilities Engineering Command, Mid-Atlantic		**Logged By:** RACHEL MACPHEE
Project: NS NEWPORT, RI	**Location:** Portsmouth, RI	**Drilling Company:** GEOSEARCH, INC.
Project #: 60250336	**Northing:** 176500.13 **Easting:** 383986.06	**Drilling Method:** Geoprobe
Start Date: 12/10/2013	**Water Surface Elevation (ft MLLW):** NA	**Surface Sample Method:** Hand Auger
Finish Date: 12/10/2013		

Depth (ft bgs)	Recovery Length (feet)	PID (ppm)	USCS Code	Graphic	Soil and Rock Description Classification Scheme: USCS
0					
2	4	0.0	SM		silty SAND, some gravel, 10YR 3/3 dark brown, dry, top foot 90% gravel
4					
5					silty SAND and gravel, 10YR 2/1 black, dry, multiple bands of gray crushed gravel
6	4.5	0.0	SM		
8					
10					

Remarks: **Boring Depth (ft bgs):** 10

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Boring Log

BORING #: CRP-SB222

Client: Department of the Navy, Naval Facilities Engineering Command, Mid-Atlantic		**Logged By:** RACHEL MACPHEE
Project: NS NEWPORT, RI	**Location:** Portsmouth, RI	**Drilling Company:** GEOSEARCH, INC.
Project #: 60250336	**Northing:** 176559.36 **Easting:** 383875.09	**Drilling Method:** Hand Auger
Start Date: 12/12/2013	**Water Surface Elevation (ft MLLW):** NA	**Surface Sample Method:** Hand Auger
Finish Date: 12/12/2013		

Depth (ft bgs)	Recovery Length (feet)	PID (ppm)	USCS Code	Graphic	Soil and Rock Description Classification Scheme: USCS
0					
	1	0.0	SWSM		SAND, with gravel, moist, subangular
				1	

Remarks: **Boring Depth (ft bgs):** 1

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Boring Log

BORING #: CRP-SB223

Client: Department of the Navy, Naval Facilities Engineering Command, Mid-Atlantic		**Logged By:** RACHEL MACPHEE
Project: NS NEWPORT, RI	**Location:** Portsmouth, RI	**Drilling Company:** GEOSEARCH, INC.
Project #: 60250336	**Northing:** 176581.78 **Easting:** 383903.16	**Drilling Method:** Hand Auger
Start Date: 12/12/2013	**Water Surface Elevation (ft MLLW):** NA	**Surface Sample Method:** Hand Auger
Finish Date: 12/12/2013		

Depth (ft bgs)	Recovery Length (feet)	PID (ppm)	USCS Code	Graphic	Soil and Rock Description Classification Scheme: USCS
0					
1	4.5	0.0	SM		silty SAND, 10YR 3/3 dark brown, non plastic, loose fine to medium sand, dry, none, subangular, poorly graded, organic material (roots, leaves, grass)
2					
3	4.5	0.0	SM		silty SAND, with organics, 10YR 4/4 dark yellowish brown, non plastic, loose fine to medium, dry, poorly graded, organics throughout (grass, leaves, roots)
4					

Remarks: **Boring Depth (ft bgs):** 4

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Boring Log

BORING #: CRP-SB224

Client: Department of the Navy, Naval Facilities Engineering Command, Mid-Atlantic		**Logged By:** RACHEL MACPHEE
Project: NS NEWPORT, RI	**Location:** Portsmouth, RI	**Drilling Company:** GEOSEARCH, INC.
Project #: 60250336	**Northing:** 176620.47 **Easting:** 383932.00	**Drilling Method:** Hand Auger
Start Date: 12/6/2013	**Water Surface Elevation (ft MLLW):** NA	**Surface Sample Method:** Hand Auger
Finish Date: 12/6/2013		

Depth (ft bgs)	Recovery Length (feet)	PID (ppm)	USCS Code	Graphic	Soil and Rock Description Classification Scheme: USCS
0	0.83	0.0	SWSM		sandy, with gravel, moist, subangular 0.83

Remarks: **Boring Depth (ft bgs):** 0.83

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Boring Log

BORING #: CRP-SB225

Client: Department of the Navy, Naval Facilities Engineering Command, Mid-Atlantic		**Logged By:** RACHEL MACPHEE
Project: NS NEWPORT, RI	**Location:** Portsmouth, RI	**Drilling Company:** GEOSEARCH, INC.
Project #: 60250336	**Northing:** 176692.47 **Easting:** 383980.75	**Drilling Method:** Hand Auger
Start Date: 12/6/2013	**Water Surface Elevation (ft MLLW):** NA	**Surface Sample Method:** Hand Auger
Finish Date: 12/6/2013		

Depth (ft bgs)	Recovery Length (feet)	PID (ppm)	USCS Code	Graphic	Soil and Rock Description Classification Scheme: USCS
0	0.75	0.0	SWSM		SAND, with gravel, moist, subangular 0.75

Remarks: **Boring Depth (ft bgs):** 0.75

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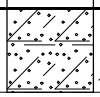
Boring Log

BORING #: CRP-SB226

Client: Department of the Navy, Naval Facilities Engineering Command, Mid-Atlantic		**Logged By:** RACHEL MACPHEE
Project: NS NEWPORT, RI	**Location:** Portsmouth, RI	**Drilling Company:** GEOSEARCH, INC.
Project #: 60250336	**Northing:** 176898.56 **Easting:** 384062.44	**Drilling Method:** Hand Auger
Start Date: 12/5/2013	**Water Surface Elevation (ft MLLW):** NA	**Surface Sample Method:** Hand Auger
Finish Date: 12/5/2013		

Depth (ft bgs)	Recovery Length (feet)	PID (ppm)	USCS Code	Graphic	Soil and Rock Description Classification Scheme: USCS
0					
	1	0.0	SW	 1	gravelly SAND, with medium to coarse sand little gravel, moist, subangular

Remarks: **Boring Depth (ft bgs):** 1

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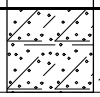
Boring Log

BORING #: CRP-SB227

Client: Department of the Navy, Naval Facilities Engineering Command, Mid-Atlantic		**Logged By:** RACHEL MACPHEE
Project: NS NEWPORT, RI	**Location:** Portsmouth, RI	**Drilling Company:** GEOSEARCH, INC.
Project #: 60250336	**Northing:** 177000.92 **Easting:** 384098.41	**Drilling Method:** Geoprobe
Start Date: 12/5/2013	**Water Surface Elevation (ft MLLW):** NA	**Surface Sample Method:** Hand Auger
Finish Date: 12/5/2013		

Depth (ft bgs)	Recovery Length (feet)	PID (ppm)	USCS Code	Graphic	Soil and Rock Description Classification Scheme: USCS
0					
	1	0.0	SW	 1	gravelly SAND, with medium to coarse sand some gravel, moist, subangular

Remarks: **Boring Depth (ft bgs):** 1

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Boring Log

BORING #: CRP-SB228

Client: Department of the Navy, Naval Facilities Engineering Command, Mid-Atlantic		**Logged By:** RACHEL MACPHEE
Project: NS NEWPORT, RI	**Location:** Portsmouth, RI	**Drilling Company:** GEOSEARCH, INC.
Project #: 60250336	**Northing:** 177030.94 **Easting:** 384123.06	**Drilling Method:** Geoprobe
Start Date: 12/9/2013	**Water Surface Elevation (ft MLLW):** NA	**Surface Sample Method:** Hand Auger
Finish Date: 12/9/2013		

Depth (ft bgs)	Recovery Length (feet)	PID (ppm)	USCS Code	Graphic	Soil and Rock Description Classification Scheme: USCS
0					
2	3	0.0	SM		silty SAND, some gravel little medium to coarse sand, 10YR 3/2 very dark grayish brown, dry, 0-0.5 TOP SOIL
4					
5					silty SAND, little gravel, 10YR 4/3 brown, dry
6	3.5	0.0	SM		
8					

Remarks: **Boring Depth (ft bgs):** 8

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Boring Log

BORING #: CRP-SB229

Client: Department of the Navy, Naval Facilities Engineering Command, Mid-Atlantic		**Logged By:** RACHEL MACPHEE
Project: NS NEWPORT, RI	**Location:** Portsmouth, RI	**Drilling Company:** GEOSEARCH, INC.
Project #: 60250336	**Northing:** 176879.03 **Easting:** 384199.94	**Drilling Method:** Geoprobe
Start Date: 12/10/2013	**Water Surface Elevation (ft MLLW):** NA	**Surface Sample Method:** Hand Auger
Finish Date: 12/10/2013		

Depth (ft bgs)	Recovery Length (feet)	PID (ppm)	USCS Code	Graphic	Soil and Rock Description Classification Scheme: USCS
0					
1					silty SAND, some gravel, 10YR 3/3 dark brown, dry, 0-1 top soil.
2	4.5	0.0	SM		
4					
5					

Remarks: **Boring Depth (ft bgs):** 5

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Boring Log

BORING #: CRP-SB301

Client: Department of the Navy, Naval Facilities Engineering Command, Mid-Atlantic		**Logged By:** RACHEL MACPHEE
Project: NS NEWPORT, RI	**Location:** Portsmouth, RI	**Drilling Company:** GEOSEARCH, INC.
Project #: 60250336	**Northing:** 176504.28 **Easting:** 383852.06	**Drilling Method:** Hand Auger
Start Date: 12/6/2013	**Water Surface Elevation (ft MLLW):** NA	**Surface Sample Method:** Hand Auger
Finish Date: 12/6/2013		

Depth (ft bgs)	Recovery Length (feet)	PID (ppm)	USCS Code	Graphic	Soil and Rock Description Classification Scheme: USCS
0					
	0.92	0.0	SWSM		silty SAND and gravel some organics, moist 0.92

Remarks: **Boring Depth (ft bgs):** 0.92

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Boring Log

BORING #: CRP-SB302

Client: Department of the Navy, Naval Facilities Engineering Command, Mid-Atlantic		**Logged By:** RACHEL MACPHEE
Project: NS NEWPORT, RI	**Location:** Portsmouth, RI	**Drilling Company:** GEOSEARCH, INC.
Project #: 60250336	**Northing:** 176570.11 **Easting:** 383975.06	**Drilling Method:** Geoprobe
Start Date: 12/10/2013	**Water Surface Elevation (ft MLLW):** NA	**Surface Sample Method:** Hand Auger
Finish Date: 12/10/2013		

Depth (ft bgs)	Recovery Length (feet)	PID (ppm)	USCS Code	Graphic	Soil and Rock Description Classification Scheme: USCS
0	4.5	0.0	SM		silty SAND, some gravel, 10YR 3/3 dark brown, 0-0.5 top soil. bands of medium-coarse sand throughout interval.
5	4.5	0.0	SM		silty SAND and gravel, 10YR 3/3 dark brown, dry, bands of gray and yellow crushed gravel throughout
10					

Remarks: **Boring Depth (ft bgs):** 10

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Boring Log

BORING #: CRP-SB303

Client: Department of the Navy, Naval Facilities Engineering Command, Mid-Atlantic		**Logged By:** RACHEL MACPHEE
Project: NS NEWPORT, RI	**Location:** Portsmouth, RI	**Drilling Company:** GEOSEARCH, INC.
Project #: 60250336	**Northing:** 176428.55 **Easting:** 383961.41	**Drilling Method:** Geoprobe
Start Date: 12/10/2013	**Water Surface Elevation (ft MLLW):** NA	**Surface Sample Method:** Hand Auger
Finish Date: 12/10/2013		

Depth (ft bgs)	Recovery Length (feet)	PID (ppm)	USCS Code	Graphic	Soil and Rock Description Classification Scheme: USCS
0	4.5	0.0	SM		silty SAND, some gravel little medium to coarse sand, 10YR 3/3 dark brown, dry
5	5	0.0	SM		silty SAND, some gravel trace medium to coarse sand, 10YR 3/2 very dark grayish brown, dry, band of homogeius very fine silty sand with trace gravel at 7-8ft
10					

Remarks: **Boring Depth (ft bgs):** 10

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Boring Log

BORING #: CRP-SB324

Client: Department of the Navy, Naval Facilities Engineering Command, Mid-Atlantic		**Logged By:** RACHEL MACPHEE
Project: NS NEWPORT, RI	**Location:** Portsmouth, RI	**Drilling Company:** GEOSEARCH, INC.
Project #: 60250336	**Northing:** 176490.34 **Easting:** 383869.03	**Drilling Method:** Geoprobe
Start Date: 12/12/2013	**Water Surface Elevation (ft MLLW):** NA	**Surface Sample Method:** Hand Auger
Finish Date: 12/12/2013		

Depth (ft bgs)	Recovery Length (feet)	PID (ppm)	USCS Code	Graphic	Soil and Rock Description Classification Scheme: USCS
0	4.5	0.0	SM		silty SAND, 10YR 4/4 dark yellowish brown, non plastic, medium dense fine to medium sand, dry to moist, subangular, poorly graded, fill material at top, color change at 5' bgs to 10YR 3/1
5	4	0.0	SM		silty SAND, with fine to coarse sand, 10YR 4/1 dark gray, non plastic, loose, dry, well graded, medium to coarse sand with crushed gravel throughout
10					

Remarks: **Boring Depth (ft bgs):** 10

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Appendix **D**-3

Sediment Cores

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Core ID: 101

Client:	Navy	**Contractor:** OSI	**Water Depth:** 0
Project Number:	60250336.FI.FS	**Sampling Equipment:** shovel	**MLW:**
Station Location:		**Survey Vessel:**	**Core Diameter (in):**
GPS Coordinates:		**Weather:** sunny/windy 25°F	**No. Attempts:**
Date:	12/13/13	**Seas:**	**Logged by:** H. Jones
Time:	1130	**Survey Personnel:**	

Geographic Reference: Hudson River - Rensselaer, NY (Note: bgs = below ground surface)

Depth Range	Blow per 6 inch	Re-covery ft/ft	PID	Lab Sample ID	USCS	Geologic Description Method:
						0-1 F-C silty sand, some f-c subrounded gravel, some shells + shell hash, loose, wet 10YR 3/2

Estimated Penetration Range:

Project Depth:

Actual Penetration:

Recovery:

% Recovery:

Comments:

Moved 10 ft east of original location (toward beach)
Removed 2" cobbles prior to collecting sample
weather 0-1' - 4813

Collected dup on PAH, metals, Hg, TS
0-1 ft

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Core ID: 102

Page 1 of 1

Client:	Navy	**Contractor:** OSI	**Water Depth:**
Project Number:	60250336.FI.FS	**Sampling Equipment:** Shovel	**MLW:**
Station Location:		**Survey Vessel:**	**Core Diameter (in):**
GPS Coordinates:		**Weather:** sunny 25°F	**No. Attempts:**
Date:	12/13/13	**Seas:** windy 20 mph	**Logged by:** H. Jones
Time:	1010	**Survey Personnel:**	

Geographic Reference: Hudson River - Rensselaer, NY (Note: bgs = below ground surface)

Depth Range	Blow per 6 inch	Recovery ft/ft	PID	Lab Sample ID	USCS	Geologic Description Method:
						0-1 Silty fine sand, some f-c subrounded gravel, some shells, wet, loose 10YR 3/3

Estimated Penetration Range:

Project Depth:

Actual Penetration:

Recovery:

% Recovery:

Comments:

collect MS/MSD on wet sieve PAH and Cr6+

Moved location 8 ft East of target

Weight 0-1' - 5540 g

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Core ID: 103

Page 1 of 1

Client:	Navy	**Contractor:** OSI	**Water Depth:**
Project Number:	60250336.FI.FS	**Sampling Equipment:** shovel	**MLW:**
Station Location:		**Survey Vessel:**	**Core Diameter (in):**
GPS Coordinates:		**Weather:** Sunny 25°F	**No. Attempts:**
Date: 12/13/13		**Seas:** windy 20 mph	**Logged by:**
Time: 1025		**Survey Personnel:**	

Geographic Reference: Hudson River - Rensselaer, NY (Note: bgs = below ground surface)

Depth Range	Blow per 6 inch	Re-covery ft/ft	PID	Lab Sample ID	USCS	Geologic Description Method:
						0-1 Silty f-m sand, some f-c subangular to subrounded gravel, wet, loose to dense 10YR 3/1

Estimated Penetration Range:	**Comments:** Moved location 10ft east (toward beach) from target
Project Depth:	
Actual Penetration:	weight 0-1' ~~4640~~ 5640
Recovery:	collected MS/MSD
% Recovery:	observed pellets in 0-1

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Core ID: 105

Client:	Navy	**Contractor:** OSI	**Water Depth:**
Project Number:	60250336.FI.FS	**Sampling Equipment:**	**MLW:**
Station Location:	105	**Survey Vessel:**	**Core Diameter (in):**
GPS Coordinates:		**Weather:**	**No. Attempts:**
Date:	12/6/13	**Seas:**	**Logged by:**
Time:	1225 | 1245 | 1255	**Survey Personnel:**	

Geographic Reference: Hudson River - Rensselaer, NY (Note: bgs = below ground surface)

Depth Range	Blow per 6 inch	Recovery ft/ft	PID	Lab Sample ID	USCS	Geologic Description Method:
						0 – 0.6 Silty fine sand, some shell hash, loose, wet 2.5Y 3/1
						0.6 – 2 Silty f-c sand, and f-c subrounded gravel, loose, wet 2.5Y 3/1

Estimated Penetration Range:	
Project Depth:	
Actual Penetration:	
Recovery:	2.0 / 1.9 / 2.9
% Recovery:	

Comments:

weights 0-1 1954 + 3222
1-2 2122 + 2531
2-3 2819

2-3' interval has 2/3 vol for pellet cover

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Core ID: 106

Client:	Navy	**Contractor:** OSI	**Water Depth:**
Project Number:	60250336.FI.FS	**Sampling Equipment:**	**MLW:**
Station Location:	106	**Survey Vessel:** Camden	**Core Diameter (in):** 3
GPS Coordinates:		**Weather:** Snow 35°F	**No. Attempts:**
Date:	12/10/13	**Seas:**	**Logged by:** H. Jones
Time:	0939	**Survey Personnel:**	

Geographic Reference: Hudson River - Rensselaer, NY (Note: bgs = below ground surface)

Depth Range	Blow per 6 Inch	Recovery ft/ft	PID	Lab Sample ID	USCS	Geologic Description Method:
						0-0.9 Silty f-m sand, little organics, some shell hash, loose, wet, lens of silt 0.4-0.5 2.5Y 3/2
						0.9-2.1 Silty f-c sand, some f-c submarked gravel, some shell hash, dense, wet 2.5Y 3/2
						2.1-3.1 Silty f. sand, some f-m submarked/subangular gravel, very dense, moist 2.5Y 3/1

Estimated Penetration Range:	
Project Depth:	
Actual Penetration:	
Recovery:	3.1
% Recovery:	

Comments:

weights
0-1 1793g + 2523 – dry on wet sieved fraction
1-2 1772g + 2601
2-3 2043 + 3328

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Core ID: 107

Client:	Navy	Contractor: OSI		Water Depth:	10.5 ft
Project Number:	60250336.FI.FS	Sampling Equipment:	vibracore	MLW:	
Station Location:	107	Survey Vessel:	Wilda	Core Diameter (in):	
GPS Coordinates:	383337.8, 776732.5	Weather:	sunny, 40°F	No. Attempts:	
Date:	12/2/13	Seas:	calm	Logged by:	H. Jones
Time:	1455/1515/1535	Survey Personnel:	R. McCarty		

Geographic Reference: Hudson River - Rensselaer, NY (Note: bgs = below ground surface)

Depth Range	Blow per 6 Inch	Recovery ft/ft	PID	Lab Sample ID	USCS	Geologic Description Method:
Core 1						0-4.4 10YR 2/1 Silty f-m sand, some f-c subrounded gravel, few subrounded cobbles, wet, dense.

Estimated Penetration Range:	
Project Depth:	
Actual Penetration:	4.0 ft / 4.15 ft / 3.0 ft
Recovery:	4.4 ft / 4.35 ft / 3.0 ft
% Recovery:	110% / 106% / 100%

Comments: Sieved portions
0.5-1 1898g + 1231g + 1686
1-2 3437g + 1847
2-3 3419 + 2025
0-0.5 - 928 + 1609

12/10/13 @ 1130
0-1 1259 + 3049

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Core ID: 108

Client:	Navy	**Contractor:** OSI	**Water Depth:** 10.4 ft
Project Number:	60250336.FI.FS	**Sampling Equipment:** vibra core	**MLW:**
Station Location:	108	**Survey Vessel:** Wilda	**Core Diameter (in):** 3
GPS Coordinates:	E383297.8 N176848.49	**Weather:** Sunny 45°F	**No. Attempts:** 5
Date:	12/3/13	**Seas:** winds 6-8 mph	**Logged by:** H. Jones
Time:	1230 / 1240 / 1307	**Survey Personnel:**	

Geographic Reference: Hudson River - Rensselaer, NY (Note: bgs = below ground surface)

Depth Range	Blow per 6 Inch	Recovery ft/ft	PID	Lab Sample ID	USCS	Geologic Description Method:
						0-3.5 Silty fine sand, trace shell hash, little organics (roots, sticks), dense, wet 2.5Y 2.5/1
						3.5-4 Silty f-c sand, some f-m rounded gravel, med dense, wet 2.5Y 2.5/1

Estimated Penetration Range:	
Project Depth:	
Actual Penetration:	3.8' / 4.0' / 3.8'
Recovery:	3.6' / 3.8' / 3.9'
% Recovery:	

Comments:

weights: 0-0.5 1210 + 835 + 1178
0.5-1.0 1747 + 1335 + 2685
1.0-2.0 1910 + 1847 + 2222
2.0-3.0 1949 + 1855 + 1872

Collect FD-01 from 0.5-1.0, m/m10 from 12-24

12/10/13 1202 0-1 1450 + 2917

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Core ID: 109

Client:	Navy	**Contractor:** OSI	**Water Depth:** 10.2
Project Number:	60250336.FI.FS	**Sampling Equipment:** vibracore	**MLW:**
Station Location:	109	**Survey Vessel:** Wilda	**Core Diameter (in):** 3
GPS Coordinates:	E 383312.0 N 176989.33	**Weather:** sunny 45°F	**No. Attempts:** 5
Date:	12/3/13	**Seas:** winds ~6 mph	**Logged by:** H. Jones
Time:	1356 / 1415 / 1437 / 1500	**Survey Personnel:**	

Geographic Reference: Hudson River - Rensselaer, NY (Note: bgs = below ground surface)

Depth Range	Blow per 6 inch	Recovery ft/ft	PID	Lab Sample ID	USCS	Geologic Description Method:
						0–0.9 silty fine sand, homogeneous, med dense, wet 2.5Y 3/1
						0.9–2.5 Fine-med subrounded gravel (mixed colored) some f-c sand, trace silt, loose, wet 2.5Y 2.5/1
						2.5–3.3 silty f-m sand, some f. subrounded gravel, med dense, wet 2.5Y 4/2

Estimated Penetration Range:	
Project Depth:	
Actual Penetration:	3.2 / 3.2 / ~~3.7~~ 3.2 / 3.7
Recovery:	3.3 / 3.4 / ~~3.5~~ 3.1 / 3.5
% Recovery:	

Comments:

weights: 0-1 3112
1-2 1374 + 2319 + 1997
2-3 2290 + 2015 + 1735

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Core ID: SD 110

Client:	Navy	**Contractor:** OSI	**Water Depth:** 11.0
Project Number:	60250336.FI.FS	**Sampling Equipment:**	**MLW:**
Station Location:	110	**Survey Vessel:**	**Core Diameter (in):** 3
GPS Coordinates:	E 383379.7 N 177136.24	**Weather:** sunny 45°F	**No. Attempts:** 3
Date:	12/3/13	**Seas:**	**Logged by:** H. Jones
Time:	1516 / 1530 / 1542	**Survey Personnel:**	

Geographic Reference: Hudson River - Rensselaer, NY (Note: bgs = below ground surface)

Depth Range	Blow per 6 Inch	Recovery ft/ft	PID	Lab Sample ID	USCS	Geologic Description Method:
						0-0.2 shells, some silt, GLEY 3/N
						0.2-1.1 Silty f-c Sand, some shell hash + organics, med dense, wet 2.5Y 2.5/1
						1.1-2.3 Silty f-m sand, little f-m subangular gravel and shell hash, med dense, wet 2.5Y 3/2
						2.3-3.4 Silty f-m sand, some f-c subrounded gravel med dense, wet 2.5Y 4/2
						3.4-3.8 Silty f sand, dense, homogeneous, wet 2.5Y 4/3

Estimated Penetration Range:	
Project Depth:	
Actual Penetration:	3.5 / 3.7 / 3.8
Recovery:	3.8 / 4.0 / 3.5
% Recovery:	

Comments:

weights D-1 2343
1-2 1662 + 2082 + 1469
2-3 1947 + 1849 + 2143
Collected field dup FD-02 on 12-24"
MS/MSD on 24-36"

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Core ID: 111

Client: Navy	**Contractor:** OSI	**Water Depth:** 10.5
Project Number: 60250336.FI.FS	**Sampling Equipment:** vibracore	**MLW:**
Station Location: 111	**Survey Vessel:** Wilda	**Core Diameter (in):** 3
GPS Coordinates: E 383516.3 N 177242.57	**Weather:** sunny 45° F	**No. Attempts:** 3
Date: 12/4/13	**Seas:**	**Logged by:** H. Jones
Time: 1510 / 1525 / 1540	**Survey Personnel:**	

Geographic Reference: Hudson River - Rensselaer, NY (Note: bgs = below ground surface)

Depth Range	Blow per 6 Inch	Recovery ft/ft	PID	Lab Sample ID	USCS	Geologic Description Method:
						0 - 0.9 Silty f-m sand, wet, med dense, slipper snails on surface, little shell hash 2.5Y 2.5/1
						0.9 - 1.7 Silty f-c sand, trace f-m subangular gravel, loose, wet 2.5Y 4/2
						1.7 - 3.9 Silty f-m sand, some subrounded fm-c gravel, med dense, wet 2.5Y 4/2

Estimated Penetration Range:	**Comments:**
Project Depth:	weights
Actual Penetration: 4.0 / 4.0 / 3.8	0-1 1680 + 1115 + 1322
Recovery: 3.9 / 3.9 / 3.5	1-2 1460 + 2336 + 1253
% Recovery:	2-3 2124 + 1379 + 1685

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Core ID: 112

Client:	Navy	**Contractor:** OSI	**Water Depth:** 11.0
Project Number:	60250336.FI.FS	**Sampling Equipment:** Ga vibracore	**MLW:**
Station Location:	112	**Survey Vessel:** Candy	**Core Diameter (in):** 3
GPS Coordinates:		**Weather:** cloudy 50°F	**No. Attempts:**
Date:	12/5/13	**Seas:** calm	**Logged by:** H. Jones
Time:	1254 / 1330 / 1350	**Survey Personnel:**	

Geographic Reference: Hudson River - Rensselaer, NY (Note: bgs = below ground surface)

Depth Range	Blow per 6 inch	Recovery ft/ft	PID	Lab Sample ID	USCS	Geologic Description Method:
						0 – 1.6 Silty f-m sand, little shell hash + organics (roots), med dense, wet 2.5Y 3/1
						1.6 – 4.4 Silty f-m sand, some f-m subangular gravel, dense, wet 2.5Y 3/1 some organics 2.9-3.3 Phillite 4-4.2

Estimated Penetration Range:

Project Depth:

Actual Penetration:

Recovery: 4.4 / 4.7 / 4.1

% Recovery:

Comments:

weights 0-1 1113 + 3564
1-2 781 + 3632
2-3 ~~1776~~ 1276 + 3044

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Core ID: 113

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Client: Navy	**Contractor:** OSI	**Water Depth:**	
Project Number: 60250336.FI.FS	**Sampling Equipment:** vibracore	**MLW:**	
Station Location: 113	**Survey Vessel:** Conde	**Core Diameter (in):**	
GPS Coordinates:	**Weather:** cloudy 50°F	**No. Attempts:**	
Date: 12/5/13	**Seas:** calm	**Logged by:** H. Jones	
Time: 1537	**Survey Personnel:**		

Geographic Reference: Hudson River - Rensselaer, NY (Note: bgs = below ground surface)

Depth Range	Blow per 6 Inch	Recovery ft/ft	PID	Lab Sample ID	USCS	Geologic Description Method:
						0-2 Silty fine sand, homogeneous, little shell hash + organics, loose, wet 2.5Y 3/1
						2-2.9 Silty f-m sand, some f-c subrounded gravel, med dense, wet 2.5Y 3/1 Rounded cobble 2.3-2.6
						2.9-4.2 Silty f-m sand, trace f-m subangular gravel, dense, wet 2.5Y 4/2

Estimated Penetration Range:	**Comments:** weights 0-1 1483 + 3335 1-2 1672 + 3386 2-3 1987 + 4655
Project Depth:	
Actual Penetration:	
Recovery: 4.2	
% Recovery:	

well

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Core ID: 114

Client:	Navy	**Contractor:** OSI	**Water Depth:**
Project Number:	60250336.FI.FS	**Sampling Equipment:** 5' vibracore	**MLW:**
Station Location:		**Survey Vessel:** Candu	**Core Diameter (in):** 3
GPS Coordinates:		**Weather:** ~~[illegible]~~ snow, 20°F	**No. Attempts:**
Date:	12/17/13	**Seas:**	**Logged by:** th Jones
Time:	1100	**Survey Personnel:**	

Geographic Reference: Hudson River - Rensselaer, NY (Note: bgs = below ground surface)

Depth Range	Blow per 6 Inch	Re-covery ft/ft	PID	Lab Sample ID	USCS	Geologic Description Method:
						0-3.2 silty f-m sand, med dense to very dense, wet to moist some organics 0-1.1, some shells / shell hash
						0.7-1, ~~so~~ little f-m-c submerged gravel 1.7-3.2 ft
						0-1: 2.5Y 2.5/1 1-3.2: 2.5Y 4/1

Estimated Penetration Range:	**Comments:** Observed PCB oils in 0-2 weights: 0-1 3221 + 1764 1-2 3351 + 1845 2-3 3972 + 1682
Project Depth:	
Actual Penetration:	
Recovery:	
% Recovery:	

collected PAH, metals, Hg MS/MSD on 0-1'
dup on 1-2'
FDSD121713C2

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Core ID: 115

Client:	Navy	**Contractor:** OSI	**Water Depth:**
Project Number:	60250336.FI.FS	**Sampling Equipment:** 5' vibracore	**MLW:**
Station Location:	115	**Survey Vessel:** Cendu	**Core Diameter (in):**
GPS Coordinates:		**Weather:** light snow/cloudy 20°F	**No. Attempts:**
Date:	12/17/13	**Seas:**	**Logged by:** H. Jones
Time:	0955	**Survey Personnel:**	

Geographic Reference: Hudson River - Rensselaer, NY (Note: bgs = below ground surface)

Depth Range	Blow per 6 Inch	Recovery ft/ft	PID	Lab Sample ID	USCS	Geologic Description Method:
						0-1.8 silty f-m sand, little f. subangular gravel, med dense, wet 2.5Y 3/1 organics (roots) 0-0.6, worm @ 0.7
						1.8-4 silty f-m sand and f-c subrounded gravel, very dense, wet 2.5Y 3/1

Estimated Penetration Range:	**Comments:** observed pellets in 0-1
Project Depth:	wet, hits 0-1 2576 +1015
Actual Penetration:	1-2 2561 +969
Recovery:	2-3 3720 +1398
% Recovery:	

MS/MSD on PAH, metals 0-1'
dup FDSD121713C1 on PAH, metals 1-2'

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Core ID: 117

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Client: Navy	**Contractor:** OSI	**Water Depth:** ~~4.2 ft~~ 5.0 ft	
Project Number: 60250336.FI.FS	**Sampling Equipment:** vibracore	**MLW:**	
Station Location: E 383958.6 N 176927.59	**Survey Vessel:** wildcat	**Core Diameter (in):** 3	
GPS Coordinates:	**Weather:** sunny, 40°F	**No. Attempts:**	
Date: 12/3/13	**Seas:** winds 6-8 mph	**Logged by:** H. Jones	
Time: 1120 / 1135 / 1148	**Survey Personnel:**		

Geographic Reference: Hudson River - Rensselaer, NY (Note: bgs = below ground surface)

Depth Range	Blow per 6 Inch	Recovery ft/ft	PID	Lab Sample ID	USCS	Geologic Description Method:
						0 - 2.5 Silty fine-med sand, little f-m sub angular gravel, some organics at surface, shells 1.2-1.7 ft, 2.4 ft, very dense, moist, lens of organics at 2.2-2.3 ft
						Few worms 0 - 0.3 ft 2.5Y 2.5/1

Estimated Penetration Range:

Project Depth:

Actual Penetration: 2.0 (refusal) / 2.5 / 2.0

Recovery: 1.8 / 2.8 / 2.0

% Recovery:

Comments:
Hit refusal on all attempts, no pellet count for 2-3 ft interval due to lack of material
weights: 0-0.5 1183 + 1525 + 1186
0.5-1.0 2299 + 1966 + 1785
1.0-2.0 1708 + 1398 + 908

12/10/13 @ 1241 0-1 1797+

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Core ID: 118

Client:	Navy	**Contractor:** OSI	**Water Depth:**
Project Number:	60250336.FI.FS	**Sampling Equipment:**	**MLW:**
Station Location:	118	**Survey Vessel:**	**Core Diameter (in):**
GPS Coordinates:		**Weather:** Snow	**No. Attempts:**
Date:	12/10/13	**Seas:**	**Logged by:** H. Jones
Time:	1410	**Survey Personnel:**	

Geographic Reference: Hudson River - Rensselaer, NY (Note: bgs = below ground surface)

Depth Range	Blow per 6 inch	Recovery ft/ft	PID	Lab Sample ID	USCS	Geologic Description Method:
						0-0.7 Silty fine sand, trace shell hash, homogeneous, loose, wet 2.5Y 3/1
						0.7-1.1 Silty f-c sand, some shell hash, loose, wet 2.5Y 3/2
						1.1-3 Silty f-c sand, some f-c subangular gravel, few cobbles, very dense, wet to most shells at 1.3-1.4 2.5Y 3/1

Estimated Penetration Range:	
Project Depth:	
Actual Penetration:	3.3
Recovery:	3.0
% Recovery:	

Comments:

0-1 2485 +1644
1-2 3650 +1549
2-3 4651 +2024

Observed pellets in 0-2'

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Core ID: 119

Client:	Navy	**Contractor:** OSI	**Water Depth:**
Project Number:	60250336.FI.FS	**Sampling Equipment:**	**MLW:**
Station Location:		**Survey Vessel:**	**Core Diameter (in):**
GPS Coordinates:		**Weather:**	**No. Attempts:**
Date:	12/6/13	**Seas:**	**Logged by:**
Time:	1400	**Survey Personnel:**	

Geographic Reference: Hudson River - Rensselaer, NY (Note: bgs = below ground surface)

Depth Range	Blow per 6 inch	Re-covery ft/ft	PID	Lab Sample ID	USCS	Geologic Description Method:
						0-1.8 silty f-c sand and f-c subrounded gravel, loose, wet 2.5Y 3/1 slipper snail @ 0.8-0.9

Estimated Penetration Range:	
Project Depth:	
Actual Penetration:	
Recovery:	1.8
% Recovery:	

Comments: weights
0-1 1261 + 2714
1-2 2388 + 1125

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Core ID: 120

Client:	Navy	**Contractor:** OSI	**Water Depth:** 13.5
Project Number:	60250336.FI.FS	**Sampling Equipment:** ~~Canada~~ vibracore	**MLW:**
Station Location:	120	**Survey Vessel:** Carolyn	**Core Diameter (in):** 3
GPS Coordinates:		**Weather:** cloudy / light rain 45°F	**No. Attempts:**
Date:	12/5/13	**Seas:** light wind	**Logged by:** H. Jones
Time:	1045 / 1055 / 1125	**Survey Personnel:**	

Geographic Reference: Hudson River - Rensselaer, NY (Note: bgs = below ground surface)

Depth Range	Blow per 6 Inch	Recovery ft/ft	PID	Lab Sample ID	USCS	Geologic Description Method:
						0 - 4 Silty f-m sand little f-m subangular gravel dense, wet. 2.5Y 2.5/1 ~~Som~~ Little shell hash 0-1.4 ft
						~~Some~~ little organics 0 - 0.9 ft Rounded cobbles 3.4-3.8 ft Some coarse sand 3.7-4

Estimated Penetration Range:	
Project Depth:	
Actual Penetration:	4.5/4.0/4.0
Recovery:	4.0/4.2/3.9
% Recovery:	

Comments:

weights
0-1 1403 + 2335
1-2 942 + 2719
2-3 1694 + 2480

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Core ID: 121

Page 1 of 1

Client:	Navy	**Contractor:** OSI	**Water Depth:** 10.4
Project Number:	60250336.FI.FS	**Sampling Equipment:**	**MLW:**
Station Location:	121	**Survey Vessel:**	**Core Diameter (in):**
GPS Coordinates:		**Weather:**	**No. Attempts:**
Date:	12/4/13	**Seas:**	**Logged by:**
Time:	1210 / 1225 / 1315 / 1240 (box→) / 1255 / 1420 / 1445 / 1445	**Survey Personnel:**	

Geographic Reference: Hudson River - Rensselaer, NY (Note: bgs = below ground surface)

Depth Range	Blow per 6 Inch	Recovery ft/ft	PID	Lab Sample ID	USCS	Geologic Description Method:
						0 – 3.6 Silty f-m sand, trace fine gravel (subrounded) and organics (roots) at surface, med dense, wet f-c sand 2.9 – 3.6 ft 2.5Y 4/1

Estimated Penetration Range:

Project Depth:

Actual Penetration: 3.8

Recovery: 3.6 / 3.5 / 3.5 / 2.7 (box→) / 1.0 / / / 2.8

% Recovery:

Comments: weights:

0 – 1 1649 + 1667 + 1972
1 – 2 1667 + 2105 + 2116
2 – 3 1624 + 1670 + 2013

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Core ID: 122

Client:	Navy	Contractor: OSI	Water Depth: 4'
Project Number:	60250336.FI.FS	Sampling Equipment: Shovel	MLW:
Station Location:		Survey Vessel:	Core Diameter (in): NA
GPS Coordinates:		Weather: 20s, sunny, dry	No. Attempts: 1
Date: 12-12-13		Seas:	Logged by: Tom Croft
Time: 0915		Survey Personnel:	

Geographic Reference: Hudson River - Rensselaer, NY (Note: bgs = below ground surface)

Depth Range	Blow per 6 inch	Recovery ft/ft	PID	Lab Sample ID	USCS	Geologic Description Method:
0-3"	NA	NA	NM	049 SD 122		COBBLES, 4"-6"; moved aside prior to sample collection
3"-12"	NA	NA	NM	049 SD 122 0012		10YR 4/2 Drk. Grayish Brown WELL GRADED SAND WITH GRAVEL (SW), wet, 35% F-C gravel, subrounded, 3" max size, trace silt, loose, no odors

Estimated Penetration Range:	**Comments:**
Project Depth:	Weight:
Actual Penetration:	0-1 4215g
Recovery:	
% Recovery:	

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Core ID: 123

Page 1 of 1

Client:	Navy	Contractor: OSI		Water Depth:	0
Project Number:	60250336.FI.FS	Sampling Equipment:	shovel	MLW:	
Station Location:	123	Survey Vessel:	N/A	Core Diameter (in):	
GPS Coordinates:		Weather:	sunny/windy 25°F	No. Attempts:	
Date:	12/12/13	Seas:		Logged by:	H. Jones
Time:	1145	Survey Personnel:			

Geographic Reference: Hudson River - Rensselaer, NY (Note: bgs = below ground surface)

Depth Range	Blow per 6 Inch	Re-covery ft/ft	PID	Lab Sample ID	USCS	Geologic Description Method:
						0-9" well graded silty f-c sand, 30% f-c subrounded gravel (to 2.5"), loose, wet 10YR 4/3
						9-12" silty f-c sand, ~~some~~ little subrounded f-c gravel + silt, some shale fragments very dense, wet 10YR 3/1

Estimated Penetration Range:	**Comments:**
Project Depth:	weight:
Actual Penetration:	0-1 4280
Recovery:	
% Recovery:	

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Core ID: 124

Client:	Navy	**Contractor:** OSI	**Water Depth:** 10"
Project Number:	60250336.FI.FS	**Sampling Equipment:** Shovel	**MLW:**
Station Location:		**Survey Vessel:**	**Core Diameter (in):** NA
GPS Coordinates:		**Weather:** 20s, sunny, dry	**No. Attempts:** 1
Date: 12-12-13		**Seas:**	**Logged by:** Tom Croft
Time: 0750		**Survey Personnel:**	

Geographic Reference: Hudson River - Rensselaer, NY (Note: bgs = below ground surface)

Depth Range	Blow per 6 Inch	Recovery ft/ft	PID	Lab Sample ID	USCS	Geologic Description Method:
0-10"	NA	NA	NM	0409 SD124 0012		Brown 7.5YR 4/3 WELL GRADED SAND WITH GRAVEL (SW), moist to wet, 40% F-C gravel, subrounded, 3" max. size, trace silt, no odors, loose
10"-12"	NA	NA	NM	↓		Reddish brown ~~7.5YR~~ 10YR 4/4 WELL GRADED SAND WITH GRAVEL AND SILT (SW), wet, 20% F-C gravel, 10% silt, subrounded, 1.5" max. size, no odors, loose

Estimated Penetration Range:	**Comments:** Weight 00-12-4856
Project Depth:	
Actual Penetration:	
Recovery:	sampled from ground surface
% Recovery:	

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Core ID: 125

Page 1 of 1

Client:	Navy	**Contractor:** OSI	**Water Depth:**
Project Number:	60250336.FI.FS	**Sampling Equipment:** 5' vibracore	**MLW:**
Station Location:		**Survey Vessel:** Cundin	**Core Diameter (in):** 3
GPS Coordinates:		**Weather:** sunny 30°F	**No. Attempts:**
Date:	12/11/13	**Seas:** choppy 8 mph wind	**Logged by:** H. Jones
Time:		**Survey Personnel:**	

Geographic Reference: Hudson River - Rensselaer, NY (Note: bgs = below ground surface)

Depth Range	Blow per 6 Inch	Re-covery ft/ft	PID	Lab Sample ID	USCS	Geologic Description Method:
						0-1.2 Silty f sand, little organics (roots), med dense, wet homogeneous small cobble at surface 2.5Y 3/1 2.6
						1.2-~~3.1~~ Silty f-m sand, some f-m subangular gravel, med dense, wet 2.5Y 3/1 Shells @ 2.2
						2.6-3.1 Silt, little f. sand, soft, moist slight sewer-like odor 2.5Y 3/1

Estimated Penetration Range:	**Comments:** Saw pellets in 0-1
Project Depth:	weights:
Actual Penetration:	0-1 3454 + 2411
Recovery:	1-2 3591 + 1510
% Recovery:	2-3 3868 + 1456

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Core ID: 126

Client:	Navy	**Contractor:** OSI	**Water Depth:**
Project Number:	60250336.FI.FS	**Sampling Equipment:** 5' vibracore	**MLW:**
Station Location:	126	**Survey Vessel:** Carolin	**Core Diameter (in):**
GPS Coordinates:		**Weather:** sunny/windy 25°F	**No. Attempts:**
Date:	12/12/13	**Seas:** winds 16mph, choppy	**Logged by:** H. Jones
Time:	0825	**Survey Personnel:**	

Geographic Reference: Hudson River - Rensselaer, NY (Note: bgs = below ground surface)

Depth Range	Blow per 6 Inch	Recovery ft/ft	PID	Lab Sample ID	USCS	Geologic Description Method:
						0-1.1 silty f-m sand, some shell hash, wet, loose, shells at 0.9-1.1 2.5Y 2.5/1
						1.1-1.3 silt, wet, soft 2.5Y 2.5/1
						1.3-2.2 silty f-c sand, some f. subangular gravel, wet, loose 2.5Y 3/1
						2.2-3.1 f-c subrounded gravel, little silty f-c sand, loose, wet 2.5Y 3/1

Estimated Penetration Range:	
Project Depth:	
Actual Penetration:	3.3
Recovery:	3.1
% Recovery:	

Comments:

Weights? 0-1 2085 + 2048
1-2 2458 + 1862
2-3 4181

Note 2-3' interval only has 2/3 vol.

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Core ID: 302

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Client:	Navy	**Contractor:** OSI	**Water Depth:**
Project Number:	60250336.FI.FS	**Sampling Equipment:** 5' vibracore	**MLW:**
Station Location:	302	**Survey Vessel:** Carder	**Core Diameter (in):** 3
GPS Coordinates:		**Weather:** Sunny 30°F	**No. Attempts:**
Date:	12/11/13	**Seas:** choppy 8 mph wind W	**Logged by:** H. Jones
Time:	0906	**Survey Personnel:**	

Geographic Reference: Hudson River - Rensselaer, NY (Note: bgs = below ground surface)

Depth Range	Blow per 6 inch	Recovery ft/ft	PID	Lab Sample ID	USCS	Geologic Description Method:
						0-1.2 Silt, some f-m sand + shells, little organics (leaves) very soft, wet, ~~sm~~ juvenile crab at top 2.5Y 2.5/1
						1.2-~~4.4~~ 3.3 Silty f-m sand, some f-m subangular gravel, dense, wet to moist clam shells @ 2-2.3 2.5Y 3/1
						3.3-4.4 Silty f-m sand, some ~~m~~ f-c subangular gravel, dense, moist 2.5Y 3/2

Estimated Penetration Range:	**Comments:** Collected MS/MSD on 0-1' interval
Project Depth:	
Actual Penetration:	
Recovery:	
% Recovery:	

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Core ID: 303

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Client:	Navy	**Contractor:** OSI	**Water Depth:** 0
Project Number:	60250336.FI.FS	**Sampling Equipment:** shovel	**MLW:**
Station Location:		**Survey Vessel:**	**Core Diameter (in):**
GPS Coordinates:		**Weather:** Sunny / windy 25°F	**No. Attempts:**
Date: 12/13/13		**Seas:**	**Logged by:** H. Jones
Time: 1045		**Survey Personnel:**	

Geographic Reference: Hudson River - Rensselaer, NY (Note: bgs = below ground surface)

Depth Range	Blow per 6 Inch	Re-covery ft/ft	PID	Lab Sample ID	USCS	Geologic Description Method:
						0-1 Silty f-c sand, some f-c subrounded gravel + shells/shell hash. loose, wet 10YR 3/2

Estimated Penetration Range:

Project Depth:

Actual Penetration:

Recovery:

% Recovery:

Comments: Collected FD on all analytes ~~except VOCs (no VOAs available)~~

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Core ID: 304

Client:	Navy	**Contractor:** OSI		**Water Depth:**	0
Project Number:	60250336.FI.FS	**Sampling Equipment:**	shovel	**MLW:**	
Station Location:		**Survey Vessel:**		**Core Diameter (in):**	
GPS Coordinates:		**Weather:**	sunny	**No. Attempts:**	
Date:	12/13/12	**Seas:**		**Logged by:**	H. Jones
Time:	0950	**Survey Personnel:**			

Geographic Reference: Hudson River - Rensselaer, NY (Note: bgs = below ground surface)

Depth Range	Blow per 6 Inch	Re-covery ft/ft	PID	Lab Sample ID	USCS	Geologic Description Method:
						0-1 F-m sand, some f-C subrounded gravel, loose, wet, some shells + shell-hash 10YR 3/2 few subrounded cobbles

Estimated Penetration Range:	
Project Depth:	
Actual Penetration:	
Recovery:	
% Recovery:	

Comments:

collect FD on 0-1' PAH
3-4" cobbles removed before sampling

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Core ID: 305

Client:	Navy	**Contractor:** OSI	**Water Depth:**
Project Number:	60250336.FI.FS	**Sampling Equipment:**	**MLW:**
Station Location:	305	**Survey Vessel:**	**Core Diameter (in):**
GPS Coordinates:		**Weather:** sunny/windy 25°F	**No. Attempts:**
Date:	12/12/13	**Seas:** choppy 16 mph winds	**Logged by:** H. Jones
Time:	1020	**Survey Personnel:**	

Geographic Reference: Hudson River - Rensselaer, NY (Note: bgs = below ground surface)

Depth Range	Blow per 6 inch	Re-covery ft/ft	PID	Lab Sample ID	USCS	Geologic Description Method:
						0 – 3.5 Silt, trace f sand, soft, wet, slight odor (sewage?) shells at c -1.4 2.5Y 2.5/1
						3.5 – 4.2 silty f-m sand, some shell hash trace f-m subangular gravel, med dense, wet 2.5Y 2.5/1

Estimated Penetration Range:	**Comments:**
Project Depth:	Collected FD on 0-1'
Actual Penetration:	
Recovery:	
% Recovery:	

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Core ID: 304

Page 1 of 1

Client:	Navy	**Contractor:** OSI	**Water Depth:**
Project Number:	60250336.FI.FS	**Sampling Equipment:** 5' vibracore	**MLW:**
Station Location:		**Survey Vessel:** Cardes	**Core Diameter (in):**
GPS Coordinates:		**Weather:** sunny/windy 25°F	**No. Attempts:**
Date: 12/12/13		**Seas:** choppy 16 mph winds	**Logged by:** Lt. Jones
Time: 1442		**Survey Personnel:**	

Geographic Reference: Hudson River - Rensselaer, NY (Note: bgs = below ground surface)

Depth Range	Blow per 6 Inch	Re-covery ft/ft	PID	Lab Sample ID	USCS	Geologic Description Method:
						0 - 3.3 Silty f. sand, med dense, wet to moist some organics (roots) 0 - 1.1 some shell hash 1.1 - 1.4
						cobble at 2.6 - 3.1

Estimated Penetration Range:	**Comments:**
Project Depth:	
Actual Penetration: 3.3	
Recovery: 3.3	
% Recovery:	

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Core ID: 307

Client:	Navy	**Contractor:** OSI	**Water Depth:**
Project Number:	60250336.FI.FS	**Sampling Equipment:** 5' vibracore	**MLW:**
Station Location:		**Survey Vessel:** Candu	**Core Diameter (in):** 3
GPS Coordinates:		**Weather:** snow, 20°F	**No. Attempts:**
Date:	12/17/13	**Seas:**	**Logged by:** H. Jones
Time:	1235	**Survey Personnel:**	

Geographic Reference: Hudson River - Rensselaer, NY (Note: bgs = below ground surface)

Depth Range	Blow per 6 inch	Recovery ft/ft	PID	Lab Sample ID	USCS	Geologic Description Method:
						0-2.4 silty f-c sand, some f-c subrounded gravel and shell hash, med dense, wet 2.5Y 4/1 clams 0.1ft
						2.4-4.7 silty f-m sand, little f-m subrounded gravel, dense, wet 2.5Y 3/1

Estimated Penetration Range:	**Comments:**
Project Depth:	
Actual Penetration:	
Recovery:	
% Recovery:	

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Core ID: 308

Client:	Navy	**Contractor:** OSI	**Water Depth:**
Project Number:	60250336.FI.FS	**Sampling Equipment:** 5' vibracore	**MLW:**
Station Location:		**Survey Vessel:** Cardy	**Core Diameter (in):**
GPS Coordinates:		**Weather:** snow, 20°F	**No. Attempts:**
Date:	12/17/13	**Seas:**	**Logged by:** H Jones
Time:	1442	**Survey Personnel:**	

Geographic Reference: Hudson River - Rensselaer, NY (Note: bgs = below ground surface)

Depth Range	Blow per 6 Inch	Re-covery ft/ft	PID	Lab Sample ID	USCS	Geologic Description Method:
						0-1.6 Silt and fine sand, some shells / shell hash, soft, wet 2.5Y 2.5/1
						1.6-3.6 Silty f-m sand, ~~tr~~ trace f subangular gravel, med dense, wet some shell hash 2.5Y 4/1

Estimated Penetration Range:	**Comments:**
Project Depth:	
Actual Penetration:	
Recovery:	
% Recovery:	

Appendix D-4

Low Flow Sample Collection Records

AECOM

Sampling Order:

Well ID: MW 12

Low Flow Ground Water Sample Collection Record

Client: NAVSTA Newport
Date: 12/18/13
Time: Start 0800 am/pm
Finish 0915 am/pm
Project No:
Site Location: Carr Point
Weather Conds: Sunny, cold ~ 25°F, 5-10mph
Collector(s): A. Borden, R. MacPhee

1. WATER LEVEL DATA: (measured from Top of Casing)

a. Total Well Length 17.0 c. Length of Water Column 7.78 (a-b) Screen Depth: 7-17

b. Water Table Depth 9.22 d. Casing Diameter/Material 2"

2. WELL PURGE DATA

a. Purge Method: Well Volume: Purge Volume:

b. Acceptance Criteria defined (see workplan)

- Temperature ±3% - D.O. ±10% or ± 0.5 mg/l
- pH ± 0.1 unit - ORP ± 10mV
- Sp. Cond. ±3% - Drawdown < 0.3' -Turbidity ±10% for values >1 NTU

c. Field Testing Equipment used:

Make	Model	Serial Number
Geotech Peri Pump		491
Heron Dip T		663640

Time (24hr)	Temp. (°C)	Spec. Cond. (µS/cm)	DO (mg/l)	pH	ORP (mV)	Turbidity (NTU)	Volume Removed (Liters)	Flow Rate (ml/min)	Drawdown (feet)	Color/Odor
0820	12.41	309	0.69	6.71	-52.4		—	—	0.0	No odor
0825	12.52	308	0.49	6.71	-52.4	258 69	0.25	250	0.0	
0830	12.53	307	0.34	6.69	-51.2	20.9	1.0	250	0.0	
0835	12.52	307	0.31	6.70	-50.8	30.8	1.5	260	0.0	
0840	12.50	306	0.29	6.70	-50.2	32.9	—	250	0.0	
0845	12.49	306	0.28	6.69	-49.3	17.9	2.0	250	0.0	
0850	12.46	306	0.24	6.68	-48.7	13.8	2.5	225	0.0	
0855	12.44	305	0.21	6.69	-47.8	8.49	3.0	225	0.0	
0900	12.49	305	0.31	6.69	-47.1	6.43	3.5	225	0.0	

(continued on back)

d. Acceptance criteria pass/fail

	Yes	No	N/A
Has required turbidity been reached	☐	☐	☐
Have parameters stabilized	☐	☐	☐

If no or N/A - Explain below.

3. SAMPLE COLLECTION: Method:

Sample ID	Container Type	No. of Containers	Preservation	Analysis Req.	Time

Comments

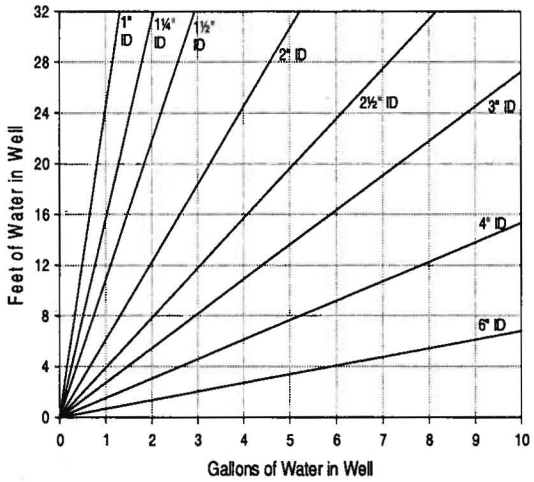
Signature Date

Sample @ 915 Dup @ 930

3.0 mg/L
2.63 mg/L

MW12

Purge Volume Calculation



Volume / Linear Ft. of Pipe		
ID (in)	Gallon	Liter
0.25	0.0025	0.0097
0.375	0.0057	0.0217
0.5	0.0102	0.0386
0.75	0.0229	0.0869
1	0.0408	0.1544
1.25	0.0637	0.2413
1.5	0.0918	0.3475
2	0.1632	0.6178
2.5	0.2550	0.9653
3	0.3672	1.3900
4	0.6528	2.4711
6	1.4688	5.5600

(continued from front)

Time (24 hr)	Volume Removed (Liters)	Temp (°C)	pH	Spec. Cond. (µS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Flow Rate (ml/min)	Drawdown (ft)	Color/Odor
0905	3.75	17.54	6.68	304	0.34	-468	5.17	225	0.0	
0915	Samples		collected							

12/18/13
Andrew Bull

AECOM

Sampling Order:

Well ID: MW12D

Low Flow Ground Water Sample Collection Record

Client: NAVSTA Newport Date: 12/18/13 Time: Start 0825 am/pm
Project No: Finish _____ am/pm
Site Location: Carr Point
Weather Conds: Sunny, cold 28°F Collector(s): _____

1. WATER LEVEL DATA: (measured from Top of Casing)

a. Total Well Length 40 c. Length of Water Column 33.11 (a-b) Screen Depth: 35-40

b. Water Table Depth 6.89 d. Casing Diameter/Material 2" / PVC

2. WELL PURGE DATA

a. Purge Method: _____ Well Volume: _____ Purge Volume: _____

b. Acceptance Criteria defined (see workplan)

- Temperature ±3% - D.O. ±10% or ± 0.5 mg/l
- pH ± 0.1 unit - ORP ± 10mV
- Sp. Cond. ±3% - Drawdown < 0.3' -Turbidity ±10% for values >1 NTU

c. Field Testing Equipment used:

Make	Model	Serial Number
Geotech Peri Pump		491
Heron Dipper T		G 68640

Time (24hr)	Temp. (°C)	Spec. Cond. (µS/cm)	DO (mg/l)	pH	ORP (mV)	Turbidity (NTU)	Volume Removed (Liters)	Flow Rate (ml/min)	Drawdown (feet)	Color/Odor
0830	11.66	316	2.89	6.56	-332.1		—		0.5	no color / odor
0835	11.68	308	0.60	6.56	-356.3	258	0.50	275	0.20	
0840	11.74	307	0.43	6.55	-373.8	155	1.0	260	0.20	
0845	11.75	304	0.36	6.55	-366.3	82.5	1.5	260	0.20	
0850	11.76	302	0.30	6.55	-357.7	29.1	1.75	275	0.20	
0855	11.82	300	0.26	6.55	-348.8	25.0	2.0	275	0.20	
0900	11.81	298	0.22	6.55	-338.6	16.7	2.5	275	0.20	
0905	11.83	298	0.19	6.54	-331.2	5.83	3.0	275	0.20	
0915	11.86	297	0.16	6.55	-332.5	7.54	4.0	275	0.20	

d. Acceptance criteria pass/fail

	Yes	No	N/A
Has required turbidity been reached	☐	☐	☐
Have parameters stabilized	☐	☐	☐

If no or N/A - Explain below.

(continued on back)

3. SAMPLE COLLECTION: Method: _____

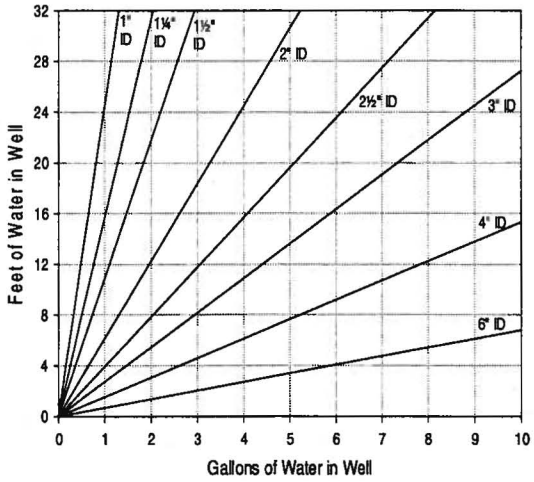
Sample ID	Container Type	No. of Containers	Preservation	Analysis Req.	Time

Comments _____

Signature _____ Date _____

MW12D

Purge Volume Calculation



Volume / Linear Ft. of Pipe		
ID (in)	Gallon	Liter
0.25	0.0025	0.0097
0.375	0.0057	0.0217
0.5	0.0102	0.0386
0.75	0.0229	0.0869
1	0.0408	0.1544
1.25	0.0637	0.2413
1.5	0.0918	0.3475
2	0.1632	0.6178
2.5	0.2550	0.9653
3	0.3672	1.3900
4	0.6528	2.4711
6	1.4688	5.5600

(continued from front)

Time (24 hr)	Volume Removed (Liters)	Temp (°C)	pH	Spec. Cond. (µS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Flow Rate (ml/min)	Drawdown (ft)	Color/Odor
0925	4.0	11.87	6.55	221	0.15	-319.9	7.56	275	0.3	
0940	5.0	11.80	6.55	219	0.11	-314.0	3.65	275	0.2	
0945	5.5	11.83	6.55	220	0.10	-310.9	2.45	275	0.2	

3.3 mg/L

AECOM

Sampling Order:

Well ID: MW13

Low Flow Ground Water Sample Collection Record

Client: _____ Date: _____ Time: Start 1230 am/pm
Project No: _____ Finish _____ am/pm
Site Location: _____
Weather Conds: _____ Collector(s): _____

1. WATER LEVEL DATA: (measured from Top of Casing)

a. Total Well Length _____ c. Length of Water Column _____ (a-b) Screen Depth: _____

b. Water Table Depth 2.43 d. Casing Diameter/Material _____

2. WELL PURGE DATA

a. Purge Method: _____ Well Volume: _____ Purge Volume: _____

b. Acceptance Criteria defined (see workplan)

- Temperature ±3% - D.O. ±10% or ± 0.5 mg/l
- pH ± 0.1 unit - ORP ± 10mV
- Sp. Cond. ±3% - Drawdown < 0.3' -Turbidity ±10% for values >1 NTU

c. Field Testing Equipment used: Make Model Serial Number

_____
_____
_____

Time (24hr)	Temp. (°C)	Spec. Cond. (µS/cm)	DO (mg/l)	pH	ORP (mV)	Turbidity (NTU)	Volume Removed (Liters)	Flow Rate (ml/min)	Drawdown (feet)	Color/Odor
1230	11.25	256	4.20	6.17	202	117	—	200	0.20	clear, no
1235	11.07	254	4.28	6.17	201.9	138	0.25	200	0.25	odor
1240	11.07	256	4.44	6.20	202.0	122	0.75	200	0.20	slightly
1245	10.95	256	4.87	6.22	192.2	111	0.85	200	0.20	cloudy
1250	10.81	256	5.16	6.24	182.8	76.7	1.0	200	0.20	
1255	10.69	255	5.31	6.24	176.2	58.1	1.20	200	0.23	clearing
1300	10.88	256	5.33	6.25	168.7	52.4	1.50	200	0.23	
1305	10.76	253	5.55	6.29	163.8	32.8	1.70	200	0.23	
1310	10.77	252	5.84	6.29	161.7	25.8	2.0	200	0.23	

d. Acceptance criteria pass/fail

	Yes	No	N/A
Has required turbidity been reached	☐	☐	☐
Have parameters stabilized	☐	☐	☐

If no or N/A - Explain below.

(continued on back)

3. SAMPLE COLLECTION: Method: _____

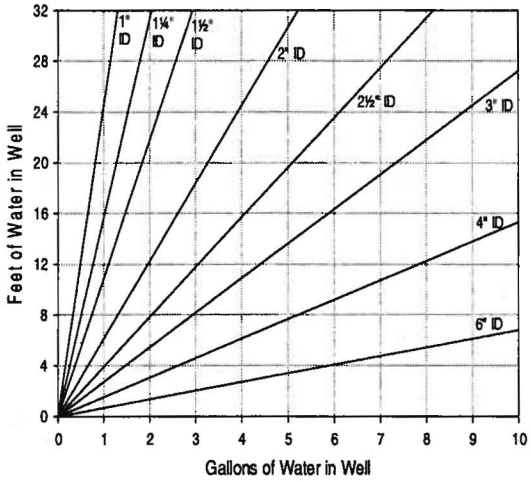
Sample ID	Container Type	No. of Containers	Preservation	Analysis Req.	Time

Comments _____

Signature _____ Date _____

MW13

Purge Volume Calculation



Volume / Linear Ft. of Pipe		
ID (in)	Gallon	Liter
0.25	0.0025	0.0097
0.375	0.0057	0.0217
0.5	0.0102	0.0386
0.75	0.0229	0.0869
1	0.0408	0.1544
1.25	0.0637	0.2413
1.5	0.0918	0.3475
2	0.1632	0.6178
2.5	0.2550	0.9653
3	0.3672	1.3900
4	0.6528	2.4711
6	1.4688	5.5600

(continued from front)

Time (24 hr)	Volume Removed ~~(Liters)~~ gallon	Temp (°C)	pH	Spec. Cond (µS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Flow Rate (ml/min)	Drawdown (ft)	Color/Odor
1315	2.5	10.95	6.30	253	6.29	152	27.3	200	0.23	
1320	2.75	10.86	6.29	252	5.98	147.2	20.1	200	0.23	
1325	3.0	10.76	6.30	249	6.03	144.3	17.8	200	0.23	
1330	3.25	10.86	6.30	249	6.10	142.5	15.6	200	0.23	
	Samples			collected						

12/18/13 B.L.
Amber

Fe^{3+} 0.31 mg/L
0.22 mg/L

AECOM

Sampling Order:

Well ID: MW 1D

Low Flow Ground Water Sample Collection Record

Client: _____ Date: _____ Time: Start 1015 am/pm
Project No: _____ Finish 1130 am/pm
Site Location: _____
Weather Conds: _____ Collector(s): _____

1. WATER LEVEL DATA: (measured from Top of Casing)

a. Total Well Length _____ c. Length of Water Column _____ (a-b) Screen Depth: _____

b. Water Table Depth 10.14 d. Casing Diameter/Material _____

2. WELL PURGE DATA

a. Purge Method: _____ Well Volume: _____ Purge Volume: _____

b. Acceptance Criteria defined (see workplan)

- Temperature ±3% - D.O. ±10% or ± 0.5 mg/l
- pH ± 0.1 unit - ORP ± 10mV
- Sp. Cond. ±3% - Drawdown < 0.3' -Turbidity ±10% for values >1 NTU

c. Field Testing Equipment used: Make Model Serial Number

Time (24hr)	Temp. (°C)	Spec. Cond. (µS/cm)	DO (mg/l)	pH	ORP (mV)	Turbidity (NTU)	Volume Removed (Liters)	Flow Rate (ml/min)	Drawdown (feet)	Color/Odor
1050	13.00	295	0.48	6.29	-216.8	~~16~~ 17.3	17.83	150	0.8	no odor/
1055	13.04	294	0.35	6.28	-234.6	14.9	1.5	150	0.8	clear
1100	13.15	294	0.30	6.29	-255.4	11.7	1.75	150	1.02	
1105	12.94	292	0.30	6.30	-236.3	9.15	2.0	150	1.0	
1110	13.02	290	0.29	6.30	-241.3	11.0	2.5	150	1.0	
1115	13.05	291	0.28	6.30	-246.4	7.58	2.75	150	1.0	
1120	13.08	291	0.26	6.30	-249.1	—	3.0	160	1.0	
1125	13.18	290	0.48	6.30	-251.6	6.68	3.0	160	1.0	
1130	13.21	290	0.28	6.30	-252.0	15.6	3.0	150	1.0	

d. Acceptance criteria pass/fail

	Yes	No	N/A
Has required turbidity been reached	☐	☐	☐
Have parameters stabilized	☐	☐	☐

If no or N/A - Explain below.

(continued on back)

3. SAMPLE COLLECTION: Method: _____

Sample ID	Container Type	No. of Containers	Preservation	Analysis Req.	Time

Comments Samples collected at 1130

Signature _____ Date _____

3.3 mg/L
3.3 mg/L

AECOM

Sampling Order:

Well ID: MW1

Low Flow Ground Water Sample Collection Record

Client: _____ Date: _____ Time: Start 1100 am/pm
Project No: _____ Finish _____ am/pm
Site Location: _____
Weather Conds: _____ Collector(s): _____

1. WATER LEVEL DATA: (measured from Top of Casing)

a. Total Well Length _____ c. Length of Water Column _____ (a-b) Screen Depth: _____

b. Water Table Depth 10.14 d. Casing Diameter/Material _____

2. WELL PURGE DATA

a. Purge Method: _____ Well Volume: _____ Purge Volume: _____

b. Acceptance Criteria defined (see workplan)

- Temperature ±3% - D.O. ±10% or ± 0.5 mg/l
- pH ± 0.1 unit - ORP ± 10mV
- Sp. Cond. ±3% - Drawdown < 0.3' -Turbidity ±10% for values >1 NTU

c. Field Testing Equipment used: Make Model Serial Number

Time (24hr)	Temp. (°C)	Spec. Cond. (µS/cm)	DO (mg/l)	pH	ORP (mV)	Turbidity (NTU)	Volume Removed (Liters)	Flow Rate (ml/min)	Drawdown (feet)	Color/Odor
1110	12.83	265	2.07 ~~6.16~~	6.16	111.9	OUT	—	150		purple/red
1115	12.76	261	2.80	6.00	113.6	105	0.5	150	2.40	no odor,
1120	12.68	264	0.73	6.02	72.6	258	0.75	150	2.80	clear after
1130	12.79	267	0.63	6.04	51.4	58.6	1.0	100		2-3 min
1135	12.08	266	3.01	6.05	61.0	80.8	1.5	100	3.20	empty flow
1140	11.90	259	3.93	6.05	61.3	51.7	1.5	80	3.20	all of
☆ 1145	11.89	262	4.25	6.04	63.5	30.0	1.5	80	3.40	reddish
1150	11.79	258	7.65	6.04	67.6	24.5	2.0	80	3.40	material
1155	11.73	253	5.09	6.02	75.0	18.9	2.0	80	3.40	

d. Acceptance criteria pass/fail

	Yes	No	N/A
Has required turbidity been reached	☐	☐	☐
Have parameters stabilized	☐	☐	☐

If no or N/A - Explain below.

(continued on back)

3. SAMPLE COLLECTION: Method: _____

Sample ID	Container Type	No. of Containers	Preservation	Analysis Req.	Time

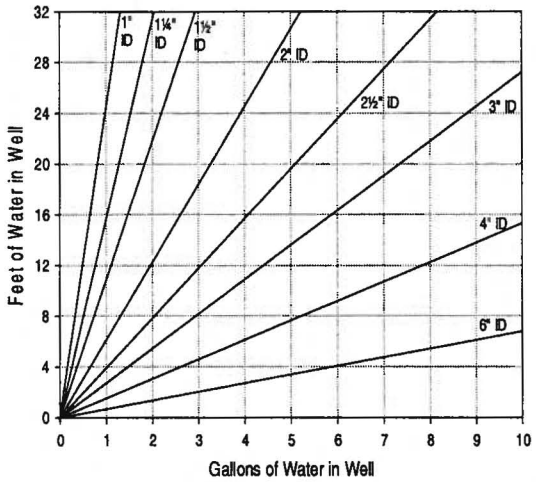
Comments: Water reddish/purple out of well, dump out flow cell and refill

Signature _____ Date _____

☆ 1145 Air bubbles in flow cell, attempt to tighten fittings, no luck elevated DO readings

MW11

Purge Volume Calculation



Volume / Linear Ft. of Pipe		
ID (in)	Gallon	Liter
0.25	0.0025	0.0097
0.375	0.0057	0.0217
0.5	0.0102	0.0386
0.75	0.0229	0.0869
1	0.0408	0.1544
1.25	0.0637	0.2413
1.5	0.0918	0.3475
2	0.1632	0.6178
2.5	0.2550	0.9653
3	0.3672	1.3900
4	0.6528	2.4711
6	1.4688	5.5600

8.33' bgs

(continued from front)

Time (24 hr)	Volume Removed (Liters)	Temp (°C)	pH	Spec. Cond (µS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Flow Rate (ml/min)	Drawdown (ft)	Color/Odor
1415	—	12.86	6.85	275	1.10	171.7	8.99	100	0.20	
1420	0.25	11.84	6.58	239	1.64	169.0	12.5	100	0.15	
1425	0.75	11.60	6.39	209	1.86	188.0	14.0	100	0.10	
1430	1.0	13.19	6.26	186	1.72	201.6	33.8	100	1.60	
1435	1.25	13.05	6.15	172	1.97	215.2	7.28	200	1.30	
1440	1.50	13.05	6.14	170	1.84	222.2	3.61	175	1.30	
1445	1.75	13.03	6.09	166	1.84	230.3	8.47	175	1.30	
1450	2.0	13.13	6.10	167	1.79	233.6		175	1.30	

Fe: 0.0mg/L

Appendix E

Background Evaluation

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ATTACHMENT 5 PROUCL OUTPUT FILES

1.0 INTRODUCTION

This appendix presents an evaluation of chemicals of potential concern (COPCs), identified based on the Human Health Risk Assessment (HHRA) and Ecological Risk Assessment (ERA) for the Former Carr Point Shooting Range, Munitions Response Program (MRP) Site 1, Operable Unit (OU) 9 located at the Naval Station (NAVSTA) Newport, Rhode Island, in available background media samples. This background evaluation was conducted using the following guidance:

- USEPA Guidance for Comparing Background and Chemical Concentrations in Soil for CERCLA Sites (USEPA, 2002b);
- Navy Policy on the Use of Background Chemical Levels (DON, 2004);
- Navy Guidance for Environmental Background Analysis, Volume I: Soil, Volume II: Sediment, Volume III: Groundwater, and Volume IV: Vapor Intrusion Pathway (NAVFAC, 2002, 2003, 2004, and 2011).

Data collected from MRP Site 1 were evaluated in the HHRA and ERA to determine (1) which constituents in sediment, soils, and shellfish tissue require comparison to background (i.e., exceedance of risk-based values); (2) whether the constituents that require comparison to background are naturally occurring or have anthropogenic constituent sources; (3) if the background samples available are from the same type of soil, sediment or shellfish as those collected at MRP Site 1; and (4) the distribution of the data (i.e., are the data normally distributed).

Background media sample locations were selected to provide a representation of regional media that were not impacted by the Site. Per the SAP, samples locations were designed to be collected from a variety of areas, taking into account similar depths and sediment/soil types as samples collected to represent Site conditions. The background dataset utilized provides a representative range of analyte concentrations of media not impacted by the Site.

2.0 Summary of Background Data

The following is a summary of the background soils, sediment, and tissue data that were used in this evaluation.

2.1 Soil

Background soils data compiled in the Basewide Background Study Report (Tetra Tech, 2007) are included in this evaluation. A total of 20 surface (0-1 ft) and 20 subsurface (1-10 ft) soil samples were selected for this evaluation. These samples are from the soil type, Merrimack sandy loam, which is consistent with the soil type present at MRP Site 1. A summary of these data is presented for surface

soil samples only (0-1 ft) in **Table 1** and for subsurface soil samples (0-10 ft) in **Table 2**. All analytical data for surface and subsurface soils are presented in **Table 3**.

2.2 Sediment

A total of 12 sediment samples were collected at background locations during the current investigation[1]. A summary of the surface sediment data (0-1 ft) is presented in **Table 4**. A summary of grain size and total organic carbon for these samples is presented in **Table 5**. All analytical data for background sediment samples are presented in Attachment A of the ERA.

2.3 Shellfish

A total of four shellfish tissue samples were collected at background locations during the current investigation[2]. One quahog and three blue mussel tissue samples were collected, which is consistent with the types of shellfish collected at MRP Site 1. A summary of the background shellfish tissue is presented in **Table 6**. All analytical data for background shellfish tissue samples are presented in Attachment A of the ERA.

3.0 Background Evaluation Methodology

A statistical comparison between site and background media was conducted using USEPA's ProUCL software, version 5.0 (USEPA, 2013) for the COPCs identified in the ERA and HHRA. COPCs considered appropriate for background statistical evaluation are those with a minimum of eight samples in both the site and background datasets based on best professional judgment and USEPA background evaluation guidance (USEPA, 2002b and 2011). Decision statistics (e.g., hypotheses test statistics) are not considered reliable with a small dataset (i.e., less than 8 samples) (USEPA, 2011). However, although it is not recommended, ProUCL will compute decision statistics for as low as 5 samples and will provide warnings about the potential deficiencies associated with the dataset. Where minimum data needs are not met, a background evaluation was conducted by direct comparison of the range of concentrations from the background and site datasets. Histograms of site and background datasets and quantile-quantile plots (Q-Q plots) were created for graphical comparisons.

A two-sample hypothesis test was conducted to compare the mean or median of site and background datasets. The null hypothesis (H_O) and alternative hypothesis (H_A) of this test are:

H_O = Mean/Median of Site Soil >= Background Soil + S

[1] See Figure 4 of ERA for the background locations of sediment and shellfish samples.

[2] *Ibid*.

H_A = Mean/Median of Site Soil < Background Soil + S

The statistical factor "S" (substantial difference) was included in the hypothesis test for this evaluation. The value of S is the standard deviation of the background data set. This value was added to the value of each Background sediment or soil sample prior to conducting the two-sample hypothesis test.

The statistical tests selected for each COPC per media was determined by the distributions of the site and background data sets. The normality of the distributions was determined using Goodness-of-Fit Statistics (Shapiro-Wilk test, significance level 0.05) in ProUCL 5.0. If both data sets are normally distributed, then a t-test was selected. If either data set is not normal, then a non-parametric test (Wilcoxon-Mann-Whitney [WMW] or Gehan) was selected. The WMW test was selected in cases of datasets including all detected samples (with not normal distributions), or in cases of datasets with non-detected concentrations where the detection limits are equal. The Gehan test was selected in the case of a dataset that includes non-detected samples with unequal detection limits.

If the p-value of the two-sample hypothesis test is greater than the alpha (0.05), then the null hypothesis is not rejected and it was concluded that site concentrations are greater than background. If the p-value is less than alpha (0.05), then the null hypothesis is rejected and the alternative hypothesis is accepted: site concentrations are less than or similar to background.

4.0 Background Evaluation Results

The following section presents the results of the background evaluation for each media type. The results of the statistical comparisons are presented in tabular form. The Site and Background concentrations are also presented in graphical form in histograms and Q-Q plots (see **Attachments 1-4**). The ProUCL output is presented in **Attachment 5**.

4.1 Surface Soil

The results of the background comparisons for surface soils are presented in **Table 7**. Three out of the 15 COPCs were not detected in any background surface soil sample: antimony, cadmium, and thallium. Based on the Shapiro-Wilk test, the distributions of the background datasets for all COPCs are normal. Most Site COPC datasets are not normal with the exceptions of manganese, nickel, selenium, thallium, and vanadium. This is evident in the histograms as well in which the Site datasets are mostly skewed left (**Attachment 1**).

Site concentrations of vanadium were found to be less than or similar to background based on the t-test. For all other COPCs, Site concentrations were found to be greater than background. This is further illustrated by the Q-Q plots in which the Site concentrations (blue dots) are consistently higher than background (**Attachment 1**).

4.2 Subsurface soil

The results of the background comparisons for subsurface soils are presented in **Table 8**. Three out of the 15 COPCs were not detected in any background subsurface soil sample: antimony, cadmium, and thallium. Based on the Shapiro-Wilk test, the distributions of the background datasets for most COPCs are normal or approximately normal; however, most site COPC datasets are not normal with the exceptions of iron and vanadium. This is evident in the histograms as well in which the Site datasets are mostly skewed left (**Attachment 2**).

Site concentrations of chromium (total) were found to be less than or similar to background based on the WMW test. For all other COPCs, Site concentrations were found to be greater than background. This is further illustrated by the Q-Q plots in which the Site concentrations (blue dots) are consistently higher than background (**Attachment 2**).

4.3 Sediment

The results of the background comparisons for surface sediment are presented in **Table 9**. All 11 COPCs were detected in most background sediment samples. Based on the Shapiro-Wilk test, the distributions of the background datasets for most COPCs are normal or approximately normal with the exceptions of lead and total high molecular weight (HMW) and low molecular weight (LMW) polycyclic aromatic hydrocarbons (PAHs). All Site COPC datasets are not normal. This is evident in the histograms as well in which the Site datasets are mostly skewed left (**Attachment 3**).

Site concentrations of most COPCs were found to be less than or similar to background based on the WMW of Gehan tests (**Table 9**). For antimony and lead, Site concentrations were found to be greater than background. As illustrated by the Q-Q plots (**Attachment 3**), Site concentrations (red dots) and background concentrations (blue dots) are fairly consistent for most COPCs except antimony and lead.

4.4 Tissue

The results of the background comparisons for shellfish tissue are presented in **Table 10**. All 15 COPCs were detected in most background tissue samples with the exception of antimony. Because there are only four background tissue samples available, there are insufficient data to statistically compare background and Site concentrations. As illustrated in the histograms (**Attachment 4**), the range of concentrations is similar between Site and background for many COPCs. As illustrated by the Q-Q plots, Site concentrations (red dots) and background concentrations (blue dots) appear to be consistent for arsenic, barium, selenium, and zinc; whereas, beryllium, copper, lead, mercury, and vanadium Site tissue concentrations appear greater than background. It is difficult to discern the patterns for aluminum, antimony, cobalt, manganese, and total PAHs based on the data available (i.e., Site and background concentrations are range considerably).

5.0 References

Department of the Navy (DON). 2004. Navy Policy on the Use of Background Chemical Levels. 30 January 2004.

NAVFAC, 2002. Navy Guidance for Environmental Background Analysis. Volume I: Soil. Naval Facilities Engineering Command. Washington, D.C. April 2002.

NAVFAC, 2003. Navy Guidance for Environmental Background Analysis. Volume II: Sediment. Naval Facilities Engineering Command. Washington, D.C. April 2003.

NAVFAC, 2004. Navy Guidance for Environmental Background Analysis. Volume III: Groundwater. Naval Facilities Engineering Command. Washington, D.C. April 2004.

NAVFAC, 2011. Navy Guidance for Environmental Background Analysis. Volume IV: Vapor Intrusion Pathway. Naval Facilities Engineering Command. Washington, D.C. April 2011.

Tetra Tech. 2007. Basewide Background Study Report for Naval Station Newport. Tetra Tech NUS, Inc. October 2007.

USEPA. 2002. Guidance for Comparing Background and Chemical Concentrations in Soil for CERCLA Sites. Office of Emergency and Remedial Response. EPA 540-R-01-003 OSWER 9285.7-41 September 2002.

USEPA. 2011. ProUCL Version 4.1.01, Updated 7/12/11.

USEPA, 2013. ProUCL Version 5.0.00. Updated

APPENDIX E TABLE 1
SUMMARY STATISTICS OF BACKGROUND SURFACE SOIL (0-1 FT)
REMEDIAL INVESTIGATION
CARR POINT - MRP SITE 1

			Reporting Limits		Detected Concentrations			
COPC	**Unit**	**FOD**	**Minimum**	**Maximum**	**Minimum**	**Mean**	**Maximum**	
ANTIMONY	mg/kg	0:20	3.3	4.4	--	--	--	
ARSENIC	mg/kg	20:20	--	--	2.4	4.025	6	
CADMIUM	mg/kg	0:20	0.27	0.36	--	--	--	
CHROMIUM, TOTAL	mg/kg	20:20	--	--	5.8	9.87	15.1	
COBALT	mg/kg	20:20	--	--	1.3	2.87	4.6	
COPPER	mg/kg	20:20	--	--	3.6	6.835	11.3	
IRON	mg/kg	20:20	--	--	8240	13797	18000	
LEAD	mg/kg	20:20	--	--	5.3	10.84	18.4	
MANGANESE	mg/kg	20:20	--	--	80.4	140.7	194	
MERCURY	mg/kg	18:20	--	--	0.016	0.0293	0.056	
NICKEL	mg/kg	20:20	--	--	4.5	7.695	10.6	
SELENIUM	mg/kg	13:20	--	--	0.18	0.338	0.55	J
THALLIUM	mg/kg	0:20	0.55	0.73	--	--	--	
VANADIUM	mg/kg	20:20	--	--	10.8	17.03	22.7	
ZINC	mg/kg	20:20	--	--	15.1	21.96	29.4	

Notes:
The calculation of the summary statistics is based on detected concentrations only. The minimum and maximum detection limits are presented for chemicals that were not detected.
The analytical results of the background soils data are presented in Table 3 of this appendix.

COPC - Chemical of Potential Concern.
FOD - Frequency of Detection.
J - The compound was positively identified; however, the associated numerical value is an estimated concentration only (+ and - indicate bias).

APPENDIX E TABLE 2
SUMMARY STATISTICS OF BACKGROUND SUBSURFACE SOIL (0-12 FT)
REMEDIAL INVESTIGATION
CARR POINT - MRP SITE 1

			Reporting Limits		Detected Concentrations			
COPC	**Unit**	**FOD**	**Minimum**	**Maximum**	**Minimum**	**Mean**	**Maximum**	
ANTIMONY	mg/kg	0:40	3	4.4	--	--	--	
ARSENIC	mg/kg	40:40	--	--	2.4	4.025	6.7	
CADMIUM	mg/kg	0:40	0.25	0.36	--	--	--	
CHROMIUM, TOTAL	mg/kg	40:40	--	--	5.8	10.66	18.8	J
COBALT	mg/kg	40:40	--	--	1.3	4.903	11.3	
COPPER	mg/kg	40:40	--	--	3.6	10.61	43.7	
IRON	mg/kg	40:40	--	--	8240	14984	24000	
LEAD	mg/kg	40:40	--	--	5.3	9.16	18.4	
MANGANESE	mg/kg	40:40	--	--	80.4	229.7	768	
MERCURY	mg/kg	18:40	--	--	0.016	0.0293	0.056	
NICKEL	mg/kg	40:40	--	--	4.5	10.32	22.6	
SELENIUM	mg/kg	13:40	--	--	0.18	0.338	0.55	J
THALLIUM	mg/kg	0:40	0.51	0.73	--	--	--	
VANADIUM	mg/kg	40:40	--	--	8.6	15.11	22.7	
ZINC	mg/kg	40:40	--	--	15.1	25.84	42.8	J

Notes:
The calculation of the summary statistics is based on detected concentrations only. The minimum and maximum detection limits are presented for chemicals that were not detected.
The analytical results of the background soils data are presented in Table 3 of this appendix.

COPC - Chemical of Potential Concern.
FOD - Frequency of Detection.
J - The compound was positively identified; however, the associated numerical value is an estimated concentration only (+ and - indicate bias).

APPENDIX E TABLE 3
ANALYTICAL RESULTS FOR SURFACE AND SUBSURFACE SOIL
REMEDIAL INVESTIGATION
CARR POINT – MRP SITE 1

	Site	BACKGROUND	BACKGROUND	BACKGROUND	BACKGROUND	BACKGROUND	BACKGROUND	BACKGROUND
	Location	BWBK-MM101	BWBK-MM101	BWBK-MM102	BWBK-MM102	BWBK-MM103	BWBK-MM103	BWBK-MM104
	Depth	0 - 1 ft	1 - 10 ft	0 - 1 ft	1 - 9 ft	0 - 1 ft	1 - 7 ft	0 - 1 ft
	Date	3/26/2007 00:00	3/26/2007 00:00	3/26/2007 00:00	3/26/2007 00:00	3/26/2007 00:00	3/26/2007 00:00	3/26/2007 00:00
	Matrix	SO	SO	SO	SO	SO	SO	SO
	Type	N	N	N	N	N	N	N
	Sample	BWBK-SS-MM101-0001	BWBK-SB-MM101-0110	BWBK-SS-MM102-0001	BWBK-SB-MM102-0109	BWBK-SS-MM103-0001	BWBK-SB-MM103-0107	BWBK-SS-MM104-0001
Analyte	**Units**							
Metals								
ALUMINUM	mg/kg	**15200**	**7370**	**11400**	**9150**	**14200**	**8050**	**14100**
ANTIMONY	mg/kg	< 3.8 UJ	< 3.4 UJ	< 3.8 UJ	< 3.3 UJ	< 3.9 UJ	< 3.6 UJ	< 3.9 UJ
ARSENIC	mg/kg	**5.8**	**4.3**	**3.7**	**3.9**	**6**	**5.3**	**6**
BARIUM	mg/kg	**31**	**18.3**	**19**	**22.2**	**25**	**20.9**	**31.7**
BERYLLIUM	mg/kg	**0.58**	**0.33**	**0.46**	**0.38**	**0.52**	**0.33**	**0.55**
CADMIUM	mg/kg	< 0.32 U	< 0.29 U	< 0.32 U	< 0.28 U	< 0.32 U	< 0.3 U	< 0.33 U
CALCIUM	mg/kg	**380**	**456**	**357**	**678**	**315 J**	**487**	**360**
CHROMIUM, TOTAL	mg/kg	**12.1**	**10 J**	**9.6**	**12.1 J**	**12.2**	**11.8 J**	**12.4**
COBALT	mg/kg	**3.4**	**6.9**	**2.6 J**	**7.2**	**3.2 J**	**11.3**	**4.2**
COPPER	mg/kg	**9.1**	**13.1**	**5.5**	**14.7**	**8.4**	**13.5**	**11.3**
IRON	mg/kg	**17800**	**15100**	**14100**	**15800**	**17400**	**14900**	**18000**
LEAD	mg/kg	**14**	**8.1**	**7.8**	**7.5**	**15.2**	**8.2**	**15.2**
MAGNESIUM	mg/kg	**1970 J**	**2550**	**1500 J**	**3430**	**1760 J**	**2660**	**2190 J**
MANGANESE	mg/kg	**163**	**255**	**164**	**263**	**154**	**330**	**190**
MERCURY	mg/kg	**0.038 J**	< 0.038 U	**0.021 J**	< 0.036 U	**0.041**	< 0.042 U	**0.028 J**
NICKEL	mg/kg	**9.6**	**11.9**	**8.2**	**17.7**	**9.2**	**13**	**10.6**
POTASSIUM	mg/kg	**528**	**847 J**	**496**	**1110 J**	**502**	**1060 J**	**576**
SELENIUM	mg/kg	**0.47 J**	< 0.29 UJ	**0.42 J**	< 0.28 UJ	**0.55 J**	< 0.3 UJ	**0.32 J**
SILVER	mg/kg	< 0.64 U	< 0.57 U	< 0.64 U	< 0.56 U	< 0.65 U	< 0.6 U	< 0.65 U
SODIUM	mg/kg	< 320 U	< 287 U	< 319 U	< 279 U	< 324 U	< 298 U	< 327 U
THALLIUM	mg/kg	< 0.64 U	< 0.57 U	< 0.64 U	< 0.56 U	< 0.65 U	< 0.6 U	< 0.65 U
VANADIUM	mg/kg	**21.7**	**10.6**	**16.7**	**13.2**	**22.2**	**11**	**20.6**
ZINC	mg/kg	**29**	**27.5 J**	**21.6**	**29.8 J**	**26.1**	**28.3 J**	**28.3**

Source: Tetra Tech (2007)

Notes:

U or < - Non-detect at laboratory detection limit.

J - The compound was positively identified; however, the associated numerical value is an estimated concentration only.

Sample Type - N = normal sample, FD = duplicate sample.

mg/kg - milligram per kilogram

APPENDIX E TABLE 3
ANALYTICAL RESULTS FOR SURFACE AND SUBSURFACE SOIL
REMEDIAL INVESTIGATION
CARR POINT – MRP SITE 1

	Site	BACKGROUND	BACKGROUND	BACKGROUND	BACKGROUND	BACKGROUND	BACKGROUND	BACKGROUND
	Location	BWBK-MM104	BWBK-MM105	BWBK-MM105	BWBK-MM106	BWBK-MM106	BWBK-MM107	BWBK-MM107
	Depth	1 - 10 ft	0 - 1 ft	1 - 10 ft	0 - 1 ft	1 - 10 ft	0 - 1 ft	1 - 10 ft
	Date	3/26/2007 00:00	3/26/2007 00:00	3/26/2007 00:00	3/26/2007 00:00	3/26/2007 00:00	3/26/2007 00:00	3/26/2007 00:00
	Matrix	SO	SO	SO	SO	SO	SO	SO
	Type	N	N	N	N	N	N	N
	Sample	BWBK-SB-MM104-0110	BWBK-SS-MM105-0001	BWBK-SB-MM105-0110	BWBK-SS-MM106-0001	BWBK-SB-MM106-0110	BWBK-SS-MM107-0001	BWBK-SB-MM107-0110
Analyte	**Units**							
Metals								
ALUMINUM	mg/kg	**11300**	**10400**	**6760**	**14000**	**12000**	**15100**	**7650**
ANTIMONY	mg/kg	< 3.4 UJ	< 4.2 UJ	< 3.5 UJ	< 3.4 UJ	< 3.1 UJ	< 4.2 UJ	< 3.4 UJ
ARSENIC	mg/kg	**6.7**	**4.3**	**4.5**	**5.4**	**4**	**4.6**	**4**
BARIUM	mg/kg	**24.3**	**18.5**	**16.5**	**29.6**	**32.6**	**29.7**	**21.7**
BERYLLIUM	mg/kg	**0.42**	**0.38**	**0.71**	**0.52**	**0.48**	**0.55**	**0.37**
CADMIUM	mg/kg	< 0.28 U	< 0.35 U	< 0.29 U	< 0.29 UJ	< 0.26 UJ	< 0.35 U	< 0.29 UJ
CALCIUM	mg/kg	**511**	**250 J**	**509**	**473**	**893**	**403**	**594**
CHROMIUM, TOTAL	mg/kg	**13.7 J**	**8.5**	**7.7 J**	**15.1**	**15.1 J**	**12.6**	**16 J**
COBALT	mg/kg	**8.8**	**2.7 J**	**5.1**	**4.6**	**8.5**	**3.6**	**6.6**
COPPER	mg/kg	**43.7**	**6.5**	**10.5**	**10.3**	**16.7**	**8.6**	**13.3**
IRON	mg/kg	**24000**	**12000**	**12000**	**17900**	**21600**	**17800**	**14700**
LEAD	mg/kg	**9.1 J**	**11.1**	**7.7**	**11**	**8.3 J**	**11**	**6.8 J**
MAGNESIUM	mg/kg	**4580**	**1130 J**	**1960**	**2140 J**	**4510**	**2290 J**	**2650**
MANGANESE	mg/kg	**335**	**136**	**210**	**194**	**450**	**176**	**245**
MERCURY	mg/kg	< 0.035 U	**0.039 J**	< 0.037 U	**0.028 J**	< 0.033 U	**0.056**	< 0.035 U
NICKEL	mg/kg	**12.9**	**6.7**	**10.3**	**10.1**	**15.9**	**10.3**	**11.4**
POTASSIUM	mg/kg	**1810 J**	**436**	**610 J**	**840**	**1670 J**	**678**	**1260 J**
SELENIUM	mg/kg	< 0.28 UJ	**0.31 J**	< 0.29 UJ	**0.41 J**	< 0.26 UJ	**0.32 J**	< 0.29 UJ
SILVER	mg/kg	< 0.57 U	< 0.7 U	< 0.59 U	< 0.57 U	< 0.51 U	< 0.7 U	< 0.57 U
SODIUM	mg/kg	< 285 U	< 350 U	< 293 U	**63.3 J**	**67.8 J**	< 352 U	< 286 U
THALLIUM	mg/kg	< 0.57 U	< 0.7 U	< 0.59 U	< 0.57 U	< 0.51 U	< 0.7 U	< 0.57 U
VANADIUM	mg/kg	**15.6**	**16.7**	**9.9**	**21.1**	**19**	**20.4**	**12.4**
ZINC	mg/kg	**38.9 J**	**19.7**	**23.1 J**	**28.1**	**42.8 J**	**29.4**	**27.5 J**

Source: Tetra Tech (2007)

Notes:

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Sample Type - N = normal sample, FD = duplicate sample.

mg/kg - milligram per kilogram

APPENDIX E TABLE 3
ANALYTICAL RESULTS FOR SURFACE AND SUBSURFACE SOIL
REMEDIAL INVESTIGATION
CARR POINT – MRP SITE 1

	Site	BACKGROUND	BACKGROUND	BACKGROUND	BACKGROUND	BACKGROUND	BACKGROUND	BACKGROUND
	Location	BWBK-MM108	BWBK-MM108	BWBK-MM109	BWBK-MM109	BWBK-MM110	BWBK-MM110	BWBK-MM111
	Depth	0 - 1 ft	1 - 10 ft	0 - 1 ft	1 - 10 ft	0 - 1 ft	1 - 9 ft	0 - 1 ft
	Date	3/26/2007 00:00	3/26/2007 00:00	3/26/2007 00:00	3/26/2007 00:00	3/28/2007 00:00	3/28/2007 00:00	3/28/2007 00:00
	Matrix	SO	SO	SO	SO	SO	SO	SO
	Type	N	N	N	N	N	N	N
	Sample	BWBK-SS-MM108-0001	BWBK-SB-MM108-0110	BWBK-SS-MM109-0001	BWBK-SB-MM109-0110	BWBK-SS-MM110-0001	BWBK-SB-MM110-0109	BWBK-SS-MM111-0001
Analyte	**Units**							
Metals								
ALUMINUM	mg/kg	**15500**	**8910**	**14300**	**10800**	**9610**	**9490**	**10900**
ANTIMONY	mg/kg	< 3.8 UJ	< 3.2 UJ	< 4.4 UJ	< 3.3 UJ	< 3.7 UJ	< 3.3 UJ	< 3.5 UJ
ARSENIC	mg/kg	**4.5**	**3.5**	**4.5**	**3.6**	**2.7**	**4.4**	**2.6**
BARIUM	mg/kg	**27.5**	**22.1**	**20.2**	**33.9**	**18.9**	**23.8**	**17.8**
BERYLLIUM	mg/kg	**0.58**	**0.38**	**0.51**	**0.56**	**0.26 J**	**0.34**	**0.28 J**
CADMIUM	mg/kg	< 0.31 UJ	< 0.26 UJ	< 0.36 U	< 0.27 U	< 0.31 U	< 0.27 U	< 0.29 U
CALCIUM	mg/kg	**351**	**555**	**283 J**	**393**	**249 J**	**576**	**239 J**
CHROMIUM, TOTAL	mg/kg	**11.9**	**9.9 J**	**11.5**	**13 J**	**7.1**	**14.3 J**	**7.8**
COBALT	mg/kg	**2.7 J**	**6.6**	**2.8 J**	**7.5**	**1.5 J**	**6.2**	**1.9 J**
COPPER	mg/kg	**7.7**	**12.3**	**5.7**	**13.8**	**4.2**	**14**	**3.7**
IRON	mg/kg	**15400**	**15600**	**15500**	**17800**	**9880**	**16900**	**10400**
LEAD	mg/kg	**12.4**	**6.4 J**	**9**	**9**	**11.9**	**8**	**10.3**
MAGNESIUM	mg/kg	**1470 J**	**2890**	**1720 J**	**2840**	**791 J**	**2800**	**1040 J**
MANGANESE	mg/kg	**113**	**244**	**127**	**290**	**82.4**	**240**	**97.5**
MERCURY	mg/kg	**0.034 J**	< 0.032 U	**0.025 J**	< 0.031 U	**0.033 J**	< 0.035 U	**0.017 J**
NICKEL	mg/kg	**8.5**	**11.4**	**8.2**	**13.4**	**4.7**	**12**	**5.3**
POTASSIUM	mg/kg	**530**	**1250 J**	**474**	**1540 J**	**311**	**1200 J**	**353**
SELENIUM	mg/kg	**0.37 J**	< 0.26 UJ	< 0.36 UJ	< 0.27 UJ	**0.29 J**	< 0.27 UJ	**0.18 J**
SILVER	mg/kg	< 0.63 U	< 0.53 U	< 0.73 U	< 0.54 U	< 0.61 U	< 0.54 U	< 0.58 U
SODIUM	mg/kg	< 313 U	< 263 U	< 363 U	**54.9 J**	< 306 U	< 272 U	< 289 U
THALLIUM	mg/kg	< 0.63 U	< 0.53 U	< 0.73 U	< 0.54 U	< 0.61 U	< 0.54 U	< 0.58 U
VANADIUM	mg/kg	**22.7**	**13.5**	**20.3**	**16.7**	**15.2**	**14.8**	**13.9**
ZINC	mg/kg	**24**	**29.4 J**	**22.2**	**31.9 J**	**15.1**	**29 J**	**16.3**

Source: Tetra Tech (2007)

Notes:

U or < - Non-detect at laboratory detection limit.

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Sample Type - N = normal sample, FD = duplicate sample.

mg/kg - milligram per kilogram

APPENDIX E TABLE 3
ANALYTICAL RESULTS FOR SURFACE AND SUBSURFACE SOIL
REMEDIAL INVESTIGATION
CARR POINT – MRP SITE 1

	Site	BACKGROUND	BACKGROUND	BACKGROUND	BACKGROUND	BACKGROUND	BACKGROUND	BACKGROUND
	Location	BWBK-MM111	BWBK-MM112	BWBK-MM112	BWBK-MM113	BWBK-MM113	BWBK-MM114	BWBK-MM114
	Depth	1 - 10 ft	0 - 1 ft	1 - 10 ft	0 - 1 ft	1 - 10 ft	0 - 1 ft	1 - 10 ft
	Date	3/28/2007 00:00	3/28/2007 00:00	3/28/2007 00:00	3/28/2007 00:00	3/28/2007 00:00	3/28/2007 00:00	3/28/2007 00:00
	Matrix	SO	SO	SO	SO	SO	SO	SO
	Type	N	N	N	N	N	N	N
	Sample	BWBK-SB-MM111-0110	BWBK-SS-MM112-0001	BWBK-SB-MM112-0110	BWBK-SS-MM113-0001	BWBK-SB-MM113-0110	BWBK-SS-MM114-0001	BWBK-SB-MM114-0110
Analyte	**Units**							
Metals								
ALUMINUM	mg/kg	**10000**	**9430**	**10700**	**13500**	**8890**	**8540**	**8040**
ANTIMONY	mg/kg	< 3.3 UJ	< 3.5 UJ	< 3.2 UJ	< 3.7 UJ	< 3 UJ	< 3.4 UJ	< 3.2 UJ
ARSENIC	mg/kg	**4**	**3**	**3.6**	**3.9**	**3.3**	**2.4**	**5.2**
BARIUM	mg/kg	**29.6**	**16.5**	**29.3**	**25.7**	**21.6**	**16**	**23.1**
BERYLLIUM	mg/kg	**0.4**	**0.27 J**	**0.4**	**0.38**	**0.33**	**0.3**	**0.32**
CADMIUM	mg/kg	< 0.27 U	< 0.29 U	< 0.27 U	< 0.3 U	< 0.25 U	< 0.28 U	< 0.27 U
CALCIUM	mg/kg	**651**	**222 J**	**612**	**343**	**605**	**251 J**	**891**
CHROMIUM, TOTAL	mg/kg	**11.6 J**	**6.4**	**11.8 J**	**10.2**	**18.8 J**	**5.8**	**8.8 J**
COBALT	mg/kg	**6.8**	**1.3 J**	**7**	**2.3 J**	**6.8**	**1.5 J**	**5.5**
COPPER	mg/kg	**13**	**4.3**	**10.4**	**7**	**14.8**	**3.6**	**10**
IRON	mg/kg	**19200**	**9120**	**21000**	**14100**	**16100**	**8240**	**12700**
LEAD	mg/kg	**9.4**	**11.7**	**6.9 J**	**18.4**	**6.6 J**	**7.2**	**6.5**
MAGNESIUM	mg/kg	**3270**	**875 J**	**3330**	**1450 J**	**3220**	**767 J**	**2300**
MANGANESE	mg/kg	**280**	**80.4**	**768**	**120**	**268**	**94**	**289**
MERCURY	mg/kg	< 0.033 U	**0.028 J**	< 0.033 U	**0.04**	< 0.03 U	**0.019 J**	< 0.032 U
NICKEL	mg/kg	**13.3**	**4.8**	**14.4**	**7.3**	**14.6**	**4.5**	**11.2**
POTASSIUM	mg/kg	**1700 J**	**319**	**1520 J**	**538**	**1190 J**	**276 J**	**1080 J**
SELENIUM	mg/kg	< 0.27 UJ	**0.21 J**	< 0.27 UJ	**0.36 J**	< 0.51 UJ	**0.19 J**	< 0.27 UJ
SILVER	mg/kg	< 0.55 U	< 0.59 U	< 0.54 U	< 0.61 U	< 0.51 U	< 0.56 U	< 0.54 U
SODIUM	mg/kg	< 274 U	< 294 U	< 270 U	< 304 U	< 254 U	< 281 U	< 270 U
THALLIUM	mg/kg	< 0.55 U	< 0.59 U	< 0.54 U	< 0.61 U	< 0.51 U	< 0.56 U	< 0.54 U
VANADIUM	mg/kg	**14.4**	**12.8**	**18.5**	**21.5**	**13.3**	**10.8**	**10.6**
ZINC	mg/kg	**31.7 J**	**16.7**	**33.2 J**	**23.1**	**31 J**	**15.6**	**23.7 J**

Source: Tetra Tech (2007)

Notes:

U or < - Non-detect at laboratory detection limit.

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Sample Type - N = normal sample, FD = duplicate sample.

mg/kg - milligram per kilogram

APPENDIX E TABLE 3
ANALYTICAL RESULTS FOR SURFACE AND SUBSURFACE SOIL
REMEDIAL INVESTIGATION
CARR POINT – MRP SITE 1

	Site	BACKGROUND	BACKGROUND	BACKGROUND	BACKGROUND	BACKGROUND	BACKGROUND	BACKGROUND
	Location	BWBK-MM115	BWBK-MM115	BWBK-MM116	BWBK-MM116	BWBK-MM117	BWBK-MM117	BWBK-MM118
	Depth	0 - 1 ft	1 - 10 ft	0 - 1 ft	1 - 10 ft	0 - 1 ft	1 - 10 ft	0 - 1 ft
	Date	3/28/2007 00:00	3/28/2007 00:00	3/28/2007 00:00	3/28/2007 00:00	3/28/2007 00:00	3/28/2007 00:00	3/28/2007 00:00
	Matrix	SO	SO	SO	SO	SO	SO	SO
	Type	N	N	N	N	N	N	N
	Sample	BWBK-SS-MM115-0001	BWBK-SB-MM115-0110	BWBK-SS-MM116-0001	BWBK-SB-MM116-0110	BWBK-SS-MM117-0001	BWBK-SB-MM117-0110	BWBK-SS-MM118-0001
Analyte	**Units**							
Metals								
ALUMINUM	mg/kg	**10200**	**10700**	**9520**	**8140**	**12800**	**7070**	**9250**
ANTIMONY	mg/kg	< 3.5 UJ	< 3.1 UJ	< 3.3 UJ	< 3.2 UJ	< 3.4 UJ	< 3.1 UJ	< 3.3 UJ
ARSENIC	mg/kg	**2.8**	**3**	**3**	**3.4**	**3.8**	**3.6**	**4.5**
BARIUM	mg/kg	**21.3**	**42.9**	**18.2**	**24.8**	**27.7**	**18.9**	**19.4**
BERYLLIUM	mg/kg	**0.38**	**0.33**	**0.31**	**0.31**	**0.4**	**0.28**	**0.32**
CADMIUM	mg/kg	< 0.29 U	< 0.26 U	< 0.28 U	< 0.27 U	< 0.29 U	< 0.26 U	< 0.27 UJ
CALCIUM	mg/kg	**277 J**	**923**	**274 J**	**689**	**261 J**	**399**	**330**
CHROMIUM, TOTAL	mg/kg	**7.1**	**9.8 J**	**7**	**11.9 J**	**10.3**	**6.9 J**	**9.4**
COBALT	mg/kg	**1.5 J**	**6.1**	**1.8 J**	**6**	**3**	**6.7**	**4.6**
COPPER	mg/kg	**4.5**	**9.4**	**3.8**	**12.6**	**7.8**	**12.1**	**8.2**
IRON	mg/kg	**11000**	**16300**	**10200**	**14900**	**15000**	**13500**	**13100**
LEAD	mg/kg	**8.7**	**5.7 J**	**10.3**	**7.4**	**13.1**	**6.7**	**6.1**
MAGNESIUM	mg/kg	**918 J**	**3450**	**967 J**	**2780**	**1670 J**	**2320**	**2260 J**
MANGANESE	mg/kg	**141**	**313**	**113**	**306**	**138**	**254**	**178**
MERCURY	mg/kg	**0.025 J**	< 0.031 U	**0.022 J**	< 0.032 U	**0.018 J**	< 0.03 U	< 0.036 U
NICKEL	mg/kg	**5.5**	**9.7**	**5**	**12.9**	**8.4**	**10.6**	**9**
POTASSIUM	mg/kg	**296**	**2440 J**	**295**	**1300 J**	**465**	**993 J**	**830**
SELENIUM	mg/kg	< 0.29 UJ	< 0.52 UJ	< 0.28 UJ	< 0.53 UJ	< 0.29 UJ	< 0.26 UJ	< 0.27 UJ
SILVER	mg/kg	< 0.59 U	< 0.52 U	< 0.55 U	< 0.53 U	< 0.57 U	< 0.52 U	< 0.55 U
SODIUM	mg/kg	< 294 U	< 261 U	< 276 U	< 267 U	< 286 U	< 258 U	< 274 U
THALLIUM	mg/kg	< 0.59 U	< 0.52 U	< 0.55 U	< 0.53 U	< 0.57 U	< 0.52 U	< 0.55 U
VANADIUM	mg/kg	**13.5**	**16.7**	**14.3**	**10.6**	**17.8**	**9.5**	**12.7**
ZINC	mg/kg	**18.4**	**31.4 J**	**16.5**	**31 J**	**23.8**	**25 J**	**21.1**

Source: Tetra Tech (2007)

Notes:

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Sample Type - N = normal sample, FD = duplicate sample.

mg/kg - milligram per kilogram

APPENDIX E TABLE 3
ANALYTICAL RESULTS FOR SURFACE AND SUBSURFACE SOIL
REMEDIAL INVESTIGATION
CARR POINT – MRP SITE 1

	Site	BACKGROUND	BACKGROUND	BACKGROUND	BACKGROUND	BACKGROUND
	Location	BWBK-MM118	BWBK-MM119	BWBK-MM119	BWBK-MM120	BWBK-MM120
	Depth	1 - 10 ft	0 - 1 ft	1 - 10 ft	0 - 1 ft	1 - 10 ft
	Date	3/28/2007 00:00	3/28/2007 00:00	3/28/2007 00:00	3/28/2007 00:00	3/28/2007 00:00
	Matrix	SO	SO	SO	SO	SO
	Type	N	N	N	N	N
	Sample	BWBK-SB-MM118-0110	BWBK-SS-MM119-0001	BWBK-SB-MM119-0110	BWBK-SS-MM120-0001	BWBK-SB-MM120-0110
Analyte	**Units**					
Metals						
ALUMINUM	mg/kg	**7890**	**8300**	**7940**	**8900**	**5520**
ANTIMONY	mg/kg	< 3.1 UJ	< 3.3 UJ	< 3.2 UJ	< 3.3 UJ	< 3.1 UJ
ARSENIC	mg/kg	**3.7**	**3.4**	**4**	**3.6**	**2.5**
BARIUM	mg/kg	**21.3**	**19**	**21.4**	**15.6**	**14.6**
BERYLLIUM	mg/kg	**0.36**	**0.34**	**0.31**	**0.49**	**0.28**
CADMIUM	mg/kg	< 0.26 UJ	< 0.27 UJ	< 0.26 UJ	< 0.28 UJ	< 0.26 UJ
CALCIUM	mg/kg	**538**	**480**	**707**	**371**	**348**
CHROMIUM, TOTAL	mg/kg	**9.5 J**	**7.6**	**10.2 J**	**12.8**	**6.2 J**
COBALT	mg/kg	**8.4**	**4**	**6.1**	**4.2**	**4.6**
COPPER	mg/kg	**19.2**	**7.4**	**10.9**	**9.1**	**9.6**
IRON	mg/kg	**14900**	**11400**	**15800**	**17600**	**10600**
LEAD	mg/kg	**9.2**	**5.3**	**6.9 J**	**7 J**	**5.3**
MAGNESIUM	mg/kg	**3050**	**1890 J**	**3170**	**1560 J**	**1880**
MANGANESE	mg/kg	**539**	**182**	**302**	**171**	**193**
MERCURY	mg/kg	< 0.035 U	< 0.035 U	< 0.028 U	**0.016 J**	< 0.034 U
NICKEL	mg/kg	**22.6**	**9.1**	**11.9**	**8.9**	**7.6**
POTASSIUM	mg/kg	**1110 J**	**678**	**1390 J**	**450**	**934 J**
SELENIUM	mg/kg	< 0.26 UJ	< 0.27 UJ	< 0.26 UJ	< 0.28 UJ	< 0.26 UJ
SILVER	mg/kg	< 0.52 U	< 0.55 U	< 0.53 U	< 0.55 U	< 0.52 U
SODIUM	mg/kg	< 259 U	< 273 U	< 263 U	< 275 U	< 262 U
THALLIUM	mg/kg	< 0.52 U	< 0.55 U	< 0.53 U	< 0.55 U	< 0.52 U
VANADIUM	mg/kg	**12.1**	**11.2**	**12.8**	**14.4**	**8.6**
ZINC	mg/kg	**30.9 J**	**19.4**	**29.4 J**	**24.8**	**18.7 J**

Source: Tetra Tech (2007)

Notes:

U or < - Non-detect at laboratory detection limit.

J - The compound was positively identified; however, the associated numerical value is an estimated concentration only.

Sample Type - N = normal sample, FD = duplicate sample.

mg/kg - milligram per kilogram

APPENDIX E TABLE 4
SUMMARY STATISTICS OF BACKGROUND SURFACE SEDIMENT (0-1 FT)
REMEDIAL INVESTIGATION
CARR POINT - MRP SITE 1

			Detected Concentrations			
COPC	**Unit**	**FOD**	**Minimum**	**Mean**	**Maximum**	
ANTIMONY	mg/kg	12:12	0.03	0.0703	0.13	J-
ARSENIC	mg/kg	12:12	1.2	3.206	5.7	
COBALT	mg/kg	12:12	2.2	4.049	8	
COPPER	mg/kg	12:12	3.7	11.35	25.4	J
LEAD	mg/kg	12:12	6	16.74	39.4	J+
MANGANESE	mg/kg	12:12	77.4	144.3	282	
MERCURY	mg/kg	12:12	0.0043	0.0476	0.17	J
NICKEL	mg/kg	12:12	5.6	10.08	17.7	J
VANADIUM	mg/kg	12:12	7.6	16.07	29	
TOTAL HMW PAHs	mg/kg	12:12	0.0035	0.699	6	
TOTAL LMW PAHs	mg/kg	11:12	0.0022	0.102	0.87	

Notes:
The calculation of the summary statistics is based on detected concentrations only.
Refer to Attachment A of the ERA for samples included in data set. Where two sample depths (e.g., 0-0.5 ft and 0.5-1 ft) were available for one location, samples combined to form one composite result for the location.

COPC - Chemical of Potential Concern.
FOD - Frequency of Detection.
HMW - High Molecular Weight.
J - The compound was positively identified; however, the associated numerical value is an estimated concentration only (+ and - indicate bias).
LMW - Low Molecular Weight.
PAH - Polycyclic Aromatic Hydrocarbon.

APPENDIX E TABLE 5
SUMMARY STATISTICS OF GRAIN SIZE AND TOC FOR SURFACE SEDIMENT (0-1 FT)
REMEDIAL INVESTIGATION
CARR POINT - MRP SITE 1

		Summary Statistics		
Metric	**Unit**	**Minimum**	**Mean**	**Maximum**
Total Organic Carbon	mg/kg	5400	15308	34000
Fines	%	0.7	12.6	53
Gravel	%	0.2	19	67
Sand	%	27	68	92
Coarse Sand	%	0.4	6.8	16
Find Sand	%	8	45	86
Medium Sand	%	4	17	33

APPENDIX E TABLE 6
SUMMARY STATISTICS OF BACKGROUND SHELLFISH TISSUE
REMEDIAL INVESTIGATION
CARR POINT - MRP SITE 1

			Reporting Limits		Detected Concentrations			
COPC	**Units**	**FOD**	**Minimum**	**Maximum**	**Minimum**	**Mean**	**Maximum**	
ALUMINUM	mg/kg	4:4	--	--	6.77	18.67	29.4	
ANTIMONY	mg/kg	0:4	0.0006	0.0056	--	--	--	
ARSENIC	mg/kg	4:4	--	--	2.5	3.285	3.6	J+
BARIUM	mg/kg	4:4	--	--	0.0974	0.186	0.28	J+
BERYLLIUM	mg/kg	4:4	--	--	0.0018	0.00245	0.0035	
COBALT	mg/kg	4:4	--	--	0.0646	0.115	0.202	J+
COPPER	mg/kg	4:4	--	--	0.92	1.04	1.26	J+
IRON	mg/kg	4:4	--	--	19.7	54.83	72.3	
LEAD	mg/kg	4:4	--	--	0.148	0.272	0.426	J
MANGANESE	mg/kg	4:4	--	--	2.6	4.75	7.72	J+
MERCURY	mg/kg	4:4	--	--	0.012	0.016	0.0196	
SELENIUM	mg/kg	4:4	--	--	0.25	0.398	0.5	
VANADIUM	mg/kg	4:4	--	--	0.123	0.153	0.179	J+
ZINC	mg/kg	4:4	--	--	8.69	12.05	15.6	J+
TOTAL PAHs	mg/kg	4:4	--	--	0.0056	0.0647	0.19	

Notes:
The calculation of the summary statistics is based on detected concentrations only. The minimum and maximum detection limits are presented for chemicals that were not detected.
Refer to Attachment A of the ERA for samples included in data set. Data set includes both quahog and blue mussel results.

COPC - Chemical of Potential Concern.
FOD - Frequency of Detection.
J - The compound was positively identified; however, the associated numerical value is an estimated concentration only (+ and - indicate bias).
PAH - Polycyclic Aromatic Hydrocarbon.

APPENDIX E TABLE 7
COMPARISON OF CHEMICAL CONCENTRATIONS IN BACKGROUND AND SITE SURFICIAL SOIL (0-1 FT)
REMEDIAL INVESTIGATION
CARR POINT - MRP SITE 1

	Site Surface Soil			**Background Surface Soil**			**Distribution [a]**		**Two-Sample Hypothesis Test [b]**				
COPC	Number of detects	Total number of samples	FOD	Number of detects	Total number of samples	FOD	Site	Background	Test	S value[c]	p-value	Reject Null Hypothesis?	Is Site >= Background Sediment?
ANTIMONY	27	27	100	0	20	0	Not Normal	NC	NC	--	--	--	--
ARSENIC	45	45	100	20	20	100	Not Normal	Normal	WMW	1.14	1.0	**NO**	**YES**
CADMIUM	23	27	85	0	20	0	Not Normal	NC	--	--	--	--	--
CHROMIUM, TOTAL	45	45	100	20	20	100	Not Normal	Normal	WMW	2.63	0.236	**NO**	**YES**
COBALT	27	27	100	20	20	100	Not Normal	Normal	WMW	1.09	1.0	**NO**	**YES**
COPPER	27	27	100	20	20	100	Not Normal	Normal	WMW	2.33	1.0	**NO**	**YES**
IRON	27	27	100	20	20	100	Not Normal	Normal	WMW	3332	1.0	**NO**	**YES**
LEAD	57	57	100	20	20	100	Not Normal	Normal	WMW	3.35	1.0	**NO**	**YES**
MANGANESE	27	27	100	20	20	100	Normal	Normal	t-test	36.28	1.0	**NO**	**YES**
MERCURY	21	27	78	18	20	90	Not Normal	Normal	Gehan	0.0105	0.833	**NO**	**YES**
NICKEL	27	27	100	20	20	100	Approximate Normal	Normal	t-test	2.05	1.0	**NO**	**YES**
SELENIUM	11	27	41	13	20	65	Normal	Normal	t-test	0.11	0.506	**NO**	**YES**
THALLIUM	27	27	100	0	20	0	Approximate Normal	NC	NC	--	--	--	--
VANADIUM	27	27	100	20	20	100	Normal	Normal	t-test	3.99	0.017	Yes	No
ZINC	27	27	100	20	20	100	Not Normal	Normal	WMW	4.70	1.0	**NO**	**YES**

Notes:
COPC - Chemical of Potential Concern.
FOD - Frequency of Detection.
NC - Not Calculated.
ND - No Data.
S - Substantial Difference.
WMW - Wilcoxon-Mann-Whitney test.

[a] The distribution of the Site and Background datasets were determined using Goodness of Fit Statistics (significance level 0.05) in ProUCL 5.0. A minimum of five detected samples is required for determining the distribution in ProUCL.
[b] A two-sample hypothesis test was conducted. A t-test was used when both Site and Background datasets are normally distributed. If either datasets were not normally distributed, then the WMW test or the Gehan test was used depending on if detection limits were equal for all non-detected samples (WMW) or if they were not equal (Gehan).
The null hypothesis is "Mean/Median of Site Soil > = Background Soil + S". The alternative hypothesis is "Mean/Median of Site Soil < Background Soil + S".
If the p-value of the two-sample hypothesis test is < alpha (0.05), then the null hypothesis is rejected.
[c] The value of S is the standard deviation of the Background data set. This value was added to the value of each Background soil sample.

APPENDIX E TABLE 8
COMPARISON OF CHEMICAL CONCENTRATIONS IN BACKGROUND AND SITE SUBSURFACE SOIL (0-12 FT)
REMEDIAL INVESTIGATION
CARR POINT - MRP SITE 1

	Site Subsurface Soil			**Background Subsurface Soil**			**Distribution [a]**		**Two-Sample Hypothesis Test [b]**				
COPC	Number of detects	Total number of samples	FOD (%)	Number of detects	Total number of samples	FOD (%)	Site	Background	Test	S value [c]	p-value	Reject Null Hypothesis?	Is Background >= Site Sediment?
ANTIMONY	72	80	90	0	40	0	Not normal	NC	NC	--	--	--	--
ARSENIC	115	115	100	40	40	100	Not normal	Normal	WMW	1.019	1	**NO**	**YES**
CADMIUM	51	80	63.75	0	40	0	Not normal	NC	NC	--	--	--	--
CHROMIUM, TOTAL	115	115	100	40	40	100	Not normal	Normal	WMW	2.964	5.69E-04	Yes	No
COBALT	80	80	100	40	40	100	Not normal	Normal	WMW	2.424	1	**NO**	**YES**
COPPER	80	80	100	40	40	100	Not normal	Not normal	WMW	6.582	0.995	**NO**	**YES**
IRON	80	80	100	40	40	100	Approximate normal	Normal	t-test	3472	1	**NO**	**YES**
LEAD	127	127	100	40	40	100	Not normal	Not normal	WMW	3.004	1	**NO**	**YES**
MANGANESE	80	80	100	40	40	100	Not normal	Approximate normal	WMW	131.3	1	**NO**	**YES**
MERCURY	33	80	41.25	18	40	45	Not normal	Normal	Gehan	0.0106	0.226	**NO**	**YES**
NICKEL	80	80	100	40	40	100	Not normal	Normal	WMW	3.745	1	**NO**	**YES**
SELENIUM	33	80	41.25	13	40	32.5	Not normal	Normal	Gehan	0.109	0.817	**NO**	**YES**
THALLIUM	78	80	97.5	0	40	0	Not normal	NC	NC	--	--	--	--
VANADIUM	80	80	100	40	40	100	Normal	Approximate normal	t-test	3.982	0.058	**NO**	**YES**
ZINC	80	80	100	40	40	100	Not normal	Normal	WMW	6.283	1	**NO**	**YES**

Notes:
COPC - Chemical of Potential Concern.
FOD - Frequency of Detection.
NC - Not Calculated.
S - Substantial Difference.
WMW - Wilcoxon-Mann-Whitney test.

[a] The distribution of the Site and Background datasets were determined using Goodness of Fit Statistics (significance level 0.05) in ProUCL 5.0.
[b] A two-sample hypothesis test was conducted. A t-test was used when both Site and Background datasets are normally distributed. If either datasets were not normally distributed, then the WMW test or the Gehan test was used depending on if detection limits were equal for all non-detected samples (WMW) or if they were not equal (Gehan).
The null hypothesis is "Mean/Median of Site Soil > = Background Soil + S". The alternative hypothesis is "Mean/Median of Site Soil < Background Soil + S".
If the p-value of the two-sample hypothesis test is < alpha (0.05), then the null hypothesis is rejected.
[c] The value of S is the standard deviation of the Background data set. This value was added to the value of each Background soil sample.

APPENDIX E TABLE 9
COMPARISON OF CHEMICAL CONCENTRATIONS IN BACKGROUND AND SITE SURFACE SEDIMENT (0-1 FT)
REMEDIAL INVESTIGATION
CARR POINT - MRP SITE 1

	Site Sediment			Background Sediment			Distribution [a]		Two-Sample Hypothesis Test [b]				
COPC	Number of detects	Total number of samples	FOD (%)	Number of detects	Total number of samples	FOD (%)	Site	Background	Test	S value[c]	p-value	Reject Null Hypothesis?	Is Site >= Background Sediment?
ANTIMONY	44	55	80	12	12	100	Not Normal	Normal	Gehan	0.0246	0.975	**No**	**Yes**
ARSENIC	55	55	100	12	12	100	Not Normal	Normal	WMW	1.46	0.0013	Yes	No
COBALT	55	55	100	12	12	100	Not Normal	Normal	WMW	1.54	9.94E-04	Yes	No
COPPER	55	55	100	12	12	100	Not Normal	Normal	WMW	6.98	0.00121	Yes	No
LEAD	55	55	100	12	12	100	Not Normal	Not Normal	WMW	11.6	0.854	**No**	**Yes**
MANGANESE	55	55	100	12	12	100	Not Normal	Approximate Normal	WMW	66.6	5.22E-04	Yes	No
MERCURY	33	35	94	12	12	100	Not Normal	Approximate Normal	Gehan	0.047	5.24E-06	Yes	No
NICKEL	55	55	100	12	12	100	Not Normal	Normal	WMW	3.25	0.00185	Yes	No
VANADIUM	55	55	100	12	12	100	Not Normal	Normal	WMW	6.46	3.58E-06	Yes	No
TOTAL HMW PAHs	41	41	100	12	12	100	Not Normal	Not Normal	WMW	1.69	2.57E-05	Yes	No
TOTAL LMW PAHs	38	41	93	11	12	92	Not Normal	Not Normal	Gehan	0.256	8.88E-05	Yes	No

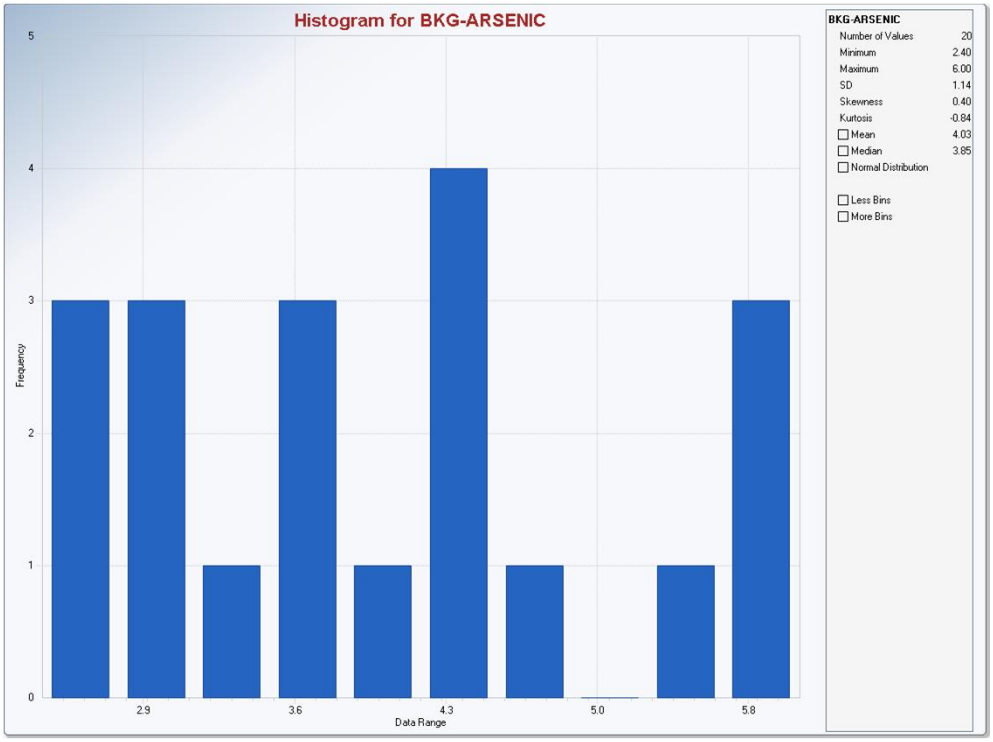
Notes:
COPC - Chemical of Potential Concern.
FOD - Frequency of Detection.
HMW - High Molecular Weight.
LMW - Low Molecular Weight.
PAH - Polycyclic Aromatic Hydrocarbon.
S - Substantial Difference.
WMW - Wilcoxon-Mann-Whitney test.

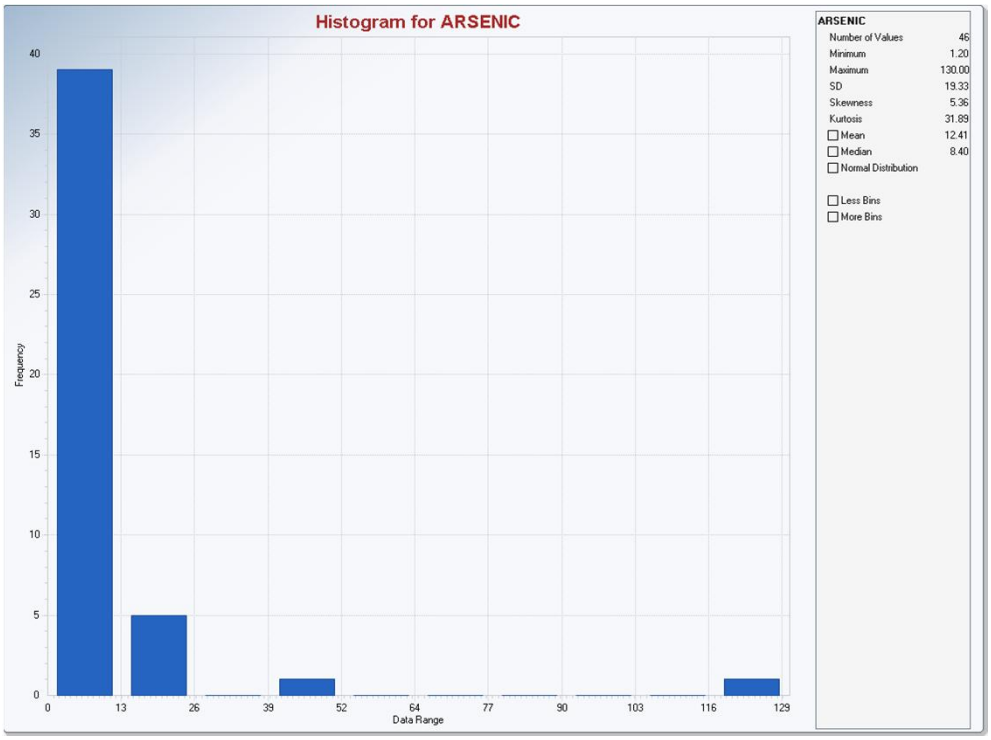
[a] The distribution of the Site and Background datasets were determined using Goodness of Fit Statistics (significance level 0.05) in ProUCL 5.0. A minimum of five detected samples is required for determining the distribution in ProUCL.
[b] A two-sample hypothesis test was conducted. A t-test was used when both Site and Background datasets are normally distributed. If either datasets were not normally distributed, then the WMW test or the Gehan test was used depending on if detection limits were equal for all non-detected samples (WMW) or if they were not equal (Gehan).
The null hypothesis is "Mean/Median of Site Sediment > Background Sediment + S". The alternative hypothesis is "Mean/Median of Site Sediment <= Background Sediment + S".
If the p-value of the two-sample hypothesis test is < alpha (0.05), then the null hypothesis is rejected.
[c] The value of S is the standard deviation of the Background data set. This value was added to the value of each Background sediment sample.

Attachment 1

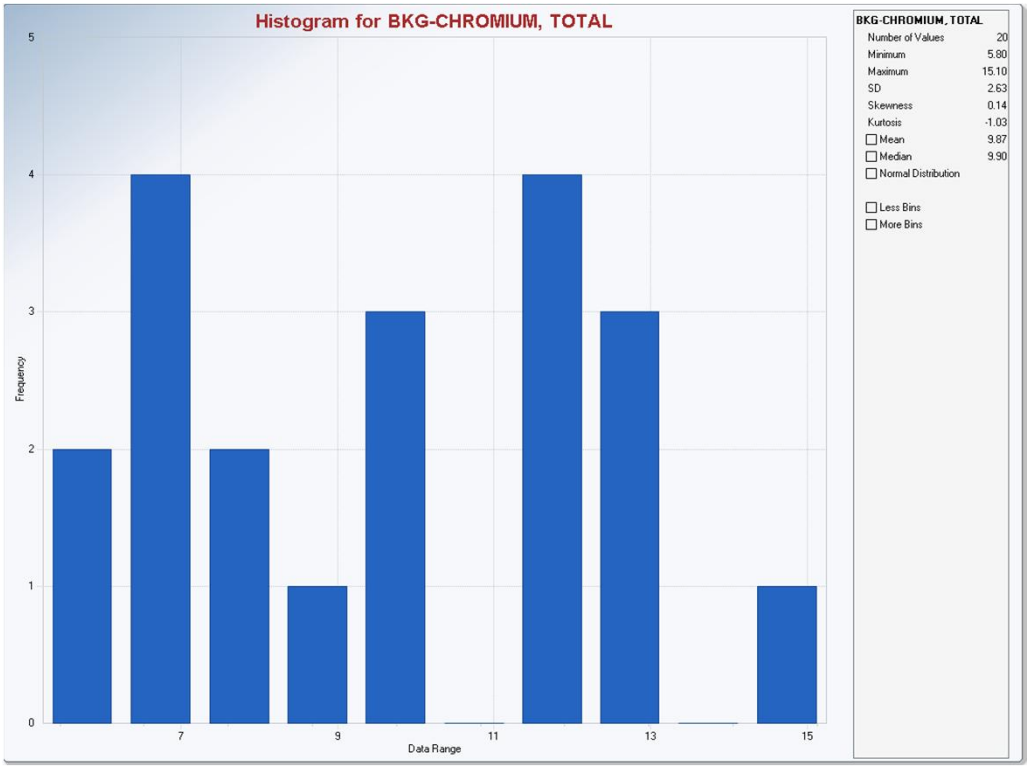
Histograms and Quantile-Quantile Plots

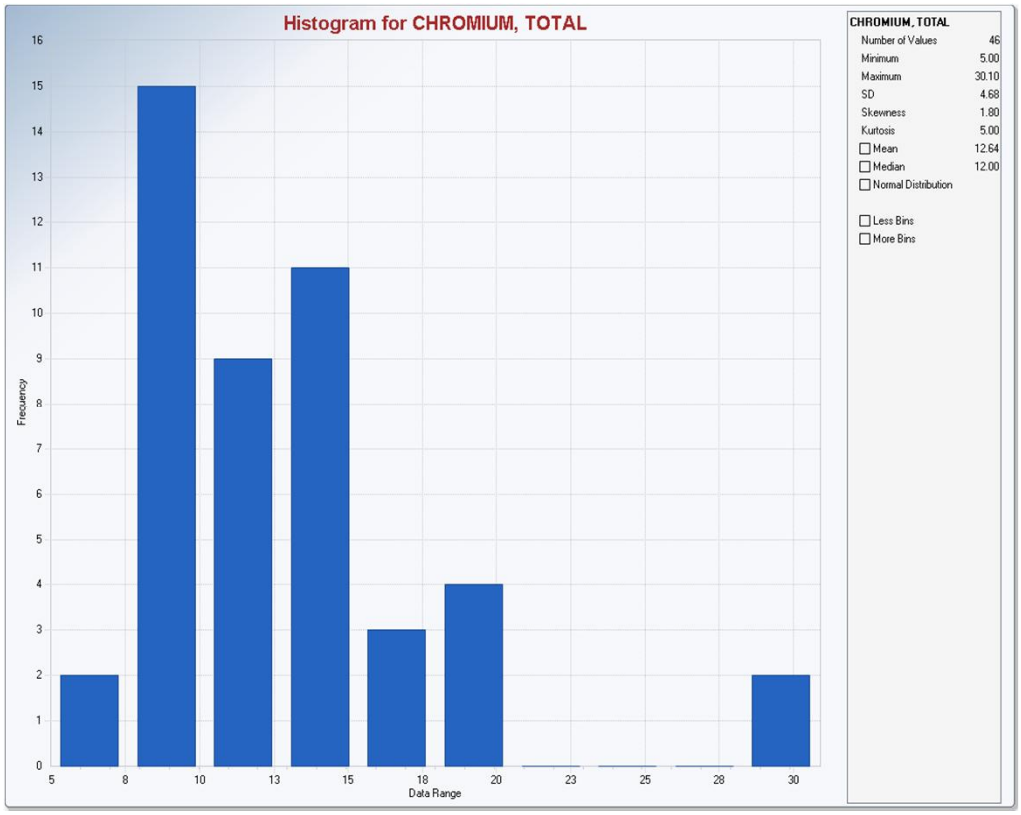
Comparing Site and Background Surface Soils



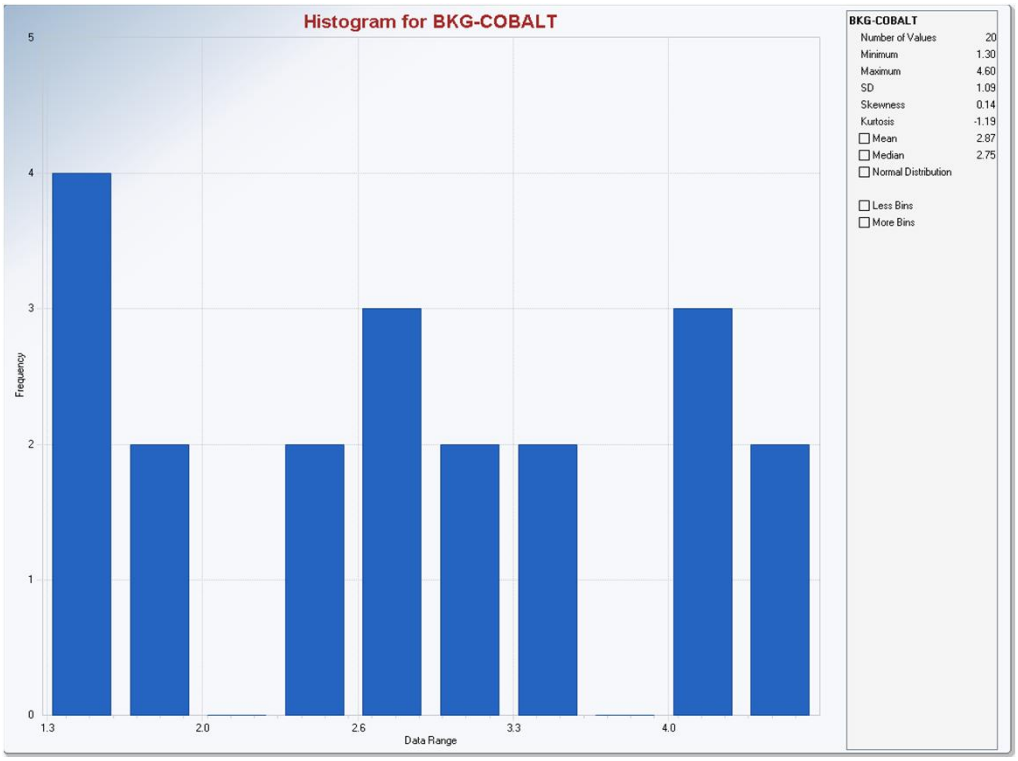


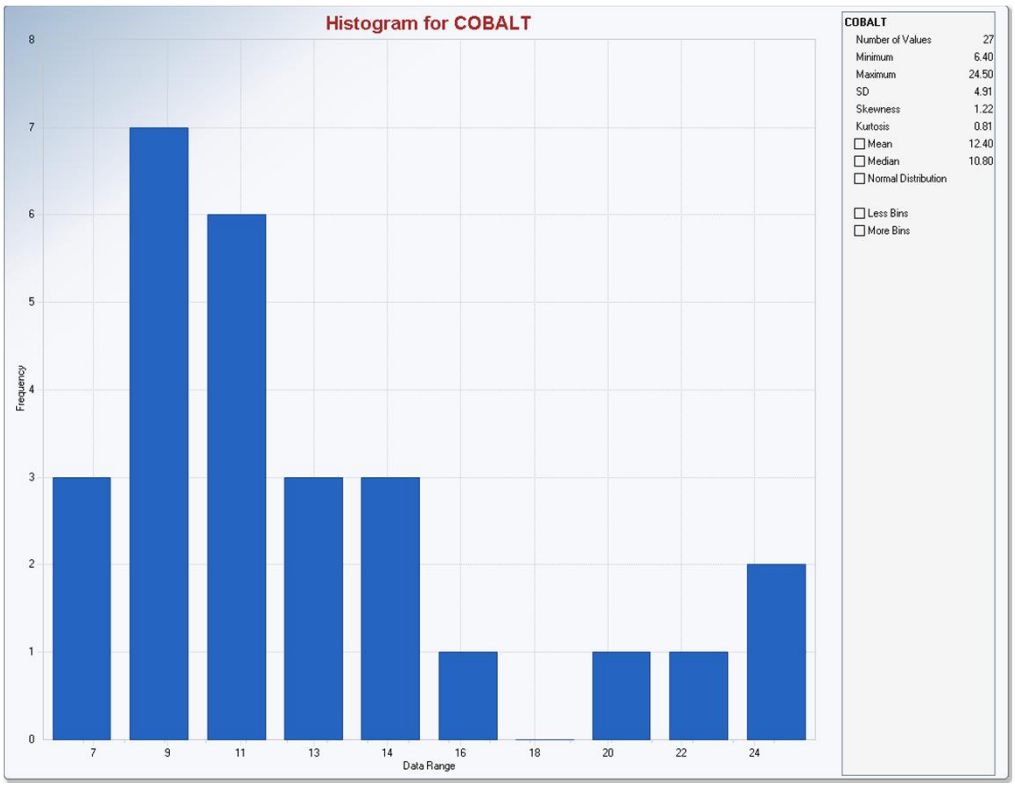
Histograms of background concentrations are presented on top and Site concentrations are presented on bottom graphs.



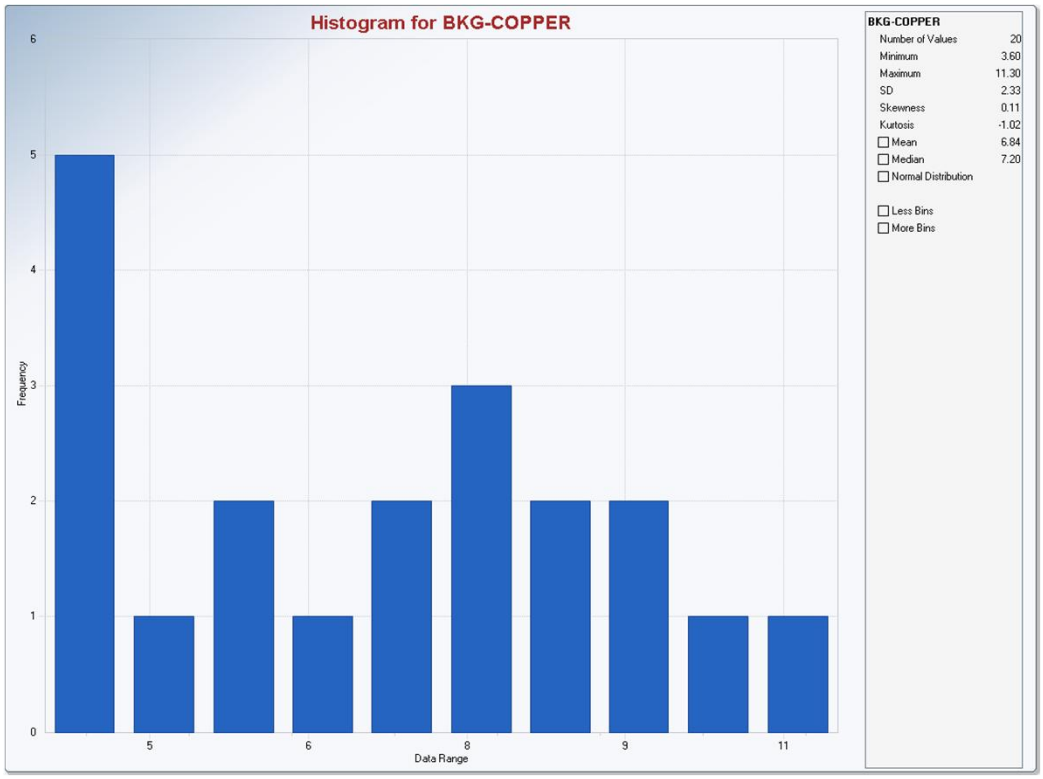


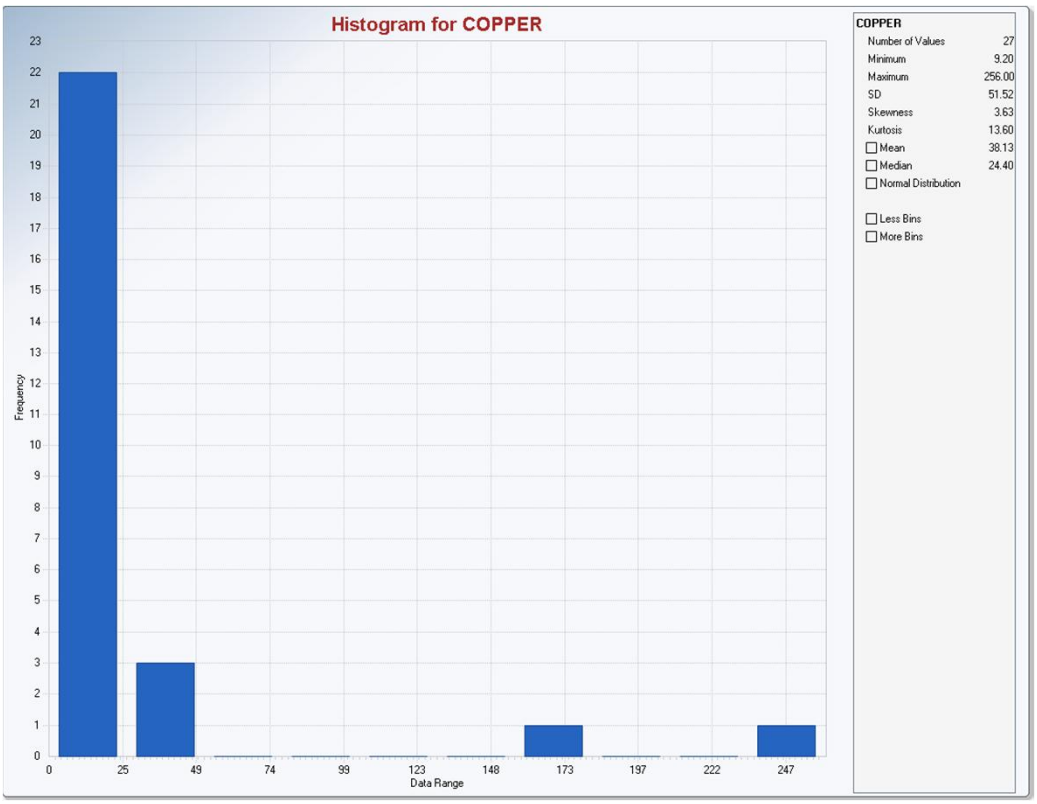
Histograms of background concentrations are presented on top and Site concentrations are presented on bottom graphs.



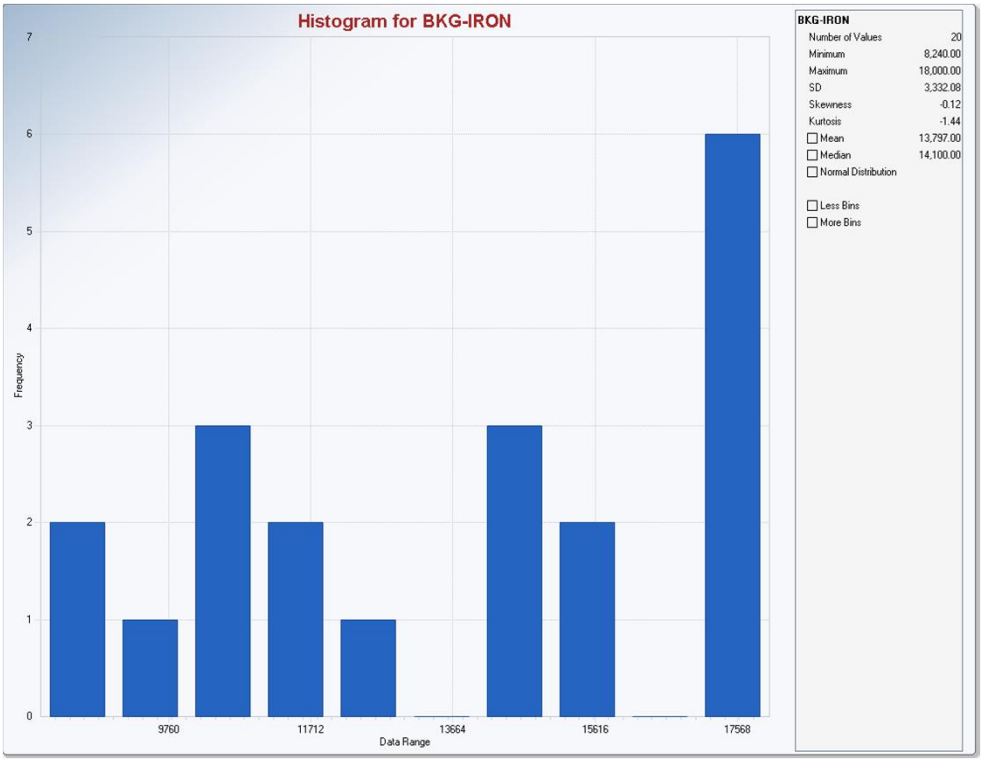


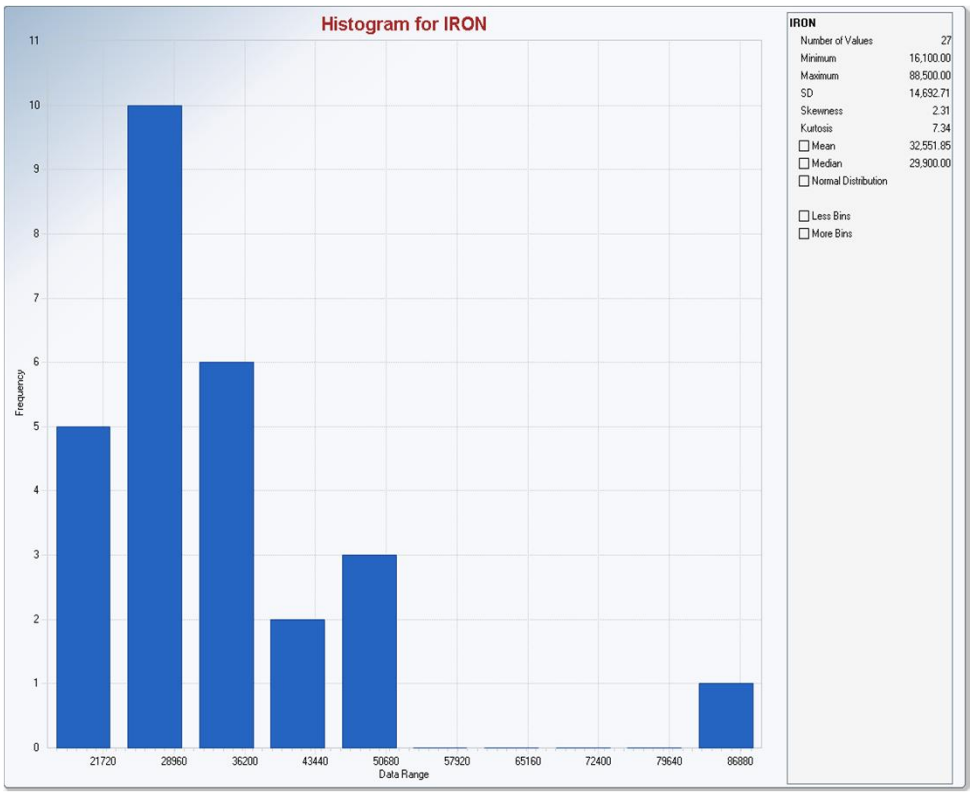
Histograms of background concentrations are presented on top and Site concentrations are presented on bottom graphs.



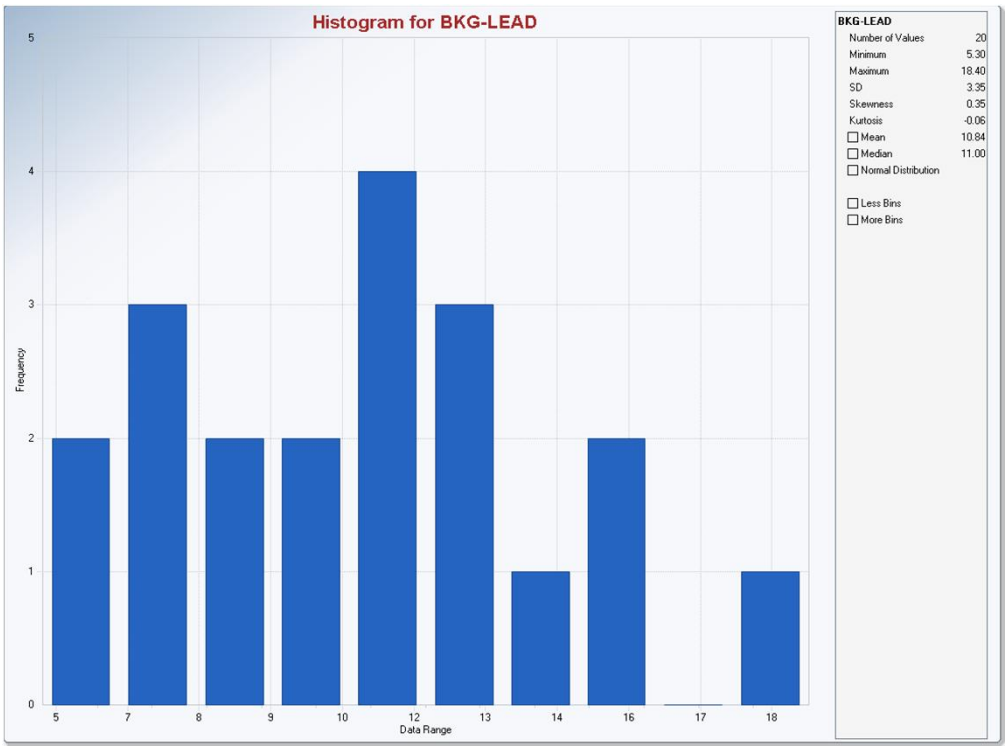


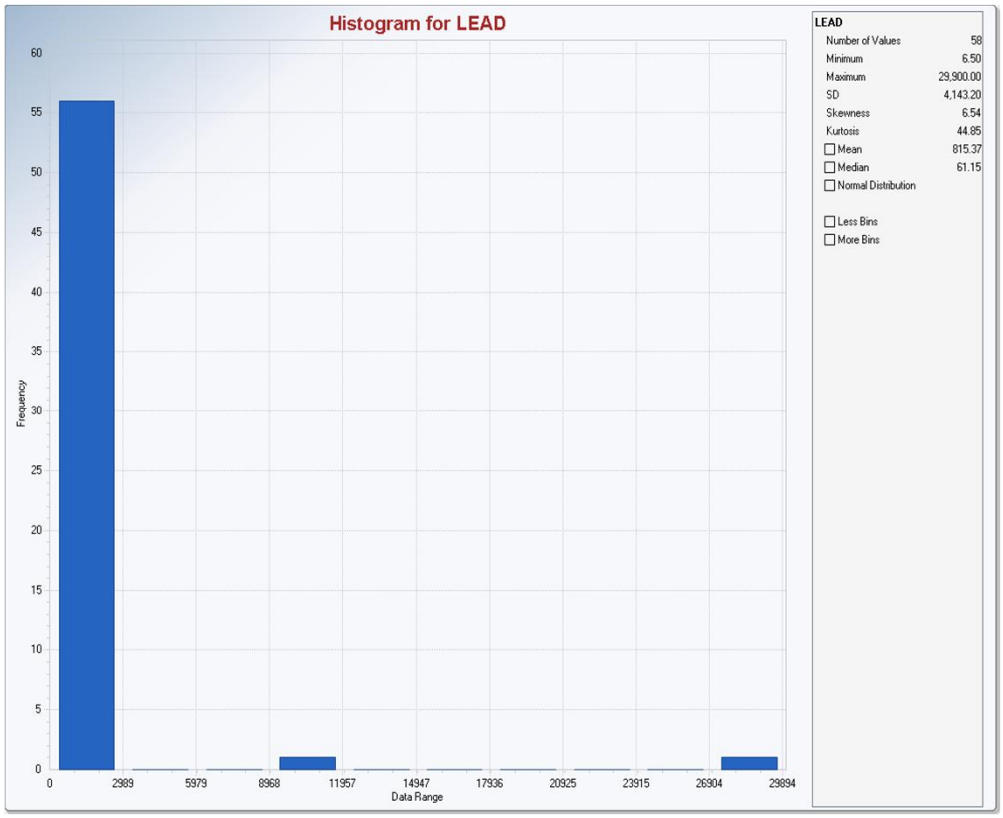
Histograms of background concentrations are presented on top and Site concentrations are presented on bottom graphs.



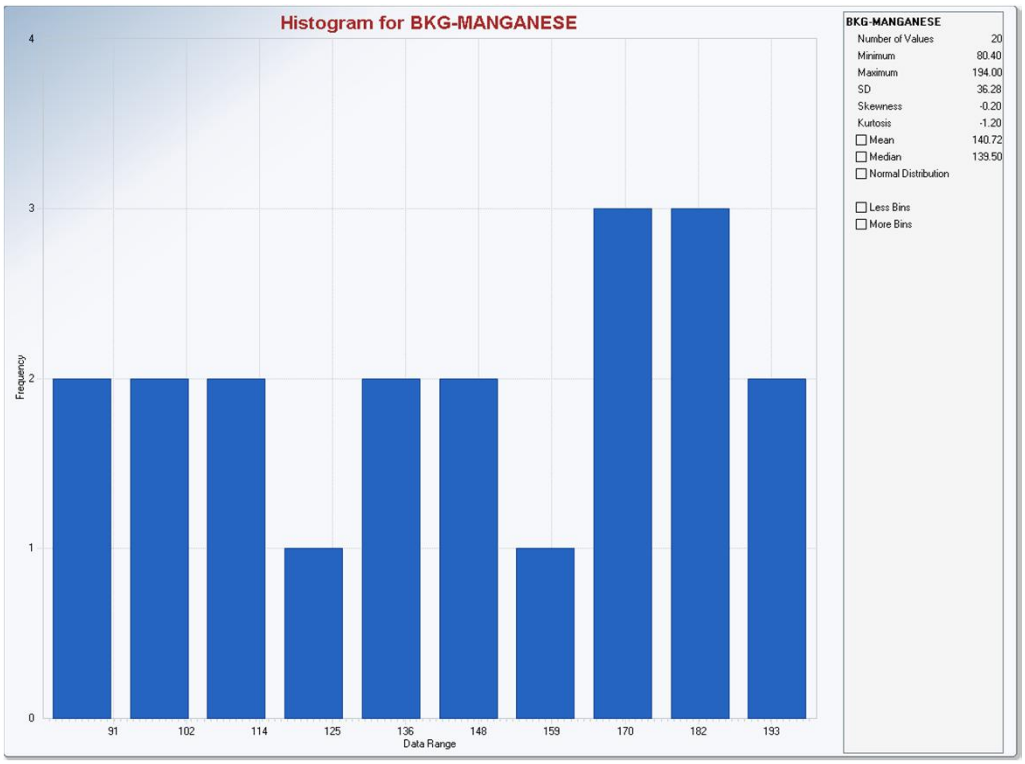


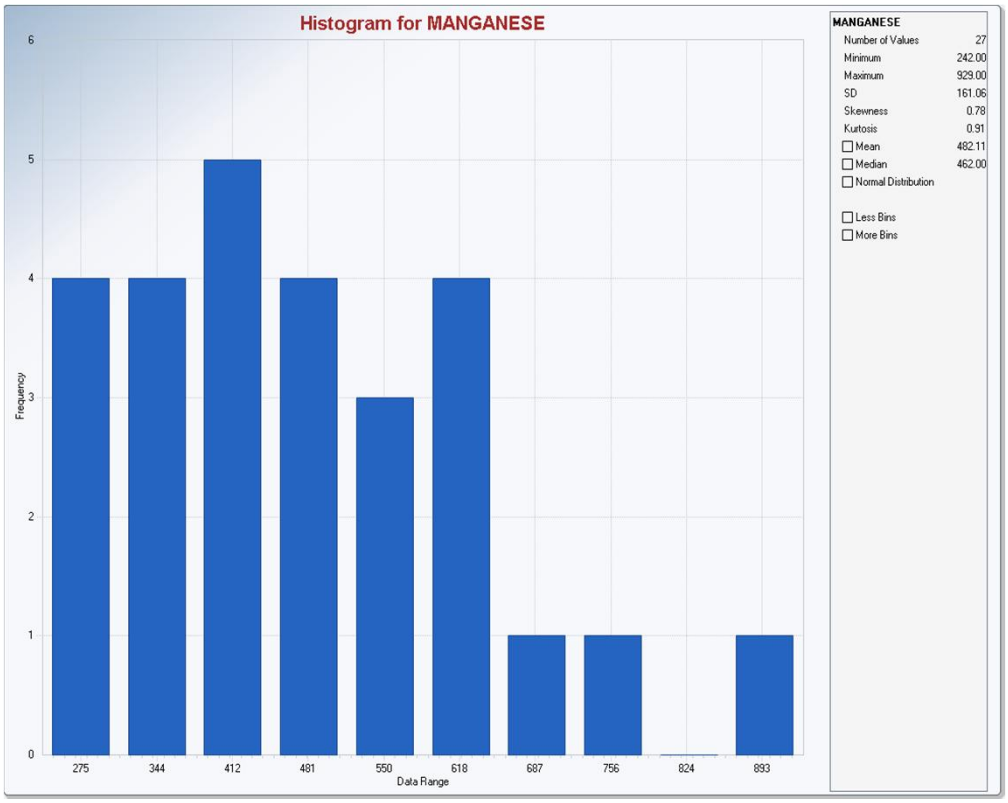
Histograms of background concentrations are presented on top and Site concentrations are presented on bottom graphs.



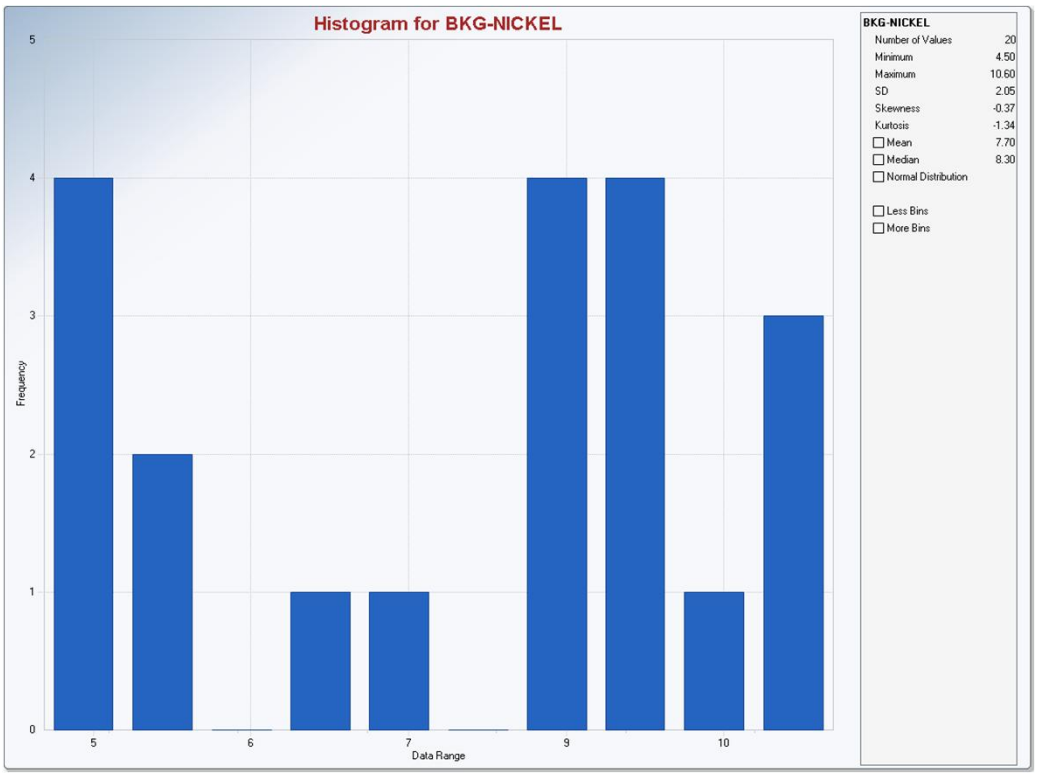


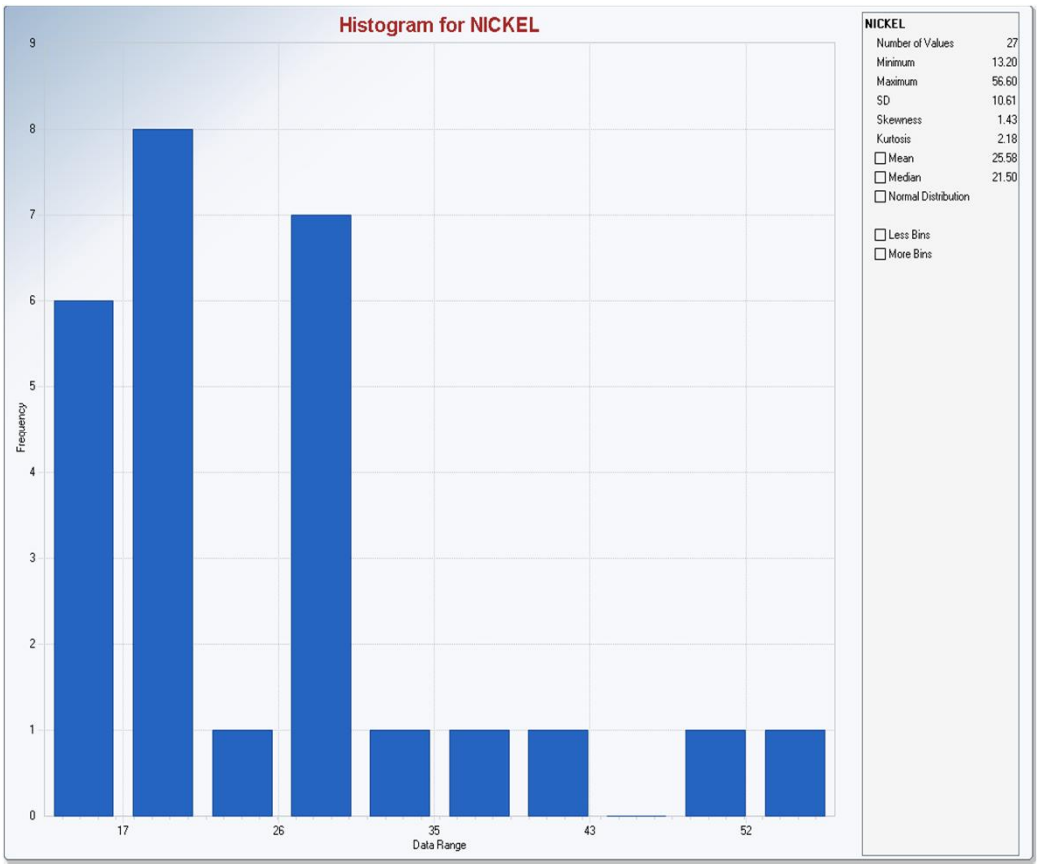
Histograms of background concentrations are presented on top and Site concentrations are presented on bottom graphs.



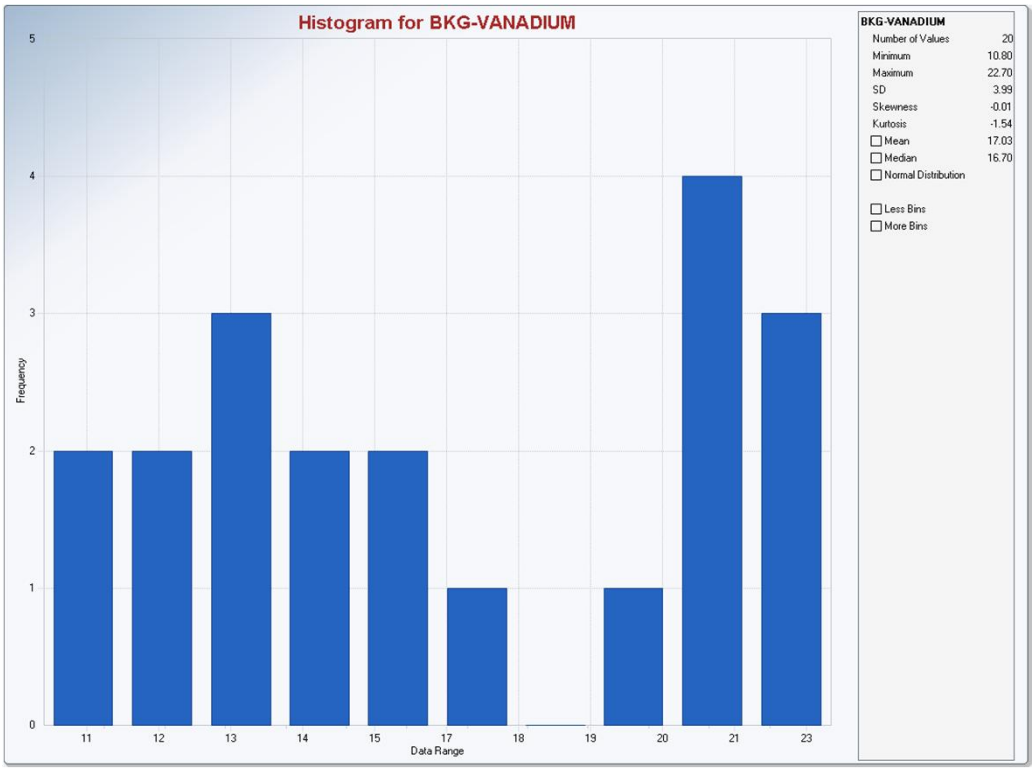


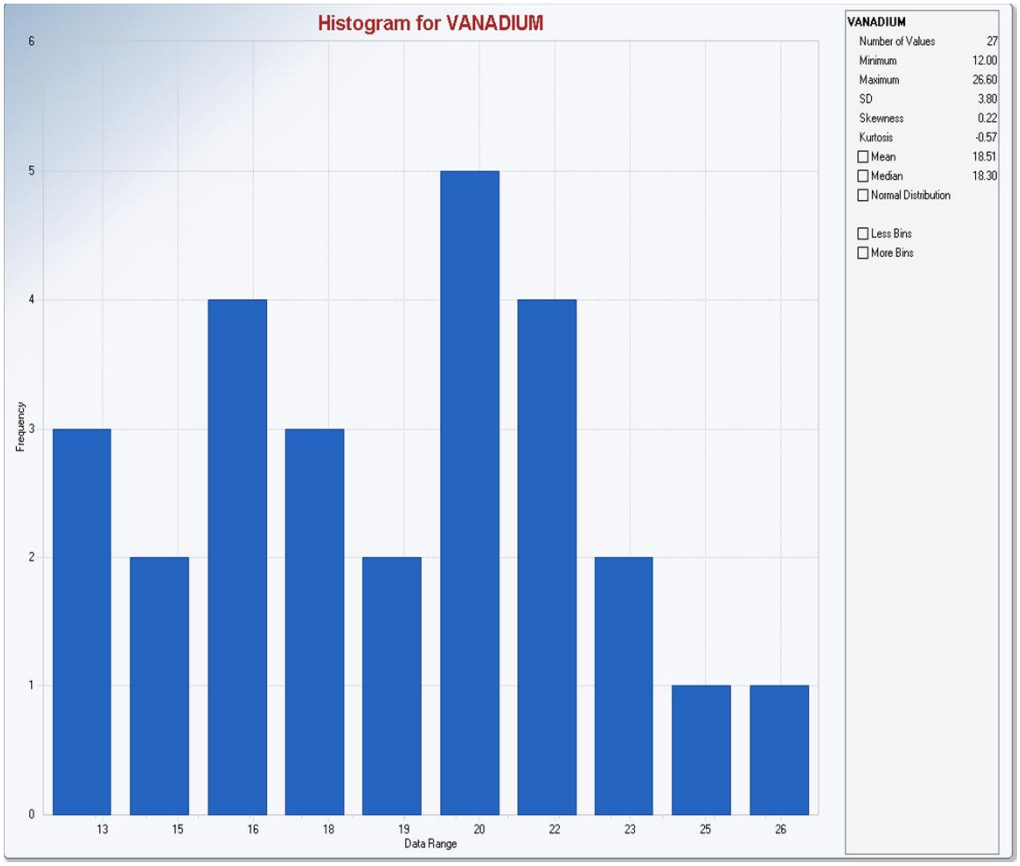
Histograms of background concentrations are presented on top and Site concentrations are presented on bottom graphs.



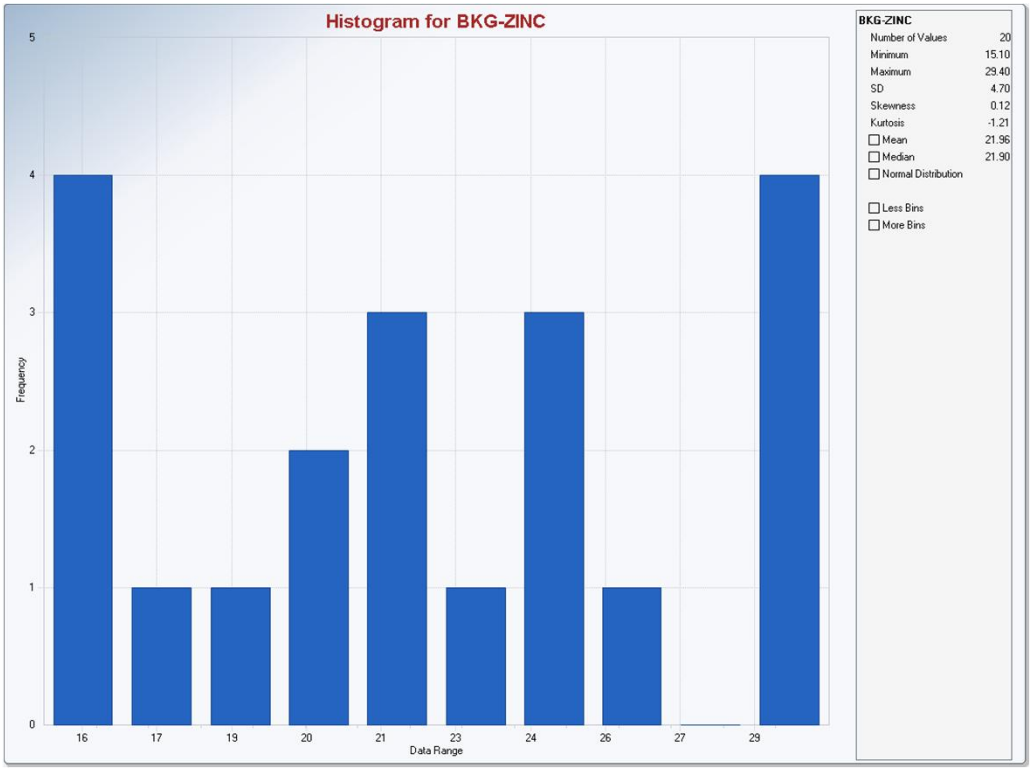


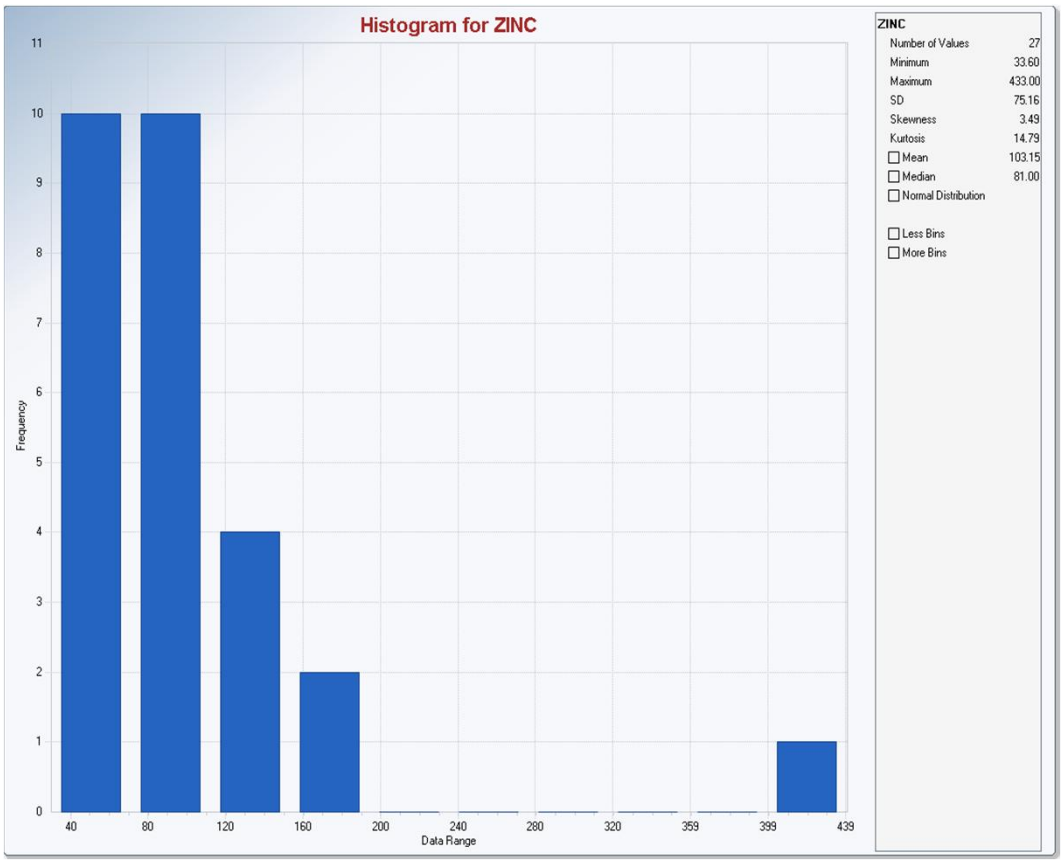
Histograms of background concentrations are presented on top and Site concentrations are presented on bottom graphs.



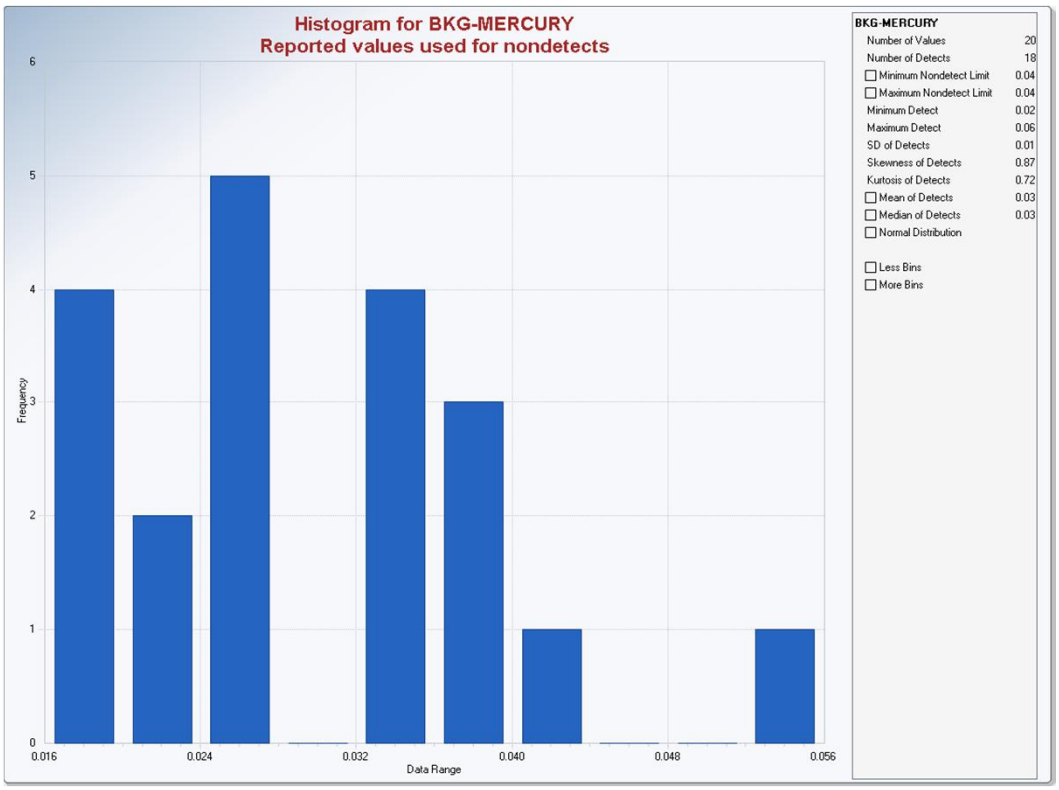


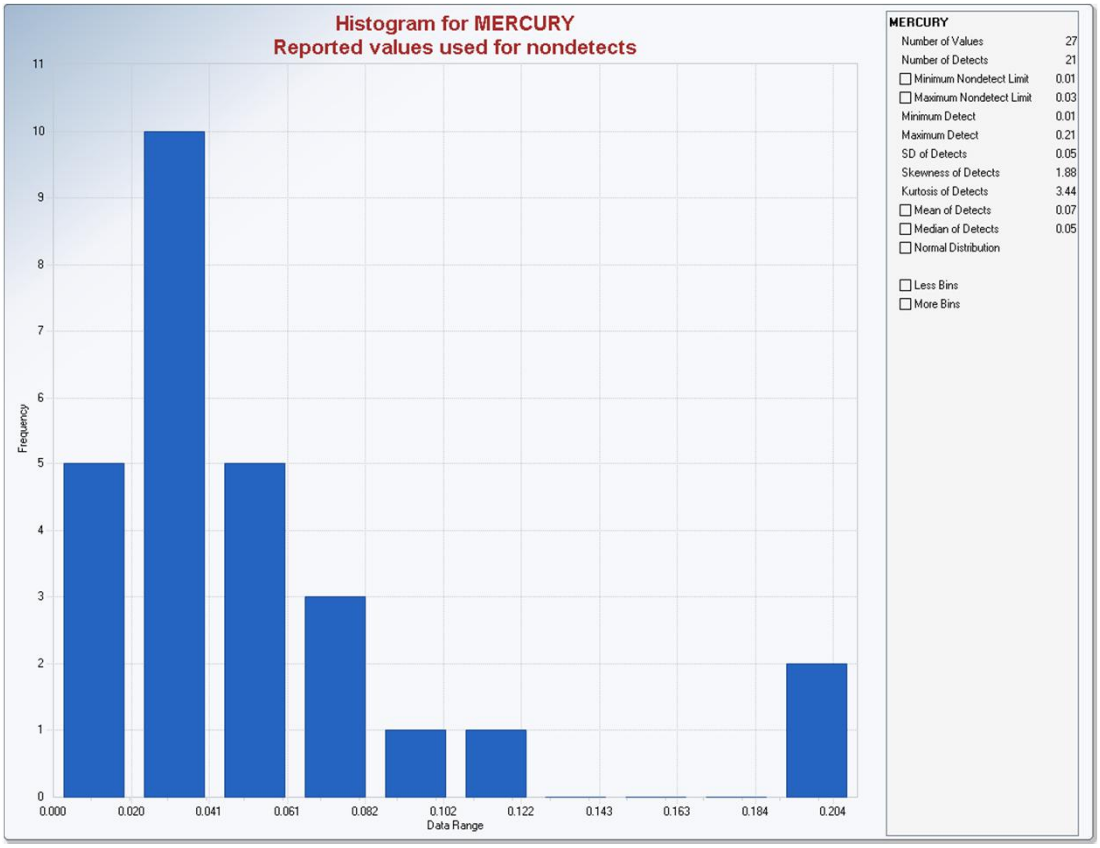
Histograms of background concentrations are presented on top and Site concentrations are presented on bottom graphs.



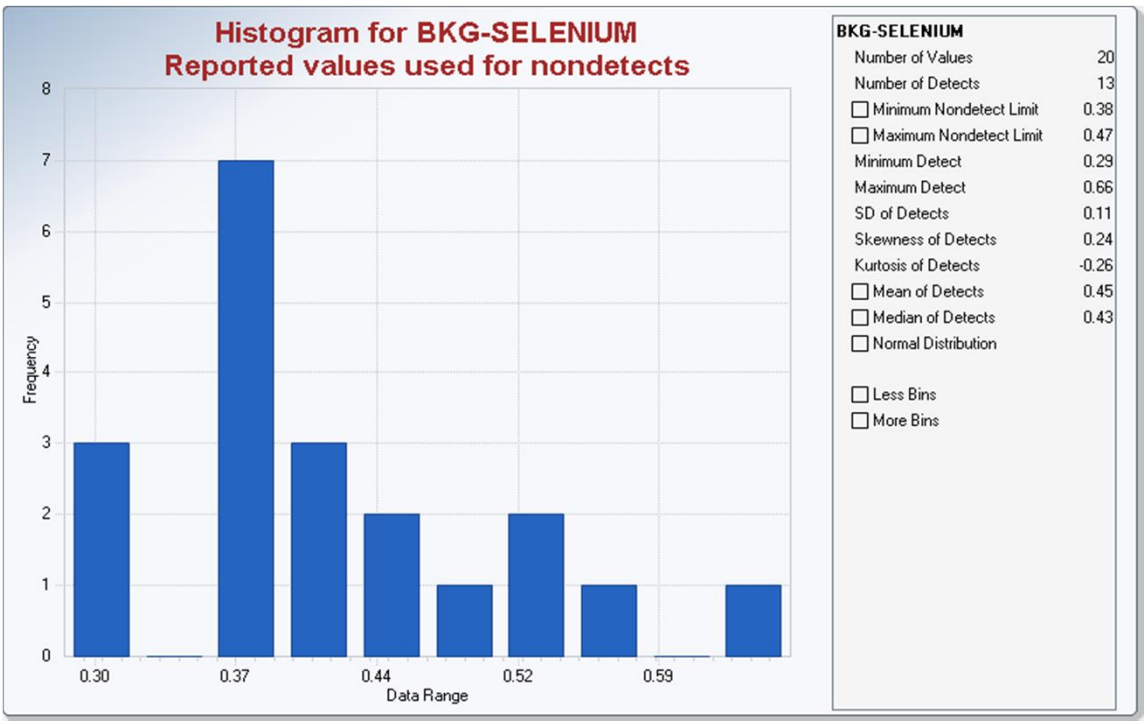


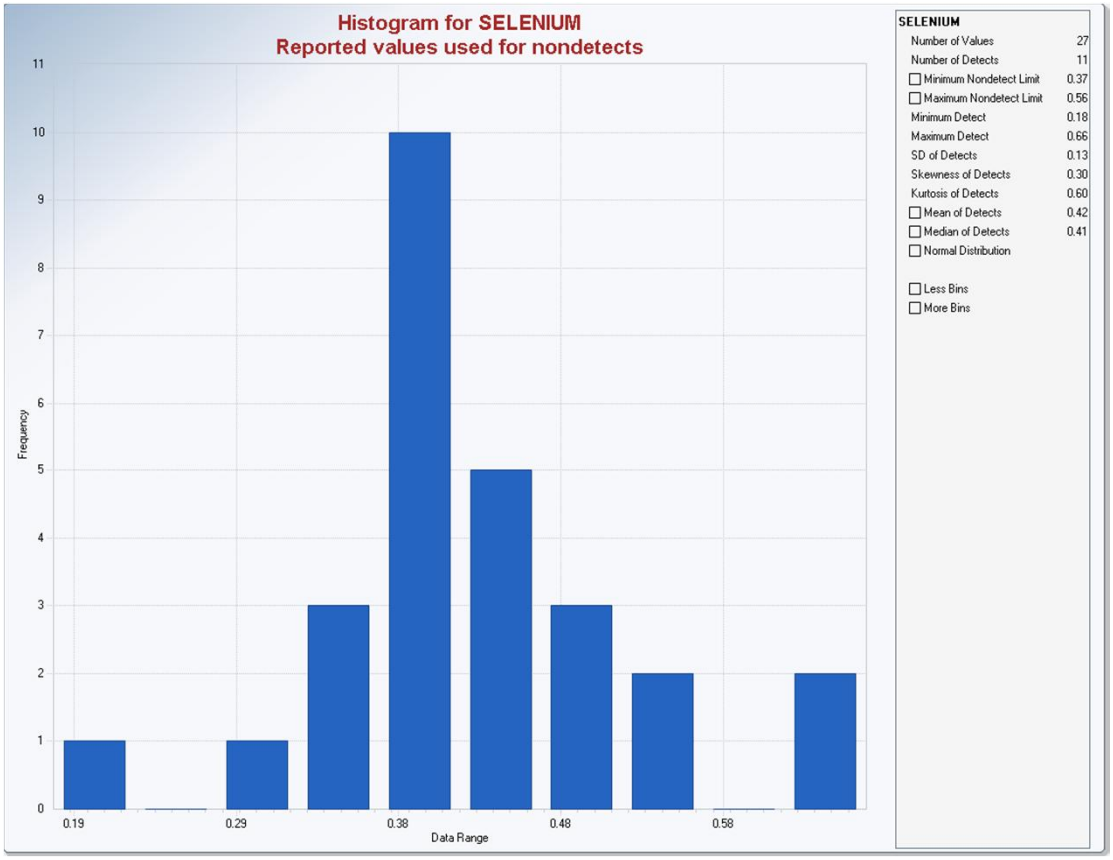
Histograms of background concentrations are presented on top and Site concentrations are presented on bottom graphs.



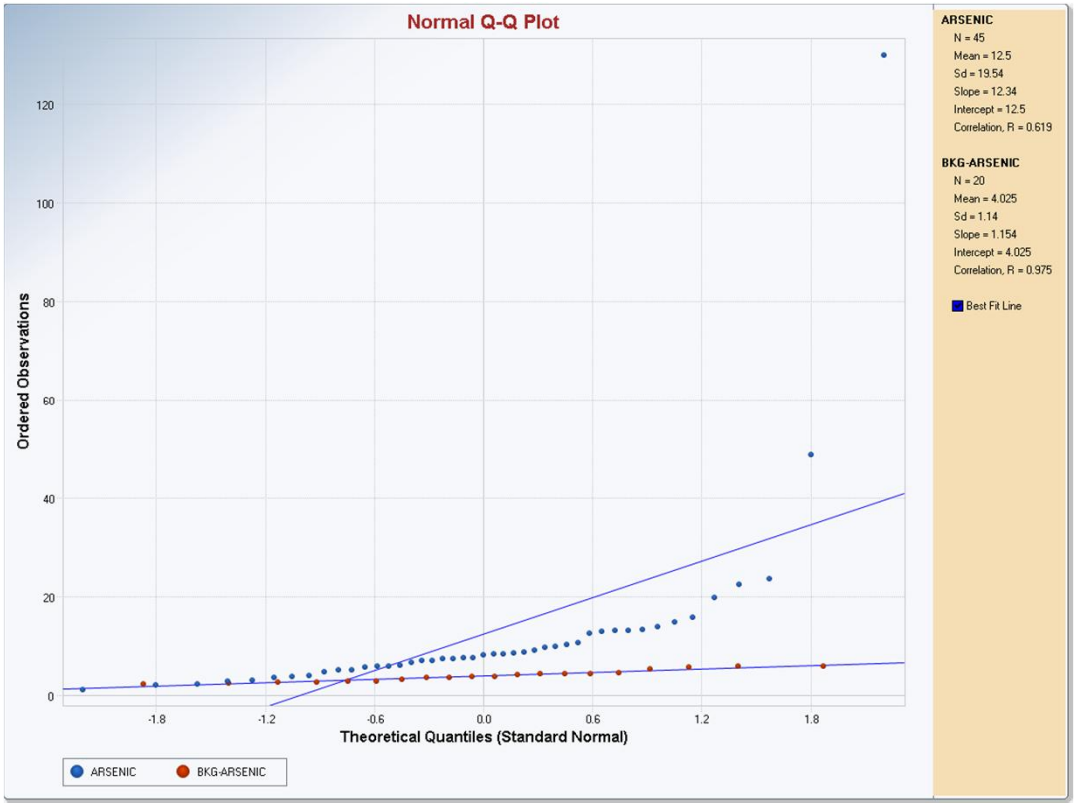


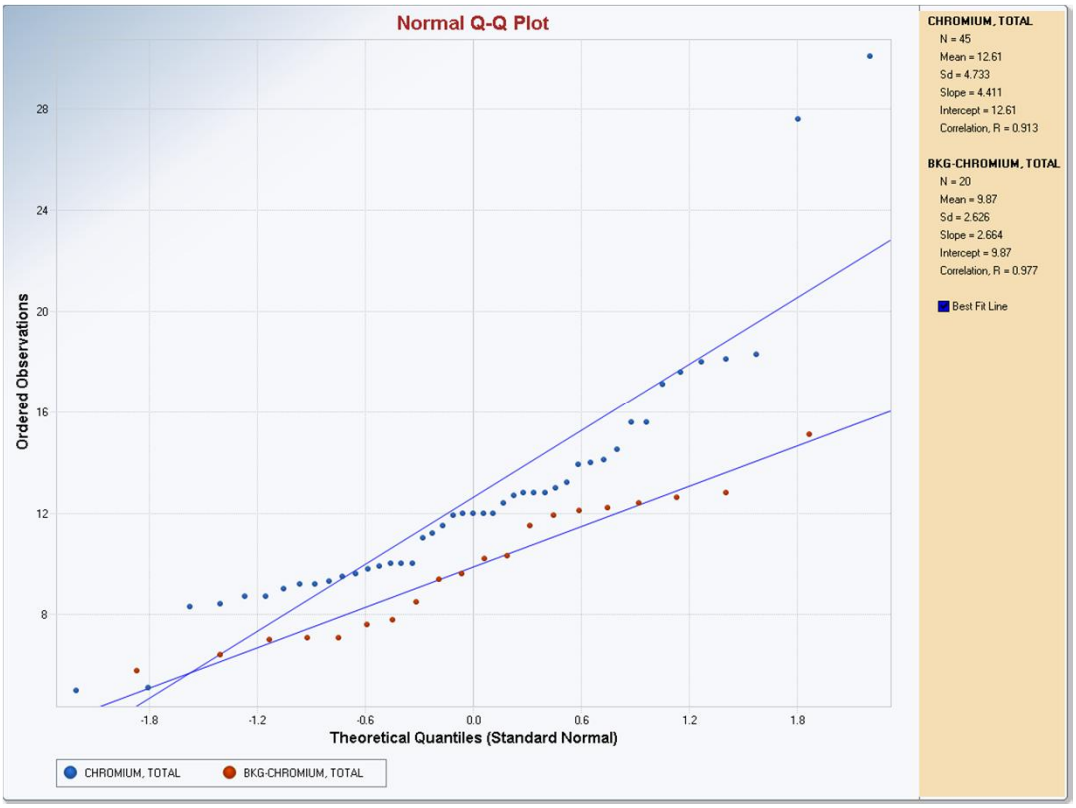
Histograms of background concentrations are presented on top and Site concentrations are presented on bottom graphs.



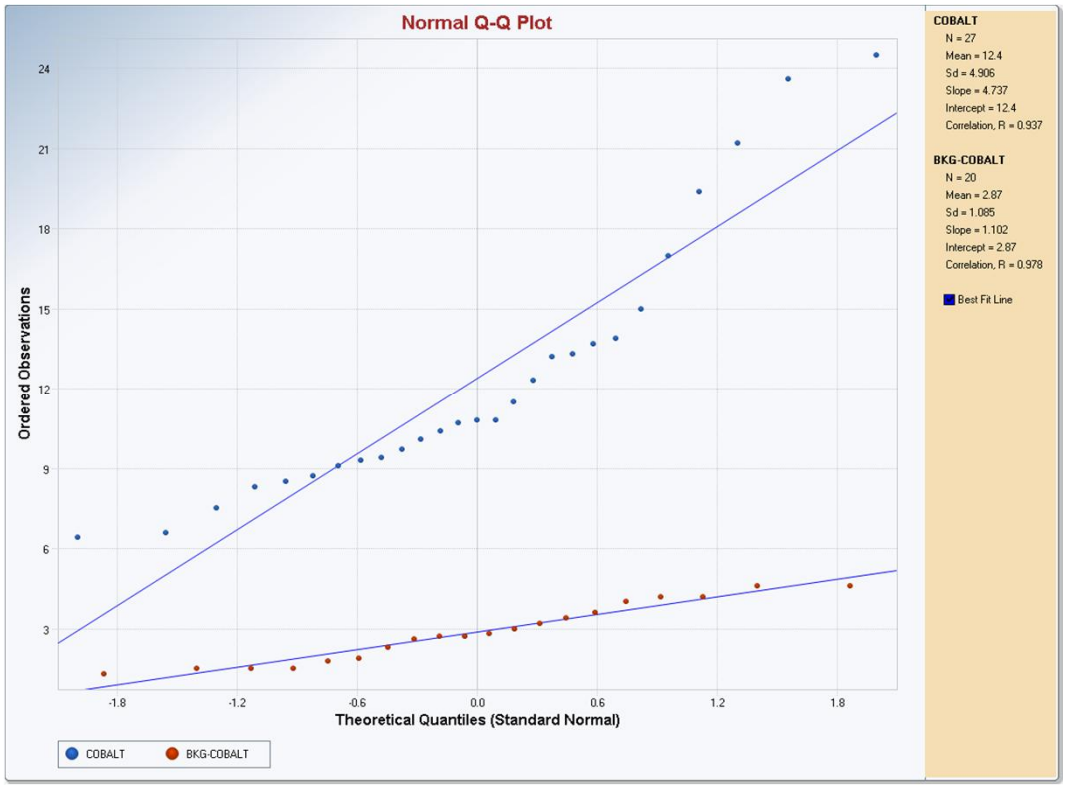


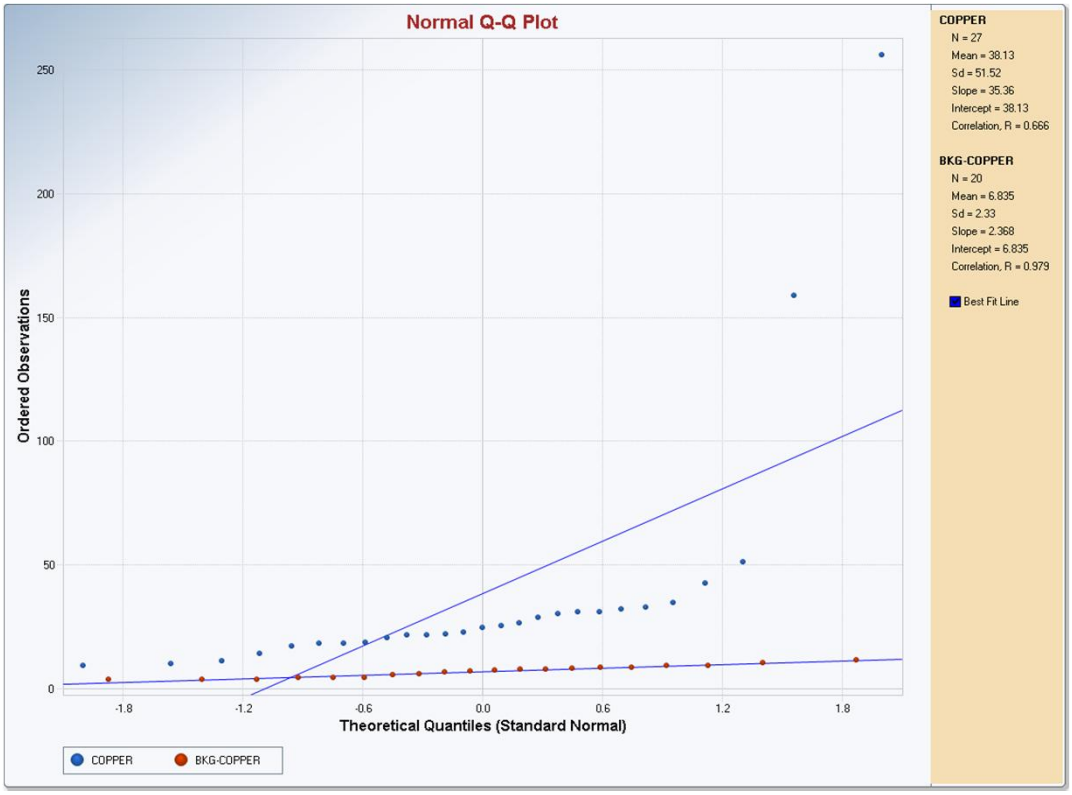
Histograms of background concentrations are presented on top and Site concentrations are presented on bottom graphs.





BKG - Background





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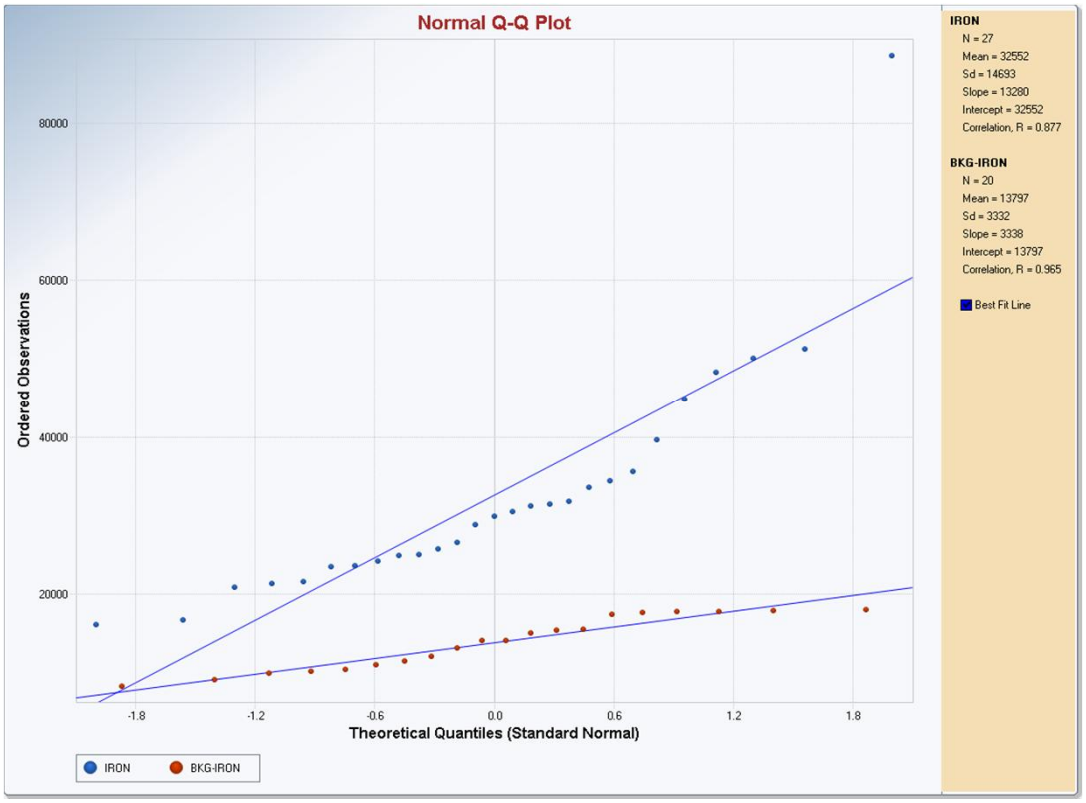

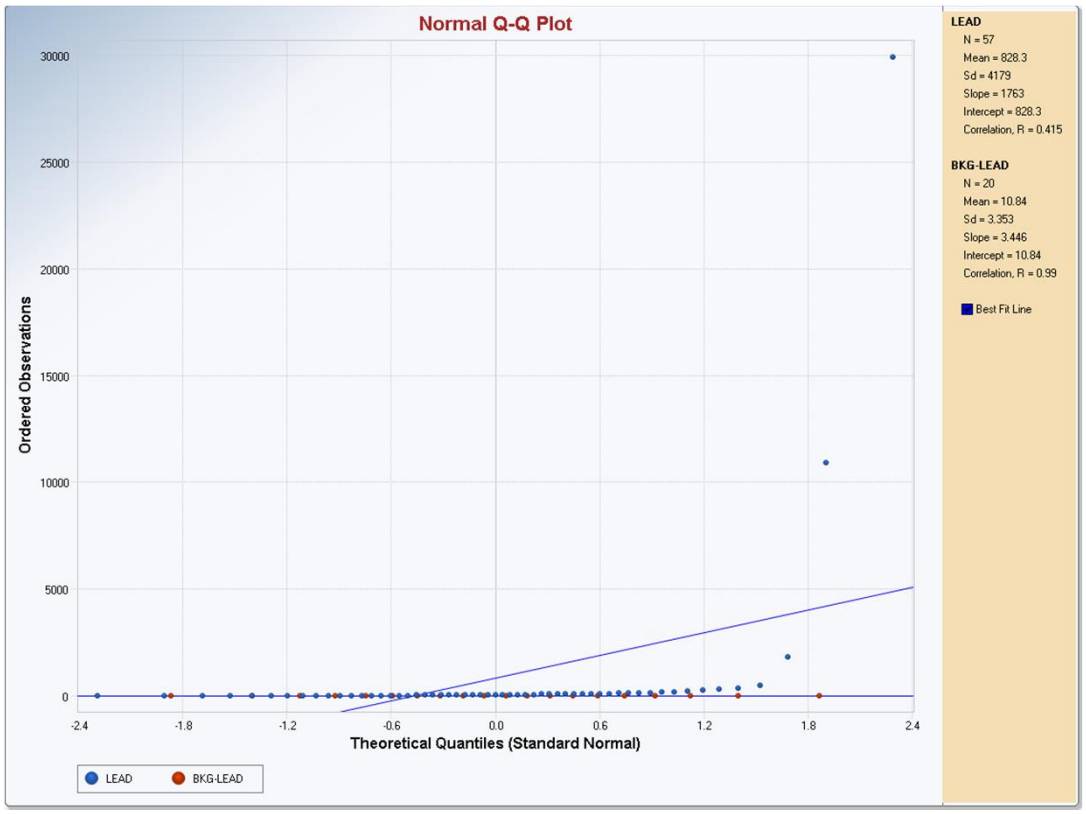

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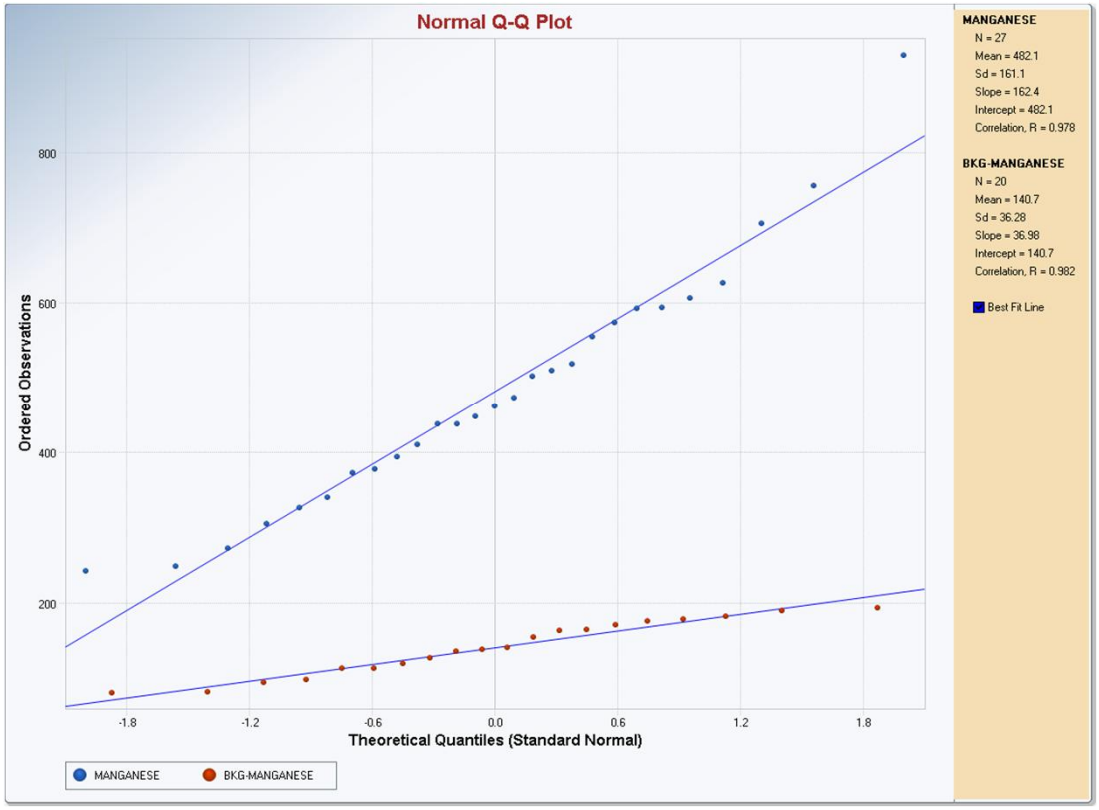

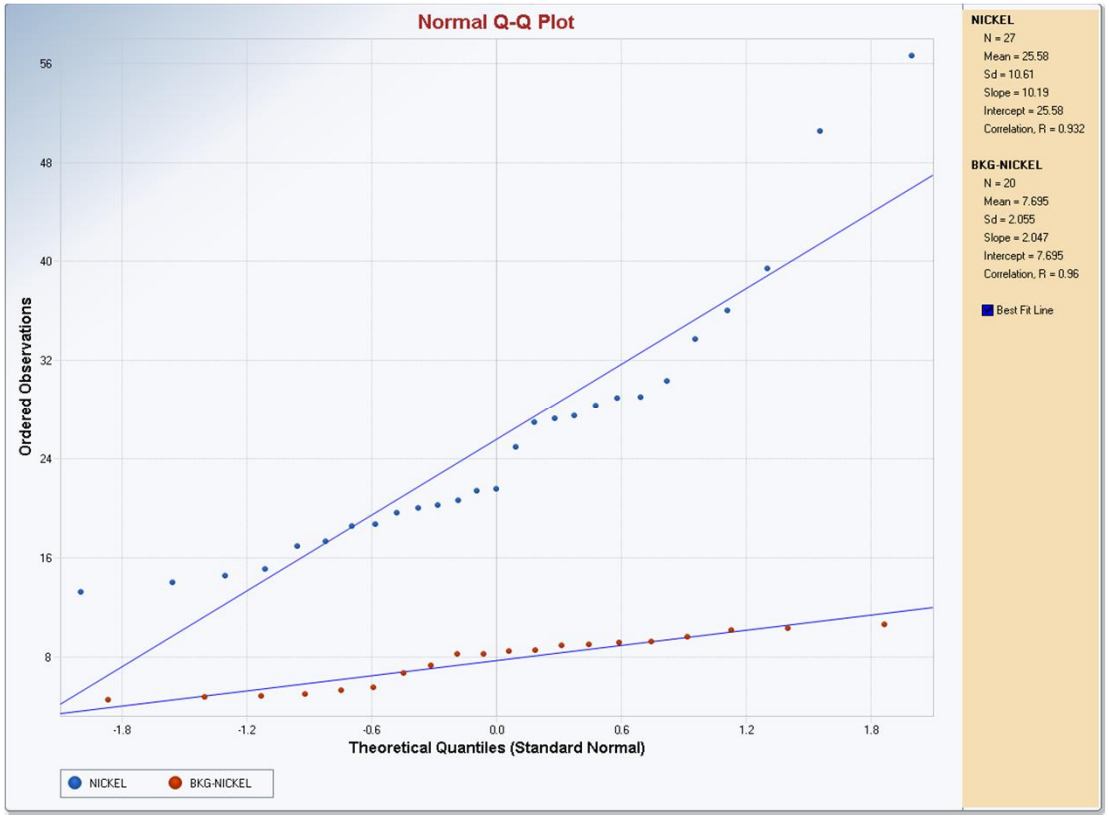

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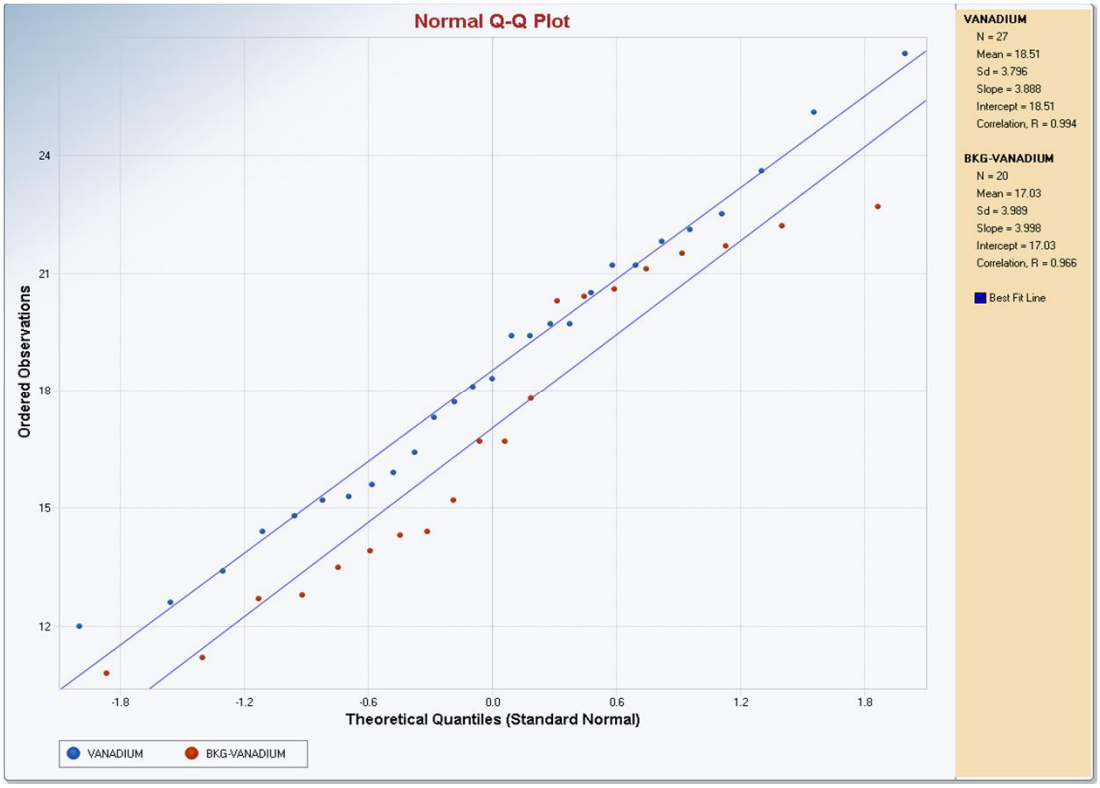

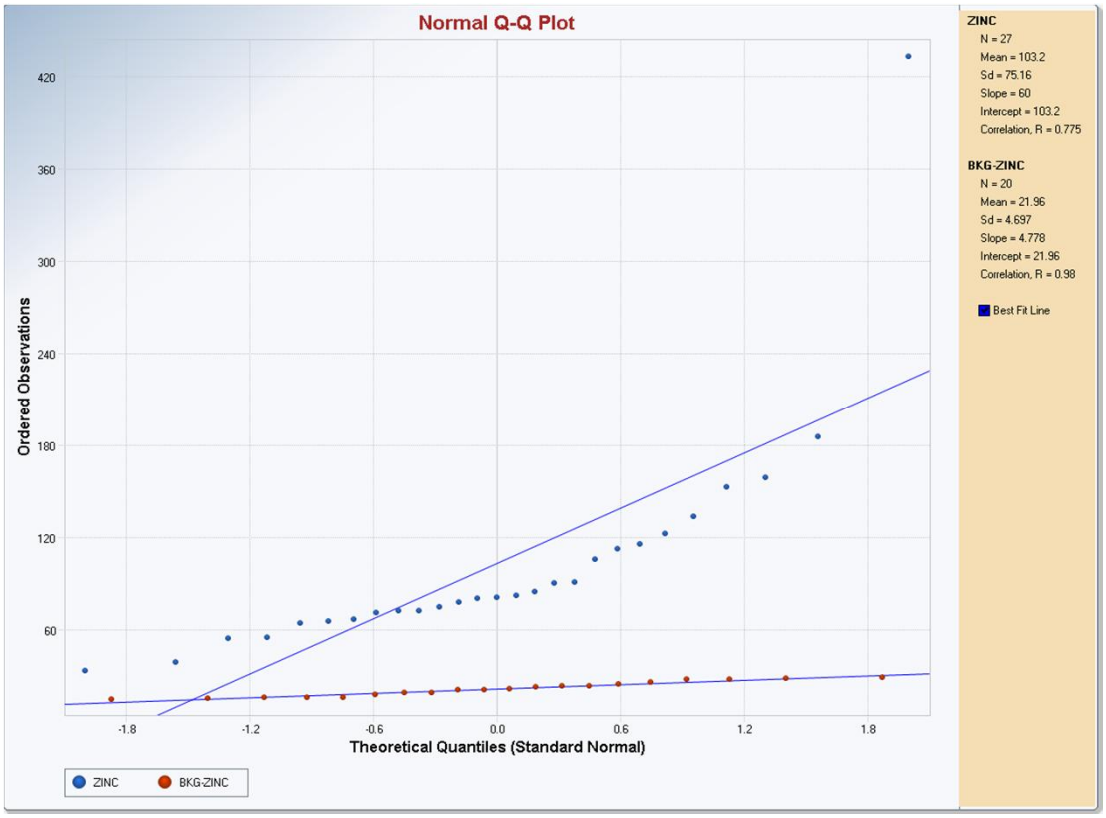

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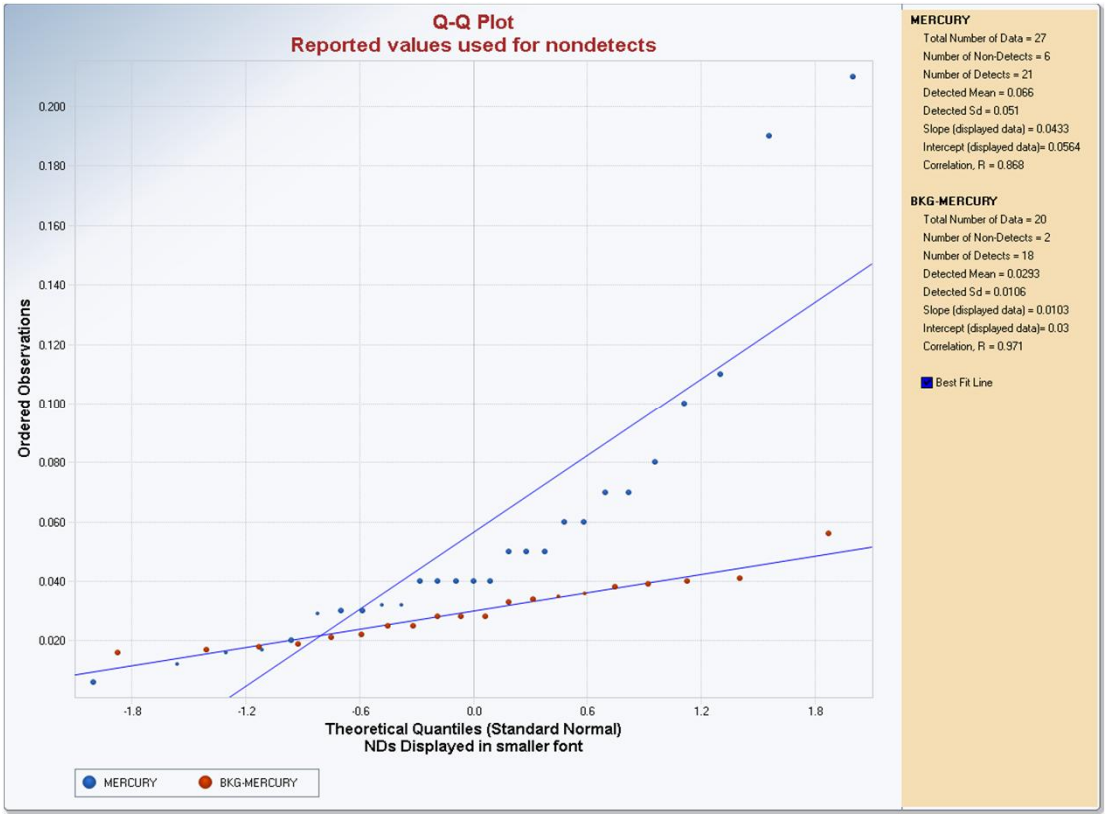
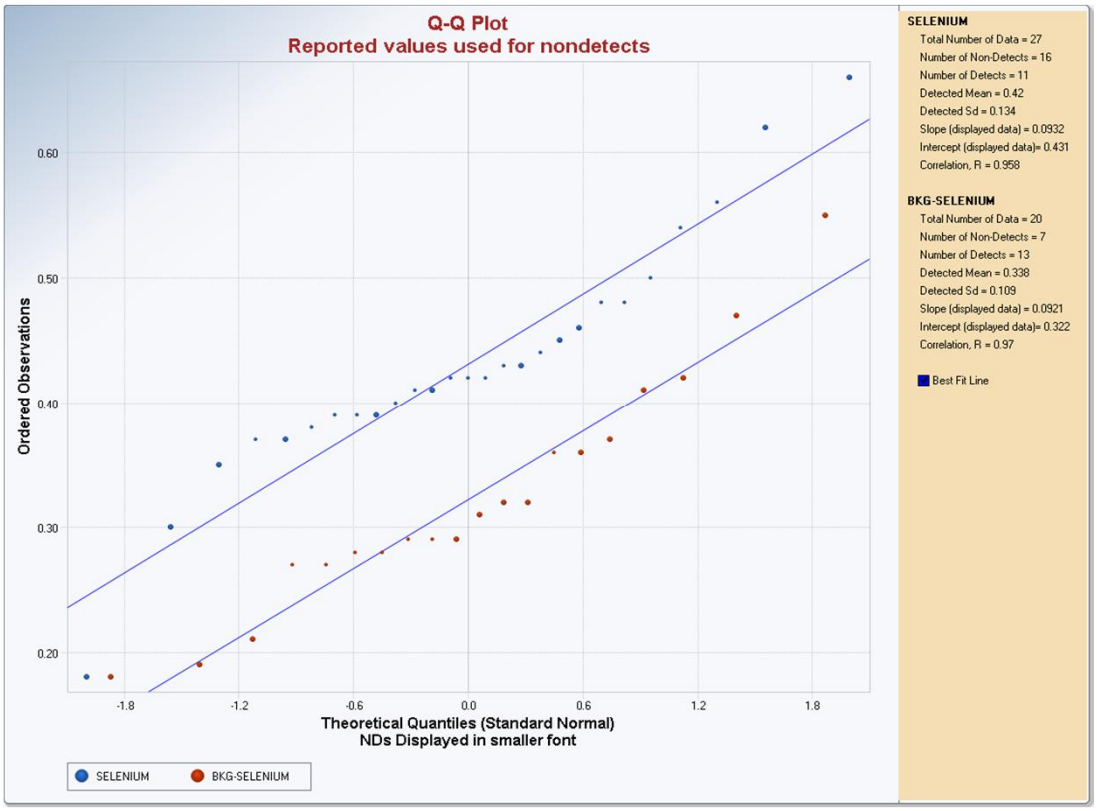


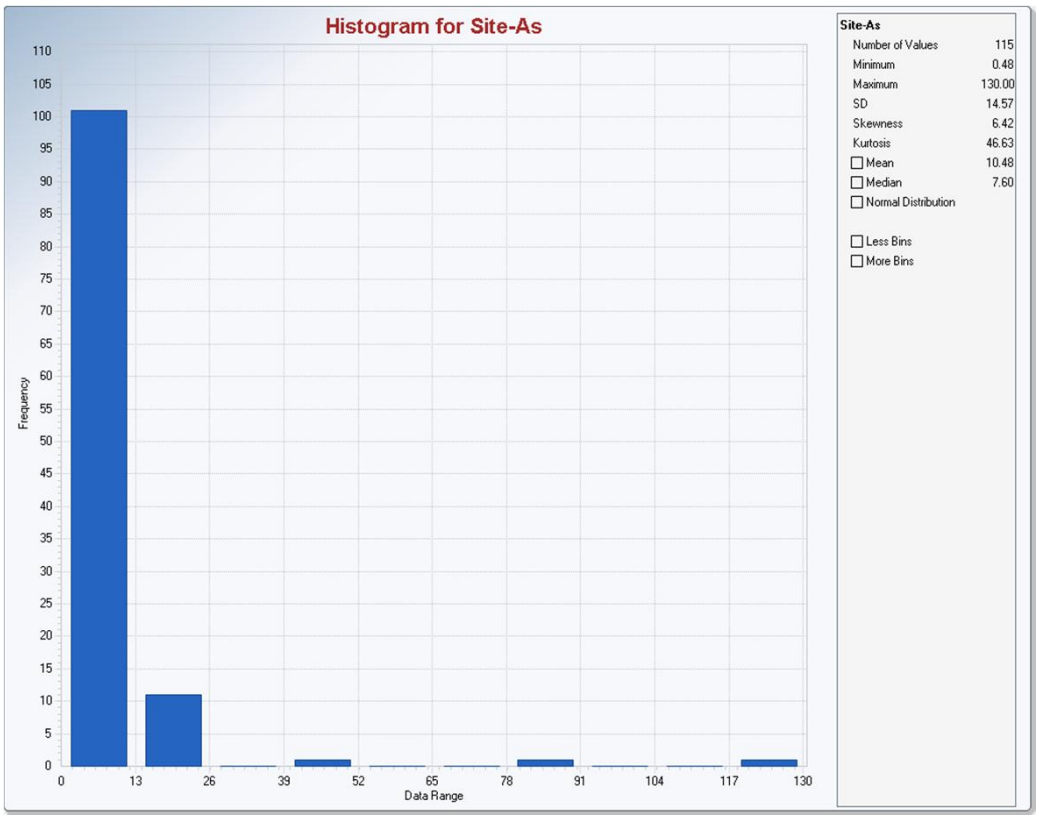


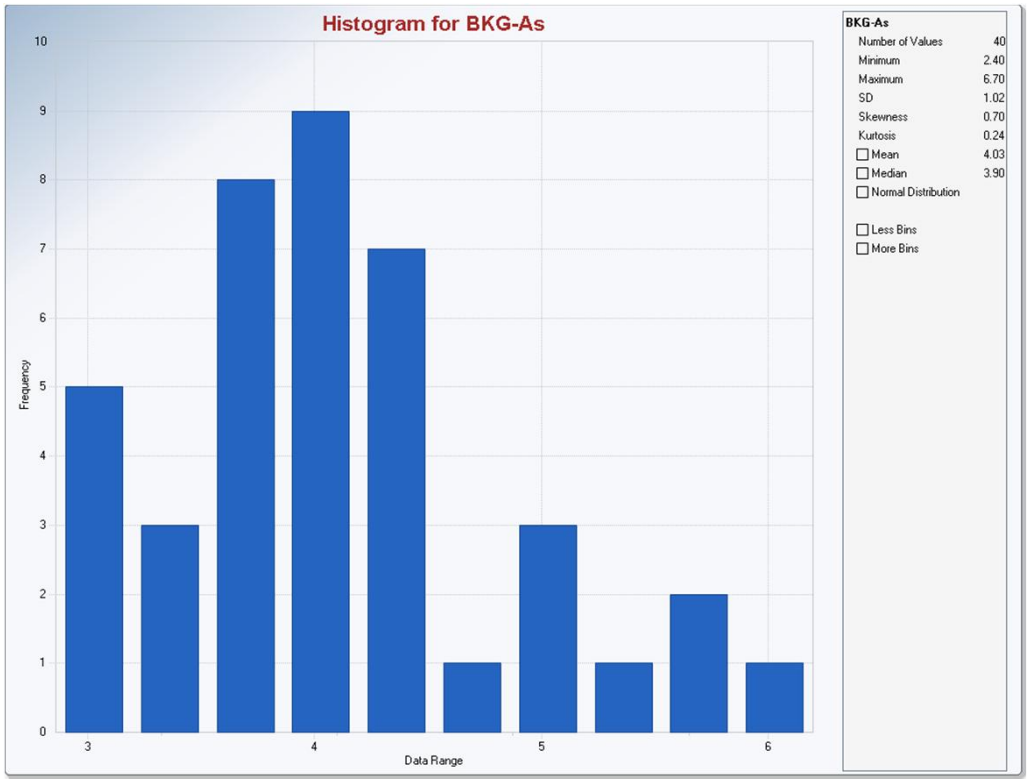
BKG - Background

Attachment 2

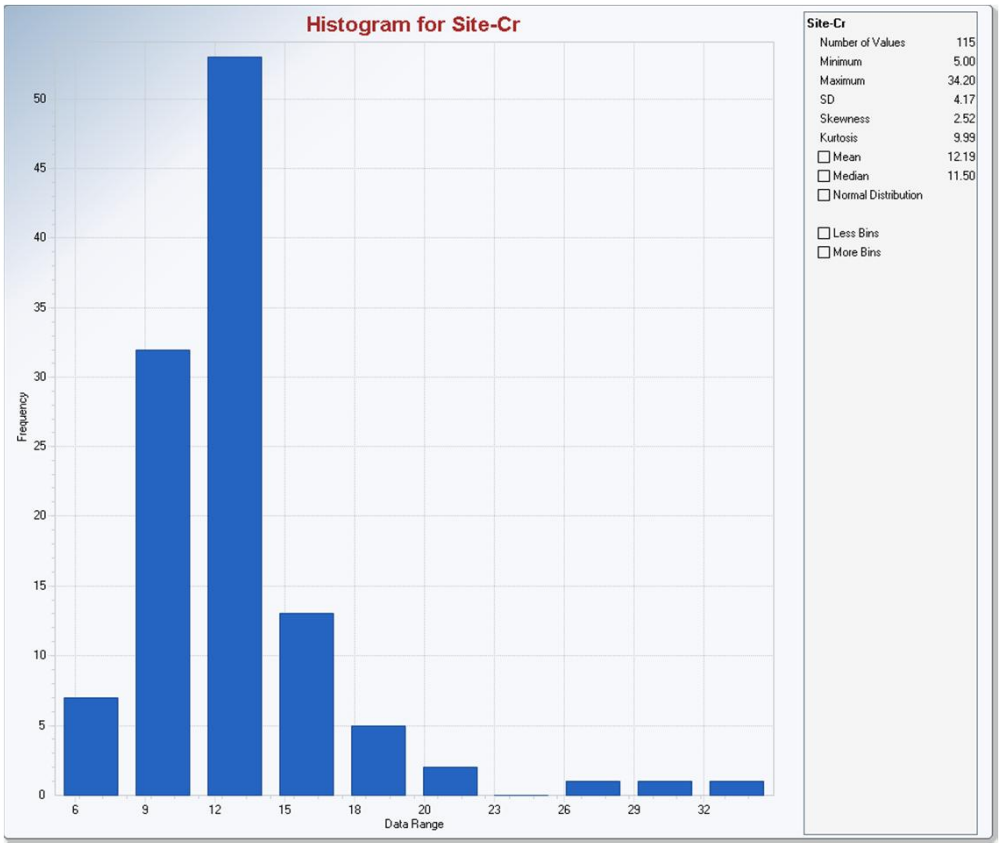
Histograms and Quantile-Quantile Plots

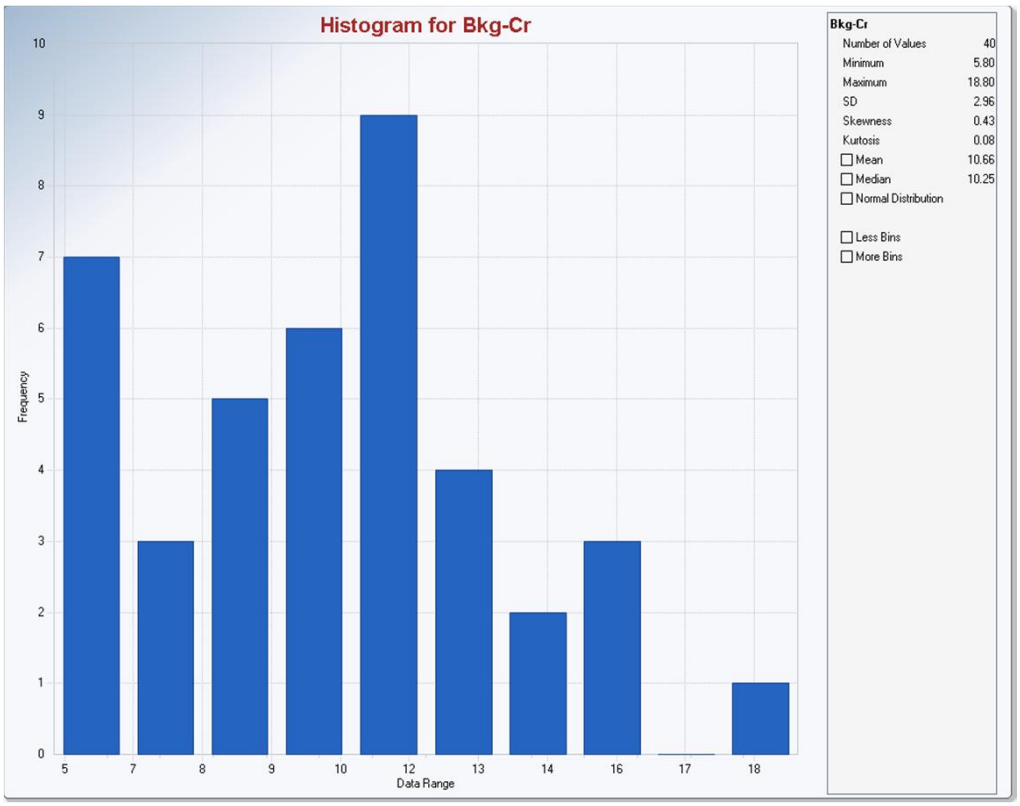
Comparing Site and Background Subsurface Soils



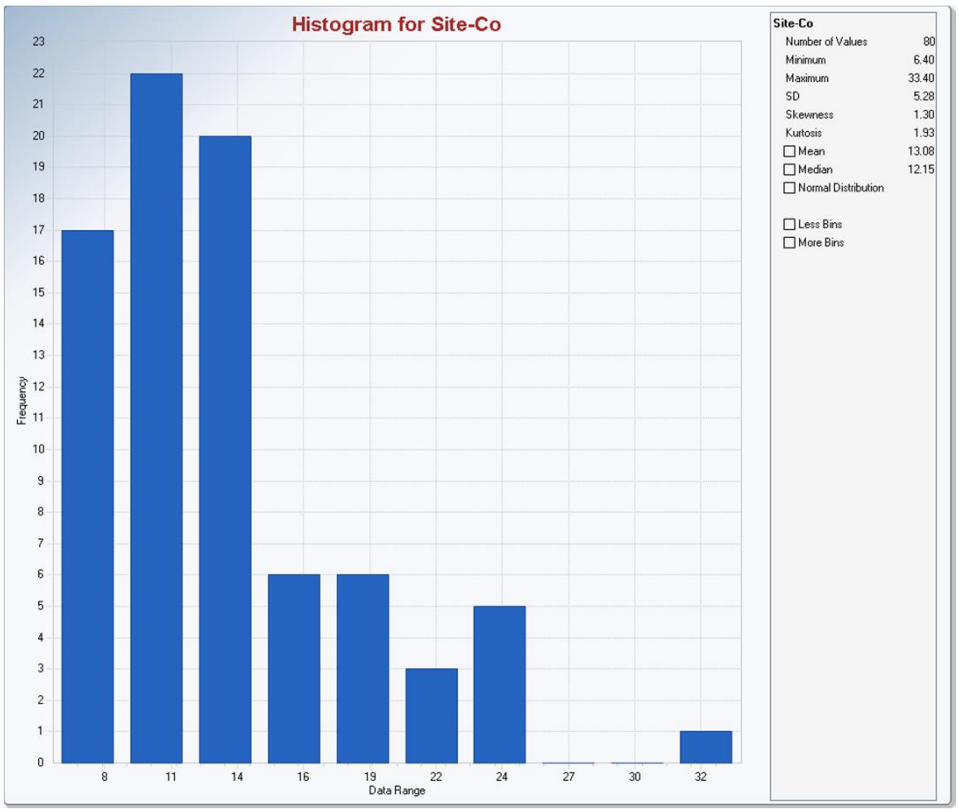


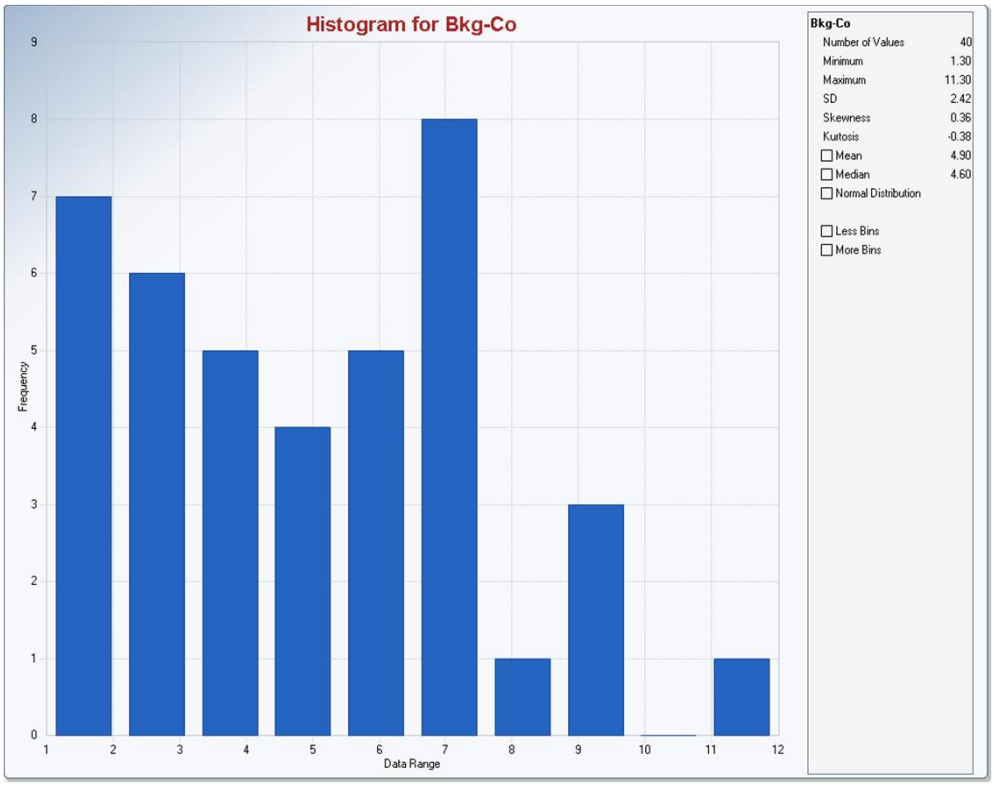
Histograms of Site concentrations are presented on top and background concentrations are presented on bottom graphs.



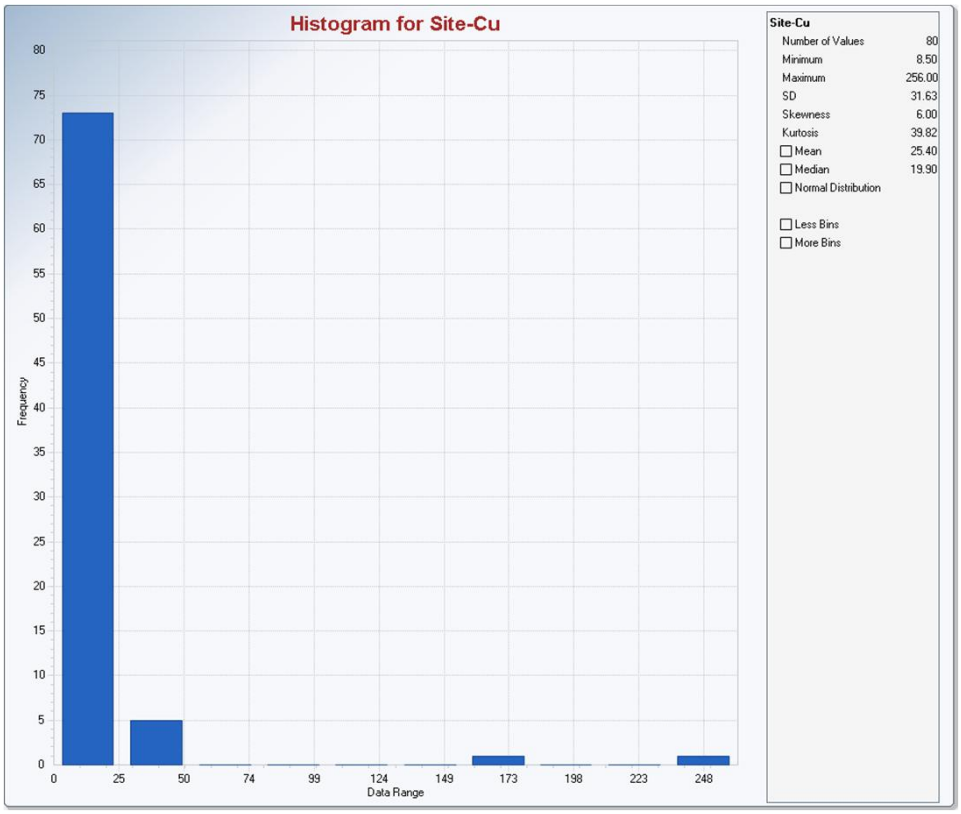


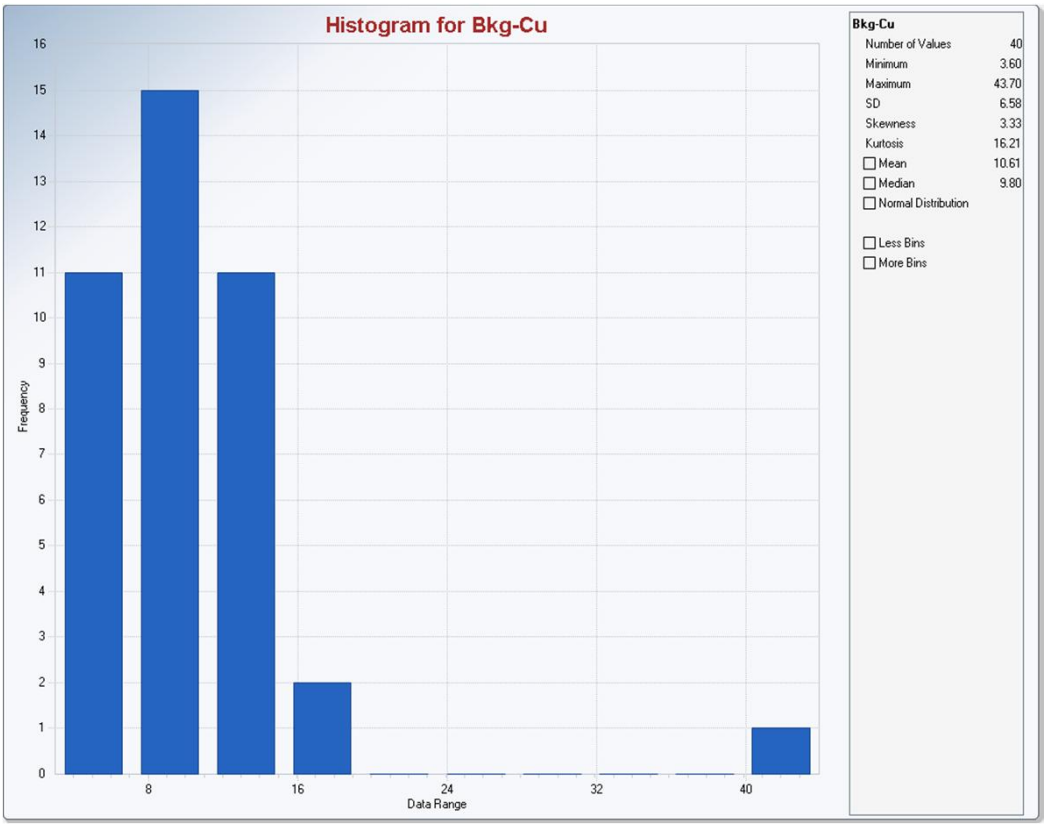
Histograms of Site concentrations are presented on top and background concentrations are presented on bottom graphs.



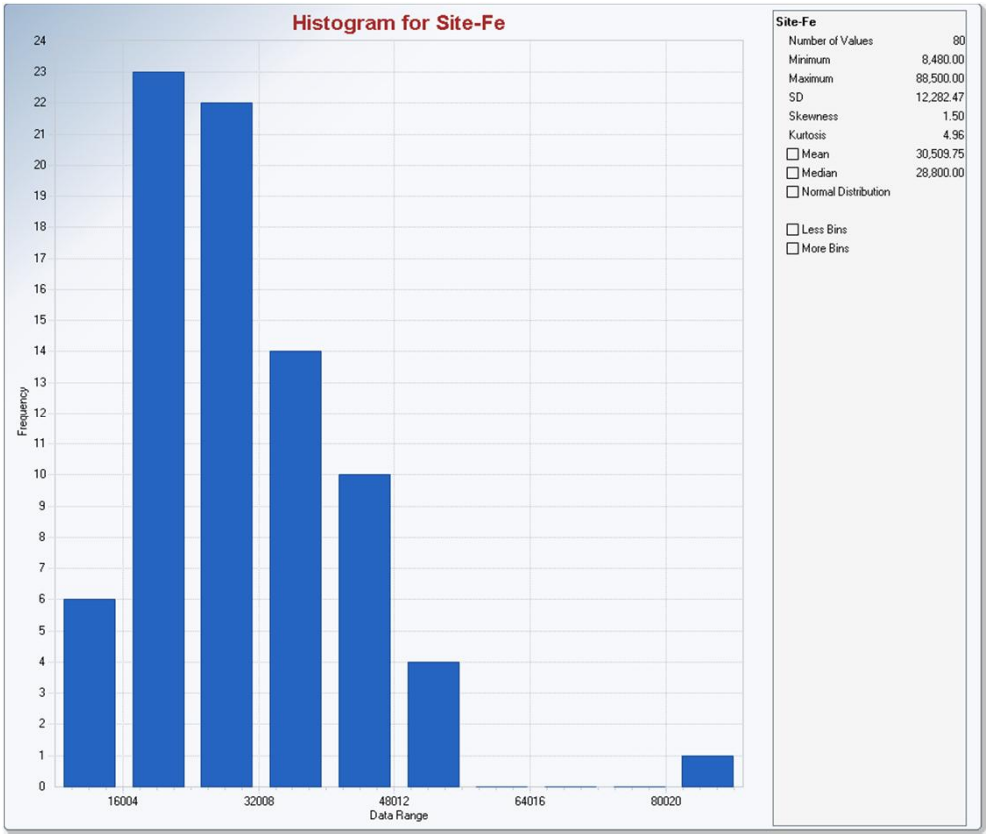


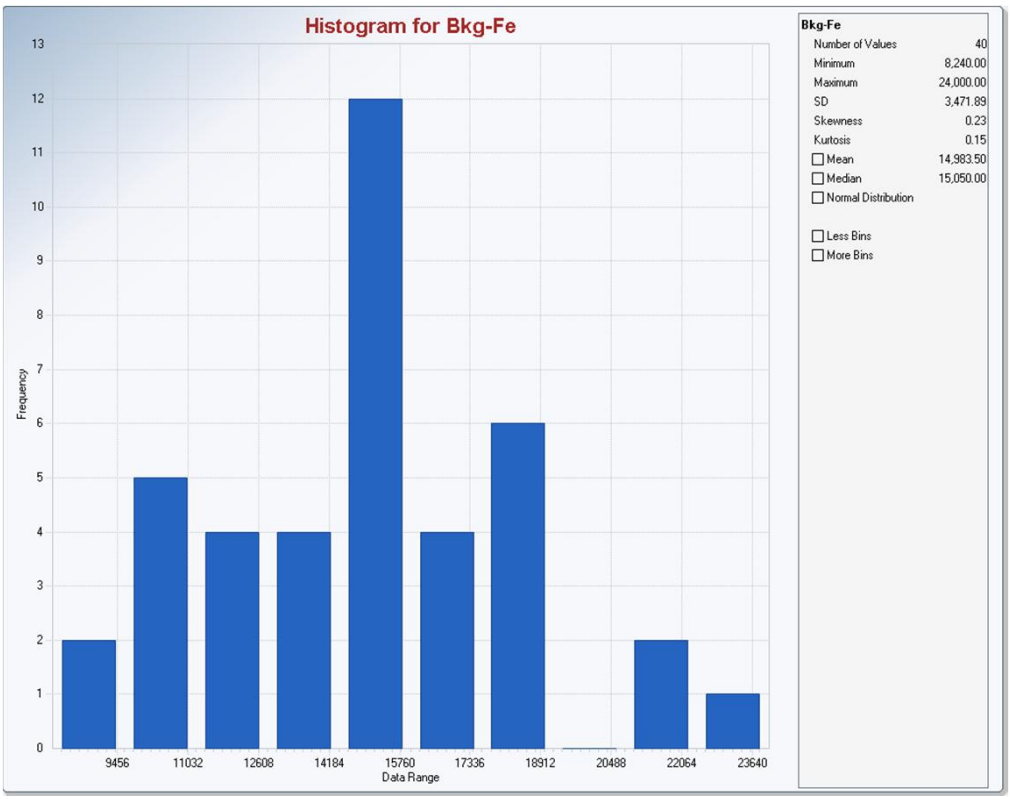
Histograms of Site concentrations are presented on top and background concentrations are presented on bottom graphs.



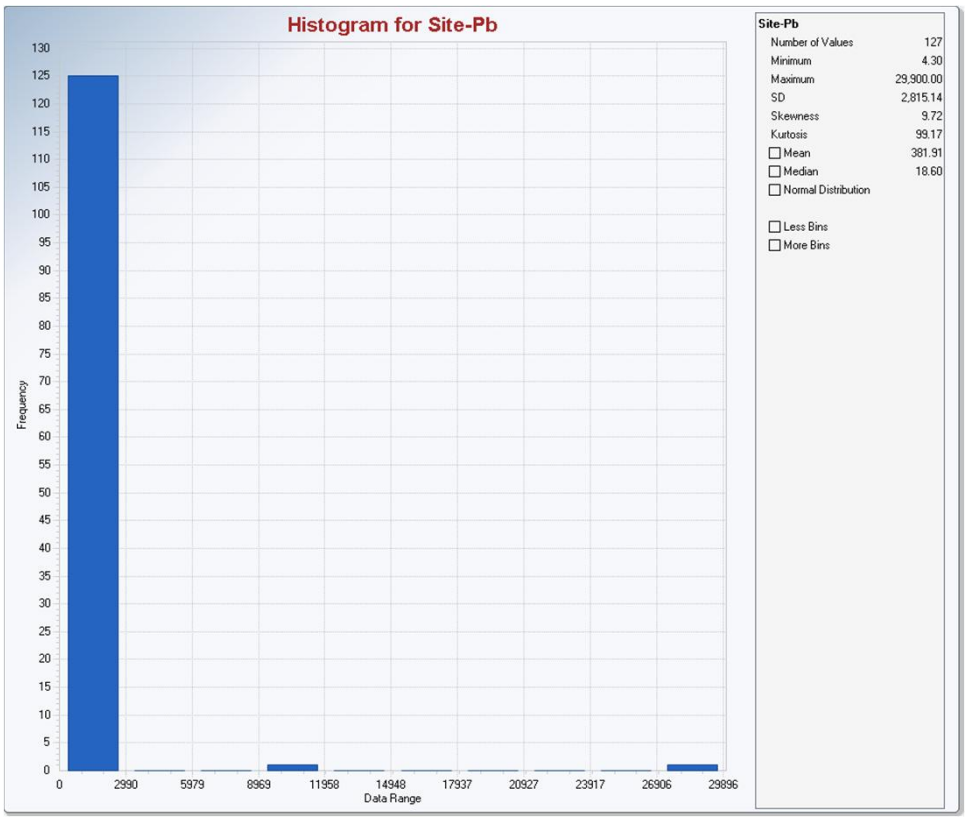


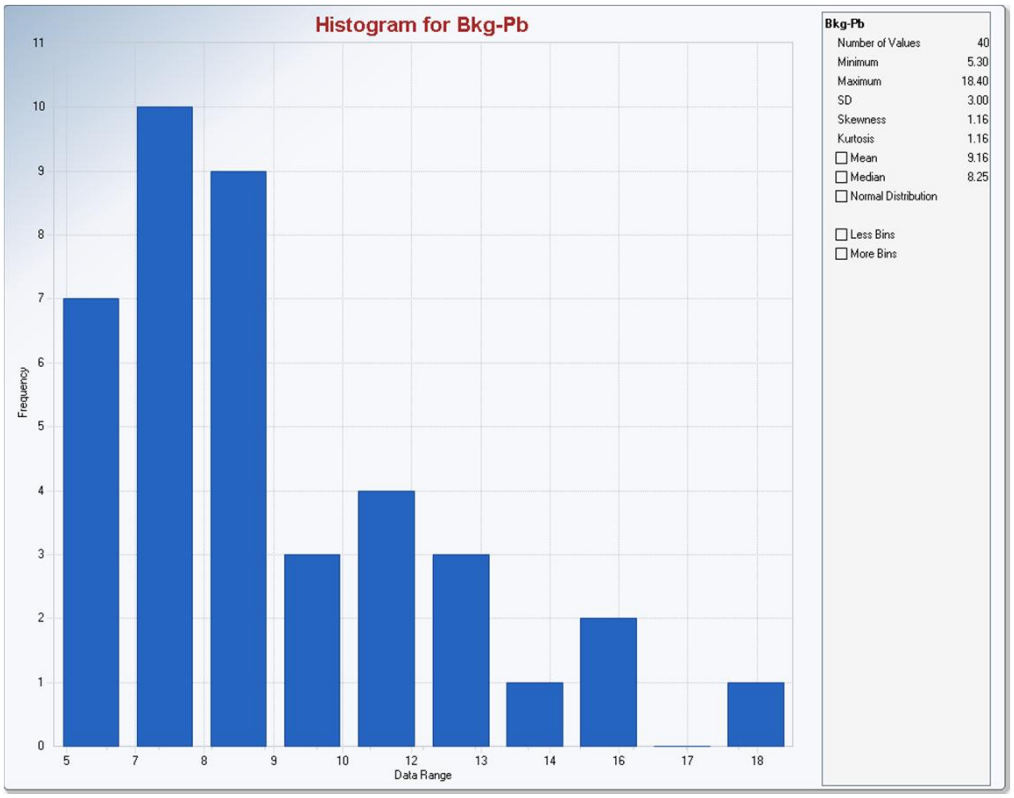
Histograms of Site concentrations are presented on top and background concentrations are presented on bottom graphs.



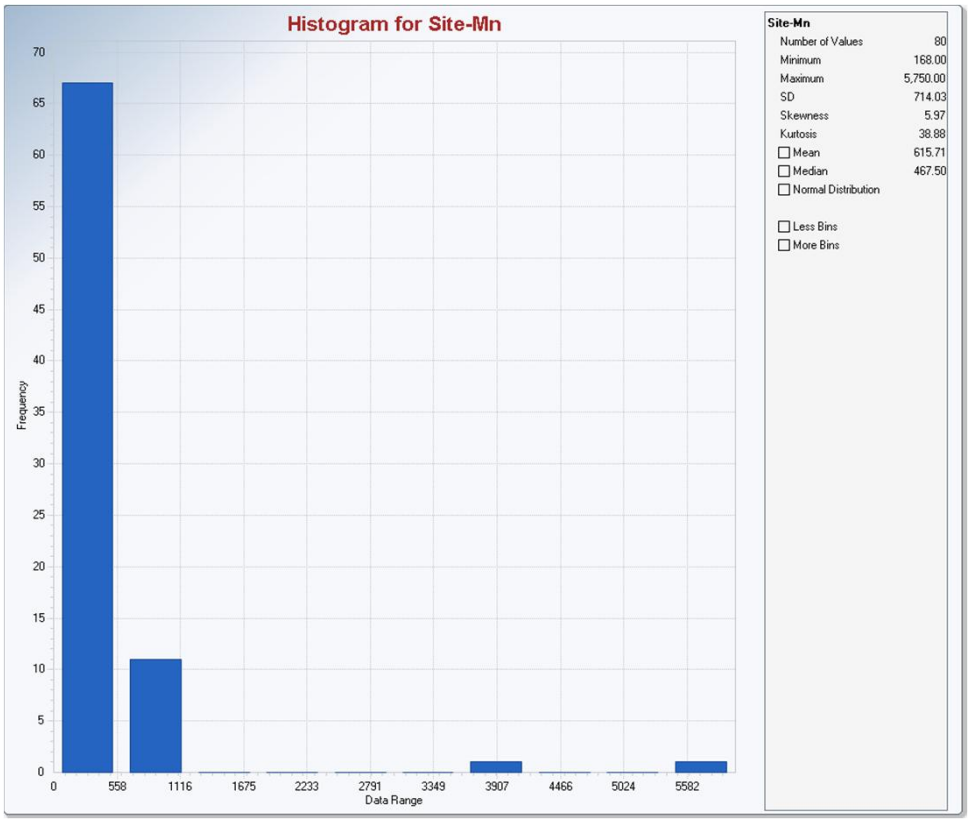


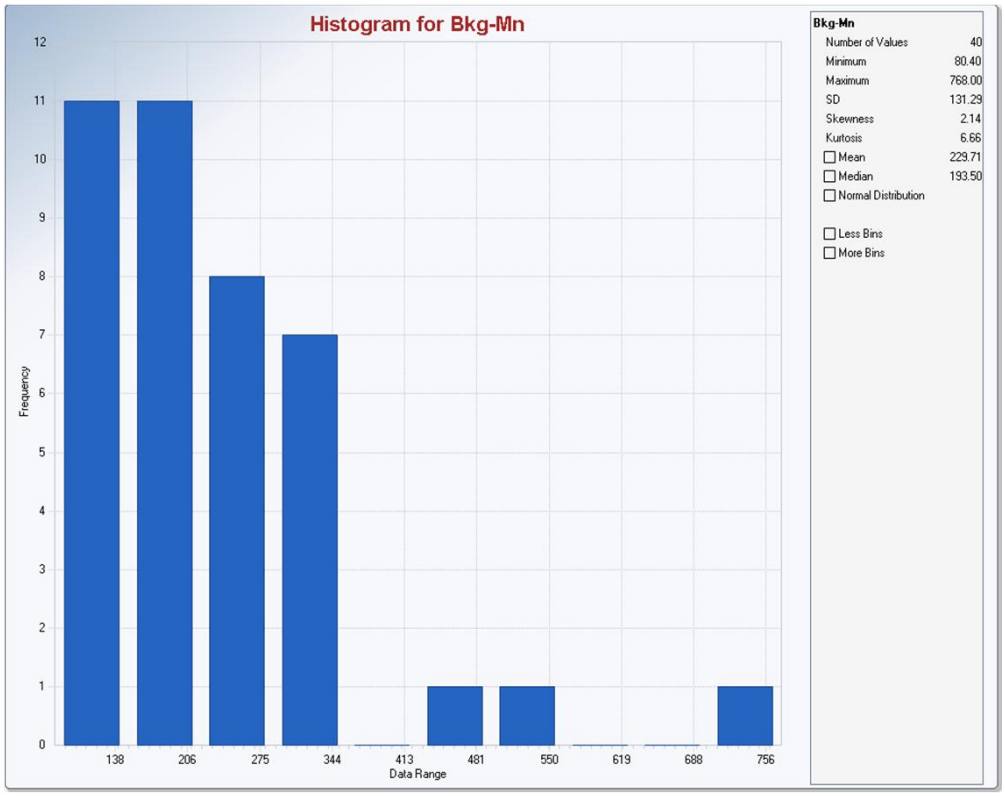
Histograms of Site concentrations are presented on top and background concentrations are presented on bottom graphs.



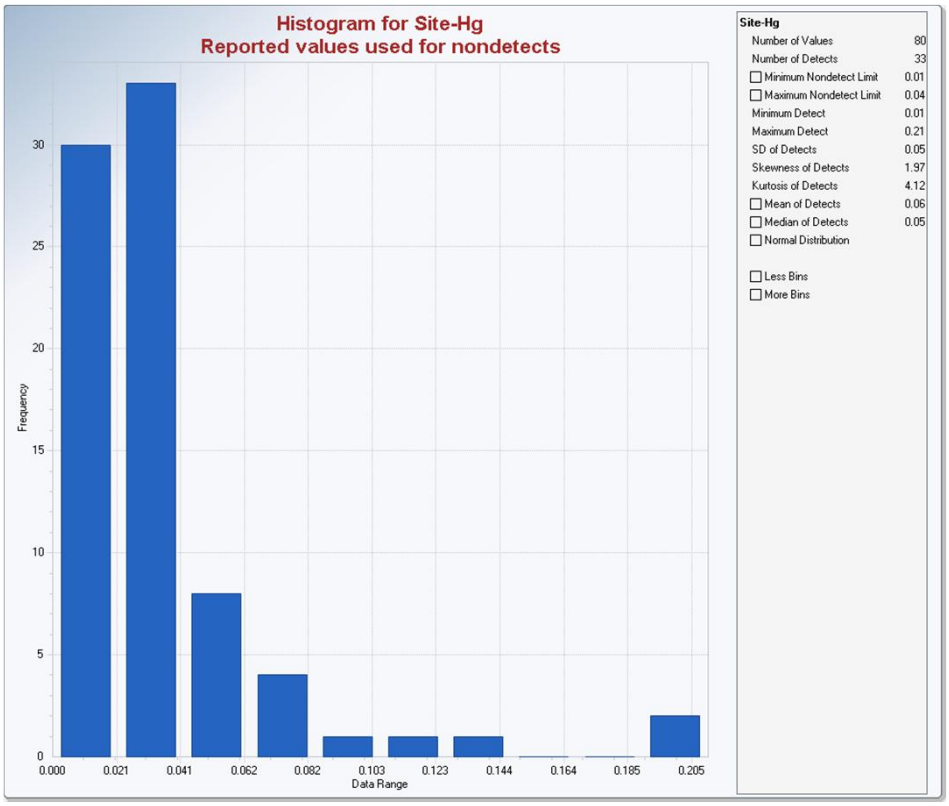


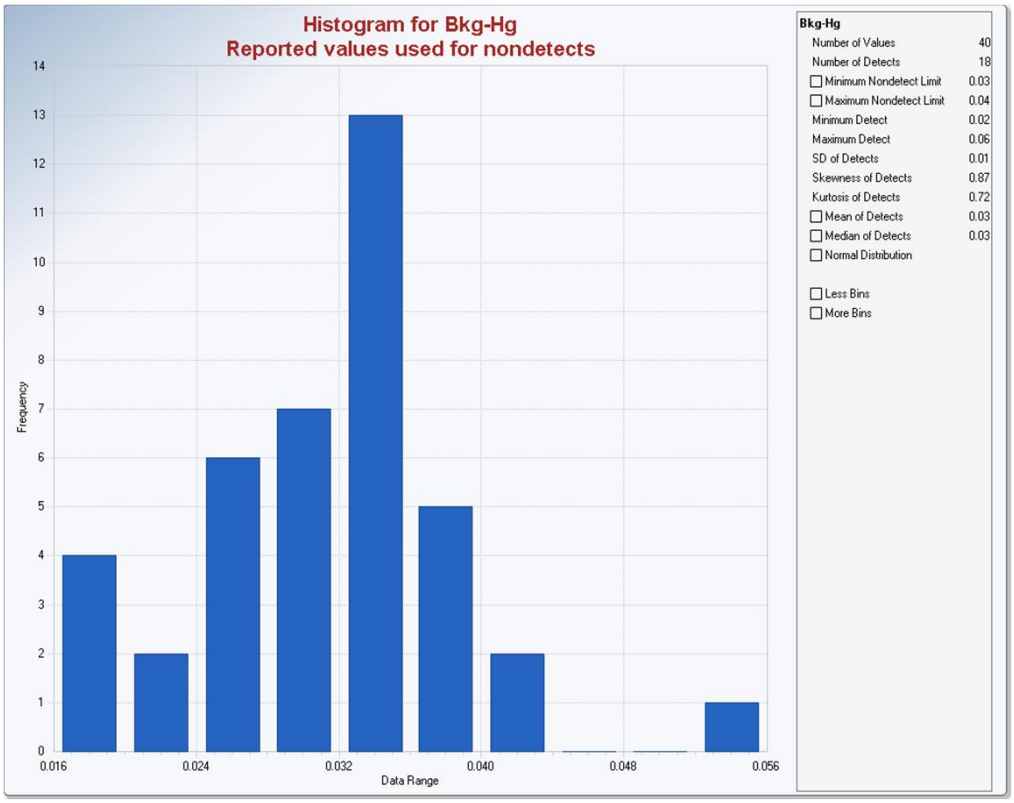
Histograms of Site concentrations are presented on top and background concentrations are presented on bottom graphs.



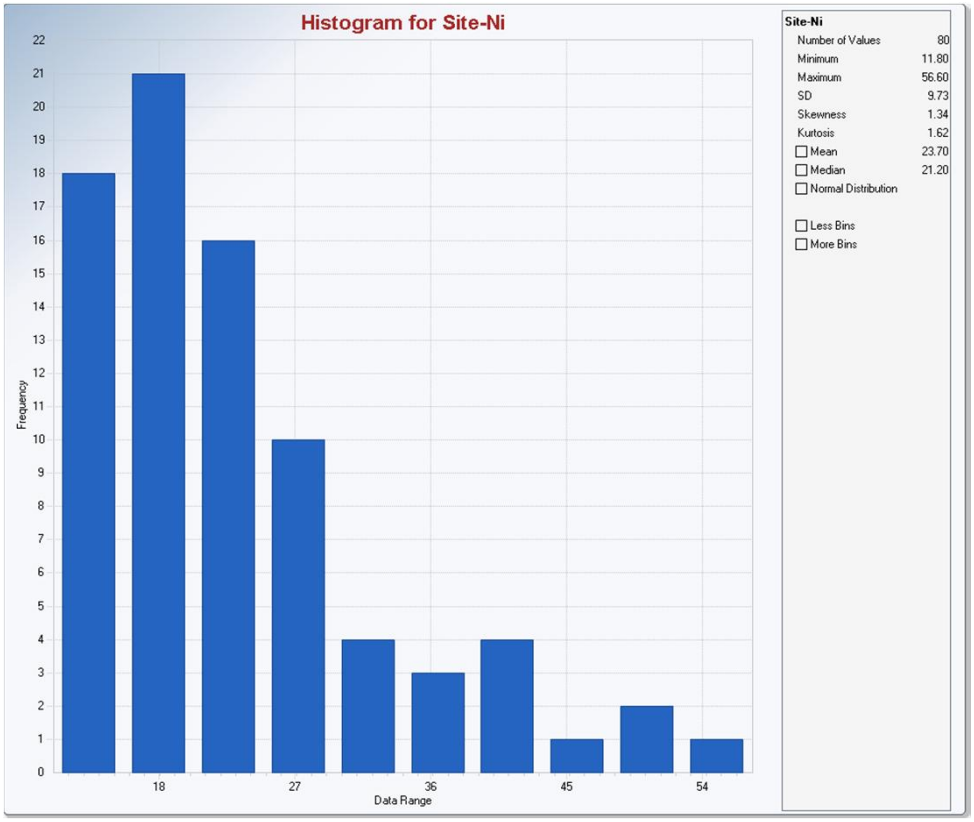


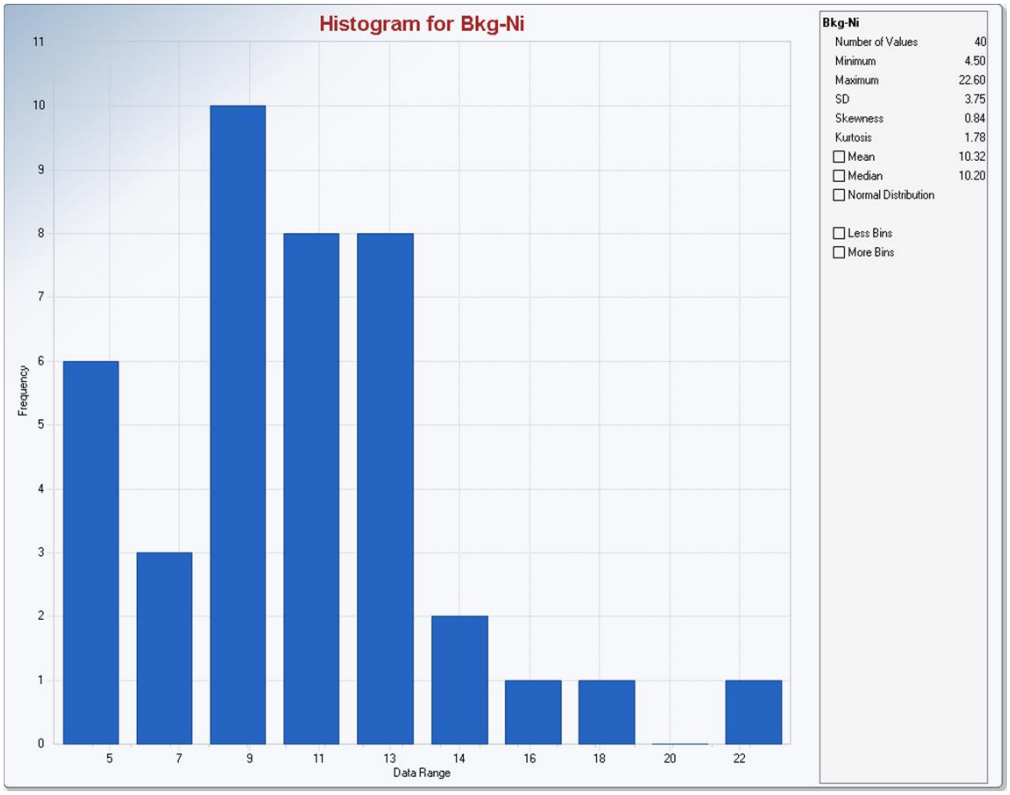
Histograms of Site concentrations are presented on top and background concentrations are presented on bottom graphs.



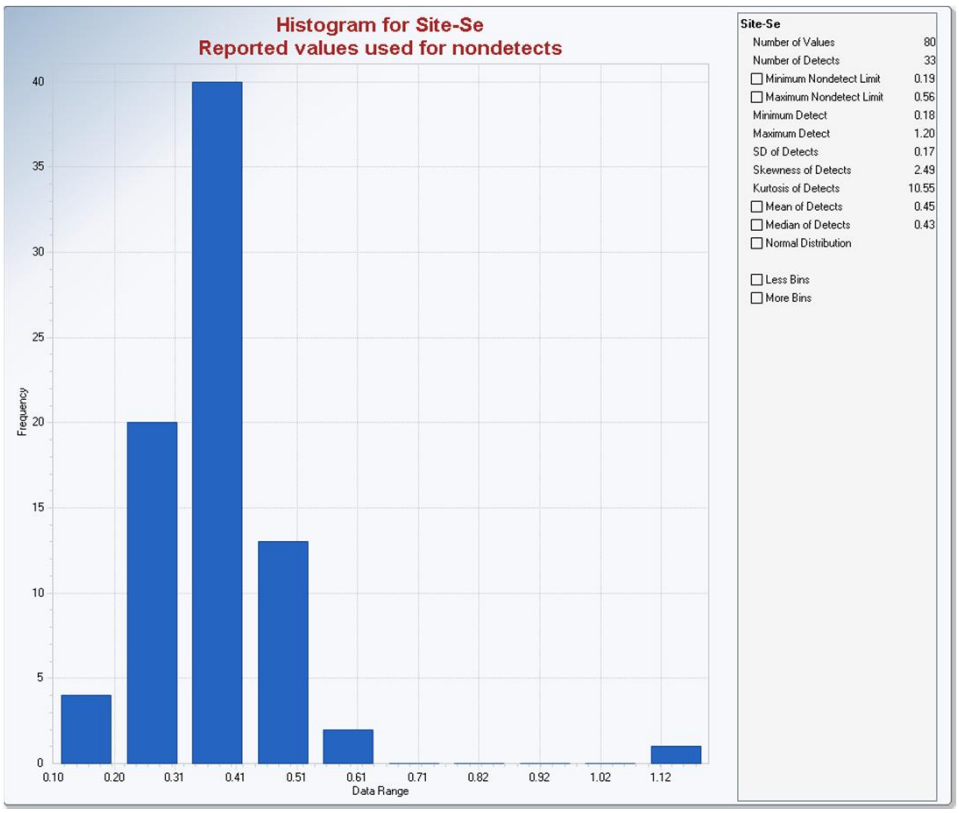


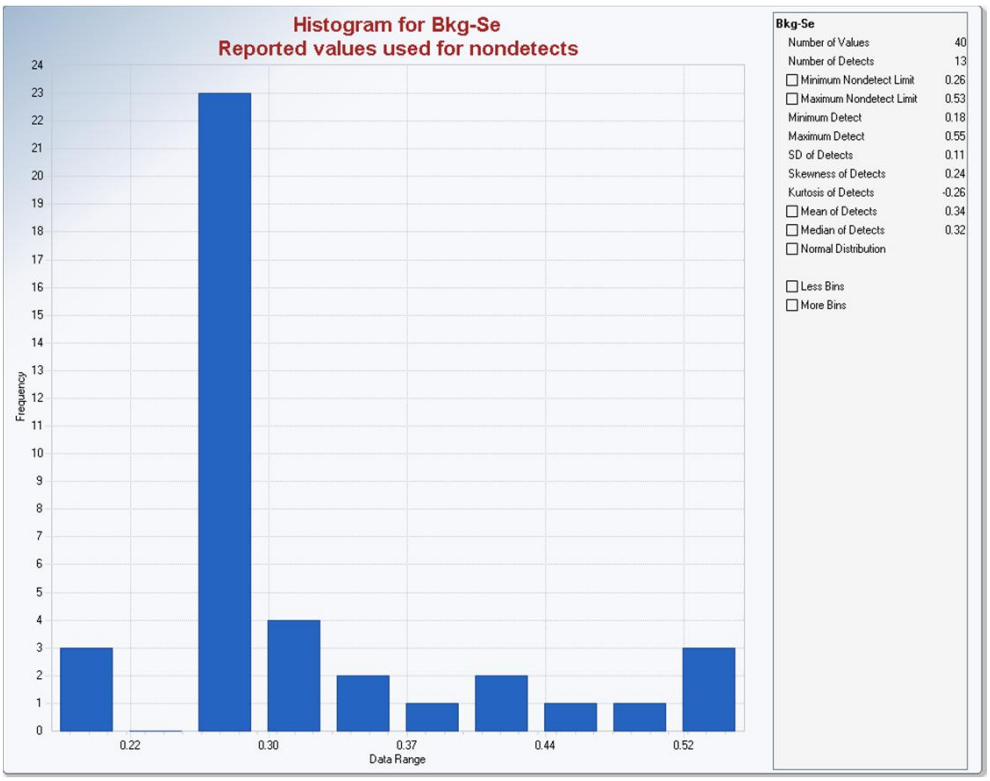
Histograms of Site concentrations are presented on top and background concentrations are presented on bottom graphs.



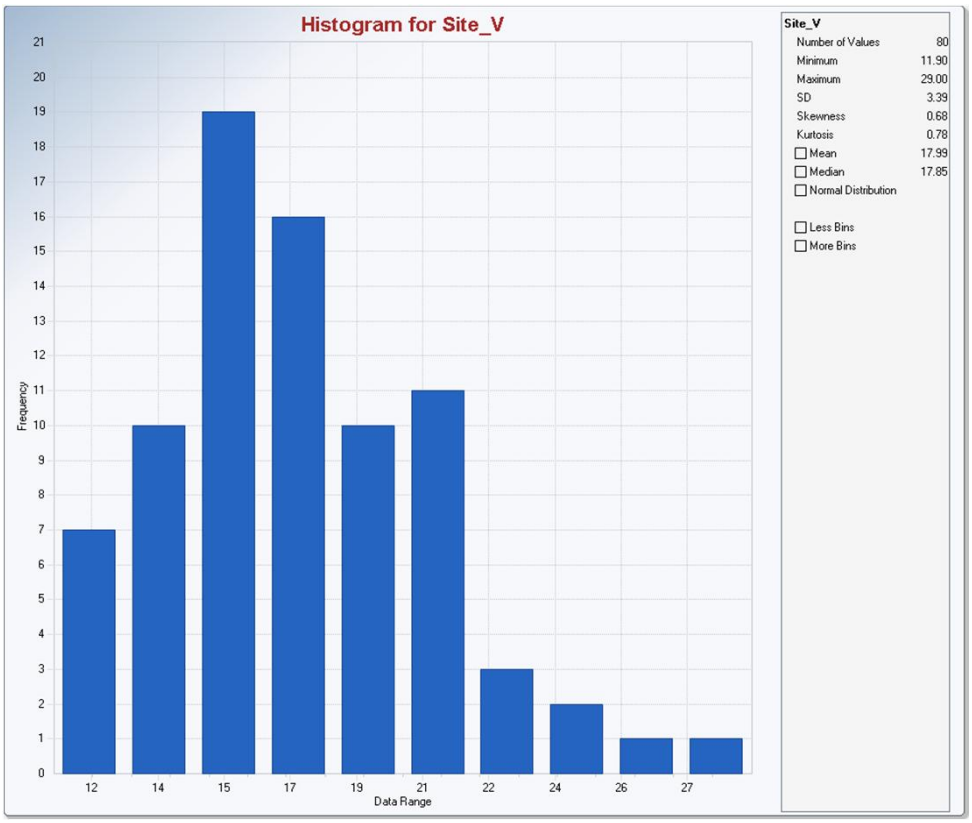


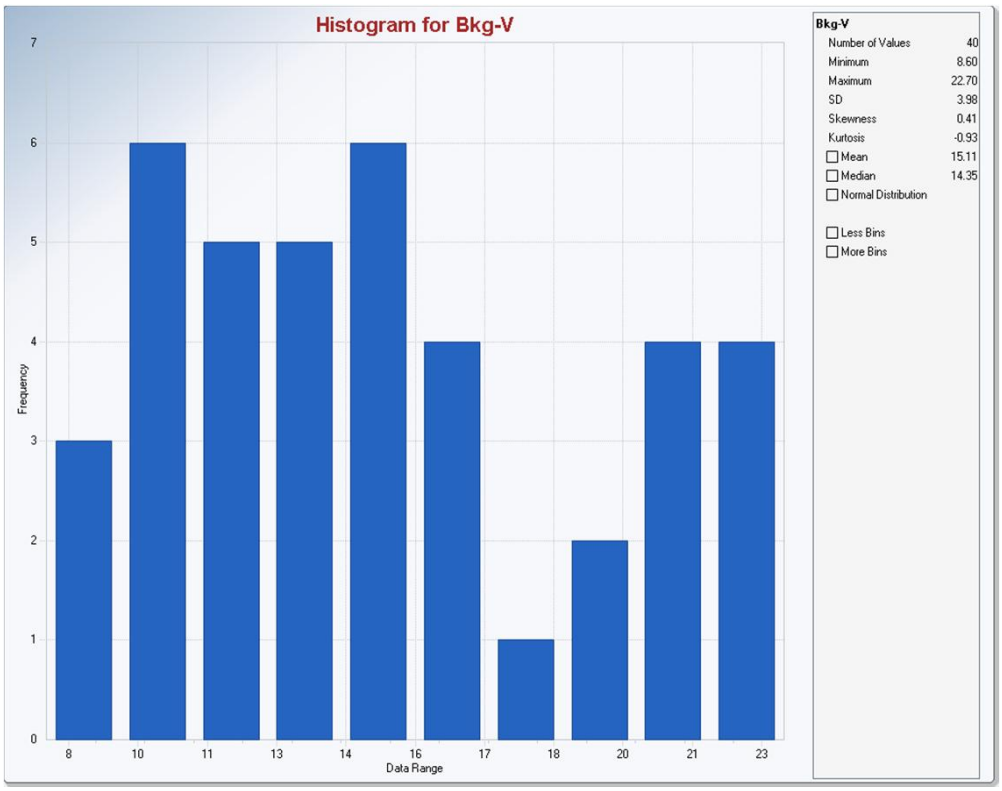
Histograms of Site concentrations are presented on top and background concentrations are presented on bottom graphs.



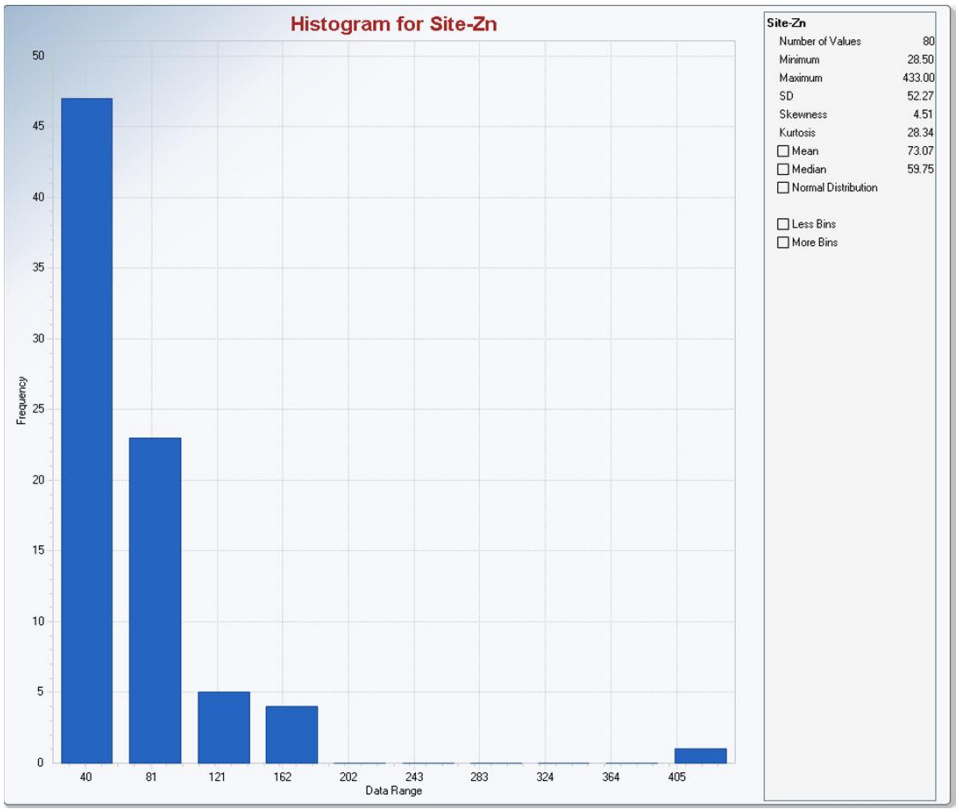


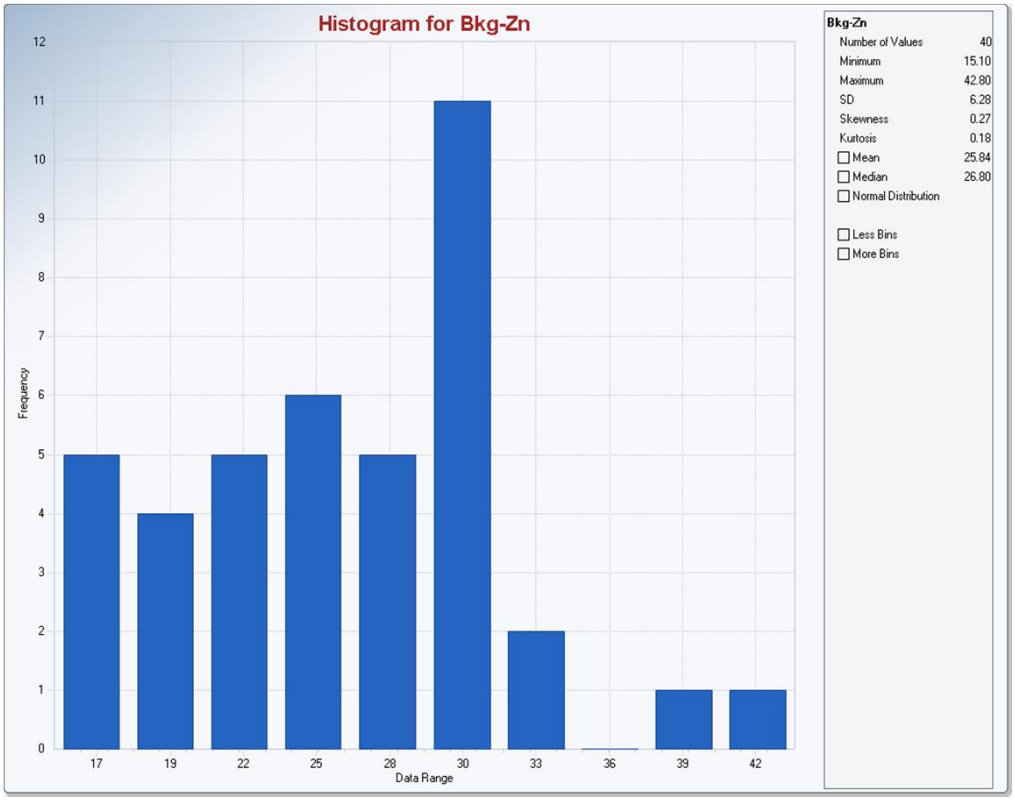
Histograms of Site concentrations are presented on top and background concentrations are presented on bottom graphs.



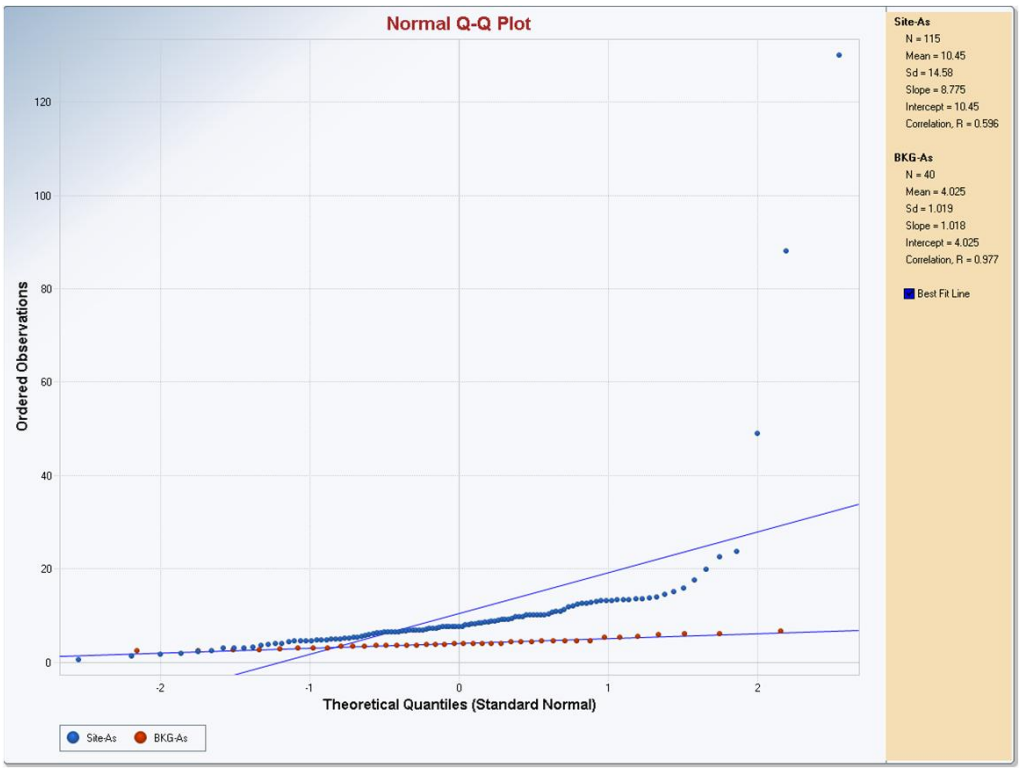


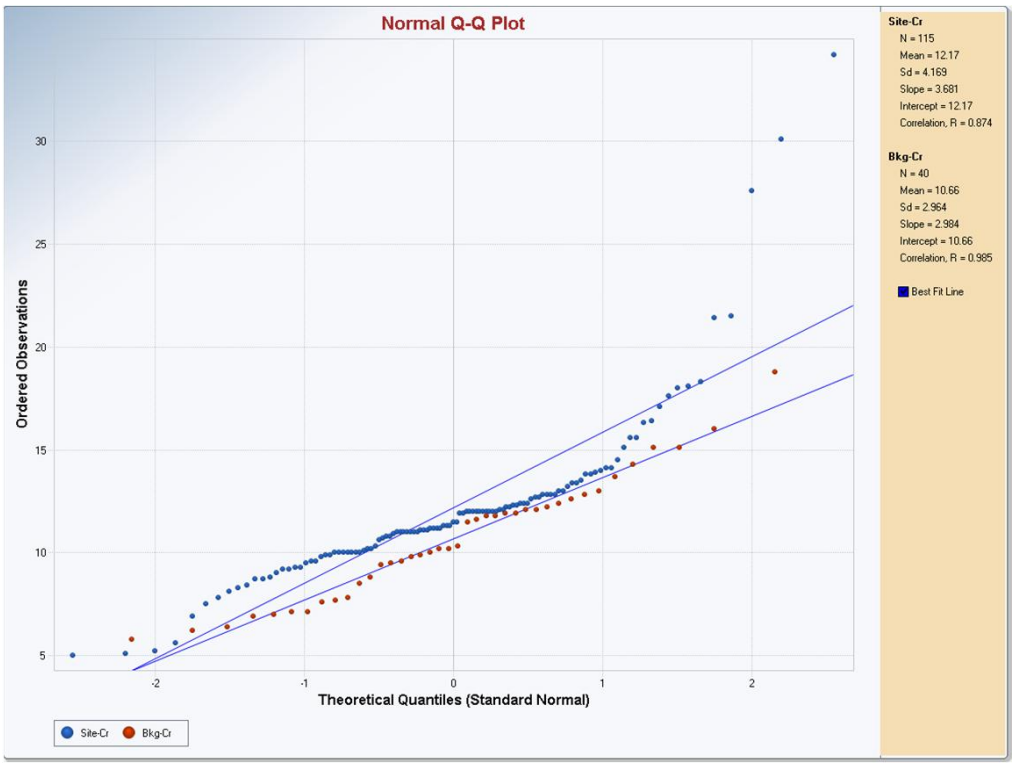
Histograms of Site concentrations are presented on top and background concentrations are presented on bottom graphs.



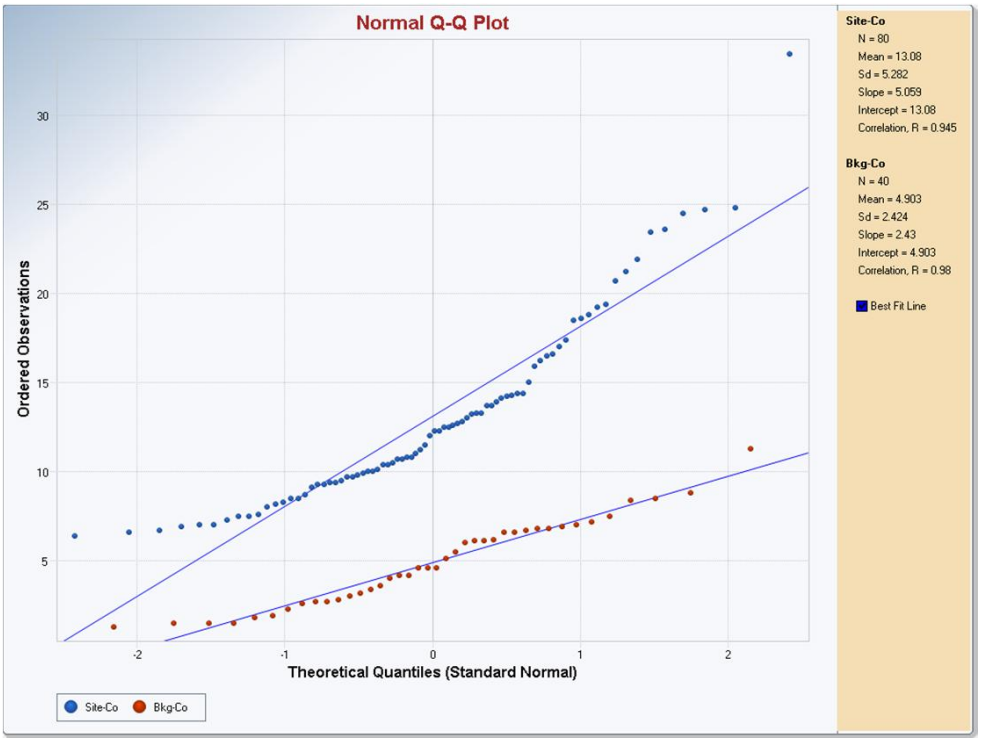


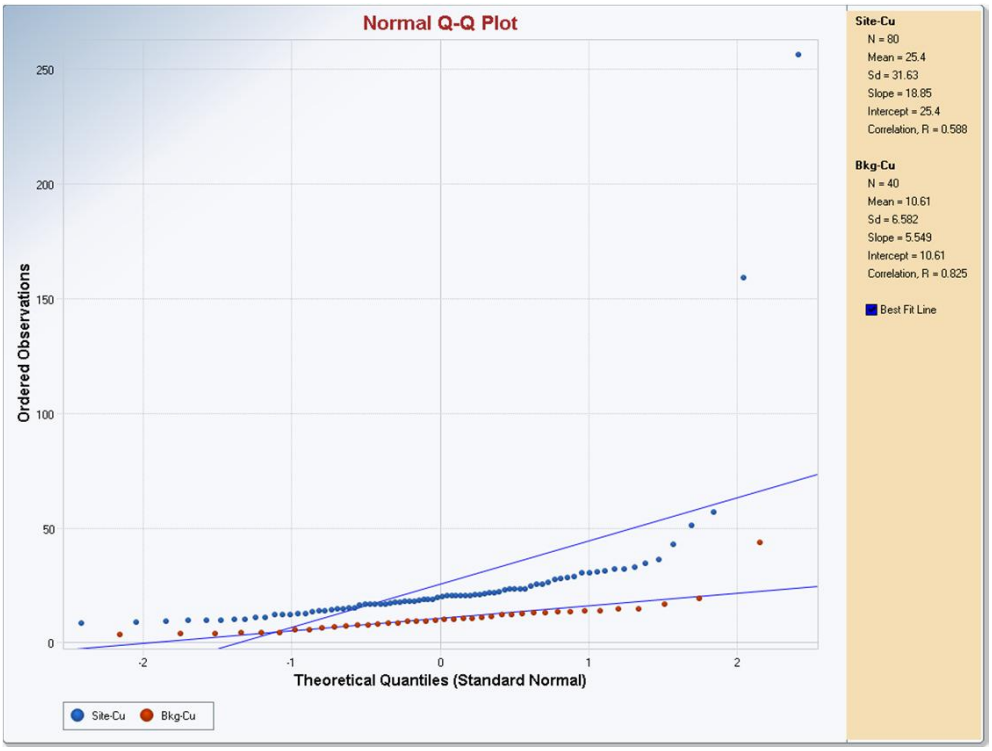
Histograms of Site concentrations are presented on top and background concentrations are presented on bottom graphs.





BKG - Background





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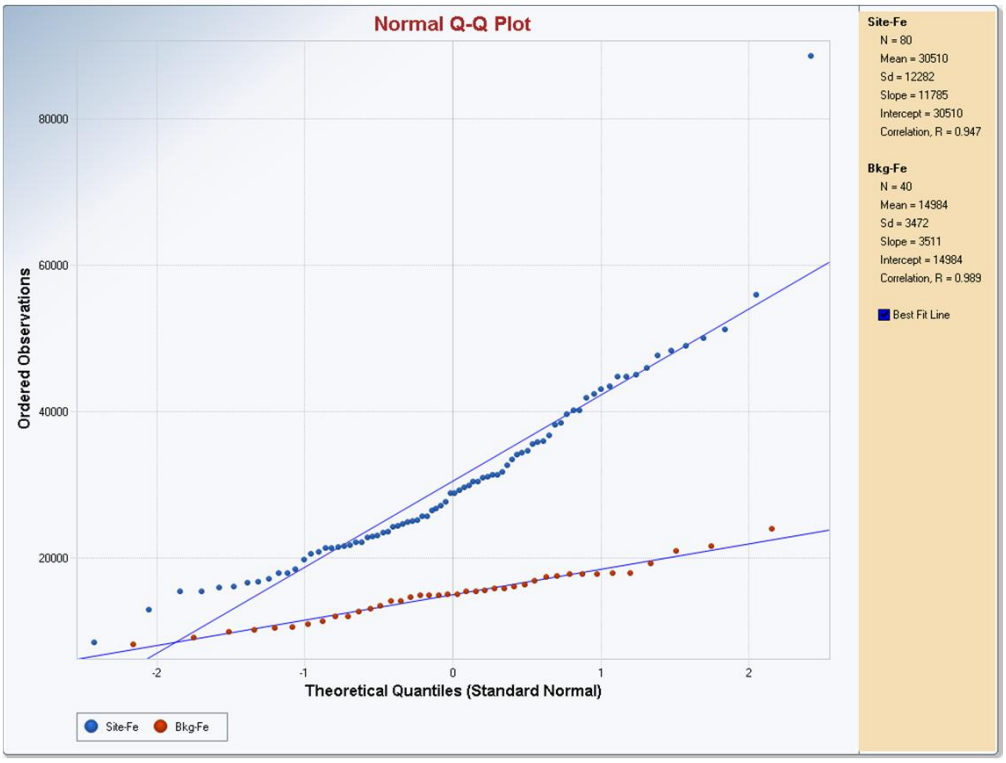

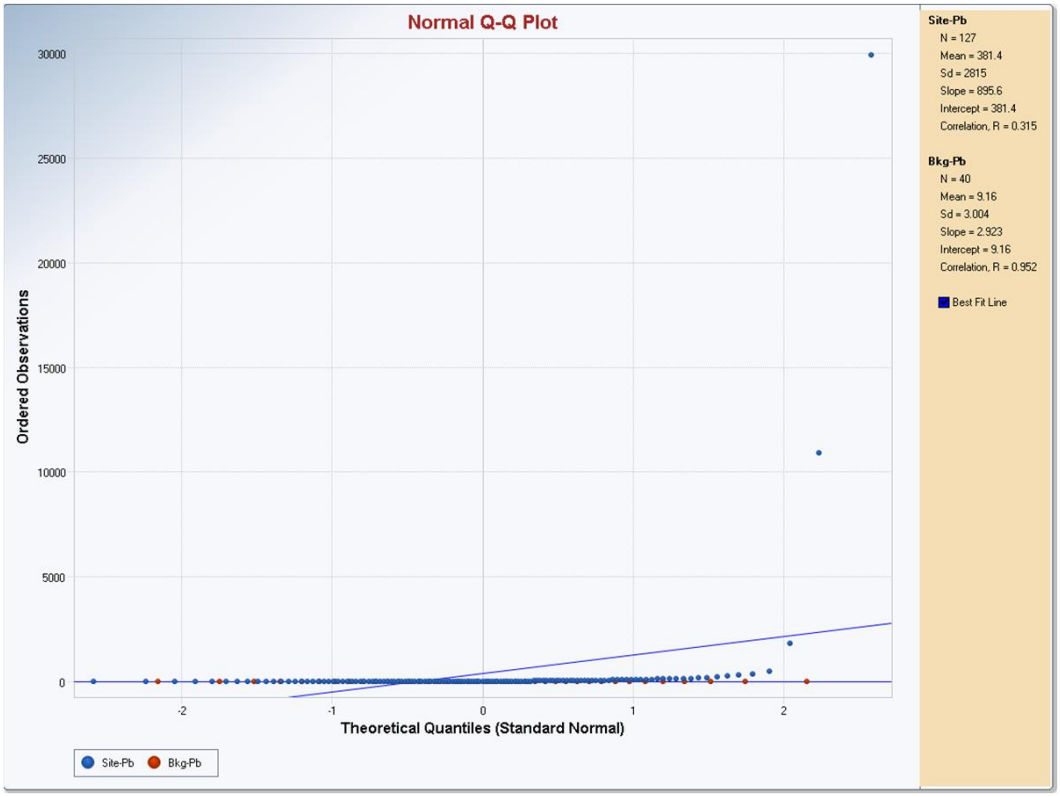

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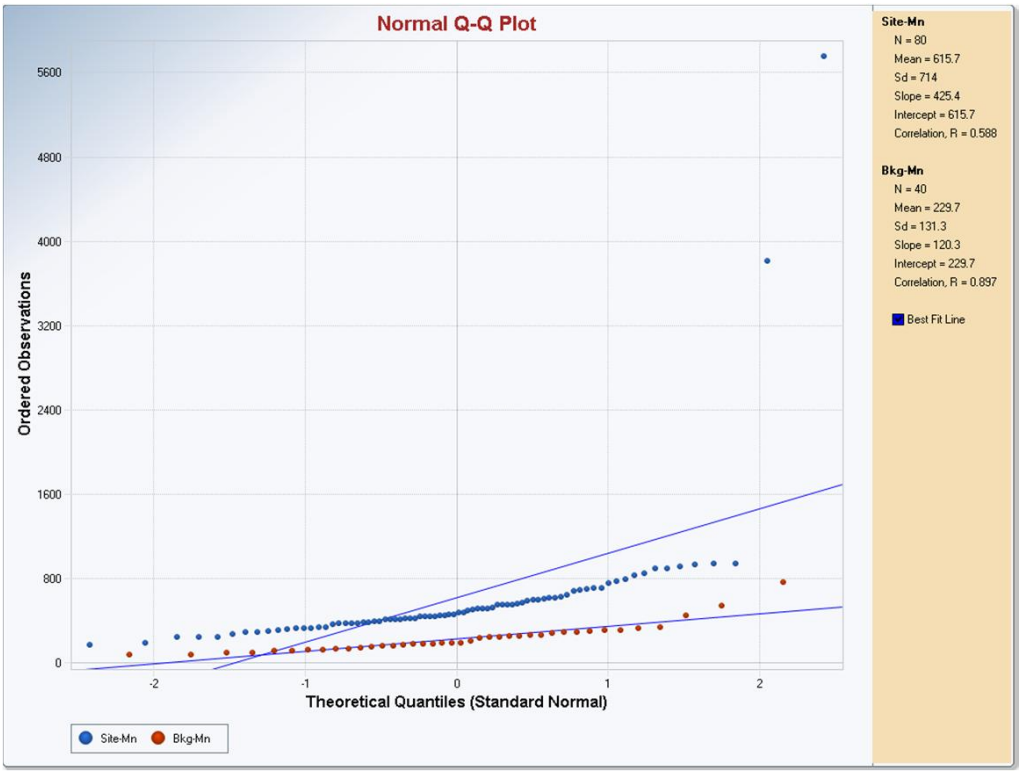

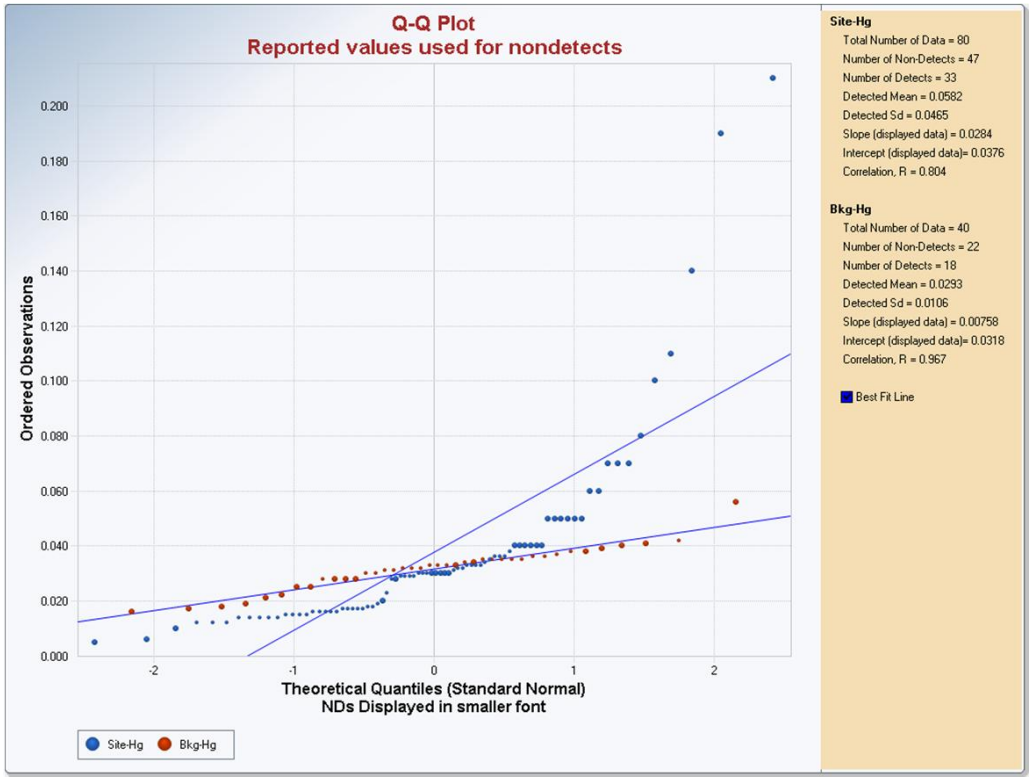

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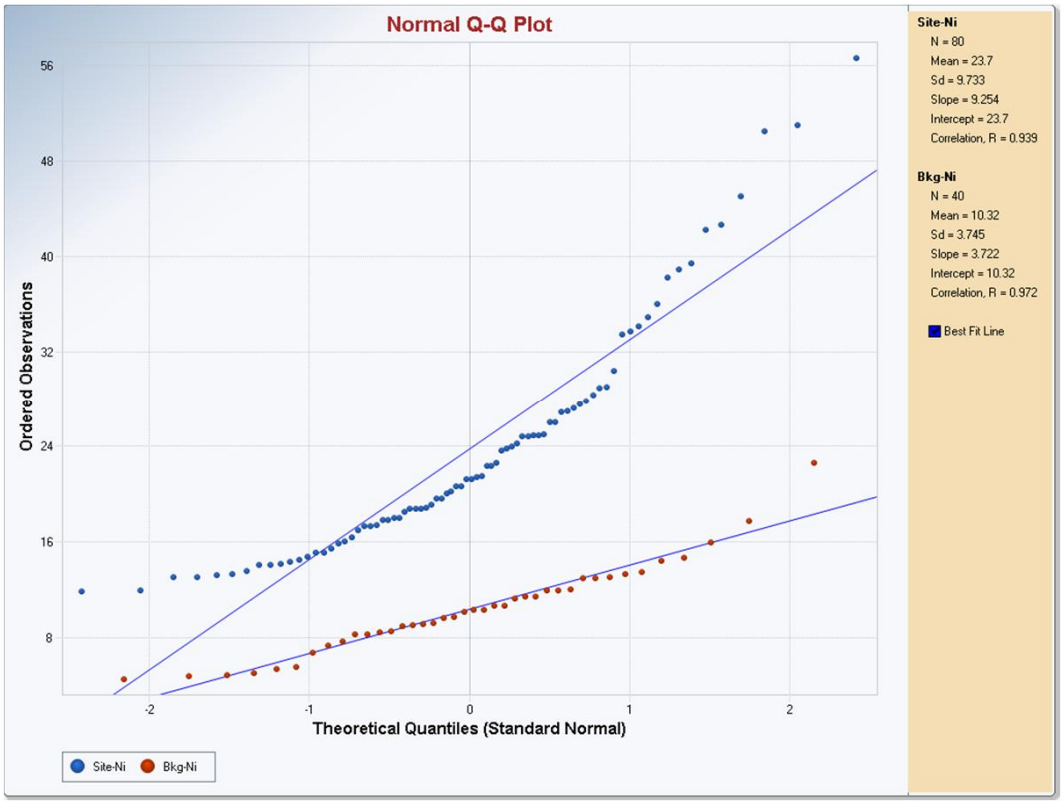

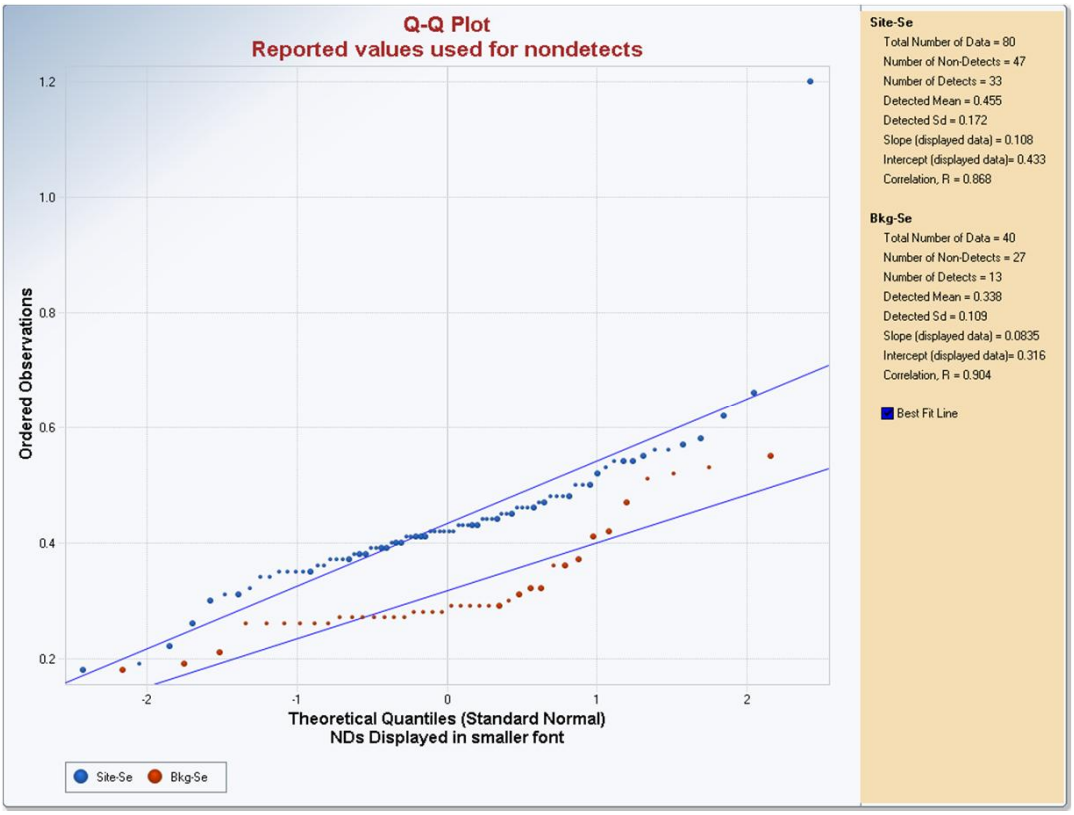

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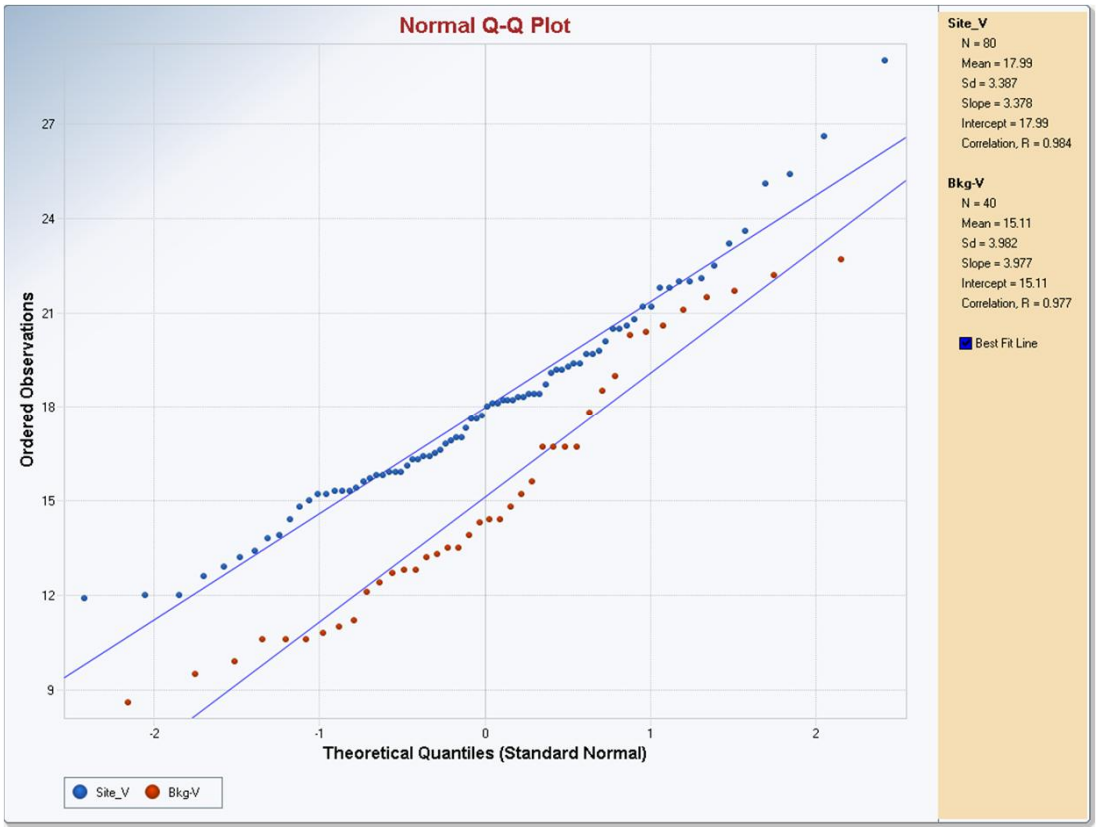
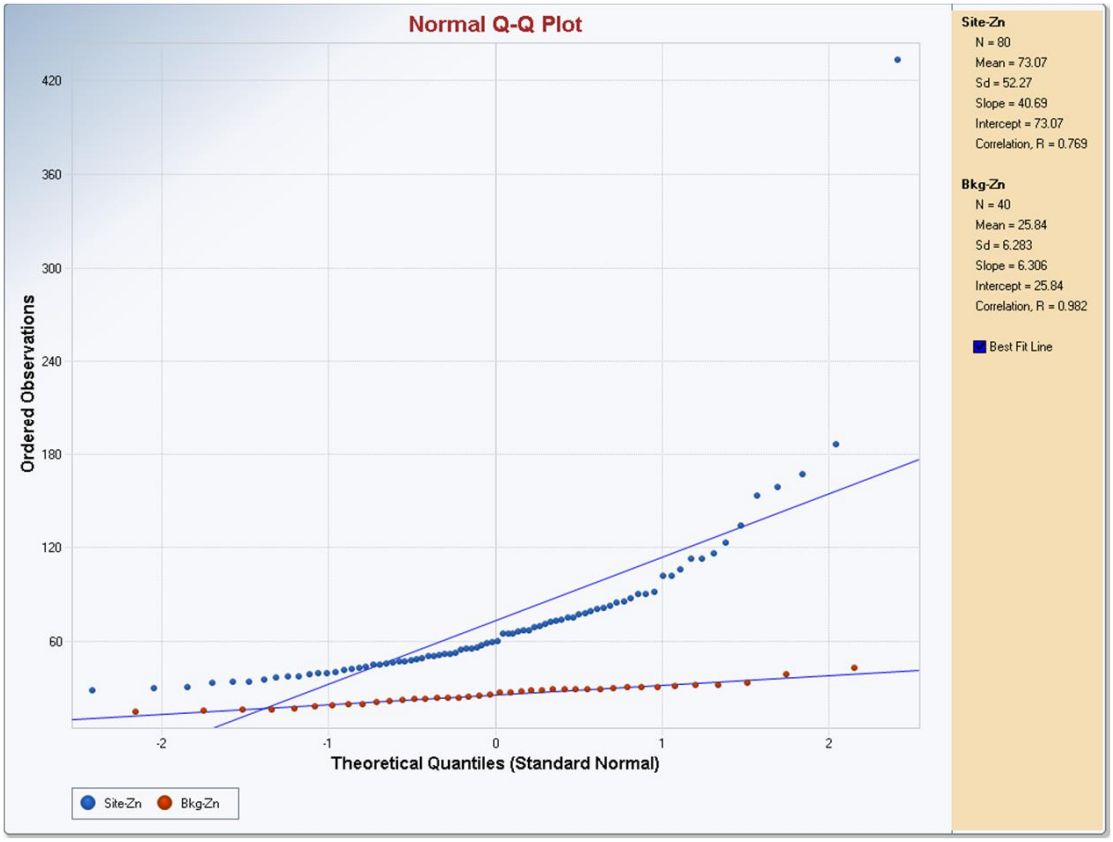


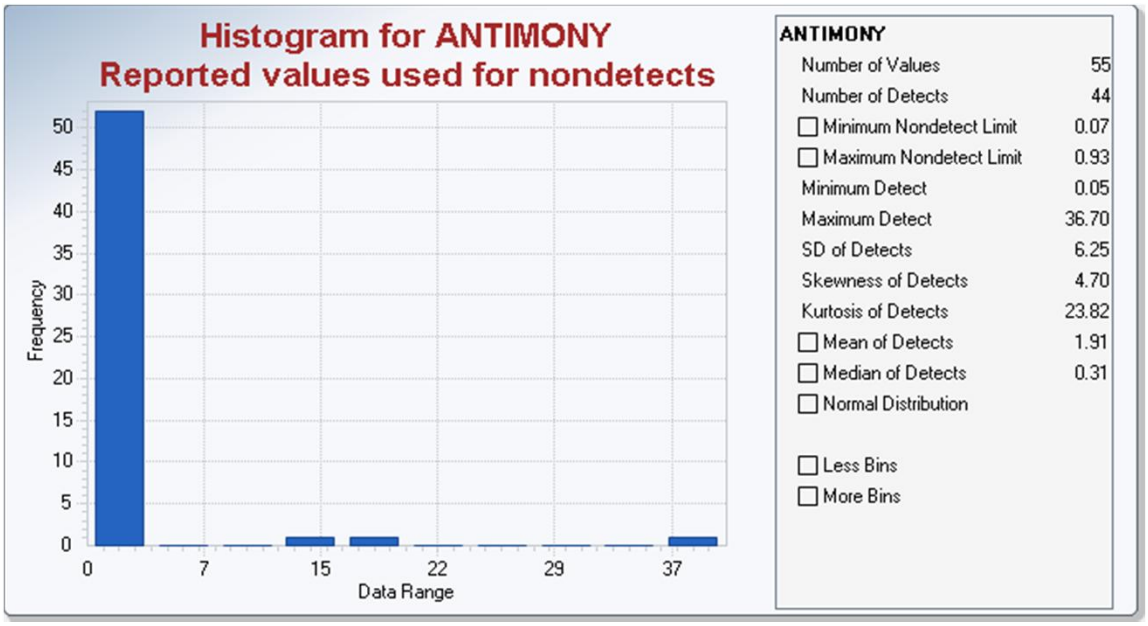


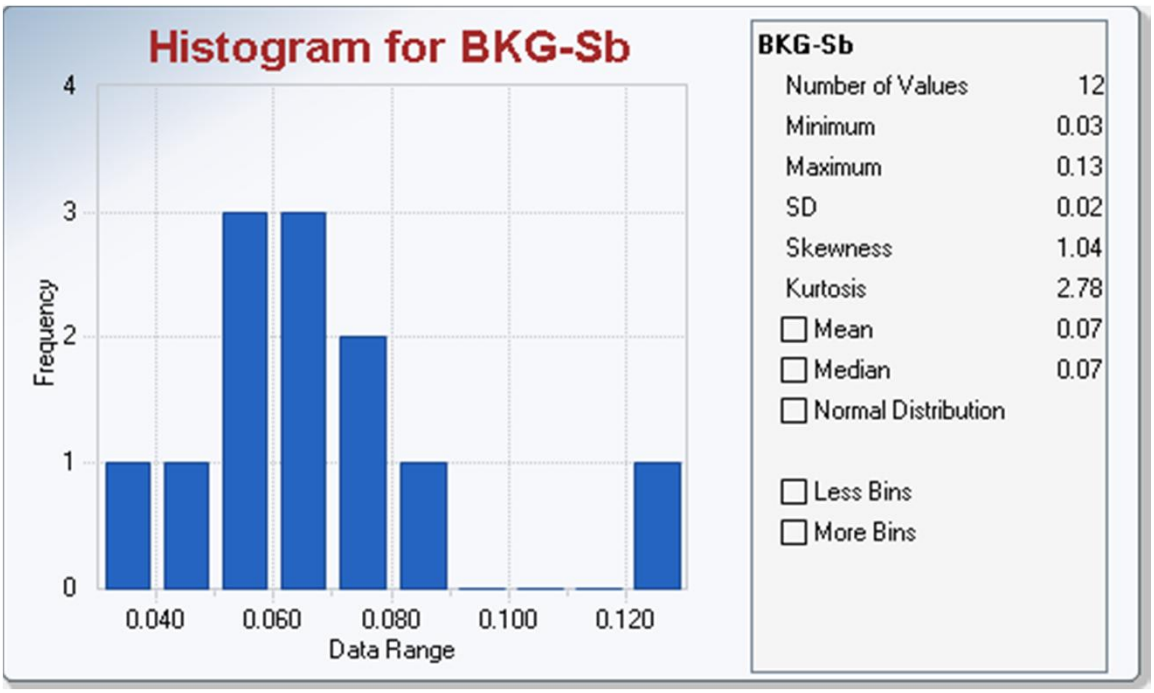
BKG - Background

Attachment 3

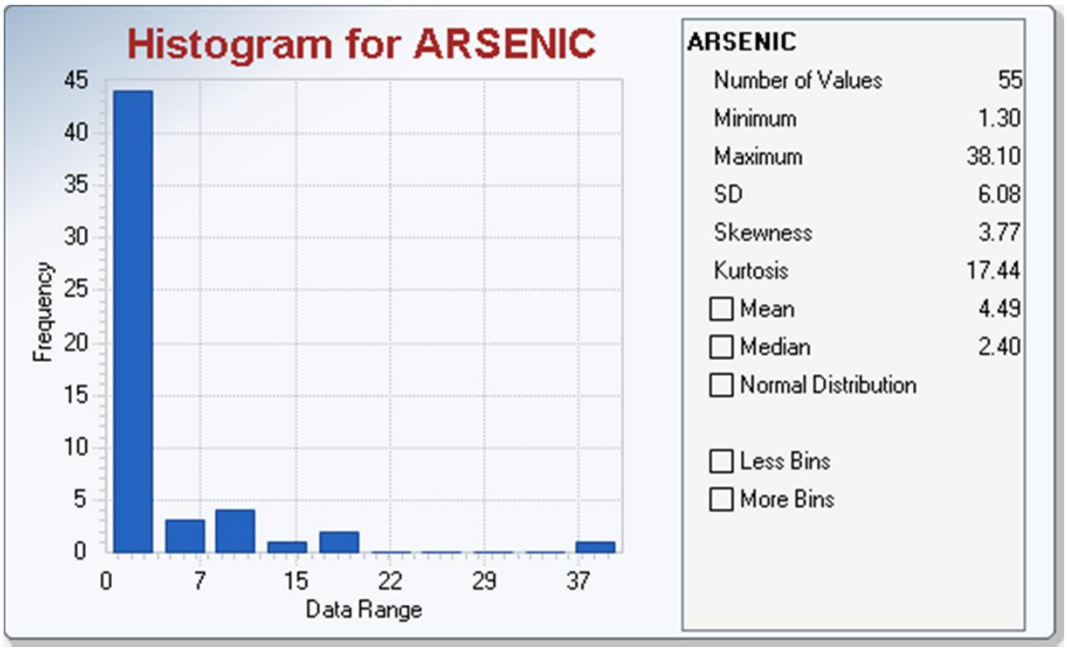
Histograms and Quantile-Quantile Plots

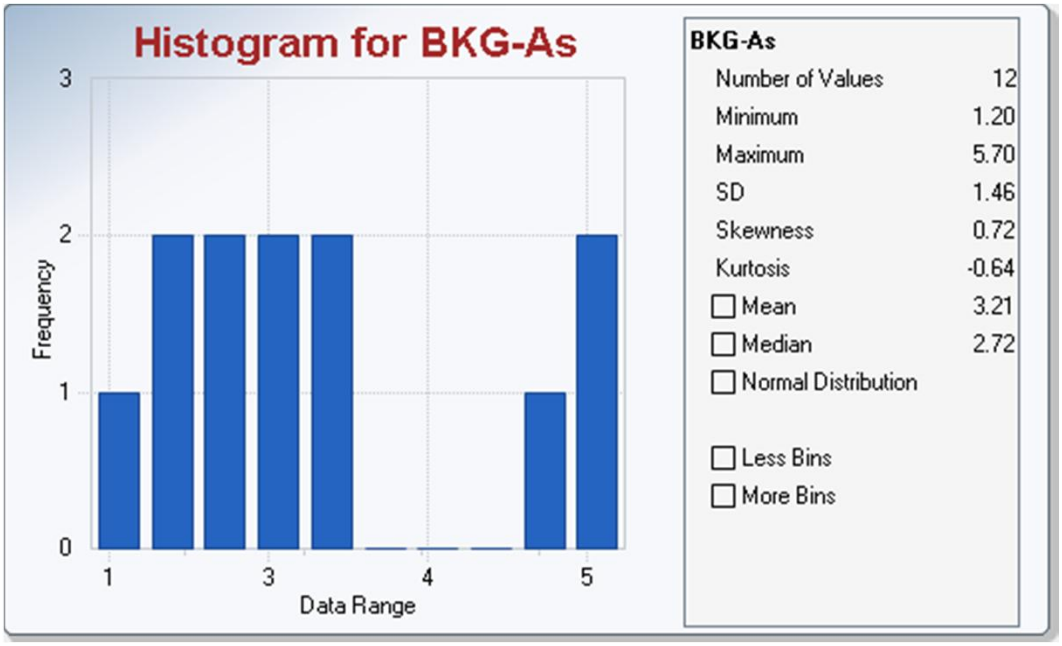
Comparing Site and Background Surface Sediment



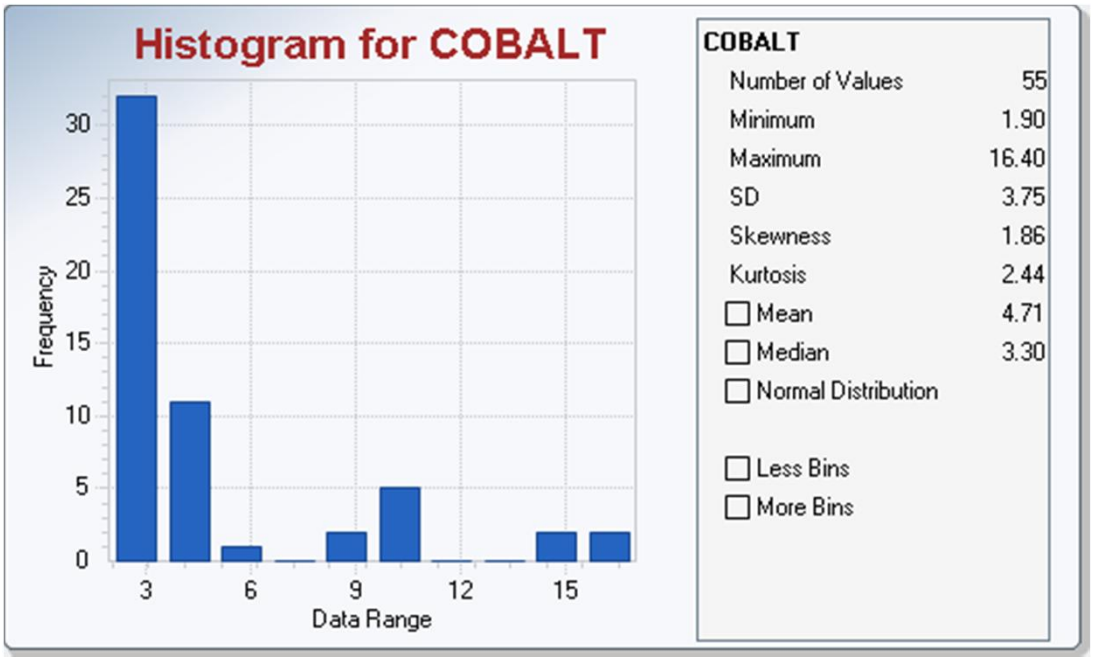


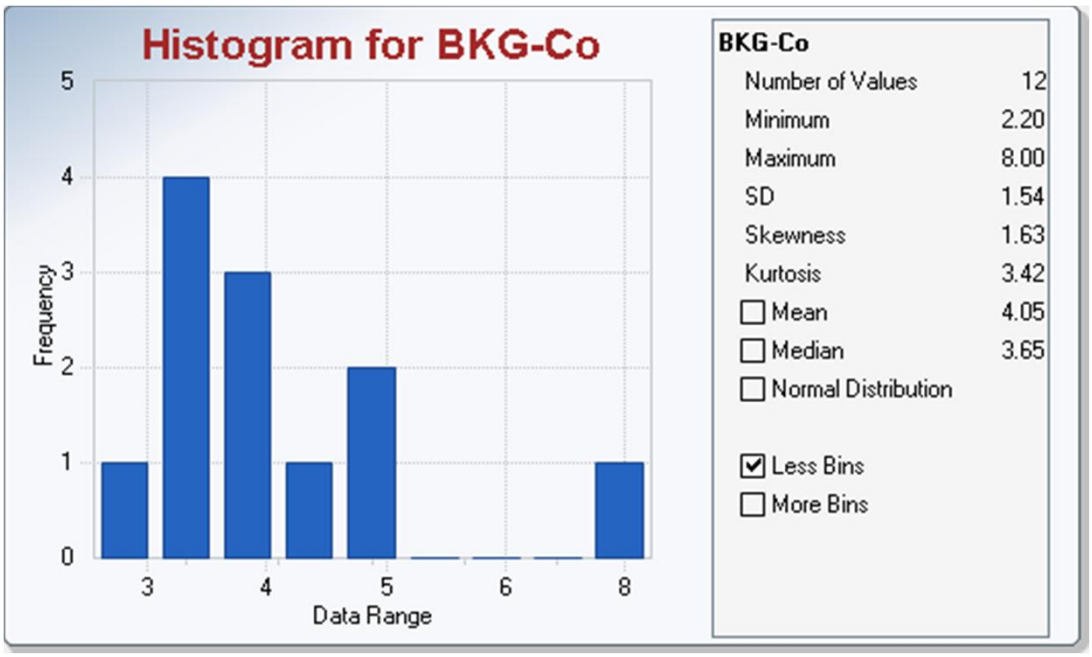
Histograms of Site concentrations are presented on top and background concentrations are presented on bottom graphs.





Histograms of Site concentrations are presented on top and background concentrations are presented on bottom graphs.





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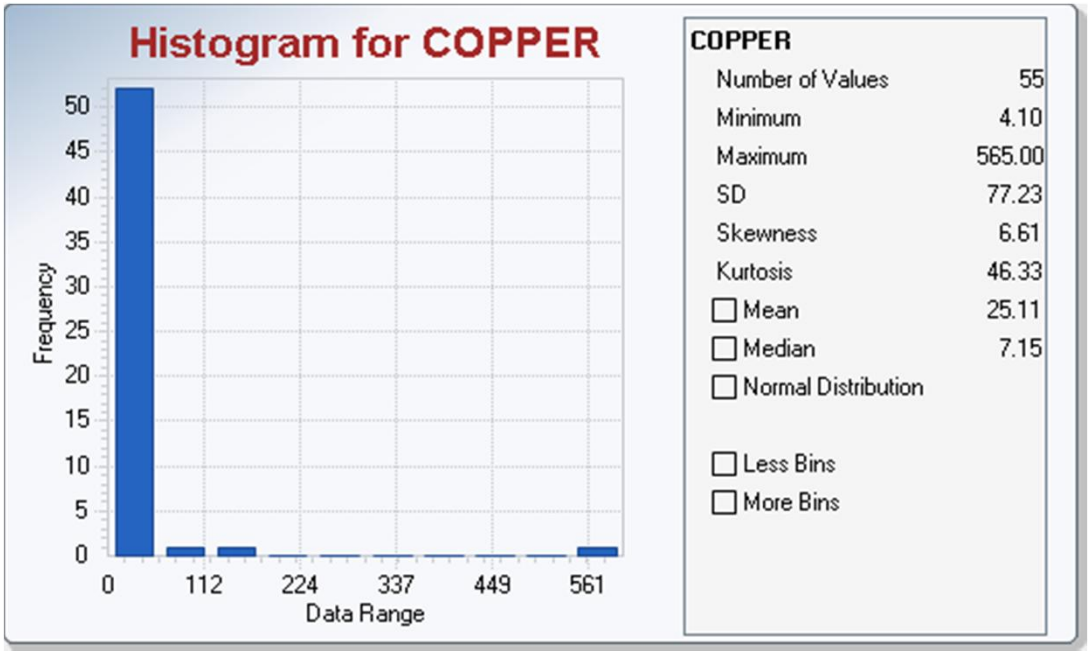

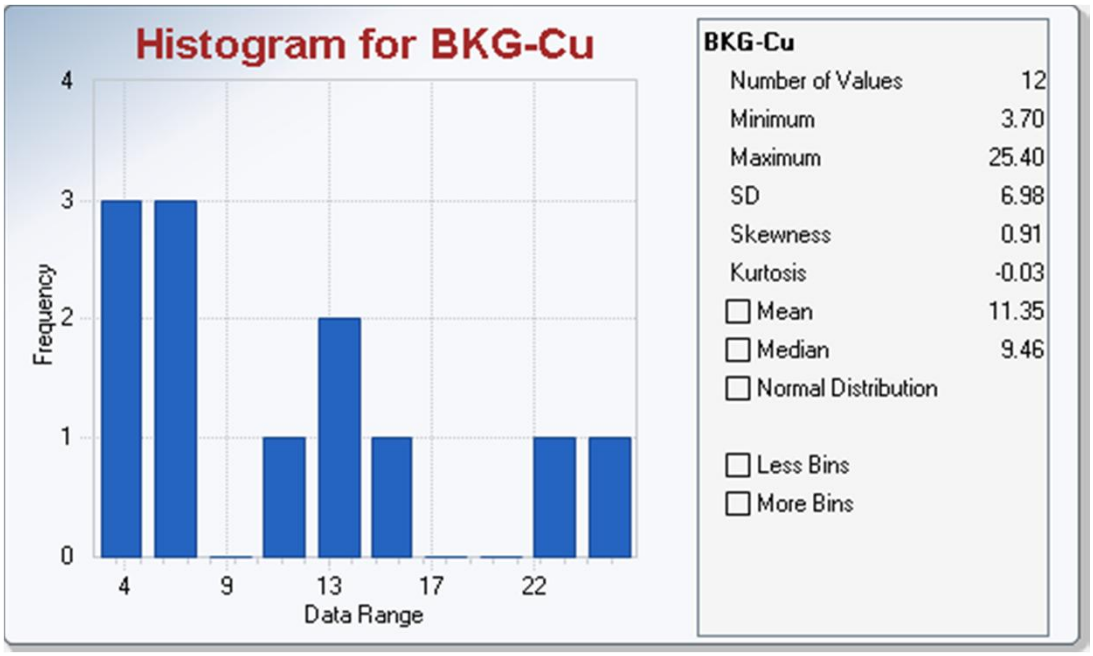

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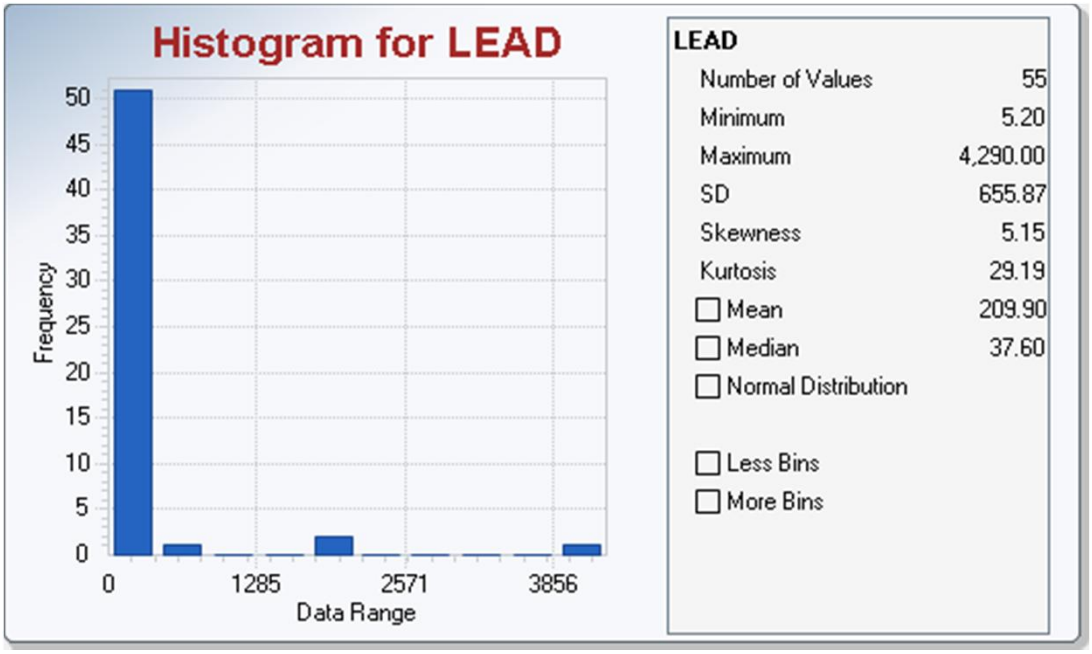

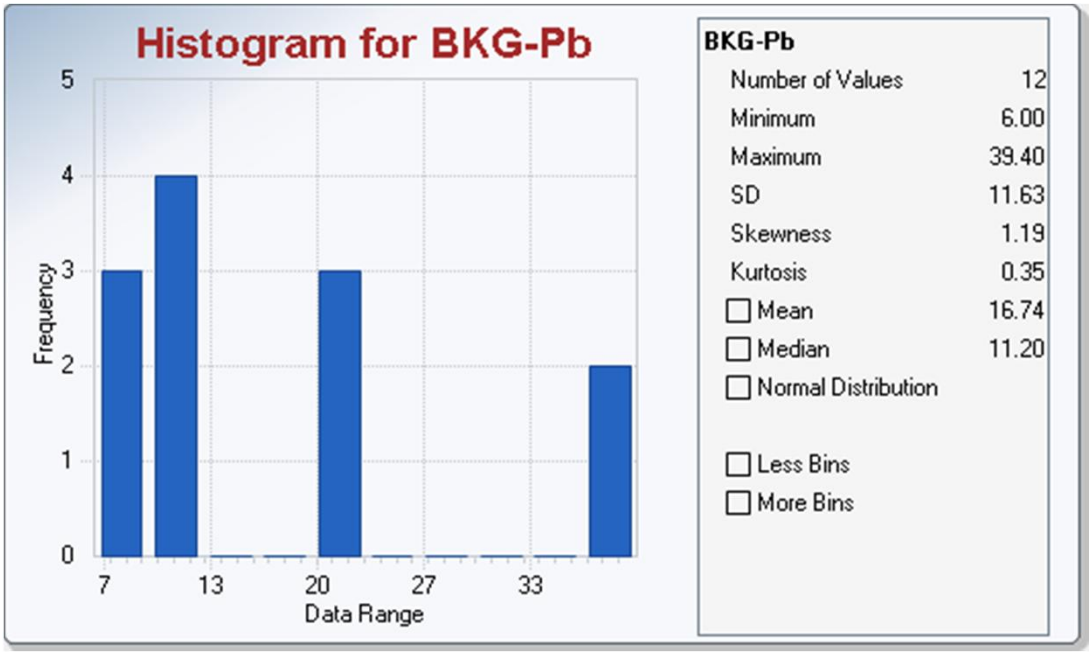

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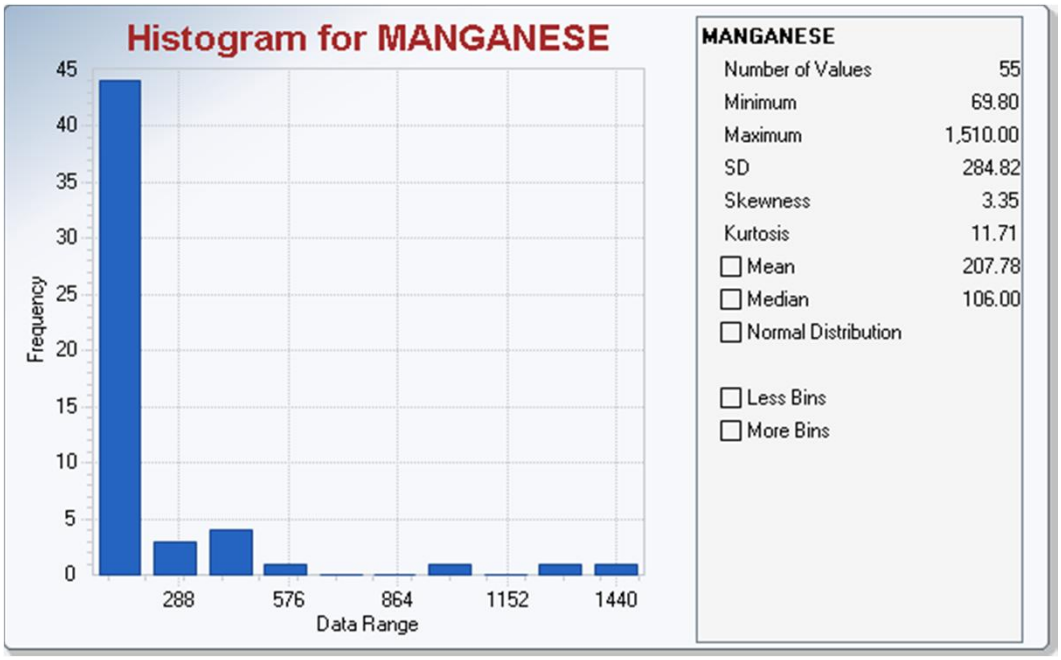

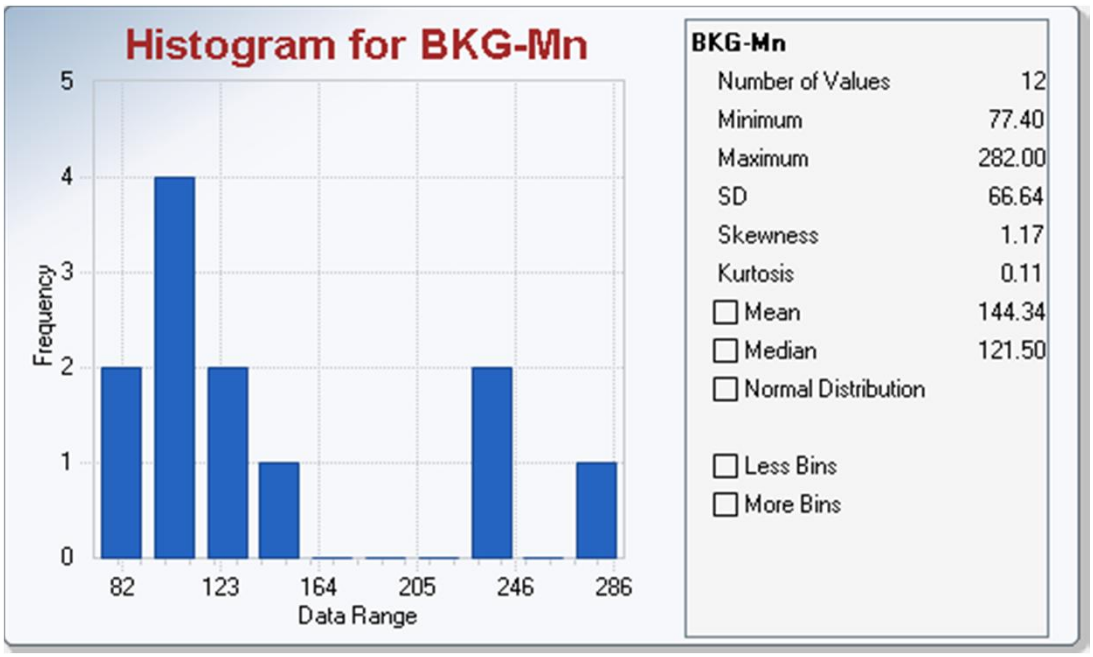

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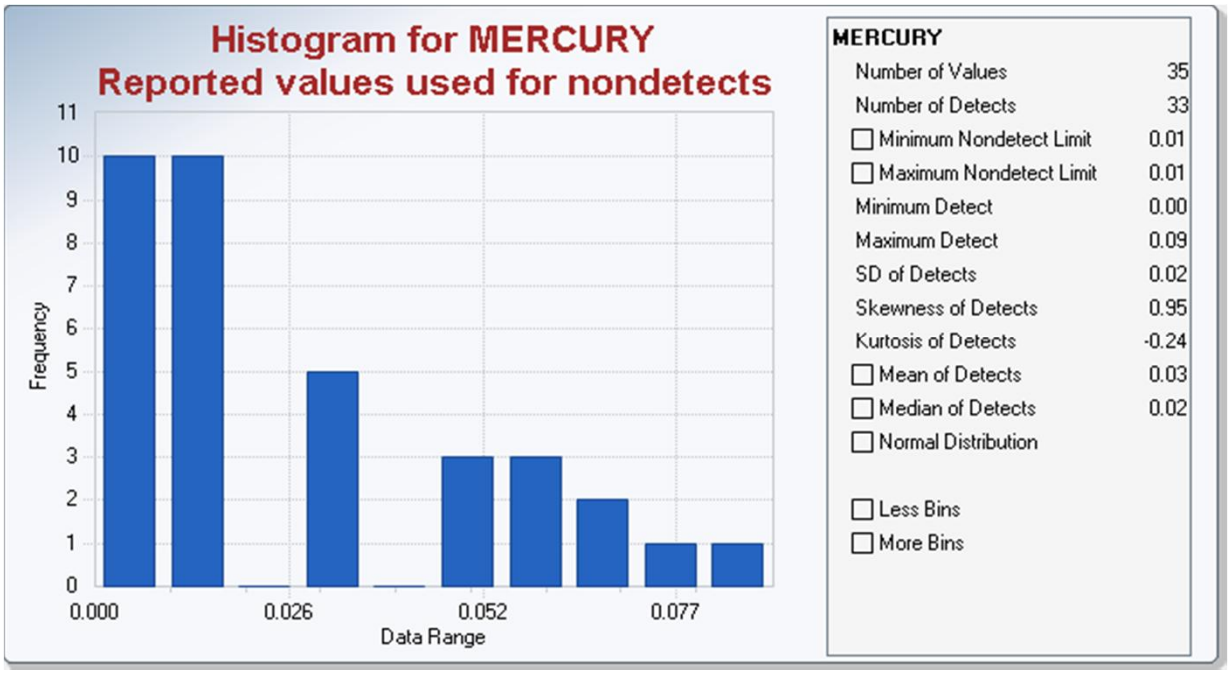

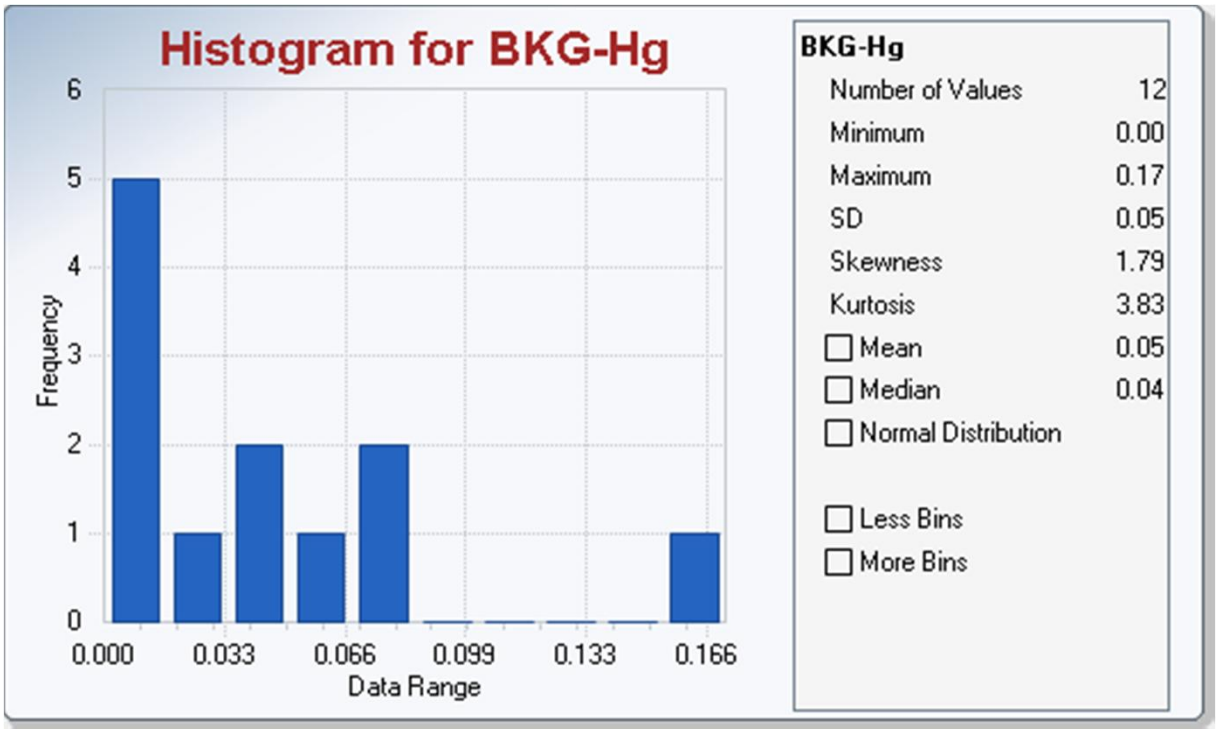

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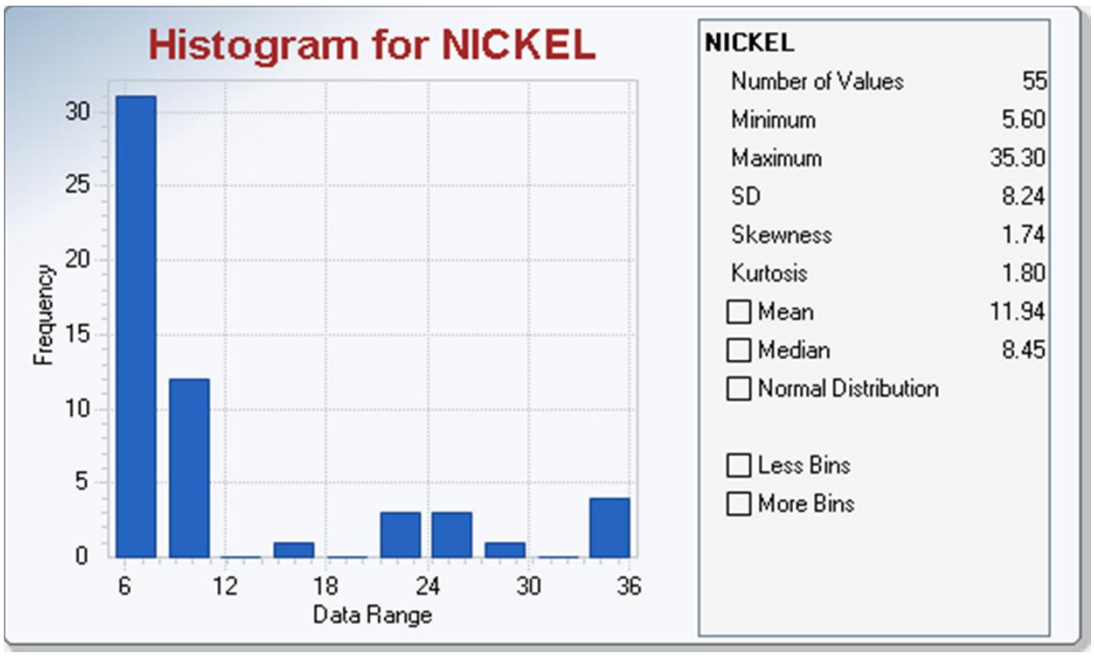

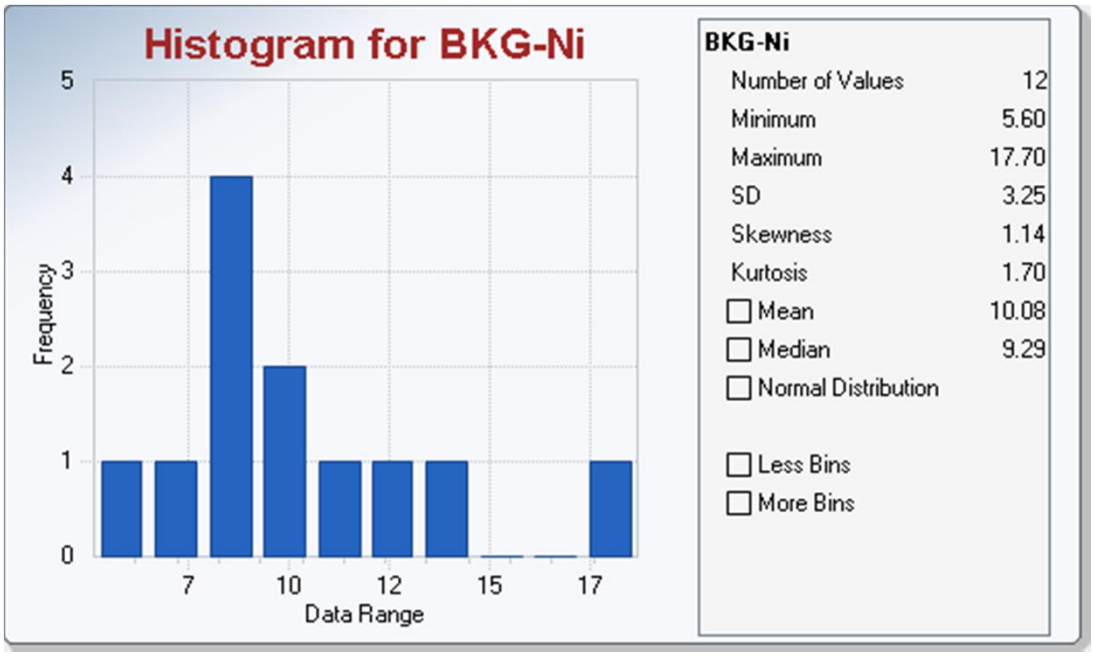

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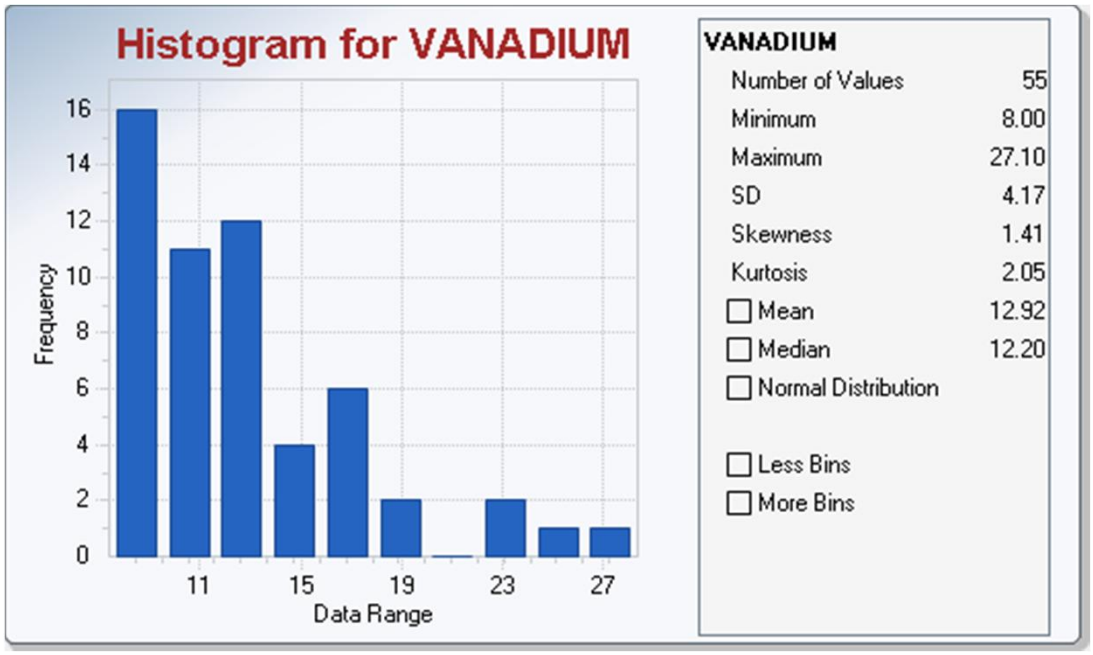

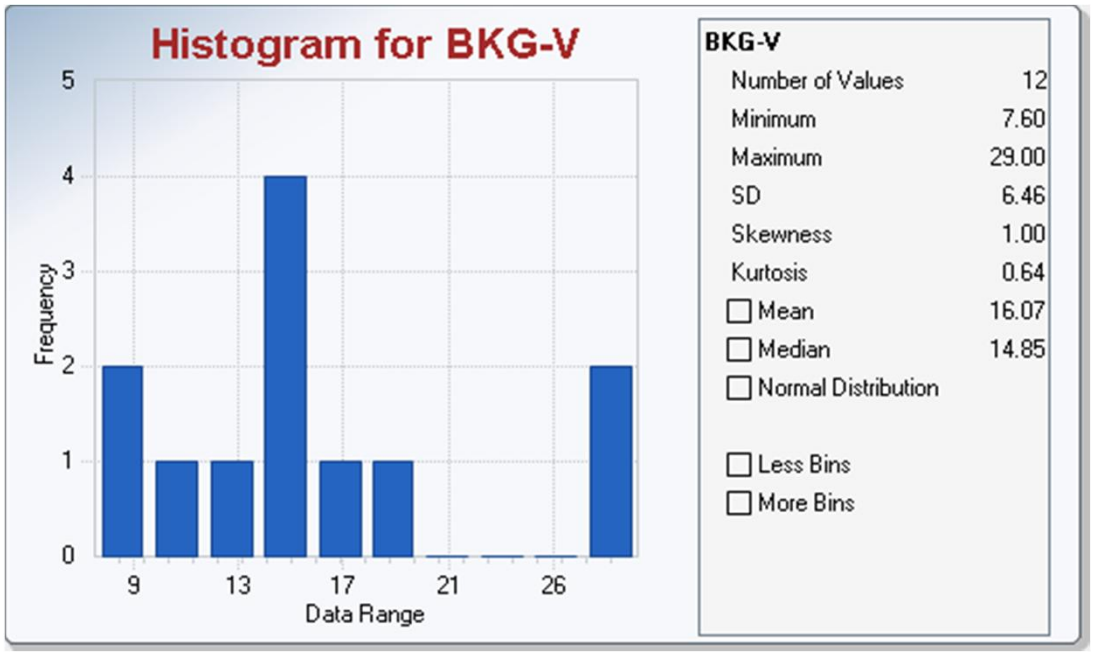

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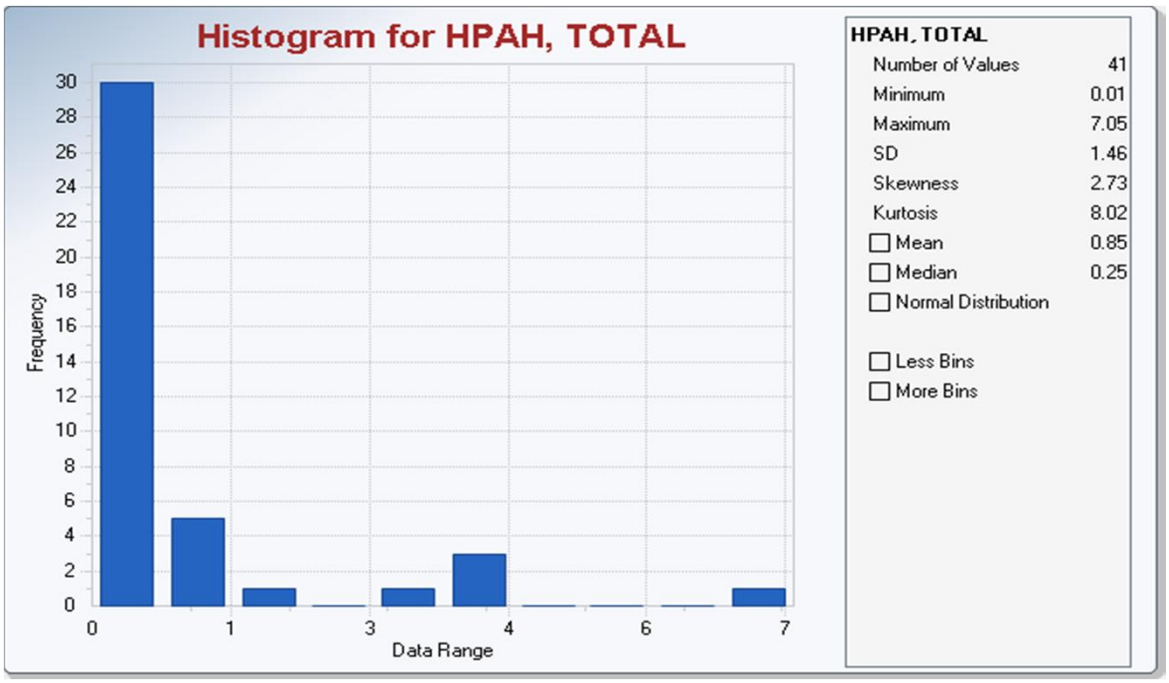

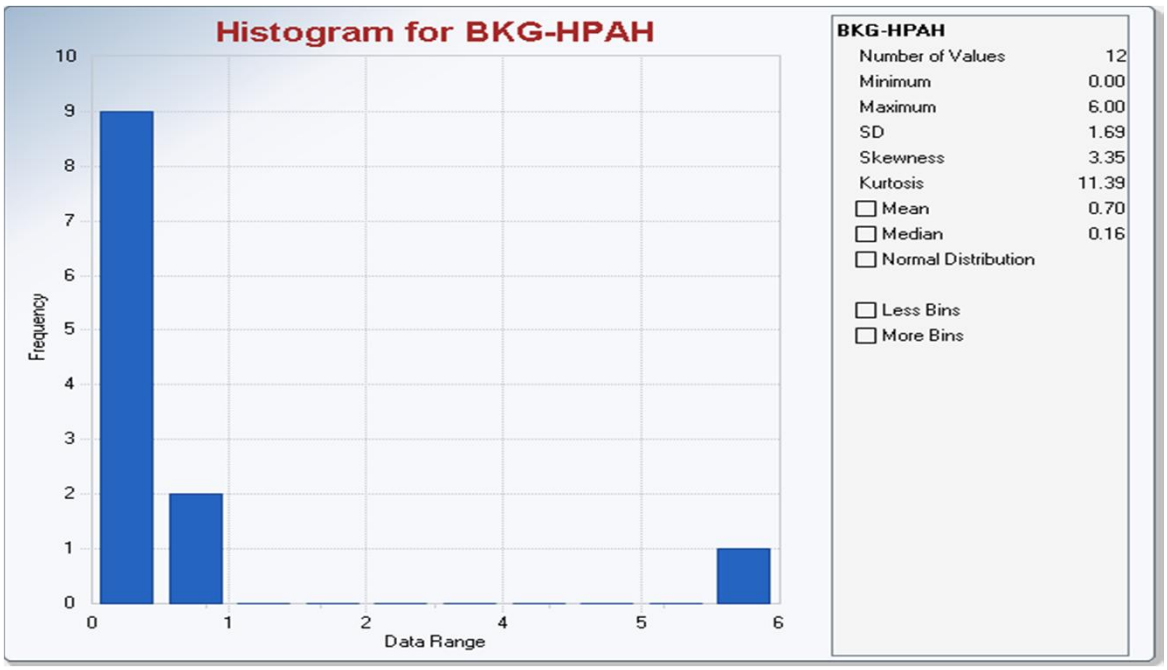

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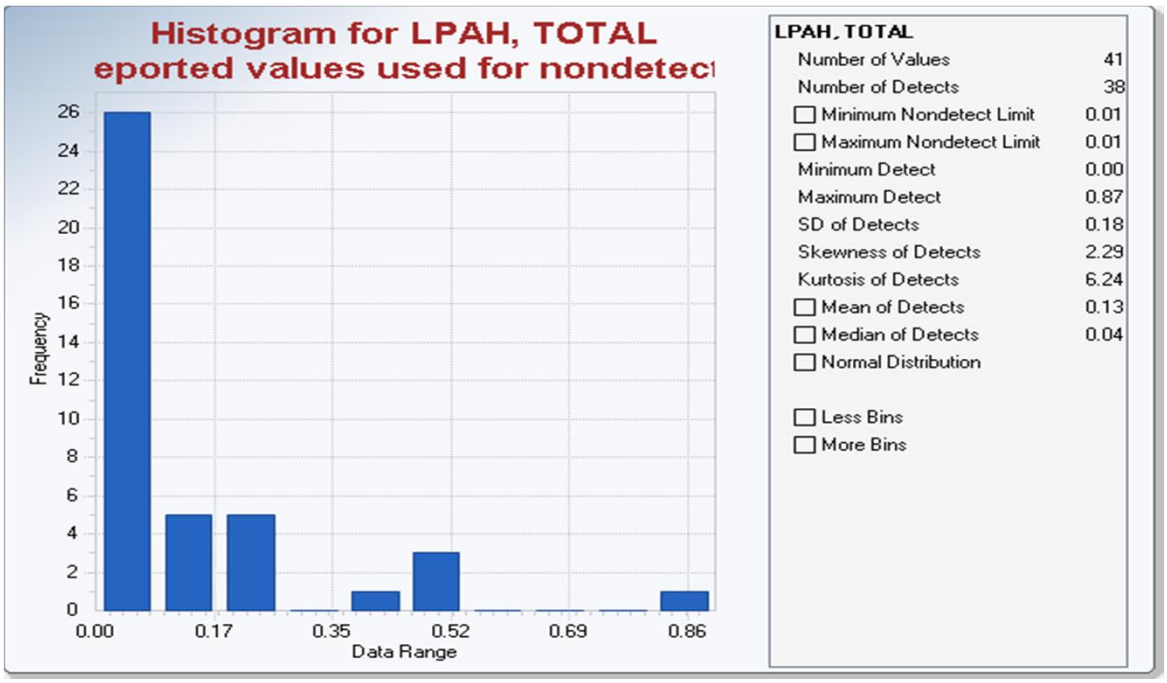

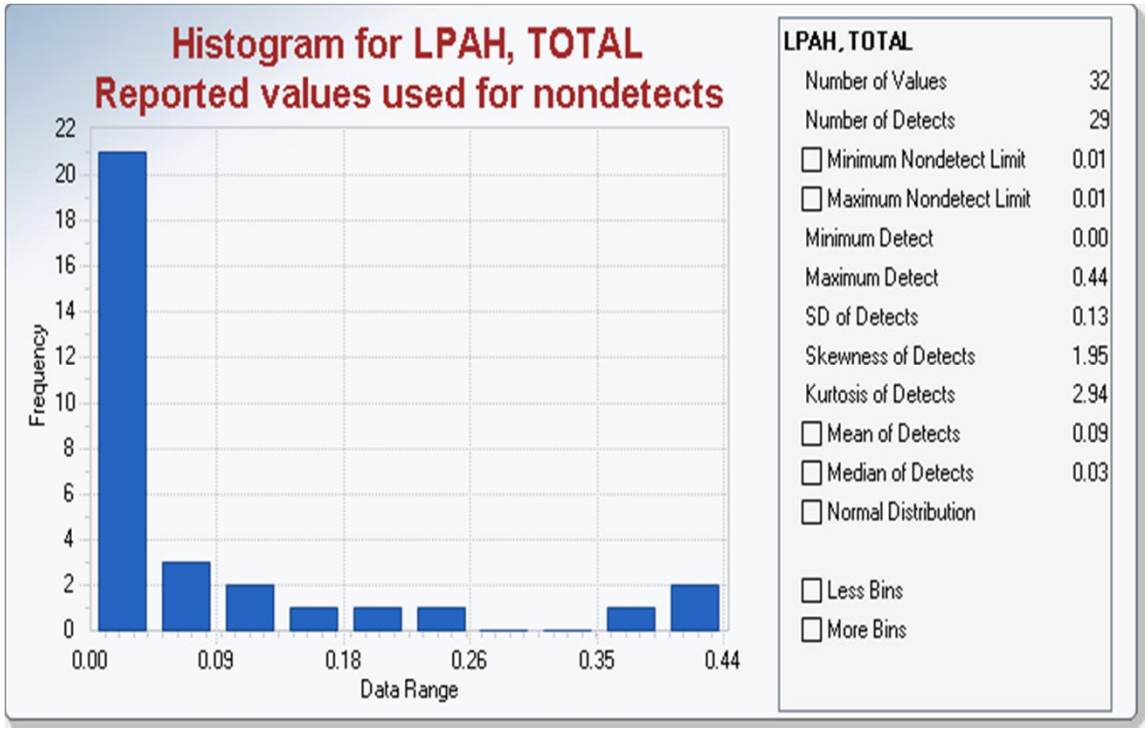

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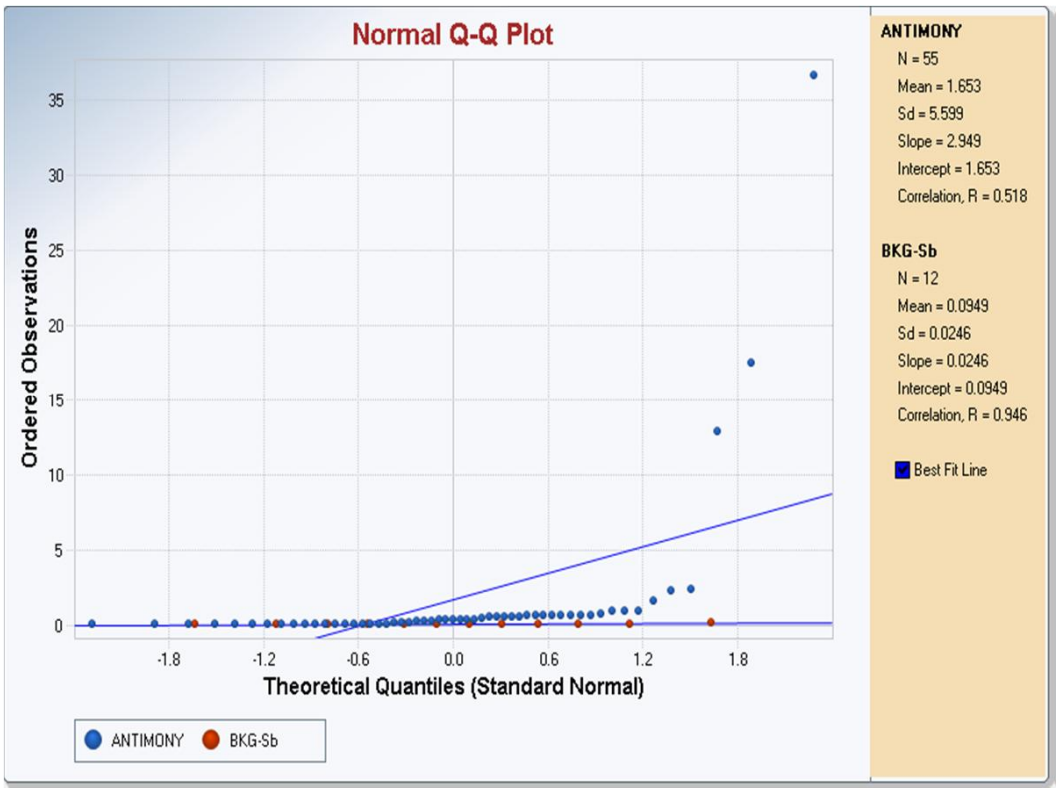
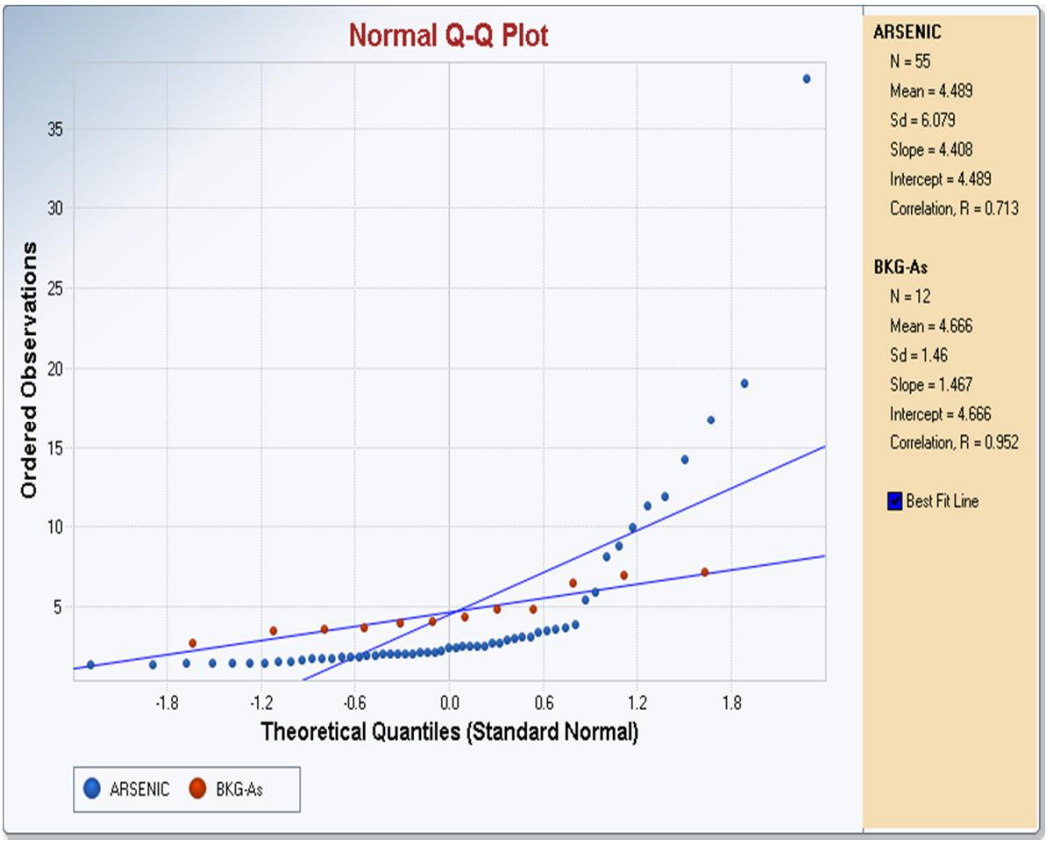
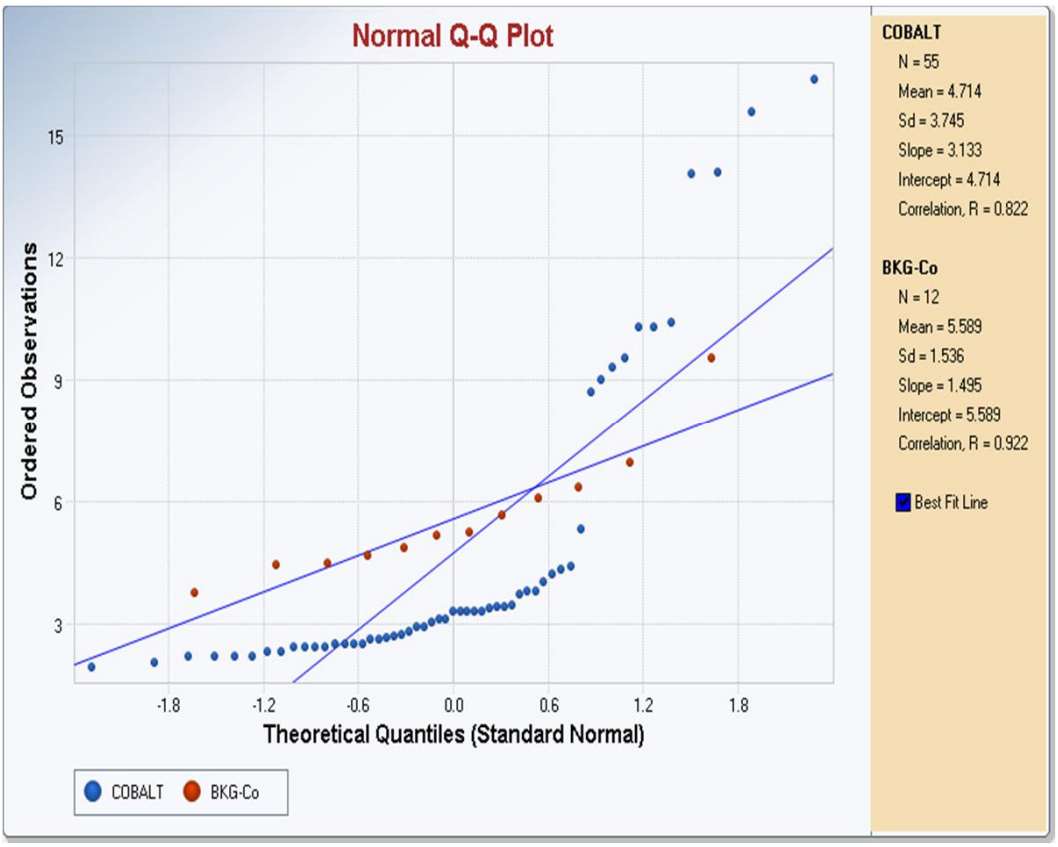
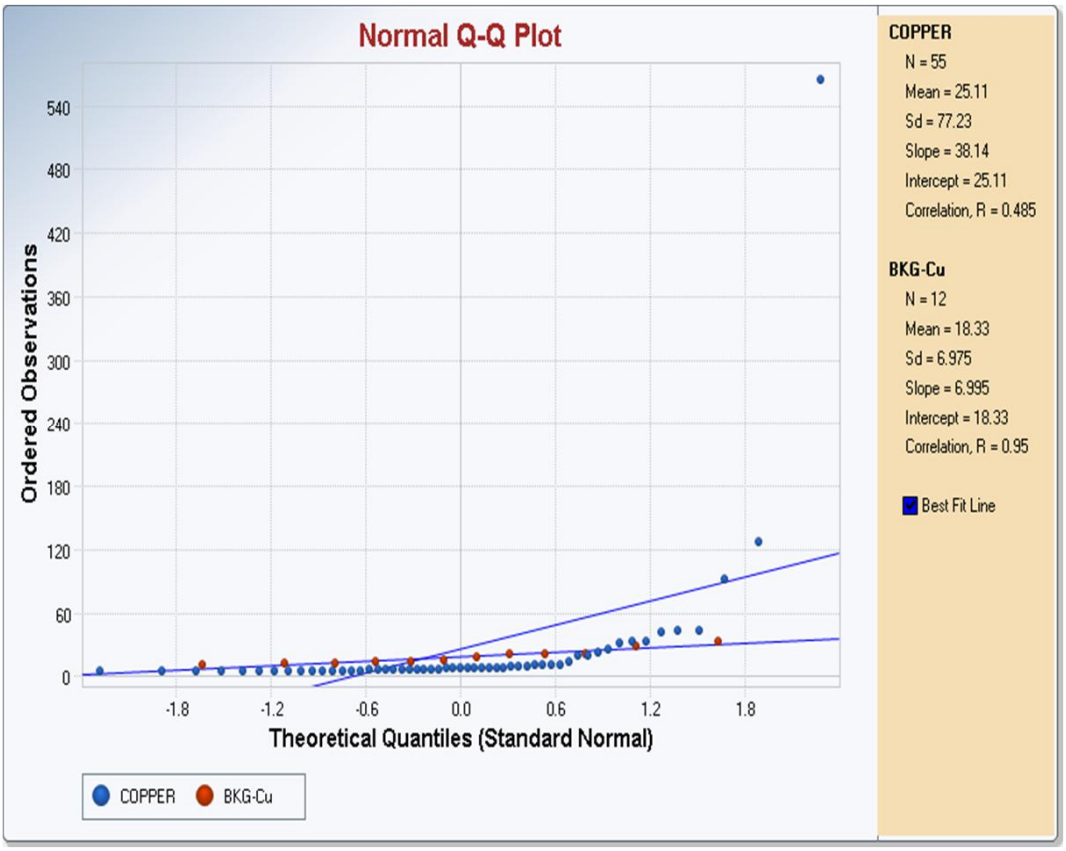




BKG - Background





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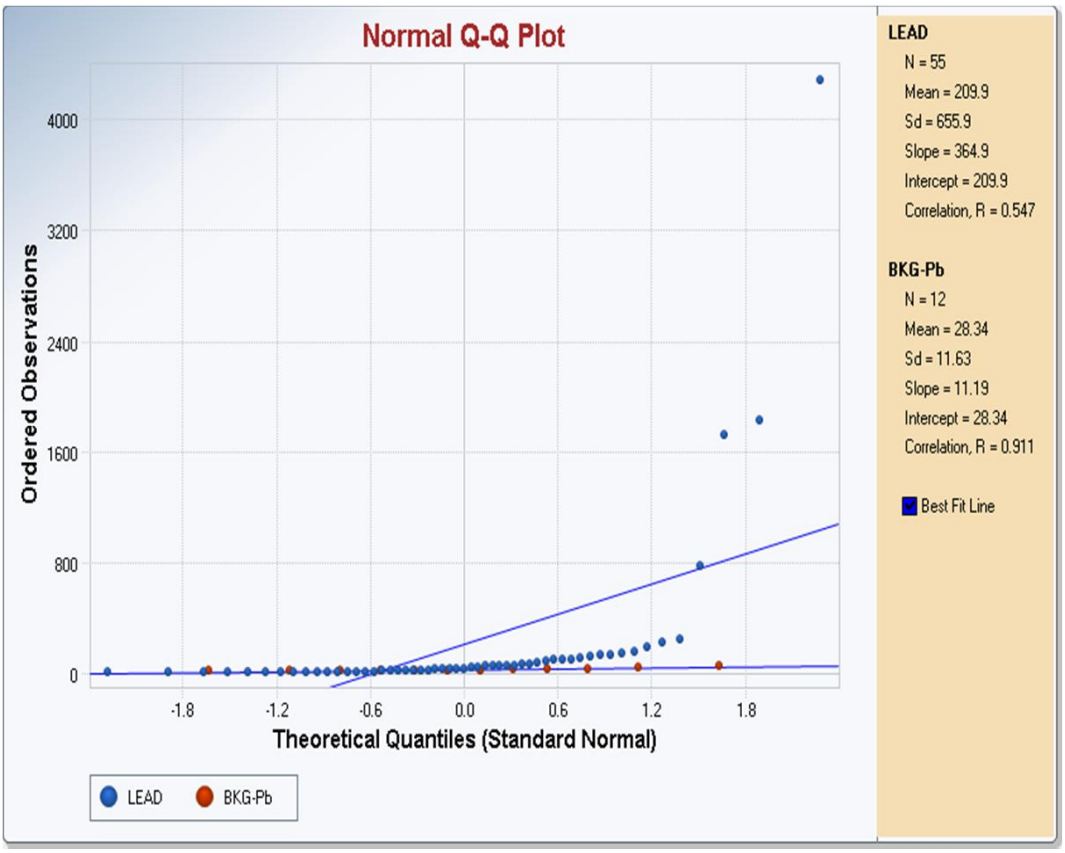

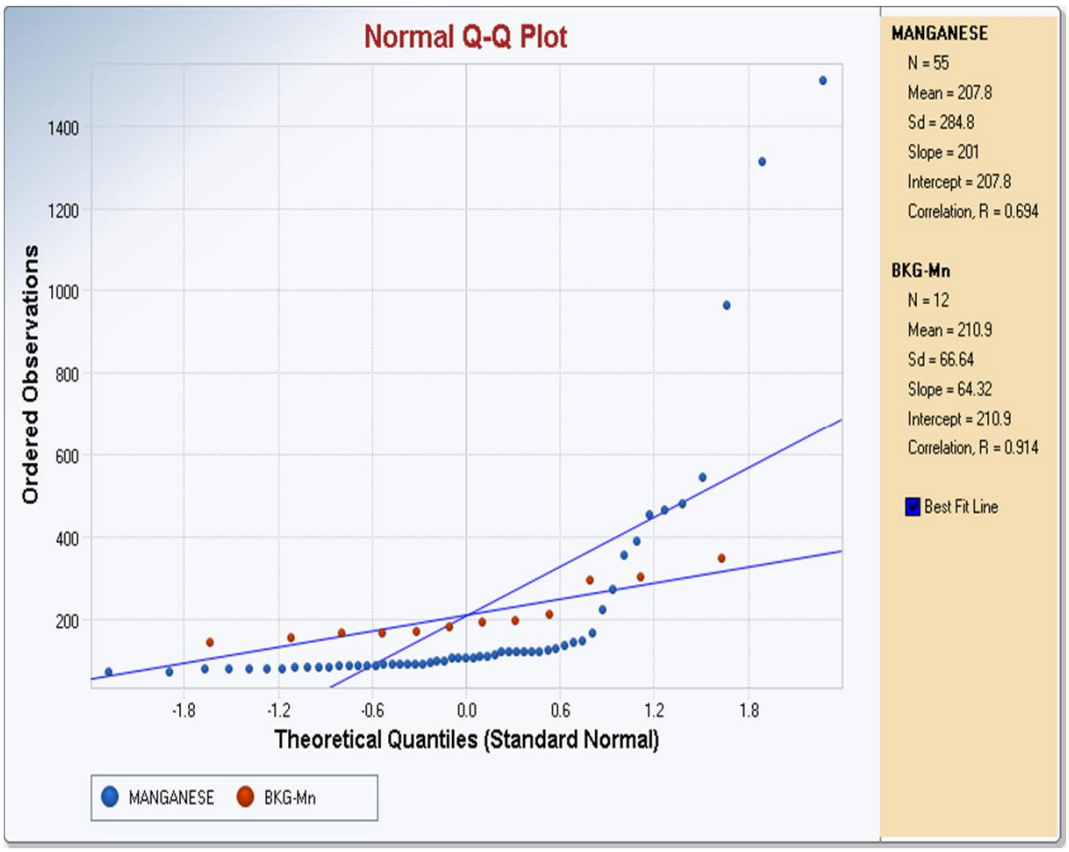

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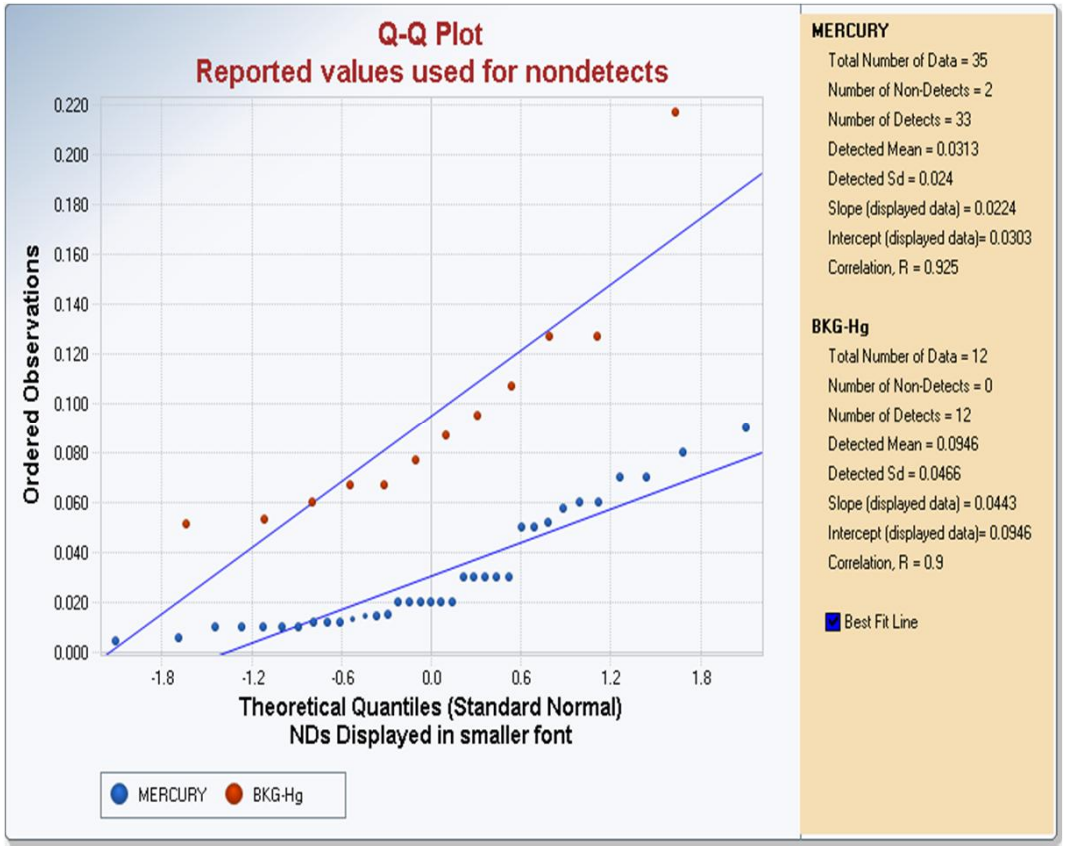

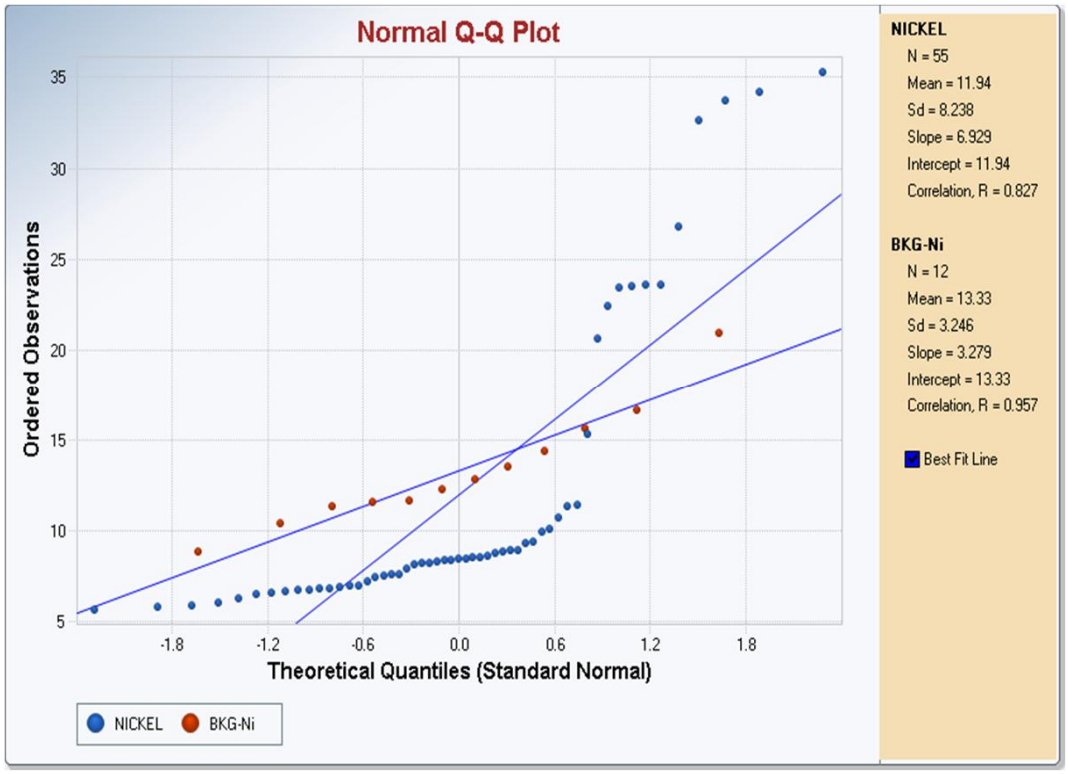

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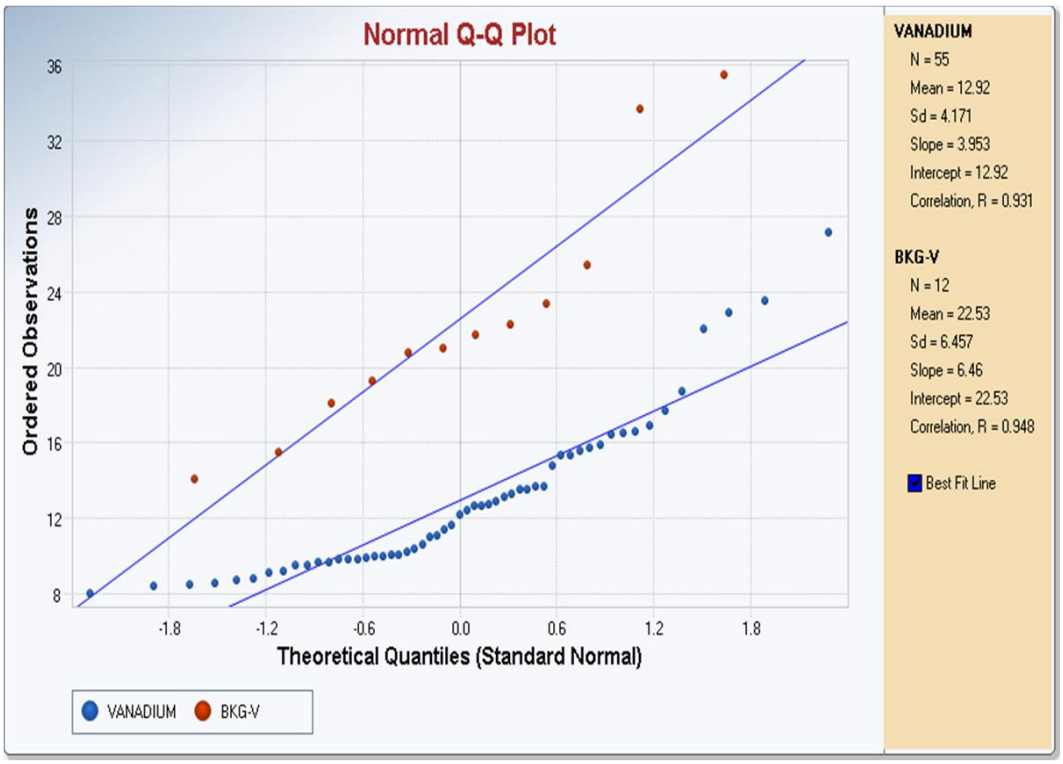

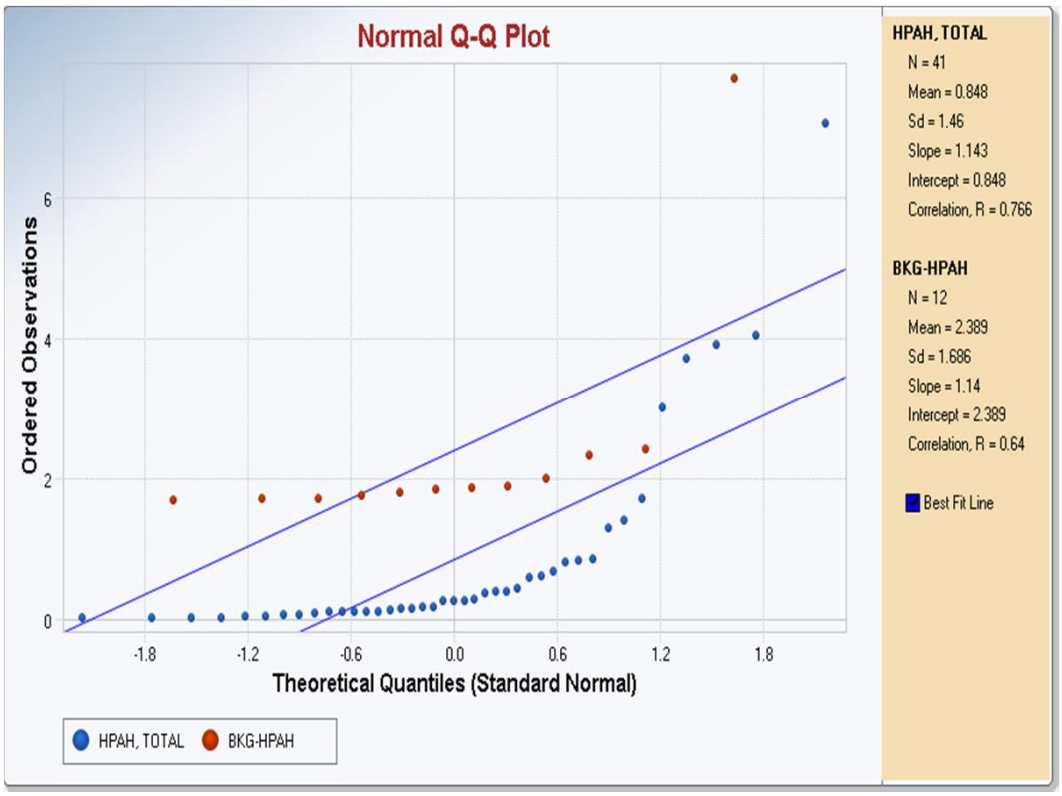

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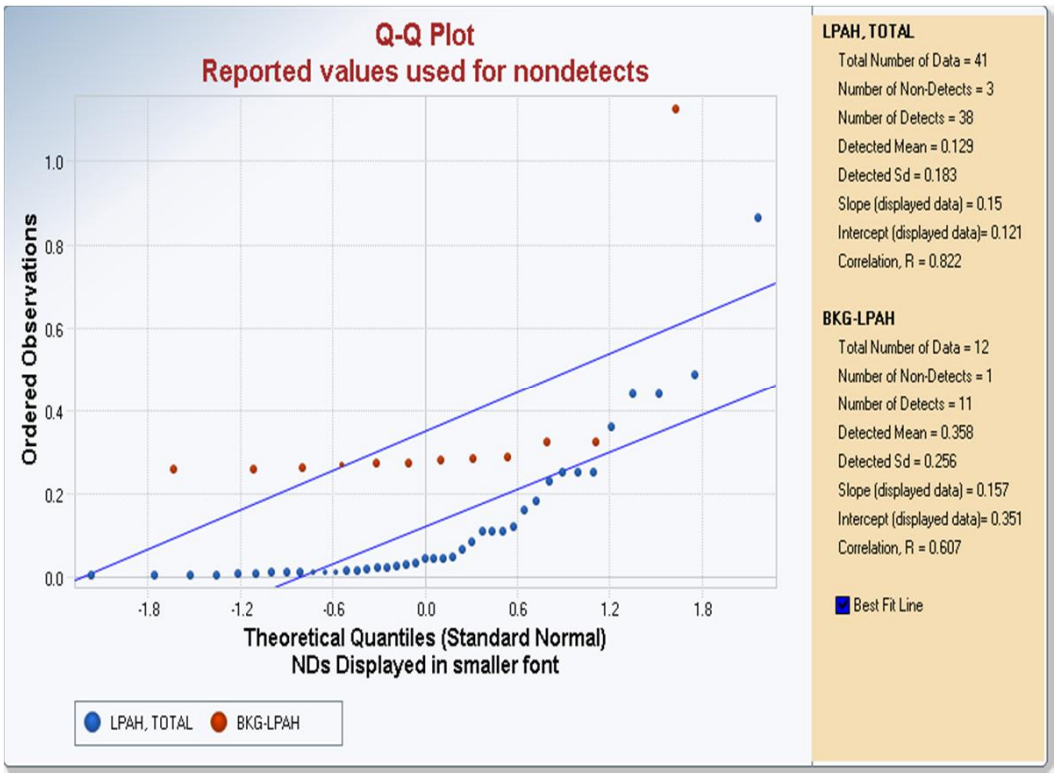
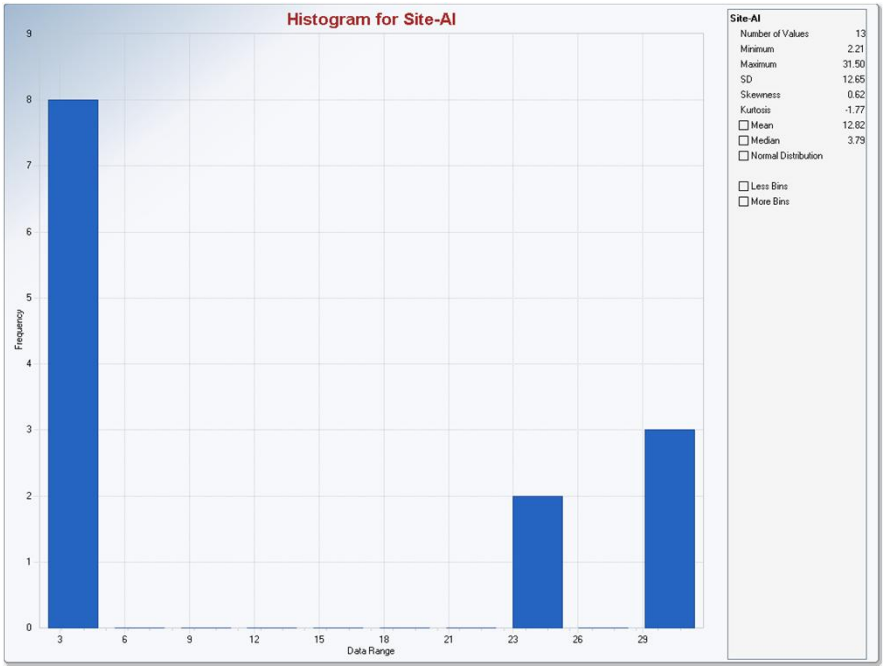


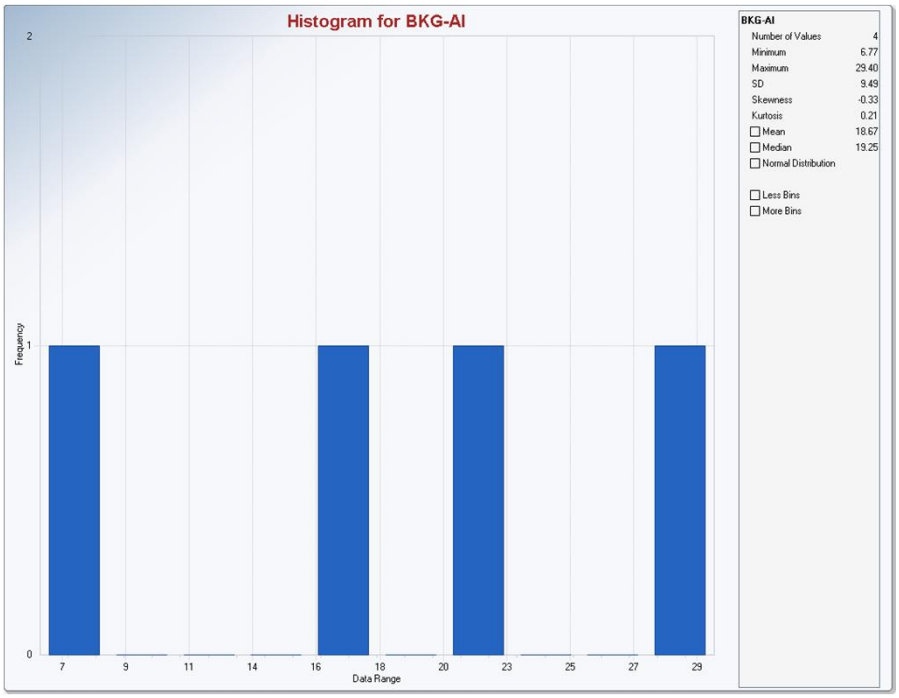
BKG - Background

Attachment 4

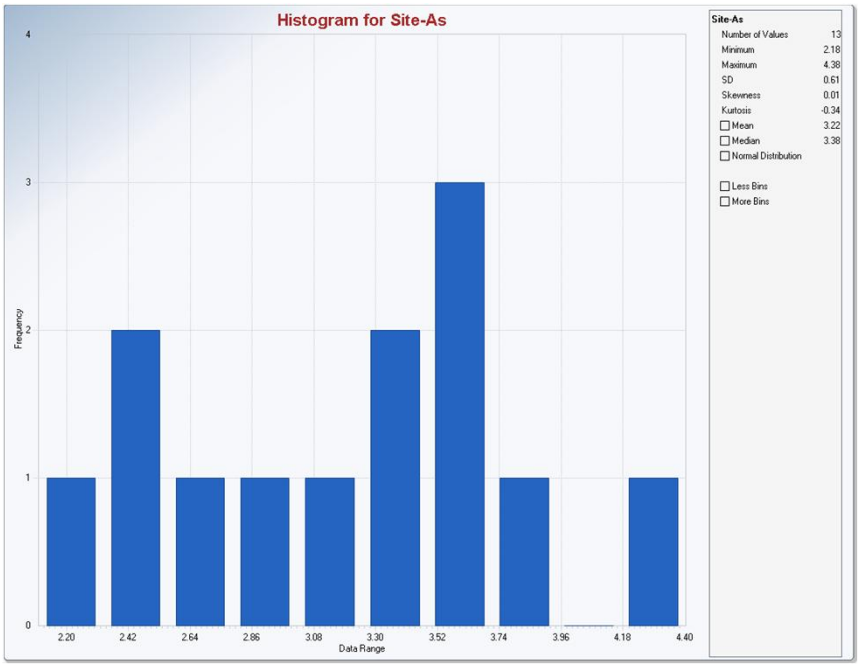
Histograms and Quantile-Quantile Plots

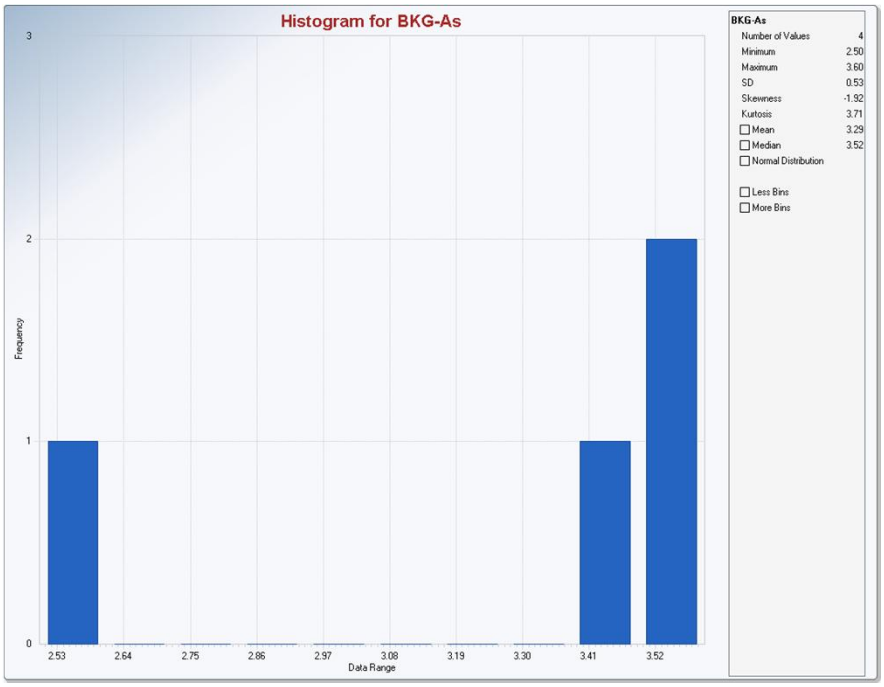
Comparing Site and Background Shellfish Tissue





Histograms of Site concentrations are presented on top and background concentrations are presented on the bottom graphs.





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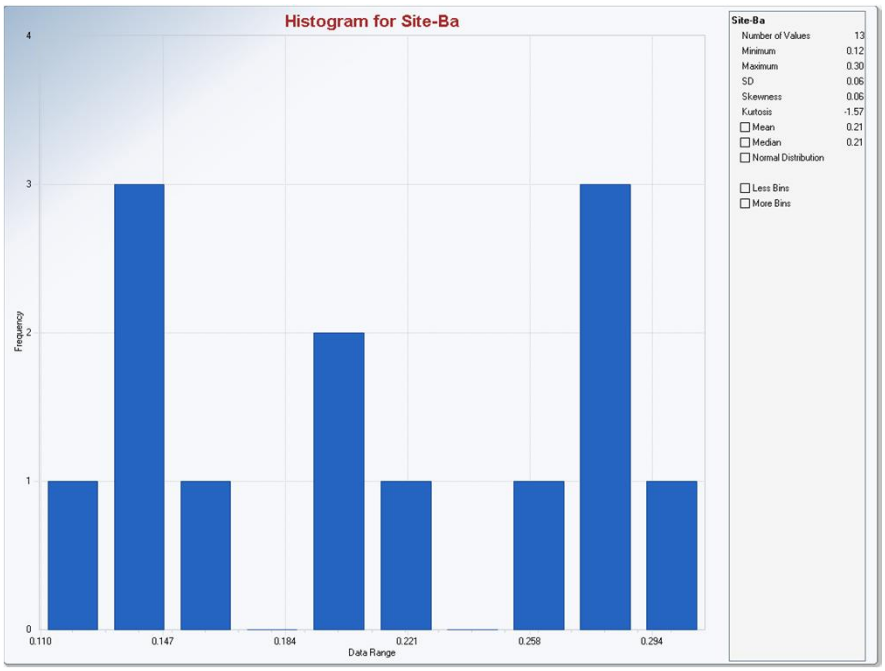

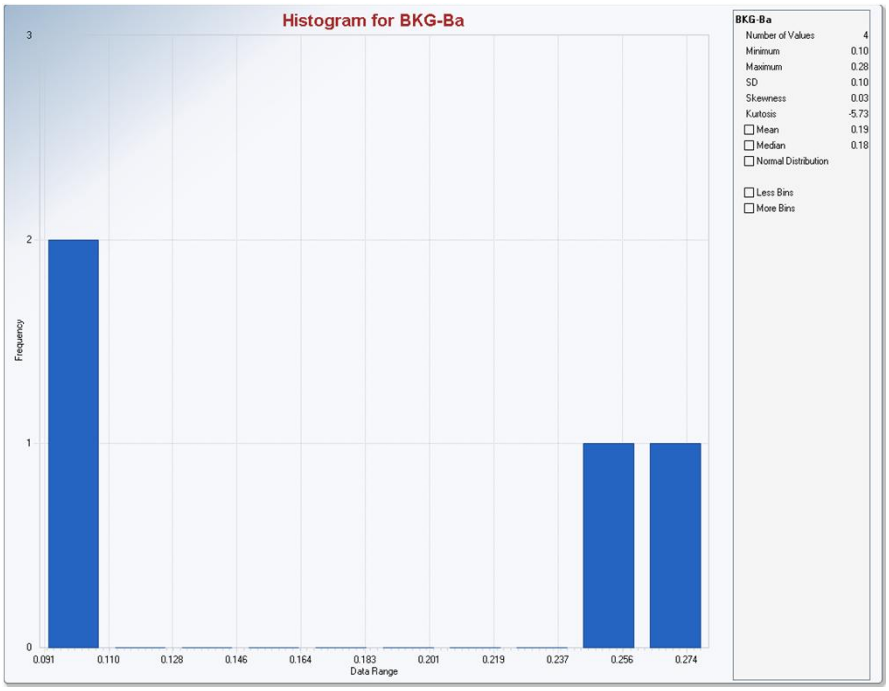

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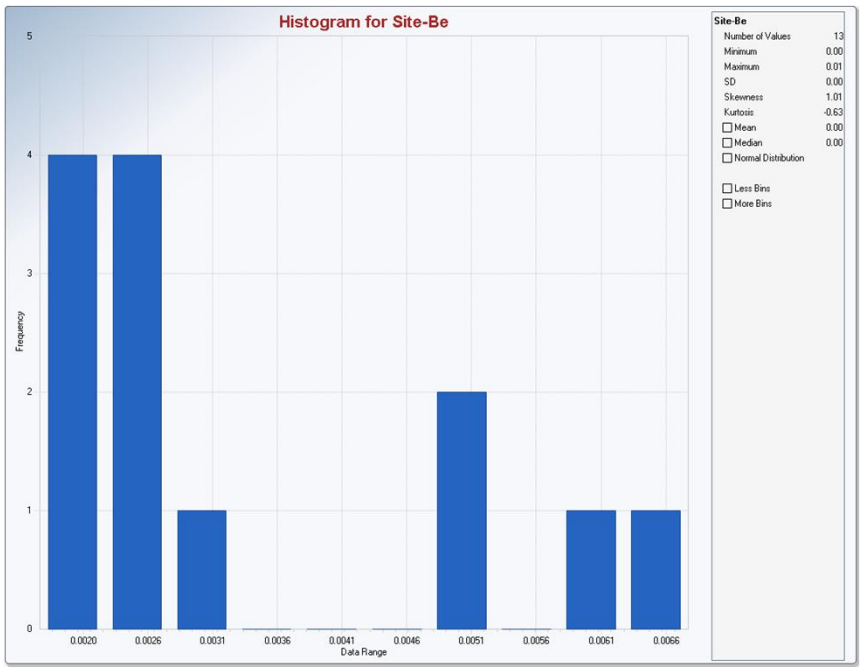

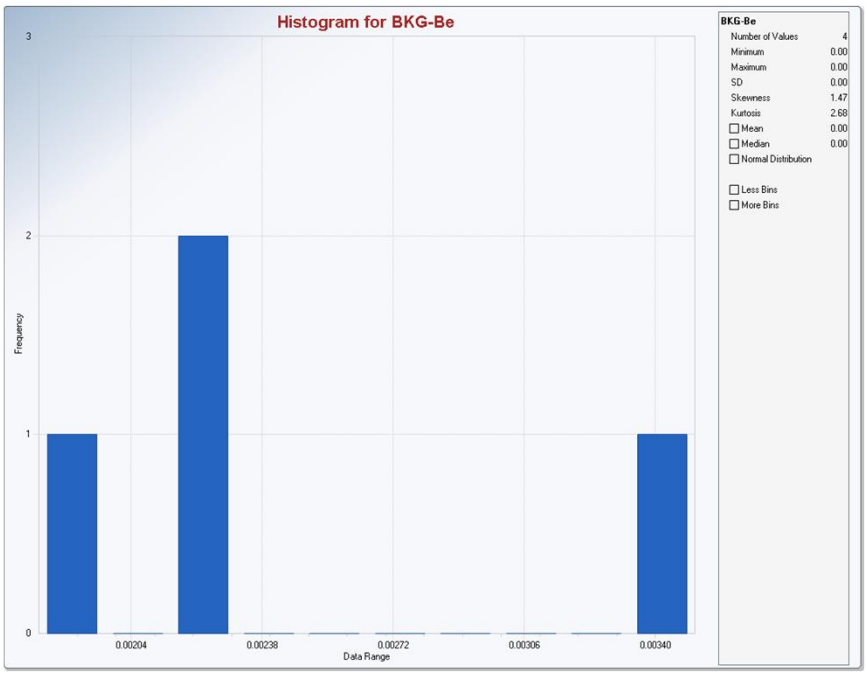

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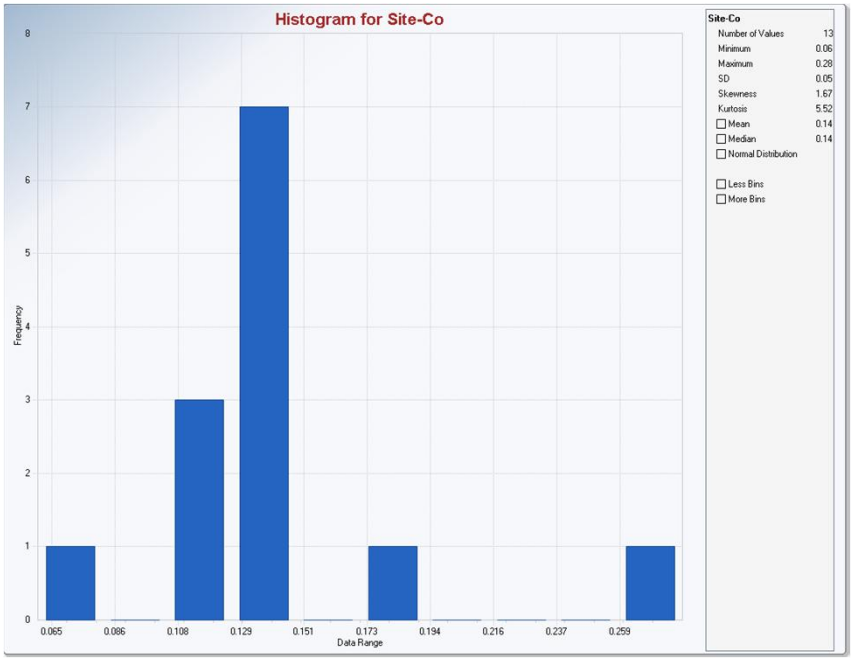

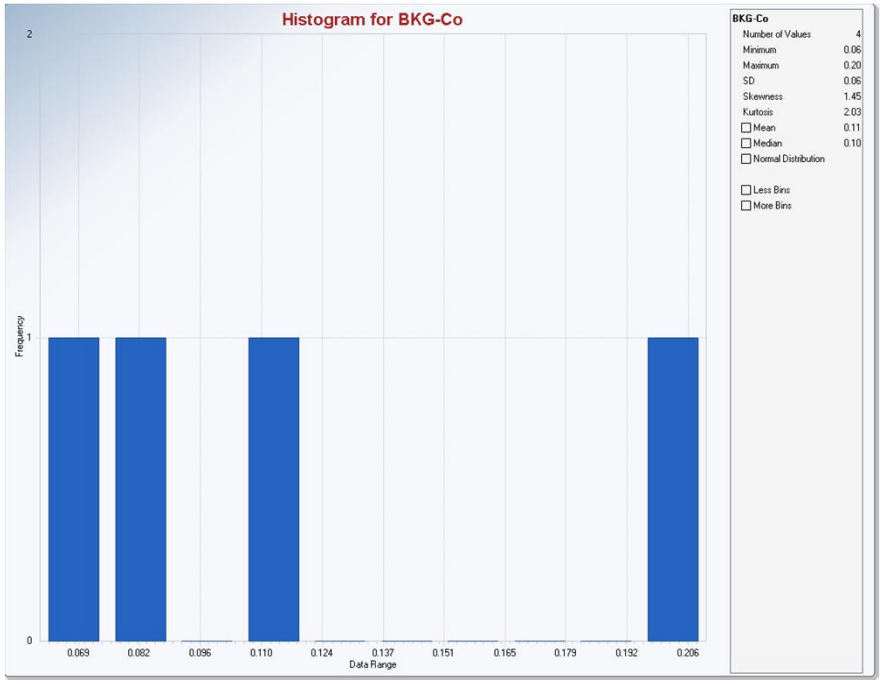

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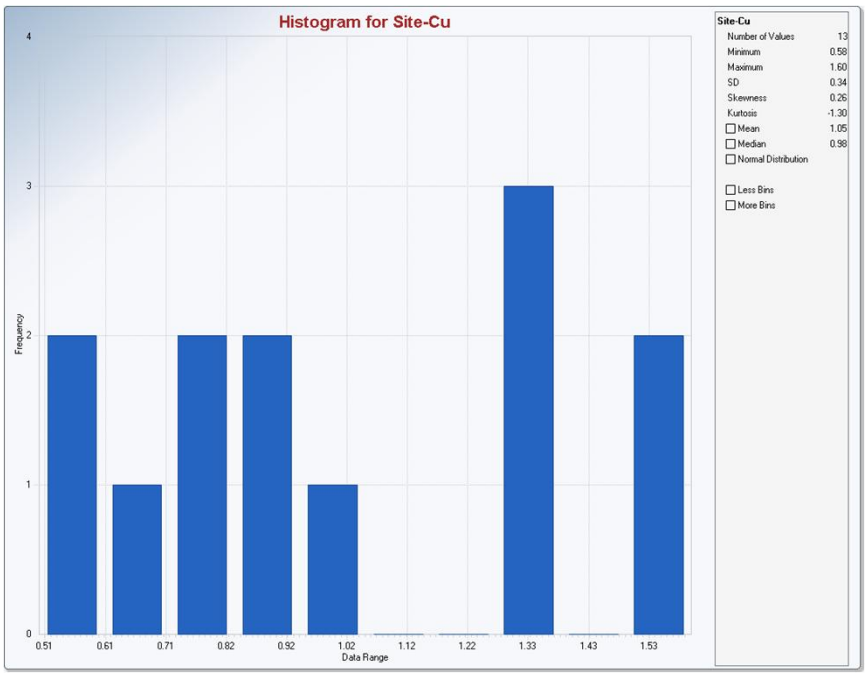

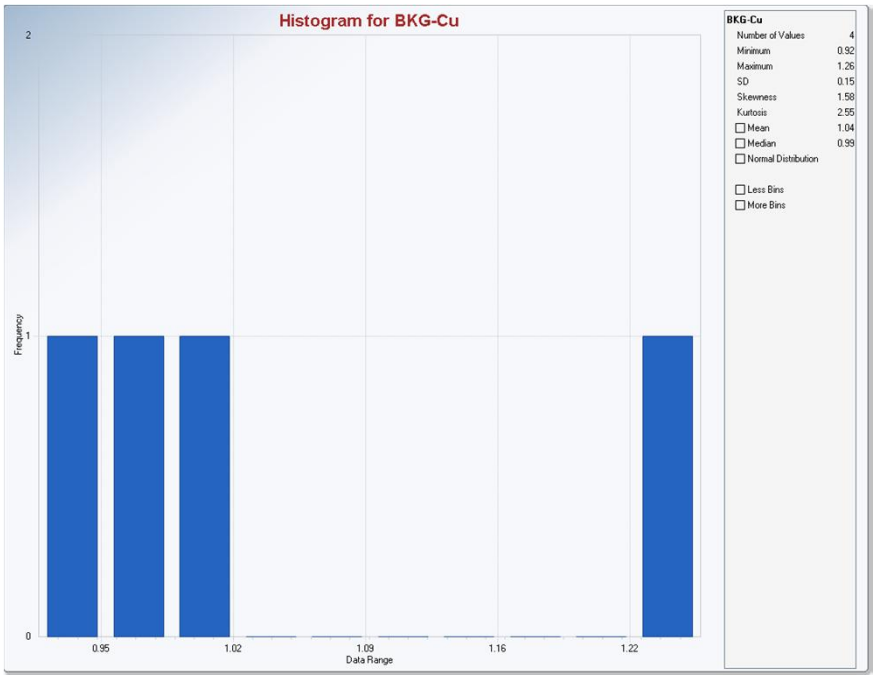

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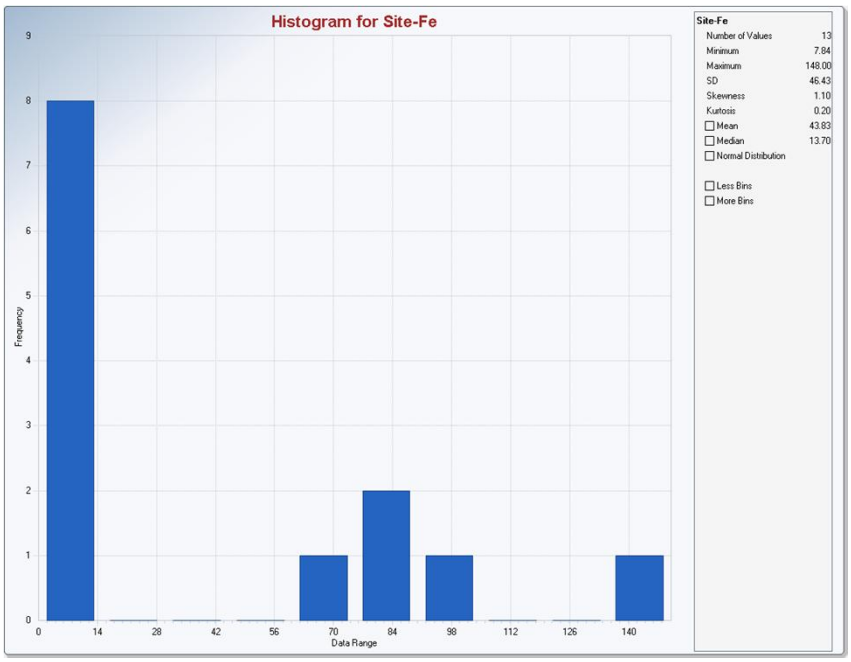

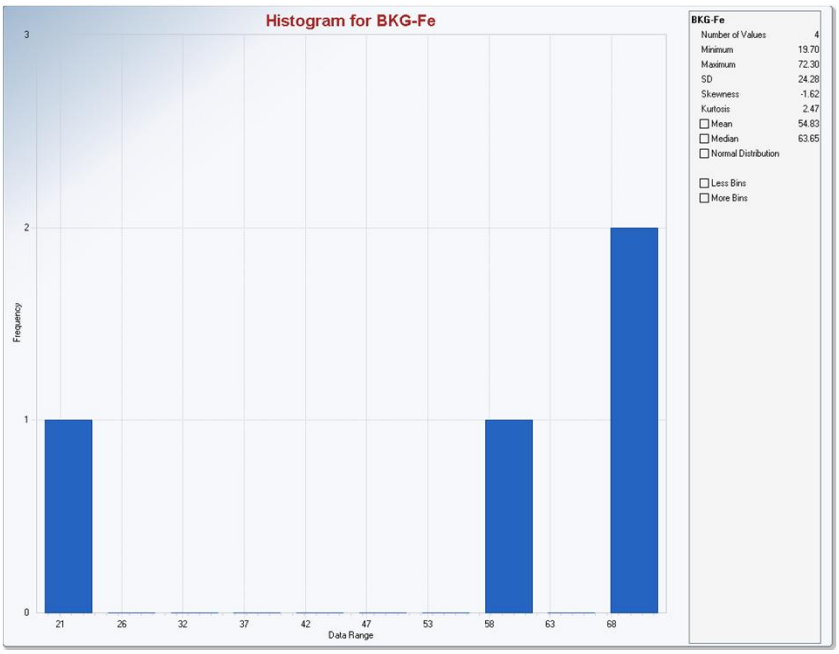

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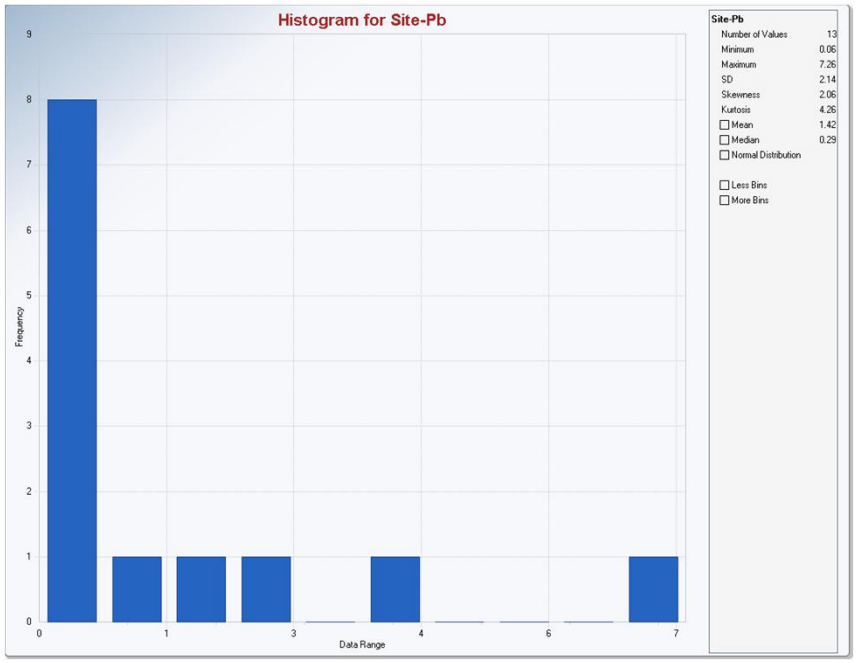

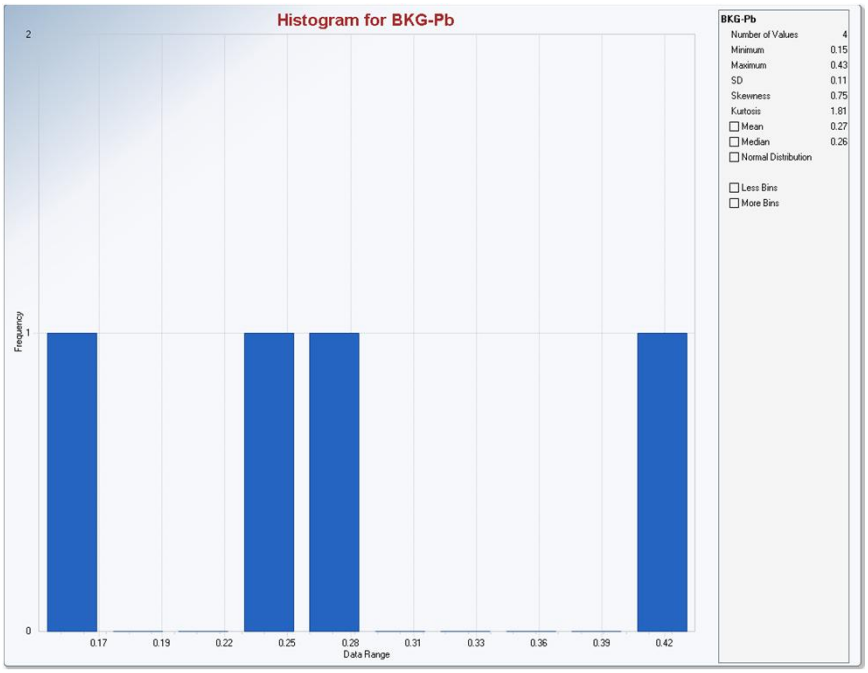

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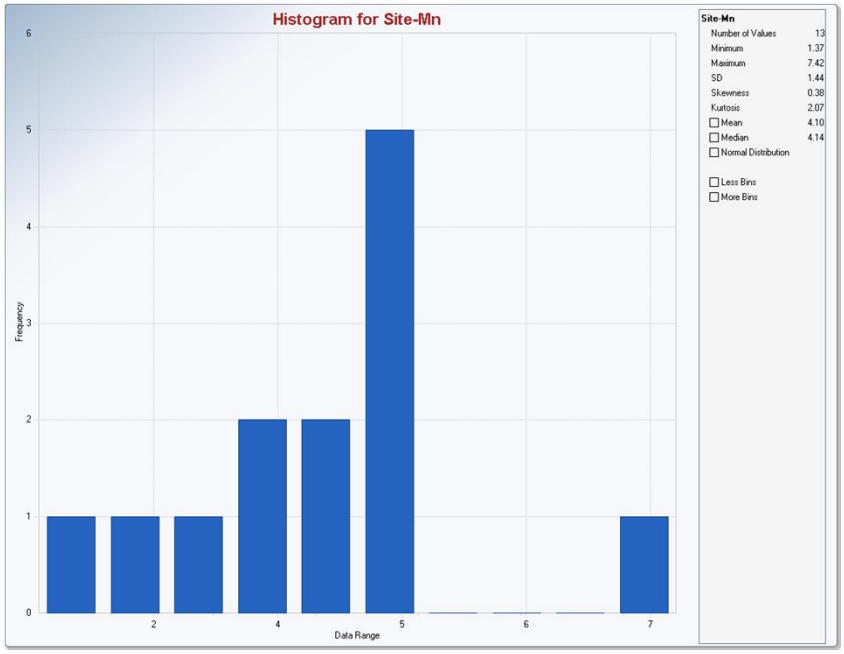

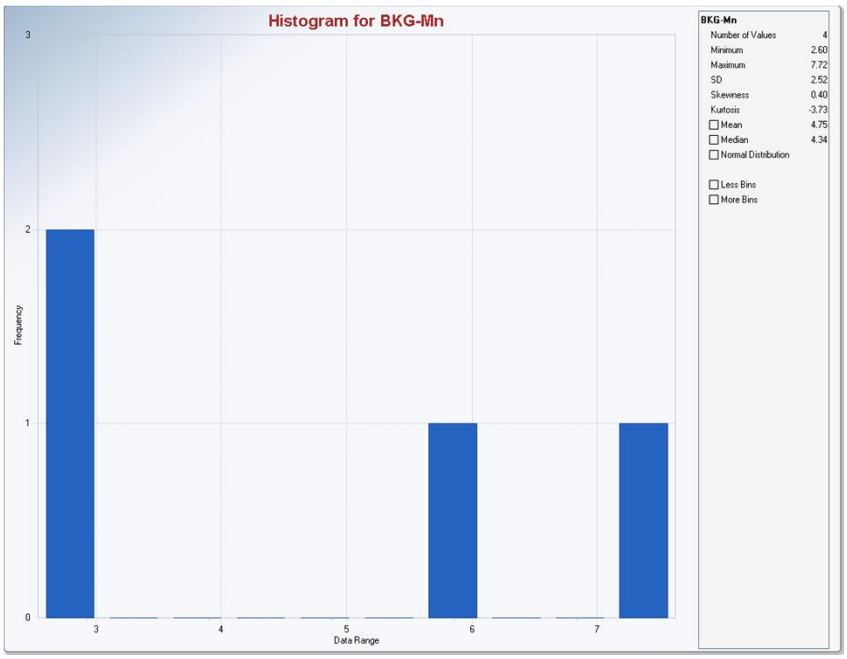

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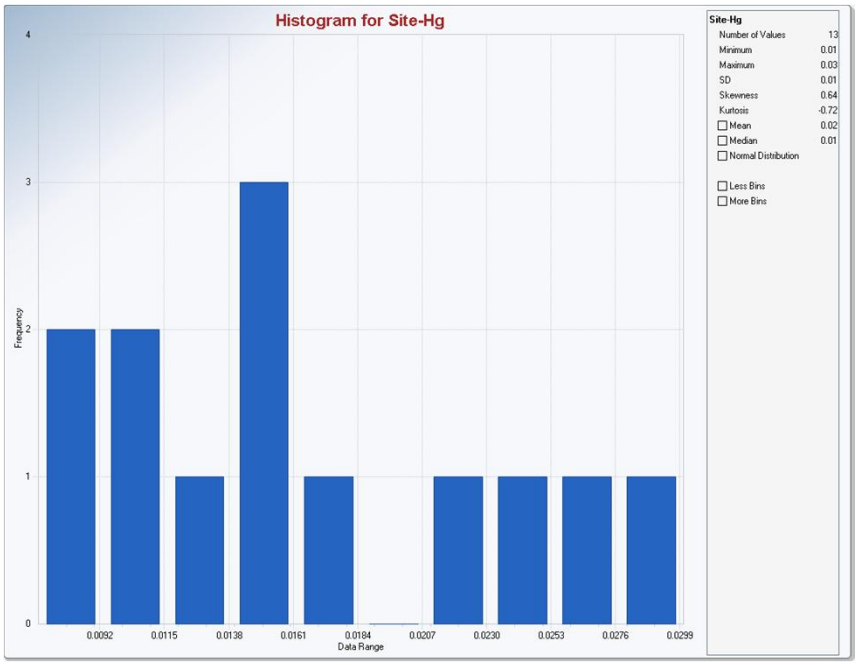

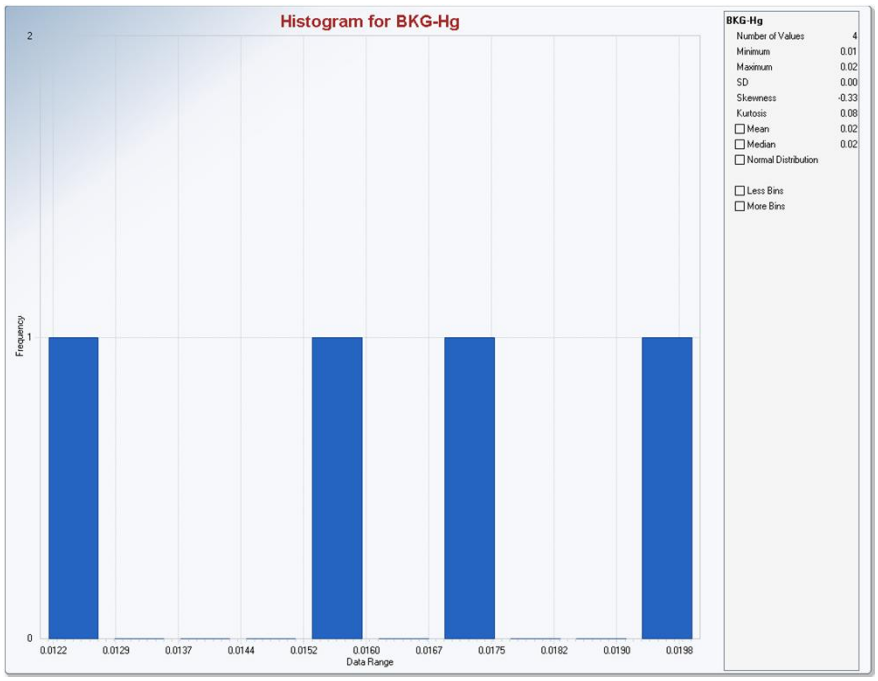

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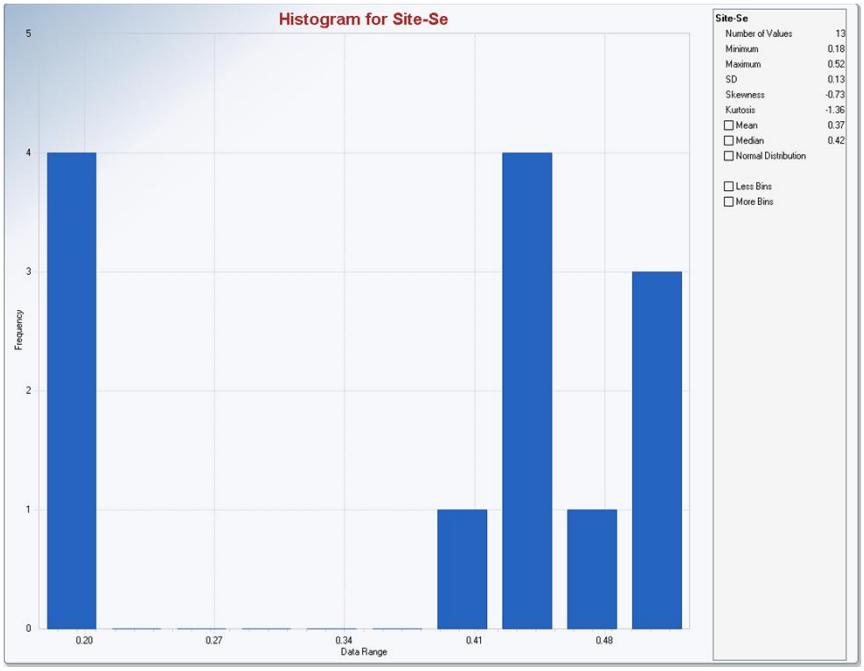

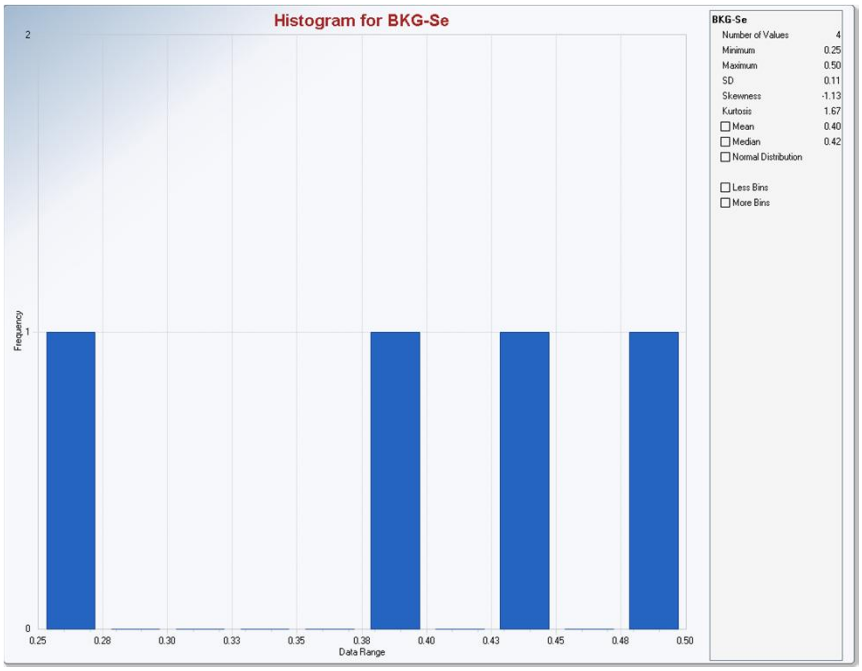

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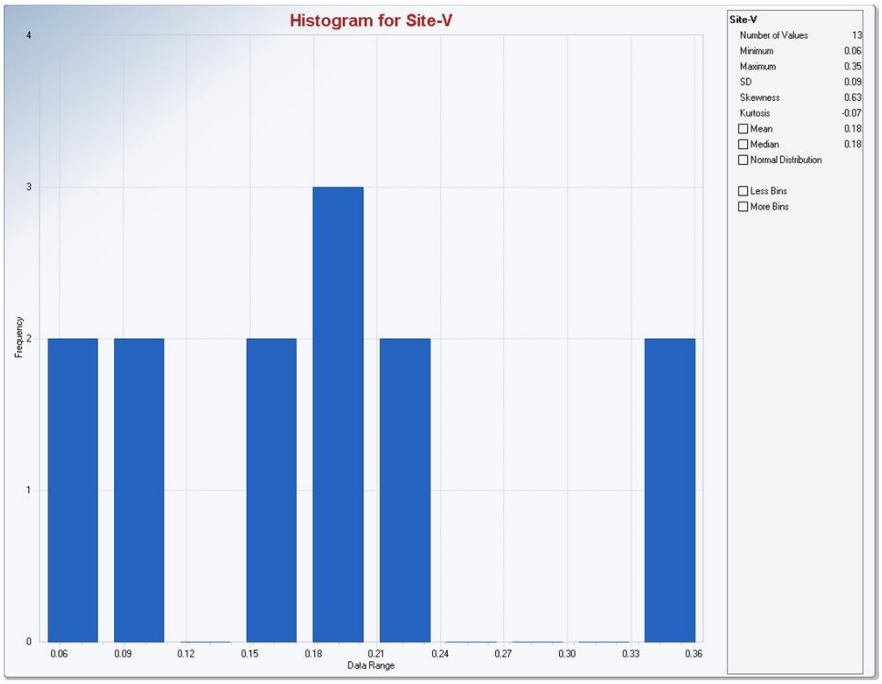

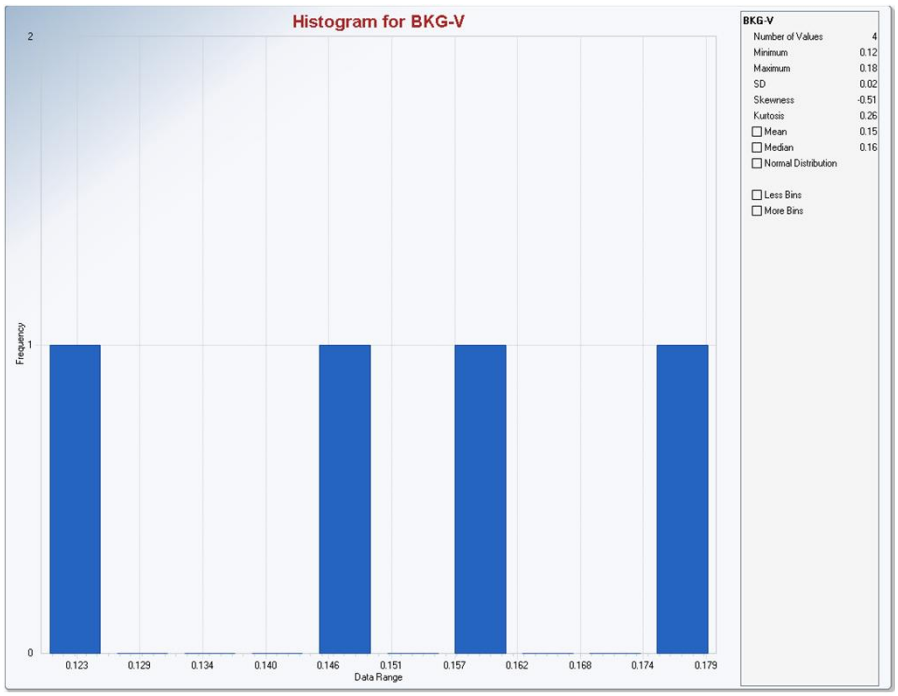

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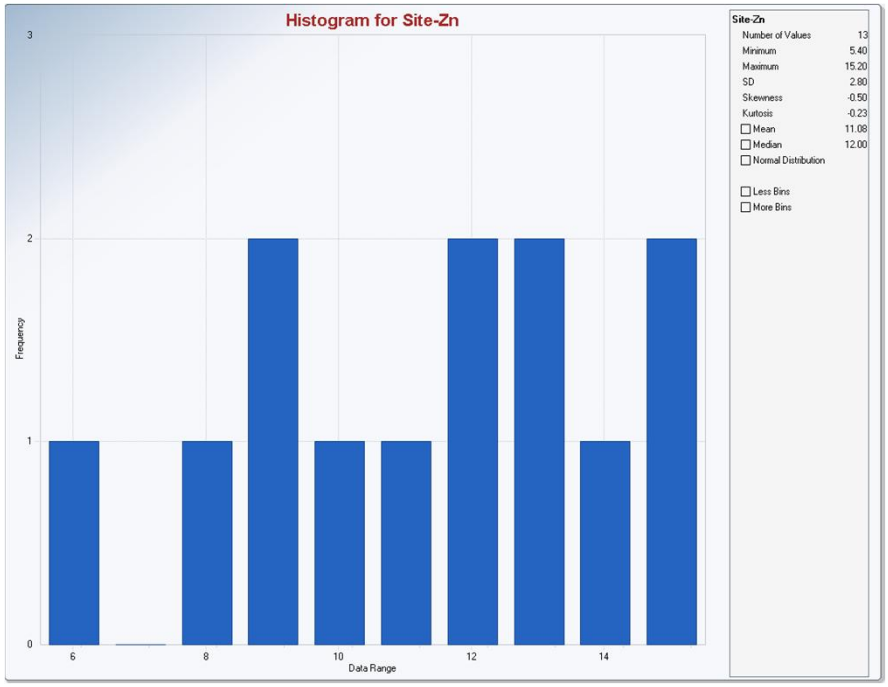

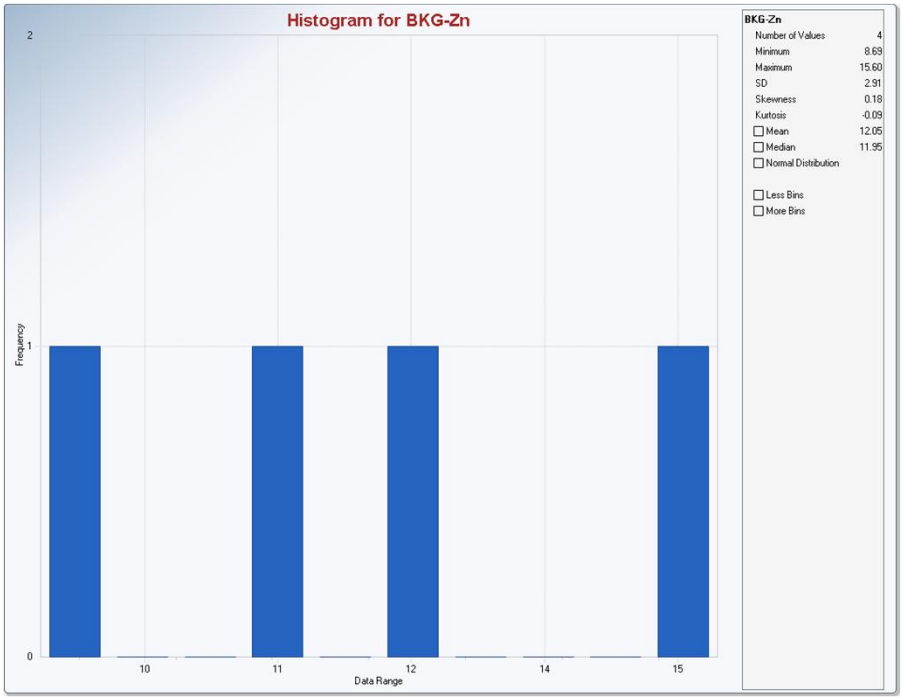

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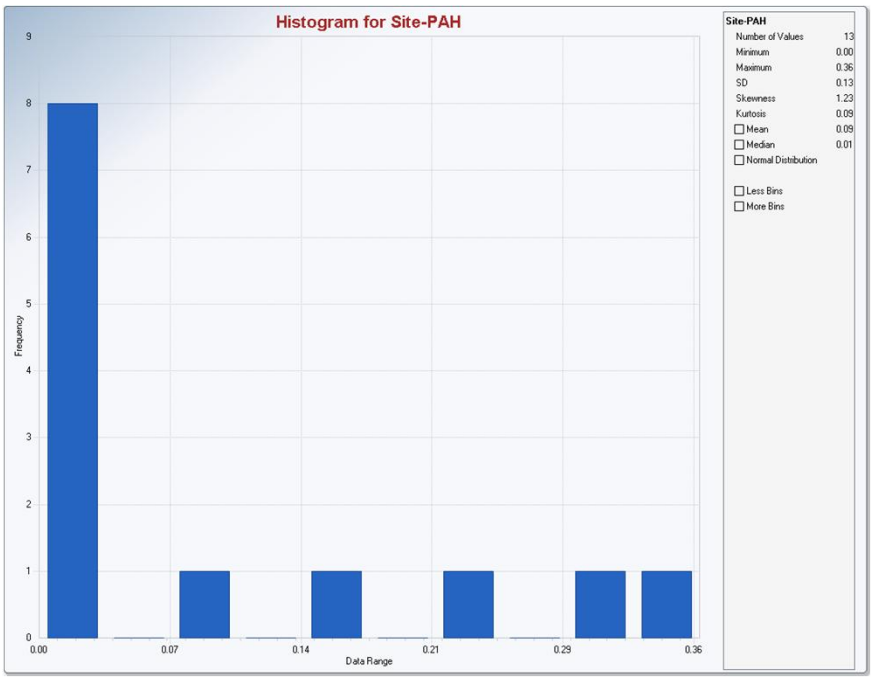
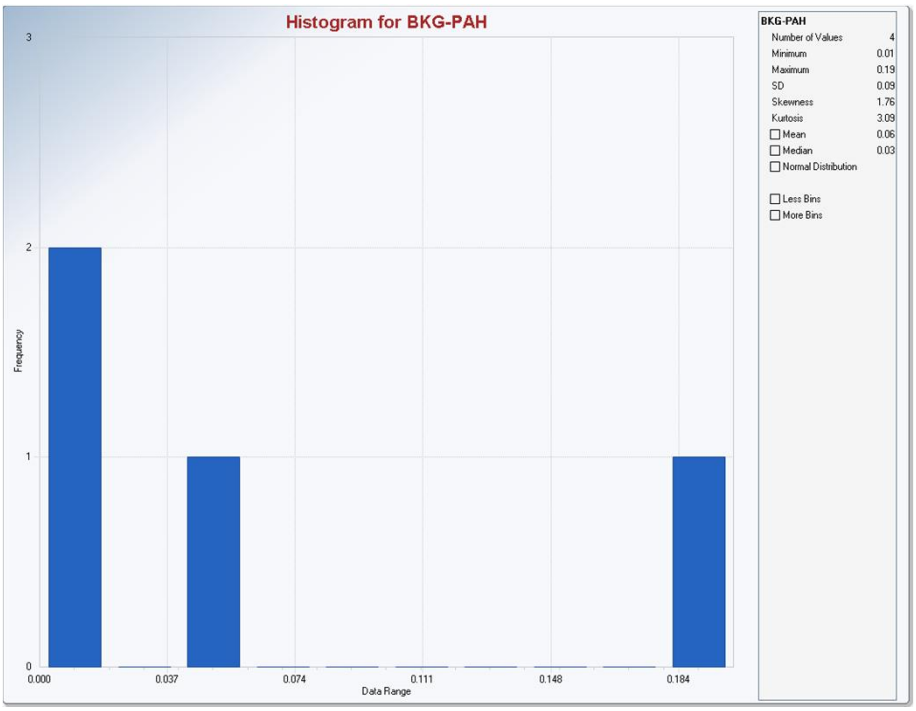
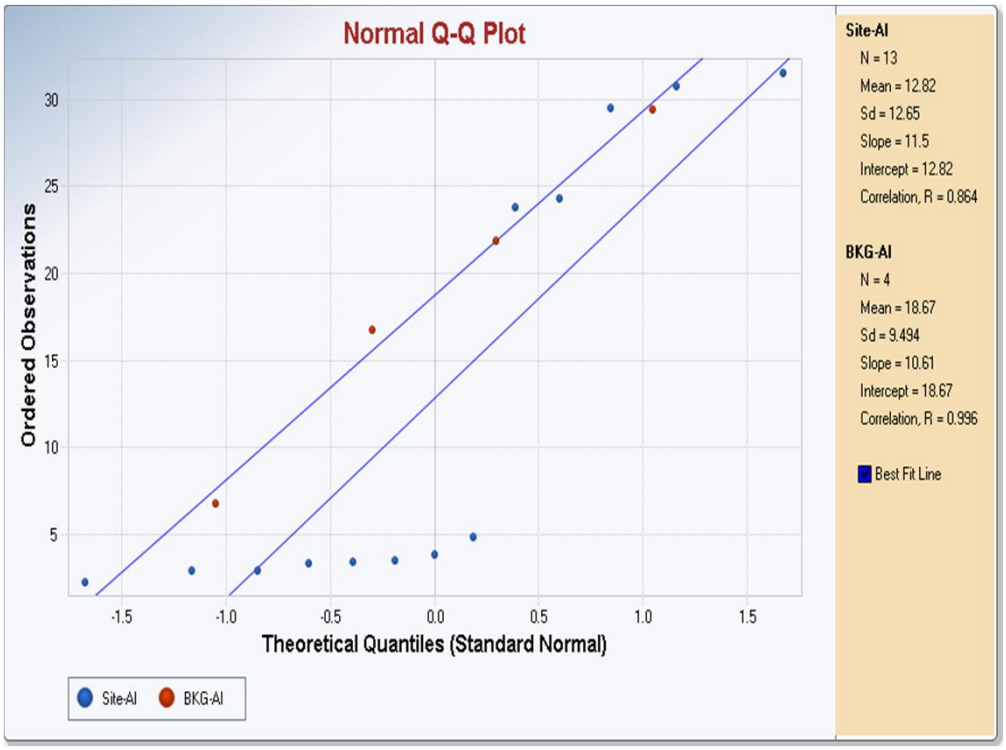
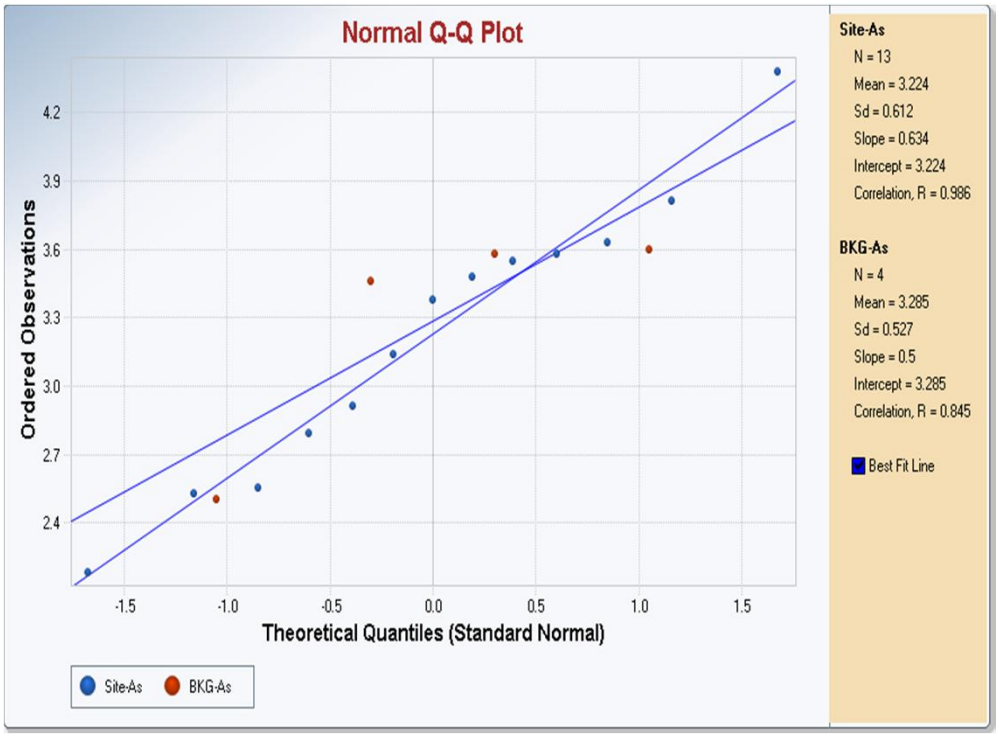


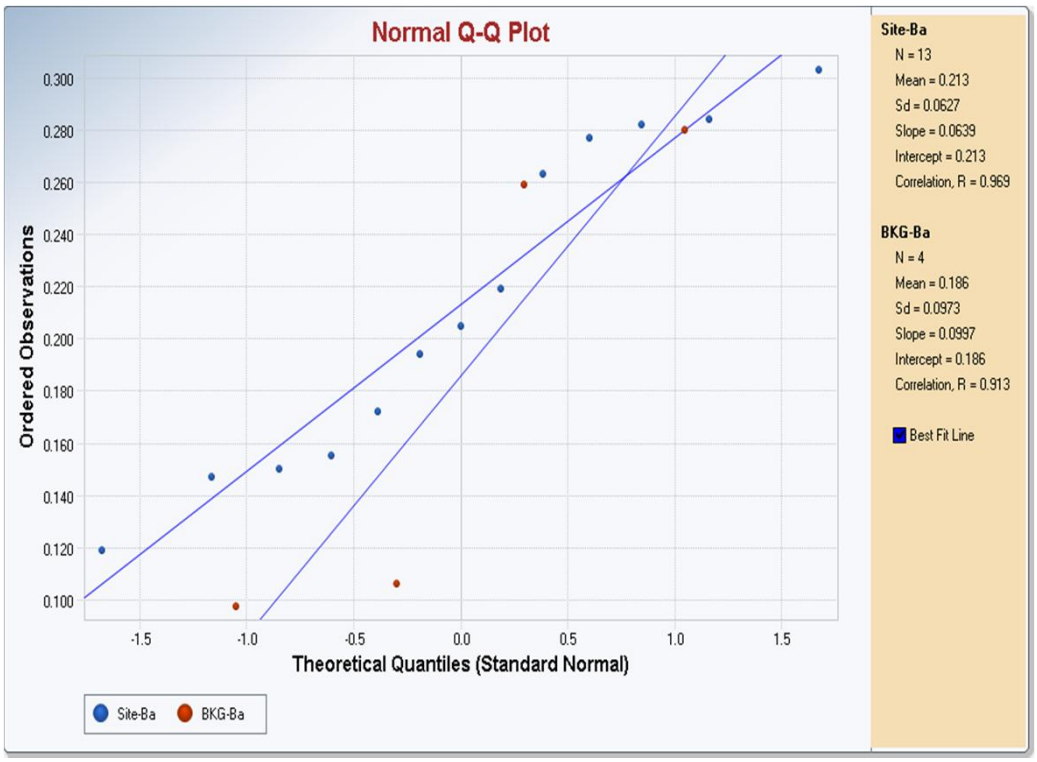


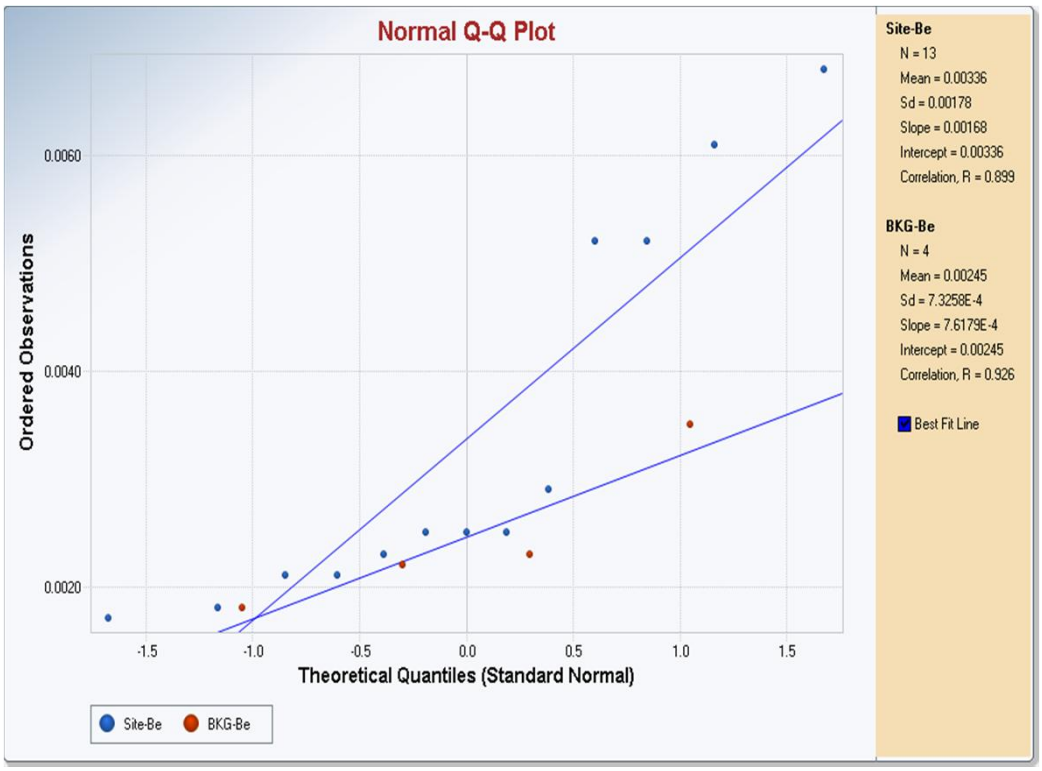
Histograms of Site concentrations are presented on top and background concentrations are presented on the bottom graphs.



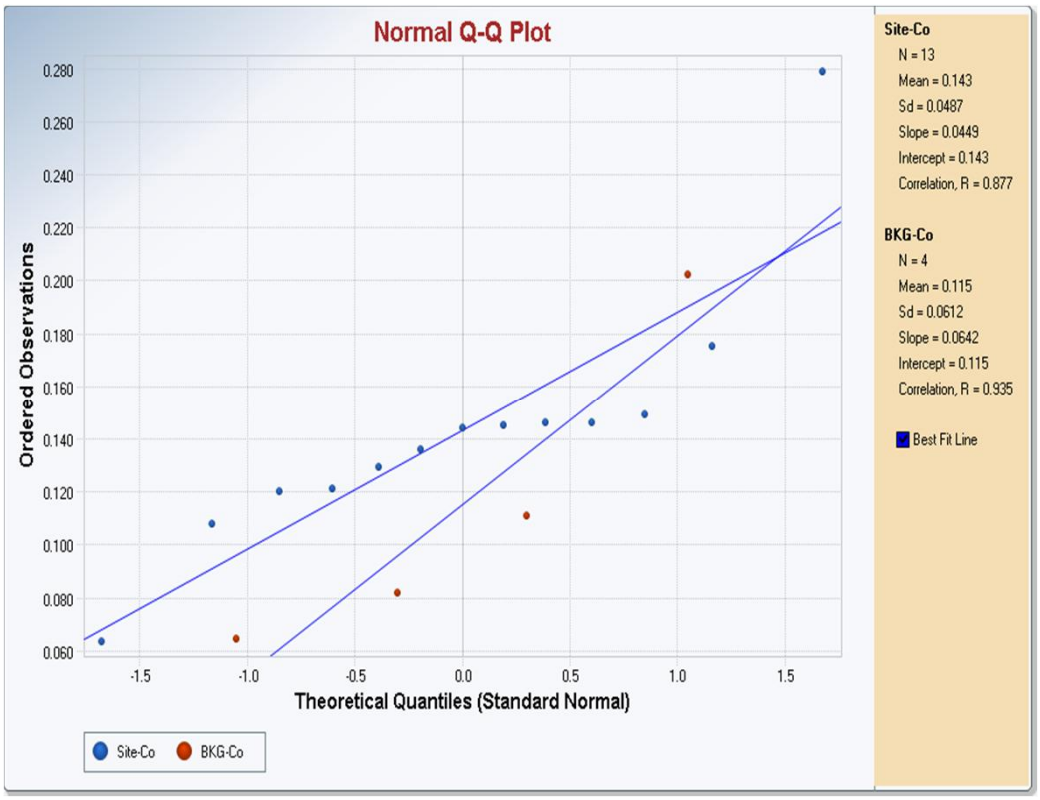


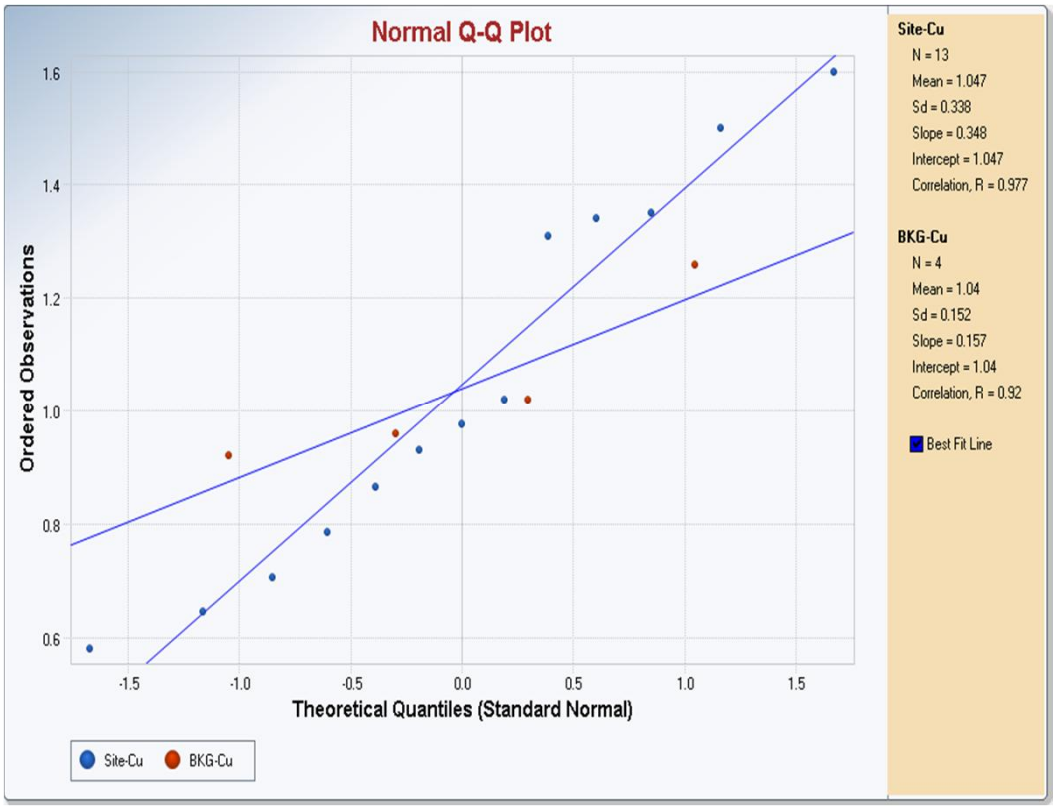
BKG - Background



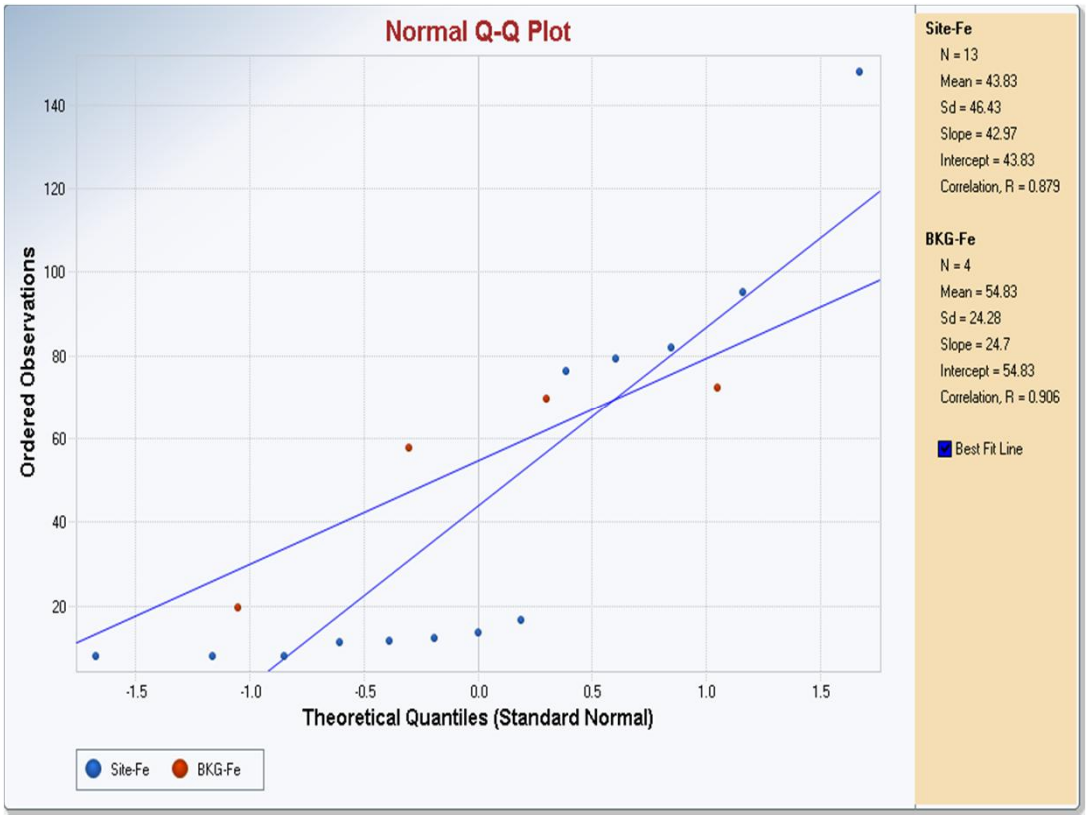


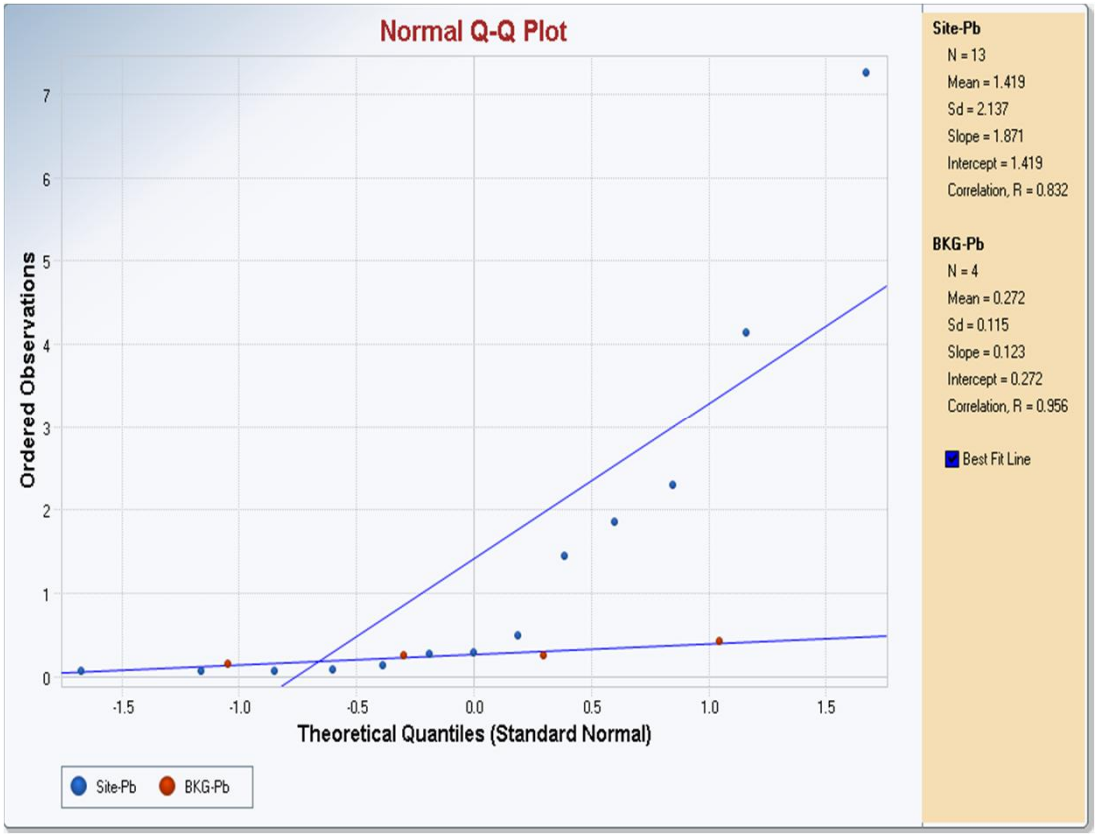
BKG - Background



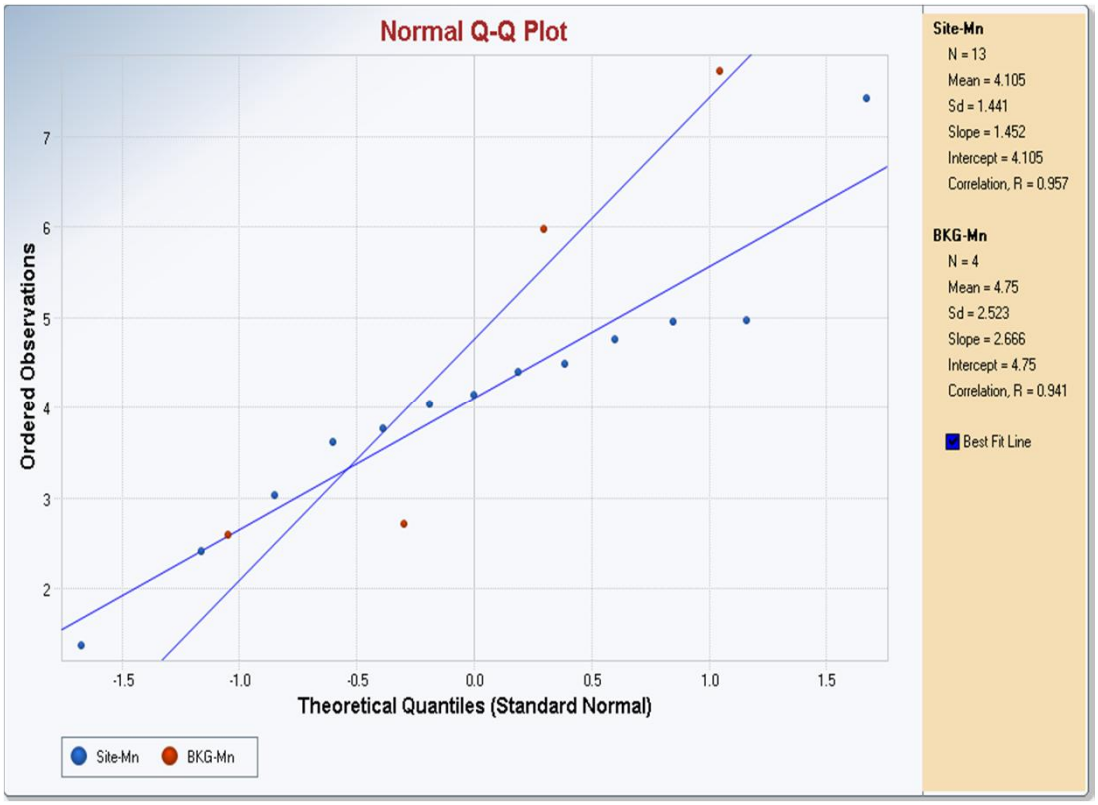


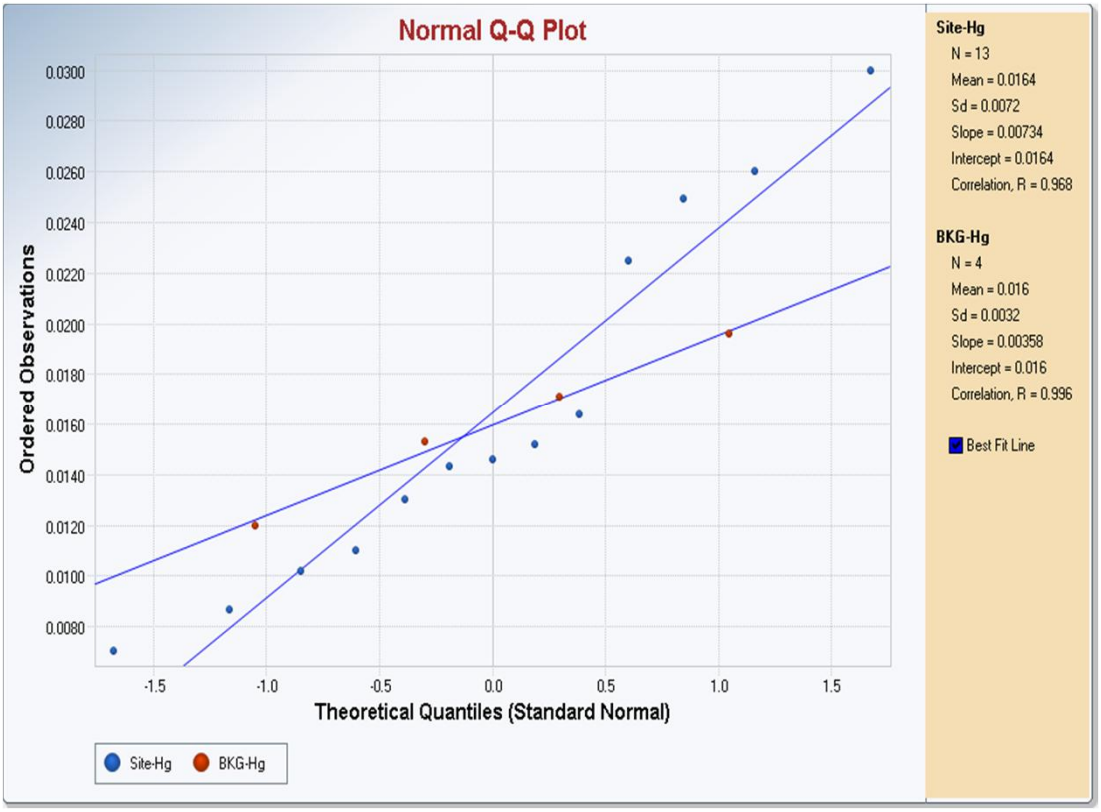
BKG - Background



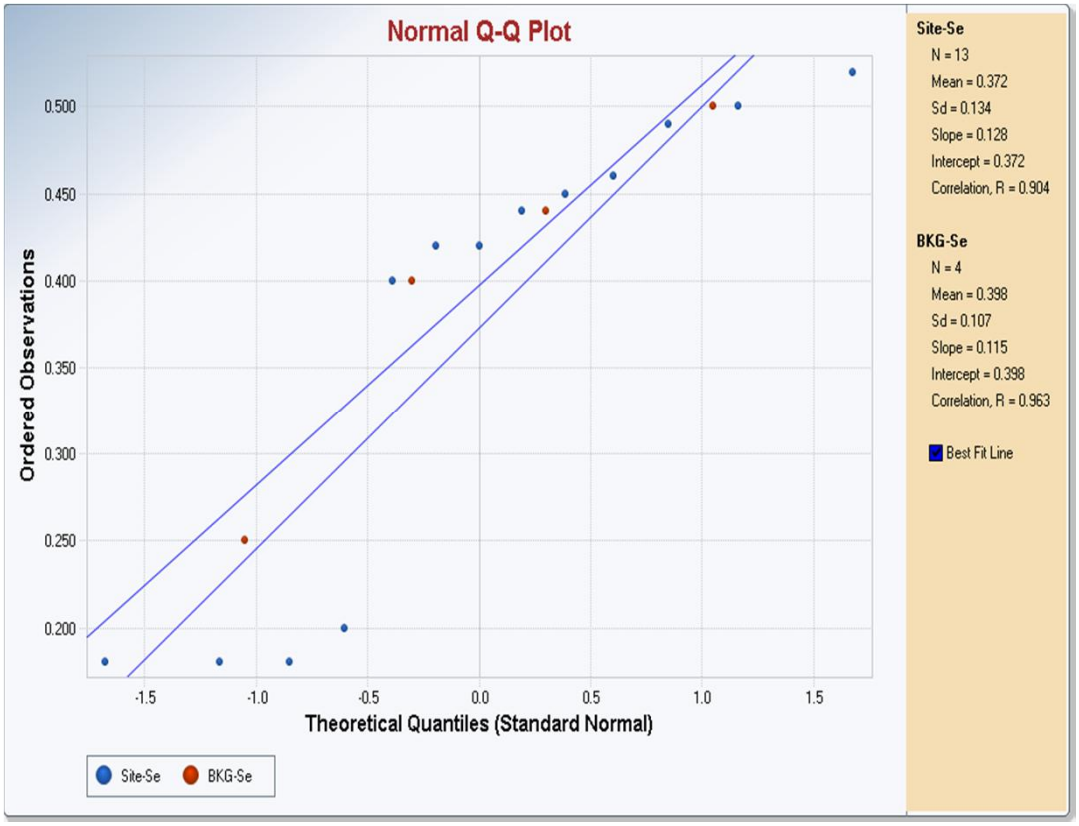


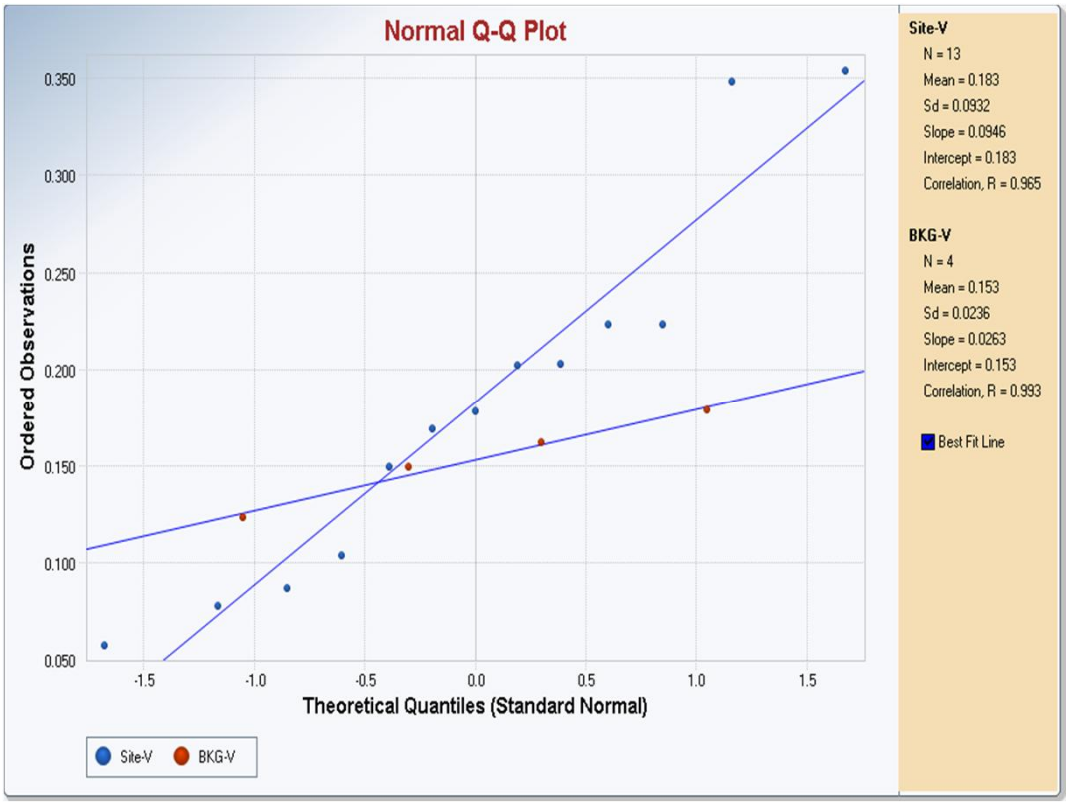
BKG - Background



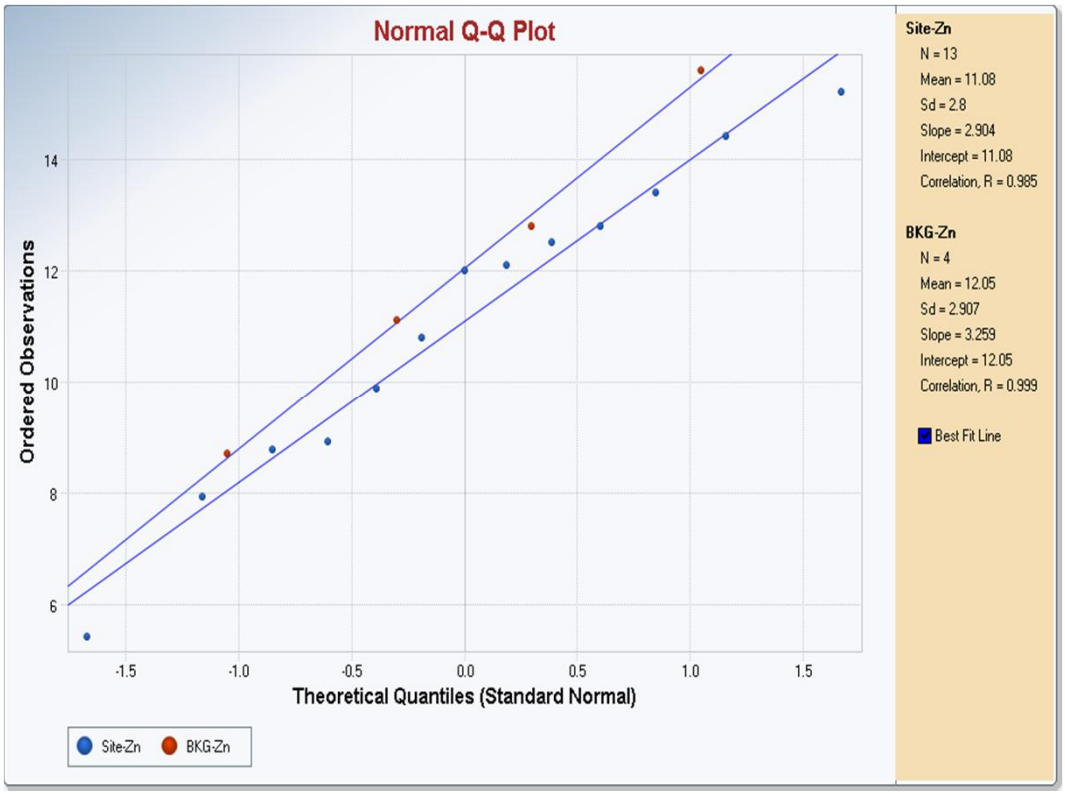


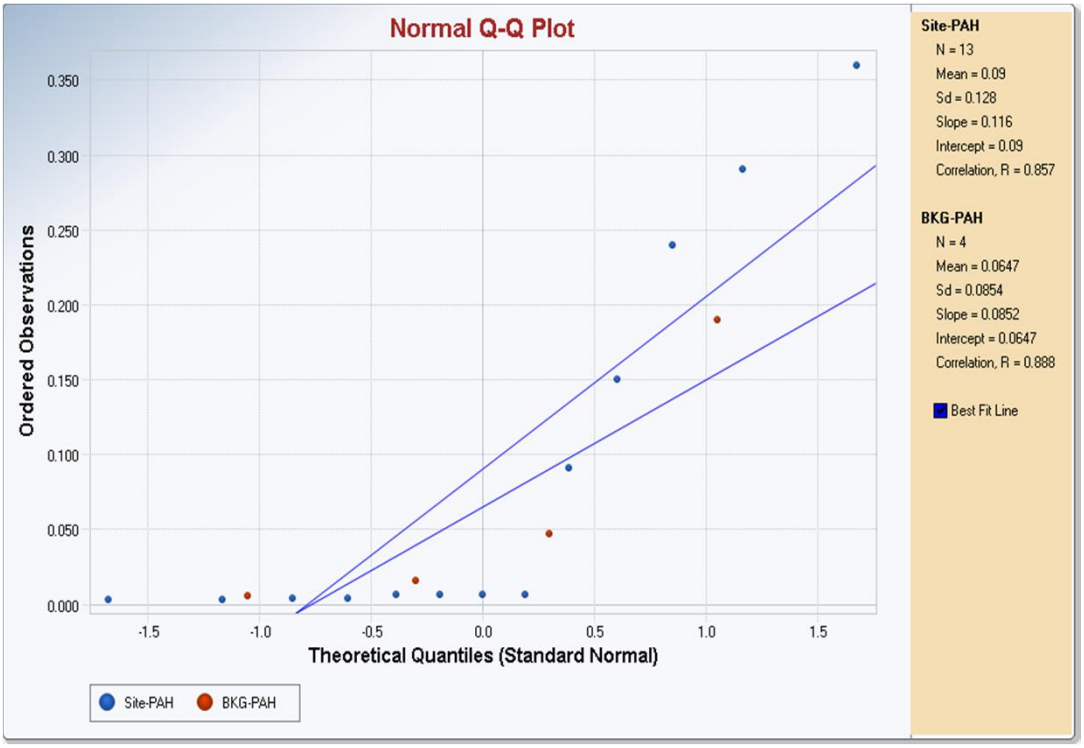
BKG - Background





BKG - Background





BKG - Background

Attachment 5

ProUCL Output files

Surface Soil

Goodness-of-Fit Test Statistics for Data Sets with Non-Detects

User Selected Options

Date/Time of Computation	8/18/2014 4:35:19 PM
From File	Soil_ProUCL_Input_RevPAHs.xls
Full Precision	OFF
Confidence Coefficient	0.95

Newport_RA_SO_SVOCs|LPAH, TOTAL

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	58	0	58	57	1	1.72%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Detects Only)	57	0.0051	140	4.145	0.229	19.15
Statistics (All: NDs treated as DL value)	58	0.0051	140	4.074	0.225	18.99
Statistics (All: NDs treated as DL/2 value)	58	0.0051	140	4.074	0.225	18.99
Statistics (Normal ROS Imputed Data)	58	-8.353	140	3.929	0.225	19.05
Statistics (Gamma ROS Imputed Data)	58	0.0051	140	4.074	0.225	18.99
Statistics (Lognormal ROS Imputed Data)	58	0.0051	140	4.074	0.225	18.99

	K hat	K Star	Theta hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.249	0.248	16.65	-1.433	2.11	-1.472
Statistics (NDs = DL)	0.247	0.246	16.47	-1.473	2.113	-1.435
Statistics (NDs = DL/2)	0.246	0.245	16.53	-1.485	2.128	-1.433
Statistics (Gamma ROS Estimates)	0.246	0.245	16.55	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-1.488	2.132	-1.433

Normal GOF Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.441	0.439	0.439	0.439

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Lilliefors (Detects Only)	0.473	0.117	Data Not Normal
Lilliefors (NDs = DL)	0.473	0.116	Data Not Normal
Lilliefors (NDs = DL/2)	0.473	0.116	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.47	0.116	Data Not Normal

Gamma GOF Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.821	0.819	0.82	0.82

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)

Anderson-Darling (Detects Only)	7.131	0.889	
Kolmogorov-Smirnov (Detects Only)	0.317	0.13	Data Not Gamma Distributed
Anderson-Darling (NDs = DL)	7.263	0.89	
Kolmogorov-Smirnov (NDs = DL)	0.315	0.128	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	7.193	0.89	
Kolmogorov-Smirnov (NDs = DL/2)	0.314	0.129	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	7.173	0.89	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.314	0.129	Data Not Gamma Distributed

Lognormal GOF Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.975	0.975	0.975	0.975

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Lilliefors (Detects Only)	0.104	0.117	Data Appear Lognormal
Lilliefors (NDs = DL)	0.101	0.116	Data Appear Lognormal
Lilliefors (NDs = DL/2)	0.101	0.116	Data Appear Lognormal
Lilliefors (Lognormal ROS Estimates)	0.101	0.116	Data Appear Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Goodness-of-Fit Test Statistics for Uncensored Full Data Sets without Non-Detects

User Selected Options

Date/Time of Computation	8/18/2014 4:33:56 PM
From File	Soil_ProUCL_Input_RevPAHs.xls
Full Precision	OFF
Confidence Coefficient	0.95

Newport_RA_SO_SVOCs|HPAH, TOTAL

Raw Statistics

Number of Valid Observations	58
Number of Distinct Observations	53
Minimum	0.0043
Maximum	650
Mean of Raw Data	23.18
Standard Deviation of Raw Data	91.32
Khat	0.266
Theta hat	87.08
Kstar	0.264
Theta star	87.83
Mean of Log Transformed Data	0.502
Standard Deviation of Log Transformed Data	2.33

Normal GOF Test Results

Correlation Coefficient R	0.489
Approximate Shapiro Wilk Test Statistic	0.281
Approximate Shapiro Wilk P Value	0
Lilliefors Test Statistic	0.463
Lilliefors Critical (0.05) Value	0.116

Data not Normal at (0.05) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.861
A-D Test Statistic	4.963
A-D Critical (0.05) Value	0.88
K-S Test Statistic	0.279
K-S Critical(0.05) Value	0.128

Data not Gamma Distributed at (0.05) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.984

Approximate Shapiro Wilk Test Statistic	0.971
Approximate Shapiro Wilk P Value	0.356
Lilliefors Test Statistic	0.111
Lilliefors Critical (0.05) Value	0.116

Data appear Lognormal at (0.05) Significance Level

Newport_RA_SO_SVOCs|PAH, TOTAL

Raw Statistics

Number of Valid Observations	58
Number of Distinct Observations	54
Minimum	0.0043
Maximum	790
Mean of Raw Data	27.18
Standard Deviation of Raw Data	110
Khat	0.264
Theta hat	103
Kstar	0.262
Theta star	103.9
Mean of Log Transformed Data	0.633
Standard Deviation of Log Transformed Data	2.314

Normal GOF Test Results

Correlation Coefficient R	0.48
Approximate Shapiro Wilk Test Statistic	0.272
Approximate Shapiro Wilk P Value	0
Lilliefors Test Statistic	0.461
Lilliefors Critical (0.05) Value	0.116

Data not Normal at (0.05) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.853
A-D Test Statistic	5.18
A-D Critical (0.05) Value	0.881
K-S Test Statistic	0.284
K-S Critical(0.05) Value	0.128

Data not Gamma Distributed at (0.05) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.984
Approximate Shapiro Wilk Test Statistic	0.973
Approximate Shapiro Wilk P Value	0.41
Lilliefors Test Statistic	0.108
Lilliefors Critical (0.05) Value	0.116

Data appear Lognormal at (0.05) Significance Level

Goodness-of-Fit Test Statistics for Data Sets with Non-Detects

User Selected Options

Date/Time of Computation	8/14/2014 4:35:21 PM
From File	Soil_ProUCL_Input_a.xls
Full Precision	OFF
Confidence Coefficient	0.95

CADMIUM

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	58	31	27	23	4	14.81%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	4	0.076	0.14	0.108	0.107	0.0322
Statistics (Detects Only)	23	0.03	0.84	0.215	0.17	0.164
Statistics (All: NDs treated as DL value)	27	0.03	0.84	0.199	0.16	0.156
Statistics (All: NDs treated as DL/2 value)	27	0.03	0.84	0.191	0.16	0.162
Statistics (Normal ROS Imputed Data)	27	-0.0313	0.84	Soil_Metals_	0.16	0.171
Statistics (Gamma ROS Imputed Data)	27	0.01	0.84	0.187	0.16	0.167
Statistics (Lognormal ROS Imputed Data)	27	0.03	0.84	0.193	0.16	0.161

	K hat	K Star	Theta hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	2.637	2.322	0.0816	-1.738	0.648	-0.373
Statistics (NDs = DL)	2.624	2.357	0.0759	-1.816	0.634	-0.349
Statistics (NDs = DL/2)	2.042	1.84	0.0937	-1.918	0.749	-0.39
Statistics (Gamma ROS Estimates)	1.423	1.289	0.131	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-1.887	0.701	-0.371

Normal GOF Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.829	0.821	0.845	0.844

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilk (Detects Only)	0.713	0.914	Data Not Normal
Lilliefors (Detects Only)	0.271	0.185	Data Not Normal
Shapiro-Wilk (NDs = DL)	0.701	0.923	Data Not Normal
Lilliefors (NDs = DL)	0.262	0.171	Data Not Normal
Shapiro-Wilk (NDs = DL/2)	0.737	0.923	Data Not Normal
Lilliefors (NDs = DL/2)	0.245	0.171	Data Not Normal
Shapiro-Wilk (Normal ROS Estimates)	0.796	0.923	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.229	0.171	Data Not Normal

Gamma GOF Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.925	0.921	0.943	0.956

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.829	0.752	
Kolmogorov-Smirnov (Detects Only)	0.187	0.183	Data Not Gamma Distributed
Anderson-Darling (NDs = DL)	0.839	0.754	
Kolmogorov-Smirnov (NDs = DL)	0.171	0.17	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	0.51	0.756	
Kolmogorov-Smirnov (NDs = DL/2)	0.146	0.17	Data Appear Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	0.726	0.765	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.165	0.172	Data Appear Gamma Distributed

Lognormal GOF Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.956	0.968	0.981	0.983

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilk (Detects Only)	0.936	0.914	Data Appear Lognormal
Lilliefors (Detects Only)	0.148	0.185	Data Appear Lognormal
Shapiro-Wilk (NDs = DL)	0.959	0.923	Data Appear Lognormal
Lilliefors (NDs = DL)	0.132	0.171	Data Appear Lognormal
Shapiro-Wilk (NDs = DL/2)	0.967	0.923	Data Appear Lognormal
Lilliefors (NDs = DL/2)	0.141	0.171	Data Appear Lognormal
Shapiro-Wilk (Lognormal ROS Estimates)	0.977	0.923	Data Appear Lognormal
Lilliefors (Lognormal ROS Estimates)	0.122	0.171	Data Appear Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

MERCURY

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	58	31	27	21	6	22.22%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	6	0.012	0.032	0.023	0.023	0.00899
Statistics (Detects Only)	21	0.006	0.21	0.066	0.05	0.051
Statistics (All: NDs treated as DL value)	27	0.006	0.21	0.0564	0.04	0.0484
Statistics (All: NDs treated as DL/2 value)	27	0.006	0.21	0.0539	0.04	0.0504
Statistics (Normal ROS Imputed Data)	27	-0.0275	0.21	0.0469	0.04	0.058
Statistics (Gamma ROS Imputed Data)	27	0.006	0.21	0.0536	0.04	0.0506
Statistics (Lognormal ROS Imputed Data)	27	0.006	0.21	0.0542	0.04	0.05

	K hat	K Star	Theta hat	Log Mean	Log Stdv	Log CV

Statistics (Detects Only)	2.154	1.878	0.0306	-2.968	0.76	-0.256
Statistics (NDs = DL)	1.887	1.702	0.0299	-3.162	0.785	-0.248
Statistics (NDs = DL/2)	1.408	1.276	0.0383	-3.316	0.959	-0.289
Statistics (Gamma ROS Estimates)	1.378	1.25	0.0389	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-3.277	0.895	-0.273

Normal GOF Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.879	0.868	0.884	0.783

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilk (Detects Only)	0.781	0.908	Data Not Normal
Lilliefors (Detects Only)	0.231	0.193	Data Not Normal
Shapiro-Wilk (NDs = DL)	0.761	0.923	Data Not Normal
Lilliefors (NDs = DL)	0.22	0.171	Data Not Normal
Shapiro-Wilk (NDs = DL/2)	0.786	0.923	Data Not Normal
Lilliefors (NDs = DL/2)	0.197	0.171	Data Not Normal
Shapiro-Wilk (Normal ROS Estimates)	0.882	0.923	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.16	0.171	Data Appear Normal

Gamma GOF Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.961	0.962	0.976	0.976

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.624	0.753	
Kolmogorov-Smirnov (Detects Only)	0.139	0.192	Detected Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	0.526	0.758	
Kolmogorov-Smirnov (NDs = DL)	0.133	0.171	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL/2)	0.361	0.765	
Kolmogorov-Smirnov (NDs = DL/2)	0.111	0.172	Data Appear Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	0.602	0.766	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.151	0.172	Data Appear Gamma Distributed

Lognormal GOF Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.955	0.985	0.982	0.985

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilk (Detects Only)	0.927	0.908	Data Appear Lognormal
Lilliefors (Detects Only)	0.18	0.193	Data Appear Lognormal
Shapiro-Wilk (NDs = DL)	0.976	0.923	Data Appear Lognormal

Lilliefors (NDs = DL)	0.13	0.171	Data Appear Lognormal
Shapiro-Wilk (NDs = DL/2)	0.955	0.923	Data Appear Lognormal
Lilliefors (NDs = DL/2)	0.17	0.171	Data Appear Lognormal
Shapiro-Wilk (Lognormal ROS Estimates)	0.965	0.923	Data Appear Lognormal
Lilliefors (Lognormal ROS Estimates)	0.156	0.171	Data Appear Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

SELENIUM

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	58	31	27	11	16	59.26%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	16	0.37	0.56	0.439	0.42	0.0569
Statistics (Detects Only)	11	0.18	0.66	0.42	0.41	0.134
Statistics (All: NDs treated as DL value)	27	0.18	0.66	0.431	0.42	0.0944
Statistics (All: NDs treated as DL/2 value)	27	0.18	0.66	0.301	0.24	0.132
Statistics (Normal ROS Imputed Data)	27	0.18	0.66	0.353	0.334	0.106
Statistics (Gamma ROS Imputed Data)	27	0.18	0.66	0.351	0.326	0.106
Statistics (Lognormal ROS Imputed Data)	27	0.18	0.66	0.348	0.319	0.106

	K hat	K Star	Theta hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	9.879	7.246	0.0425	-0.919	0.35	-0.381
Statistics (NDs = DL)	19.68	17.52	0.0219	-0.866	0.241	-0.278
Statistics (NDs = DL/2)	6.635	5.923	0.0454	-1.277	0.384	-0.301
Statistics (Gamma ROS Estimates)	13.3	11.85	0.0264	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-1.093	0.275	-0.252

Normal GOF Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.97	0.958	0.905	0.886

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilk (Detects Only)	0.949	0.85	Data Appear Normal
Lilliefors (Detects Only)	0.201	0.267	Data Appear Normal
Shapiro-Wilk (NDs = DL)	0.937	0.923	Data Appear Normal
Lilliefors (NDs = DL)	0.146	0.171	Data Appear Normal
Shapiro-Wilk (NDs = DL/2)	0.815	0.923	Data Not Normal
Lilliefors (NDs = DL/2)	0.207	0.171	Data Not Normal
Shapiro-Wilk (Normal ROS Estimates)	0.885	0.923	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.165	0.171	Data Appear Normal

Gamma GOF Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.97	0.963	0.958	0.958

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.335	0.729	
Kolmogorov-Smirnov (Detects Only)	0.164	0.255	Detected Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	0.841	0.744	
Kolmogorov-Smirnov (NDs = DL)	0.167	0.168	Detected Data appear Approximate Gamma Distri
Anderson-Darling (NDs = DL/2)	1.352	0.746	
Kolmogorov-Smirnov (NDs = DL/2)	0.187	0.168	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	0.683	0.744	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.163	0.168	Data Appear Gamma Distributed

Lognormal GOF Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.953	0.921	0.946	0.968

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilk (Detects Only)	0.924	0.85	Data Appear Lognormal
Lilliefors (Detects Only)	0.173	0.267	Data Appear Lognormal
Shapiro-Wilk (NDs = DL)	0.875	0.923	Data Not Lognormal
Lilliefors (NDs = DL)	0.186	0.171	Data Not Lognormal
Shapiro-Wilk (NDs = DL/2)	0.883	0.923	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.176	0.171	Data Not Lognormal
Shapiro-Wilk (Lognormal ROS Estimates)	0.947	0.923	Data Appear Lognormal
Lilliefors (Lognormal ROS Estimates)	0.165	0.171	Data Appear Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Goodness-of-Fit Test Statistics for Data Sets with Non-Detects

User Selected Options

Date/Time of Computation	8/14/2014 3:31:55 PM
From File	BKG_Soil Input.xls
Full Precision	OFF
Confidence Coefficient	0.95

BKG-ANTIMONY

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	20	0	20	0	20	100.00%

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!

Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!

The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable BKG-ANTIMONY was not processed!

BKG-CADMIUM

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	20	0	20	0	20	100.00%

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable BKG-CADMIUM was not processed!

BKG-MERCURY

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	20	0	20	18	2	10.00%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	2	0.035	0.036	0.0355	0.0355	7.0711E-4
Statistics (Detects Only)	18	0.016	0.056	0.0293	0.028	0.0106
Statistics (All: NDs treated as DL value)	20	0.016	0.056	0.03	0.028	0.0102
Statistics (All: NDs treated as DL/2 value)	20	0.016	0.056	0.0282	0.0265	0.0106
Statistics (Normal ROS Imputed Data)	20	0.016	0.056	0.0289	0.0266	0.0101
Statistics (Gamma ROS Imputed Data)	20	0.016	0.056	0.0288	0.0265	0.0101
Statistics (Lognormal ROS Imputed Data)	20	0.016	0.056	0.0288	0.0265	0.0101

	K hat	K Star	Theta hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	8.697	7.284	0.00337	-3.588	0.351	-0.0978
Statistics (NDs = DL)	9.343	7.975	0.00321	-3.563	0.341	-0.0956
Statistics (NDs = DL/2)	8.139	6.952	0.00346	-3.632	0.359	-0.0988
Statistics (Gamma ROS Estimates)	9.391	8.016	0.00307	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-3.602	0.335	-0.0929

Normal GOF Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.964	0.971	0.952	0.605

Test value	Crit. (0.05)	Conclusion with Alpha(0.05)

Shapiro-Wilk (Detects Only)	0.929	0.897	Data Appear Normal
Lilliefors (Detects Only)	0.161	0.209	Data Appear Normal
Shapiro-Wilk (NDs = DL)	0.943	0.905	Data Appear Normal
Lilliefors (NDs = DL)	0.126	0.198	Data Appear Normal
Shapiro-Wilk (NDs = DL/2)	0.905	0.905	Data Not Normal
Lilliefors (NDs = DL/2)	0.157	0.198	Data Appear Normal
Shapiro-Wilk (Normal ROS Estimates)	0.92	0.905	Data Appear Normal
Lilliefors (Normal ROS Estimates)	0.187	0.198	Data Appear Normal

Gamma GOF Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.985	0.984	0.98	0.983

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.266	0.74	
Kolmogorov-Smirnov (Detects Only)	0.12	0.204	Detected Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	0.283	0.742	
Kolmogorov-Smirnov (NDs = DL)	0.109	0.194	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL/2)	0.444	0.743	
Kolmogorov-Smirnov (NDs = DL/2)	0.125	0.194	Data Appear Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	0.3	0.742	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.142	0.194	Data Appear Gamma Distributed

Lognormal GOF Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.988	0.986	0.978	0.988

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilk (Detects Only)	0.968	0.897	Data Appear Lognormal
Lilliefors (Detects Only)	0.0974	0.209	Data Appear Lognormal
Shapiro-Wilk (NDs = DL)	0.966	0.905	Data Appear Lognormal
Lilliefors (NDs = DL)	0.122	0.198	Data Appear Lognormal
Shapiro-Wilk (NDs = DL/2)	0.946	0.905	Data Appear Lognormal
Lilliefors (NDs = DL/2)	0.122	0.198	Data Appear Lognormal
Shapiro-Wilk (Lognormal ROS Estimates)	0.972	0.905	Data Appear Lognormal
Lilliefors (Lognormal ROS Estimates)	0.119	0.198	Data Appear Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

BKG-SELENIUM

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	20	0	20	13	7	35.00%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	7	0.27	0.36	0.291	0.28	0.0313
Statistics (Detects Only)	13	0.18	0.55	0.338	0.32	0.109
Statistics (All: NDs treated as DL value)	20	0.18	0.55	0.322	0.3	0.0914
Statistics (All: NDs treated as DL/2 value)	20	0.135	0.55	0.271	0.25	0.128
Statistics (Normal ROS Imputed Data)	20	0.157	0.55	0.289	0.263	0.113
Statistics (Gamma ROS Imputed Data)	20	0.169	0.55	0.29	0.261	0.111
Statistics (Lognormal ROS Imputed Data)	20	0.18	0.55	0.292	0.261	0.109

	K hat	K Star	Theta hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	9.887	7.657	0.0342	-1.135	0.342	-0.301
Statistics (NDs = DL)	13.5	11.51	0.0239	-1.171	0.282	-0.241
Statistics (NDs = DL/2)	4.805	4.117	0.0564	-1.413	0.478	-0.338
Statistics (Gamma ROS Estimates)	7.752	6.623	0.0375	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-1.291	0.355	-0.275

Normal GOF Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.985	0.97	0.952	0.891

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilk (Detects Only)	0.965	0.866	Data Appear Normal
Lilliefors (Detects Only)	0.111	0.246	Data Appear Normal
Shapiro-Wilk (NDs = DL)	0.946	0.905	Data Appear Normal
Lilliefors (NDs = DL)	0.159	0.198	Data Appear Normal
Shapiro-Wilk (NDs = DL/2)	0.894	0.905	Data Not Normal
Lilliefors (NDs = DL/2)	0.186	0.198	Data Appear Normal
Shapiro-Wilk (Normal ROS Estimates)	0.925	0.905	Data Appear Normal
Lilliefors (Normal ROS Estimates)	0.184	0.198	Data Appear Normal

Gamma GOF Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.987	0.986	0.976	0.984

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.278	0.734	
Kolmogorov-Smirnov (Detects Only)	0.131	0.237	Detected Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	0.334	0.741	

Kolmogorov-Smirnov (NDs = DL)	0.146	0.194	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL/2)	0.79	0.745	
Kolmogorov-Smirnov (NDs = DL/2)	0.168	0.195	Detected Data appear Approximate Gamma Distri
Anderson-Darling (Gamma ROS Estimates)	0.504	0.743	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.185	0.194	Data Appear Gamma Distributed

Lognormal GOF Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.977	0.983	0.958	0.967

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilk (Detects Only)	0.946	0.866	Data Appear Lognormal
Lilliefors (Detects Only)	0.151	0.246	Data Appear Lognormal
Shapiro-Wilk (NDs = DL)	0.968	0.905	Data Appear Lognormal
Lilliefors (NDs = DL)	0.161	0.198	Data Appear Lognormal
Shapiro-Wilk (NDs = DL/2)	0.898	0.905	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.161	0.198	Data Appear Lognormal
Shapiro-Wilk (Lognormal ROS Estimates)	0.919	0.905	Data Appear Lognormal
Lilliefors (Lognormal ROS Estimates)	0.185	0.198	Data Appear Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

BKG-THALLIUM

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	20	0	20	0	20	100.00%

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable BKG-THALLIUM was not processed!

Goodness-of-Fit Test Statistics for Uncensored Full Data Sets without Non-Detects

User Selected Options

Date/Time of Computation	8/14/2014 4:28:02 PM
From File	Soil_ProUCL_Input_a.xls
Full Precision	OFF
Confidence Coefficient	0.95

ANTIMONY

Raw Statistics

Number of Valid Observations	27
Number of Missing Observations	31
Number of Distinct Observations	23
Minimum	0.05
Maximum	396
Mean of Raw Data	22.99
Standard Deviation of Raw Data	82.85
Khat	0.233
Theta hat	98.67
Kstar	0.232
Theta star	99.18
Mean of Log Transformed Data	0.0511
Standard Deviation of Log Transformed Data	1.951

Normal GOF Test Results

Correlation Coefficient R	0.532
Shapiro Wilk Test Statistic	0.31
Shapiro Wilk Critical (0.05) Value	0.923
Approximate Shapiro Wilk P Value	3.287E-12
Lilliefors Test Statistic	0.484
Lilliefors Critical (0.05) Value	0.171

Data not Normal at (0.05) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.906
A-D Test Statistic	5.424
A-D Critical (0.05) Value	0.886
K-S Test Statistic	0.365
K-S Critical(0.05) Value	0.185

Data not Gamma Distributed at (0.05) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.893
Shapiro Wilk Test Statistic	0.812
Shapiro Wilk Critical (0.05) Value	0.923
Approximate Shapiro Wilk P Value	1.2921E-4
Lilliefors Test Statistic	0.232
Lilliefors Critical (0.05) Value	0.171

Data not Lognormal at (0.05) Significance Level

ARSENIC

Raw Statistics

Number of Valid Observations	46
Number of Missing Observations	12
Number of Distinct Observations	39
Minimum	1.2
Maximum	130
Mean of Raw Data	12.41
Standard Deviation of Raw Data	19.33
Khat	1.395
Theta hat	8.894
Kstar	1.319
Theta star	9.41
Mean of Log Transformed Data	2.119
Standard Deviation of Log Transformed Data	0.789

Normal GOF Test Results

Correlation Coefficient R	0.616
Shapiro Wilk Test Statistic	0.423
Shapiro Wilk Critical (0.05) Value	0.945
Approximate Shapiro Wilk P Value	0
Lilliefors Test Statistic	0.32
Lilliefors Critical (0.05) Value	0.131

Data not Normal at (0.05) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.79
A-D Test Statistic	2.342
A-D Critical (0.05) Value	0.77
K-S Test Statistic	0.182
K-S Critical(0.05) Value	0.133

Data not Gamma Distributed at (0.05) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.965
Shapiro Wilk Test Statistic	0.955
Shapiro Wilk Critical (0.05) Value	0.945
Approximate Shapiro Wilk P Value	0.117
Lilliefors Test Statistic	0.103
Lilliefors Critical (0.05) Value	0.131

Data appear Lognormal at (0.05) Significance Level

CHROMIUM, TOTAL

Raw Statistics

Number of Valid Observations	46
Number of Missing Observations	12
Number of Distinct Observations	35
Minimum	5
Maximum	30.1
Mean of Raw Data	12.64
Standard Deviation of Raw Data	4.685
Khat	8.82
Theta hat	1.433
Kstar	8.259
Theta star	1.531
Mean of Log Transformed Data	2.479
Standard Deviation of Log Transformed Data	0.339

Normal GOF Test Results

Correlation Coefficient R	0.914
Shapiro Wilk Test Statistic	0.852
Shapiro Wilk Critical (0.05) Value	0.945
Approximate Shapiro Wilk P Value	5.8993E-6
Lilliefors Test Statistic	0.16
Lilliefors Critical (0.05) Value	0.131

Data not Normal at (0.05) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.952
A-D Test Statistic	0.855
A-D Critical (0.05) Value	0.75
K-S Test Statistic	0.112
K-S Critical(0.05) Value	0.131

Data follow Appr. Gamma Distribution at (0.05) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.971
Shapiro Wilk Test Statistic	0.954
Shapiro Wilk Critical (0.05) Value	0.945
Approximate Shapiro Wilk P Value	0.104
Lilliefors Test Statistic	0.0988
Lilliefors Critical (0.05) Value	0.131

Data appear Lognormal at (0.05) Significance Level

COBALT

Raw Statistics

Number of Valid Observations	27
Number of Missing Observations	31
Number of Distinct Observations	26
Minimum	6.4
Maximum	24.5
Mean of Raw Data	12.4
Standard Deviation of Raw Data	4.906
Khat	7.732
Theta hat	1.604
Kstar	6.898
Theta star	1.798
Mean of Log Transformed Data	2.452
Standard Deviation of Log Transformed Data	0.361

Normal GOF Test Results

Correlation Coefficient R	0.937
Shapiro Wilk Test Statistic	0.872
Shapiro Wilk Critical (0.05) Value	0.923
Approximate Shapiro Wilk P Value	0.00284
Lilliefors Test Statistic	0.184
Lilliefors Critical (0.05) Value	0.171

Data not Normal at (0.05) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.973
A-D Test Statistic	0.627
A-D Critical (0.05) Value	0.745
K-S Test Statistic	0.156
K-S Critical(0.05) Value	0.168

Data appear Gamma Distributed at (0.05) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.982
Shapiro Wilk Test Statistic	0.956
Shapiro Wilk Critical (0.05) Value	0.923
Approximate Shapiro Wilk P Value	0.313
Lilliefors Test Statistic	0.135
Lilliefors Critical (0.05) Value	0.171

Data appear Lognormal at (0.05) Significance Level

COPPER

Raw Statistics

Number of Valid Observations	27
Number of Missing Observations	31
Number of Distinct Observations	27
Minimum	9.2
Maximum	256
Mean of Raw Data	38.13
Standard Deviation of Raw Data	51.52
Khat	1.538
Theta hat	24.79
Kstar	1.392
Theta star	27.39
Mean of Log Transformed Data	3.282
Standard Deviation of Log Transformed Data	0.716

Normal GOF Test Results

Correlation Coefficient R	0.666
Shapiro Wilk Test Statistic	0.47
Shapiro Wilk Critical (0.05) Value	0.923
Approximate Shapiro Wilk P Value	3.098E-10
Lilliefors Test Statistic	0.378
Lilliefors Critical (0.05) Value	0.171

Data not Normal at (0.05) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.836
A-D Test Statistic	2.752
A-D Critical (0.05) Value	0.763
K-S Test Statistic	0.289
K-S Critical(0.05) Value	0.171

Data not Gamma Distributed at (0.05) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.914
Shapiro Wilk Test Statistic	0.848
Shapiro Wilk Critical (0.05) Value	0.923
Approximate Shapiro Wilk P Value	8.0888E-4
Lilliefors Test Statistic	0.208
Lilliefors Critical (0.05) Value	0.171

Data not Lognormal at (0.05) Significance Level

IRON

Raw Statistics

Number of Valid Observations	27
Number of Missing Observations	31
Number of Distinct Observations	27
Minimum	16100
Maximum	88500
Mean of Raw Data	32552
Standard Deviation of Raw Data	14693
Khat	6.922
Theta hat	4703
Kstar	6.177
Theta star	5270
Mean of Log Transformed Data	10.32
Standard Deviation of Log Transformed Data	0.373

Normal GOF Test Results

Correlation Coefficient R	0.877
Shapiro Wilk Test Statistic	0.79
Shapiro Wilk Critical (0.05) Value	0.923
Approximate Shapiro Wilk P Value	4.6584E-5
Lilliefors Test Statistic	0.198
Lilliefors Critical (0.05) Value	0.171

Data not Normal at (0.05) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.935
A-D Test Statistic	0.672
A-D Critical (0.05) Value	0.746
K-S Test Statistic	0.144
K-S Critical(0.05) Value	0.168

Data appear Gamma Distributed at (0.05) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.972
Shapiro Wilk Test Statistic	0.953
Shapiro Wilk Critical (0.05) Value	0.923
Approximate Shapiro Wilk P Value	0.268
Lilliefors Test Statistic	0.116
Lilliefors Critical (0.05) Value	0.171

Data appear Lognormal at (0.05) Significance Level

LEAD

Raw Statistics

Number of Valid Observations	58
Number of Distinct Observations	55
Minimum	6.5
Maximum	29900
Mean of Raw Data	815.4
Standard Deviation of Raw Data	4143
Khat	0.281
Theta hat	2902
Kstar	0.278
Theta star	2933
Mean of Log Transformed Data	4.223
Standard Deviation of Log Transformed Data	1.525

Normal GOF Test Results

Correlation Coefficient R	0.412
Approximate Shapiro Wilk Test Statistic	0.209
Approximate Shapiro Wilk P Value	0
Lilliefors Test Statistic	0.479
Lilliefors Critical (0.05) Value	0.116

Data not Normal at (0.05) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.783
A-D Test Statistic	11.13
A-D Critical (0.05) Value	0.873
K-S Test Statistic	0.363
K-S Critical(0.05) Value	0.127

Data not Gamma Distributed at (0.05) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.926
Approximate Shapiro Wilk Test Statistic	0.87
Approximate Shapiro Wilk P Value	1.2932E-6
Lilliefors Test Statistic	0.141
Lilliefors Critical (0.05) Value	0.116

Data not Lognormal at (0.05) Significance Level

MANGANESE

Raw Statistics

Number of Valid Observations	27
Number of Missing Observations	31
Number of Distinct Observations	26
Minimum	242
Maximum	929
Mean of Raw Data	482.1
Standard Deviation of Raw Data	161.1
Khat	9.587
Theta hat	50.29
Kstar	8.546
Theta star	56.41
Mean of Log Transformed Data	6.125
Standard Deviation of Log Transformed Data	0.334

Normal GOF Test Results

Correlation Coefficient R	0.978
Shapiro Wilk Test Statistic	0.959
Shapiro Wilk Critical (0.05) Value	0.923
Approximate Shapiro Wilk P Value	0.368
Lilliefors Test Statistic	0.0785
Lilliefors Critical (0.05) Value	0.171

Data appear Normal at (0.05) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.994
A-D Test Statistic	0.116
A-D Critical (0.05) Value	0.744
K-S Test Statistic	0.0583
K-S Critical(0.05) Value	0.168

Data appear Gamma Distributed at (0.05) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.995
Shapiro Wilk Test Statistic	0.985
Shapiro Wilk Critical (0.05) Value	0.923
Approximate Shapiro Wilk P Value	0.948
Lilliefors Test Statistic	0.0786
Lilliefors Critical (0.05) Value	0.171

Data appear Lognormal at (0.05) Significance Level

NICKEL

Raw Statistics

Number of Valid Observations	27
Number of Missing Observations	31
Number of Distinct Observations	27
Minimum	13.2
Maximum	56.6
Mean of Raw Data	25.58
Standard Deviation of Raw Data	10.61
Khat	7.186
Theta hat	3.56
Kstar	6.413
Theta star	3.989
Mean of Log Transformed Data	3.171
Standard Deviation of Log Transformed Data	0.374

Normal GOF Test Results

Correlation Coefficient R	0.932
Shapiro Wilk Test Statistic	0.871
Shapiro Wilk Critical (0.05) Value	0.923
Approximate Shapiro Wilk P Value	0.0027
Lilliefors Test Statistic	0.168
Lilliefors Critical (0.05) Value	0.171

Data appear Approximate Normal at (0.05) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.975
A-D Test Statistic	0.469
A-D Critical (0.05) Value	0.746
K-S Test Statistic	0.146
K-S Critical(0.05) Value	0.168

Data appear Gamma Distributed at (0.05) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.985
Shapiro Wilk Test Statistic	0.963
Shapiro Wilk Critical (0.05) Value	0.923
Approximate Shapiro Wilk P Value	0.458
Lilliefors Test Statistic	0.127
Lilliefors Critical (0.05) Value	0.171

Data appear Lognormal at (0.05) Significance Level

THALLIUM

Raw Statistics

Number of Valid Observations	27
Number of Missing Observations	31
Number of Distinct Observations	10
Minimum	0.02
Maximum	0.15
Mean of Raw Data	0.0578
Standard Deviation of Raw Data	0.0307
Khat	3.767
Theta hat	0.0153
Kstar	3.373
Theta star	0.0171
Mean of Log Transformed Data	-2.99
Standard Deviation of Log Transformed Data	0.552

Normal GOF Test Results

Correlation Coefficient R	0.957
Shapiro Wilk Test Statistic	0.919
Shapiro Wilk Critical (0.05) Value	0.923
Approximate Shapiro Wilk P Value	0.0397
Lilliefors Test Statistic	0.119
Lilliefors Critical (0.05) Value	0.171

Data appear Approximate Normal at (0.05) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.988
A-D Test Statistic	0.334
A-D Critical (0.05) Value	0.75
K-S Test Statistic	0.0923
K-S Critical(0.05) Value	0.169

Data appear Gamma Distributed at (0.05) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.98
Shapiro Wilk Test Statistic	0.95
Shapiro Wilk Critical (0.05) Value	0.923
Approximate Shapiro Wilk P Value	0.229
Lilliefors Test Statistic	0.125
Lilliefors Critical (0.05) Value	0.171

Data appear Lognormal at (0.05) Significance Level

VANADIUM

Raw Statistics

Number of Valid Observations	27
Number of Missing Observations	31
Number of Distinct Observations	24
Minimum	12
Maximum	26.6
Mean of Raw Data	18.51
Standard Deviation of Raw Data	3.796
Khat	24.4
Theta hat	0.759
Kstar	21.72
Theta star	0.852
Mean of Log Transformed Data	2.898
Standard Deviation of Log Transformed Data	0.208

Normal GOF Test Results

Correlation Coefficient R	0.994
Shapiro Wilk Test Statistic	0.98
Shapiro Wilk Critical (0.05) Value	0.923
Approximate Shapiro Wilk P Value	0.863
Lilliefors Test Statistic	0.0876
Lilliefors Critical (0.05) Value	0.171

Data appear Normal at (0.05) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.995
A-D Test Statistic	0.174
A-D Critical (0.05) Value	0.744
K-S Test Statistic	0.0997
K-S Critical(0.05) Value	0.168

Data appear Gamma Distributed at (0.05) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.994
Shapiro Wilk Test Statistic	0.98
Shapiro Wilk Critical (0.05) Value	0.923
Approximate Shapiro Wilk P Value	0.864
Lilliefors Test Statistic	0.108
Lilliefors Critical (0.05) Value	0.171

Data appear Lognormal at (0.05) Significance Level

ZINC

Raw Statistics

Number of Valid Observations	27
Number of Missing Observations	31
Number of Distinct Observations	27
Minimum	33.6
Maximum	433
Mean of Raw Data	103.2
Standard Deviation of Raw Data	75.16
Khat	3.555
Theta hat	29.02
Kstar	3.185
Theta star	32.39
Mean of Log Transformed Data	4.489
Standard Deviation of Log Transformed Data	0.506

Normal GOF Test Results

Correlation Coefficient R	0.775
Shapiro Wilk Test Statistic	0.631
Shapiro Wilk Critical (0.05) Value	0.923
Approximate Shapiro Wilk P Value	6.8638E-8
Lilliefors Test Statistic	0.229
Lilliefors Critical (0.05) Value	0.171

Data not Normal at (0.05) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.872
A-D Test Statistic	1.095
A-D Critical (0.05) Value	0.75
K-S Test Statistic	0.185
K-S Critical(0.05) Value	0.169

Data not Gamma Distributed at (0.05) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.958
Shapiro Wilk Test Statistic	0.936
Shapiro Wilk Critical (0.05) Value	0.923
Approximate Shapiro Wilk P Value	0.104
Lilliefors Test Statistic	0.147
Lilliefors Critical (0.05) Value	0.171

Data appear Lognormal at (0.05) Significance Level

Goodness-of-Fit Test Statistics for Uncensored Full Data Sets without Non-Detects

User Selected Options

Date/Time of Computation	8/14/2014 3:26:12 PM
From File	BKG_Soil Input.xls
Full Precision	OFF
Confidence Coefficient	0.95

BKG-ARSENIC

Raw Statistics

Number of Valid Observations	20
Number of Distinct Observations	16
Minimum	2.4
Maximum	6
Mean of Raw Data	4.025
Standard Deviation of Raw Data	1.14
Khat	13.22
Theta hat	0.304
Kstar	11.27
Theta star	0.357
Mean of Log Transformed Data	1.354
Standard Deviation of Log Transformed Data	0.285

Normal GOF Test Results

Correlation Coefficient R	0.975
Shapiro Wilk Test Statistic	0.935
Shapiro Wilk Critical (0.05) Value	0.905
Approximate Shapiro Wilk P Value	0.225
Lilliefors Test Statistic	0.116
Lilliefors Critical (0.05) Value	0.198

Data appear Normal at (0.05) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.979
A-D Test Statistic	0.33
A-D Critical (0.05) Value	0.741
K-S Test Statistic	0.123
K-S Critical(0.05) Value	0.194

Data appear Gamma Distributed at (0.05) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.984
Shapiro Wilk Test Statistic	0.953
Shapiro Wilk Critical (0.05) Value	0.905
Approximate Shapiro Wilk P Value	0.46
Lilliefors Test Statistic	0.115
Lilliefors Critical (0.05) Value	0.198

Data appear Lognormal at (0.05) Significance Level

BKG-CHROMIUM, TOTAL

Raw Statistics

Number of Valid Observations	20
Number of Distinct Observations	19
Minimum	5.8
Maximum	15.1
Mean of Raw Data	9.87
Standard Deviation of Raw Data	2.626
Khat	14.42
Theta hat	0.684
Kstar	12.29
Theta star	0.803
Mean of Log Transformed Data	2.254
Standard Deviation of Log Transformed Data	0.275

Normal GOF Test Results

Correlation Coefficient R	0.977
Shapiro Wilk Test Statistic	0.946
Shapiro Wilk Critical (0.05) Value	0.905
Approximate Shapiro Wilk P Value	0.352
Lilliefors Test Statistic	0.135
Lilliefors Critical (0.05) Value	0.198

Data appear Normal at (0.05) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.974
A-D Test Statistic	0.507
A-D Critical (0.05) Value	0.741
K-S Test Statistic	0.153
K-S Critical(0.05) Value	0.194

Data appear Gamma Distributed at (0.05) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.977
Shapiro Wilk Test Statistic	0.944
Shapiro Wilk Critical (0.05) Value	0.905
Approximate Shapiro Wilk P Value	0.325
Lilliefors Test Statistic	0.153
Lilliefors Critical (0.05) Value	0.198

Data appear Lognormal at (0.05) Significance Level

BKG-COBALT

Raw Statistics

Number of Valid Observations	20
Number of Distinct Observations	15
Minimum	1.3
Maximum	4.6
Mean of Raw Data	2.87
Standard Deviation of Raw Data	1.085
Khat	6.837
Theta hat	0.42
Kstar	5.845
Theta star	0.491
Mean of Log Transformed Data	0.979
Standard Deviation of Log Transformed Data	0.409

Normal GOF Test Results

Correlation Coefficient R	0.978
Shapiro Wilk Test Statistic	0.937
Shapiro Wilk Critical (0.05) Value	0.905
Approximate Shapiro Wilk P Value	0.251
Lilliefors Test Statistic	0.114
Lilliefors Critical (0.05) Value	0.198

Data appear Normal at (0.05) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.969
A-D Test Statistic	0.424
A-D Critical (0.05) Value	0.744
K-S Test Statistic	0.119
K-S Critical(0.05) Value	0.194

Data appear Gamma Distributed at (0.05) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.973
Shapiro Wilk Test Statistic	0.928
Shapiro Wilk Critical (0.05) Value	0.905
Approximate Shapiro Wilk P Value	0.174
Lilliefors Test Statistic	0.127
Lilliefors Critical (0.05) Value	0.198

Data appear Lognormal at (0.05) Significance Level

BKG-COPPER

Raw Statistics

Number of Valid Observations	20
Number of Distinct Observations	19
Minimum	3.6
Maximum	11.3
Mean of Raw Data	6.835
Standard Deviation of Raw Data	2.33
Khat	8.485
Theta hat	0.806
Kstar	7.245
Theta star	0.943
Mean of Log Transformed Data	1.862
Standard Deviation of Log Transformed Data	0.364

Normal GOF Test Results

Correlation Coefficient R	0.979
Shapiro Wilk Test Statistic	0.944
Shapiro Wilk Critical (0.05) Value	0.905
Approximate Shapiro Wilk P Value	0.332
Lilliefors Test Statistic	0.142
Lilliefors Critical (0.05) Value	0.198

Data appear Normal at (0.05) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.975
A-D Test Statistic	0.536
A-D Critical (0.05) Value	0.743
K-S Test Statistic	0.146
K-S Critical(0.05) Value	0.194

Data appear Gamma Distributed at (0.05) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.97
Shapiro Wilk Test Statistic	0.924
Shapiro Wilk Critical (0.05) Value	0.905
Approximate Shapiro Wilk P Value	0.142
Lilliefors Test Statistic	0.149
Lilliefors Critical (0.05) Value	0.198

Data appear Lognormal at (0.05) Significance Level

BKG-IRON

Raw Statistics

Number of Valid Observations	20
Number of Distinct Observations	18
Minimum	8240
Maximum	18000
Mean of Raw Data	13797
Standard Deviation of Raw Data	3332
Khat	17.05
Theta hat	809.3
Kstar	14.53
Theta star	949.9
Mean of Log Transformed Data	9.503
Standard Deviation of Log Transformed Data	0.254

Normal GOF Test Results

Correlation Coefficient R	0.965
Shapiro Wilk Test Statistic	0.911
Shapiro Wilk Critical (0.05) Value	0.905
Approximate Shapiro Wilk P Value	0.0814
Lilliefors Test Statistic	0.16
Lilliefors Critical (0.05) Value	0.198

Data appear Normal at (0.05) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.949
A-D Test Statistic	0.628
A-D Critical (0.05) Value	0.741
K-S Test Statistic	0.159
K-S Critical(0.05) Value	0.194

Data appear Gamma Distributed at (0.05) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.964
Shapiro Wilk Test Statistic	0.912
Shapiro Wilk Critical (0.05) Value	0.905
Approximate Shapiro Wilk P Value	0.085
Lilliefors Test Statistic	0.148
Lilliefors Critical (0.05) Value	0.198

Data appear Lognormal at (0.05) Significance Level

BKG-LEAD

Raw Statistics

Number of Valid Observations	20
Number of Distinct Observations	17
Minimum	5.3
Maximum	18.4
Mean of Raw Data	10.84
Standard Deviation of Raw Data	3.353
Khat	10.61
Theta hat	1.021
Kstar	9.05
Theta star	1.197
Mean of Log Transformed Data	2.335
Standard Deviation of Log Transformed Data	0.324

Normal GOF Test Results

Correlation Coefficient R	0.99
Shapiro Wilk Test Statistic	0.979
Shapiro Wilk Critical (0.05) Value	0.905
Approximate Shapiro Wilk P Value	0.907
Lilliefors Test Statistic	0.0866
Lilliefors Critical (0.05) Value	0.198

Data appear Normal at (0.05) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.993
A-D Test Statistic	0.189
A-D Critical (0.05) Value	0.742
K-S Test Statistic	0.126
K-S Critical(0.05) Value	0.194

Data appear Gamma Distributed at (0.05) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.989
Shapiro Wilk Test Statistic	0.976
Shapiro Wilk Critical (0.05) Value	0.905
Approximate Shapiro Wilk P Value	0.866
Lilliefors Test Statistic	0.147
Lilliefors Critical (0.05) Value	0.198

Data appear Lognormal at (0.05) Significance Level

BKG-MANGANESE

Raw Statistics

Number of Valid Observations	20
Number of Distinct Observations	19
Minimum	80.4
Maximum	194
Mean of Raw Data	140.7
Standard Deviation of Raw Data	36.28
Khat	14.56
Theta hat	9.662
Kstar	12.41
Theta star	11.34
Mean of Log Transformed Data	4.912
Standard Deviation of Log Transformed Data	0.277

Normal GOF Test Results

Correlation Coefficient R	0.982
Shapiro Wilk Test Statistic	0.946
Shapiro Wilk Critical (0.05) Value	0.905
Approximate Shapiro Wilk P Value	0.369
Lilliefors Test Statistic	0.13
Lilliefors Critical (0.05) Value	0.198

Data appear Normal at (0.05) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.966
A-D Test Statistic	0.43
A-D Critical (0.05) Value	0.741
K-S Test Statistic	0.146
K-S Critical(0.05) Value	0.194

Data appear Gamma Distributed at (0.05) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.971
Shapiro Wilk Test Statistic	0.928
Shapiro Wilk Critical (0.05) Value	0.905
Approximate Shapiro Wilk P Value	0.168
Lilliefors Test Statistic	0.144
Lilliefors Critical (0.05) Value	0.198

Data appear Lognormal at (0.05) Significance Level

BKG-NICKEL

Raw Statistics

Number of Valid Observations	20
Number of Distinct Observations	19
Minimum	4.5
Maximum	10.6
Mean of Raw Data	7.695
Standard Deviation of Raw Data	2.055
Khat	13.24
Theta hat	0.581
Kstar	11.29
Theta star	0.682
Mean of Log Transformed Data	2.002
Standard Deviation of Log Transformed Data	0.293

Normal GOF Test Results

Correlation Coefficient R	0.96
Shapiro Wilk Test Statistic	0.902
Shapiro Wilk Critical (0.05) Value	0.905
Approximate Shapiro Wilk P Value	0.0529
Lilliefors Test Statistic	0.197
Lilliefors Critical (0.05) Value	0.198

Data appear Approximate Normal at (0.05) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.94
A-D Test Statistic	0.997
A-D Critical (0.05) Value	0.741
K-S Test Statistic	0.227
K-S Critical(0.05) Value	0.194

Data not Gamma Distributed at (0.05) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.943
Shapiro Wilk Test Statistic	0.871
Shapiro Wilk Critical (0.05) Value	0.905
Approximate Shapiro Wilk P Value	0.0134
Lilliefors Test Statistic	0.236
Lilliefors Critical (0.05) Value	0.198

Data not Lognormal at (0.05) Significance Level

BKG-VANADIUM

Raw Statistics

Number of Valid Observations	20
Number of Distinct Observations	19
Minimum	10.8
Maximum	22.7
Mean of Raw Data	17.03
Standard Deviation of Raw Data	3.989
Khat	18.51
Theta hat	0.92
Kstar	15.76
Theta star	1.08
Mean of Log Transformed Data	2.807
Standard Deviation of Log Transformed Data	0.242

Normal GOF Test Results

Correlation Coefficient R	0.966
Shapiro Wilk Test Statistic	0.913
Shapiro Wilk Critical (0.05) Value	0.905
Approximate Shapiro Wilk P Value	0.0884
Lilliefors Test Statistic	0.194
Lilliefors Critical (0.05) Value	0.198

Data appear Normal at (0.05) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.955
A-D Test Statistic	0.666
A-D Critical (0.05) Value	0.741
K-S Test Statistic	0.204
K-S Critical(0.05) Value	0.194

Data follow Appr. Gamma Distribution at (0.05) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.967
Shapiro Wilk Test Statistic	0.917
Shapiro Wilk Critical (0.05) Value	0.905
Approximate Shapiro Wilk P Value	0.104
Lilliefors Test Statistic	0.199
Lilliefors Critical (0.05) Value	0.198

Data appear Approximate_Lognormal at (0.05) Significance Level

BKG-ZINC

Raw Statistics

Number of Valid Observations	20
Number of Distinct Observations	20
Minimum	15.1
Maximum	29.4
Mean of Raw Data	21.96
Standard Deviation of Raw Data	4.697
Khat	22.64
Theta hat	0.97
Kstar	19.28
Theta star	1.139
Mean of Log Transformed Data	3.067
Standard Deviation of Log Transformed Data	0.218

Normal GOF Test Results

Correlation Coefficient R	0.98
Shapiro Wilk Test Statistic	0.941
Shapiro Wilk Critical (0.05) Value	0.905
Approximate Shapiro Wilk P Value	0.297
Lilliefors Test Statistic	0.119
Lilliefors Critical (0.05) Value	0.198

Data appear Normal at (0.05) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.977
A-D Test Statistic	0.36
A-D Critical (0.05) Value	0.741
K-S Test Statistic	0.13
K-S Critical(0.05) Value	0.193

Data appear Gamma Distributed at (0.05) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.98
Shapiro Wilk Test Statistic	0.941
Shapiro Wilk Critical (0.05) Value	0.905
Approximate Shapiro Wilk P Value	0.295
Lilliefors Test Statistic	0.126
Lilliefors Critical (0.05) Value	0.198

Data appear Lognormal at (0.05) Significance Level

Wilcoxon-Mann-Whitney Sample 1 vs Sample 2 Comparison Test for Uncensor Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	8/15/2014 2:36:06 PM
From File	Soil_ProUCL_Input_W ST_b.xls
Full Precision	OFF
Confidence Coefficient	95%
Substantial Difference	0.000
Selected Null Hypothesis	Sample 1 Mean/Median >= Sample 2 Mean/Median (Form 2)
Alternative Hypothesis	Sample 1 Mean/Median < Sample 2 Mean/Median

Sample 1 Data: ZINC

Sample 2 Data: BKG-ZINC

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	27	20
Number of Missing Observations	31	58
Number of Distinct Observations	27	20
Minimum	33.6	19.8
Maximum	433	34.1
Mean	103.2	26.66
Median	81	26.6
SD	75.16	4.697
SE of Mean	14.46	1.05

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Sample 1 >= Mean/Median of Sample 2

Sample 1 Rank Sum W-Stat	916
Standardized WMW U-Stat	5.756
Mean (U)	270
SD(U) - Adj ties	46.48
Approximate U-Stat Critical Value (0.05)	-1.645
P-Value (Adjusted for Ties)	1

Conclusion with Alpha = 0.05

Do Not Reject H0, Conclude Sample 1 >= Sample 2

P-Value >= alpha (0.05)

t-Test Sample 1 vs Sample 2 Comparison for Uncensored Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	8/15/2014 2:31:04 PM
From File	Soil_ProUCL_Input_W ST_b.xls
Full Precision	OFF
Confidence Coefficient	95%
Substantial Difference (S)	0.000
Selected Null Hypothesis	Sample 1 Mean >= Sample 2 Mean (Form 2)
Alternative Hypothesis	Sample 1 Mean < the Sample 2 Mean

Sample 1 Data: VANADIUM

Sample 2 Data: BKG-VANADIUM

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	27	20
Number of Missing Observations	31	58
Number of Distinct Observations	24	19
Minimum	12	14.79
Maximum	26.6	26.69
Mean	18.51	21.01
Median	18.3	20.69
SD	3.796	3.989
SE of Mean	0.731	0.892

Sample 1 vs Sample 2 Two-Sample t-Test

H0: Mean of Sample 1 - Mean of Sample 2 >= 0

Method	DF	t-Test Value	Critical t (0.05)	P-Value
Pooled (Equal Variance)	45	-2.187	-1.679	0.017
Welch-Satterthwaite (Unequal Vari	39.9	-2.171	-1.684	0.018

Pooled SD: 3.878

Conclusion with Alpha = 0.050

Student t (Pooled) Test: Reject H0, Conclude Sample 1 < Sample 2

Welch-Satterthwaite Test: Reject H0, Conclude Sample 1 < Sample 2

Test of Equality of Variances

Variance of Sample 1	14.41
Variance of Sample 2	15.91

Numerator DF	Denominator DF	F-Test Value	P-Value
19	26	1.104	0.801

Conclusion with Alpha = 0.05

Two variances appear to be equal

t-Test Sample 1 vs Sample 2 Comparison for Uncensored Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	8/15/2014 2:28:08 PM
From File	Soil_ProUCL_Input_W ST_b.xls
Full Precision	OFF
Confidence Coefficient	95%
Substantial Difference (S)	0.000
Selected Null Hypothesis	Sample 1 Mean >= Sample 2 Mean (Form 2)
Alternative Hypothesis	Sample 1 Mean < the Sample 2 Mean

Sample 1 Data: SELENIUM

Sample 2 Data: BKG-SELENIUM

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	27	20
Number of Missing Observations	31	58
Number of Distinct Observations	19	14
Minimum	0.18	0.289
Maximum	0.66	0.659
Mean	0.431	0.431
Median	0.42	0.409
SD	0.0944	0.0914
SE of Mean	0.0182	0.0204

Sample 1 vs Sample 2 Two-Sample t-Test

H0: Mean of Sample 1 - Mean of Sample 2 >= 0

Method	DF	t-Test Value	Critical t (0.05)	P-Value
Pooled (Equal Variance)	45	0.015	-1.679	0.506
Welch-Satterthwaite (Unequal Vari	41.8	0.015	-1.682	0.506

Pooled SD: 0.093

Conclusion with Alpha = 0.050

Student t (Pooled) Test: Do Not Reject H0, Conclude Sample 1 >= Sample 2

Welch-Satterthwaite Test: Do Not Reject H0, Conclude Sample 1 >= Sample 2

Test of Equality of Variances

Variance of Sample 1	0.00891
Variance of Sample 2	0.00835

Numerator DF	Denominator DF	F-Test Value	P-Value
26	19	1.066	0.900

Conclusion with Alpha = 0.05

Two variances appear to be equal

Wilcoxon-Mann-Whitney Sample 1 vs Sample 2 Comparison Test for Uncensor Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	8/15/2014 2:10:13 PM
From File	Soil_ProUCL_Input_W ST_b.xls
Full Precision	OFF
Confidence Coefficient	95%
Substantial Difference	0.000
Selected Null Hypothesis	Sample 1 Mean/Median >= Sample 2 Mean/Median (Form 2)
Alternative Hypothesis	Sample 1 Mean/Median < Sample 2 Mean/Median

Sample 1 Data: LEAD

Sample 2 Data: BKG-LEAD

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	58	20
Number of Missing Observations	0	58
Number of Distinct Observations	55	17
Minimum	6.5	8.653
Maximum	29900	21.75
Mean	815.4	14.19
Median	61.15	14.35
SD	4143	3.353
SE of Mean	544	0.75

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Sample 1 >= Mean/Median of Sample 2

Sample 1 Rank Sum W-Stat	2750
Standardized WMW U-Stat	5.247
Mean (U)	580
SD(U) - Adj ties	87.39
Approximate U-Stat Critical Value (0.05)	-1.645
P-Value (Adjusted for Ties)	1

Conclusion with Alpha = 0.05

Do Not Reject H0, Conclude Sample 1 >= Sample 2

P-Value >= alpha (0.05)

t-Test Sample 1 vs Sample 2 Comparison for Uncensored Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	8/15/2014 2:41:06 PM
From File	Soil_ProUCL_Input_W ST_b.xls
Full Precision	OFF
Confidence Coefficient	95%
Substantial Difference (S)	0.000
Selected Null Hypothesis	Sample 1 Mean >= Sample 2 Mean (Form 2)
Alternative Hypothesis	Sample 1 Mean < the Sample 2 Mean

Sample 1 Data: NICKEL

Sample 2 Data: BKG-NICKEL

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	27	20
Number of Missing Observations	31	58
Number of Distinct Observations	27	19
Minimum	13.2	6.555
Maximum	56.6	12.65
Mean	25.58	9.75
Median	21.5	10.35
SD	10.61	2.055
SE of Mean	2.041	0.459

Sample 1 vs Sample 2 Two-Sample t-Test

H0: Mean of Sample 1 - Mean of Sample 2 >= 0

Method	DF	t-Test Value	Critical t (0.05)	P-Value
Pooled (Equal Variance)	45	6.566	-1.679	1.000
Welch-Satterthwaite (Unequal Vari	28.6	7.566	-1.699	1.000

Pooled SD: 8.173

Conclusion with Alpha = 0.050

Student t (Pooled) Test: Do Not Reject H0, Conclude Sample 1 >= Sample 2

Welch-Satterthwaite Test: Do Not Reject H0, Conclude Sample 1 >= Sample 2

Test of Equality of Variances

Variance of Sample 1	112.5
Variance of Sample 2	4.222

Numerator DF	Denominator DF	F-Test Value	P-Value
26	19	26.656	0.000

Conclusion with Alpha = 0.05

Two variances are not equal

t-Test Sample 1 vs Sample 2 Comparison for Uncensored Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	8/15/2014 2:40:02 PM
From File	Soil_ProUCL_Input_W ST_b.xls
Full Precision	OFF
Confidence Coefficient	95%
Substantial Difference (S)	0.000
Selected Null Hypothesis	Sample 1 Mean >= Sample 2 Mean (Form 2)
Alternative Hypothesis	Sample 1 Mean < the Sample 2 Mean

Sample 1 Data: MANGANESE

Sample 2 Data: BKG-MANGANESE

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	27	20
Number of Missing Observations	31	58
Number of Distinct Observations	26	19
Minimum	242	116.7
Maximum	929	230.3
Mean	482.1	177
Median	462	175.8
SD	161.1	36.28
SE of Mean	31	8.113

Sample 1 vs Sample 2 Two-Sample t-Test

H0: Mean of Sample 1 - Mean of Sample 2 >= 0

Method	DF	t-Test Value	Critical t (0.05)	P-Value
Pooled (Equal Variance)	45	8.295	-1.679	1.000
Welch-Satterthwaite (Unequal Vari	29.5	9.523	-1.699	1.000

Pooled SD: 124.675

Conclusion with Alpha = 0.050

Student t (Pooled) Test: Do Not Reject H0, Conclude Sample 1 >= Sample 2

Welch-Satterthwaite Test: Do Not Reject H0, Conclude Sample 1 >= Sample 2

Test of Equality of Variances

Variance of Sample 1	25941
Variance of Sample 2	1316

Numerator DF	Denominator DF	F-Test Value	P-Value
26	19	19.706	0.000

Conclusion with Alpha = 0.05

Two variances are not equal

Gehan Sample 1 vs Sample 2 Comparison Hypothesis Test for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	8/15/2014 2:17:42 PM
From File	Soil_ProUCL_Input_W ST_b.xls
Full Precision	OFF
Confidence Coefficient	95%
Selected Null Hypothesis	Sample 1 Mean/Median >= Sample 2 Mean/Median (Form 2)
Alternative Hypothesis	Sample 1 Mean/Median < Sample 2 Mean/Median

Sample 1 Data: MERCURY

Sample 2 Data: BKG-MERCURY

Raw Statistics

	Sample 1	Sample 2
Number of Valid Data	27	20
Number of Missing Observations	31	58
Number of Non-Detects	6	2
Number of Detect Data	21	18
Minimum Non-Detect	0.012	0.0456
Maximum Non-Detect	0.032	0.0466
Percent Non-detects	22.22%	10.00%
Minimum Detect	0.006	0.0266
Maximum Detect	0.21	0.0666
Mean of Detects	0.066	0.0399
Median of Detects	0.05	0.0386
SD of Detects	0.051	0.0106

Sample 1 vs Sample 2 Gehan Test

H0: Mean of Sample 1 >= Mean of background

Gehan z Test Value	0.967
Critical z (0.05)	-1.645
P-Value	0.833

Conclusion with Alpha = 0.05

Do Not Reject H0, Conclude Sample 1 >= Sample 2

P-Value >= alpha (0.05)

Wilcoxon-Mann-Whitney Sample 1 vs Sample 2 Comparison Test for Uncensor Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	8/15/2014 2:08:49 PM
From File	Soil_ProUCL_Input_W ST_b.xls
Full Precision	OFF
Confidence Coefficient	95%
Substantial Difference	0.000
Selected Null Hypothesis	Sample 1 Mean/Median >= Sample 2 Mean/Median (Form 2)
Alternative Hypothesis	Sample 1 Mean/Median < Sample 2 Mean/Median

Sample 1 Data: IRON

Sample 2 Data: BKG-IRON

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	27	20
Number of Missing Observations	31	58
Number of Distinct Observations	27	18
Minimum	16100	11572
Maximum	88500	21332
Mean	32552	17129
Median	29900	17432
SD	14693	3332
SE of Mean	2828	745.1

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Sample 1 >= Mean/Median of Sample 2

Sample 1 Rank Sum W-Stat	889
Standardized WMW U-Stat	5.175
Mean (U)	270
SD(U) - Adj ties	46.47
Approximate U-Stat Critical Value (0.05)	-1.645
P-Value (Adjusted for Ties)	1

Conclusion with Alpha = 0.05

Do Not Reject H0, Conclude Sample 1 >= Sample 2

P-Value >= alpha (0.05)

Wilcoxon-Mann-Whitney Sample 1 vs Sample 2 Comparison Test for Uncensor Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	8/15/2014 2:07:58 PM
From File	Soil_ProUCL_Input_W ST_b.xls
Full Precision	OFF
Confidence Coefficient	95%
Substantial Difference	0.000
Selected Null Hypothesis	Sample 1 Mean/Median >= Sample 2 Mean/Median (Form 2)
Alternative Hypothesis	Sample 1 Mean/Median < Sample 2 Mean/Median

Sample 1 Data: COPPER

Sample 2 Data: BKG-COPPER

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	27	20
Number of Missing Observations	31	58
Number of Distinct Observations	27	19
Minimum	9.2	5.93
Maximum	256	13.63
Mean	38.13	9.165
Median	24.4	9.53
SD	51.52	2.33
SE of Mean	9.916	0.521

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Sample 1 >= Mean/Median of Sample 2

Sample 1 Rank Sum W-Stat	894
Standardized WMW U-Stat	5.282
Mean (U)	270
SD(U) - Adj ties	46.48
Approximate U-Stat Critical Value (0.05)	-1.645
P-Value (Adjusted for Ties)	1

Conclusion with Alpha = 0.05

Do Not Reject H0, Conclude Sample 1 >= Sample 2

P-Value >= alpha (0.05)

Wilcoxon-Mann-Whitney Sample 1 vs Sample 2 Comparison Test for Uncensor Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	8/15/2014 2:05:14 PM
From File	Soil_ProUCL_Input_W ST_b.xls
Full Precision	OFF
Confidence Coefficient	95%
Substantial Difference	0.000
Selected Null Hypothesis	Sample 1 Mean/Median >= Sample 2 Mean/Median (Form 2)
Alternative Hypothesis	Sample 1 Mean/Median < Sample 2 Mean/Median

Sample 1 Data: CHROMIUM, TOTAL

Sample 2 Data: BKG-CHROMIUM, TOTAL

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	46	20
Number of Missing Observations	12	58
Number of Distinct Observations	35	19
Minimum	5	8.426
Maximum	30.1	17.73
Mean	12.64	12.5
Median	12	12.53
SD	4.685	2.626
SE of Mean	0.691	0.587

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Sample 1 >= Mean/Median of Sample 2

Sample 1 Rank Sum W-Stat	1493
Standardized WMW U-Stat	-0.677
Mean (U)	460
SD(U) - Adj ties	71.65
Approximate U-Stat Critical Value (0.05)	-1.645
P-Value (Adjusted for Ties)	0.249

Conclusion with Alpha = 0.05

Do Not Reject H0, Conclude Sample 1 >= Sample 2

P-Value >= alpha (0.05)

Wilcoxon-Mann-Whitney Sample 1 vs Sample 2 Comparison Test for Uncensor Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	8/15/2014 2:06:25 PM
From File	Soil_ProUCL_Input_W ST_b.xls
Full Precision	OFF
Confidence Coefficient	95%
Substantial Difference	0.000
Selected Null Hypothesis	Sample 1 Mean/Median >= Sample 2 Mean/Median (Form 2)
Alternative Hypothesis	Sample 1 Mean/Median < Sample 2 Mean/Median

Sample 1 Data: COBALT

Sample 2 Data: BKG-COBALT

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	27	20
Number of Missing Observations	31	58
Number of Distinct Observations	26	15
Minimum	6.4	2.385
Maximum	24.5	5.685
Mean	12.4	3.955
Median	10.8	3.835
SD	4.906	1.085
SE of Mean	0.944	0.243

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Sample 1 >= Mean/Median of Sample 2

Sample 1 Rank Sum W-Stat	918
Standardized WMW U-Stat	5.8
Mean (U)	270
SD(U) - Adj ties	46.47
Approximate U-Stat Critical Value (0.05)	-1.645
P-Value (Adjusted for Ties)	1

Conclusion with Alpha = 0.05

Do Not Reject H0, Conclude Sample 1 >= Sample 2

P-Value >= alpha (0.05)

Wilcoxon-Mann-Whitney Sample 1 vs Sample 2 Comparison Test for Uncensor Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	8/15/2014 2:03:02 PM
From File	Soil_ProUCL_Input_W ST_b.xls
Full Precision	OFF
Confidence Coefficient	95%
Substantial Difference	0.000
Selected Null Hypothesis	Sample 1 Mean/Median >= Sample 2 Mean/Median (Form 2)
Alternative Hypothesis	Sample 1 Mean/Median < Sample 2 Mean/Median

Sample 1 Data: ARSENIC

Sample 2 Data: BKG-ARSENIC

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	46	20
Number of Missing Observations	12	58
Number of Distinct Observations	39	16
Minimum	1.2	3.54
Maximum	130	7.14
Mean	12.41	5.165
Median	8.4	4.99
SD	19.33	1.14
SE of Mean	2.85	0.255

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Sample 1 >= Mean/Median of Sample 2

Sample 1 Rank Sum W-Stat	1800
Standardized WMW U-Stat	3.607
Mean (U)	460
SD(U) - Adj ties	71.66
Approximate U-Stat Critical Value (0.05)	-1.645
P-Value (Adjusted for Ties)	1

Conclusion with Alpha = 0.05

Do Not Reject H0, Conclude Sample 1 >= Sample 2

P-Value >= alpha (0.05)

General Statistics on Uncensored Full Data

Date/Time of Computation 8/15/2014 3:22:36 PM

User Selected Options

From File BKG_Soil Input.xls

Full Precision OFF

From File: BKG_Soil Input.xls

General Statistics for Uncensored Data Sets

Variable	NumObs	# Missing	Minimum	Maximum	Mean	SD	SEM	MAD/0.675	Skewness	Kurtosis	CV
BKG-ARSENIC	20	0	2.4	6	4.025	1.14	0.255	1.186	0.405	-0.844	0.283
KG-CHROMIUM, TOTAL	20	0	5.8	15.1	9.87	2.626	0.587	3.41	0.138	-1.034	0.266
BKG-COBALT	20	0	1.3	4.6	2.87	1.085	0.243	1.334	0.144	-1.19	0.378
BKG-COPPER	20	0	3.6	11.3	6.835	2.33	0.521	2.669	0.109	-1.015	0.341
BKG-IRON	20	0	8240	18000	13797	3332	745.1	5041	-0.122	-1.443	0.242
BKG-LEAD	20	0	5.3	18.4	10.84	3.353	0.75	3.262	0.347	-0.062	0.309
BKG-MANGANESE	20	0	80.4	194	140.7	36.28	8.113	42.99	-0.2	-1.196	0.258
BKG-NICKEL	20	0	4.5	10.6	7.695	2.055	0.459	2.15	-0.367	-1.336	0.267
BKG-VANADIUM	20	0	10.8	22.7	17.03	3.989	0.892	5.634	-0.0124	-1.54	0.234
BKG-ZINC	20	0	15.1	29.4	21.96	4.697	1.05	5.708	0.12	-1.208	0.214

Percentiles for Uncensored Data Sets

Variable	NumObs	# Missing	10%ile	20%ile	25%ile(Q1)	50%ile(Q2)	75%ile(Q3)	80%ile	90%ile	95%ile	99%ile
BKG-ARSENIC	20	0	2.69	2.96	3	3.85	4.525	4.76	5.82	6	6
KG-CHROMIUM, TOTAL	20	0	6.94	7.1	7.475	9.9	12.13	12.24	12.62	12.92	14.66
BKG-COBALT	20	0	1.5	1.74	1.875	2.75	3.7	4.04	4.24	4.6	4.6
BKG-COPPER	20	0	3.79	4.28	4.45	7.2	8.45	8.7	9.22	10.35	11.11
BKG-IRON	20	0	9804	10360	10850	14100	17450	17640	17810	17905	17981
BKG-LEAD	20	0	6.91	7.68	8.475	11	12.58	13.28	15.2	15.36	17.79
BKG-MANGANESE	20	0	92.84	109.9	113	139.5	172.3	176.4	182.8	190.2	193.2
BKG-NICKEL	20	0	4.79	5.24	5.45	8.3	9.125	9.28	10.12	10.32	10.54
BKG-VANADIUM	20	0	12.55	13.36	13.8	16.7	20.73	21.18	21.75	22.23	22.61
BKG-ZINC	20	0	16.23	16.66	17.98	21.9	25.13	26.5	28.37	29.02	29.32

General Statistics on Uncensored Data

Date/Time of Computation 8/15/2014 3:25:29 PM

User Selected Options

From File BKG_Soil Input.xls

Full Precision OFF

From File: BKG_Soil Input.xls

General Statistics for Censored Data Set (with NDs) using Kaplan Meier Method

Variable	NumObs	# Missing	Num Ds	NumNDs	% NDs	Min ND	Max ND	KM Mean	KM Var	KM SD	KM CV
BKG-ANTIMONY	20	0	0	20	100.00%	3.3	4.4	N/A	N/A	N/A	N/A
BKG-CADMIUM	20	0	0	20	100.00%	0.27	0.36	N/A	N/A	N/A	N/A
BKG-SELENIUM	20	0	13	7	35.00%	0.27	0.36	0.289	0.0119	0.109	0.376
BKG-MERCURY	20	0	18	2	10.00%	0.035	0.036	0.0288	1.0043E-4	0.01	0.348
BKG-THALLIUM	20	0	0	20	100.00%	0.55	0.73	N/A	N/A	N/A	N/A

General Statistics for Raw Data Sets using Detected Data Only

Variable	NumObs	# Missing	Minimum	Maximum	Mean	Median	Var	SD	MAD/0.675	Skewness	CV
BKG-ANTIMONY	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
BKG-CADMIUM	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
BKG-SELENIUM	13	0	0.18	0.55	0.338	0.32	0.0119	0.109	0.133	0.241	0.322
BKG-MERCURY	18	0	0.016	0.056	0.0293	0.028	1.1153E-4	0.0106	0.0119	0.872	0.36
BKG-THALLIUM	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Percentiles using all Detects (Ds) and Non-Detects (NDs)

Variable	NumObs	# Missing	10%ile	20%ile	25%ile(Q1)	50%ile(Q2)	75%ile(Q3)	80%ile	90%ile	95%ile	99%ile
BKG-ANTIMONY	20	0	3.3	3.38	3.4	3.6	3.825	3.9	4.2	4.21	4.362
BKG-CADMIUM	20	0	0.279	0.28	0.288	0.295	0.32	0.322	0.35	0.351	0.358
BKG-SELENIUM	20	0	0.208	0.27	0.278	0.3	0.363	0.378	0.425	0.474	0.535
BKG-MERCURY	20	0	0.0179	0.0206	0.0218	0.028	0.0365	0.0382	0.0401	0.0418	0.0532
BKG-THALLIUM	20	0	0.55	0.558	0.568	0.6	0.643	0.65	0.7	0.702	0.724

Subsurface Soil

General Statistics on Uncensored Full Data

Date/Time of Computation 8/19/2014 4:44:24 PM

User Selected Options

From File WorkSheet.xls

Full Precision OFF

From File: WorkSheet.xls

General Statistics for Uncensored Data Sets

Variable	NumObs	# Missing	Minimum	Maximum	Mean	SD	SEM	MAD/0.675	Skewness	Kurtosis	CV
Site-As	115	17	0.48	130	10.48	14.57	1.359	3.706	6.416	46.63	1.39
Site-Cr	115	17	5	34.2	12.19	4.171	0.389	2.224	2.522	9.993	0.342
Site-Co	80	52	6.4	33.4	13.08	5.282	0.591	4.151	1.299	1.929	0.404
Site-Cu	80	52	8.5	256	25.4	31.63	3.537	7.932	6.001	39.82	1.245
Site-Fe	80	52	8480	88500	30510	12282	1373	10600	1.505	4.961	0.403
Site-Pb	127	5	4.3	29900	381.9	2815	249.8	15.42	9.716	99.17	7.371
Site-Mn	80	52	168	5750	615.7	714	79.83	188.3	5.966	38.88	1.16
Site-Ni	80	52	11.8	56.6	23.7	9.733	1.088	7.858	1.341	1.625	0.411
Site_V	80	52	11.9	29	17.99	3.387	0.379	3.039	0.675	0.78	0.188
Site-Zn	80	52	28.5	433	73.07	52.27	5.844	26.24	4.507	28.34	0.715

Percentiles for Uncensored Data Sets

Variable	NumObs	# Missing	10%ile	20%ile	25%ile(Q1)	50%ile(Q2)	75%ile(Q3)	80%ile	90%ile	95%ile	99%ile
Site-As	115	17	3.84	4.9	5.55	7.6	10.8	12.5	13.68	18.26	82.53
Site-Cr	115	17	8.74	9.9	10	11.5	12.9	13.56	16.02	18.16	29.75
Site-Co	80	52	7.5	9.02	9.4	12.15	15.23	16.68	20.75	23.65	26.61
Site-Cu	80	52	10.83	13.74	14.68	19.9	25.38	28.02	32.17	43.03	179.4
Site-Fe	80	52	17060	21300	22000	28800	37075	40200	45100	49050	62746
Site-Pb	127	5	8	9.22	10.1	18.6	56.38	76.94	132.4	246.1	8542
Site-Mn	80	52	303.9	358.4	378	467.5	620.3	694.6	851.7	929.5	4217
Site-Ni	80	52	14	15.72	17.2	21.2	27.28	28.92	38.27	42.72	52.18
Site_V	80	52	13.89	15.3	15.78	17.85	19.73	20.52	22.01	23.68	27.1
Site-Zn	80	52	37.32	43.04	45.68	59.75	81.4	88.08	113.3	153.3	237.9

General Statistics on Uncensored Data

Date/Time of Computation 8/19/2014 4:46:20 PM

User Selected Options

From File WorkSheet.xls

Full Precision OFF

From File: WorkSheet.xls

General Statistics for Censored Data Set (with NDs) using Kaplan Meier Method

Variable	NumObs	# Missing	Num Ds	NumNDs	% NDs	Min ND	Max ND	KM Mean	KM Var	KM SD	KM CV
Site-Sb	80	52	72	8	10.00%	0.073	0.92	7.898	2347	48.44	6.134
Site-Cd	80	52	51	29	36.25%	0.059	0.14	0.121	0.0131	0.115	0.947
Site-Hg	80	52	33	47	58.75%	0.012	0.038	0.0288	0.00148	0.0385	1.338
Site-Se	80	52	33	47	58.75%	0.19	0.56	0.351	0.0235	0.153	0.436
Site-Thallium	80	52	78	2	2.50%	0.46	0.49	0.0717	0.00139	0.0373	0.52

General Statistics for Raw Data Sets using Detected Data Only

Variable	NumObs	# Missing	Minimum	Maximum	Mean	Median	Var	SD	MAD/0.675	Skewness	CV
Site-Sb	72	52	0.05	396	8.763	0.225	2637	51.35	0.185	6.835	5.86
Site-Cd	51	52	0.03	0.84	0.16	0.14	0.0166	0.129	0.0741	3.29	0.807
Site-Hg	33	52	0.005	0.21	0.0582	0.05	0.00216	0.0465	0.0297	1.969	0.799
Site-Se	33	52	0.18	1.2	0.455	0.43	0.0297	0.172	0.089	2.488	0.379
Site-Thallium	78	52	0.02	0.26	0.0717	0.06	0.00141	0.0375	0.0297	2.061	0.524

Percentiles using all Detects (Ds) and Non-Detects (NDs)

Variable	NumObs	# Missing	10%ile	20%ile	25%ile(Q1)	50%ile(Q2)	75%ile(Q3)	80%ile	90%ile	95%ile	99%ile
Site-Sb	80	52	0.08	0.1	0.11	0.215	0.573	0.644	1.14	4.22	232.5
Site-Cd	80	52	0.0618	0.0728	0.0793	0.0935	0.153	0.172	0.22	0.301	0.524
Site-Hg	80	52	0.014	0.016	0.0168	0.03	0.04	0.05	0.07	0.101	0.194
Site-Se	80	52	0.338	0.36	0.37	0.42	0.473	0.484	0.541	0.571	0.773
Site-Thallium	80	52	0.03	0.05	0.05	0.065	0.09	0.092	0.11	0.152	0.466

General Statistics on Uncensored Full Data

Date/Time of Computation 8/19/2014 4:56:22 PM

User Selected Options

From File WorkSheet.xls

Full Precision OFF

From File: WorkSheet.xls

General Statistics for Uncensored Data Sets

Variable	NumObs	# Missing	Minimum	Maximum	Mean	SD	SEM	MAD/0.675	Skewness	Kurtosis	CV
BKG-As	40	132	2.4	6.7	4.025	1.019	0.161	0.89	0.703	0.243	0.253
Bkg-Cr	40	132	5.8	18.8	10.66	2.964	0.469	3.039	0.435	0.0831	0.278
Bkg-Co	40	132	1.3	11.3	4.903	2.424	0.383	2.965	0.365	-0.379	0.494
Bkg-Cu	40	132	3.6	43.7	10.61	6.582	1.041	4.448	3.33	16.21	0.62
Bkg-Fe	40	132	8240	24000	14984	3472	549	3632	0.234	0.147	0.232
Bkg-Pb	40	132	5.3	18.4	9.16	3.004	0.475	2.372	1.162	1.164	0.328
Bkg-Mn	40	132	80.4	768	229.7	131.3	20.76	100.8	2.141	6.659	0.572
Bkg-Ni	40	132	4.5	22.6	10.32	3.745	0.592	2.965	0.842	1.785	0.363
Bkg-V	40	132	8.6	22.7	15.11	3.982	0.63	4.077	0.41	-0.931	0.264
Bkg-Zn	40	132	15.1	42.8	25.84	6.283	0.994	6.153	0.273	0.181	0.243

Percentiles for Uncensored Data Sets

Variable	NumObs	# Missing	10%ile	20%ile	25%ile(Q1)	50%ile(Q2)	75%ile(Q3)	80%ile	90%ile	95%ile	99%ile
BKG-As	40	132	2.79	3.24	3.4	3.9	4.5	4.52	5.44	6	6.427
Bkg-Cr	40	132	6.99	7.68	8.325	10.25	12.25	12.64	14.38	15.15	17.71
Bkg-Co	40	132	1.77	2.68	2.775	4.6	6.725	6.82	7.59	8.515	10.33
Bkg-Cu	40	132	4.29	6.34	7.3	9.8	13.03	13.34	14.71	16.83	34.15
Bkg-Fe	40	132	10380	11880	12525	15050	17450	17800	18120	21030	23064
Bkg-Pb	40	132	6.37	6.78	6.9	8.25	11	11.22	13.19	15.2	17.15
Bkg-Mn	40	132	111.5	134.2	140.3	193.5	282.3	292.4	330.5	454.5	678.7
Bkg-Ni	40	132	5.27	7.54	8.2	10.2	12.23	12.92	14.42	15.99	20.69
Bkg-V	40	132	10.6	11.16	12.33	14.35	17.98	19.26	21.14	21.73	22.51
Bkg-Zn	40	132	16.68	19.64	21.48	26.8	29.5	30.92	31.72	33.49	41.28

General Statistics on Uncensored Data

Date/Time of Computation 8/19/2014 4:55:37 PM

User Selected Options

From File WorkSheet.xls

Full Precision OFF

From File: WorkSheet.xls

General Statistics for Censored Data Set (with NDs) using Kaplan Meier Method

Variable	NumObs	# Missing	Num Ds	NumNDs	% NDs	Min ND	Max ND	KM Mean	KM Var	KM SD	KM CV
Bkg-Hg	40	132	18	22	55.00%	0.028	0.042	0.0257	7.1364E-5	0.00845	0.329
Bkg-Se	40	132	13	27	67.50%	0.26	0.53	0.244	0.00859	0.0927	0.379

General Statistics for Raw Data Sets using Detected Data Only

Variable	NumObs	# Missing	Minimum	Maximum	Mean	Median	Var	SD	MAD/0.675	Skewness	CV
Bkg-Hg	18	132	0.016	0.056	0.0293	0.028	1.1153E-4	0.0106	0.0119	0.872	0.36
Bkg-Se	13	132	0.18	0.55	0.338	0.32	0.0119	0.109	0.133	0.241	0.322

Percentiles using all Detects (Ds) and Non-Detects (NDs)

Variable	NumObs	# Missing	10%ile	20%ile	25%ile(Q1)	50%ile(Q2)	75%ile(Q3)	80%ile	90%ile	95%ile	99%ile
Bkg-Hg	40	132	0.0208	0.0274	0.028	0.033	0.0353	0.0362	0.0391	0.0411	0.0505
Bkg-Se	40	132	0.26	0.26	0.27	0.285	0.33	0.362	0.474	0.521	0.542

Goodness-of-Fit Test Statistics for Uncensored Full Data Sets without Non-Detects

User Selected Options

Date/Time of Computation	8/19/2014 4:35:17 PM
From File	WorkSheet.xls
Full Precision	OFF
Confidence Coefficient	0.95

Site-As

Raw Statistics

Number of Valid Observations	115
Number of Missing Observations	17
Number of Distinct Observations	76
Minimum	0.48
Maximum	130
Mean of Raw Data	10.48
Standard Deviation of Raw Data	14.57
Khat	1.795
Theta hat	5.837
Kstar	1.754
Theta star	5.974
Mean of Log Transformed Data	2.046
Standard Deviation of Log Transformed Data	0.706

Normal GOF Test Results

Correlation Coefficient R	0.595
Approximate Shapiro Wilk Test Statistic	0.4
Approximate Shapiro Wilk P Value	0
Lilliefors Test Statistic	0.318
Lilliefors Critical (0.05) Value	0.0826

Data not Normal at (0.05) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.747
A-D Test Statistic	5.246
A-D Critical (0.05) Value	0.767
K-S Test Statistic	0.17
K-S Critical(0.05) Value	0.0869

Data not Gamma Distributed at (0.05) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.95
Approximate Shapiro Wilk Test Statistic	0.935
Approximate Shapiro Wilk P Value	1.1424E-5
Lilliefors Test Statistic	0.113

Lilliefors Critical (0.05) Value	0.0826

Data not Lognormal at (0.05) Significance Level

Site-Cr

Raw Statistics

Number of Valid Observations	115
Number of Missing Observations	17
Number of Distinct Observations	64
Minimum	5
Maximum	34.2
Mean of Raw Data	12.19
Standard Deviation of Raw Data	4.171
Khat	11.04
Theta hat	1.104
Kstar	10.76
Theta star	1.133
Mean of Log Transformed Data	2.455
Standard Deviation of Log Transformed Data	0.296

Normal GOF Test Results

Correlation Coefficient R	0.877
Approximate Shapiro Wilk Test Statistic	0.792
Approximate Shapiro Wilk P Value	0
Lilliefors Test Statistic	0.19
Lilliefors Critical (0.05) Value	0.0826

Data not Normal at (0.05) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.918
A-D Test Statistic	3.438
A-D Critical (0.05) Value	0.752
K-S Test Statistic	0.144
K-S Critical(0.05) Value	0.0855

Data not Gamma Distributed at (0.05) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.958
Approximate Shapiro Wilk Test Statistic	0.929
Approximate Shapiro Wilk P Value	2.0741E-6
Lilliefors Test Statistic	0.122
Lilliefors Critical (0.05) Value	0.0826

Data not Lognormal at (0.05) Significance Level

Site-Co

Raw Statistics

Number of Valid Observations	80
Number of Missing Observations	52
Number of Distinct Observations	65
Minimum	6.4
Maximum	33.4
Mean of Raw Data	13.08
Standard Deviation of Raw Data	5.282
Khat	7.215
Theta hat	1.813
Kstar	6.952
Theta star	1.881
Mean of Log Transformed Data	2.5
Standard Deviation of Log Transformed Data	0.371

Normal GOF Test Results

Correlation Coefficient R	0.945
Approximate Shapiro Wilk Test Statistic	0.893
Approximate Shapiro Wilk P Value	1.8783E-7
Lilliefors Test Statistic	0.139
Lilliefors Critical (0.05) Value	0.0991

Data not Normal at (0.05) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.984
A-D Test Statistic	0.886
A-D Critical (0.05) Value	0.753
K-S Test Statistic	0.0951
K-S Critical(0.05) Value	0.0998

Data follow Appr. Gamma Distribution at (0.05) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.99
Approximate Shapiro Wilk Test Statistic	0.966
Approximate Shapiro Wilk P Value	0.111
Lilliefors Test Statistic	0.0774
Lilliefors Critical (0.05) Value	0.0991

Data appear Lognormal at (0.05) Significance Level

Site-Cu

Raw Statistics

Number of Valid Observations	80
Number of Missing Observations	52
Number of Distinct Observations	69
Minimum	8.5

Maximum	256
Mean of Raw Data	25.4
Standard Deviation of Raw Data	31.63
Khat	2.346
Theta hat	10.83
Kstar	2.267
Theta star	11.21
Mean of Log Transformed Data	3.007
Standard Deviation of Log Transformed Data	0.549

Normal GOF Test Results

Correlation Coefficient R	0.588
Approximate Shapiro Wilk Test Statistic	0.39
Approximate Shapiro Wilk P Value	0
Lilliefors Test Statistic	0.32
Lilliefors Critical (0.05) Value	0.0991

Data not Normal at (0.05) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.731
A-D Test Statistic	5.298
A-D Critical (0.05) Value	0.762
K-S Test Statistic	0.184
K-S Critical(0.05) Value	0.101

Data not Gamma Distributed at (0.05) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.925
Approximate Shapiro Wilk Test Statistic	0.872
Approximate Shapiro Wilk P Value	2.9162E-9
Lilliefors Test Statistic	0.117
Lilliefors Critical (0.05) Value	0.0991

Data not Lognormal at (0.05) Significance Level

Site-Fe

Raw Statistics

Number of Valid Observations	80
Number of Missing Observations	52
Number of Distinct Observations	74
Minimum	8480
Maximum	88500
Mean of Raw Data	30510
Standard Deviation of Raw Data	12282
Khat	6.952
Theta hat	4389

Kstar	6.699
Theta star	4554
Mean of Log Transformed Data	10.25
Standard Deviation of Log Transformed Data	0.388

Normal GOF Test Results

Correlation Coefficient R	0.947
Approximate Shapiro Wilk Test Statistic	0.918
Approximate Shapiro Wilk P Value	2.2507E-5
Lilliefors Test Statistic	0.0989
Lilliefors Critical (0.05) Value	0.0991

Data appear Approximate Normal at (0.05) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.978
A-D Test Statistic	0.287
A-D Critical (0.05) Value	0.753
K-S Test Statistic	0.0597
K-S Critical(0.05) Value	0.0999

Data appear Gamma Distributed at (0.05) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.992
Approximate Shapiro Wilk Test Statistic	0.994
Approximate Shapiro Wilk P Value	0.996
Lilliefors Test Statistic	0.0431
Lilliefors Critical (0.05) Value	0.0991

Data appear Lognormal at (0.05) Significance Level

Site-Pb

Raw Statistics

Number of Valid Observations	127
Number of Missing Observations	5
Number of Distinct Observations	103
Minimum	4.3
Maximum	29900
Mean of Raw Data	381.9
Standard Deviation of Raw Data	2815
Khat	0.269
Theta hat	1420
Kstar	0.268
Theta star	1426
Mean of Log Transformed Data	3.335
Standard Deviation of Log Transformed Data	1.395

Normal GOF Test Results

Correlation Coefficient R	0.315
Approximate Shapiro Wilk Test Statistic	0.14
Approximate Shapiro Wilk P Value	0
Lilliefors Test Statistic	0.473
Lilliefors Critical (0.05) Value	0.0786

Data not Normal at (0.05) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.672
A-D Test Statistic	26.11
A-D Critical (0.05) Value	0.884
K-S Test Statistic	0.331
K-S Critical(0.05) Value	0.0902

Data not Gamma Distributed at (0.05) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.913
Approximate Shapiro Wilk Test Statistic	0.844
Approximate Shapiro Wilk P Value	0
Lilliefors Test Statistic	0.124
Lilliefors Critical (0.05) Value	0.0786

Data not Lognormal at (0.05) Significance Level

Site-Mn

Raw Statistics

Number of Valid Observations	80
Number of Missing Observations	52
Number of Distinct Observations	72
Minimum	168
Maximum	5750
Mean of Raw Data	615.7
Standard Deviation of Raw Data	714
Khat	2.611
Theta hat	235.8
Kstar	2.521
Theta star	244.2
Mean of Log Transformed Data	6.219
Standard Deviation of Log Transformed Data	0.523

Normal GOF Test Results

Correlation Coefficient R	0.588
Approximate Shapiro Wilk Test Statistic	0.39
Approximate Shapiro Wilk P Value	0

Lilliefors Test Statistic	0.298
Lilliefors Critical (0.05) Value	0.0991

Data not Normal at (0.05) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.718
A-D Test Statistic	5.068
A-D Critical (0.05) Value	0.761
K-S Test Statistic	0.169
K-S Critical(0.05) Value	0.101

Data not Gamma Distributed at (0.05) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.923
Approximate Shapiro Wilk Test Statistic	0.878
Approximate Shapiro Wilk P Value	8.4432E-9
Lilliefors Test Statistic	0.0983
Lilliefors Critical (0.05) Value	0.0991

Data appear Approximate_Lognormal at (0.05) Significance Level

Site-Ni

Raw Statistics

Number of Valid Observations	80
Number of Missing Observations	52
Number of Distinct Observations	65
Minimum	11.8
Maximum	56.6
Mean of Raw Data	23.7
Standard Deviation of Raw Data	9.733
Khat	7.13
Theta hat	3.324
Kstar	6.871
Theta star	3.45
Mean of Log Transformed Data	3.094
Standard Deviation of Log Transformed Data	0.371

Normal GOF Test Results

Correlation Coefficient R	0.939
Approximate Shapiro Wilk Test Statistic	0.874
Approximate Shapiro Wilk P Value	3.8129E-9
Lilliefors Test Statistic	0.134
Lilliefors Critical (0.05) Value	0.0991

Data not Normal at (0.05) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.981
A-D Test Statistic	1.132
A-D Critical (0.05) Value	0.753
K-S Test Statistic	0.0892
K-S Critical(0.05) Value	0.0998

Data follow Appr. Gamma Distribution at (0.05) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.987
Approximate Shapiro Wilk Test Statistic	0.956
Approximate Shapiro Wilk P Value	0.0246
Lilliefors Test Statistic	0.0668
Lilliefors Critical (0.05) Value	0.0991

Data appear Approximate_Lognormal at (0.05) Significance Level

Site_V

Raw Statistics

Number of Valid Observations	80
Number of Missing Observations	52
Number of Distinct Observations	56
Minimum	11.9
Maximum	29
Mean of Raw Data	17.99
Standard Deviation of Raw Data	3.387
Khat	29.56
Theta hat	0.608
Kstar	28.46
Theta star	0.632
Mean of Log Transformed Data	2.873
Standard Deviation of Log Transformed Data	0.185

Normal GOF Test Results

Correlation Coefficient R	0.984
Approximate Shapiro Wilk Test Statistic	0.965
Approximate Shapiro Wilk P Value	0.0964
Lilliefors Test Statistic	0.0887
Lilliefors Critical (0.05) Value	0.0991

Data appear Normal at (0.05) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.994
A-D Test Statistic	0.253
A-D Critical (0.05) Value	0.75
K-S Test Statistic	0.0638

K-S Critical(0.05) Value	0.0994

Data appear Gamma Distributed at (0.05) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.996
Approximate Shapiro Wilk Test Statistic	0.983
Approximate Shapiro Wilk P Value	0.722
Lilliefors Test Statistic	0.0569
Lilliefors Critical (0.05) Value	0.0991

Data appear Lognormal at (0.05) Significance Level

Site-Zn

Raw Statistics

Number of Valid Observations	80
Number of Missing Observations	52
Number of Distinct Observations	77
Minimum	28.5
Maximum	433
Mean of Raw Data	73.07
Standard Deviation of Raw Data	52.27
Khat	3.823
Theta hat	19.11
Kstar	3.688
Theta star	19.81
Mean of Log Transformed Data	4.155
Standard Deviation of Log Transformed Data	0.479

Normal GOF Test Results

Correlation Coefficient R	0.769
Approximate Shapiro Wilk Test Statistic	0.635
Approximate Shapiro Wilk P Value	0
Lilliefors Test Statistic	0.201
Lilliefors Critical (0.05) Value	0.0991

Data not Normal at (0.05) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.865
A-D Test Statistic	1.868
A-D Critical (0.05) Value	0.757
K-S Test Statistic	0.105
K-S Critical(0.05) Value	0.1

Data not Gamma Distributed at (0.05) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.971
Approximate Shapiro Wilk Test Statistic	0.95
Approximate Shapiro Wilk P Value	0.00874
Lilliefors Test Statistic	0.0691
Lilliefors Critical (0.05) Value	0.0991

Data appear Approximate_Lognormal at (0.05) Significance Level

Goodness-of-Fit Test Statistics for Data Sets with Non-Detects

User Selected Options

Date/Time of Computation	8/19/2014 4:29:09 PM
From File	WorkSheet.xls
Full Precision	OFF
Confidence Coefficient	0.95

Site-Sb

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	132	52	80	72	8	10.00%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	8	0.073	0.92	0.284	0.089	0.371
Statistics (Detects Only)	72	0.05	396	8.763	0.225	51.35
Statistics (All: NDs treated as DL value)	80	0.05	396	7.915	0.215	48.75
Statistics (All: NDs treated as DL/2 value)	80	0.0365	396	7.901	0.215	48.75
Statistics (Normal ROS Imputed Data)	80	-33.95	396	5.913	0.215	49.62
Statistics (Gamma ROS Imputed Data)	80	0.01	396	7.888	0.185	48.75
Statistics (Lognormal ROS Imputed Data)	80	0.0157	396	7.894	0.206	48.75

	K hat	K Star	Theta hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.22	0.22	39.8	-1.122	1.586	-1.414
Statistics (NDs = DL)	0.222	0.222	35.72	-1.199	1.556	-1.298
Statistics (NDs = DL/2)	0.218	0.218	36.29	-1.268	1.6	-1.262
Statistics (Gamma ROS Estimates)	0.207	0.208	38.1	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-1.324	1.65	-1.247

Normal GOF Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.382	0.368	0.368	0.376

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Lilliefors (Detects Only)	0.481	0.104	Data Not Normal
Lilliefors (NDs = DL)	0.482	0.0991	Data Not Normal
Lilliefors (NDs = DL/2)	0.482	0.0991	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.465	0.0991	Data Not Normal

Gamma GOF Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.781	0.765	0.767	0.773

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	17.39	0.905	
Kolmogorov-Smirnov (Detects Only)	0.398	0.116	Data Not Gamma Distributed
Anderson-Darling (NDs = DL)	19.24	0.904	

Kolmogorov-Smirnov (NDs = DL)	0.396	0.11	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	18.78	0.906	
Kolmogorov-Smirnov (NDs = DL/2)	0.399	0.111	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	16.99	0.911	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.385	0.111	Data Not Gamma Distributed

Lognormal GOF Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.871	0.874	0.895	0.91

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Lilliefors (Detects Only)	0.169	0.104	Data Not Lognormal
Lilliefors (NDs = DL)	0.156	0.0991	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.139	0.0991	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.152	0.0991	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Site-Cd

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	132	52	80	51	29	36.25%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	29	0.059	0.14	0.0859	0.085	0.0178
Statistics (Detects Only)	51	0.03	0.84	0.16	0.14	0.129
Statistics (All: NDs treated as DL value)	80	0.03	0.84	0.133	0.0935	0.109
Statistics (All: NDs treated as DL/2 value)	80	0.0295	0.84	0.117	0.08	0.117
Statistics (Normal ROS Imputed Data)	80	-0.0408	0.84	0.106	0.08	0.126
Statistics (Gamma ROS Imputed Data)	80	0.01	0.84	0.109	0.08	0.123
Statistics (Lognormal ROS Imputed Data)	80	0.03	0.84	0.121	0.08	0.115

	K hat	K Star	Theta hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	2.464	2.332	0.0648	-2.051	0.649	-0.316
Statistics (NDs = DL)	2.843	2.745	0.0467	-2.204	0.567	-0.257
Statistics (NDs = DL/2)	1.747	1.69	0.0671	-2.455	0.755	-0.308
Statistics (Gamma ROS Estimates)	1.021	0.991	0.107	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-2.381	0.687	-0.289

Normal GOF Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.828	0.782	0.807	0.865

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Lilliefors (Detects Only)	0.191	0.124	Data Not Normal
Lilliefors (NDs = DL)	0.212	0.0991	Data Not Normal
Lilliefors (NDs = DL/2)	0.227	0.0991	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.132	0.0991	Data Not Normal

Gamma GOF Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.927	0.894	0.937	0.966

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.546	0.76	
Kolmogorov-Smirnov (Detects Only)	0.0954	0.125	Detected Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	2.372	0.76	
Kolmogorov-Smirnov (NDs = DL)	0.149	0.101	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	2.276	0.767	
Kolmogorov-Smirnov (NDs = DL/2)	0.152	0.101	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	0.941	0.781	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.0908	0.103	Detected Data appear Approximate Gamma Distri

Lognormal GOF Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.991	0.977	0.969	0.973

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Lilliefors (Detects Only)	0.0718	0.124	Data Appear Lognormal
Lilliefors (NDs = DL)	0.124	0.0991	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.15	0.0991	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.122	0.0991	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Site-Hg

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	132	52	80	33	47	58.75%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	47	0.012	0.038	0.0231	0.018	0.00866
Statistics (Detects Only)	33	0.005	0.21	0.0582	0.05	0.0465
Statistics (All: NDs treated as DL value)	80	0.005	0.21	0.0376	0.03	0.0349
Statistics (All: NDs treated as DL/2 value)	80	0.005	0.21	0.0308	0.0163	0.0377
Statistics (Normal ROS Imputed Data)	80	-0.0679	0.21	0.0109	0.00455	0.0528
Statistics (Gamma ROS Imputed Data)	80	0.005	0.21	0.0299	0.01	0.038
Statistics (Lognormal ROS Imputed Data)	80	0.00352	0.21	0.0297	0.0134	0.0382

	K hat	K Star	Theta hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	1.928	1.773	0.0302	-3.126	0.815	-0.261
Statistics (NDs = DL)	2.051	1.982	0.0183	-3.545	0.693	-0.195
Statistics (NDs = DL/2)	1.2	1.164	0.0256	-3.952	0.917	-0.232
Statistics (Gamma ROS Estimates)	1.178	1.142	0.0254	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-4.073	1.018	-0.25

Normal GOF Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.882	0.804	0.799	0.829

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilk (Detects Only)	0.786	0.931	Data Not Normal
Lilliefors (Detects Only)	0.236	0.154	Data Not Normal
Shapiro-Wilk (NDs = DL)	N/A	N/A	
Lilliefors (NDs = DL)	0.26	0.0991	Data Not Normal
Shapiro-Wilk (NDs = DL/2)	N/A	N/A	
Lilliefors (NDs = DL/2)	0.25	0.0991	Data Not Normal
Shapiro-Wilk (Normal ROS Estimates)	N/A	N/A	
Lilliefors (Normal ROS Estimates)	0.107	0.0991	Data Not Normal

Gamma GOF Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.968	0.927	0.959	0.947

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.807	0.76	
Kolmogorov-Smirnov (Detects Only)	0.151	0.155	Detected Data appear Approximate Gamma Distri
Anderson-Darling (NDs = DL)	2.264	0.763	
Kolmogorov-Smirnov (NDs = DL)	0.16	0.101	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	3.313	0.777	
Kolmogorov-Smirnov (NDs = DL/2)	0.2	0.102	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	9.1	0.778	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.363	0.102	Data Not Gamma Distributed

Lognormal GOF Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.959	0.98	0.967	0.979

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilk (Detects Only)	0.925	0.931	Data Not Lognormal
Lilliefors (Detects Only)	0.169	0.154	Data Not Lognormal
Shapiro-Wilk (NDs = DL)	N/A	N/A	
Lilliefors (NDs = DL)	0.108	0.0991	Data Not Lognormal
Shapiro-Wilk (NDs = DL/2)	N/A	N/A	
Lilliefors (NDs = DL/2)	0.141	0.0991	Data Not Lognormal
Shapiro-Wilk (Lognormal ROS Estimates)	N/A	N/A	
Lilliefors (Lognormal ROS Estimates)	0.129	0.0991	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Site-Se

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs

Raw Statistics	132	52	80	33	47	58.75%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	47	0.19	0.56	0.417	0.42	0.07
Statistics (Detects Only)	33	0.18	1.2	0.455	0.43	0.172
Statistics (All: NDs treated as DL value)	80	0.18	1.2	0.433	0.42	0.123
Statistics (All: NDs treated as DL/2 value)	80	0.095	1.2	0.31	0.238	0.166
Statistics (Normal ROS Imputed Data)	80	0.0775	1.2	0.333	0.302	0.163
Statistics (Gamma ROS Imputed Data)	80	0.126	1.2	0.336	0.298	0.157
Statistics (Lognormal ROS Imputed Data)	80	0.18	1.2	0.35	0.307	0.146

	K hat	K Star	Theta hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	8.986	8.189	0.0506	-0.845	0.336	-0.398
Statistics (NDs = DL)	15.16	14.6	0.0285	-0.871	0.257	-0.295
Statistics (NDs = DL/2)	4.817	4.645	0.0644	-1.278	0.446	-0.349
Statistics (Gamma ROS Estimates)	5.898	5.685	0.057	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-1.112	0.34	-0.306

Normal GOF Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.874	0.868	0.877	0.915

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilk (Detects Only)	0.797	0.931	Data Not Normal
Lilliefors (Detects Only)	0.142	0.154	Data Appear Normal
Shapiro-Wilk (NDs = DL)	N/A	N/A	
Lilliefors (NDs = DL)	0.151	0.0991	Data Not Normal
Shapiro-Wilk (NDs = DL/2)	N/A	N/A	
Lilliefors (NDs = DL/2)	0.204	0.0991	Data Not Normal
Shapiro-Wilk (Normal ROS Estimates)	N/A	N/A	
Lilliefors (Normal ROS Estimates)	0.106	0.0991	Data Not Normal

Gamma GOF Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.911	0.893	0.944	0.953

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.785	0.747	
Kolmogorov-Smirnov (Detects Only)	0.133	0.153	Detected Data appear Approximate Gamma Distri
Anderson-Darling (NDs = DL)	1.75	0.751	
Kolmogorov-Smirnov (NDs = DL)	0.114	0.0996	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	2.919	0.755	
Kolmogorov-Smirnov (NDs = DL/2)	0.187	0.1	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	0.444	0.754	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.0695	0.0999	Data Appear Gamma Distributed

Lognormal GOF Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.959	0.946	0.964	0.978

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilk (Detects Only)	0.944	0.931	Data Appear Lognormal
Lilliefors (Detects Only)	0.147	0.154	Data Appear Lognormal
Shapiro-Wilk (NDs = DL)	N/A	N/A	
Lilliefors (NDs = DL)	0.118	0.0991	Data Not Lognormal
Shapiro-Wilk (NDs = DL/2)	N/A	N/A	
Lilliefors (NDs = DL/2)	0.168	0.0991	Data Not Lognormal
Shapiro-Wilk (Lognormal ROS Estimates)	N/A	N/A	
Lilliefors (Lognormal ROS Estimates)	0.0958	0.0991	Data Appear Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Site-Thallium

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	132	52	80	78	2	2.50%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	2	0.46	0.49	0.475	0.475	0.0212
Statistics (Detects Only)	78	0.02	0.26	0.0717	0.06	0.0375
Statistics (All: NDs treated as DL value)	80	0.02	0.49	0.0818	0.065	0.0734
Statistics (All: NDs treated as DL/2 value)	80	0.02	0.26	0.0758	0.065	0.0453
Statistics (Normal ROS Imputed Data)	80	0.02	0.26	0.0717	0.065	0.0371
Statistics (Gamma ROS Imputed Data)	80	0.02	0.26	0.0715	0.0631	0.0371
Statistics (Lognormal ROS Imputed Data)	80	0.02	0.26	0.0715	0.0617	0.0371

	K hat	K Star	Theta hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	4.225	4.071	0.017	-2.759	0.512	-0.186
Statistics (NDs = DL)	2.602	2.513	0.0314	-2.708	0.597	-0.22
Statistics (NDs = DL/2)	3.578	3.452	0.0212	-2.726	0.547	-0.201
Statistics (Gamma ROS Estimates)	4.326	4.172	0.0165	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-2.759	0.506	-0.183

Normal GOF Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.914	0.733	0.89	0.544

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Lilliefors (Detects Only)	0.135	0.1	Data Not Normal
Lilliefors (NDs = DL)	0.264	0.0991	Data Not Normal
Lilliefors (NDs = DL/2)	0.177	0.0991	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.135	0.0991	Data Not Normal

Gamma GOF Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.96	0.847	0.953	0.959

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.978	0.756	
Kolmogorov-Smirnov (Detects Only)	0.117	0.101	Data Not Gamma Distributed
Anderson-Darling (NDs = DL)	2.892	0.761	
Kolmogorov-Smirnov (NDs = DL)	0.158	0.101	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	1.323	0.757	
Kolmogorov-Smirnov (NDs = DL/2)	0.105	0.1	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	1.033	0.756	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.124	0.1	Data Not Gamma Distributed

Lognormal GOF Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.973	0.96	0.977	0.973

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Lilliefors (Detects Only)	0.15	0.1	Data Not Lognormal
Lilliefors (NDs = DL)	0.13	0.0991	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.136	0.0991	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.157	0.0991	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Goodness-of-Fit Test Statistics for Uncensored Full Data Sets without Non-Detects

User Selected Options

Date/Time of Computation	8/19/2014 4:49:27 PM
From File	WorkSheet.xls
Full Precision	OFF
Confidence Coefficient	0.95

BKG-As

Raw Statistics

Number of Valid Observations	40
Number of Missing Observations	132
Number of Distinct Observations	24
Minimum	2.4
Maximum	6.7
Mean of Raw Data	4.025
Standard Deviation of Raw Data	1.019
Khat	16.68
Theta hat	0.241
Kstar	15.45
Theta star	0.261
Mean of Log Transformed Data	1.362
Standard Deviation of Log Transformed Data	0.248

Normal GOF Test Results

Correlation Coefficient R	0.977
Shapiro Wilk Test Statistic	0.948
Shapiro Wilk Critical (0.05) Value	0.94
Approximate Shapiro Wilk P Value	0.0921
Lilliefors Test Statistic	0.135
Lilliefors Critical (0.05) Value	0.14

Data appear Normal at (0.05) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.99
A-D Test Statistic	0.337
A-D Critical (0.05) Value	0.747
K-S Test Statistic	0.103
K-S Critical(0.05) Value	0.139

Data appear Gamma Distributed at (0.05) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.993
Shapiro Wilk Test Statistic	0.976
Shapiro Wilk Critical (0.05) Value	0.94

Approximate Shapiro Wilk P Value	0.642
Lilliefors Test Statistic	0.0865
Lilliefors Critical (0.05) Value	0.14

Data appear Lognormal at (0.05) Significance Level

Bkg-Cr

Raw Statistics

Number of Valid Observations	40
Number of Missing Observations	132
Number of Distinct Observations	34
Minimum	5.8
Maximum	18.8
Mean of Raw Data	10.66
Standard Deviation of Raw Data	2.964
Khat	13.18
Theta hat	0.809
Kstar	12.21
Theta star	0.873
Mean of Log Transformed Data	2.328
Standard Deviation of Log Transformed Data	0.284

Normal GOF Test Results

Correlation Coefficient R	0.985
Shapiro Wilk Test Statistic	0.965
Shapiro Wilk Critical (0.05) Value	0.94
Approximate Shapiro Wilk P Value	0.341
Lilliefors Test Statistic	0.0862
Lilliefors Critical (0.05) Value	0.14

Data appear Normal at (0.05) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.991
A-D Test Statistic	0.401
A-D Critical (0.05) Value	0.748
K-S Test Statistic	0.119
K-S Critical(0.05) Value	0.139

Data appear Gamma Distributed at (0.05) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.988
Shapiro Wilk Test Statistic	0.968
Shapiro Wilk Critical (0.05) Value	0.94
Approximate Shapiro Wilk P Value	0.408
Lilliefors Test Statistic	0.131
Lilliefors Critical (0.05) Value	0.14

Data appear Lognormal at (0.05) Significance Level

Bkg-Co

Raw Statistics

Number of Valid Observations	40
Number of Missing Observations	132
Number of Distinct Observations	31
Minimum	1.3
Maximum	11.3
Mean of Raw Data	4.903
Standard Deviation of Raw Data	2.424
Khat	3.689
Theta hat	1.329
Kstar	3.429
Theta star	1.43
Mean of Log Transformed Data	1.448
Standard Deviation of Log Transformed Data	0.571

Normal GOF Test Results

Correlation Coefficient R	0.98
Shapiro Wilk Test Statistic	0.952
Shapiro Wilk Critical (0.05) Value	0.94
Approximate Shapiro Wilk P Value	0.131
Lilliefors Test Statistic	0.0996
Lilliefors Critical (0.05) Value	0.14

Data appear Normal at (0.05) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.978
A-D Test Statistic	0.643
A-D Critical (0.05) Value	0.753
K-S Test Statistic	0.142
K-S Critical(0.05) Value	0.14

Data appear Gamma Distributed at (0.05) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.973
Shapiro Wilk Test Statistic	0.932
Shapiro Wilk Critical (0.05) Value	0.94
Approximate Shapiro Wilk P Value	0.0249
Lilliefors Test Statistic	0.151
Lilliefors Critical (0.05) Value	0.14

Data not Lognormal at (0.05) Significance Level

Bkg-Cu

Raw Statistics

Number of Valid Observations	40
Number of Missing Observations	132
Number of Distinct Observations	39
Minimum	3.6
Maximum	43.7
Mean of Raw Data	10.61
Standard Deviation of Raw Data	6.582
Khat	3.949
Theta hat	2.686
Kstar	3.669
Theta star	2.891
Mean of Log Transformed Data	2.23
Standard Deviation of Log Transformed Data	0.507

Normal GOF Test Results

Correlation Coefficient R	0.825
Shapiro Wilk Test Statistic	0.715
Shapiro Wilk Critical (0.05) Value	0.94
Approximate Shapiro Wilk P Value	2.7872E-9
Lilliefors Test Statistic	0.187
Lilliefors Critical (0.05) Value	0.14

Data not Normal at (0.05) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.89
A-D Test Statistic	0.612
A-D Critical (0.05) Value	0.753
K-S Test Statistic	0.119
K-S Critical(0.05) Value	0.14

Data appear Gamma Distributed at (0.05) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.972
Shapiro Wilk Test Statistic	0.951
Shapiro Wilk Critical (0.05) Value	0.94
Approximate Shapiro Wilk P Value	0.117
Lilliefors Test Statistic	0.105
Lilliefors Critical (0.05) Value	0.14

Data appear Lognormal at (0.05) Significance Level

Bkg-Fe

Raw Statistics

Number of Valid Observations	40

Number of Missing Observations	132
Number of Distinct Observations	33
Minimum	8240
Maximum	24000
Mean of Raw Data	14984
Standard Deviation of Raw Data	3472
Khat	18.5
Theta hat	809.8
Kstar	17.13
Theta star	874.6
Mean of Log Transformed Data	9.587
Standard Deviation of Log Transformed Data	0.24

Normal GOF Test Results

Correlation Coefficient R	0.989
Shapiro Wilk Test Statistic	0.977
Shapiro Wilk Critical (0.05) Value	0.94
Approximate Shapiro Wilk P Value	0.675
Lilliefors Test Statistic	0.0925
Lilliefors Critical (0.05) Value	0.14

Data appear Normal at (0.05) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.99
A-D Test Statistic	0.43
A-D Critical (0.05) Value	0.747
K-S Test Statistic	0.123
K-S Critical(0.05) Value	0.139

Data appear Gamma Distributed at (0.05) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.986
Shapiro Wilk Test Statistic	0.969
Shapiro Wilk Critical (0.05) Value	0.94
Approximate Shapiro Wilk P Value	0.446
Lilliefors Test Statistic	0.139
Lilliefors Critical (0.05) Value	0.14

Data appear Lognormal at (0.05) Significance Level

Bkg-Pb

Raw Statistics

Number of Valid Observations	40
Number of Missing Observations	132
Number of Distinct Observations	34
Minimum	5.3

Maximum	18.4
Mean of Raw Data	9.16
Standard Deviation of Raw Data	3.004
Khat	10.83
Theta hat	0.846
Kstar	10.03
Theta star	0.913
Mean of Log Transformed Data	2.168
Standard Deviation of Log Transformed Data	0.303

Normal GOF Test Results

Correlation Coefficient R	0.952
Shapiro Wilk Test Statistic	0.904
Shapiro Wilk Critical (0.05) Value	0.94
Approximate Shapiro Wilk P Value	0.00224
Lilliefors Test Statistic	0.145
Lilliefors Critical (0.05) Value	0.14

Data not Normal at (0.05) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.983
A-D Test Statistic	0.609
A-D Critical (0.05) Value	0.748
K-S Test Statistic	0.111
K-S Critical(0.05) Value	0.139

Data appear Gamma Distributed at (0.05) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.987
Shapiro Wilk Test Statistic	0.964
Shapiro Wilk Critical (0.05) Value	0.94
Approximate Shapiro Wilk P Value	0.312
Lilliefors Test Statistic	0.0926
Lilliefors Critical (0.05) Value	0.14

Data appear Lognormal at (0.05) Significance Level

Bkg-Mn

Raw Statistics

Number of Valid Observations	40
Number of Missing Observations	132
Number of Distinct Observations	39
Minimum	80.4
Maximum	768
Mean of Raw Data	229.7
Standard Deviation of Raw Data	131.3

Khat	4.085
Theta hat	56.23
Kstar	3.796
Theta star	60.52
Mean of Log Transformed Data	5.309
Standard Deviation of Log Transformed Data	0.5

Normal GOF Test Results

Correlation Coefficient R	0.897
Shapiro Wilk Test Statistic	0.822
Shapiro Wilk Critical (0.05) Value	0.94
Approximate Shapiro Wilk P Value	3.5257E-6
Lilliefors Test Statistic	0.138
Lilliefors Critical (0.05) Value	0.14

Data appear Approximate Normal at (0.05) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.959
A-D Test Statistic	0.419
A-D Critical (0.05) Value	0.752
K-S Test Statistic	0.0902
K-S Critical(0.05) Value	0.14

Data appear Gamma Distributed at (0.05) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.99
Shapiro Wilk Test Statistic	0.977
Shapiro Wilk Critical (0.05) Value	0.94
Approximate Shapiro Wilk P Value	0.699
Lilliefors Test Statistic	0.084
Lilliefors Critical (0.05) Value	0.14

Data appear Lognormal at (0.05) Significance Level

Bkg-Ni

Raw Statistics

Number of Valid Observations	40
Number of Missing Observations	132
Number of Distinct Observations	34
Minimum	4.5
Maximum	22.6
Mean of Raw Data	10.32
Standard Deviation of Raw Data	3.745
Khat	7.813
Theta hat	1.32
Kstar	7.244

Theta star	1.424
Mean of Log Transformed Data	2.268
Standard Deviation of Log Transformed Data	0.374

Normal GOF Test Results

Correlation Coefficient R	0.972
Shapiro Wilk Test Statistic	0.95
Shapiro Wilk Critical (0.05) Value	0.94
Approximate Shapiro Wilk P Value	0.105
Lilliefors Test Statistic	0.08
Lilliefors Critical (0.05) Value	0.14

Data appear Normal at (0.05) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.988
A-D Test Statistic	0.345
A-D Critical (0.05) Value	0.75
K-S Test Statistic	0.0849
K-S Critical(0.05) Value	0.14

Data appear Gamma Distributed at (0.05) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.983
Shapiro Wilk Test Statistic	0.961
Shapiro Wilk Critical (0.05) Value	0.94
Approximate Shapiro Wilk P Value	0.255
Lilliefors Test Statistic	0.105
Lilliefors Critical (0.05) Value	0.14

Data appear Lognormal at (0.05) Significance Level

Bkg-V

Raw Statistics

Number of Valid Observations	40
Number of Missing Observations	132
Number of Distinct Observations	32
Minimum	8.6
Maximum	22.7
Mean of Raw Data	15.11
Standard Deviation of Raw Data	3.982
Khat	14.98
Theta hat	1.009
Kstar	13.87
Theta star	1.089
Mean of Log Transformed Data	2.681
Standard Deviation of Log Transformed Data	0.264

Normal GOF Test Results

Correlation Coefficient R	0.977
Shapiro Wilk Test Statistic	0.935
Shapiro Wilk Critical (0.05) Value	0.94
Approximate Shapiro Wilk P Value	0.0324
Lilliefors Test Statistic	0.121
Lilliefors Critical (0.05) Value	0.14

Data appear Approximate Normal at (0.05) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.981
A-D Test Statistic	0.495
A-D Critical (0.05) Value	0.747
K-S Test Statistic	0.101
K-S Critical(0.05) Value	0.139

Data appear Gamma Distributed at (0.05) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.987
Shapiro Wilk Test Statistic	0.957
Shapiro Wilk Critical (0.05) Value	0.94
Approximate Shapiro Wilk P Value	0.189
Lilliefors Test Statistic	0.0941
Lilliefors Critical (0.05) Value	0.14

Data appear Lognormal at (0.05) Significance Level

Bkg-Zn

Raw Statistics

Number of Valid Observations	40
Number of Missing Observations	132
Number of Distinct Observations	33
Minimum	15.1
Maximum	42.8
Mean of Raw Data	25.84
Standard Deviation of Raw Data	6.283
Khat	16.87
Theta hat	1.532
Kstar	15.62
Theta star	1.654
Mean of Log Transformed Data	3.222
Standard Deviation of Log Transformed Data	0.251

Normal GOF Test Results

Correlation Coefficient R	0.982
Shapiro Wilk Test Statistic	0.96
Shapiro Wilk Critical (0.05) Value	0.94
Approximate Shapiro Wilk P Value	0.234
Lilliefors Test Statistic	0.104
Lilliefors Critical (0.05) Value	0.14

Data appear Normal at (0.05) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.982
A-D Test Statistic	0.593
A-D Critical (0.05) Value	0.747
K-S Test Statistic	0.133
K-S Critical(0.05) Value	0.139

Data appear Gamma Distributed at (0.05) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.981
Shapiro Wilk Test Statistic	0.953
Shapiro Wilk Critical (0.05) Value	0.94
Approximate Shapiro Wilk P Value	0.138
Lilliefors Test Statistic	0.143
Lilliefors Critical (0.05) Value	0.14

Data appear Approximate_Lognormal at (0.05) Significance Level

Goodness-of-Fit Test Statistics for Data Sets with Non-Detects

User Selected Options

Date/Time of Computation	8/19/2014 4:53:43 PM
From File	WorkSheet.xls
Full Precision	OFF
Confidence Coefficient	0.95

Bkg-Hg

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	172	132	40	18	22	55.00%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	22	0.028	0.042	0.0338	0.0335	0.0031
Statistics (Detects Only)	18	0.016	0.056	0.0293	0.028	0.0106
Statistics (All: NDs treated as DL value)	40	0.016	0.056	0.0318	0.033	0.00767
Statistics (All: NDs treated as DL/2 value)	40	0.014	0.056	0.0225	0.018	0.00945
Statistics (Normal ROS Imputed Data)	40	0.0154	0.056	0.0261	0.0245	0.00818
Statistics (Gamma ROS Imputed Data)	40	0.016	0.056	0.0257	0.0238	0.00818
Statistics (Lognormal ROS Imputed Data)	40	0.016	0.056	0.0257	0.0236	0.00807

	K hat	K Star	Theta hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	8.697	7.284	0.00337	-3.588	0.351	-0.0978
Statistics (NDs = DL)	16.3	15.1	0.00195	-3.48	0.26	-0.0748
Statistics (NDs = DL/2)	7.683	7.123	0.00293	-3.861	0.348	-0.0901
Statistics (Gamma ROS Estimates)	12.24	11.33	0.0021	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-3.7	0.274	-0.0741

Normal GOF Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.964	0.967	0.868	0.813

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilk (Detects Only)	0.929	0.897	Data Appear Normal
Lilliefors (Detects Only)	0.161	0.209	Data Appear Normal
Shapiro-Wilk (NDs = DL)	0.948	0.94	Data Appear Normal
Lilliefors (NDs = DL)	0.112	0.14	Data Appear Normal
Shapiro-Wilk (NDs = DL/2)	0.761	0.94	Data Not Normal
Lilliefors (NDs = DL/2)	0.269	0.14	Data Not Normal
Shapiro-Wilk (Normal ROS Estimates)	0.883	0.94	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.2	0.14	Data Not Normal

Gamma GOF Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.985	0.963	0.932	0.96

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.266	0.74	
Kolmogorov-Smirnov (Detects Only)	0.12	0.204	Detected Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	1.148	0.747	
Kolmogorov-Smirnov (NDs = DL)	0.144	0.139	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	2.942	0.75	
Kolmogorov-Smirnov (NDs = DL/2)	0.255	0.14	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	0.8	0.748	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.145	0.139	Data Not Gamma Distributed

Lognormal GOF Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.988	0.955	0.92	0.971

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilk (Detects Only)	0.968	0.897	Data Appear Lognormal
Lilliefors (Detects Only)	0.0974	0.209	Data Appear Lognormal
Shapiro-Wilk (NDs = DL)	0.918	0.94	Data Not Lognormal
Lilliefors (NDs = DL)	0.16	0.14	Data Not Lognormal
Shapiro-Wilk (NDs = DL/2)	0.84	0.94	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.24	0.14	Data Not Lognormal
Shapiro-Wilk (Lognormal ROS Estimates)	0.943	0.94	Data Appear Lognormal
Lilliefors (Lognormal ROS Estimates)	0.125	0.14	Data Appear Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Bkg-Se

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	172	132	40	13	27	67.50%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	27	0.26	0.53	0.305	0.28	0.08
Statistics (Detects Only)	13	0.18	0.55	0.338	0.32	0.109
Statistics (All: NDs treated as DL value)	40	0.18	0.55	0.316	0.285	0.0904
Statistics (All: NDs treated as DL/2 value)	40	0.13	0.55	0.213	0.145	0.112
Statistics (Normal ROS Imputed Data)	40	0.0657	0.55	0.238	0.223	0.106
Statistics (Gamma ROS Imputed Data)	40	0.0999	0.55	0.24	0.219	0.1
Statistics (Lognormal ROS Imputed Data)	40	0.135	0.55	0.247	0.222	0.0935

	K hat	K Star	Theta hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	9.887	7.657	0.0342	-1.135	0.342	-0.301
Statistics (NDs = DL)	14.57	13.5	0.0217	-1.187	0.259	-0.218
Statistics (NDs = DL/2)	4.784	4.442	0.0445	-1.655	0.446	-0.27
Statistics (Gamma ROS Estimates)	6.61	6.131	0.0363	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-1.457	0.336	-0.231

Normal GOF Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.985	0.904	0.872	0.874

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilk (Detects Only)	0.965	0.866	Data Appear Normal
Lilliefors (Detects Only)	0.111	0.246	Data Appear Normal
Shapiro-Wilk (NDs = DL)	0.814	0.94	Data Not Normal
Lilliefors (NDs = DL)	0.263	0.14	Data Not Normal
Shapiro-Wilk (NDs = DL/2)	0.755	0.94	Data Not Normal
Lilliefors (NDs = DL/2)	0.288	0.14	Data Not Normal
Shapiro-Wilk (Normal ROS Estimates)	0.946	0.94	Data Appear Normal
Lilliefors (Normal ROS Estimates)	0.133	0.14	Data Appear Normal

Gamma GOF Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.987	0.935	0.944	0.988

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.278	0.734	
Kolmogorov-Smirnov (Detects Only)	0.131	0.237	Detected Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	2.5	0.747	
Kolmogorov-Smirnov (NDs = DL)	0.243	0.139	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	3.571	0.752	
Kolmogorov-Smirnov (NDs = DL/2)	0.29	0.14	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	0.404	0.75	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.118	0.14	Data Appear Gamma Distributed

Lognormal GOF Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.977	0.94	0.901	0.98

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilk (Detects Only)	0.946	0.866	Data Appear Lognormal
Lilliefors (Detects Only)	0.151	0.246	Data Appear Lognormal
Shapiro-Wilk (NDs = DL)	0.883	0.94	Data Not Lognormal
Lilliefors (NDs = DL)	0.228	0.14	Data Not Lognormal
Shapiro-Wilk (NDs = DL/2)	0.794	0.94	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.282	0.14	Data Not Lognormal
Shapiro-Wilk (Lognormal ROS Estimates)	0.953	0.94	Data Appear Lognormal
Lilliefors (Lognormal ROS Estimates)	0.133	0.14	Data Appear Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Wilcoxon-Mann-Whitney Sample 1 vs Sample 2 Comparison Test for Uncensor Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	8/19/2014 5:24:08 PM
From File	WorkSheet.xls
Full Precision	OFF
Confidence Coefficient	95%
Substantial Difference	0.000
Selected Null Hypothesis	Sample 1 Mean/Median >= Sample 2 Mean/Median (Form 2)
Alternative Hypothesis	Sample 1 Mean/Median < Sample 2 Mean/Median

Sample 1 Data: Site-As

Sample 2 Data: BKG-As

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	115	40
Number of Missing Observations	17	132
Number of Distinct Observations	76	24
Minimum	0.48	3.419
Maximum	130	7.719
Mean	10.48	5.044
Median	7.6	4.919
SD	14.57	1.019
SE of Mean	1.359	0.161

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Sample 1 >= Mean/Median of Sample 2

Sample 1 Rank Sum W-Stat	10307
Standardized WMW U-Stat	5.466
Mean (U)	2300
SD(U) - Adj ties	244.5
Approximate U-Stat Critical Value (0.05)	-1.645
P-Value (Adjusted for Ties)	1

Conclusion with Alpha = 0.05

Do Not Reject H0, Conclude Sample 1 >= Sample 2

P-Value >= alpha (0.05)

Wilcoxon-Mann-Whitney Sample 1 vs Sample 2 Comparison Test for Uncensor Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	8/19/2014 5:29:42 PM
From File	WorkSheet.xls
Full Precision	OFF
Confidence Coefficient	95%

Substantial Difference	0.000
Selected Null Hypothesis	Sample 1 Mean/Median >= Sample 2 Mean/Median (Form 2)
Alternative Hypothesis	Sample 1 Mean/Median < Sample 2 Mean/Median

Sample 1 Data: Site-Cr

Sample 2 Data: Bkg-Cr

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	115	40
Number of Missing Observations	17	132
Number of Distinct Observations	64	34
Minimum	5	8.764
Maximum	34.2	21.76
Mean	12.19	13.63
Median	11.5	13.21
SD	4.171	2.964
SE of Mean	0.389	0.469

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Sample 1 >= Mean/Median of Sample 2

Sample 1 Rank Sum W-Stat	8186
Standardized WMW U-Stat	-3.209
Mean (U)	2300
SD(U) - Adj ties	244.5
Approximate U-Stat Critical Value (0.05)	-1.645
P-Value (Adjusted for Ties)	6.6629E-4

Conclusion with Alpha = 0.05

Reject H0, Conclude Sample 1 < Sample 2

P-Value < alpha (0.05)

Sample 1 Data: Site-Co

Sample 2 Data: Bkg-Co

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	80	40
Number of Missing Observations	52	132
Number of Distinct Observations	65	31
Minimum	6.4	3.724
Maximum	33.4	13.72
Mean	13.08	7.327
Median	12.15	7.024
SD	5.282	2.424
SE of Mean	0.591	0.383

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Sample 1 >= Mean/Median of Sample 2

Sample 1 Rank Sum W-Stat	6006
Standardized WMW U-Stat	6.489
Mean (U)	1600
SD(U) - Adj ties	179.6
Approximate U-Stat Critical Value (0.05)	-1.645
P-Value (Adjusted for Ties)	1

Conclusion with Alpha = 0.05

Do Not Reject H0, Conclude Sample 1 >= Sample 2

P-Value >= alpha (0.05)

Wilcoxon-Mann-Whitney Sample 1 vs Sample 2 Comparison Test for Uncensor Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	8/19/2014 5:31:22 PM
From File	WorkSheet.xls
Full Precision	OFF
Confidence Coefficient	95%
Substantial Difference	0.000
Selected Null Hypothesis	Sample 1 Mean/Median >= Sample 2 Mean/Median (Form 2)
Alternative Hypothesis	Sample 1 Mean/Median < Sample 2 Mean/Median

Sample 1 Data: Site-Cu

Sample 2 Data: Bkg-Cu

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	80	40
Number of Missing Observations	52	132
Number of Distinct Observations	69	39
Minimum	8.5	10.18
Maximum	256	50.28
Mean	25.4	17.19
Median	19.9	16.38
SD	31.63	6.582
SE of Mean	3.537	1.041

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Sample 1 >= Mean/Median of Sample 2

Sample 1 Rank Sum W-Stat	5305

Standardized WMW U-Stat	2.586
Mean (U)	1600
SD(U) - Adj ties	179.6
Approximate U-Stat Critical Value (0.05)	-1.645
P-Value (Adjusted for Ties)	0.995

Conclusion with Alpha = 0.05

Do Not Reject H0, Conclude Sample 1 >= Sample 2

P-Value >= alpha (0.05)

t-Test Sample 1 vs Sample 2 Comparison for Uncensored Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	8/19/2014 5:32:46 PM
From File	WorkSheet.xls
Full Precision	OFF
Confidence Coefficient	95%
Substantial Difference (S)	0.000
Selected Null Hypothesis	Sample 1 Mean >= Sample 2 Mean (Form 2)
Alternative Hypothesis	Sample 1 Mean < the Sample 2 Mean

Sample 1 Data: Site-Fe

Sample 2 Data: Bkg-Fe

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	80	40
Number of Missing Observations	52	132
Number of Distinct Observations	74	33
Minimum	8480	11712
Maximum	88500	27472
Mean	30510	18456
Median	28800	18522
SD	12282	3472
SE of Mean	1373	549

Sample 1 vs Sample 2 Two-Sample t-Test

H0: Mean of Sample 1 - Mean of Sample 2 >= 0

Method	DF	t-Test Value	Critical t (0.05)	P-Value
Pooled (Equal Variance)	118	6.075	-1.658	1.000
Welch-Satterthwaite (Unequal Varian	101.0	8.151	-1.660	1.000

Pooled SD: 10246.115

Conclusion with Alpha = 0.050

Student t (Pooled) Test: Do Not Reject H0, Conclude Sample 1 >= Sample 2

Welch-Satterthwaite Test: Do Not Reject H0, Conclude Sample 1 >= Sample 2

Test of Equality of Variances

Variance of Sample 1	1.509E+8
Variance of Sample 2	12053987

Numerator DF	Denominator DF	F-Test Value	P-Value
79	39	12.515	0.000

Conclusion with Alpha = 0.05

Two variances are not equal

Wilcoxon-Mann-Whitney Sample 1 vs Sample 2 Comparison Test for Uncensor Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	8/19/2014 5:33:36 PM
From File	WorkSheet.xls
Full Precision	OFF
Confidence Coefficient	95%
Substantial Difference	0.000
Selected Null Hypothesis	Sample 1 Mean/Median >= Sample 2 Mean/Median (Form 2)
Alternative Hypothesis	Sample 1 Mean/Median < Sample 2 Mean/Median

Sample 1 Data: Site-Pb

Sample 2 Data: Bkg-Pb

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	127	40
Number of Missing Observations	5	132
Number of Distinct Observations	103	34
Minimum	4.3	8.304
Maximum	29900	21.4
Mean	381.9	12.16
Median	18.6	11.25
SD	2815	3.004
SE of Mean	249.8	0.475

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Sample 1 >= Mean/Median of Sample 2

Sample 1 Rank Sum W-Stat	11623
Standardized WMW U-Stat	3.579
Mean (U)	2540
SD(U) - Adj ties	266.7
Approximate U-Stat Critical Value (0.05)	-1.645
P-Value (Adjusted for Ties)	1

Conclusion with Alpha = 0.05

Do Not Reject H0, Conclude Sample 1 >= Sample 2

P-Value >= alpha (0.05)

Wilcoxon-Mann-Whitney Sample 1 vs Sample 2 Comparison Test for Uncensor Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	8/19/2014 5:34:26 PM
From File	WorkSheet.xls
Full Precision	OFF
Confidence Coefficient	95%
Substantial Difference	0.000
Selected Null Hypothesis	Sample 1 Mean/Median >= Sample 2 Mean/Median (Form 2)
Alternative Hypothesis	Sample 1 Mean/Median < Sample 2 Mean/Median

Sample 1 Data: Site-Mn

Sample 2 Data: Bkg-Mn

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	80	40
Number of Missing Observations	52	132
Number of Distinct Observations	72	39
Minimum	168	211.7
Maximum	5750	899.3
Mean	615.7	361
Median	467.5	324.8
SD	714	131.3
SE of Mean	79.83	20.76

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Sample 1 >= Mean/Median of Sample 2

Sample 1 Rank Sum W-Stat	5683
Standardized WMW U-Stat	4.69
Mean (U)	1600
SD(U) - Adj ties	179.6
Approximate U-Stat Critical Value (0.05)	-1.645
P-Value (Adjusted for Ties)	1

Conclusion with Alpha = 0.05

Do Not Reject H0, Conclude Sample 1 >= Sample 2

P-Value >= alpha (0.05)

Gehan Sample 1 vs Sample 2 Comparison Hypothesis Test for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	8/19/2014 5:35:09 PM
From File	WorkSheet.xls
Full Precision	OFF
Confidence Coefficient	95%
Selected Null Hypothesis	Sample 1 Mean/Median >= Sample 2 Mean/Median (Form 2)
Alternative Hypothesis	Sample 1 Mean/Median < Sample 2 Mean/Median

Sample 1 Data: Site-Hg

Sample 2 Data: Bkg-Hg

Raw Statistics

	Sample 1	Sample 2
Number of Valid Data	80	40
Number of Missing Observations	52	132
Number of Non-Detects	47	22
Number of Detect Data	33	18
Minimum Non-Detect	0.012	0.0386
Maximum Non-Detect	0.038	0.0526
Percent Non-detects	58.75%	55.00%
Minimum Detect	0.005	0.0266
Maximum Detect	0.21	0.0666
Mean of Detects	0.0582	0.0399
Median of Detects	0.05	0.0386
SD of Detects	0.0465	0.0106

Sample 1 vs Sample 2 Gehan Test

H0: Mean of Sample 1 >= Mean of background

Gehan z Test Value	-0.751
Critical z (0.05)	-1.645
P-Value	0.226

Conclusion with Alpha = 0.05

Do Not Reject H0, Conclude Sample 1 >= Sample 2

P-Value >= alpha (0.05)

Wilcoxon-Mann-Whitney Sample 1 vs Sample 2 Comparison Test for Uncensor Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	8/19/2014 5:35:57 PM
From File	WorkSheet.xls
Full Precision	OFF
Confidence Coefficient	95%
Substantial Difference	0.000
Selected Null Hypothesis	Sample 1 Mean/Median >= Sample 2 Mean/Median (Form 2)
Alternative Hypothesis	Sample 1 Mean/Median < Sample 2 Mean/Median

Sample 1 Data: Site-Ni

Sample 2 Data: Bkg-Ni

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	80	40
Number of Missing Observations	52	132
Number of Distinct Observations	65	34
Minimum	11.8	8.245
Maximum	56.6	26.35
Mean	23.7	14.06
Median	21.2	13.95
SD	9.733	3.745
SE of Mean	1.088	0.592

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Sample 1 >= Mean/Median of Sample 2

Sample 1 Rank Sum W-Stat	5989
Standardized WMW U-Stat	6.394
Mean (U)	1600
SD(U) - Adj ties	179.6
Approximate U-Stat Critical Value (0.05)	-1.645
P-Value (Adjusted for Ties)	1

Conclusion with Alpha = 0.05

Do Not Reject H0, Conclude Sample 1 >= Sample 2

P-Value >= alpha (0.05)

Gehan Sample 1 vs Sample 2 Comparison Hypothesis Test for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	8/19/2014 5:36:43 PM
From File	WorkSheet.xls
Full Precision	OFF
Confidence Coefficient	95%
Selected Null Hypothesis	Sample 1 Mean/Median >= Sample 2 Mean/Median (Form 2)
Alternative Hypothesis	Sample 1 Mean/Median < Sample 2 Mean/Median

Sample 1 Data: Site-Se

Sample 2 Data: Bkg-Se

Raw Statistics

	Sample 1	Sample 2
Number of Valid Data	80	40

Number of Missing Observations	52	132
Number of Non-Detects	47	27
Number of Detect Data	33	13
Minimum Non-Detect	0.19	0.369
Maximum Non-Detect	0.56	0.639
Percent Non-detects	58.75%	67.50%
Minimum Detect	0.18	0.289
Maximum Detect	1.2	0.659
Mean of Detects	0.455	0.447
Median of Detects	0.43	0.429
SD of Detects	0.172	0.109

Sample 1 vs Sample 2 Gehan Test

H0: Mean of Sample 1 >= Mean of background

Gehan z Test Value	0.906
Critical z (0.05)	-1.645
P-Value	0.817

Conclusion with Alpha = 0.05

Do Not Reject H0, Conclude Sample 1 >= Sample 2

P-Value >= alpha (0.05)

t-Test Sample 1 vs Sample 2 Comparison for Uncensored Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	8/19/2014 5:38:01 PM
From File	WorkSheet.xls
Full Precision	OFF
Confidence Coefficient	95%
Substantial Difference (S)	0.000
Selected Null Hypothesis	Sample 1 Mean >= Sample 2 Mean (Form 2)
Alternative Hypothesis	Sample 1 Mean < the Sample 2 Mean

Sample 1 Data: Site_V

Sample 2 Data: Bkg-V

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	80	40
Number of Missing Observations	52	132
Number of Distinct Observations	56	32
Minimum	11.9	12.58
Maximum	29	26.68
Mean	17.99	19.09
Median	17.85	18.33

SD	3.387	3.982
SE of Mean	0.379	0.63

Sample 1 vs Sample 2 Two-Sample t-Test

H0: Mean of Sample 1 - Mean of Sample 2 >= 0

Method	DF	t-Test Value	Critical t (0.05)	P-Value
Pooled (Equal Variance)	118	-1.587	-1.658	0.058
Welch-Satterthwaite (Unequal Varian	67.9	-1.503	-1.668	0.069

Pooled SD: 3.594

Conclusion with Alpha = 0.050

Student t (Pooled) Test: Do Not Reject H0, Conclude Sample 1 >= Sample 2

Welch-Satterthwaite Test: Do Not Reject H0, Conclude Sample 1 >= Sample 2

Test of Equality of Variances

Variance of Sample 1	11.47
Variance of Sample 2	15.85

Numerator DF	Denominator DF	F-Test Value	P-Value
39	79	1.382	0.225

Conclusion with Alpha = 0.05

Two variances appear to be equal

Wilcoxon-Mann-Whitney Sample 1 vs Sample 2 Comparison Test for Uncensor Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	8/19/2014 5:38:59 PM
From File	WorkSheet.xls
Full Precision	OFF
Confidence Coefficient	95%
Substantial Difference	0.000
Selected Null Hypothesis	Sample 1 Mean/Median >= Sample 2 Mean/Median (Form 2)
Alternative Hypothesis	Sample 1 Mean/Median < Sample 2 Mean/Median

Sample 1 Data: Site-Zn

Sample 2 Data: Bkg-Zn

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	80	40
Number of Missing Observations	52	132
Number of Distinct Observations	77	33
Minimum	28.5	21.38
Maximum	433	49.08
Mean	73.07	32.12

Median	59.75	33.08
SD	52.27	6.283
SE of Mean	5.844	0.994

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Sample 1 >= Mean/Median of Sample 2

Sample 1 Rank Sum W-Stat	6247
Standardized WMW U-Stat	7.83
Mean (U)	1600
SD(U) - Adj ties	179.6
Approximate U-Stat Critical Value (0.05)	-1.645
P-Value (Adjusted for Ties)	1

Conclusion with Alpha = 0.05

Do Not Reject H0, Conclude Sample 1 >= Sample 2

P-Value >= alpha (0.05)

Sediment

Goodness-of-Fit Test Statistics for Uncensored Full Data Sets without Non-Detects

User Selected Options

Date/Time of Computation	8/13/2014 2:38:35 PM
From File	ProUCLinput_SE.xls
Full Precision	OFF
Confidence Coefficient	0.95

BKG-Sb

Raw Statistics

Number of Valid Observations	12
Number of Distinct Observations	9
Minimum	0.03
Maximum	0.13
Mean of Raw Data	0.0703
Standard Deviation of Raw Data	0.0246
Khat	9.083
Theta hat	0.00773
Kstar	6.868
Theta star	0.0102
Mean of Log Transformed Data	-2.712
Standard Deviation of Log Transformed Data	0.357

Normal GOF Test Results

Correlation Coefficient R	0.946
Shapiro Wilk Test Statistic	0.92
Shapiro Wilk Critical (0.05) Value	0.859
Approximate Shapiro Wilk P Value	0.182
Lilliefors Test Statistic	0.179
Lilliefors Critical (0.05) Value	0.256

Data appear Normal at (0.05) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.966
A-D Test Statistic	0.33
A-D Critical (0.05) Value	0.731
K-S Test Statistic	0.143
K-S Critical(0.05) Value	0.245

Data appear Gamma Distributed at (0.05) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.961
Shapiro Wilk Test Statistic	0.948
Shapiro Wilk Critical (0.05) Value	0.859
Approximate Shapiro Wilk P Value	0.397
Lilliefors Test Statistic	0.167
Lilliefors Critical (0.05) Value	0.256

Data appear Lognormal at (0.05) Significance Level

BKG-As

Raw Statistics

Number of Valid Observations	12
Number of Distinct Observations	11
Minimum	1.2
Maximum	5.7
Mean of Raw Data	3.206
Standard Deviation of Raw Data	1.46
Khat	5.403
Theta hat	0.593
Kstar	4.108
Theta star	0.78
Mean of Log Transformed Data	1.07
Standard Deviation of Log Transformed Data	0.461

Normal GOF Test Results

Correlation Coefficient R	0.952
Shapiro Wilk Test Statistic	0.896
Shapiro Wilk Critical (0.05) Value	0.859
Approximate Shapiro Wilk P Value	0.164
Lilliefors Test Statistic	0.197
Lilliefors Critical (0.05) Value	0.256

Data appear Normal at (0.05) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.967
A-D Test Statistic	0.372
A-D Critical (0.05) Value	0.732
K-S Test Statistic	0.145
K-S Critical(0.05) Value	0.246

Data appear Gamma Distributed at (0.05) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.976
Shapiro Wilk Test Statistic	0.949
Shapiro Wilk Critical (0.05) Value	0.859
Approximate Shapiro Wilk P Value	0.612
Lilliefors Test Statistic	0.133
Lilliefors Critical (0.05) Value	0.256

Data appear Lognormal at (0.05) Significance Level

BKG-Co

Raw Statistics

Number of Valid Observations	12
Number of Distinct Observations	12
Minimum	2.2
Maximum	8
Mean of Raw Data	4.049
Standard Deviation of Raw Data	1.536
Khat	9.07

Theta hat	0.446
Kstar	6.858
Theta star	0.59
Mean of Log Transformed Data	1.342
Standard Deviation of Log Transformed Data	0.34

Normal GOF Test Results

Correlation Coefficient R	0.922
Shapiro Wilk Test Statistic	0.867
Shapiro Wilk Critical (0.05) Value	0.859
Approximate Shapiro Wilk P Value	0.0433
Lilliefors Test Statistic	0.176
Lilliefors Critical (0.05) Value	0.256

Data appear Normal at (0.05) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.963
A-D Test Statistic	0.305
A-D Critical (0.05) Value	0.731
K-S Test Statistic	0.148
K-S Critical(0.05) Value	0.245

Data appear Gamma Distributed at (0.05) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.978
Shapiro Wilk Test Statistic	0.969
Shapiro Wilk Critical (0.05) Value	0.859
Approximate Shapiro Wilk P Value	0.772
Lilliefors Test Statistic	0.126
Lilliefors Critical (0.05) Value	0.256

Data appear Lognormal at (0.05) Significance Level

BKG-Cu

Raw Statistics

Number of Valid Observations	12
Number of Distinct Observations	12
Minimum	3.7
Maximum	25.4
Mean of Raw Data	11.35
Standard Deviation of Raw Data	6.975
Khat	3.029
Theta hat	3.747
Kstar	2.327
Theta star	4.877
Mean of Log Transformed Data	2.255
Standard Deviation of Log Transformed Data	0.623

Normal GOF Test Results

Correlation Coefficient R	0.95

Shapiro Wilk Test Statistic	0.894
Shapiro Wilk Critical (0.05) Value	0.859
Approximate Shapiro Wilk P Value	0.15
Lilliefors Test Statistic	0.189
Lilliefors Critical (0.05) Value	0.256

Data appear Normal at (0.05) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.983
A-D Test Statistic	0.318
A-D Critical (0.05) Value	0.739
K-S Test Statistic	0.153
K-S Critical(0.05) Value	0.247

Data appear Gamma Distributed at (0.05) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.985
Shapiro Wilk Test Statistic	0.955
Shapiro Wilk Critical (0.05) Value	0.859
Approximate Shapiro Wilk P Value	0.79
Lilliefors Test Statistic	0.152
Lilliefors Critical (0.05) Value	0.256

Data appear Lognormal at (0.05) Significance Level

BKG-Pb

Raw Statistics

Number of Valid Observations	12
Number of Distinct Observations	12
Minimum	6
Maximum	39.4
Mean of Raw Data	16.74
Standard Deviation of Raw Data	11.63
Khat	2.631
Theta hat	6.364
Kstar	2.029
Theta star	8.253
Mean of Log Transformed Data	2.616
Standard Deviation of Log Transformed Data	0.653

Normal GOF Test Results

Correlation Coefficient R	0.911
Shapiro Wilk Test Statistic	0.819
Shapiro Wilk Critical (0.05) Value	0.859
Approximate Shapiro Wilk P Value	0.0169
Lilliefors Test Statistic	0.263
Lilliefors Critical (0.05) Value	0.256

Data not Normal at (0.05) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.963
A-D Test Statistic	0.541
A-D Critical (0.05) Value	0.74
K-S Test Statistic	0.233
K-S Critical(0.05) Value	0.248

Data appear Gamma Distributed at (0.05) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.968
Shapiro Wilk Test Statistic	0.918
Shapiro Wilk Critical (0.05) Value	0.859
Approximate Shapiro Wilk P Value	0.355
Lilliefors Test Statistic	0.199
Lilliefors Critical (0.05) Value	0.256

Data appear Lognormal at (0.05) Significance Level

BKG-Mn

Raw Statistics

Number of Valid Observations	12
Number of Distinct Observations	12
Minimum	77.4
Maximum	282
Mean of Raw Data	144.3
Standard Deviation of Raw Data	66.64
Khat	6.044
Theta hat	23.88
Kstar	4.589
Theta star	31.46
Mean of Log Transformed Data	4.887
Standard Deviation of Log Transformed Data	0.416

Normal GOF Test Results

Correlation Coefficient R	0.914
Shapiro Wilk Test Statistic	0.83
Shapiro Wilk Critical (0.05) Value	0.859
Approximate Shapiro Wilk P Value	0.0216
Lilliefors Test Statistic	0.252
Lilliefors Critical (0.05) Value	0.256

Data appear Approximate Normal at (0.05) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.957
A-D Test Statistic	0.681
A-D Critical (0.05) Value	0.732
K-S Test Statistic	0.213
K-S Critical(0.05) Value	0.246

Data appear Gamma Distributed at (0.05) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.958
Shapiro Wilk Test Statistic	0.907
Shapiro Wilk Critical (0.05) Value	0.859
Approximate Shapiro Wilk P Value	0.23
Lilliefors Test Statistic	0.185
Lilliefors Critical (0.05) Value	0.256

Data appear Lognormal at (0.05) Significance Level

BKG-Hg

Raw Statistics

Number of Valid Observations	12
Number of Distinct Observations	10
Minimum	0.0043
Maximum	0.17
Mean of Raw Data	0.0476
Standard Deviation of Raw Data	0.0466
Khat	1.212
Theta hat	0.0393
Kstar	0.965
Theta star	0.0493
Mean of Log Transformed Data	-3.511
Standard Deviation of Log Transformed Data	1.091

Normal GOF Test Results

Correlation Coefficient R	0.9
Shapiro Wilk Test Statistic	0.822
Shapiro Wilk Critical (0.05) Value	0.859
Approximate Shapiro Wilk P Value	0.0125
Lilliefors Test Statistic	0.177
Lilliefors Critical (0.05) Value	0.256

Data appear Approximate Normal at (0.05) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.985
A-D Test Statistic	0.161
A-D Critical (0.05) Value	0.752
K-S Test Statistic	0.112
K-S Critical(0.05) Value	0.251

Data appear Gamma Distributed at (0.05) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.987
Shapiro Wilk Test Statistic	0.969
Shapiro Wilk Critical (0.05) Value	0.859
Approximate Shapiro Wilk P Value	0.895
Lilliefors Test Statistic	0.107
Lilliefors Critical (0.05) Value	0.256

Data appear Lognormal at (0.05) Significance Level

BKG-Ni

Raw Statistics

Number of Valid Observations	12
Number of Distinct Observations	12
Minimum	5.6
Maximum	17.7
Mean of Raw Data	10.08
Standard Deviation of Raw Data	3.246
Khat	11.54
Theta hat	0.873
Kstar	8.714
Theta star	1.157
Mean of Log Transformed Data	2.267
Standard Deviation of Log Transformed Data	0.306

Normal GOF Test Results

Correlation Coefficient R	0.957
Shapiro Wilk Test Statistic	0.928
Shapiro Wilk Critical (0.05) Value	0.859
Approximate Shapiro Wilk P Value	0.28
Lilliefors Test Statistic	0.146
Lilliefors Critical (0.05) Value	0.256

Data appear Normal at (0.05) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.983
A-D Test Statistic	0.211
A-D Critical (0.05) Value	0.731
K-S Test Statistic	0.114
K-S Critical(0.05) Value	0.245

Data appear Gamma Distributed at (0.05) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.988
Shapiro Wilk Test Statistic	0.986
Shapiro Wilk Critical (0.05) Value	0.859
Approximate Shapiro Wilk P Value	0.968
Lilliefors Test Statistic	0.115
Lilliefors Critical (0.05) Value	0.256

Data appear Lognormal at (0.05) Significance Level

BKG-V

Raw Statistics

Number of Valid Observations	12
Number of Distinct Observations	12
Minimum	7.6
Maximum	29
Mean of Raw Data	16.07
Standard Deviation of Raw Data	6.457
Khat	7.285

Theta hat	2.205
Kstar	5.519
Theta star	2.911
Mean of Log Transformed Data	2.707
Standard Deviation of Log Transformed Data	0.39

Normal GOF Test Results

Correlation Coefficient R	0.948
Shapiro Wilk Test Statistic	0.898
Shapiro Wilk Critical (0.05) Value	0.859
Approximate Shapiro Wilk P Value	0.146
Lilliefors Test Statistic	0.199
Lilliefors Critical (0.05) Value	0.256

Data appear Normal at (0.05) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.971
A-D Test Statistic	0.321
A-D Critical (0.05) Value	0.731
K-S Test Statistic	0.147
K-S Critical(0.05) Value	0.246

Data appear Gamma Distributed at (0.05) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.981
Shapiro Wilk Test Statistic	0.962
Shapiro Wilk Critical (0.05) Value	0.859
Approximate Shapiro Wilk P Value	0.77
Lilliefors Test Statistic	0.129
Lilliefors Critical (0.05) Value	0.256

Data appear Lognormal at (0.05) Significance Level

BKG-HPAH

Raw Statistics

Number of Valid Observations	12
Number of Distinct Observations	12
Minimum	0.0035
Maximum	6
Mean of Raw Data	0.699
Standard Deviation of Raw Data	1.686
Khat	0.392
Theta hat	1.782
Kstar	0.35
Theta star	1.999
Mean of Log Transformed Data	-2.043
Standard Deviation of Log Transformed Data	1.999

Normal GOF Test Results

Correlation Coefficient R	0.64

Shapiro Wilk Test Statistic	0.441
Shapiro Wilk Critical (0.05) Value	0.859
Approximate Shapiro Wilk P Value	7.8759E-7
Lilliefors Test Statistic	0.409
Lilliefors Critical (0.05) Value	0.256

Data not Normal at (0.05) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.914
A-D Test Statistic	0.705
A-D Critical (0.05) Value	0.806
K-S Test Statistic	0.212
K-S Critical(0.05) Value	0.262

Data appear Gamma Distributed at (0.05) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.986
Shapiro Wilk Test Statistic	0.981
Shapiro Wilk Critical (0.05) Value	0.859
Approximate Shapiro Wilk P Value	0.935
Lilliefors Test Statistic	0.134
Lilliefors Critical (0.05) Value	0.256

Data appear Lognormal at (0.05) Significance Level

ARSENIC

Raw Statistics

Number of Valid Observations	55
Number of Missing Observations	14
Number of Distinct Observations	41
Minimum	1.3
Maximum	38.1
Mean of Raw Data	4.489
Standard Deviation of Raw Data	6.079
Khat	1.36
Theta hat	3.301
Kstar	1.298
Theta star	3.459
Mean of Log Transformed Data	1.091
Standard Deviation of Log Transformed Data	0.777

Normal GOF Test Results

Correlation Coefficient R	0.713
Approximate Shapiro Wilk Test Statistic	0.539
Approximate Shapiro Wilk P Value	0
Lilliefors Test Statistic	0.339
Lilliefors Critical (0.05) Value	0.119

Data not Normal at (0.05) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.899
A-D Test Statistic	5.359
A-D Critical (0.05) Value	0.771
K-S Test Statistic	0.253
K-S Critical(0.05) Value	0.123

Data not Gamma Distributed at (0.05) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.912
Approximate Shapiro Wilk Test Statistic	0.829
Approximate Shapiro Wilk P Value	2.5485E-8
Lilliefors Test Statistic	0.188
Lilliefors Critical (0.05) Value	0.119

Data not Lognormal at (0.05) Significance Level

COBALT

Raw Statistics

Number of Valid Observations	55
Number of Missing Observations	14
Number of Distinct Observations	37
Minimum	1.9
Maximum	16.4
Mean of Raw Data	4.714
Standard Deviation of Raw Data	3.745
Khat	2.527
Theta hat	1.866
Kstar	2.401
Theta star	1.963
Mean of Log Transformed Data	1.34
Standard Deviation of Log Transformed Data	0.595

Normal GOF Test Results

Correlation Coefficient R	0.822
Approximate Shapiro Wilk Test Statistic	0.672
Approximate Shapiro Wilk P Value	3.220E-15
Lilliefors Test Statistic	0.315
Lilliefors Critical (0.05) Value	0.119

Data not Normal at (0.05) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.928
A-D Test Statistic	5.299
A-D Critical (0.05) Value	0.76
K-S Test Statistic	0.255
K-S Critical(0.05) Value	0.121

Data not Gamma Distributed at (0.05) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.908

Approximate Shapiro Wilk Test Statistic	0.809
Approximate Shapiro Wilk P Value	2.8622E-9
Lilliefors Test Statistic	0.222
Lilliefors Critical (0.05) Value	0.119

Data not Lognormal at (0.05) Significance Level

COPPER

Raw Statistics

Number of Valid Observations	55
Number of Missing Observations	14
Number of Distinct Observations	52
Minimum	4.1
Maximum	565
Mean of Raw Data	25.11
Standard Deviation of Raw Data	77.23
Khat	0.675
Theta hat	37.18
Kstar	0.651
Theta star	38.59
Mean of Log Transformed Data	2.324
Standard Deviation of Log Transformed Data	0.988

Normal GOF Test Results

Correlation Coefficient R	0.485
Approximate Shapiro Wilk Test Statistic	0.279
Approximate Shapiro Wilk P Value	0
Lilliefors Test Statistic	0.393
Lilliefors Critical (0.05) Value	0.119

Data not Normal at (0.05) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.748
A-D Test Statistic	7.625
A-D Critical (0.05) Value	0.799
K-S Test Statistic	0.319
K-S Critical(0.05) Value	0.125

Data not Gamma Distributed at (0.05) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.883
Approximate Shapiro Wilk Test Statistic	0.788
Approximate Shapiro Wilk P Value	2.937E-10
Lilliefors Test Statistic	0.227
Lilliefors Critical (0.05) Value	0.119

Data not Lognormal at (0.05) Significance Level

LEAD

Raw Statistics

Number of Valid Observations	55

Number of Missing Observations	14
Number of Distinct Observations	53
Minimum	5.2
Maximum	4290
Mean of Raw Data	209.9
Standard Deviation of Raw Data	655.9
Khat	0.425
Theta hat	494.1
Kstar	0.414
Theta star	507.3
Mean of Log Transformed Data	3.813
Standard Deviation of Log Transformed Data	1.478

Normal GOF Test Results

Correlation Coefficient R	0.547
Approximate Shapiro Wilk Test Statistic	0.337
Approximate Shapiro Wilk P Value	0
Lilliefors Test Statistic	0.404
Lilliefors Critical (0.05) Value	0.119

Data not Normal at (0.05) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.864
A-D Test Statistic	5.494
A-D Critical (0.05) Value	0.833
K-S Test Statistic	0.242
K-S Critical(0.05) Value	0.128

Data not Gamma Distributed at (0.05) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.961
Approximate Shapiro Wilk Test Statistic	0.919
Approximate Shapiro Wilk P Value	0.00109
Lilliefors Test Statistic	0.0937
Lilliefors Critical (0.05) Value	0.119

Data appear Approximate_Lognormal at (0.05) Significance Level

MANGANESE

Raw Statistics

Number of Valid Observations	55
Number of Missing Observations	14
Number of Distinct Observations	51
Minimum	69.8
Maximum	1510
Mean of Raw Data	207.8
Standard Deviation of Raw Data	284.8
Khat	1.378
Theta hat	150.7
Kstar	1.315
Theta star	158

Mean of Log Transformed Data	4.932
Standard Deviation of Log Transformed Data	0.747

Normal GOF Test Results

Correlation Coefficient R	0.694
Approximate Shapiro Wilk Test Statistic	0.5
Approximate Shapiro Wilk P Value	0
Lilliefors Test Statistic	0.365
Lilliefors Critical (0.05) Value	0.119

Data not Normal at (0.05) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.884
A-D Test Statistic	7.575
A-D Critical (0.05) Value	0.771
K-S Test Statistic	0.321
K-S Critical(0.05) Value	0.122

Data not Gamma Distributed at (0.05) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.859
Approximate Shapiro Wilk Test Statistic	0.735
Approximate Shapiro Wilk P Value	1.353E-12
Lilliefors Test Statistic	0.274
Lilliefors Critical (0.05) Value	0.119

Data not Lognormal at (0.05) Significance Level

NICKEL

Raw Statistics

Number of Valid Observations	55
Number of Missing Observations	14
Number of Distinct Observations	48
Minimum	5.6
Maximum	35.3
Mean of Raw Data	11.94
Standard Deviation of Raw Data	8.238
Khat	3.199
Theta hat	3.733
Kstar	3.037
Theta star	3.933
Mean of Log Transformed Data	2.316
Standard Deviation of Log Transformed Data	0.529

Normal GOF Test Results

Correlation Coefficient R	0.827
Approximate Shapiro Wilk Test Statistic	0.675
Approximate Shapiro Wilk P Value	4.219E-15
Lilliefors Test Statistic	0.316
Lilliefors Critical (0.05) Value	0.119

Data not Normal at (0.05) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.917
A-D Test Statistic	5.687
A-D Critical (0.05) Value	0.757
K-S Test Statistic	0.278
K-S Critical(0.05) Value	0.121

Data not Gamma Distributed at (0.05) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.899
Approximate Shapiro Wilk Test Statistic	0.791
Approximate Shapiro Wilk P Value	4.368E-10
Lilliefors Test Statistic	0.251
Lilliefors Critical (0.05) Value	0.119

Data not Lognormal at (0.05) Significance Level

VANADIUM

Raw Statistics

Number of Valid Observations	55
Number of Missing Observations	14
Number of Distinct Observations	47
Minimum	8
Maximum	27.1
Mean of Raw Data	12.92
Standard Deviation of Raw Data	4.171
Khat	11.54
Theta hat	1.119
Kstar	10.93
Theta star	1.182
Mean of Log Transformed Data	2.515
Standard Deviation of Log Transformed Data	0.29

Normal GOF Test Results

Correlation Coefficient R	0.931
Approximate Shapiro Wilk Test Statistic	0.866
Approximate Shapiro Wilk P Value	1.7374E-6
Lilliefors Test Statistic	0.135
Lilliefors Critical (0.05) Value	0.119

Data not Normal at (0.05) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.969
A-D Test Statistic	1.243
A-D Critical (0.05) Value	0.75
K-S Test Statistic	0.131
K-S Critical(0.05) Value	0.12

Data not Gamma Distributed at (0.05) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.973
Approximate Shapiro Wilk Test Statistic	0.934
Approximate Shapiro Wilk P Value	0.00673
Lilliefors Test Statistic	0.128
Lilliefors Critical (0.05) Value	0.119

Data not Lognormal at (0.05) Significance Level

HPAH, TOTAL

Raw Statistics

Number of Valid Observations	41
Number of Missing Observations	21
Number of Distinct Observations	37
Minimum	0.012
Maximum	7.045
Mean of Raw Data	0.848
Standard Deviation of Raw Data	1.46
Khat	0.549
Theta hat	1.545
Kstar	0.525
Theta star	1.615
Mean of Log Transformed Data	-1.306
Standard Deviation of Log Transformed Data	1.575

Normal GOF Test Results

Correlation Coefficient R	0.766
Shapiro Wilk Test Statistic	0.604
Shapiro Wilk Critical (0.05) Value	0.941
Approximate Shapiro Wilk P Value	1.965E-12
Lilliefors Test Statistic	0.304
Lilliefors Critical (0.05) Value	0.138

Data not Normal at (0.05) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.975
A-D Test Statistic	1.385
A-D Critical (0.05) Value	0.809
K-S Test Statistic	0.151
K-S Critical(0.05) Value	0.145

Data not Gamma Distributed at (0.05) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.995
Shapiro Wilk Test Statistic	0.977
Shapiro Wilk Critical (0.05) Value	0.941
Approximate Shapiro Wilk P Value	0.692
Lilliefors Test Statistic	0.0657
Lilliefors Critical (0.05) Value	0.138

Data appear Lognormal at (0.05) Significance Level

Goodness-of-Fit Test Statistics for Data Sets with Non-Detects

User Selected Options

Date/Time of Computation	8/13/2014 2:34:55 PM
From File	ProUCLinput_SE.xls
Full Precision	OFF
Confidence Coefficient	0.95

BKG-LPAH

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	12	0	12	11	1	8.33%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Detects Only)	11	0.0022	0.87	0.102	0.022	0.256
Statistics (All: NDs treated as DL value)	12	0.0022	0.87	0.0945	0.019	0.245
Statistics (All: NDs treated as DL/2 value)	12	0.0022	0.87	0.094	0.019	0.245
Statistics (Normal ROS Imputed Data)	12	-0.0809	0.87	0.0868	0.019	0.249
Statistics (Gamma ROS Imputed Data)	12	0.0022	0.87	0.0943	0.019	0.245
Statistics (Lognormal ROS Imputed Data)	12	0.0022	0.87	0.0938	0.019	0.245

	K hat	K Star	Theta hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.421	0.367	0.242	-3.831	1.679	-0.438
Statistics (NDs = DL)	0.428	0.377	0.221	-3.88	1.61	-0.415
Statistics (NDs = DL/2)	0.416	0.367	0.226	-3.938	1.643	-0.417
Statistics (Gamma ROS Estimates)	0.425	0.374	0.222	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-3.994	1.698	-0.425

Normal GOF Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.623	0.607	0.608	0.72

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilk (Detects Only)	0.419	0.85	Data Not Normal
Lilliefors (Detects Only)	0.465	0.267	Data Not Normal
Shapiro-Wilk (NDs = DL)	0.4	0.859	Data Not Normal
Lilliefors (NDs = DL)	0.463	0.256	Data Not Normal
Shapiro-Wilk (NDs = DL/2)	0.401	0.859	Data Not Normal
Lilliefors (NDs = DL/2)	0.462	0.256	Data Not Normal
Shapiro-Wilk (Normal ROS Estimates)	0.461	0.859	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.45	0.256	Data Not Normal

Gamma GOF Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.896	0.885	0.887	0.885

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	1.137	0.796	
Kolmogorov-Smirnov (Detects Only)	0.305	0.272	Data Not Gamma Distributed
Anderson-Darling (NDs = DL)	1.307	0.799	
Kolmogorov-Smirnov (NDs = DL)	0.299	0.261	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	1.27	0.801	

Kolmogorov-Smirnov (NDs = DL/2)	0.294	0.261	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	1.292	0.8	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.298	0.261	Data Not Gamma Distributed

Lognormal GOF Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.961	0.959	0.961	0.959

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilk (Detects Only)	0.933	0.85	Data Appear Lognormal
Lilliefors (Detects Only)	0.163	0.267	Data Appear Lognormal
Shapiro-Wilk (NDs = DL)	0.931	0.859	Data Appear Lognormal
Lilliefors (NDs = DL)	0.152	0.256	Data Appear Lognormal
Shapiro-Wilk (NDs = DL/2)	0.932	0.859	Data Appear Lognormal
Lilliefors (NDs = DL/2)	0.146	0.256	Data Appear Lognormal
Shapiro-Wilk (Lognormal ROS Estimates)	0.923	0.859	Data Appear Lognormal
Lilliefors (Lognormal ROS Estimates)	0.143	0.256	Data Appear Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

ANTIMONY

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	69	14	55	44	11	20.00%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	11	0.067	0.93	0.614	0.64	0.296
Statistics (Detects Only)	44	0.05	36.7	1.912	0.31	6.245
Statistics (All: NDs treated as DL value)	55	0.05	36.7	1.653	0.4	5.599
Statistics (All: NDs treated as DL/2 value)	55	0.0335	36.7	1.591	0.32	5.611
Statistics (Normal ROS Imputed Data)	55	-3.153	36.7	1.567	0.33	5.663
Statistics (Gamma ROS Imputed Data)	55	0.01	36.7	1.534	0.13	5.625
Statistics (Lognormal ROS Imputed Data)	55	0.0317	36.7	1.565	0.23	5.617

	K hat	K Star	Theta hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.365	0.356	5.234	-1.179	1.575	-1.336
Statistics (NDs = DL)	0.411	0.401	4.02	-1.091	1.473	-1.35
Statistics (NDs = DL/2)	0.39	0.381	4.081	-1.23	1.466	-1.192
Statistics (Gamma ROS Estimates)	0.306	0.301	5.013	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-1.334	1.476	-1.106

Normal GOF Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.546	0.518	0.511	0.607

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilk (Detects Only)	0.332	0.944	Data Not Normal
Lilliefors (Detects Only)	0.437	0.134	Data Not Normal
Shapiro-Wilk (NDs = DL)	N/A	N/A	
Lilliefors (NDs = DL)	0.442	0.119	Data Not Normal
Shapiro-Wilk (NDs = DL/2)	N/A	N/A	
Lilliefors (NDs = DL/2)	0.45	0.119	Data Not Normal
Shapiro-Wilk (Normal ROS Estimates)	N/A	N/A	

Lilliefors (Normal ROS Estimates)	0.387	0.119	Data Not Normal

Gamma GOF Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.88	0.841	0.844	0.87

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	5.603	0.845	
Kolmogorov-Smirnov (Detects Only)	0.331	0.144	Data Not Gamma Distributed
Anderson-Darling (NDs = DL)	6.248	0.836	
Kolmogorov-Smirnov (NDs = DL)	0.312	0.128	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	7.232	0.841	
Kolmogorov-Smirnov (NDs = DL/2)	0.338	0.129	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	5.428	0.861	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.288	0.13	Data Not Gamma Distributed

Lognormal GOF Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.941	0.949	0.945	0.94

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilk (Detects Only)	0.88	0.944	Data Not Lognormal
Lilliefors (Detects Only)	0.149	0.134	Data Not Lognormal
Shapiro-Wilk (NDs = DL)	N/A	N/A	
Lilliefors (NDs = DL)	0.136	0.119	Data Not Lognormal
Shapiro-Wilk (NDs = DL/2)	N/A	N/A	
Lilliefors (NDs = DL/2)	0.151	0.119	Data Not Lognormal
Shapiro-Wilk (Lognormal ROS Estimates)	N/A	N/A	
Lilliefors (Lognormal ROS Estimates)	0.13	0.119	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

MERCURY

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	62	27	35	33	2	5.71%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	2	0.013	0.014	0.0135	0.0135	7.0711E-4
Statistics (Detects Only)	33	0.004	0.09	0.0313	0.02	0.024
Statistics (All: NDs treated as DL value)	35	0.004	0.09	0.0303	0.02	0.0236
Statistics (All: NDs treated as DL/2 value)	35	0.004	0.09	0.0299	0.02	0.024
Statistics (Normal ROS Imputed Data)	35	0.004	0.09	0.0299	0.02	0.024
Statistics (Gamma ROS Imputed Data)	35	0.004	0.09	0.0301	0.02	0.0238
Statistics (Lognormal ROS Imputed Data)	35	0.004	0.09	0.0301	0.02	0.0238

	K hat	K Star	Theta hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	1.822	1.677	0.0172	-3.762	0.812	-0.216
Statistics (NDs = DL)	1.833	1.695	0.0165	-3.793	0.798	-0.21
Statistics (NDs = DL/2)	1.692	1.566	0.0177	-3.833	0.84	-0.219
Statistics (Gamma ROS Estimates)	1.775	1.642	0.017	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-3.812	0.814	-0.213

Normal GOF Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.933	0.925	0.928	0.562

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilk (Detects Only)	0.86	0.931	Data Not Normal
Lilliefors (Detects Only)	0.227	0.154	Data Not Normal
Shapiro-Wilk (NDs = DL)	0.845	0.934	Data Not Normal
Lilliefors (NDs = DL)	0.24	0.15	Data Not Normal
Shapiro-Wilk (NDs = DL/2)	0.851	0.934	Data Not Normal
Lilliefors (NDs = DL/2)	0.232	0.15	Data Not Normal
Shapiro-Wilk (Normal ROS Estimates)	0.85	0.934	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.232	0.15	Data Not Normal

Gamma GOF Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.976	0.976	0.976	0.975

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.801	0.761	
Kolmogorov-Smirnov (Detects Only)	0.166	0.156	Data Not Gamma Distributed
Anderson-Darling (NDs = DL)	0.972	0.762	
Kolmogorov-Smirnov (NDs = DL)	0.178	0.151	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	0.823	0.764	
Kolmogorov-Smirnov (NDs = DL/2)	0.161	0.151	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	1.036	0.763	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.17	0.151	Data Not Gamma Distributed

Lognormal GOF Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.981	0.98	0.983	0.978

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilk (Detects Only)	0.951	0.931	Data Appear Lognormal
Lilliefors (Detects Only)	0.13	0.154	Data Appear Lognormal
Shapiro-Wilk (NDs = DL)	0.95	0.934	Data Appear Lognormal
Lilliefors (NDs = DL)	0.131	0.15	Data Appear Lognormal
Shapiro-Wilk (NDs = DL/2)	0.953	0.934	Data Appear Lognormal
Lilliefors (NDs = DL/2)	0.126	0.15	Data Appear Lognormal
Shapiro-Wilk (Lognormal ROS Estimates)	0.944	0.934	Data Appear Lognormal
Lilliefors (Lognormal ROS Estimates)	0.128	0.15	Data Appear Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

LPAH, TOTAL

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	62	21	41	38	3	7.32%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	3	0.011	0.012	0.0117	0.012	5.7735E-4
Statistics (Detects Only)	38	0.0023	0.865	0.129	0.0443	0.183

Statistics (All: NDs treated as DL value)	41	0.0023	0.865	0.121	0.043	0.179
Statistics (All: NDs treated as DL/2 value)	41	0.0023	0.865	0.12	0.043	0.179
Statistics (Normal ROS Imputed Data)	41	-0.0984	0.865	0.115	0.043	0.183
Statistics (Gamma ROS Imputed Data)	41	0.0023	0.865	0.121	0.043	0.179
Statistics (Lognormal ROS Imputed Data)	41	0.0023	0.865	0.12	0.043	0.179

	K hat	K Star	Theta hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.592	0.563	0.218	-3.092	1.626	-0.526
Statistics (NDs = DL)	0.577	0.551	0.209	-3.192	1.604	-0.503
Statistics (NDs = DL/2)	0.556	0.532	0.216	-3.243	1.654	-0.51
Statistics (Gamma ROS Estimates)	0.572	0.547	0.211	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-3.242	1.655	-0.511

Normal GOF Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.836	0.822	0.823	0.828

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilk (Detects Only)	0.712	0.938	Data Not Normal
Lilliefors (Detects Only)	0.244	0.144	Data Not Normal
Shapiro-Wilk (NDs = DL)	0.691	0.941	Data Not Normal
Lilliefors (NDs = DL)	0.254	0.138	Data Not Normal
Shapiro-Wilk (NDs = DL/2)	0.692	0.941	Data Not Normal
Lilliefors (NDs = DL/2)	0.255	0.138	Data Not Normal
Shapiro-Wilk (Normal ROS Estimates)	0.755	0.941	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.231	0.138	Data Not Normal

Gamma GOF Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.992	0.991	0.991	0.991

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.652	0.804	
Kolmogorov-Smirnov (Detects Only)	0.135	0.15	Detected Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	1.01	0.806	
Kolmogorov-Smirnov (NDs = DL)	0.148	0.145	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	0.972	0.808	
Kolmogorov-Smirnov (NDs = DL/2)	0.139	0.145	Detected Data appear Approximate Gamma Distri
Anderson-Darling (Gamma ROS Estimates)	1.025	0.806	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.146	0.145	Data Not Gamma Distributed

Lognormal GOF Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.988	0.987	0.984	0.985

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilk (Detects Only)	0.959	0.938	Data Appear Lognormal
Lilliefors (Detects Only)	0.102	0.144	Data Appear Lognormal
Shapiro-Wilk (NDs = DL)	0.957	0.941	Data Appear Lognormal
Lilliefors (NDs = DL)	0.105	0.138	Data Appear Lognormal
Shapiro-Wilk (NDs = DL/2)	0.949	0.941	Data Appear Lognormal

Lilliefors (NDs = DL/2)	0.1	0.138	Data Appear Lognormal
Shapiro-Wilk (Lognormal ROS Estimates)	0.951	0.941	Data Appear Lognormal
Lilliefors (Lognormal ROS Estimates)	0.0998	0.138	Data Appear Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Gehan Sample 1 vs Sample 2 Comparison Hypothesis Test for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	8/14/2014 5:59:10 PM
From File	ProUCLinput_SE+S.xls
Full Precision	OFF
Confidence Coefficient	95%
Selected Null Hypothesis	Sample 1 Mean/Median >= Sample 2 Mean/Median (Form 2)
Alternative Hypothesis	Sample 1 Mean/Median < Sample 2 Mean/Median

Sample 1 Data: ANTIMONY

Sample 2 Data: BKG-Sb

Raw Statistics

	Sample 1	Sample 2
Number of Valid Data	55	12
Number of Missing Observations	14	0
Number of Non-Detects	11	0
Number of Detect Data	44	12
Minimum Non-Detect	0.067	N/A
Maximum Non-Detect	0.93	N/A
Percent Non-detects	20.00%	0.00%
Minimum Detect	0.05	0.0546
Maximum Detect	36.7	0.155
Mean of Detects	1.912	0.0949
Median of Detects	0.31	0.0936
SD of Detects	6.245	0.0246

Sample 1 vs Sample 2 Gehan Test

H0: Mean of Sample 1 >= Mean of background

Gehan z Test Value	1.955
Critical z (0.05)	-1.645
P-Value	0.975

Conclusion with Alpha = 0.05

Do Not Reject H0, Conclude Sample 1 >= Sample 2

P-Value >= alpha (0.05)

Wilcoxon-Mann-Whitney Sample 1 vs Sample 2 Comparison Test for Uncensor Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	8/14/2014 5:24:09 PM
From File	ProUCLinput_SE+S.xls
Full Precision	OFF
Confidence Coefficient	95%
Substantial Difference	0.000
Selected Null Hypothesis	Sample 1 Mean/Median >= Sample 2 Mean/Median (Form 2)
Alternative Hypothesis	Sample 1 Mean/Median < Sample 2 Mean/Median

Sample 1 Data: ARSENIC

Sample 2 Data: BKG-As

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	55	12
Number of Missing Observations	14	0
Number of Distinct Observations	41	11
Minimum	1.3	2.66
Maximum	38.1	7.16
Mean	4.489	4.666
Median	2.4	4.175
SD	6.079	1.46
SE of Mean	0.82	0.422

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Sample 1 >= Mean/Median of Sample 2

Sample 1 Rank Sum W-Stat	1686
Standardized WMW U-Stat	-3.018
Mean (U)	330
SD(U) - Adj ties	61.14
Approximate U-Stat Critical Value (0.05)	-1.645
P-Value (Adjusted for Ties)	0.00127

Conclusion with Alpha = 0.05

Reject H0, Conclude Sample 1 < Sample 2

P-Value < alpha (0.05)

Wilcoxon-Mann-Whitney Sample 1 vs Sample 2 Comparison Test for Uncensor Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	8/14/2014 5:31:54 PM
From File	ProUCLinput_SE+S.xls
Full Precision	OFF
Confidence Coefficient	95%
Substantial Difference	0.000
Selected Null Hypothesis	Sample 1 Mean/Median >= Sample 2 Mean/Median (Form 2)
Alternative Hypothesis	Sample 1 Mean/Median < Sample 2 Mean/Median

Sample 1 Data: COBALT

Sample 2 Data: BKG-Co

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	55	12
Number of Missing Observations	14	0
Number of Distinct Observations	37	12
Minimum	1.9	3.74
Maximum	16.4	9.54
Mean	4.714	5.589
Median	3.3	5.185
SD	3.745	1.536
SE of Mean	0.505	0.443

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Sample 1 >= Mean/Median of Sample 2

Sample 1 Rank Sum W-Stat	1682
Standardized WMW U-Stat	-3.092
Mean (U)	330
SD(U) - Adj ties	61.13
Approximate U-Stat Critical Value (0.05)	-1.645
P-Value (Adjusted for Ties)	9.9388E-4

Conclusion with Alpha = 0.05

Reject H0, Conclude Sample 1 < Sample 2

P-Value < alpha (0.05)

Wilcoxon-Mann-Whitney Sample 1 vs Sample 2 Comparison Test for Uncensor Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	8/14/2014 5:32:42 PM
From File	ProUCLinput_SE+S.xls
Full Precision	OFF
Confidence Coefficient	95%
Substantial Difference	0.000
Selected Null Hypothesis	Sample 1 Mean/Median >= Sample 2 Mean/Median (Form 2)
Alternative Hypothesis	Sample 1 Mean/Median < Sample 2 Mean/Median

Sample 1 Data: COPPER

Sample 2 Data: BKG-Cu

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	55	12
Number of Missing Observations	14	0
Number of Distinct Observations	52	12
Minimum	4.1	10.68
Maximum	565	32.38
Mean	25.11	18.33
Median	7.15	16.44
SD	77.23	6.975
SE of Mean	10.41	2.014

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Sample 1 >= Mean/Median of Sample 2

Sample 1 Rank Sum W-Stat	1685
Standardized WMW U-Stat	-3.033
Mean (U)	330
SD(U) - Adj ties	61.15
Approximate U-Stat Critical Value (0.05)	-1.645
P-Value (Adjusted for Ties)	0.00121

Conclusion with Alpha = 0.05

Reject H0, Conclude Sample 1 < Sample 2

P-Value < alpha (0.05)

Wilcoxon-Mann-Whitney Sample 1 vs Sample 2 Comparison Test for Uncensor Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	8/14/2014 5:33:19 PM
From File	ProUCLinput_SE+S.xls
Full Precision	OFF
Confidence Coefficient	95%
Substantial Difference	0.000
Selected Null Hypothesis	Sample 1 Mean/Median >= Sample 2 Mean/Median (Form 2)
Alternative Hypothesis	Sample 1 Mean/Median < Sample 2 Mean/Median

Sample 1 Data: LEAD

Sample 2 Data: BKG-Pb

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	55	12
Number of Missing Observations	14	0
Number of Distinct Observations	53	12
Minimum	5.2	17.6
Maximum	4290	51
Mean	209.9	28.34
Median	37.6	22.8
SD	655.9	11.63
SE of Mean	88.44	3.358

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Sample 1 >= Mean/Median of Sample 2

Sample 1 Rank Sum W-Stat	1935
Standardized WMW U-Stat	1.055
Mean (U)	330
SD(U) - Adj ties	61.15
Approximate U-Stat Critical Value (0.05)	-1.645
P-Value (Adjusted for Ties)	0.854

Conclusion with Alpha = 0.05

Do Not Reject H0, Conclude Sample 1 >= Sample 2

P-Value >= alpha (0.05)

Wilcoxon-Mann-Whitney Sample 1 vs Sample 2 Comparison Test for Uncensor Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	8/14/2014 5:34:00 PM
From File	ProUCLinput_SE+S.xls
Full Precision	OFF
Confidence Coefficient	95%
Substantial Difference	0.000
Selected Null Hypothesis	Sample 1 Mean/Median >= Sample 2 Mean/Median (Form 2)
Alternative Hypothesis	Sample 1 Mean/Median < Sample 2 Mean/Median

Sample 1 Data: MANGANESE

Sample 2 Data: BKG-Mn

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	55	12
Number of Missing Observations	14	0
Number of Distinct Observations	51	12
Minimum	69.8	144
Maximum	1510	348.6
Mean	207.8	210.9
Median	106	188.1
SD	284.8	66.64
SE of Mean	38.4	19.24

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Sample 1 >= Mean/Median of Sample 2

Sample 1 Rank Sum W-Stat	1670
Standardized WMW U-Stat	-3.279
Mean (U)	330
SD(U) - Adj ties	61.15
Approximate U-Stat Critical Value (0.05)	-1.645
P-Value (Adjusted for Ties)	5.2151E-4

Conclusion with Alpha = 0.05

Reject H0, Conclude Sample 1 < Sample 2

P-Value < alpha (0.05)

Gehan Sample 1 vs Sample 2 Comparison Hypothesis Test for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	8/14/2014 5:25:35 PM
From File	ProUCLinput_SE+S.xls
Full Precision	OFF
Confidence Coefficient	95%
Selected Null Hypothesis	Sample 1 Mean/Median >= Sample 2 Mean/Median (Form 2)
Alternative Hypothesis	Sample 1 Mean/Median < Sample 2 Mean/Median

Sample 1 Data: MERCURY

Sample 2 Data: BKG-Hg

Raw Statistics

	Sample 1	Sample 2
Number of Valid Data	35	12
Number of Missing Observations	27	0
Number of Non-Detects	2	0
Number of Detect Data	33	12
Minimum Non-Detect	0.013	N/A
Maximum Non-Detect	0.014	N/A
Percent Non-detects	5.71%	0.00%
Minimum Detect	0.004	0.0513
Maximum Detect	0.09	0.217
Mean of Detects	0.0313	0.0946
Median of Detects	0.02	0.082
SD of Detects	0.024	0.0466

Sample 1 vs Sample 2 Gehan Test

H0: Mean of Sample 1 >= Mean of background

Gehan z Test Value	-4.407
Critical z (0.05)	-1.645
P-Value	5.2408E-6

Conclusion with Alpha = 0.05

Reject H0, Conclude Sample 1 < Sample 2

P-Value < alpha (0.05)

Wilcoxon-Mann-Whitney Sample 1 vs Sample 2 Comparison Test for Uncensor Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	8/14/2014 5:35:06 PM
From File	ProUCLinput_SE+S.xls
Full Precision	OFF
Confidence Coefficient	95%
Substantial Difference	0.000
Selected Null Hypothesis	Sample 1 Mean/Median >= Sample 2 Mean/Median (Form 2)
Alternative Hypothesis	Sample 1 Mean/Median < Sample 2 Mean/Median

Sample 1 Data: NICKEL

Sample 2 Data: BKG-Ni

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	55	12
Number of Missing Observations	14	0
Number of Distinct Observations	48	12
Minimum	5.6	8.85
Maximum	35.3	20.95
Mean	11.94	13.33
Median	8.45	12.54
SD	8.238	3.246
SE of Mean	1.111	0.937

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Sample 1 >= Mean/Median of Sample 2

Sample 1 Rank Sum W-Stat	1693
Standardized WMW U-Stat	-2.903
Mean (U)	330
SD(U) - Adj ties	61.15
Approximate U-Stat Critical Value (0.05)	-1.645
P-Value (Adjusted for Ties)	0.00185

Conclusion with Alpha = 0.05

Reject H0, Conclude Sample 1 < Sample 2

P-Value < alpha (0.05)

Wilcoxon-Mann-Whitney Sample 1 vs Sample 2 Comparison Test for Uncensor Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	8/14/2014 5:35:51 PM
From File	ProUCLinput_SE+S.xls
Full Precision	OFF
Confidence Coefficient	95%
Substantial Difference	0.000
Selected Null Hypothesis	Sample 1 Mean/Median >= Sample 2 Mean/Median (Form 2)
Alternative Hypothesis	Sample 1 Mean/Median < Sample 2 Mean/Median

Sample 1 Data: VANADIUM

Sample 2 Data: BKG-V

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	55	12
Number of Missing Observations	14	0
Number of Distinct Observations	47	12
Minimum	8	14.06
Maximum	27.1	35.46
Mean	12.92	22.53
Median	12.2	21.31
SD	4.171	6.457
SE of Mean	0.562	1.864

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Sample 1 >= Mean/Median of Sample 2

Sample 1 Rank Sum W-Stat	1596
Standardized WMW U-Stat	-4.489
Mean (U)	330
SD(U) - Adj ties	61.15
Approximate U-Stat Critical Value (0.05)	-1.645
P-Value (Adjusted for Ties)	3.5779E-6

Conclusion with Alpha = 0.05

Reject H0, Conclude Sample 1 < Sample 2

P-Value < alpha (0.05)

Wilcoxon-Mann-Whitney Sample 1 vs Sample 2 Comparison Test for Uncensor Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	8/14/2014 5:36:31 PM
From File	ProUCLinput_SE+S.xls
Full Precision	OFF
Confidence Coefficient	95%
Substantial Difference	0.000
Selected Null Hypothesis	Sample 1 Mean/Median >= Sample 2 Mean/Median (Form 2)
Alternative Hypothesis	Sample 1 Mean/Median < Sample 2 Mean/Median

Sample 1 Data: HPAH, TOTAL

Sample 2 Data: BKG-HPAH

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	41	12
Number of Missing Observations	21	0
Number of Distinct Observations	37	12
Minimum	0.012	1.694
Maximum	7.045	7.69
Mean	0.848	2.389
Median	0.25	1.85
SD	1.46	1.686
SE of Mean	0.228	0.487

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Sample 1 >= Mean/Median of Sample 2

Sample 1 Rank Sum W-Stat	917
Standardized WMW U-Stat	-4.049
Mean (U)	246
SD(U) - Adj ties	47.05
Approximate U-Stat Critical Value (0.05)	-1.645
P-Value (Adjusted for Ties)	2.5725E-5

Conclusion with Alpha = 0.05

Reject H0, Conclude Sample 1 < Sample 2

P-Value < alpha (0.05)

Gehan Sample 1 vs Sample 2 Comparison Hypothesis Test for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	8/14/2014 5:30:47 PM
From File	ProUCLinput_SE+S.xls
Full Precision	OFF
Confidence Coefficient	95%
Selected Null Hypothesis	Sample 1 Mean/Median >= Sample 2 Mean/Median (Form 2)
Alternative Hypothesis	Sample 1 Mean/Median < Sample 2 Mean/Median

Sample 1 Data: LPAH, TOTAL

Sample 2 Data: BKG-LPAH

Raw Statistics

	Sample 1	Sample 2
Number of Valid Data	41	12
Number of Missing Observations	21	0
Number of Non-Detects	3	1
Number of Detect Data	38	11
Minimum Non-Detect	0.011	0.268
Maximum Non-Detect	0.012	0.268
Percent Non-detects	7.32%	8.33%
Minimum Detect	0.0023	0.258
Maximum Detect	0.865	1.126
Mean of Detects	0.129	0.358
Median of Detects	0.0443	0.278
SD of Detects	0.183	0.256

Sample 1 vs Sample 2 Gehan Test

H0: Mean of Sample 1 >= Mean of background

Gehan z Test Value	-3.749
Critical z (0.05)	-1.645
P-Value	8.8814E-5

Conclusion with Alpha = 0.05

Reject H0, Conclude Sample 1 < Sample 2

P-Value < alpha (0.05)

General Statistics on Uncensored Data

Date/Time of Computation 8/14/2014 3:10:11 PM

User Selected Options

From File ProUCLinput_SE.xls

Full Precision OFF

From File: ProUCLinput_SE.xls

General Statistics for Censored Datasets (with NDs) using Kaplan Meier Method

Variable	NumObs	# Missing	Num Ds	NumNDs	% NDs	Min ND	Max ND	KM Mean	KM Var	KM SD	KM CV
BKG-LPAH	12	0	11	1	8.33%	0.012	0.012	0.0938	0.0552	0.235	2.505

General Statistics for Raw Dataset using Detected Data Only

Variable	NumObs	# Missing	Minimum	Maximum	Mean	Median	Var	SD	MAD/0.675	Skewness	CV
BKG-LPAH	11	0	0.0022	0.87	0.102	0.022	0.0654	0.256	0.0248	3.272	2.506

Percentiles using all Detects (Ds) and Non-Detects (NDs)

Variable	NumObs	# Missing	10%ile	20%ile	25%ile(Q1)	50%ile(Q2)	75%ile(Q3)	80%ile	90%ile	95%ile	99%ile
BKG-LPAH	12	0	0.00287	0.00664	0.0103	0.019	0.0395	0.0582	0.0659	0.428	0.782

General Statistics on Uncensored Full Data

Date/Time of Computation 8/14/2014 2:59:05 PM

User Selected Options

From File ProUCLinput_SE.xls

Full Precision OFF

From File: ProUCLinput_SE.xls

General Statistics for Uncensored Data Sets

Variable	NumObs	# Missing	Minimum	Maximum	Mean	SD	SEM	MAD/0.675	Skewness	Kurtosis	CV
BKG-Sb	12	0	0.03	0.13	0.0703	0.0246	0.0071	0.0163	1.042	2.783	0.35
BKG-As	12	0	1.2	5.7	3.206	1.46	0.422	1.016	0.722	-0.64	0.456
BKG-Co	12	0	2.2	8	4.049	1.536	0.443	1.09	1.628	3.424	0.379
BKG-Cu	12	0	3.7	25.4	11.35	6.975	2.014	7.005	0.91	-0.0301	0.615
BKG-Pb	12	0	6	39.4	16.74	11.63	3.358	7.443	1.191	0.345	0.695
BKG-Mn	12	0	77.4	282	144.3	66.64	19.24	34.17	1.173	0.11	0.462
BKG-Hg	12	0	0.0043	0.17	0.0476	0.0466	0.0135	0.0348	1.787	3.825	0.98
BKG-Ni	12	0	5.6	17.7	10.08	3.246	0.937	2.239	1.138	1.702	0.322
BKG-V	12	0	7.6	29	16.07	6.457	1.864	3.929	1.002	0.642	0.402
BKG-HPAH	12	0	0.0035	6	0.699	1.686	0.487	0.213	3.347	11.39	2.414

Percentiles for Uncensored Data Sets

Variable	NumObs	# Missing	10%ile	20%ile	25%ile(Q1)	50%ile(Q2)	75%ile(Q3)	80%ile	90%ile	95%ile	99%ile
BKG-Sb	12	0	0.0489	0.0576	0.0593	0.069	0.08	0.08	0.089	0.108	0.126
BKG-As	12	0	2.034	2.096	2.168	2.715	3.8	4.68	5.45	5.59	5.678
BKG-Co	12	0	2.902	2.962	3.078	3.645	4.598	4.746	5.34	6.57	7.714
BKG-Cu	12	0	4.693	5.384	6.22	9.46	14.38	14.54	21.26	23.53	25.03
BKG-Pb	12	0	6.424	7.532	8.995	11.2	20.55	21.76	36.42	38.63	39.25
BKG-Mn	12	0	88.11	100.1	100.7	121.5	166.3	210.8	235.1	256.7	276.9
BKG-Hg	12	0	0.0067	0.0144	0.0183	0.035	0.065	0.076	0.08	0.121	0.16
BKG-Ni	12	0	7.207	8.122	8.238	9.285	11.43	12.14	13.3	15.34	17.23
BKG-V	12	0	9.26	11.84	12.5	14.85	17.4	18.5	26.37	28.01	28.8
BKG-HPAH	12	0	0.0129	0.028	0.0473	0.16	0.39	0.566	0.72	3.102	5.42

Shellfish Tissue

Goodness-of-Fit Test Statistics for Data Sets with Non-Detects

User Selected Options

Date/Time of Computation	8/14/2014 11:50:29 AM
From File	Copy of ProUCLinput_Tissue.xls
Full Precision	OFF
Confidence Coefficient	0.95

Site-Sb

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	17	4	13	5	8	61.54%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	8	0.0041	0.0057	0.00463	0.00445	5.0639E-4
Statistics (Detects Only)	5	0.0111	0.0287	0.0168	0.0131	0.0073
Statistics (All: NDs treated as DL value)	13	0.0041	0.0287	0.00932	0.005	0.00749
Statistics (All: NDs treated as DL/2 value)	13	0.00205	0.0287	0.0079	0.0025	0.00848
Statistics (Normal ROS Imputed Data)	13	-0.0128	0.0287	0.00189	-0.00735	0.0132
Statistics (Gamma ROS Imputed Data)	13	0.01	0.0287	0.0126	0.01	0.00545
Statistics (Lognormal ROS Imputed Data)	13	0.00312	0.0287	0.00907	0.00419	0.00767

	K hat	K Star	Theta hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	7.778	3.245	0.00217	-4.15	0.391	-0.0943
Statistics (NDs = DL)	2.306	1.825	0.00404	-4.907	0.668	-0.136
Statistics (NDs = DL/2)	1.152	0.937	0.00686	-5.334	1.004	-0.188
Statistics (Gamma ROS Estimates)	8.732	6.768	0.00145	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-4.968	0.719	-0.145

Normal GOF Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.912	0.856	0.859	0.813

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilk (Detects Only)	0.833	0.762	Data Appear Normal
Lilliefors (Detects Only)	0.296	0.396	Data Appear Normal
Shapiro-Wilk (NDs = DL)	0.738	0.866	Data Not Normal
Lilliefors (NDs = DL)	0.301	0.246	Data Not Normal
Shapiro-Wilk (NDs = DL/2)	0.738	0.866	Data Not Normal
Lilliefors (NDs = DL/2)	0.34	0.246	Data Not Normal
Shapiro-Wilk (Normal ROS Estimates)	0.831	0.866	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.297	0.246	Data Not Normal

Gamma GOF Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.964	0.96	0.973	0.827

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.447	0.68	
Kolmogorov-Smirnov (Detects Only)	0.309	0.358	Detected Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	1.204	0.742	
Kolmogorov-Smirnov (NDs = DL)	0.293	0.239	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	1.471	0.755	
Kolmogorov-Smirnov (NDs = DL/2)	0.342	0.242	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	2.224	0.734	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.324	0.237	Data Not Gamma Distributed

Lognormal GOF Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.943	0.908	0.888	0.916

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilk (Detects Only)	0.885	0.762	Data Appear Lognormal
Lilliefors (Detects Only)	0.282	0.396	Data Appear Lognormal
Shapiro-Wilk (NDs = DL)	0.813	0.866	Data Not Lognormal
Lilliefors (NDs = DL)	0.267	0.246	Data Not Lognormal
Shapiro-Wilk (NDs = DL/2)	0.77	0.866	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.315	0.246	Data Not Lognormal
Shapiro-Wilk (Lognormal ROS Estimates)	0.831	0.866	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.298	0.246	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Goodness-of-Fit Test Statistics for Uncensored Full Data Sets without Non-Detects

User Selected Options

Date/Time of Computation	8/14/2014 11:31:40 AM
From File	Copy of ProUCLinput_Tissue.xls
Full Precision	OFF
Confidence Coefficient	0.95

Site-Al

Raw Statistics

Number of Valid Observations	13
Number of Missing Observations	4
Number of Distinct Observations	13
Minimum	2.21
Maximum	31.5
Mean of Raw Data	12.82
Standard Deviation of Raw Data	12.65
Khat	1.06
Theta hat	12.1
Kstar	0.867
Theta star	14.8
Mean of Log Transformed Data	2.01
Standard Deviation of Log Transformed Data	1.097

Normal GOF Test Results

Correlation Coefficient R	0.864
Shapiro Wilk Test Statistic	0.723
Shapiro Wilk Critical (0.05) Value	0.866
Approximate Shapiro Wilk P Value	9.5577E-4
Lilliefors Test Statistic	0.352
Lilliefors Critical (0.05) Value	0.246

Data not Normal at (0.05) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.879
A-D Test Statistic	1.597
A-D Critical (0.05) Value	0.757
K-S Test Statistic	0.314
K-S Critical(0.05) Value	0.243

Data not Gamma Distributed at (0.05) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.892
Shapiro Wilk Test Statistic	0.771
Shapiro Wilk Critical (0.05) Value	0.866
Approximate Shapiro Wilk P Value	0.00379
Lilliefors Test Statistic	0.27
Lilliefors Critical (0.05) Value	0.246

Data not Lognormal at (0.05) Significance Level

Site-As

Raw Statistics

Number of Valid Observations	13
Number of Missing Observations	4
Number of Distinct Observations	13
Minimum	2.18
Maximum	4.38
Mean of Raw Data	3.224
Standard Deviation of Raw Data	0.612
Khat	29.15
Theta hat	0.111
Kstar	22.47
Theta star	0.143
Mean of Log Transformed Data	1.153
Standard Deviation of Log Transformed Data	0.196

Normal GOF Test Results

Correlation Coefficient R	0.986
Shapiro Wilk Test Statistic	0.972
Shapiro Wilk Critical (0.05) Value	0.866
Approximate Shapiro Wilk P Value	0.881
Lilliefors Test Statistic	0.139
Lilliefors Critical (0.05) Value	0.246

Data appear Normal at (0.05) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.983
A-D Test Statistic	0.288
A-D Critical (0.05) Value	0.733
K-S Test Statistic	0.164
K-S Critical(0.05) Value	0.236

Data appear Gamma Distributed at (0.05) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.981
Shapiro Wilk Test Statistic	0.963
Shapiro Wilk Critical (0.05) Value	0.866
Approximate Shapiro Wilk P Value	0.768
Lilliefors Test Statistic	0.168
Lilliefors Critical (0.05) Value	0.246

Data appear Lognormal at (0.05) Significance Level

Site-Ba

Raw Statistics

Number of Valid Observations	13
Number of Missing Observations	4
Number of Distinct Observations	13
Minimum	0.119
Maximum	0.303
Mean of Raw Data	0.213
Standard Deviation of Raw Data	0.0627
Khat	11.99
Theta hat	0.0178
Kstar	9.274
Theta star	0.023
Mean of Log Transformed Data	-1.588
Standard Deviation of Log Transformed Data	0.307

Normal GOF Test Results

Correlation Coefficient R	0.969
Shapiro Wilk Test Statistic	0.919
Shapiro Wilk Critical (0.05) Value	0.866
Approximate Shapiro Wilk P Value	0.327
Lilliefors Test Statistic	0.172
Lilliefors Critical (0.05) Value	0.246

Data appear Normal at (0.05) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.958
A-D Test Statistic	0.448
A-D Critical (0.05) Value	0.734
K-S Test Statistic	0.187
K-S Critical(0.05) Value	0.237

Data appear Gamma Distributed at (0.05) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.971
Shapiro Wilk Test Statistic	0.926
Shapiro Wilk Critical (0.05) Value	0.866
Approximate Shapiro Wilk P Value	0.38
Lilliefors Test Statistic	0.179
Lilliefors Critical (0.05) Value	0.246

Data appear Lognormal at (0.05) Significance Level

Site-Be

Raw Statistics

Number of Valid Observations	13
Number of Missing Observations	4
Number of Distinct Observations	9
Minimum	0.0017
Maximum	0.0068
Mean of Raw Data	0.00336
Standard Deviation of Raw Data	0.00178
Khat	4.523
Theta hat	7.4324E-4
Kstar	3.53
Theta star	9.5218E-4
Mean of Log Transformed Data	-5.81
Standard Deviation of Log Transformed Data	0.482

Normal GOF Test Results

Correlation Coefficient R	0.899
Shapiro Wilk Test Statistic	0.797
Shapiro Wilk Critical (0.05) Value	0.866
Approximate Shapiro Wilk P Value	0.00668
Lilliefors Test Statistic	0.301
Lilliefors Critical (0.05) Value	0.246

Data not Normal at (0.05) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.943
A-D Test Statistic	1.038
A-D Critical (0.05) Value	0.737
K-S Test Statistic	0.285
K-S Critical(0.05) Value	0.238

Data not Gamma Distributed at (0.05) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.936
Shapiro Wilk Test Statistic	0.859
Shapiro Wilk Critical (0.05) Value	0.866
Approximate Shapiro Wilk P Value	0.0484
Lilliefors Test Statistic	0.262
Lilliefors Critical (0.05) Value	0.246

Data not Lognormal at (0.05) Significance Level

Site-Co

Raw Statistics

Number of Valid Observations	13
Number of Missing Observations	4
Number of Distinct Observations	12
Minimum	0.0632
Maximum	0.279
Mean of Raw Data	0.143
Standard Deviation of Raw Data	0.0487
Khat	10.41
Theta hat	0.0138
Kstar	8.058
Theta star	0.0178
Mean of Log Transformed Data	-1.993
Standard Deviation of Log Transformed Data	0.326

Normal GOF Test Results

Correlation Coefficient R	0.877
Shapiro Wilk Test Statistic	0.808
Shapiro Wilk Critical (0.05) Value	0.866
Approximate Shapiro Wilk P Value	0.00418
Lilliefors Test Statistic	0.298
Lilliefors Critical (0.05) Value	0.246

Data not Normal at (0.05) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.907
A-D Test Statistic	0.836
A-D Critical (0.05) Value	0.734
K-S Test Statistic	0.254

K-S Critical(0.05) Value	0.237

Data not Gamma Distributed at (0.05) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.914
Shapiro Wilk Test Statistic	0.875
Shapiro Wilk Critical (0.05) Value	0.866
Approximate Shapiro Wilk P Value	0.0316
Lilliefors Test Statistic	0.239
Lilliefors Critical (0.05) Value	0.246

Data appear Lognormal at (0.05) Significance Level

Site-Cu

Raw Statistics

Number of Valid Observations	13
Number of Missing Observations	4
Number of Distinct Observations	13
Minimum	0.58
Maximum	1.6
Mean of Raw Data	1.047
Standard Deviation of Raw Data	0.338
Khat	10.19
Theta hat	0.103
Kstar	7.887
Theta star	0.133
Mean of Log Transformed Data	-0.00381
Standard Deviation of Log Transformed Data	0.332

Normal GOF Test Results

Correlation Coefficient R	0.977
Shapiro Wilk Test Statistic	0.937
Shapiro Wilk Critical (0.05) Value	0.866
Approximate Shapiro Wilk P Value	0.517
Lilliefors Test Statistic	0.166
Lilliefors Critical (0.05) Value	0.246

Data appear Normal at (0.05) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.976
A-D Test Statistic	0.324
A-D Critical (0.05) Value	0.734

K-S Test Statistic	0.186
K-S Critical(0.05) Value	0.237

Data appear Gamma Distributed at (0.05) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.982
Shapiro Wilk Test Statistic	0.948
Shapiro Wilk Critical (0.05) Value	0.866
Approximate Shapiro Wilk P Value	0.675
Lilliefors Test Statistic	0.18
Lilliefors Critical (0.05) Value	0.246

Data appear Lognormal at (0.05) Significance Level

Site-Fe

Raw Statistics

Number of Valid Observations	13
Number of Missing Observations	4
Number of Distinct Observations	13
Minimum	7.84
Maximum	148
Mean of Raw Data	43.83
Standard Deviation of Raw Data	46.43
Khat	1.004
Theta hat	43.68
Kstar	0.823
Theta star	53.24
Mean of Log Transformed Data	3.205
Standard Deviation of Log Transformed Data	1.125

Normal GOF Test Results

Correlation Coefficient R	0.879
Shapiro Wilk Test Statistic	0.768
Shapiro Wilk Critical (0.05) Value	0.866
Approximate Shapiro Wilk P Value	0.0026
Lilliefors Test Statistic	0.336
Lilliefors Critical (0.05) Value	0.246

Data not Normal at (0.05) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.955
A-D Test Statistic	1.258

A-D Critical (0.05) Value	0.757
K-S Test Statistic	0.299
K-S Critical(0.05) Value	0.243

Data not Gamma Distributed at (0.05) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.916
Shapiro Wilk Test Statistic	0.817
Shapiro Wilk Critical (0.05) Value	0.866
Approximate Shapiro Wilk P Value	0.0145
Lilliefors Test Statistic	0.251
Lilliefors Critical (0.05) Value	0.246

Data not Lognormal at (0.05) Significance Level

Site-Pb

Raw Statistics

Number of Valid Observations	13
Number of Missing Observations	4
Number of Distinct Observations	13
Minimum	0.06
Maximum	7.26
Mean of Raw Data	1.419
Standard Deviation of Raw Data	2.137
Khat	0.536
Theta hat	2.65
Kstar	0.463
Theta star	3.064
Mean of Log Transformed Data	-0.823
Standard Deviation of Log Transformed Data	1.698

Normal GOF Test Results

Correlation Coefficient R	0.832
Shapiro Wilk Test Statistic	0.702
Shapiro Wilk Critical (0.05) Value	0.866
Approximate Shapiro Wilk P Value	3.3225E-4
Lilliefors Test Statistic	0.283
Lilliefors Critical (0.05) Value	0.246

Data not Normal at (0.05) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.995

A-D Test Statistic	0.621
A-D Critical (0.05) Value	0.787
K-S Test Statistic	0.205
K-S Critical(0.05) Value	0.249

Data appear Gamma Distributed at (0.05) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.965
Shapiro Wilk Test Statistic	0.909
Shapiro Wilk Critical (0.05) Value	0.866
Approximate Shapiro Wilk P Value	0.252
Lilliefors Test Statistic	0.145
Lilliefors Critical (0.05) Value	0.246

Data appear Lognormal at (0.05) Significance Level

Site-Mn

Raw Statistics

Number of Valid Observations	13
Number of Missing Observations	4
Number of Distinct Observations	13
Minimum	1.37
Maximum	7.42
Mean of Raw Data	4.105
Standard Deviation of Raw Data	1.441
Khat	7.605
Theta hat	0.54
Kstar	5.901
Theta star	0.696
Mean of Log Transformed Data	1.345
Standard Deviation of Log Transformed Data	0.408

Normal GOF Test Results

Correlation Coefficient R	0.957
Shapiro Wilk Test Statistic	0.941
Shapiro Wilk Critical (0.05) Value	0.866
Approximate Shapiro Wilk P Value	0.313
Lilliefors Test Statistic	0.199
Lilliefors Critical (0.05) Value	0.246

Data appear Normal at (0.05) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.955
A-D Test Statistic	0.509
A-D Critical (0.05) Value	0.735
K-S Test Statistic	0.183
K-S Critical(0.05) Value	0.237

Data appear Gamma Distributed at (0.05) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.93
Shapiro Wilk Test Statistic	0.89
Shapiro Wilk Critical (0.05) Value	0.866
Approximate Shapiro Wilk P Value	0.0637
Lilliefors Test Statistic	0.212
Lilliefors Critical (0.05) Value	0.246

Data appear Lognormal at (0.05) Significance Level

Site-Hg

Raw Statistics

Number of Valid Observations	13
Number of Missing Observations	4
Number of Distinct Observations	13
Minimum	0.00701
Maximum	0.03
Mean of Raw Data	0.0164
Standard Deviation of Raw Data	0.0072
Khat	5.762
Theta hat	0.00285
Kstar	4.484
Theta star	0.00367
Mean of Log Transformed Data	-4.197
Standard Deviation of Log Transformed Data	0.444

Normal GOF Test Results

Correlation Coefficient R	0.968
Shapiro Wilk Test Statistic	0.926
Shapiro Wilk Critical (0.05) Value	0.866
Approximate Shapiro Wilk P Value	0.346
Lilliefors Test Statistic	0.195
Lilliefors Critical (0.05) Value	0.246

Data appear Normal at (0.05) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.982
A-D Test Statistic	0.28
A-D Critical (0.05) Value	0.736
K-S Test Statistic	0.139
K-S Critical(0.05) Value	0.237

Data appear Gamma Distributed at (0.05) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.988
Shapiro Wilk Test Statistic	0.967
Shapiro Wilk Critical (0.05) Value	0.866
Approximate Shapiro Wilk P Value	0.884
Lilliefors Test Statistic	0.126
Lilliefors Critical (0.05) Value	0.246

Data appear Lognormal at (0.05) Significance Level

Site-Se

Raw Statistics

Number of Valid Observations	13
Number of Missing Observations	4
Number of Distinct Observations	10
Minimum	0.18
Maximum	0.52
Mean of Raw Data	0.372
Standard Deviation of Raw Data	0.134
Khat	6.553
Theta hat	0.0568
Kstar	5.092
Theta star	0.0731
Mean of Log Transformed Data	-1.066
Standard Deviation of Log Transformed Data	0.439

Normal GOF Test Results

Correlation Coefficient R	0.904
Shapiro Wilk Test Statistic	0.794
Shapiro Wilk Critical (0.05) Value	0.866
Approximate Shapiro Wilk P Value	0.00726
Lilliefors Test Statistic	0.274
Lilliefors Critical (0.05) Value	0.246

Data not Normal at (0.05) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.859
A-D Test Statistic	1.527
A-D Critical (0.05) Value	0.735
K-S Test Statistic	0.316
K-S Critical(0.05) Value	0.237

Data not Gamma Distributed at (0.05) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.873
Shapiro Wilk Test Statistic	0.741
Shapiro Wilk Critical (0.05) Value	0.866
Approximate Shapiro Wilk P Value	0.00152
Lilliefors Test Statistic	0.326
Lilliefors Critical (0.05) Value	0.246

Data not Lognormal at (0.05) Significance Level

Site-V

Raw Statistics

Number of Valid Observations	13
Number of Missing Observations	4
Number of Distinct Observations	12
Minimum	0.057
Maximum	0.354
Mean of Raw Data	0.183
Standard Deviation of Raw Data	0.0932
Khat	3.941
Theta hat	0.0464
Kstar	3.083
Theta star	0.0593
Mean of Log Transformed Data	-1.832
Standard Deviation of Log Transformed Data	0.557

Normal GOF Test Results

Correlation Coefficient R	0.965
Shapiro Wilk Test Statistic	0.921
Shapiro Wilk Critical (0.05) Value	0.866
Approximate Shapiro Wilk P Value	0.294
Lilliefors Test Statistic	0.179
Lilliefors Critical (0.05) Value	0.246

Data appear Normal at (0.05) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.971
A-D Test Statistic	0.303
A-D Critical (0.05) Value	0.737
K-S Test Statistic	0.129
K-S Critical(0.05) Value	0.238

Data appear Gamma Distributed at (0.05) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.977
Shapiro Wilk Test Statistic	0.946
Shapiro Wilk Critical (0.05) Value	0.866
Approximate Shapiro Wilk P Value	0.573
Lilliefors Test Statistic	0.154
Lilliefors Critical (0.05) Value	0.246

Data appear Lognormal at (0.05) Significance Level

Site-Zn

Raw Statistics

Number of Valid Observations	13
Number of Missing Observations	4
Number of Distinct Observations	13
Minimum	5.4
Maximum	15.2
Mean of Raw Data	11.08
Standard Deviation of Raw Data	2.8
Khat	14.63
Theta hat	0.757
Kstar	11.31
Theta star	0.98
Mean of Log Transformed Data	2.371
Standard Deviation of Log Transformed Data	0.286

Normal GOF Test Results

Correlation Coefficient R	0.985
Shapiro Wilk Test Statistic	0.969
Shapiro Wilk Critical (0.05) Value	0.866
Approximate Shapiro Wilk P Value	0.859
Lilliefors Test Statistic	0.167
Lilliefors Critical (0.05) Value	0.246

Data appear Normal at (0.05) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.965
A-D Test Statistic	0.338
A-D Critical (0.05) Value	0.734
K-S Test Statistic	0.192
K-S Critical(0.05) Value	0.236

Data appear Gamma Distributed at (0.05) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.954
Shapiro Wilk Test Statistic	0.916
Shapiro Wilk Critical (0.05) Value	0.866
Approximate Shapiro Wilk P Value	0.202
Lilliefors Test Statistic	0.193
Lilliefors Critical (0.05) Value	0.246

Data appear Lognormal at (0.05) Significance Level

Site-PAH

Raw Statistics

Number of Valid Observations	13
Number of Missing Observations	4
Number of Distinct Observations	11
Minimum	0.0027
Maximum	0.36
Mean of Raw Data	0.09
Standard Deviation of Raw Data	0.128
Khat	0.428
Theta hat	0.21
Kstar	0.381
Theta star	0.236
Mean of Log Transformed Data	-3.929
Standard Deviation of Log Transformed Data	1.965

Normal GOF Test Results

Correlation Coefficient R	0.857
Shapiro Wilk Test Statistic	0.726
Shapiro Wilk Critical (0.05) Value	0.866
Approximate Shapiro Wilk P Value	8.2224E-4
Lilliefors Test Statistic	0.358

Lilliefors Critical (0.05) Value	0.246

Data not Normal at (0.05) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.945
A-D Test Statistic	1.385
A-D Critical (0.05) Value	0.804
K-S Test Statistic	0.364
K-S Critical(0.05) Value	0.252

Data not Gamma Distributed at (0.05) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.903
Shapiro Wilk Test Statistic	0.791
Shapiro Wilk Critical (0.05) Value	0.866
Approximate Shapiro Wilk P Value	0.00685
Lilliefors Test Statistic	0.331
Lilliefors Critical (0.05) Value	0.246

Data not Lognormal at (0.05) Significance Level

General Statistics on Uncensored Full Data

Date/Time of Computation 8/19/2014 11:55:30 AM

User Selected Options

From File ProUCLinput_Tissue.xls

Full Precision OFF

From File: ProUCLinput_Tissue.xls

General Statistics for Uncensored Data Sets

Variable	NumObs	# Missing	Minimum	Maximum	Mean	SD	SEM	MAD/0.675	Skewness	Kurtosis	CV
BKG-Al	4	0	6.77	29.4	18.67	9.494	4.747	9.414	-0.331	0.209	0.509
BKG-As	4	0	2.5	3.6	3.285	0.527	0.263	0.104	-1.92	3.707	0.16
BKG-Ba	4	0	0.0974	0.28	0.186	0.0973	0.0487	0.12	0.0334	-5.73	0.524
BKG-Be	4	0	0.0018	0.0035	0.00245	7.3258E-4	3.6629E-4	3.7064E-4	1.465	2.685	0.299
BKG-Co	4	0	0.0646	0.202	0.115	0.0612	0.0306	0.0344	1.452	2.033	0.532
BKG-Cu	4	0	0.92	1.26	1.04	0.152	0.0762	0.0741	1.585	2.546	0.146
BKG-Fe	4	0	19.7	72.3	54.83	24.28	12.14	10.9	-1.616	2.473	0.443
BKG-Pb	4	0	0.148	0.426	0.272	0.115	0.0574	0.083	0.754	1.81	0.422
BKG-Mn	4	0	2.6	7.72	4.75	2.523	1.261	2.498	0.398	-3.731	0.531
BKG-Hg	4	0	0.012	0.0196	0.016	0.0032	0.0016	0.00319	-0.334	0.0846	0.2
BKG-Se	4	0	0.25	0.5	0.398	0.107	0.0533	0.0741	-1.132	1.666	0.268
BKG-V	4	0	0.123	0.179	0.153	0.0236	0.0118	0.0222	-0.507	0.258	0.154
BKG-Zn	4	0	8.69	15.6	12.05	2.907	1.454	3.047	0.178	-0.0872	0.241
BKG-PAH	4	0	0.0056	0.19	0.0647	0.0854	0.0427	0.0307	1.759	3.093	1.321

Percentiles for Uncensored Data Sets

Variable	NumObs	# Missing	10%ile	20%ile	25%ile(Q1)	50%ile(Q2)	75%ile(Q3)	80%ile	90%ile	95%ile	99%ile
BKG-Al	4	0	9.749	12.73	14.22	19.25	23.7	24.84	27.12	28.26	29.17
BKG-As	4	0	2.788	3.076	3.22	3.52	3.585	3.588	3.594	3.597	3.599
BKG-Ba	4	0	0.1	0.103	0.104	0.183	0.264	0.267	0.274	0.277	0.279
BKG-Be	4	0	0.00192	0.00204	0.0021	0.00225	0.0026	0.00278	0.00314	0.00332	0.00346
BKG-Co	4	0	0.0698	0.075	0.0776	0.0965	0.134	0.147	0.175	0.188	0.199
BKG-Cu	4	0	0.932	0.944	0.95	0.99	1.08	1.116	1.188	1.224	1.253
BKG-Fe	4	0	31.07	42.44	48.13	63.65	70.35	70.74	71.52	71.91	72.22
BKG-Pb	4	0	0.18	0.212	0.228	0.258	0.302	0.326	0.376	0.401	0.421
BKG-Mn	4	0	2.633	2.666	2.683	4.34	6.408	6.67	7.195	7.458	7.668
BKG-Hg	4	0	0.013	0.014	0.0145	0.0162	0.0177	0.0181	0.0189	0.0192	0.0195
BKG-Se	4	0	0.295	0.34	0.363	0.42	0.455	0.464	0.482	0.491	0.498
BKG-V	4	0	0.131	0.139	0.143	0.156	0.166	0.169	0.174	0.176	0.178
BKG-Zn	4	0	9.413	10.14	10.5	11.95	13.5	13.92	14.76	15.18	15.52
BKG-PAH	4	0	0.00872	0.0118	0.0134	0.0315	0.0828	0.104	0.147	0.169	0.186

Appendix F

Data Validation Memos

Data Validation Memos

Groundwater

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Data Validation Report

Project:	MRP Site 1 (OU9) Remedial Investigation, NAVSTA Newport, Rhode Island CTO WE06
Laboratory:	Katahdin Analytical Services, Scarborough, Maine
Service Request:	CARR-15
Analyses/Method:	Polycyclic Aromatic Hydrocarbons (GC/MS) Full Scan and SIM / EPA SW-846 Method 8270D
Validation Level:	Limited
Resolution Consultants Project Number:	60250336 SA.DV

Prepared by:	Helen Jones Parry/Resolution Consultants	Completed on: 02/03/2014
Reviewed by:	Constance Lapite/Resolution Consultants	File Name: CARR-15_GW_8270_DVRpt

SUMMARY

The samples listed below were collected by Resolution Consultants from the MRP Site 1 (OU9) Remedial Investigation, NAVSTA Newport, Rhode Island, on December 18, 2013.

Sample ID	Matrix/Sample Type
RBWG12181301	Equipment blank
FDWG12181301	Field Duplicate of OU09 01 MW12
OU09 01 MW01	Ground water
OU09 01 MW01D	Ground water
OU09 01 MW11	Ground water
OU09 01 MW12	Ground water
OU09 01 MW12D	Ground water
OU09 01 MW13	Ground water

The data have been validated in accordance with the project-specific Sampling and Analysis Plan, *Sampling and Analysis Plan, Former Carr Point Shooting Range (MRP Site 1, OU9), Naval Station (NAVSTA) Newport, Rhode Island, Final* (Naval Facilities Engineering Command, Mid-Atlantic, 2013) and the following references:

- *DoD Quality Systems Manual (QMS) for Environmental Laboratories, version 4.2* (DoD EDQW, 2010);
- *USEPA Region 1, EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses* (December 1996);
- *USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review* (June 2008);

- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW846, Method 8270D, Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)* (USEPA, 1996);
- laboratory quality control (QC) limits, as applicable.

The USEPA Region 1 and National Data Validation Functional Guidelines were modified to accommodate the non-CLP methodologies. In the absence of method-specific direction for validation, Resolution Consultants professional judgment was used as appropriate.

REVIEW ELEMENTS

The data were evaluated based on the following parameters (where applicable to the method):

✓ Data completeness (chain-of-custody (COC)/sample integrity
✓ Holding times and sample preservation
✓ Instrument tuning
✗ Initial calibration/continuing calibration verification
✓ Laboratory blanks/equipment blanks
✓ Surrogate spike recoveries
✗ Matrix spike (MS) and/or matrix spike duplicate (MSD) results
✗ Laboratory control sample (LCS)/laboratory control sample duplicate (LCSD) results
✓ Field duplicates
✓ Internal standards
✓ Sample results/reporting issues

The symbol (✓) indicates that no validation qualifiers were applied based on this parameter. NA indicates that the parameter was not included as part of this data set or was not applicable to this validation and therefore not reviewed. The symbol (✗) indicates that a quality control (QC) nonconformance resulted in the qualification of data. Any QC nonconformance that resulted in the qualification of data is discussed below. In addition, nonconformances or other issues that were noted during validation, but did not result in qualification of data, may be discussed for informational purposes only.

The data appear valid as reported and may be used for decision making purposes. Selected data points were estimated, negated, and/or rejected due to nonconformances of certain QC criteria (see discussion below). Qualified sample results are presented in Table 1.

RESULTS

<u>Data Completeness</u>

The data package was reviewed and found to meet acceptance criteria for completeness:

- The COCs were reviewed for completeness of information relevant to the samples and requested analyses, and for signatures indicating transfer of sample custody.
- The laboratory sample login sheet(s) were reviewed for issues potentially affecting sample integrity, including the condition of sample containers upon receipt at the laboratory.
- Completeness of analyses was verified by comparing the reported results to the COC requests.

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Holding Times/Sample Preservation

Sample preservation and preparation/analysis holding times were reviewed for conformance with the QC acceptance criteria.

The QC acceptance criteria were met.

GC/MS Performance Checks

The data were reviewed to ensure that the decafluorotriphenylphosphine (DFTPP) tuning was performed at the correct frequency and that the method acceptance criteria were met. All samples were analyzed within 12 hours of the DFTPP tunes.

Initial Calibration/Continuing Calibration Verification

Calibration data were reviewed for conformance with the QC acceptance criteria to ensure that:

- the initial calibration (ICAL) percent relative standard deviation (%RSD), correlation coefficient (r)/coefficient of determination (r^2), and/or response factor method acceptance criteria were met;
- the initial calibration verification standard (ICV) percent recovery acceptance criteria were met;
- the continuing calibration verification standard (CCV) method percent difference or percent drift (%Ds) and RF acceptance criteria were met; and
- the retention time method acceptance criteria were met.

Nonconformances are summarized in Attachment A in Tables A- 1 and A-2. Data qualification to the analytes associated with the specific ICAL and/or CCV was as follows:

ICAL and CCV Response Factor Nonconformances

Criteria	Actions	
	Detected Results	**Nondetected Results[4]**
SPCCs		
RF<0.050 for N-nitroso-di-n-propylamine; hexachlorocyclopentadiene; 2,4-dinitrophenol; and 4-nitrophenol.	J[1]	UJ[1]
All compounds except SPCCs and Poor Performing Compounds[2]		
RF<0.050	J	R[3]
RF<0.05 but ≥ 0.010 (if low standard response is adequate)	J[1]	UJ[1]
Poor Performing Compounds[2]		
RF< 0.010	J	R
[1]No guidance in NFG, thus Resolution Consultants professional judgment was used.		
[2]As defined in Table 28 of the NFG.		
[3]Resolution Consultants professional judgment may be used to either raise reporting level or to estimate reporting limit if low standard response is adequate.		
[4]Sample results qualified as not detected (U) due to blank contamination are not rejected, but estimated (UJ).		
SPCCs - System Performance Check Compounds as listed in SW-846 Method 8270C		

ICAL Linearity Nonconformances

Criteria	Actions	
	Detected Results	Nondetected
%RSD > 30% for CCCs (acenaphthene, 1,4-dichlorobenzene, hexachlorobutadiene, diphenylamine, di-n-octyl phthalate, fluoranthene, and benzo(a)pyrene; 4-chloro-3-methylphenol, 2,4-dichlorophenol, 2-nitrophenol, phenol, pentachlorophenol, and 2,4,6-trichlorophenol)	J*	UJ*
%RSD > 15% and quantitation based on mean RF	J	UJ
r or r^2 < 0.99 and quantitation based on linear regression	J*	UJ*
* No guidance in NFG, thus Resolution Consultants professional judgment was used		
CCCs - Calibration Check Compounds as listed in SW-846 Method 8270C		

ICV Recovery Nonconformances

Criteria	Actions*	
	Detected Results	Nondetected Results
Recovery > 120	J	UJ
Recovery < 80	J	UJ
* No guidance in NFG, thus Resolution Consultants professional judgment was used		

CCV Linearity Nonconformances

Criteria	Actions	
	Detected Results	Nondetected Results
%D > 20%	J	UJ
%Drift >20%	J*	UJ*
* No guidance in NFG, thus Resolution Consultants professional judgment was used		

Qualified sample results are shown in Table 1.

Laboratory Blanks/Equipment Blanks

Laboratory method blanks and equipment rinsate blanks were evaluated as to whether there were contaminants detected above the method detection limit (MDL).

Data validation qualifications for individual samples are based on the maximum contaminant concentration detected in all associated blanks.

Detected results in blanks are not discussed in this data validation report if the associated results were nondetect or if qualification of sample results was not required.

Surrogate Spike Recoveries

The surrogate recoveries (%Rs) were reviewed for conformance with the QC acceptance criteria.

All QC acceptance criteria were met.

MS/MSD Results

The MS/MSD %Rs and relative percent differences (RPDs) were reviewed for conformance with the QC acceptance criteria.

Nonconformances are summarized in Attachment A in Table A-3. Data qualification to the analytes associated with the specific MS/MSD nonconformances was as follows:

Criteria	Action[1]	
	Detected Compounds	Nondetected Compounds
%R> UL	J	No qualification
10% ≤ %R < LL	J	UJ
%R <10%	J	R
%RPD > UL	J	No qualification

Notes:

1. If a field duplicate sample was also collected for the native sample chosen for MS/MSD analysis, professional judgment is used to apply MS/MSD actions to the corresponding field duplicate sample as well as the native sample.

2. Resolution Consultants professional judgment is used to estimate (UJ) rather the reject (R) sample results previously negated (U) on the basis of blank contamination.

Qualified sample results are shown in Table 1.

LCS/LCSD Results

The LCS/LCSD %Rs and/or relative percent recoveries (RPDs) were reviewed for conformance with the QC acceptance criteria.

Nonconformances are summarized in Attachment A in Table A-4. Data qualification to the analytes associated with the specific LCS %Rs or RPDs was as follows:

Criteria	Action*	
	Detected Compounds	Nondetected Compounds
%R or RPD > UL	J	No qualification
10%≥%R < LL	J	UJ
%R < 10%	J	R
*If the %R of more than half of the analytes are not within limits, then reject (R) nondetects for the analytes with <10% recovery and estimate (J/UJ) all other analyte(s) in the associated samples.		

Qualified sample results are shown in Table 1.

Field Duplicate Results

Field duplicate RPDs were reviewed for conformance with the Resolution Consultants QC criteria of ≤50% for solid matrices and ≤30% for aqueous matrices. These criteria apply if both results were greater than twice the limit of quantitation (LOQ).

All QC acceptance criteria were met and/or qualification of the data was not required.

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Internal Standard Results

The internal standard (IS) recoveries were reviewed for conformance with the QC acceptance criteria.

All QC acceptance criteria were met.

Sample Results/Reporting Issues

All compounds detected at concentrations less than the limit of quantitation (LOQ) but greater than the method detection limit (MDL) were qualified by the laboratory as estimated (J). This "J" qualifier was retained during data validation.

Any sample that was analyzed at a dilution due to high concentrations of target or non-targets was checked to confirm that the results and/or sample specific LODs and LOQs were adjusted accordingly by the laboratory.

QUALIFICATION ACTIONS

Sample results qualified as a result of validation actions are summarized in Table 1. All actions are described above.

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ATTACHMENTS

Attachment A: Nonconformance Summary Tables

Attachment B: Qualifier Codes and Explanations

Attachment C: Reason Codes and Explanations

Table 1 - Data Validation Summary of Qualified Data

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
FDWG12181301	WG	BENZO[B]FLUORANTHENE	0.094	0.094	0.19	UG_L	UJ	c
FDWG12181301	WG	FLUORANTHENE	0.094	0.094	0.19	UG_L	UJ	l
FDWG12181301	WG	PYRENE	0.094	0.094	0.19	UG_L	UJ	l
OU09 01 MW01	WG	BENZO[B]FLUORANTHENE	0.097	0.097	0.19	UG_L	UJ	c
OU09 01 MW01	WG	FLUORANTHENE	0.097	0.097	0.19	UG_L	UJ	l
OU09 01 MW01	WG	PYRENE	0.097	0.097	0.19	UG_L	UJ	l
OU09 01 MW01D	WG	BENZO[B]FLUORANTHENE	0.094	0.094	0.19	UG_L	UJ	c
OU09 01 MW01D	WG	FLUORANTHENE	0.094	0.094	0.19	UG_L	UJ	l
OU09 01 MW01D	WG	PYRENE	0.094	0.094	0.19	UG_L	UJ	l
OU09 01 MW11	WG	BENZO[B]FLUORANTHENE	0.094	0.094	0.19	UG_L	UJ	c
OU09 01 MW11	WG	FLUORANTHENE	0.094	0.094	0.19	UG_L	UJ	l
OU09 01 MW11	WG	PYRENE	0.094	0.094	0.19	UG_L	UJ	l
OU09 01 MW12	WG	BENZO[B]FLUORANTHENE	0.094	0.094	0.19	UG_L	UJ	c
OU09 01 MW12	WG	FLUORANTHENE	0.094	0.094	0.19	UG_L	UJ	l
OU09 01 MW12	WG	PYRENE	0.094	0.094	0.19	UG_L	UJ	l
OU09 01 MW12D	WG	BENZO[B]FLUORANTHENE	0.094	0.094	0.19	UG_L	UJ	c
OU09 01 MW12D	WG	BENZO[A]PYRENE	0.094	0.094	0.19	UG_L	UJ	m
OU09 01 MW12D	WG	BENZO[G,H,I]PERYLENE	0.094	0.094	0.19	UG_L	UJ	m
OU09 01 MW12D	WG	BENZO[K]FLUORANTHENE	0.094	0.094	0.19	UG_L	UJ	m
OU09 01 MW12D	WG	FLUORANTHENE	0.094	0.094	0.19	UG_L	UJ	l
OU09 01 MW12D	WG	PYRENE	0.094	0.094	0.19	UG_L	UJ	l
OU09 01 MW13	WG	BENZO[B]FLUORANTHENE	0.094	0.094	0.19	UG_L	UJ	c
OU09 01 MW13	WG	FLUORANTHENE	0.094	0.094	0.19	UG_L	UJ	l
OU09 01 MW13	WG	PYRENE	0.094	0.094	0.19	UG_L	UJ	l
RBWG12181301	WQ	BENZO[B]FLUORANTHENE	0.099	0.099	0.19	UG_L	UJ	c
RBWG12181301	WQ	FLUORANTHENE	0.099	0.099	0.20	UG_L	UJ	l
RBWG12181301	WQ	PYRENE	0.099	0.099	0.20	UG_L	UJ	l

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Non Conformance Tables

Attachment A

Non Conformance Summary Tables

Table A-1 – Initial Calibration/Continuing Calibration Verification

Calibration	Compound	% Recovery	Lower Limit	Upper Limit	Associated Samples
ICV (G0880)	BENZO[B]FLUORANTHENE	62.0	80	120	FDWG12181301 OU09 01 MW01 OU09 01 MW01D OU09 01 MW11 OU09 01 MW12 OU09 01 MW12D OU09 01 MW13 RBSD12181301 RBWG12181301

Table A-2 – Continuing Calibration Verification

Calibration	Compound	% D/%Drift	RPD Limit	Associated Samples
CCV (G0840)	PYRENE	-23.6	20	NONE
CCV (G0891)	FLUORANTHENE	21.3	20	FDWG12181301 RBWG12181301 OU09 01 MW11
CCV (G0891)	BENZO[A]ANTHRACENE	27.0	20	FDWG12181301 RBWG12181301 OU09 01 MW11

Table A-3 - Matrix Spikes

Sample ID	Compound	MS % Recovery	MSD % Recovery	Lower Limit	Upper Limit	RPD	RPD Limit
OU09 01 MW12D	BENZO[G,H,I]PERYLENE	57.8	62.5	62	106	9	30
OU09 01 MW12D	BENZO[K]FLUORANTHENE	62.0	69.3	68	103	12	30
OU09 01 MW12D	CHRYSENE	95.9	98.7	70	95	4	30
OU09 01 MW12D	BENZO[A]PYRENE	45.9	48.2	63	98	6	30

Table A-4 - Lab Control Samples

LCS ID	Compound	LCS % Recovery	LCSD % Recovery	Lower Limit	Upper Limit	RPD	RPD Limit	Associated Samples
WG136627-2	PYRENE	68	67.5	71	104	1	30	FDWG12181301 OU09 01 MW01 OU09 01 MW01D OU09 01 MW11 OU09 01 MW12 OU09 01 MW12D OU09 01 MW13 RBWG12181301
WG136627-2	FLUORANTHENE	87	78.5	81	109	10	30	FDWG12181301 OU09 01 MW01 OU09 01 MW01D OU09 01 MW11 OU09 01 MW12 OU09 01 MW12D OU09 01 MW13 RBWG12181301

Attachment B

Qualifier Codes and Explanations

Qualifier	Explanation
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
UJ	The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual quantitation limit necessary to accurately and precisely measure the analyte in the sample.
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

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Attachment C

Reason Codes and Explanations

Reason Code	Explanation
be	Equipment blank contamination
bf	Field blank contamination
bl	Laboratory blank contamination
c	Calibration issue
d	Reporting limit raised due to chromatographic interference
fd	Field duplicate RPDs
h	Holding times
i	Internal standard areas
k	Estimated Maximum Possible Concentration (EMPC)
l	LCS or OPR recoveries
lc	Labeled compound recovery
ld	Laboratory duplicate RPDs
lp	Laboratory control sample/laboratory control sample duplicate RPDs
m	Matrix spike recovery
md	Matrix spike/matrix spike duplicate RPDs
nb	Negative laboratory blank contamination
p	Chemical preservation issue
r	Dual column RPD
q	Quantitation issue
s	Surrogate recovery
su	Ion suppression
t	Temperature preservation issue
x	Percent solids
y	Serial dilution results
z	ICS results

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Data Validation Report

Project:	MRP Site 1 (OU9) Remedial Investigation, NAVSTA Newport, Rhode Island CTO WE06	
Laboratory:	Katahdin Analytical Services, Scarborough, Maine	
Service Request:	CARR-15	
Analyses/Method:	EPA SW-846 Methods 6010C, 6020A, 7470A for Metals	
Validation Level:	Limited	
Resolution Consultants Project Number:	60250336 SA.DV	
Prepared by:	Dion Lewis/Resolution Consultants	Completed on: 01/31/2014
Reviewed by:	Waverly Braunstein/Resolution Consultants	File Name: CARR-15_GW_6010C_6020A_7470A_DVRpt

SUMMARY

The samples listed below were collected by Resolution Consultants from the MRP Site 1 (OU9) Remedial Investigation, NAVSTA Newport, Rhode Island, on December 18, 2013.

Sample ID	Matrix/Sample Type
RBWG12181301	Equipment blank
FDWG12181301	Field Duplicate of OU09 01 MW12
OU09 01 MW01	Ground water
OU09 01 MW01D	Ground water
OU09 01 MW11	Ground water
OU09 01 MW12	Ground water
OU09 01 MW12D	Ground water
OU09 01 MW13	Ground water

The data have been validated in accordance with the project-specific Sampling and Analysis Plan, *Sampling and Analysis Plan, Former Carr Point Shooting Range (MRP Site 1, OU9), Naval Station (NAVSTA) Newport, Rhode Island, Final* (Naval Facilities Engineering Command, Mid-Atlantic, 2013) and the following references:

- *DoD Quality Systems Manual (QMS) for Environmental Laboratories, version 4.2* (DoD EDQW, 2010);
- *USEPA Region 1, EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses* (December 1996);
- *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review* (January 2010);
- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW846, Method 6010C, Inductively Coupled Plasma-Atomic Emission Spectrometry* (USEPA, 1996);
- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW846, Method 6020A, Inductively Coupled Plasma-Mass Spectrometry* (USEPA, 1996);
- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW846, Method 7470A, Mercury in Liquid Waste (Manual Cold-Vapor Technique)* (USEPA, 1996);

- laboratory quality control (QC) limits, as applicable.

The USEPA Region 1 and National Data Validation Functional Guidelines were modified to accommodate the non-CLP methodologies. In the absence of method-specific direction for validation, Resolution Consultants professional judgment was used as appropriate.

REVIEW ELEMENTS

The data were evaluated based on the following parameters (where applicable to the method):

✓ Data completeness (chain-of-custody (COC)/sample integrity
✓ Holding times and sample preservation
✗ Laboratory blanks/equipment blanks
✗ Matrix spike (MS) and/or matrix spike duplicate (MSD) results
✓ Laboratory duplicate results
✓ Laboratory control sample (LCS)/laboratory control sample duplicate (LCSD) results
✓ Field duplicates
✓ Sample results/reporting issues

The symbol (✓) indicates that no validation qualifiers were applied based on this parameter. NA indicates that the parameter was not included as part of this data set or was not applicable to this validation and therefore not reviewed. The symbol (✗) indicates that a quality control (QC) nonconformance resulted in the qualification of data. Any QC nonconformance that resulted in the qualification of data is discussed below. In addition, nonconformances or other issues that were noted during validation, but did not result in qualification of data, may be discussed for informational purposes only.

The data appear valid as reported and may be used for decision making purposes. Selected data points were estimated, negated, and/or rejected due to nonconformances of certain QC criteria (see discussion below). Qualified sample results are presented in Table 1.

<u>Data Completeness</u>

The data package was reviewed and found to meet acceptance criteria for completeness:

- The COCs were reviewed for completeness of information relevant to the samples and requested analyses, and for signatures indicating transfer of sample custody.
- The laboratory sample login sheet(s) were reviewed for issues potentially affecting sample integrity, including the condition of sample containers upon receipt at the laboratory.
- Completeness of analyses was verified by comparing the reported results to the COC requests.

<u>Holding Times/Sample Preservation</u>

Sample preservation and preparation/analysis holding times were reviewed for conformance with the QC acceptance criteria.

The QC acceptance criteria were met.

Laboratory Blanks/Equipment Blanks

Laboratory method blanks and equipment rinsate blanks were evaluated as to whether there were contaminants detected above the method detection limit (MDL). Data validation qualifications for individual samples are based on the maximum contaminant concentration detected in all associated blanks.

Method and equipment rinsate results were reviewed for conformance with the QC acceptance criteria. Detected results in blanks are not discussed in this data validation report if the associated results were nondetect or if qualification of sample results was not required.

Nonconformances are summarized in Attachment A in Tables A-1 and A-2. Sample results were qualified as follows:

Blank Type	Blank Result	Sample Result	Action for Samples
PB / EB/ FB (Positive)	> LOQ	≥IDL/MDL but ≤ LOQ	Qualify as nondetect (U) at the LOQ
		>LOQ but < 10x Blank Result	Qualify results as unusable
		≥10x Blank Result	No action
	≥IDL/MDL but ≤LOQ	Nondetect	No action
		≥IDL/MDL but ≤LOQ	Qualify as nondetect (U) at the LOQ
		> LOQ	Use Resolution Consultants professional judgment (see below [1])
PB (Negative)	< (-LOQ)	< 10x LOQ	Qualify positive results <10x LOQ as estimated (J) and nondetects as estimated (UJ)
		≥10x LOQ	No action

[1] Establish an action level (AL) at 5x the blank contamination. If sample result is <AL, qualify the reported result with a U.

Qualified sample results are shown in Table 1.

MS Results

The MS and/or MSD %Rs and/or RPDs were reviewed for conformance with the QC acceptance criteria.

Nonconformances are summarized in Attachment A in Table A-3. Data qualification on the basis of MS and/or MSD nonconformances was as follows:

Qualify Results	%R < 30	80 > %R ≥ 30	%R >120	RPD>20
Detected results	J	J	J	J
Nondetects	R	UJ	Accept	UJ

Notes: MS actions apply to all samples of the same matrix. This qualification will also be applied to the results of all samples within a given area of the site, if deemed appropriate.

1. If the sample result (SR) > 4x the spike concentration (S), no action is taken.

2. If any analyte does not meet the %R criteria and a post digestion spike (PDS) analysis was performed, use professional judgment to assess the results. Refer to the National Functional Guidelines (NFG) 2010 for recommended actions.

3. If either the MS or MSD does not meet %R criteria, qualify all associated samples.

Laboratory Duplicate Results

The laboratory duplicate relative percent differences (RPDs) were reviewed for conformance.

The laboratory duplicate RPDs were within the QC acceptance criteria.

LCS/LCSD Results

The LCS/LCSD %Rs and/or RPDs were reviewed for conformance with the QC acceptance criteria.

The LCS and LCSD %Rs and RPDs were within the QC acceptance criteria.

Field Duplicate Results

Field duplicate RPDs were reviewed for conformance with the Resolution Consultants QC acceptance criterion of ≤50% for solid matrices and ≤30% for aqueous matrices. This criterion applies if both results were greater than 5 times the limit of quantitation (LOQ).

All field duplicate precision criteria were met.

Sample Results/Reporting Issues

All analytes detected at concentrations less than the limit of quantitation (LOQ) but greater than the method detection limit (MDL) were qualified by the laboratory as estimated (J). This "J" qualifier was retained during data validation.

QUALIFICATION ACTIONS

Sample results qualified as a result of validation actions are summarized in Table 1. All actions are described above.

ATTACHMENTS

Attachment A: Nonconformance Summary Tables

Attachment B: Qualifier Codes and Explanations

Attachment C: Reason Codes and Explanations

Table 1 - Data Validation Summary of Qualified Data

Sample ID	Matrix	Compound	Result	QL	Units	Validation Qualifiers	Validation Reason
OU09 01 MW11	WG	IRON	100	100	UG_L	U	bl
OU09 01 MW12D	WG	ALUMINUM	26.5	300	UG_L	U	bl
RBWG12181301	WQ	IRON	100	100	UG_L	U	bl
FDWG12181301	WG	ANTIMONY	0.18	1.0	UG_L	U	be
FDWG12181301	WG	ARSENIC	5.6	5.6	UG_L	U	be
FDWG12181301	WG	BARIUM	18.3	1.0	UG_L	J	m
FDWG12181301	WG	VANADIUM	0.81	5.0	UG_L	U	be
FDWG12181301	WG	CHROMIUM, TOTAL	5.0	5.0	UG_L	U	bl
FDWG12181301	WG	LEAD	5.0	5.0	UG_L	U	bl
FDWG12181301	WG	NICKEL	2.0	2.0	UG_L	U	bl
FDWG12181301	WG	ZINC	10	10	UG_L	U	bl
OU09 01 MW01	WG	ANTIMONY	0.08	1.0	UG_L	U	be
OU09 01 MW01	WG	ARSENIC	5.2	5.2	UG_L	U	be
OU09 01 MW01	WG	BARIUM	22.0	1.0	UG_L	J	m
OU09 01 MW01	WG	VANADIUM	2.2	5.0	UG_L	U	be
OU09 01 MW01	WG	CHROMIUM, TOTAL	5.0	5.0	UG_L	U	bl
OU09 01 MW01	WG	LEAD	5.0	5.0	UG_L	U	bl
OU09 01 MW01	WG	ZINC	28.6	28.6	UG_L	U	bl
OU09 01 MW01D	WG	BARIUM	23.2	1.0	UG_L	J	m
OU09 01 MW01D	WG	VANADIUM	1.6	5.0	UG_L	U	be
OU09 01 MW01D	WG	CHROMIUM, TOTAL	4.0	4.0	UG_L	U	bl
OU09 01 MW01D	WG	COPPER	3.5	3.5	UG_L	U	bl
OU09 01 MW01D	WG	LEAD	0.50	0.50	UG_L	U	bl
OU09 01 MW01D	WG	ZINC	21.4	21.4	UG_L	U	bl
OU09 01 MW11	WG	ANTIMONY	0.08	1.0	UG_L	U	be
OU09 01 MW11	WG	ARSENIC	2.6	5.0	UG_L	U	be
OU09 01 MW11	WG	BARIUM	14.8	1.0	UG_L	J	m
OU09 01 MW11	WG	VANADIUM	1.2	5.0	UG_L	U	be
OU09 01 MW11	WG	CHROMIUM, TOTAL	5.0	5.0	UG_L	U	bl
OU09 01 MW11	WG	COPPER	3.3	3.3	UG_L	U	bl
OU09 01 MW11	WG	LEAD	5.0	5.0	UG_L	U	bl
OU09 01 MW11	WG	NICKEL	2.0	2.0	UG_L	U	bl
OU09 01 MW11	WG	ZINC	10	10	UG_L	U	bl
OU09 01 MW12	WG	ANTIMONY	0.08	1.0	UG_L	U	be
OU09 01 MW12	WG	ARSENIC	5.8	5.8	UG_L	U	be
OU09 01 MW12	WG	BARIUM	18.4	1.0	UG_L	J	m
OU09 01 MW12	WG	CHROMIUM, TOTAL	5.0	5.0	UG_L	U	bl
OU09 01 MW12	WG	LEAD	5.0	5.0	UG_L	U	bl
OU09 01 MW12	WG	NICKEL	2.1	2.1	UG_L	U	bl
OU09 01 MW12	WG	ZINC	10	10	UG_L	U	bl
OU09 01 MW12D	WG	ANTIMONY	0.07	1.0	UG_L	U	be

Sample ID	Matrix	Compound	Result	QL	Units	Validation Qualifiers	Validation Reason
OU09 01 MW12D	WG	ARSENIC	5.1	5.1	UG_L	U	be
OU09 01 MW12D	WG	BARIUM	23.1	1.0	UG_L	J	m
OU09 01 MW12D	WG	VANADIUM	1.2	5.0	UG_L	U	be
OU09 01 MW12D	WG	CHROMIUM, TOTAL	5.0	5.0	UG_L	U	bl
OU09 01 MW12D	WG	COPPER	3.0	3.0	UG_L	U	bl
OU09 01 MW12D	WG	LEAD	5.0	5.0	UG_L	U	bl
OU09 01 MW12D	WG	ZINC	12.4	12.4	UG_L	U	bl
OU09 01 MW13	WG	ANTIMONY	0.17	1.0	UG_L	U	be
OU09 01 MW13	WG	ARSENIC	3.0	5.0	UG_L	U	be
OU09 01 MW13	WG	BARIUM	42.6	1.0	UG_L	J	m
OU09 01 MW13	WG	VANADIUM	2.3	5.0	UG_L	U	be
OU09 01 MW13	WG	CHROMIUM, TOTAL	5.0	5.0	UG_L	U	bl
OU09 01 MW13	WG	COPPER	3.0	3.0	UG_L	U	bl
OU09 01 MW13	WG	LEAD	5.0	5.0	UG_L	U	bl
OU09 01 MW13	WG	NICKEL	2.9	2.9	UG_L	U	bl
OU09 01 MW13	WG	ZINC	10	10	UG_L	U	bl
RBWG12181301	WQ	BARIUM	2.0	2.0	UG_L	U	bl
RBWG12181301	WQ	MANGANESE	2.0	2.0	UG_L	U	bl
RBWG12181301	WQ	CHROMIUM, TOTAL	5.0	5.0	UG_L	U	bl
RBWG12181301	WQ	LEAD	5.0	5.0	UG_L	U	bl
RBWG12181301	WQ	NICKEL	2.0	2.0	UG_L	U	bl
RBWG12181301	WQ	ZINC	10	10	UG_L	U	bl

Attachment A

Non Conformance Summary Tables

Table A-1 Lab Blanks

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
PBWGL23ICW3	ALUMINUM	18.630	100	300	UG_L	OU09 01 MW12D
PBWGL23ICW3	SODIUM	36.910	500	1000	UG_L	OU09 01 MW12D
PBWHA06ICW1	IRON	5.459	80	100	UG_L	FDWG12181301 OU09 01 MW01 OU09 01 MW01D OU09 01 MW11 OU09 01 MW12 OU09 01 MW13 RBWG12181301
PBWHA06IMW1	BARIUM	0.497	1.0	2.0	UG_L	FDWG12181301 OU09 01 MW01 OU09 01 MW01D OU09 01 MW11 OU09 01 MW12 OU09 01 MW12D OU09 01 MW13 RBWG12181301
PBWHA06IMW1	MANGANESE	0.438	1.0	2.0	UG_L	FDWG12181301 OU09 01 MW01 OU09 01 MW01D OU09 01 MW11 OU09 01 MW12 OU09 01 MW12D OU09 01 MW13 RBWG12181301
PBWHA06IMW1	SELENIUM	0.190	3.0	5.0	UG_L	OU09 01 MW01D OU09 01 MW11 OU09 01 MW13 RBWG12181301
PBWHA10IMW1	CHROMIUM, TOTAL	0.916	4.0	5.0	UG_L	FDWG12181301 OU09 01 MW01 OU09 01 MW01D OU09 01 MW11 OU09 01 MW12 OU09 01 MW12D OU09 01 MW13 RBWG12181301
PBWHA10IMW1	COPPER	1.504	2.0	3.0	UG_L	FDWG12181301 OU09 01 MW01 OU09 01 MW01D OU09 01 MW11 OU09 01 MW12 OU09 01 MW12D OU09 01 MW13 RBWG12181301
PBWHA10IMW1	LEAD	0.957	0.50	5.0	UG_L	FDWG12181301 OU09 01 MW01 OU09 01 MW01D OU09 01 MW11 OU09 01 MW12 OU09 01 MW12D OU09 01 MW13 RBWG12181301

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
PBWHA10IMW1	NICKEL	0.622	1.2	2.0	UG_L	FDWG12181301 OU09 01 MW01 OU09 01 MW01D OU09 01 MW11 OU09 01 MW12 OU09 01 MW12D OU09 01 MW13 RBWG12181301
PBWHA10IMW1	ZINC	8.160	8.0	10	UG_L	FDWG12181301 OU09 01 MW01 OU09 01 MW01D OU09 01 MW11 OU09 01 MW12 OU09 01 MW12D OU09 01 MW13 RBWG12181301

Table A-2 Field Blanks

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
RBWG12181301	IRON	11.4	80	100	UG_L	
RBWG12181301	ANTIMONY	0.09	0.50	1.0	UG_L	
RBWG12181301	ARSENIC	2.5	4.0	5.0	UG_L	
RBWG12181301	BARIUM	0.41	1.0	2.0	UG_L	
RBWG12181301	CHROMIUM, TOTAL	1.4	4.0	5.0	UG_L	
RBWG12181301	COPPER	9.0	2.0	3.0	UG_L	
RBWG12181301	LEAD	1.6	0.50	5.0	UG_L	
RBWG12181301	MANGANESE	0.47	1.0	2.0	UG_L	
RBWG12181301	NICKEL	0.56	1.2	2.0	UG_L	
RBWG12181301	SELENIUM	0.59	3.0	5.0	UG_L	
RBWG12181301	VANADIUM	1.3	4.0	5.0	UG_L	
RBWG12181301	ZINC	7.0	8.0	10	UG_L	

Table A-3 Matrix Spikes

Sample ID	Compound	MS % Recovery	MSD % Recovery	Lower Limit	Upper Limit	RPD	RPD Limit
OU09 01 MW12D	BARIUM	124.7	OK	80	120	OK	20

Attachment B

Qualifier Codes and Explanations

Qualifier	Explanation
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
UJ	The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual quantitation limit necessary to accurately and precisely measure the analyte in the sample.
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

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Attachment C

Reason Codes and Explanations

Reason Code	Explanation
be	Equipment blank contamination
bf	Field blank contamination
bl	Laboratory blank contamination
c	Calibration issue
d	Reporting limit raised due to chromatographic interference
fd	Field duplicate RPDs
h	Holding times
i	Internal standard areas
k	Estimated Maximum Possible Concentration (EMPC)
l	LCS recoveries
lc	Labeled compound recovery
ld	Laboratory duplicate RPDs
lp	Laboratory control sample/laboratory control sample duplicate RPDs
m	Matrix spike recovery
md	Matrix spike/matrix spike duplicate RPDs
nb	Negative laboratory blank contamination
p	Chemical preservation issue
r	Dual column RPD
q	Quantitation issue
s	Surrogate recovery
su	Ion suppression
t	Temperature preservation issue
x	Percent solids
y	Serial dilution results
z	ICS results

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Data Validation Report

Project:	MRP Site 1 (OU9) Remedial Investigation, NAVSTA Newport, Rhode Island CTO WE06
Laboratory:	Katahdin Analytical Services, Scarborough, Maine
Service Request:	CARR-15
Analyses/Method:	EPA SW-846 Methods 7196A for Hexavalent Chromium
Validation Level:	Limited
Resolution Consultants Project Number:	60250336 SA.DV
Prepared by:	Dion Lewis/Resolution Consultants — Completed on: 02/03/2014
Reviewed by:	Waverly Braunstein, Kristin Rutherford/Resolution Consultants — File Name: CARR-15_GW_7196A_DVRpt

SUMMARY

The samples listed below were collected by Resolution Consultants from the MRP Site 1 (OU9) Remedial Investigation, NAVSTA Newport, Rhode Island, on December 18, 2013.

Sample ID	Matrix/Sample Type
RBWG12181301	Equipment blank
FDWG12181301	Field Duplicate of OU09 01 MW12
OU09 01 MW12	Groundwater
OU09 01 MW12D	Groundwater
OU09 01 MW13	Groundwater

The data have been validated in accordance with the project-specific Sampling and Analysis Plan, *Sampling and Analysis Plan, Former Carr Point Shooting Range (MRP Site 1, OU9), Naval Station (NAVSTA) Newport, Rhode Island, Final* (Naval Facilities Engineering Command, Mid-Atlantic, 2013) and the following references:

- *DoD Quality Systems Manual (QMS) for Environmental Laboratories, version 4.2* (DoD EDQW, 2010);
- *USEPA Region 1, EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses* (December 1996);
- *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review* (January 2010);
- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW846, Method 7196A, Chromium, Hexavalent (Colorimetric)* (USEPA, 1996);
- laboratory quality control (QC) limits, as applicable.

The USEPA Region 1 and National Data Validation Functional Guidelines were modified to accommodate the non-CLP methodologies. In the absence of method-specific direction for validation, Resolution Consultants professional judgment was used as appropriate.

REVIEW ELEMENTS

The data were evaluated based on the following parameters (where applicable to the method):

✓ Data completeness (chain-of-custody (COC)/sample integrity
✓ Holding times and sample preservation
✓ Initial Calibration/Continuing Calibration Verification
✓ Laboratory blanks/equipment blanks
✓ Matrix spike (MS) results
NA Post Digestion Spike
✓ Laboratory duplicate results
✓ Laboratory control sample (LCS) results
✓ Field duplicates
✓ Sample results/reporting issues

The symbol (✓) indicates that no validation qualifiers were applied based on this parameter. NA indicates that the parameter was not included as part of this data set or was not applicable to this validation and therefore not reviewed. The symbol (✗) indicates that a quality control (QC) nonconformance resulted in the qualification of data. Any QC nonconformance that resulted in the qualification of data is discussed below. In addition, nonconformances or other issues that were noted during validation, but did not result in qualification of data, may be discussed for informational purposes only.

The data appear valid as reported and may be used for decision making purposes. There were no results qualified on the basis of this data review.

RESULTS

Data Completeness

The data package was reviewed and found to meet acceptance criteria for completeness:

- The COCs were reviewed for completeness of information relevant to the samples and requested analyses, and for signatures indicating transfer of sample custody.
- The laboratory sample login sheet(s) were reviewed for issues potentially affecting sample integrity, including the condition of sample containers upon receipt at the laboratory.
- Completeness of analyses was verified by comparing the reported results to the COC requests.

Holding Times/Sample Preservation

Sample preservation and preparation/analysis holding times were reviewed for conformance with the QC acceptance criteria.

The QC acceptance criteria were met.

Initial Calibration/Continuing Calibration Verification

Calibration data were reviewed for conformance with the QC acceptance criteria to ensure that:

- all criteria were met for the calibration curves
- the initial calibration verification (ICV) percent recovery (%R) criteria were met; and
- the continuing calibration verification standard (CCV) method percent difference (%Ds) were met.

The QC acceptance criteria were met.

Laboratory Blanks/Equipment Blanks

Laboratory method blanks and equipment rinsate blanks were evaluated as to whether there were contaminants detected above the method detection limit (MDL). Data validation qualifications for individual samples are based on the maximum contaminant concentration detected in all associated blanks.

Method and equipment rinsate results were reviewed for conformance with the QC acceptance criteria. Detected results in blanks are not discussed in this data validation report if the associated results were nondetect or if qualification of sample results was not required.

The QC acceptance criteria were met and/or qualification of the sample results was not required.

MS Results

Sample OU09 01 MW12D was selected for the matrix spike analysis and used for supporting data quality recommendations. The soluble matrix spike (MS) and matrix spike duplicate (MSD) recoveries were both 0% which did not meet quality control (QC) criteria of 75-125%R and were less than 50%. Non-conformances are presented in Table A-1.

Results of the field analysis of pH, ORP, and ferrous iron were reviewed to determine whether the sample matrix was the cause of poor spike recovery. Sample pH is 6.55, ORP is -311 mV, and ferrous iron concentration is above the calibration range of the instrument (> 3.3 mg/L); all of which indicate that the sample is reducing. In a reducing matrix, the hexavalent chromium matrix spike would be reduced to trivalent chromium and would not be recovered. Therefore, data are not qualified as a result of the poor MS/MSD recoveries.

Laboratory Duplicate Results

The laboratory duplicate relative percent differences (RPDs) were reviewed for conformance.

The laboratory duplicate RPDs were within the QC acceptance criteria.

LCS Results

The LCS %Rs were reviewed for conformance with the QC acceptance criteria.

The LCS %Rs were within the QC acceptance criteria.

Field Duplicate Results

Field duplicate RPDs were reviewed for conformance with the Resolution Consultants QC acceptance criterion of ≤50% for solid matrices and ≤30% for aqueous matrices. This criterion applies if both results were greater than 5 times the limit of quantitation (LOQ).

All field duplicate precision criteria were met

QUALIFICATION ACTIONS

No sample results were qualified as a result of this data review.

ATTACHMENTS

Attachment A: Nonconformance Summary Tables

Attachment A

Non Conformance Summary Tables

Table A-1 Matrix Spikes

Sample ID	Compound	MS % Recovery	MSD % Recovery	Lower Limit	Upper Limit	RPD	RPD Limit
OU09 01 MW12D	CHROMIUM VI	0	0	85	115	0	20

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Data Validation Report

Project:	MRP Site 1 (OU9) Remedial Investigation, NAVSTA Newport, Rhode Island CTO WE06
Laboratory:	Katahdin Analytical Services, Scarborough, Maine
Service Request:	CARR-15
Analyses/Method:	EPA Method 9056 for Anions, SM 2320B for Alkalinity, and 2520B for Salinity
Validation Level:	Limited
Resolution Consultants Project Number:	60250336 SA.DV

Prepared by:	Dion Lewis/Resolution Consultants	Completed on: 02/12/2014
Reviewed by:	Waverly Braunstein/Resolution Consultants	File Name: CARR-15_GW_9056_2320B_2520B_DVRpt

SUMMARY

The samples listed below were collected by Resolution Consultants from the MRP Site 1 (OU9) Remedial Investigation, NAVSTA Newport, Rhode Island, on December 18, 2013.

Sample ID	Matrix/Sample Type	Method
RBWG12181301	Equipment blank	2520B/Salinity
FDWG12181301	Field Duplicate of OU09 01 MW12	9056/Anions, 2320B/Alkalinity, 2520B/Salinity
OU09 01 MW01	Ground water	9056/Anions, 2320B/Alkalinity, 2520B/Salinity
OU09 01 MW01D	Ground water	9056/Anions, 2320B/Alkalinity, 2520B/Salinity
OU09 01 MW12	Ground water	9056/Anions, 2320B/Alkalinity, 2520B/Salinity
OU09 01 MW12D	Ground water	9056/Anions, 2320B/Alkalinity, 2520B/Salinity
OU09 01 MW13	Ground water	9056/Anions, 2320B/Alkalinity, 2520B/Salinity

The data have been validated in accordance with the project-specific Sampling and Analysis Plan, *Sampling and Analysis Plan, Former Carr Point Shooting Range (MRP Site 1, OU9), Naval Station (NAVSTA) Newport, Rhode Island, Final* (Naval Facilities Engineering Command, Mid-Atlantic, 2013) and the following references:

- *DoD Quality Systems Manual (QMS) for Environmental Laboratories, version 4.2* (DoD EDQW, 2010);
- *USEPA Region 1, EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses* (December 1996);
- *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review* (January 2010);

- laboratory quality control (QC) limits, as applicable.

The USEPA Region 1 and National Data Validation Functional Guidelines were modified to accommodate the non-CLP methodologies. In the absence of method-specific direction for validation, Resolution Consultants professional judgment was used as appropriate.

REVIEW ELEMENTS

The data were evaluated based on the following parameters (where applicable to the method):

✓ Data completeness (chain-of-custody (COC)/sample integrity
✓ Holding times and sample preservation
✓ Laboratory blanks/equipment blanks
✗ Matrix spike (MS) results
✓ Laboratory duplicate results
✓ Laboratory control sample (LCS) results
✓ Field duplicates
✓ Sample results/reporting issues

The symbol (✓) indicates that no validation qualifiers were applied based on this parameter. NA indicates that the parameter was not included as part of this data set or was not applicable to this validation and therefore not reviewed. The symbol (✗) indicates that a quality control (QC) nonconformance resulted in the qualification of data. Any QC nonconformance that resulted in the qualification of data is discussed below. In addition, nonconformances or other issues that were noted during validation, but did not result in qualification of data, may be discussed for informational purposes only.

The data appear valid as reported and may be used for decision making purposes. Selected data points were estimated, negated, and/or rejected due to nonconformances of certain QC criteria (see discussion below). Qualified sample results are presented in Table 1.

Data Completeness

The data package was reviewed and found to meet acceptance criteria for completeness:

- The COCs were reviewed for completeness of information relevant to the samples and requested analyses, and for signatures indicating transfer of sample custody.

- The laboratory sample login sheet(s) were reviewed for issues potentially affecting sample integrity, including the condition of sample containers upon receipt at the laboratory.

- Completeness of analyses was verified by comparing the reported results to the COC requests.

Holding Times/Sample Preservation

Sample preservation and preparation/analysis holding times were reviewed for conformance with the QC acceptance criteria.

The QC acceptance criteria were met.

Laboratory Blanks/Equipment Blanks

Method and equipment rinsate results were reviewed for conformance with the QC acceptance criteria. Detected results in blanks are not discussed in this data validation report if the associated results were nondetect or if qualification of sample results was not required.

The QC acceptance criteria were met and/or qualification of the sample results was not required.

MS Results

Sample OU09 01 MW12D was selected for the matrix spike analysis and used for supporting data quality recommendations. The PO_4 matrix spike (MS) and matrix spike duplicate (MSD) recoveries were 35% and 40%, respectively, which did not meet quality control (QC) criteria of 75-125%R. All other parameters were within the specified QC range as applicable.

Since the PO_4 MS/MSD recoveries were less than 75% all of the PO_4 results were qualified (J) as estimates.

Laboratory Duplicate Results

The laboratory duplicate RPDs were within the QC acceptance criteria.

LCS Results

LCS and/or LCSD criteria were met and/or qualification of the data was not required.

Field Duplicate Results

Field duplicate RPDs were reviewed for conformance with the Resolution Consultants QC acceptance criterion of $\leq$30% for aqueous matrices. This criterion applies if both results were greater than 5 times the limit of quantitation (LOQ).

All field duplicate precision criteria were met

QUALIFICATION ACTIONS

Sample results qualified as a result of validation actions are summarized in Table 1. All actions are described above.

ATTACHMENTS

Attachment A: Nonconformance Summary Tables

Attachment B: Qualifier Codes and Explanations

Attachment C: Reason Codes and Explanations

Table 1 - Data Validation Summary of Qualified Data

Sample ID	Matrix	Compound	Result	RDL	Units	Validation Qualifiers	Validation Reason
FDWG12181301	WG	Phosphate	0.050U	0.050	MG_L	UJ	m
OU09 01 MW01	WG	Phosphate	0.050U	0.050	MG_L	UJ	m
OU09 01 MW01D	WG	Phosphate	0.050U	0.050	MG_L	UJ	m
OU09 01 MW12	WG	Phosphate	0.050U	0.050	MG_L	UJ	m
OU09 01 MW12D	WG	Phosphate	0.050U	0.050	MG_L	UJ	m
OU09 01 MW13	WG	Phosphate	0.050U	0.050	MG_L	UJ	m

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Attachment A

Non Conformance Summary Tables

Table A-1 Matrix Spikes

Sample ID	Compound	MS % Recovery	MSD % Recovery	Lower Limit	Upper Limit	RPD	RPD Limit
OU09 01 MW12D	Ortho-Phosphate	35	40	75	125	13	20

Attachment B

Qualifier Codes and Explanations

Qualifier	Explanation
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
UJ	The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual quantitation limit necessary to accurately and precisely measure the analyte in the sample.
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

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Attachment C

Reason Codes and Explanations

Reason Code	Explanation
be	Equipment blank contamination
bf	Field blank contamination
bl	Laboratory blank contamination
c	Calibration issue
d	Reporting limit raised due to chromatographic interference
fd	Field duplicate RPDs
h	Holding times
i	Internal standard areas
k	Estimated Maximum Possible Concentration (EMPC)
l	LCS recoveries
lc	Labeled compound recovery
ld	Laboratory duplicate RPDs
lp	Laboratory control sample/laboratory control sample duplicate RPDs
m	Matrix spike recovery
md	Matrix spike/matrix spike duplicate RPDs
nb	Negative laboratory blank contamination
p	Chemical preservation issue
r	Dual column RPD
q	Quantitation issue
s	Surrogate recovery
su	Ion suppression
t	Temperature preservation issue
x	Percent solids
y	Serial dilution results
z	ICS results

Data Validation Memos

Sediment

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Data Validation Report

Project:	MRP Site 1 (OU9) Remedial Investigation, NAVSTA Newport, Rhode Island CTO WE06
Laboratory:	Katahdin Analytical Services, Scarborough, Maine
Service Request:	CARR-1, CARR-7, CARR-12, and CARR-14
Analyses/Method:	EPA SW-846 Method 8260B and 8260B-SIM for Volatile Organic Compounds (GC/MS)
Validation Level:	Limited
Resolution Consultants Project Number:	60250336 SA.DV

Prepared by:	Kristin Rutherford/Resolution Consultants	Completed on: 03/25/2014
Reviewed by:	Constance Lapite/Resolution Consultants	File Name: CARR-1,7,12,14_SE_VOC_DVRpt

SUMMARY

The samples listed below were collected by Resolution Consultants from MRP Site 1 (OU9), NAVSTA, Newport, Rhode Island on December 3, 11, 12, 13, 17, and 18, 2013.

Sample ID	Matrix/Sample Type
RB-01_120313	Equipment blank
RBSD 121113 01	Equipment blank
RBSD12181301	Equipment blank
FDSD12131302	Field Duplicate of BSBG SD303 0012
FDSD12121302	Field Duplicate of BSBG SD305 0012
BSBG SD302 0012	Sediment
BSBG SD303 0012	Sediment
BSBG SD304 0012	Sediment
BSBG SD305 0012	Sediment
BSBG SD306 0012	Sediment
BSBG SD307 0012	Sediment
BSBG SD308 0012	Sediment
TBSD12121301	Trip Blank

The data have been validated in accordance with the project-specific Sampling and Analysis Plan, *Sampling and Analysis Plan, Former Carr Point Shooting Range (MRP Site 1, OU9), Naval Station (NAVSTA) Newport, Rhode Island, Final* (Naval Facilities Engineering Command, Mid-Atlantic, 2013) and the following references:

- *DoD Quality Systems Manual (QMS) for Environmental Laboratories, version 4.2* (DoD EDQW, 2010);
- *USEPA Region 1, EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses* (December 1996);
- *USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review* (June 2008);
- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW846, Method 8260B, Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry* (USEPA, 1996);
- laboratory quality control (QC) limits, as applicable.

The USEPA Region 1 and National Data Validation Functional Guidelines were modified to accommodate the non-CLP methodologies. In the absence of method-specific direction for validation, Resolution Consultants professional judgment was used as appropriate.

REVIEW ELEMENTS

The data were evaluated based on the following parameters (where applicable to the method):

✓	Data completeness (chain-of-custody (COC)/sample integrity
✓	Holding times and sample preservation
✓	GC/MS performance checks
✗	Initial calibration/continuing calibration verification
✓	Laboratory blanks/trip blanks/equipment blanks
✗	Surrogate spike recoveries
✗	Matrix spike (MS) and/or matrix spike duplicate (MSD) results
✗	Laboratory control sample (LCS)/laboratory control sample duplicate (LCSD) results
✓	Field duplicates
✗	Internal standards
✓	Sample results/reporting issues

The symbol (✓) indicates that no validation qualifiers were applied based on this parameter. NA indicates that the parameter was not included as part of this data set or was not applicable to this validation and therefore not reviewed. The symbol (✗) indicates that a QC nonconformance resulted in the qualification of data. Any QC nonconformance that resulted in the qualification of data is discussed below. In addition, nonconformances or other issues that were noted during validation, but did not result in qualification of data, may be discussed for informational purposes only.

The data appear valid as reported and may be used for decision making purposes. Selected data points were qualified as estimated, negated, and/or rejected due to nonconformances of certain QC criteria (see discussion below). Qualified sample results are presented in Table 1.

RESULTS

Data Completeness

The data package was reviewed and found to meet acceptance criteria for completeness:

- The COCs were reviewed for completeness of information relevant to the samples and requested analyses, and for signatures indicating transfer of sample custody.
- The laboratory sample login sheet(s) were reviewed for issues potentially affecting sample integrity, including the condition of sample containers upon receipt at the laboratory.
- Completeness of analyses was verified by comparing the reported results to the COC requests.

Due to a laboratory error, the samples in SDG CARR-7 were not logged in for VOC-SIM analysis. The missing data were reported from the VOC full-scan analysis with elevated limits of quantitation. No qualifications were required.

Holding Times/Sample Preservation

Sample preservation and preparation/analysis holding times were reviewed for conformance with the QC acceptance criteria.

Samples in CARR-14 were received at 0.7°C, which is outside the criteria of 4°C ± 2°C. Since the samples were received in good condition on ice, no qualifications were required.

GC/MS Performance Checks

The data were reviewed to ensure that the 4-bromofluorobenzene (BFB) tuning was performed at the correct frequency and that the method acceptance criteria were met. All samples were analyzed within 12 hours of the BFB tunes.

Initial Calibration/Continuing Calibration Verification

Calibration data were reviewed for conformance with the QC acceptance criteria to ensure that:

- the initial calibration (ICAL) percent relative standard deviation (%RSD), correlation coefficient (r)/coefficient of determination (r^2), and/or response factor method acceptance criteria were met;
- the initial calibration verification standard (ICV) percent recovery acceptance criteria were met;
- the continuing calibration verification standard (CCV) method percent difference or percent drift (%Ds) and RF acceptance criteria were met; and
- the retention time method acceptance criteria were met.

Nonconformances are summarized in Attachment A in Tables A-1a and A-1b. Data qualification to the analytes associated with the specific ICAL and/or CCV was as follows:

ICAL and CCV Response Factor Nonconformances:

Criteria	Actions	
	Detected Results	Nondetected Results
SPCCs		
RF <0.10 for chloromethane, 1,1-dichloroethane, and bromoform or RF<0.30 for chlorobenzene and 1,1,2,2-tetrachloroethane	J[1]	UJ[1]
All compounds except SPCCs and Poor Performing Compounds[2]		
RF <0.05	J	R[3]
RF <0.05 but > 0.01 (if low standard response is adequate)	J[1]	UJ[1]
Poor Performing Compounds[2]		
RF <0.01	J	R
[1] No guidance in NFG, thus Resolution Consultants professional judgment was used.		
[2]As defined in Table 15 of the NFG.		
[3] Resolution Consultants professional judgment may be used to either raise reporting level or to estimate reporting limit if low standard response is adequate.		
Sample results qualified as not detected (U) due to blank contamination are not rejected, but estimated (UJ).		
SPCCs - System Performance Check Compounds		

ICAL Linearity Nonconfomances:

Criteria	Actions	
	Detected Results	Nondetected
%RSD > 30% for CCCs (1,1-dichloroethene, toluene, chloroform, ethylbenzene, 1,2-dichloropropane, vinyl chloride)	J*	UJ*
%RSD > 15% and quantitation based on mean RF	J	UJ
r or r^2 < 0.99 and quantitation based on linear regression	J*	UJ*
* No guidance in NFG, thus Resolution Consultants professional judgment was used		
CCCs - Calibration Check Compounds		

ICV Recovery Nonconfomances:

Criteria	Actions*	
	Detected Results	Nondetected Results
Recovery > 120	J	UJ
Recovery < 80	J	UJ
* No guidance in NFG, thus Resolution Consultants professional judgment was used		

CCV Linearity Nonconfomances:

Criteria	Actions	
	Detected Results	Nondetected Results
%D > 20%	J	UJ
%Drift	J*	UJ*
* No guidance in NFG, thus Resolution Consultants professional judgment was used		

Qualified sample results are shown in Table 1.

Laboratory Blanks/Equipment Blanks/Trip Blanks

Laboratory method blanks, equipment rinsate and trip blanks were evaluated as to whether there were contaminants detected above the method detection limit (MDL).

Data validation qualifications for individual samples are based on the maximum contaminant concentration detected in all associated blanks.

Detected results in blanks are not discussed in this data validation report if the associated results were nondetect or if qualification of sample results was not required.

The QC acceptance criteria were met and/or qualification of the sample results was not required. There were no detected target analytes reported in trip blank sample (TBSD12121301). Toluene was detected in rinsate blank sample RB-01_120313, and toluene and chloroform were detected in rinsate blank samples RBSD12111301 and RBSD12181301. Since the associated samples were nondetect for these compounds, no qualifications were required.

Surrogate Spike Recoveries

The surrogate recoveries (%Rs) were reviewed for conformance with the QC acceptance criteria.

Nonconformances are summarized in Attachment A in Table A-2: Data qualification on the basis of surrogate recovery nonconformances was as follows:

Criteria	Action	
	Detected Compounds	Nondetected Compounds
%R > Upper Limit (UL)	J	No qualification
10% ≤%R < Lower Limit (LL)	J	UJ
%R < 10%	J	R

Qualified sample results are shown in Table 1.

MS/MSD Results

The MS/MSD %Rs and relative percent differences (RPDs) were reviewed for conformance with the QC acceptance criteria.

Nonconformances are summarized in Attachment A in Table A-3. Data qualification to the analytes associated with the specific MS/MSD nonconformances was as follows:

Criteria	Action	
	Detected Compounds	Nondetected Compounds
%R>UL	J	No qualification
10% ≤ %R < LL	J	UJ
%R <10% (see note 1)	J	R*
RPD >UL	J	No qualification
Note: Actions are applied to the native unspiked sample only (see note 2) *When the native sample concentration is >4X the concentration of the spike added (based on Region I criteria), evaluate the MS, MSD, and native sample with regards to %RSD rather than %R (Resolution Consultants professional judgment).		

1. Resolution Consultants professional judgment is used to estimate (UJ) rather the reject (R) sample results previously negated (U) on the basis of blank contamination.
2. If a field duplicate sample was also collected for the native sample chosen for MS/MSD analysis, professional judgment is used to apply MS/MSD actions to the corresponding field duplicate sample as well as the native sample.

Qualified sample results are shown in Table 1.

LCS/LCSD Results

The LCS/LCSD %Rs and/or relative percent recoveries (RPDs) were reviewed for conformance with the QC acceptance criteria.

Nonconformances are summarized in Attachment A in Table A-4. Data qualification to the analytes associated with the specific LCS %Rs or RPDs was as follows:

Criteria[1]	**Action**	
	Detected Compounds	**Nondetected Compounds**
%R or RPD > UL	J	No qualification
%R < LL	J	UJ
%R < 10% (see note 1)	J	R
(LL = lower limit, UL = upper limit)		
Notes: 1. Resolution Consultants professional judgment is used to estimate (UJ) rather reject sample results previously negated (U) on the basis of blank contamination.		

Qualified sample results are shown in Table 1.

Field Duplicate Results

Field duplicate RPDs were reviewed for conformance with the Resolution Consultants QC criteria of ≤50% for solid matrices and ≤30% for aqueous matrices. These criteria apply if both results were greater than two times the limit of quantitation (LOQ).

All QC acceptance criteria were met.

Internal Standard Results

The internal standard (IS) recoveries were reviewed for conformance with the QC acceptance criteria.

Nonconformances are summarized in Attachment A in Table A-5. Data qualification to the analytes associated with the specific IS on the basis of IS recoveries was as follows:

Sample IS area compared to CCV and CCV IS area compared to ICAL			
Qualify results	**≤ 20%**	**≥ 20% and <50%**	**> 200%**
Positive Results	J	J	J
Nondetected Results	R	UJ	A

Qualified sample results are shown in Table 1.

Sample Results/Reporting Issues

All compounds detected at concentrations less than the limit of quantitation (LOQ) but greater than the MDL were qualified by the laboratory as estimated (J). This "J" qualifier was retained during data validation.

Any sample that was analyzed at a dilution because of high concentrations of target or non-targets was checked to confirm that the results and/or sample-specific LOQs and LODs were adjusted accordingly by the laboratory.

LOQs were elevated for carbon disulfide for sample RBSD12111301, and for ethylbenzene, m&p-xylenes, o-xylene, and xylenes (total) for sample BSBG SD302 0012; because results were reported from the full scan analysis.

The percent solids data were reviewed to ensure that NFG 2008 specified criteria were met. All percent solids criteria were met.

QUALIFICATION ACTIONS

Sample results qualified as a result of validation actions are summarized in Table 1. All actions are described above.

ATTACHMENTS

Attachment A: Nonconformance Summary Tables

Attachment B: Qualifier Codes and Explanations

Attachment C: Reason Codes and Explanations

Table 1 - Data Validation Summary of Qualified Data

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
BSBG SD302 0012	SE	1,1,1,2-TETRACHLOROETHANE	3.0	3.0	6.0	UG_KG	UJ	m
BSBG SD302 0012	SE	1,1,2,2-TETRACHLOROETHANE	3.0	3.0	6.0	UG_KG	UJ	i
BSBG SD302 0012	SE	1,2,3-TRICHLOROBENZENE	3.0	3.0	6.0	UG_KG	UJ	m,i
BSBG SD302 0012	SE	1,2,3-TRICHLOROPROPANE	3.0	3.0	6.0	UG_KG	UJ	i
BSBG SD302 0012	SE	1,2,4-TRICHLOROBENZENE	3.0	3.0	6.0	UG_KG	UJ	m,i
BSBG SD302 0012	SE	1,2,4-TRIMETHYLBENZENE	3.0	3.0	6.0	UG_KG	UJ	i
BSBG SD302 0012	SE	1,2-DIBROMO-3-CHLOROPROPANE	3.0	3.0	6.0	UG_KG	UJ	i
BSBG SD302 0012	SE	1,2-DICHLOROBENZENE	3.0	3.0	6.0	UG_KG	UJ	i
BSBG SD302 0012	SE	1,3,5-TRIMETHYLBENZENE	3.0	3.0	6.0	UG_KG	UJ	i
BSBG SD302 0012	SE	1,3-DICHLOROBENZENE	3.0	3.0	6.0	UG_KG	UJ	i
BSBG SD302 0012	SE	1,4-DICHLOROBENZENE	3.0	3.0	6.0	UG_KG	UJ	i
BSBG SD302 0012	SE	2-BUTANONE	20	15	30	UG_KG	J	s
BSBG SD302 0012	SE	2-CHLOROTOLUENE	3.0	3.0	6.0	UG_KG	UJ	i
BSBG SD302 0012	SE	4-CHLOROTOLUENE	3.0	3.0	6.0	UG_KG	UJ	i
BSBG SD302 0012	SE	ACETONE	120	15	30	UG_KG	J	c,m,s
BSBG SD302 0012	SE	BROMOBENZENE	3.0	3.0	6.0	UG_KG	UJ	i
BSBG SD302 0012	SE	BROMOFORM	3.0	3.0	6.0	UG_KG	UJ	m
BSBG SD302 0012	SE	CARBON DISULFIDE	15	3.0	6.0	UG_KG	J	s
BSBG SD302 0012	SE	CHLOROETHANE	6.0	6.0	12	UG_KG	UJ	c
BSBG SD302 0012	SE	CIS-1,3-DICHLOROPROPENE	3.0	3.0	6.0	UG_KG	UJ	m
BSBG SD302 0012	SE	HEXACHLOROBUTADIENE	3.0	3.0	6.0	UG_KG	UJ	m,i
BSBG SD302 0012	SE	ISOPROPYLBENZENE	3.0	3.0	6.0	UG_KG	UJ	i
BSBG SD302 0012	SE	N-BUTYLBENZENE	3.0	3.0	6.0	UG_KG	UJ	i
BSBG SD302 0012	SE	PROPYLBENZENE	3.0	3.0	6.0	UG_KG	UJ	i
BSBG SD302 0012	SE	SEC-BUTYLBENZENE	3.0	3.0	6.0	UG_KG	UJ	i
BSBG SD302 0012	SE	TERT-BUTANOL	15	15	30	UG_KG	UJ	c
BSBG SD302 0012	SE	TERT-BUTYLBENZENE	3.0	3.0	6.0	UG_KG	UJ	i
BSBG SD302 0012	SE	TRANS-1,3-DICHLOROPROPENE	3.0	3.0	6.0	UG_KG	UJ	m
BSBG SD303 0012	SE	1,1,1,2-TETRACHLOROETHANE	2.3	2.3	4.6	UG_KG	UJ	s
BSBG SD303 0012	SE	1,1,1-TRICHLOROETHANE	2.3	2.3	4.6	UG_KG	UJ	s
BSBG SD303 0012	SE	1,1,2,2-TETRACHLOROETHANE	2.3	2.3	4.6	UG_KG	UJ	s
BSBG SD303 0012	SE	1,1,2-TRICHLOROETHANE	2.3	2.3	4.6	UG_KG	UJ	s
BSBG SD303 0012	SE	1,1-DICHLOROETHANE	2.3	2.3	4.6	UG_KG	UJ	s
BSBG SD303 0012	SE	1,1-DICHLOROETHENE	2.3	2.3	4.6	UG_KG	UJ	s
BSBG SD303 0012	SE	1,1-DICHLOROPROPENE	2.3	2.3	4.6	UG_KG	UJ	s
BSBG SD303 0012	SE	1,2,3-TRICHLOROBENZENE	2.3	2.3	4.6	UG_KG	UJ	s
BSBG SD303 0012	SE	1,2,3-TRICHLOROPROPANE	2.3	2.3	4.6	UG_KG	UJ	s

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
BSBG SD303 0012	SE	1,2,4-TRICHLOROBENZENE	2.3	2.3	4.6	UG_KG	UJ	s
BSBG SD303 0012	SE	1,2,4-TRIMETHYLBENZENE	2.3	2.3	4.6	UG_KG	UJ	s
BSBG SD303 0012	SE	1,2-DIBROMO-3-CHLOROPROPANE	2.3	2.3	4.6	UG_KG	UJ	c,s
BSBG SD303 0012	SE	1,2-DIBROMOETHANE	2.3	2.3	4.6	UG_KG	UJ	c,s
BSBG SD303 0012	SE	1,2-DICHLOROBENZENE	2.3	2.3	4.6	UG_KG	UJ	s
BSBG SD303 0012	SE	1,2-DICHLOROETHANE	2.3	2.3	4.6	UG_KG	UJ	s
BSBG SD303 0012	SE	1,2-DICHLOROETHENE, TOTAL	4.6	4.6	9.1	UG_KG	UJ	s
BSBG SD303 0012	SE	1,2-DICHLOROPROPANE	2.3	2.3	4.6	UG_KG	UJ	s
BSBG SD303 0012	SE	1,3,5-TRIMETHYLBENZENE	2.3	2.3	4.6	UG_KG	UJ	s
BSBG SD303 0012	SE	1,3-DICHLOROBENZENE	2.3	2.3	4.6	UG_KG	UJ	s
BSBG SD303 0012	SE	1,3-DICHLOROPROPANE	2.3	2.3	4.6	UG_KG	UJ	s
BSBG SD303 0012	SE	1,4-DICHLOROBENZENE	2.3	2.3	4.6	UG_KG	UJ	s
BSBG SD303 0012	SE	2,2-DICHLOROPROPANE	2.3	2.3	4.6	UG_KG	UJ	s
BSBG SD303 0012	SE	2-BUTANONE	11	11	23	UG_KG	UJ	s
BSBG SD303 0012	SE	2-CHLOROTOLUENE	2.3	2.3	4.6	UG_KG	UJ	s
BSBG SD303 0012	SE	2-HEXANONE	11	11	23	UG_KG	UJ	s
BSBG SD303 0012	SE	4-CHLOROTOLUENE	2.3	2.3	4.6	UG_KG	UJ	s
BSBG SD303 0012	SE	4-ISOPROPYLTOLUENE	2.3	2.3	4.6	UG_KG	UJ	s
BSBG SD303 0012	SE	4-METHYL-2-PENTANONE	11	11	23	UG_KG	UJ	s
BSBG SD303 0012	SE	ACETONE	11	11	23	UG_KG	UJ	c,s
BSBG SD303 0012	SE	BENZENE	2.3	2.3	4.6	UG_KG	UJ	s
BSBG SD303 0012	SE	BROMOBENZENE	2.3	2.3	4.6	UG_KG	UJ	s
BSBG SD303 0012	SE	BROMOCHLOROMETHANE	2.3	2.3	4.6	UG_KG	UJ	s
BSBG SD303 0012	SE	BROMODICHLOROMETHANE	2.3	2.3	4.6	UG_KG	UJ	s
BSBG SD303 0012	SE	BROMOFORM	2.3	2.3	4.6	UG_KG	UJ	s
BSBG SD303 0012	SE	BROMOMETHANE	4.6	4.6	9.1	UG_KG	UJ	s
BSBG SD303 0012	SE	CARBON DISULFIDE	2.3	2.3	4.6	UG_KG	UJ	s
BSBG SD303 0012	SE	CARBON TETRACHLORIDE	2.3	2.3	4.6	UG_KG	UJ	s
BSBG SD303 0012	SE	CHLOROBENZENE	2.3	2.3	4.6	UG_KG	UJ	s
BSBG SD303 0012	SE	CHLOROETHANE	4.6	4.6	9.1	UG_KG	UJ	s
BSBG SD303 0012	SE	CHLOROFORM	2.3	2.3	4.6	UG_KG	UJ	s
BSBG SD303 0012	SE	CHLOROMETHANE	4.6	4.6	9.1	UG_KG	UJ	s
BSBG SD303 0012	SE	CIS-1,2-DICHLOROETHENE	2.3	2.3	4.6	UG_KG	UJ	s
BSBG SD303 0012	SE	CIS-1,3-DICHLOROPROPENE	2.3	2.3	4.6	UG_KG	UJ	s
BSBG SD303 0012	SE	DIBROMOCHLOROMETHANE	2.3	2.3	4.6	UG_KG	UJ	s
BSBG SD303 0012	SE	DIBROMOMETHANE	2.3	2.3	4.6	UG_KG	UJ	s
BSBG SD303 0012	SE	DICHLORODIFLUOROMETHANE	4.6	4.6	9.1	UG_KG	UJ	c,s
BSBG SD303 0012	SE	ETHYLBENZENE	2.3	2.3	4.6	UG_KG	UJ	s
BSBG SD303 0012	SE	HEXACHLOROBUTADIENE	2.3	2.3	4.6	UG_KG	UJ	s

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
BSBG SD303 0012	SE	ISOPROPYLBENZENE	2.3	2.3	4.6	UG_KG	UJ	s
BSBG SD303 0012	SE	M- AND P-XYLENE	4.6	4.6	9.1	UG_KG	UJ	s
BSBG SD303 0012	SE	METHYL CYCLOHEXANE	2.3	2.3	4.6	UG_KG	UJ	s
BSBG SD303 0012	SE	METHYL TERT-BUTYL ETHER	2.3	2.3	4.6	UG_KG	UJ	c,s
BSBG SD303 0012	SE	METHYLENE CHLORIDE	11	11	23	UG_KG	UJ	s
BSBG SD303 0012	SE	N-BUTYLBENZENE	2.3	2.3	4.6	UG_KG	UJ	s
BSBG SD303 0012	SE	O-XYLENE	2.3	2.3	4.6	UG_KG	UJ	s
BSBG SD303 0012	SE	PROPYLBENZENE	2.3	2.3	4.6	UG_KG	UJ	s
BSBG SD303 0012	SE	SEC-BUTYLBENZENE	2.3	2.3	4.6	UG_KG	UJ	s
BSBG SD303 0012	SE	STYRENE	2.3	2.3	4.6	UG_KG	UJ	s
BSBG SD303 0012	SE	TERT-BUTANOL	11	11	23	UG_KG	UJ	s
BSBG SD303 0012	SE	TERT-BUTYLBENZENE	2.3	2.3	4.6	UG_KG	UJ	s
BSBG SD303 0012	SE	TETRACHLOROETHENE	2.3	2.3	4.6	UG_KG	UJ	s
BSBG SD303 0012	SE	TOLUENE	2.3	2.3	4.6	UG_KG	UJ	s
BSBG SD303 0012	SE	TRANS-1,2-DICHLOROETHENE	2.3	2.3	4.6	UG_KG	UJ	s
BSBG SD303 0012	SE	TRANS-1,3-DICHLOROPROPENE	2.3	2.3	4.6	UG_KG	UJ	s
BSBG SD303 0012	SE	TRICHLOROETHENE	2.3	2.3	4.6	UG_KG	UJ	s
BSBG SD303 0012	SE	TRICHLOROFLUOROMETHANE	4.6	4.6	9.1	UG_KG	UJ	s
BSBG SD303 0012	SE	VINYL CHLORIDE	4.6	4.6	9.1	UG_KG	UJ	s
BSBG SD303 0012	SE	XYLENES, TOTAL	6.8	6.8	14	UG_KG	UJ	s
BSBG SD303 0012	SE	CARBON DISULFIDE	0.25	0.25	0.50	UG_KG	UJ	i,c
BSBG SD303 0012	SE	ETHYLBENZENE	0.25	0.25	0.50	UG_KG	UJ	i
BSBG SD303 0012	SE	M- AND P-XYLENE	0.50	0.50	1.0	UG_KG	UJ	i
BSBG SD303 0012	SE	O-XYLENE	0.25	0.25	0.50	UG_KG	UJ	i
BSBG SD303 0012	SE	XYLENES, TOTAL	0.75	0.75	1.5	UG_KG	UJ	i
BSBG SD304 0012	SE	1,2-DIBROMO-3-CHLOROPROPANE	2.4	2.4	4.8	UG_KG	UJ	c
BSBG SD304 0012	SE	1,2-DIBROMOETHANE	2.4	2.4	4.8	UG_KG	UJ	c
BSBG SD304 0012	SE	ACETONE	12	12	24	UG_KG	UJ	c
BSBG SD304 0012	SE	DICHLORODIFLUOROMETHANE	4.8	4.8	9.5	UG_KG	UJ	c
BSBG SD304 0012	SE	METHYL TERT-BUTYL ETHER	2.4	2.4	4.8	UG_KG	UJ	c
BSBG SD304 0012	SE	CARBON DISULFIDE	0.25	0.25	0.50	UG_KG	UJ	c
BSBG SD305 0012	SE	1,1,1,2-TETRACHLOROETHANE	4.5	4.5	9.0	UG_KG	UJ	s
BSBG SD305 0012	SE	1,1,1-TRICHLOROETHANE	4.5	4.5	9.0	UG_KG	UJ	s
BSBG SD305 0012	SE	1,1,2,2-TETRACHLOROETHANE	4.5	4.5	9.0	UG_KG	UJ	s
BSBG SD305 0012	SE	1,1,2-TRICHLOROETHANE	4.5	4.5	9.0	UG_KG	UJ	s
BSBG SD305 0012	SE	1,1-DICHLOROETHANE	4.5	4.5	9.0	UG_KG	UJ	s
BSBG SD305 0012	SE	1,1-DICHLOROETHENE	4.5	4.5	9.0	UG_KG	UJ	s
BSBG SD305 0012	SE	1,1-DICHLOROPROPENE	4.5	4.5	9.0	UG_KG	UJ	s
BSBG SD305 0012	SE	1,2,3-TRICHLOROBENZENE	4.5	4.5	9.0	UG_KG	UJ	s

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
BSBG SD305 0012	SE	1,2,3-TRICHLOROPROPANE	4.5	4.5	9.0	UG_KG	UJ	s
BSBG SD305 0012	SE	1,2,4-TRICHLOROBENZENE	4.5	4.5	9.0	UG_KG	UJ	s
BSBG SD305 0012	SE	1,2,4-TRIMETHYLBENZENE	4.5	4.5	9.0	UG_KG	UJ	s
BSBG SD305 0012	SE	1,2-DIBROMO-3-CHLOROPROPANE	4.5	4.5	9.0	UG_KG	UJ	c,s
BSBG SD305 0012	SE	1,2-DIBROMOETHANE	4.5	4.5	9.0	UG_KG	UJ	c,s
BSBG SD305 0012	SE	1,2-DICHLOROBENZENE	4.5	4.5	9.0	UG_KG	UJ	s
BSBG SD305 0012	SE	1,2-DICHLOROETHANE	4.5	4.5	9.0	UG_KG	UJ	s
BSBG SD305 0012	SE	1,2-DICHLOROETHENE, TOTAL	9.0	9.0	18	UG_KG	UJ	s
BSBG SD305 0012	SE	1,2-DICHLOROPROPANE	4.5	4.5	9.0	UG_KG	UJ	s
BSBG SD305 0012	SE	1,3,5-TRIMETHYLBENZENE	4.5	4.5	9.0	UG_KG	UJ	s
BSBG SD305 0012	SE	1,3-DICHLOROBENZENE	4.5	4.5	9.0	UG_KG	UJ	s
BSBG SD305 0012	SE	1,3-DICHLOROPROPANE	4.5	4.5	9.0	UG_KG	UJ	s
BSBG SD305 0012	SE	1,4-DICHLOROBENZENE	4.5	4.5	9.0	UG_KG	UJ	s
BSBG SD305 0012	SE	2,2-DICHLOROPROPANE	4.5	4.5	9.0	UG_KG	UJ	s
BSBG SD305 0012	SE	2-BUTANONE	22	22	45	UG_KG	UJ	s
BSBG SD305 0012	SE	2-CHLOROTOLUENE	4.5	4.5	9.0	UG_KG	UJ	s
BSBG SD305 0012	SE	2-HEXANONE	22	22	45	UG_KG	UJ	s
BSBG SD305 0012	SE	4-CHLOROTOLUENE	4.5	4.5	9.0	UG_KG	UJ	s
BSBG SD305 0012	SE	4-ISOPROPYLTOLUENE	4.5	4.5	9.0	UG_KG	UJ	s
BSBG SD305 0012	SE	4-METHYL-2-PENTANONE	22	22	45	UG_KG	UJ	s
BSBG SD305 0012	SE	ACETONE	120	22	45	UG_KG	J	c,s,l
BSBG SD305 0012	SE	BENZENE	4.5	4.5	9.0	UG_KG	UJ	s
BSBG SD305 0012	SE	BROMOBENZENE	4.5	4.5	9.0	UG_KG	UJ	s
BSBG SD305 0012	SE	BROMOCHLOROMETHANE	4.5	4.5	9.0	UG_KG	UJ	s
BSBG SD305 0012	SE	BROMODICHLOROMETHANE	4.5	4.5	9.0	UG_KG	UJ	s
BSBG SD305 0012	SE	BROMOFORM	4.5	4.5	9.0	UG_KG	UJ	s
BSBG SD305 0012	SE	BROMOMETHANE	9.0	9.0	18	UG_KG	UJ	s
BSBG SD305 0012	SE	CARBON DISULFIDE	16	4.5	9.0	UG_KG	J	s
BSBG SD305 0012	SE	CARBON TETRACHLORIDE	4.5	4.5	9.0	UG_KG	UJ	s
BSBG SD305 0012	SE	CHLOROBENZENE	4.5	4.5	9.0	UG_KG	UJ	s
BSBG SD305 0012	SE	CHLOROETHANE	9.0	9.0	18	UG_KG	UJ	s
BSBG SD305 0012	SE	CHLOROFORM	4.5	4.5	9.0	UG_KG	UJ	s
BSBG SD305 0012	SE	CHLOROMETHANE	9.0	9.0	18	UG_KG	UJ	s
BSBG SD305 0012	SE	CIS-1,2-DICHLOROETHENE	4.5	4.5	9.0	UG_KG	UJ	s
BSBG SD305 0012	SE	CIS-1,3-DICHLOROPROPENE	4.5	4.5	9.0	UG_KG	UJ	s
BSBG SD305 0012	SE	DIBROMOCHLOROMETHANE	4.5	4.5	9.0	UG_KG	UJ	s
BSBG SD305 0012	SE	DIBROMOMETHANE	4.5	4.5	9.0	UG_KG	UJ	s
BSBG SD305 0012	SE	DICHLORODIFLUOROMETHANE	9.0	9.0	18	UG_KG	UJ	c,s
BSBG SD305 0012	SE	HEXACHLOROBUTADIENE	4.5	4.5	9.0	UG_KG	UJ	s

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
BSBG SD305 0012	SE	ISOPROPYLBENZENE	4.5	4.5	9.0	UG_KG	UJ	s
BSBG SD305 0012	SE	METHYL CYCLOHEXANE	4.5	4.5	9.0	UG_KG	UJ	s
BSBG SD305 0012	SE	METHYL TERT-BUTYL ETHER	4.5	4.5	9.0	UG_KG	UJ	c,s
BSBG SD305 0012	SE	METHYLENE CHLORIDE	22	22	45	UG_KG	UJ	s
BSBG SD305 0012	SE	N-BUTYLBENZENE	4.5	4.5	9.0	UG_KG	UJ	s
BSBG SD305 0012	SE	PROPYLBENZENE	4.5	4.5	9.0	UG_KG	UJ	s
BSBG SD305 0012	SE	SEC-BUTYLBENZENE	4.5	4.5	9.0	UG_KG	UJ	s
BSBG SD305 0012	SE	STYRENE	4.5	4.5	9.0	UG_KG	UJ	s
BSBG SD305 0012	SE	TERT-BUTANOL	22	22	45	UG_KG	UJ	s
BSBG SD305 0012	SE	TERT-BUTYLBENZENE	4.5	4.5	9.0	UG_KG	UJ	s
BSBG SD305 0012	SE	TETRACHLOROETHENE	4.5	4.5	9.0	UG_KG	UJ	s
BSBG SD305 0012	SE	TOLUENE	4.5	4.5	9.0	UG_KG	UJ	s
BSBG SD305 0012	SE	TRANS-1,2-DICHLOROETHENE	4.5	4.5	9.0	UG_KG	UJ	s
BSBG SD305 0012	SE	TRANS-1,3-DICHLOROPROPENE	4.5	4.5	9.0	UG_KG	UJ	s
BSBG SD305 0012	SE	TRICHLOROETHENE	4.5	4.5	9.0	UG_KG	UJ	s
BSBG SD305 0012	SE	TRICHLOROFLUOROMETHANE	9.0	9.0	18	UG_KG	UJ	s
BSBG SD305 0012	SE	VINYL CHLORIDE	9.0	9.0	18	UG_KG	UJ	s
BSBG SD306 0012	SE	1,1,1,2-TETRACHLOROETHANE	2.5	2.5	5.0	UG_KG	UJ	s
BSBG SD306 0012	SE	1,1,1-TRICHLOROETHANE	2.5	2.5	5.0	UG_KG	UJ	s
BSBG SD306 0012	SE	1,1,2,2-TETRACHLOROETHANE	2.5	2.5	5.0	UG_KG	UJ	s
BSBG SD306 0012	SE	1,1,2-TRICHLOROETHANE	2.5	2.5	5.0	UG_KG	UJ	s
BSBG SD306 0012	SE	1,1-DICHLOROETHANE	2.5	2.5	5.0	UG_KG	UJ	s
BSBG SD306 0012	SE	1,1-DICHLOROETHENE	2.5	2.5	5.0	UG_KG	UJ	s
BSBG SD306 0012	SE	1,1-DICHLOROPROPENE	2.5	2.5	5.0	UG_KG	UJ	s
BSBG SD306 0012	SE	1,2,3-TRICHLOROBENZENE	2.5	2.5	5.0	UG_KG	UJ	s
BSBG SD306 0012	SE	1,2,3-TRICHLOROPROPANE	2.5	2.5	5.0	UG_KG	UJ	s
BSBG SD306 0012	SE	1,2,4-TRICHLOROBENZENE	2.5	2.5	5.0	UG_KG	UJ	s
BSBG SD306 0012	SE	1,2,4-TRIMETHYLBENZENE	2.5	2.5	5.0	UG_KG	UJ	s
BSBG SD306 0012	SE	1,2-DIBROMO-3-CHLOROPROPANE	2.5	2.5	5.0	UG_KG	UJ	c,s
BSBG SD306 0012	SE	1,2-DIBROMOETHANE	2.5	2.5	5.0	UG_KG	UJ	c,s
BSBG SD306 0012	SE	1,2-DICHLOROBENZENE	2.5	2.5	5.0	UG_KG	UJ	s
BSBG SD306 0012	SE	1,2-DICHLOROETHANE	2.5	2.5	5.0	UG_KG	UJ	s
BSBG SD306 0012	SE	1,2-DICHLOROETHENE, TOTAL	5.0	5.0	10	UG_KG	UJ	s
BSBG SD306 0012	SE	1,2-DICHLOROPROPANE	2.5	2.5	5.0	UG_KG	UJ	s
BSBG SD306 0012	SE	1,3,5-TRIMETHYLBENZENE	2.5	2.5	5.0	UG_KG	UJ	s
BSBG SD306 0012	SE	1,3-DICHLOROBENZENE	2.5	2.5	5.0	UG_KG	UJ	s
BSBG SD306 0012	SE	1,3-DICHLOROPROPANE	2.5	2.5	5.0	UG_KG	UJ	s
BSBG SD306 0012	SE	1,4-DICHLOROBENZENE	2.5	2.5	5.0	UG_KG	UJ	s
BSBG SD306 0012	SE	2,2-DICHLOROPROPANE	2.5	2.5	5.0	UG_KG	UJ	s

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
BSBG SD306 0012	SE	2-BUTANONE	12	12	25	UG_KG	UJ	s
BSBG SD306 0012	SE	2-CHLOROTOLUENE	2.5	2.5	5.0	UG_KG	UJ	s
BSBG SD306 0012	SE	2-HEXANONE	12	12	25	UG_KG	UJ	s
BSBG SD306 0012	SE	4-CHLOROTOLUENE	2.5	2.5	5.0	UG_KG	UJ	s
BSBG SD306 0012	SE	4-ISOPROPYLTOLUENE	2.5	2.5	5.0	UG_KG	UJ	s
BSBG SD306 0012	SE	4-METHYL-2-PENTANONE	12	12	25	UG_KG	UJ	s
BSBG SD306 0012	SE	ACETONE	12	12	25	UG_KG	UJ	c,s
BSBG SD306 0012	SE	BENZENE	2.5	2.5	5.0	UG_KG	UJ	s
BSBG SD306 0012	SE	BROMOBENZENE	2.5	2.5	5.0	UG_KG	UJ	s
BSBG SD306 0012	SE	BROMOCHLOROMETHANE	2.5	2.5	5.0	UG_KG	UJ	s
BSBG SD306 0012	SE	BROMODICHLOROMETHANE	2.5	2.5	5.0	UG_KG	UJ	s
BSBG SD306 0012	SE	BROMOFORM	2.5	2.5	5.0	UG_KG	UJ	s
BSBG SD306 0012	SE	BROMOMETHANE	5.0	5.0	10	UG_KG	UJ	s
BSBG SD306 0012	SE	CARBON TETRACHLORIDE	2.5	2.5	5.0	UG_KG	UJ	s
BSBG SD306 0012	SE	CHLOROBENZENE	2.5	2.5	5.0	UG_KG	UJ	s
BSBG SD306 0012	SE	CHLOROETHANE	5.0	5.0	10	UG_KG	UJ	s
BSBG SD306 0012	SE	CHLOROFORM	2.5	2.5	5.0	UG_KG	UJ	s
BSBG SD306 0012	SE	CHLOROMETHANE	5.0	5.0	10	UG_KG	UJ	s
BSBG SD306 0012	SE	CIS-1,2-DICHLOROETHENE	2.5	2.5	5.0	UG_KG	UJ	s
BSBG SD306 0012	SE	CIS-1,3-DICHLOROPROPENE	2.5	2.5	5.0	UG_KG	UJ	s
BSBG SD306 0012	SE	DIBROMOCHLOROMETHANE	2.5	2.5	5.0	UG_KG	UJ	s
BSBG SD306 0012	SE	DIBROMOMETHANE	2.5	2.5	5.0	UG_KG	UJ	s
BSBG SD306 0012	SE	DICHLORODIFLUOROMETHANE	5.0	5.0	10	UG_KG	UJ	c,s
BSBG SD306 0012	SE	HEXACHLOROBUTADIENE	2.5	2.5	5.0	UG_KG	UJ	s
BSBG SD306 0012	SE	ISOPROPYLBENZENE	2.5	2.5	5.0	UG_KG	UJ	s
BSBG SD306 0012	SE	METHYL CYCLOHEXANE	2.5	2.5	5.0	UG_KG	UJ	s
BSBG SD306 0012	SE	METHYL TERT-BUTYL ETHER	2.5	2.5	5.0	UG_KG	UJ	c,s
BSBG SD306 0012	SE	METHYLENE CHLORIDE	12	12	25	UG_KG	UJ	s
BSBG SD306 0012	SE	N-BUTYLBENZENE	2.5	2.5	5.0	UG_KG	UJ	s
BSBG SD306 0012	SE	PROPYLBENZENE	2.5	2.5	5.0	UG_KG	UJ	s
BSBG SD306 0012	SE	SEC-BUTYLBENZENE	2.5	2.5	5.0	UG_KG	UJ	s
BSBG SD306 0012	SE	STYRENE	2.5	2.5	5.0	UG_KG	UJ	s
BSBG SD306 0012	SE	TERT-BUTANOL	12	12	25	UG_KG	UJ	s
BSBG SD306 0012	SE	TERT-BUTYLBENZENE	2.5	2.5	5.0	UG_KG	UJ	s
BSBG SD306 0012	SE	TETRACHLOROETHENE	2.5	2.5	5.0	UG_KG	UJ	s
BSBG SD306 0012	SE	TOLUENE	2.5	2.5	5.0	UG_KG	UJ	s
BSBG SD306 0012	SE	TRANS-1,2-DICHLOROETHENE	2.5	2.5	5.0	UG_KG	UJ	s
BSBG SD306 0012	SE	TRANS-1,3-DICHLOROPROPENE	2.5	2.5	5.0	UG_KG	UJ	s
BSBG SD306 0012	SE	TRICHLOROETHENE	2.5	2.5	5.0	UG_KG	UJ	s

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
BSBG SD306 0012	SE	TRICHLOROFLUOROMETHANE	5.0	5.0	10	UG_KG	UJ	s
BSBG SD306 0012	SE	VINYL CHLORIDE	5.0	5.0	10	UG_KG	UJ	s
BSBG SD306 0012	SE	CARBON DISULFIDE	2.2	0.25	0.50	UG_KG	J	c
BSBG SD307 0012	SE	1,1,1,2-TETRACHLOROETHANE	2.5	2.5	5.0	UG_KG	UJ	s
BSBG SD307 0012	SE	1,1,1-TRICHLOROETHANE	2.5	2.5	5.0	UG_KG	UJ	s
BSBG SD307 0012	SE	1,1,2,2-TETRACHLOROETHANE	2.5	2.5	5.0	UG_KG	UJ	s
BSBG SD307 0012	SE	1,1,2-TRICHLOROETHANE	2.5	2.5	5.0	UG_KG	UJ	s
BSBG SD307 0012	SE	1,1-DICHLOROETHANE	2.5	2.5	5.0	UG_KG	UJ	s
BSBG SD307 0012	SE	1,1-DICHLOROETHENE	2.5	2.5	5.0	UG_KG	UJ	s
BSBG SD307 0012	SE	1,1-DICHLOROPROPENE	2.5	2.5	5.0	UG_KG	UJ	s
BSBG SD307 0012	SE	1,2,3-TRICHLOROBENZENE	2.5	2.5	5.0	UG_KG	UJ	s
BSBG SD307 0012	SE	1,2,3-TRICHLOROPROPANE	2.5	2.5	5.0	UG_KG	UJ	s
BSBG SD307 0012	SE	1,2,4-TRICHLOROBENZENE	2.5	2.5	5.0	UG_KG	UJ	s
BSBG SD307 0012	SE	1,2,4-TRIMETHYLBENZENE	2.5	2.5	5.0	UG_KG	UJ	s
BSBG SD307 0012	SE	1,2-DIBROMO-3-CHLOROPROPANE	2.5	2.5	5.0	UG_KG	UJ	c,s
BSBG SD307 0012	SE	1,2-DIBROMOETHANE	2.5	2.5	5.0	UG_KG	UJ	c,s
BSBG SD307 0012	SE	1,2-DICHLOROBENZENE	2.5	2.5	5.0	UG_KG	UJ	s
BSBG SD307 0012	SE	1,2-DICHLOROETHANE	2.5	2.5	5.0	UG_KG	UJ	s
BSBG SD307 0012	SE	1,2-DICHLOROETHENE, TOTAL	5.0	5.0	10	UG_KG	UJ	s
BSBG SD307 0012	SE	1,2-DICHLOROPROPANE	2.5	2.5	5.0	UG_KG	UJ	s
BSBG SD307 0012	SE	1,3,5-TRIMETHYLBENZENE	2.5	2.5	5.0	UG_KG	UJ	s
BSBG SD307 0012	SE	1,3-DICHLOROBENZENE	2.5	2.5	5.0	UG_KG	UJ	s
BSBG SD307 0012	SE	1,3-DICHLOROPROPANE	2.5	2.5	5.0	UG_KG	UJ	s
BSBG SD307 0012	SE	1,4-DICHLOROBENZENE	2.5	2.5	5.0	UG_KG	UJ	s
BSBG SD307 0012	SE	2,2-DICHLOROPROPANE	2.5	2.5	5.0	UG_KG	UJ	s
BSBG SD307 0012	SE	2-BUTANONE	12	12	25	UG_KG	UJ	s
BSBG SD307 0012	SE	2-CHLOROTOLUENE	2.5	2.5	5.0	UG_KG	UJ	s
BSBG SD307 0012	SE	2-HEXANONE	12	12	25	UG_KG	UJ	s
BSBG SD307 0012	SE	4-CHLOROTOLUENE	2.5	2.5	5.0	UG_KG	UJ	s
BSBG SD307 0012	SE	4-ISOPROPYLTOLUENE	2.5	2.5	5.0	UG_KG	UJ	s
BSBG SD307 0012	SE	4-METHYL-2-PENTANONE	12	12	25	UG_KG	UJ	s
BSBG SD307 0012	SE	ACETONE	12	12	25	UG_KG	UJ	c,s
BSBG SD307 0012	SE	BENZENE	2.5	2.5	5.0	UG_KG	UJ	s
BSBG SD307 0012	SE	BROMOBENZENE	2.5	2.5	5.0	UG_KG	UJ	s
BSBG SD307 0012	SE	BROMOCHLOROMETHANE	2.5	2.5	5.0	UG_KG	UJ	s
BSBG SD307 0012	SE	BROMODICHLOROMETHANE	2.5	2.5	5.0	UG_KG	UJ	s
BSBG SD307 0012	SE	BROMOFORM	2.5	2.5	5.0	UG_KG	UJ	s
BSBG SD307 0012	SE	BROMOMETHANE	5.0	5.0	10	UG_KG	UJ	s
BSBG SD307 0012	SE	CARBON DISULFIDE	6.4	2.5	5.0	UG_KG	J	s

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
BSBG SD307 0012	SE	CARBON TETRACHLORIDE	2.5	2.5	5.0	UG_KG	UJ	c,s
BSBG SD307 0012	SE	CHLOROBENZENE	2.5	2.5	5.0	UG_KG	UJ	s
BSBG SD307 0012	SE	CHLOROETHANE	5.0	5.0	10	UG_KG	UJ	c,s
BSBG SD307 0012	SE	CHLOROFORM	2.5	2.5	5.0	UG_KG	UJ	s
BSBG SD307 0012	SE	CHLOROMETHANE	5.0	5.0	10	UG_KG	UJ	s
BSBG SD307 0012	SE	CIS-1,2-DICHLOROETHENE	2.5	2.5	5.0	UG_KG	UJ	s
BSBG SD307 0012	SE	CIS-1,3-DICHLOROPROPENE	2.5	2.5	5.0	UG_KG	UJ	s
BSBG SD307 0012	SE	DIBROMOCHLOROMETHANE	2.5	2.5	5.0	UG_KG	UJ	s
BSBG SD307 0012	SE	DIBROMOMETHANE	2.5	2.5	5.0	UG_KG	UJ	s
BSBG SD307 0012	SE	DICHLORODIFLUOROMETHANE	5.0	5.0	10	UG_KG	UJ	c,s
BSBG SD307 0012	SE	HEXACHLOROBUTADIENE	2.5	2.5	5.0	UG_KG	UJ	s
BSBG SD307 0012	SE	ISOPROPYLBENZENE	2.5	2.5	5.0	UG_KG	UJ	s
BSBG SD307 0012	SE	METHYL CYCLOHEXANE	2.5	2.5	5.0	UG_KG	UJ	s
BSBG SD307 0012	SE	METHYL TERT-BUTYL ETHER	2.5	2.5	5.0	UG_KG	UJ	c,s
BSBG SD307 0012	SE	METHYLENE CHLORIDE	12	12	25	UG_KG	UJ	s
BSBG SD307 0012	SE	N-BUTYLBENZENE	2.5	2.5	5.0	UG_KG	UJ	s
BSBG SD307 0012	SE	PROPYLBENZENE	2.5	2.5	5.0	UG_KG	UJ	s
BSBG SD307 0012	SE	SEC-BUTYLBENZENE	2.5	2.5	5.0	UG_KG	UJ	s
BSBG SD307 0012	SE	STYRENE	2.5	2.5	5.0	UG_KG	UJ	s
BSBG SD307 0012	SE	TERT-BUTANOL	12	12	25	UG_KG	UJ	c,s
BSBG SD307 0012	SE	TERT-BUTYLBENZENE	2.5	2.5	5.0	UG_KG	UJ	s
BSBG SD307 0012	SE	TETRACHLOROETHENE	2.5	2.5	5.0	UG_KG	UJ	s
BSBG SD307 0012	SE	TOLUENE	2.5	2.5	5.0	UG_KG	UJ	s
BSBG SD307 0012	SE	TRANS-1,2-DICHLOROETHENE	2.5	2.5	5.0	UG_KG	UJ	s
BSBG SD307 0012	SE	TRANS-1,3-DICHLOROPROPENE	2.5	2.5	5.0	UG_KG	UJ	s
BSBG SD307 0012	SE	TRICHLOROETHENE	2.5	2.5	5.0	UG_KG	UJ	s
BSBG SD307 0012	SE	TRICHLOROFLUOROMETHANE	5.0	5.0	10	UG_KG	UJ	c,s
BSBG SD307 0012	SE	VINYL CHLORIDE	5.0	5.0	10	UG_KG	UJ	s
BSBG SD308 0012	SE	1,1,1,2-TETRACHLOROETHANE	3.8	3.8	7.5	UG_KG	UJ	s
BSBG SD308 0012	SE	1,1,1-TRICHLOROETHANE	3.8	3.8	7.5	UG_KG	UJ	s
BSBG SD308 0012	SE	1,1,2,2-TETRACHLOROETHANE	3.8	3.8	7.5	UG_KG	UJ	s,i
BSBG SD308 0012	SE	1,1,2-TRICHLOROETHANE	3.8	3.8	7.5	UG_KG	UJ	s
BSBG SD308 0012	SE	1,1-DICHLOROETHANE	3.8	3.8	7.5	UG_KG	UJ	s
BSBG SD308 0012	SE	1,1-DICHLOROETHENE	3.8	3.8	7.5	UG_KG	UJ	s
BSBG SD308 0012	SE	1,1-DICHLOROPROPENE	3.8	3.8	7.5	UG_KG	UJ	s
BSBG SD308 0012	SE	1,2,3-TRICHLOROBENZENE	3.8	3.8	7.5	UG_KG	UJ	s,i
BSBG SD308 0012	SE	1,2,3-TRICHLOROPROPANE	3.8	3.8	7.5	UG_KG	UJ	s,i
BSBG SD308 0012	SE	1,2,4-TRICHLOROBENZENE	3.8	3.8	7.5	UG_KG	UJ	s,i
BSBG SD308 0012	SE	1,2,4-TRIMETHYLBENZENE	3.8	3.8	7.5	UG_KG	UJ	s,i

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
BSBG SD308 0012	SE	1,2-DIBROMO-3-CHLOROPROPANE	3.8	3.8	7.5	UG_KG	UJ	s,i
BSBG SD308 0012	SE	1,2-DIBROMOETHANE	3.8	3.8	7.5	UG_KG	UJ	s
BSBG SD308 0012	SE	1,2-DICHLOROBENZENE	3.8	3.8	7.5	UG_KG	UJ	s,i
BSBG SD308 0012	SE	1,2-DICHLOROETHANE	3.8	3.8	7.5	UG_KG	UJ	s
BSBG SD308 0012	SE	1,2-DICHLOROETHENE, TOTAL	7.5	7.5	15	UG_KG	UJ	s
BSBG SD308 0012	SE	1,2-DICHLOROPROPANE	3.8	3.8	7.5	UG_KG	UJ	s
BSBG SD308 0012	SE	1,3,5-TRIMETHYLBENZENE	3.8	3.8	7.5	UG_KG	UJ	s,i
BSBG SD308 0012	SE	1,3-DICHLOROBENZENE	3.8	3.8	7.5	UG_KG	UJ	s,i
BSBG SD308 0012	SE	1,3-DICHLOROPROPANE	3.8	3.8	7.5	UG_KG	UJ	s
BSBG SD308 0012	SE	1,4-DICHLOROBENZENE	3.8	3.8	7.5	UG_KG	UJ	s,i
BSBG SD308 0012	SE	2,2-DICHLOROPROPANE	3.8	3.8	7.5	UG_KG	UJ	c,s
BSBG SD308 0012	SE	2-BUTANONE	24	19	38	UG_KG	J	s
BSBG SD308 0012	SE	2-CHLOROTOLUENE	3.8	3.8	7.5	UG_KG	UJ	s,i
BSBG SD308 0012	SE	2-HEXANONE	19	19	38	UG_KG	UJ	s
BSBG SD308 0012	SE	4-CHLOROTOLUENE	3.8	3.8	7.5	UG_KG	UJ	s,i
BSBG SD308 0012	SE	4-ISOPROPYLTOLUENE	3.8	3.8	7.5	UG_KG	UJ	s
BSBG SD308 0012	SE	4-METHYL-2-PENTANONE	19	19	38	UG_KG	UJ	s
BSBG SD308 0012	SE	ACETONE	110	19	38	UG_KG	J	s
BSBG SD308 0012	SE	BENZENE	3.8	3.8	7.5	UG_KG	UJ	s
BSBG SD308 0012	SE	BROMOBENZENE	3.8	3.8	7.5	UG_KG	UJ	s,i
BSBG SD308 0012	SE	BROMOCHLOROMETHANE	3.8	3.8	7.5	UG_KG	UJ	s
BSBG SD308 0012	SE	BROMODICHLOROMETHANE	3.8	3.8	7.5	UG_KG	UJ	s
BSBG SD308 0012	SE	BROMOFORM	3.8	3.8	7.5	UG_KG	UJ	s
BSBG SD308 0012	SE	BROMOMETHANE	7.5	7.5	15	UG_KG	UJ	s
BSBG SD308 0012	SE	CARBON DISULFIDE	5.8	0.25	0.50	UG_KG	J	s
BSBG SD308 0012	SE	CARBON TETRACHLORIDE	3.8	3.8	7.5	UG_KG	UJ	c,s
BSBG SD308 0012	SE	CHLOROBENZENE	3.8	3.8	7.5	UG_KG	UJ	s
BSBG SD308 0012	SE	CHLOROETHANE	7.5	7.5	15	UG_KG	UJ	c,s
BSBG SD308 0012	SE	CHLOROFORM	3.8	3.8	7.5	UG_KG	UJ	s
BSBG SD308 0012	SE	CHLOROMETHANE	7.5	7.5	15	UG_KG	UJ	s
BSBG SD308 0012	SE	CIS-1,2-DICHLOROETHENE	3.8	3.8	7.5	UG_KG	UJ	s
BSBG SD308 0012	SE	CIS-1,3-DICHLOROPROPENE	3.8	3.8	7.5	UG_KG	UJ	s
BSBG SD308 0012	SE	DIBROMOCHLOROMETHANE	3.8	3.8	7.5	UG_KG	UJ	s
BSBG SD308 0012	SE	DIBROMOMETHANE	3.8	3.8	7.5	UG_KG	UJ	s
BSBG SD308 0012	SE	DICHLORODIFLUOROMETHANE	7.5	7.5	15	UG_KG	UJ	c,s
BSBG SD308 0012	SE	HEXACHLOROBUTADIENE	3.8	3.8	7.5	UG_KG	UJ	s,i
BSBG SD308 0012	SE	ISOPROPYLBENZENE	3.8	3.8	7.5	UG_KG	UJ	s,i
BSBG SD308 0012	SE	METHYL CYCLOHEXANE	3.8	3.8	7.5	UG_KG	UJ	s
BSBG SD308 0012	SE	METHYL TERT-BUTYL ETHER	3.8	3.8	7.5	UG_KG	UJ	s

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
BSBG SD308 0012	SE	METHYLENE CHLORIDE	19	19	38	UG_KG	UJ	s
BSBG SD308 0012	SE	N-BUTYLBENZENE	3.8	3.8	7.5	UG_KG	UJ	s,i
BSBG SD308 0012	SE	PROPYLBENZENE	3.8	3.8	7.5	UG_KG	UJ	s,i
BSBG SD308 0012	SE	SEC-BUTYLBENZENE	3.8	3.8	7.5	UG_KG	UJ	s,i
BSBG SD308 0012	SE	STYRENE	3.8	3.8	7.5	UG_KG	UJ	s
BSBG SD308 0012	SE	TERT-BUTANOL	19	19	38	UG_KG	UJ	c,s
BSBG SD308 0012	SE	TERT-BUTYLBENZENE	3.8	3.8	7.5	UG_KG	UJ	s,i
BSBG SD308 0012	SE	TETRACHLOROETHENE	3.8	3.8	7.5	UG_KG	UJ	s
BSBG SD308 0012	SE	TOLUENE	3.8	3.8	7.5	UG_KG	UJ	s
BSBG SD308 0012	SE	TRANS-1,2-DICHLOROETHENE	3.8	3.8	7.5	UG_KG	UJ	s
BSBG SD308 0012	SE	TRANS-1,3-DICHLOROPROPENE	3.8	3.8	7.5	UG_KG	UJ	s
BSBG SD308 0012	SE	TRICHLOROETHENE	3.8	3.8	7.5	UG_KG	UJ	s
BSBG SD308 0012	SE	TRICHLOROFLUOROMETHANE	7.5	7.5	15	UG_KG	UJ	c,s
BSBG SD308 0012	SE	VINYL CHLORIDE	7.5	7.5	15	UG_KG	UJ	s
FDSD12121302	SE	1,1,1,2-TETRACHLOROETHANE	5.5	5.5	11	UG_KG	UJ	s
FDSD12121302	SE	1,1,1-TRICHLOROETHANE	5.5	5.5	11	UG_KG	UJ	s
FDSD12121302	SE	1,1,2,2-TETRACHLOROETHANE	5.5	5.5	11	UG_KG	UJ	s
FDSD12121302	SE	1,1,2-TRICHLOROETHANE	5.5	5.5	11	UG_KG	UJ	s
FDSD12121302	SE	1,1-DICHLOROETHANE	5.5	5.5	11	UG_KG	UJ	s
FDSD12121302	SE	1,1-DICHLOROETHENE	5.5	5.5	11	UG_KG	UJ	s
FDSD12121302	SE	1,1-DICHLOROPROPENE	5.5	5.5	11	UG_KG	UJ	s
FDSD12121302	SE	1,2,3-TRICHLOROBENZENE	5.5	5.5	11	UG_KG	UJ	s
FDSD12121302	SE	1,2,3-TRICHLOROPROPANE	5.5	5.5	11	UG_KG	UJ	s
FDSD12121302	SE	1,2,4-TRICHLOROBENZENE	5.5	5.5	11	UG_KG	UJ	s
FDSD12121302	SE	1,2,4-TRIMETHYLBENZENE	5.5	5.5	11	UG_KG	UJ	s
FDSD12121302	SE	1,2-DIBROMO-3-CHLOROPROPANE	5.5	5.5	11	UG_KG	UJ	c,s
FDSD12121302	SE	1,2-DIBROMOETHANE	5.5	5.5	11	UG_KG	UJ	c,s
FDSD12121302	SE	1,2-DICHLOROBENZENE	5.5	5.5	11	UG_KG	UJ	s
FDSD12121302	SE	1,2-DICHLOROETHANE	5.5	5.5	11	UG_KG	UJ	s
FDSD12121302	SE	1,2-DICHLOROETHENE, TOTAL	11	11	22	UG_KG	UJ	s
FDSD12121302	SE	1,2-DICHLOROPROPANE	5.5	5.5	11	UG_KG	UJ	s
FDSD12121302	SE	1,3,5-TRIMETHYLBENZENE	5.5	5.5	11	UG_KG	UJ	s
FDSD12121302	SE	1,3-DICHLOROBENZENE	5.5	5.5	11	UG_KG	UJ	s
FDSD12121302	SE	1,3-DICHLOROPROPANE	5.5	5.5	11	UG_KG	UJ	s
FDSD12121302	SE	1,4-DICHLOROBENZENE	5.5	5.5	11	UG_KG	UJ	s
FDSD12121302	SE	2,2-DICHLOROPROPANE	5.5	5.5	11	UG_KG	UJ	s
FDSD12121302	SE	2-BUTANONE	28	28	55	UG_KG	UJ	s
FDSD12121302	SE	2-CHLOROTOLUENE	5.5	5.5	11	UG_KG	UJ	s
FDSD12121302	SE	2-HEXANONE	28	28	55	UG_KG	UJ	s

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
FDSD12121302	SE	4-CHLOROTOLUENE	5.5	5.5	11	UG_KG	UJ	s
FDSD12121302	SE	4-ISOPROPYLTOLUENE	5.5	5.5	11	UG_KG	UJ	s
FDSD12121302	SE	4-METHYL-2-PENTANONE	28	28	55	UG_KG	UJ	s
FDSD12121302	SE	ACETONE	170	28	55	UG_KG	UJ	c,s,l
FDSD12121302	SE	BENZENE	5.5	5.5	11	UG_KG	UJ	s
FDSD12121302	SE	BROMOBENZENE	5.5	5.5	11	UG_KG	UJ	s
FDSD12121302	SE	BROMOCHLOROMETHANE	5.5	5.5	11	UG_KG	UJ	s
FDSD12121302	SE	BROMODICHLOROMETHANE	5.5	5.5	11	UG_KG	UJ	s
FDSD12121302	SE	BROMOFORM	5.5	5.5	11	UG_KG	UJ	s
FDSD12121302	SE	BROMOMETHANE	11	11	22	UG_KG	UJ	s
FDSD12121302	SE	CARBON DISULFIDE	12	5.5	11	UG_KG	J	s
FDSD12121302	SE	CARBON TETRACHLORIDE	5.5	5.5	11	UG_KG	UJ	s
FDSD12121302	SE	CHLOROBENZENE	5.5	5.5	11	UG_KG	UJ	s
FDSD12121302	SE	CHLOROETHANE	11	11	22	UG_KG	UJ	s
FDSD12121302	SE	CHLOROFORM	5.5	5.5	11	UG_KG	UJ	s
FDSD12121302	SE	CHLOROMETHANE	11	11	22	UG_KG	UJ	s
FDSD12121302	SE	CIS-1,2-DICHLOROETHENE	5.5	5.5	11	UG_KG	UJ	s
FDSD12121302	SE	CIS-1,3-DICHLOROPROPENE	5.5	5.5	11	UG_KG	UJ	s
FDSD12121302	SE	DIBROMOCHLOROMETHANE	5.5	5.5	11	UG_KG	UJ	s
FDSD12121302	SE	DIBROMOMETHANE	5.5	5.5	11	UG_KG	UJ	s
FDSD12121302	SE	DICHLORODIFLUOROMETHANE	11	11	22	UG_KG	UJ	c,s
FDSD12121302	SE	HEXACHLOROBUTADIENE	5.5	5.5	11	UG_KG	UJ	s
FDSD12121302	SE	ISOPROPYLBENZENE	5.5	5.5	11	UG_KG	UJ	s
FDSD12121302	SE	METHYL CYCLOHEXANE	5.5	5.5	11	UG_KG	UJ	s
FDSD12121302	SE	METHYL TERT-BUTYL ETHER	5.5	5.5	11	UG_KG	UJ	c,s
FDSD12121302	SE	METHYLENE CHLORIDE	28	28	55	UG_KG	UJ	s
FDSD12121302	SE	N-BUTYLBENZENE	5.5	5.5	11	UG_KG	UJ	s
FDSD12121302	SE	PROPYLBENZENE	5.5	5.5	11	UG_KG	UJ	s
FDSD12121302	SE	SEC-BUTYLBENZENE	5.5	5.5	11	UG_KG	UJ	s
FDSD12121302	SE	STYRENE	5.5	5.5	11	UG_KG	UJ	s
FDSD12121302	SE	TERT-BUTANOL	28	28	55	UG_KG	UJ	s
FDSD12121302	SE	TERT-BUTYLBENZENE	5.5	5.5	11	UG_KG	UJ	s
FDSD12121302	SE	TETRACHLOROETHENE	5.5	5.5	11	UG_KG	UJ	s
FDSD12121302	SE	TOLUENE	5.5	5.5	11	UG_KG	UJ	s
FDSD12121302	SE	TRANS-1,2-DICHLOROETHENE	5.5	5.5	11	UG_KG	UJ	s
FDSD12121302	SE	TRANS-1,3-DICHLOROPROPENE	5.5	5.5	11	UG_KG	UJ	s
FDSD12121302	SE	TRICHLOROETHENE	5.5	5.5	11	UG_KG	UJ	s
FDSD12121302	SE	TRICHLOROFLUOROMETHANE	11	11	22	UG_KG	UJ	s
FDSD12121302	SE	VINYL CHLORIDE	11	11	22	UG_KG	UJ	s

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
FDSD12131302	SE	1,1,1,2-TETRACHLOROETHANE	2.2	2.2	4.5	UG_KG	UJ	s
FDSD12131302	SE	1,1,1-TRICHLOROETHANE	2.2	2.2	4.5	UG_KG	UJ	s
FDSD12131302	SE	1,1,2,2-TETRACHLOROETHANE	2.2	2.2	4.5	UG_KG	UJ	s
FDSD12131302	SE	1,1,2-TRICHLOROETHANE	2.2	2.2	4.5	UG_KG	UJ	s
FDSD12131302	SE	1,1-DICHLOROETHANE	2.2	2.2	4.5	UG_KG	UJ	s
FDSD12131302	SE	1,1-DICHLOROETHENE	2.2	2.2	4.5	UG_KG	UJ	s
FDSD12131302	SE	1,1-DICHLOROPROPENE	2.2	2.2	4.5	UG_KG	UJ	s
FDSD12131302	SE	1,2,3-TRICHLOROBENZENE	2.2	2.2	4.5	UG_KG	UJ	s
FDSD12131302	SE	1,2,3-TRICHLOROPROPANE	2.2	2.2	4.5	UG_KG	UJ	s
FDSD12131302	SE	1,2,4-TRICHLOROBENZENE	2.2	2.2	4.5	UG_KG	UJ	s
FDSD12131302	SE	1,2,4-TRIMETHYLBENZENE	2.2	2.2	4.5	UG_KG	UJ	s
FDSD12131302	SE	1,2-DIBROMO-3-CHLOROPROPANE	2.2	2.2	4.5	UG_KG	UJ	c,s
FDSD12131302	SE	1,2-DIBROMOETHANE	2.2	2.2	4.5	UG_KG	UJ	c,s
FDSD12131302	SE	1,2-DICHLOROBENZENE	2.2	2.2	4.5	UG_KG	UJ	s
FDSD12131302	SE	1,2-DICHLOROETHANE	2.2	2.2	4.5	UG_KG	UJ	s
FDSD12131302	SE	1,2-DICHLOROETHENE, TOTAL	4.5	4.5	9.0	UG_KG	UJ	s
FDSD12131302	SE	1,2-DICHLOROPROPANE	2.2	2.2	4.5	UG_KG	UJ	s
FDSD12131302	SE	1,3,5-TRIMETHYLBENZENE	2.2	2.2	4.5	UG_KG	UJ	s
FDSD12131302	SE	1,3-DICHLOROBENZENE	2.2	2.2	4.5	UG_KG	UJ	s
FDSD12131302	SE	1,3-DICHLOROPROPANE	2.2	2.2	4.5	UG_KG	UJ	s
FDSD12131302	SE	1,4-DICHLOROBENZENE	2.2	2.2	4.5	UG_KG	UJ	s
FDSD12131302	SE	2,2-DICHLOROPROPANE	2.2	2.2	4.5	UG_KG	UJ	s
FDSD12131302	SE	2-BUTANONE	11	11	22	UG_KG	UJ	s
FDSD12131302	SE	2-CHLOROTOLUENE	2.2	2.2	4.5	UG_KG	UJ	s
FDSD12131302	SE	2-HEXANONE	11	11	22	UG_KG	UJ	s
FDSD12131302	SE	4-CHLOROTOLUENE	2.2	2.2	4.5	UG_KG	UJ	s
FDSD12131302	SE	4-ISOPROPYLTOLUENE	2.2	2.2	4.5	UG_KG	UJ	s
FDSD12131302	SE	4-METHYL-2-PENTANONE	11	11	22	UG_KG	UJ	s
FDSD12131302	SE	ACETONE	11	11	22	UG_KG	UJ	c,s
FDSD12131302	SE	BENZENE	2.2	2.2	4.5	UG_KG	UJ	s
FDSD12131302	SE	BROMOBENZENE	2.2	2.2	4.5	UG_KG	UJ	s
FDSD12131302	SE	BROMOCHLOROMETHANE	2.2	2.2	4.5	UG_KG	UJ	s
FDSD12131302	SE	BROMODICHLOROMETHANE	2.2	2.2	4.5	UG_KG	UJ	s
FDSD12131302	SE	BROMOFORM	2.2	2.2	4.5	UG_KG	UJ	s
FDSD12131302	SE	BROMOMETHANE	4.5	4.5	9.0	UG_KG	UJ	s
FDSD12131302	SE	CARBON TETRACHLORIDE	2.2	2.2	4.5	UG_KG	UJ	s
FDSD12131302	SE	CHLOROBENZENE	2.2	2.2	4.5	UG_KG	UJ	s
FDSD12131302	SE	CHLOROETHANE	4.5	4.5	9.0	UG_KG	UJ	s
FDSD12131302	SE	CHLOROFORM	2.2	2.2	4.5	UG_KG	UJ	s

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
FDSD12131302	SE	CHLOROMETHANE	4.5	4.5	9.0	UG_KG	UJ	s
FDSD12131302	SE	CIS-1,2-DICHLOROETHENE	2.2	2.2	4.5	UG_KG	UJ	s
FDSD12131302	SE	CIS-1,3-DICHLOROPROPENE	2.2	2.2	4.5	UG_KG	UJ	s
FDSD12131302	SE	DIBROMOCHLOROMETHANE	2.2	2.2	4.5	UG_KG	UJ	s
FDSD12131302	SE	DIBROMOMETHANE	2.2	2.2	4.5	UG_KG	UJ	s
FDSD12131302	SE	DICHLORODIFLUOROMETHANE	4.5	4.5	9.0	UG_KG	UJ	c,s
FDSD12131302	SE	HEXACHLOROBUTADIENE	2.2	2.2	4.5	UG_KG	UJ	s
FDSD12131302	SE	ISOPROPYLBENZENE	2.2	2.2	4.5	UG_KG	UJ	s
FDSD12131302	SE	METHYL CYCLOHEXANE	2.2	2.2	4.5	UG_KG	UJ	s
FDSD12131302	SE	METHYL TERT-BUTYL ETHER	2.2	2.2	4.5	UG_KG	UJ	c,s
FDSD12131302	SE	METHYLENE CHLORIDE	11	11	22	UG_KG	UJ	s
FDSD12131302	SE	N-BUTYLBENZENE	2.2	2.2	4.5	UG_KG	UJ	s
FDSD12131302	SE	PROPYLBENZENE	2.2	2.2	4.5	UG_KG	UJ	s
FDSD12131302	SE	SEC-BUTYLBENZENE	2.2	2.2	4.5	UG_KG	UJ	s
FDSD12131302	SE	STYRENE	2.2	2.2	4.5	UG_KG	UJ	s
FDSD12131302	SE	TERT-BUTANOL	11	11	22	UG_KG	UJ	s
FDSD12131302	SE	TERT-BUTYLBENZENE	2.2	2.2	4.5	UG_KG	UJ	s
FDSD12131302	SE	TETRACHLOROETHENE	2.2	2.2	4.5	UG_KG	UJ	s
FDSD12131302	SE	TOLUENE	2.2	2.2	4.5	UG_KG	UJ	s
FDSD12131302	SE	TRANS-1,2-DICHLOROETHENE	2.2	2.2	4.5	UG_KG	UJ	s
FDSD12131302	SE	TRANS-1,3-DICHLOROPROPENE	2.2	2.2	4.5	UG_KG	UJ	s
FDSD12131302	SE	TRICHLOROETHENE	2.2	2.2	4.5	UG_KG	UJ	s
FDSD12131302	SE	TRICHLOROFLUOROMETHANE	4.5	4.5	9.0	UG_KG	UJ	s
FDSD12131302	SE	VINYL CHLORIDE	4.5	4.5	9.0	UG_KG	UJ	s
RB-01_120313	WQ	1,2,3-TRICHLOROBENZENE	0.50	0.50	1.0	UG_L	UJ	c
RB-01_120313	WQ	ACETONE	2.5	2.5	5.0	UG_L	UJ	c
RB-01_120313	WQ	DICHLORODIFLUOROMETHANE	1.0	1.0	2.0	UG_L	UJ	c
RB-01_120313	WQ	METHYL CYCLOHEXANE	0.50	0.50	1.0	UG_L	UJ	c
RB-01_120313	WQ	TERT-BUTANOL	2.5	2.5	5.0	UG_L	UJ	c
RBSD12111301	WQ	1,2,3-TRICHLOROBENZENE	0.50	0.50	1.0	UG_L	UJ	c
RBSD12111301	WQ	ACETONE	2.5	2.5	5.0	UG_L	UJ	c
RBSD12111301	WQ	DICHLORODIFLUOROMETHANE	1.0	1.0	2.0	UG_L	UJ	c
RBSD12111301	WQ	METHYL CYCLOHEXANE	0.50	0.50	1.0	UG_L	UJ	c
RBSD12111301	WQ	TERT-BUTANOL	2.5	2.5	5.0	UG_L	UJ	c
RBSD12181301	WQ	1,2,3-TRICHLOROBENZENE	0.50	0.50	1.0	UG_L	UJ	c
RBSD12181301	WQ	2-HEXANONE	2.5	2.5	5.0	UG_L	UJ	c
RBSD12181301	WQ	ACETONE	2.5	2.5	5.0	UG_L	UJ	c
RBSD12181301	WQ	CARBON DISULFIDE	0.23	0.25	0.50	UG_L	J	s
RBSD12181301	WQ	CARBON TETRACHLORIDE	0.50	0.50	1.0	UG_L	UJ	c

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
RBSD12181301	WQ	DICHLORODIFLUOROMETHANE	1.0	1.0	2.0	UG_L	UJ	c
RBSD12181301	WQ	ETHYL BENZENE	0.36	0.25	0.5	UG_L	J	s
RBSD12181301	WQ	TERT-BUTANOL	2.5	2.5	5.0	UG_L	UJ	c
RBSD12181301	WQ	M- AND P-XYLENE	0.92	0.50	1.0	UG_L	J	s
RBSD12181301	WQ	O-XYLENE	0.34	0.25	0.50	UG_L	J	s
RBSD12181301	WQ	XYLENES, TOTAL	1.3	0.75	1.5	UG_L	J	s
TBSD12121301	WQ	1,2-DIBROMO-3-CHLOROPROPANE	2.5	2.5	5.0	UG_KG	UJ	c
TBSD12121301	WQ	1,2-DIBROMOETHANE	2.5	2.5	5.0	UG_KG	UJ	c
TBSD12121301	WQ	ACETONE	12	12	25	UG_KG	UJ	c
TBSD12121301	WQ	DICHLORODIFLUOROMETHANE	5.0	5.0	10	UG_KG	UJ	c
TBSD12121301	WQ	METHYL TERT-BUTYL ETHER	2.5	2.5	5.0	UG_KG	UJ	c
TBSD12121301	WQ	CARBON DISULFIDE	0.25	0.25	0.50	UG_KG	UJ	c

Attachment A

Non Conformance Summary Tables

Table A-1a Initial Calibration

ICAL	Compound	% RSD or RF	%RSD/RF Limit	ICV %R	ICV %R Limits	Associated Samples
CARR-1						
12/10/13 (C)	TERT-BUTYL ALCOHOL	0.03293	>0.05			RB-01_120313
	DICHLORODIFLUOROMETHANE			128.95	80-120	
	ACETONE			129.47	80-120	
	1,2,3-TRICHLOROBENZENE			69.33	80-120	
CARR-7						
12/10/13 (C)	TERT-BUTYL ALCOHOL	0.03293	>0.05			RBSD12111301
	DICHLORODIFLUOROMETHANE			128.95	80-120	
	ACETONE			129.47	80-120	
	1,2,3-TRICHLOROBENZENE			69.33	80-120	
12/16/13 (M)	CHLOROETHANE	34.94	<15			BSBG SD302 0012
	TERT-BUTYL ALCOHOL	37.74	<15			
	TERT-BUTYL ALCOHOL	0.01416	>0.05			
	TERT-BUTYL ALCOHOL			73.47	80-120	
	ACETONE			137.18	80-120	
CARR-12						
12/19/13 (S)	DICHLORODIFLUOROMETHANE			144.85	80-120	TBSD 121213 01 BSBG SD305 0012 FDSD 12121302 BSBG SD306 0012 BSBG SD304 0012 BSBG SD303 0012 FDSD 12131302
	ACETONE			188.63	80-120	
	METHYL TERT-BUTYL ETHER			130.65	80-120	
	1,2-DIBROMOETHANE			141.81	80-120	
	1,2-DIBROMO-3-CHLOROPROPANE			122.18	80-120	
12/19/13 (T) SIM	CARBON DISULFIDE			129.36	80-120	TBSD 121213 01 BSBG SD306 0012 BSBG SD304 0012 BSBG SD303 0012 FDSD 12131302
CARR-14						
12/10/13 (C)	TERT-BUTYL ALCOHOL	0.03293	>0.05			RBSD 12181301
	DICHLORODIFLUOROMETHANE			128.95	80-120	
	ACETONE			129.47	80-120	
	1,2,3-TRICHLOROBENZENE			69.33	80-120	
12/19/13 (M)	CHLOROETHANE	35.33	<15			BSBG SD307 0012 BSBG SD308 0012
	TRICHLOROFLUOROMETHANE	15.22	<15			
	DICHLORODIFLUOROMETHANE			148.15	80-120	

ICAL	Compound	% RSD or RF	%RSD/RF Limit	ICV %R	ICV %R Limits	Associated Samples
	TERT-BUTYL ALCOHOL			170.37	80-120	
	CARBON TETRACHLORIDE			121.59	80-120	
12/19/13 (S)	DICHLORODIFLUOROMETHANE			144.85	80-120	BSBG SD307 0012 RA BSBG SD308 0012 RA
	ACETONE			188.63	80-120	
	METHYL TERT-BUTYL ETHER			130.65	80-120	
	1,2-DIBROMOETHANE			141.81	80-120	
	1,2-DIBROMO-3-CHLOROPROPANE			122.18	80-120	

Table A-1b Continuing Calibration

CCAL	Compound	% D	%D Limit	Associated Samples
CARR-1				
CCV 12/17/13 (C)	1,2,3-TRICHLOROBENZENE	-53.94	<20	RB-01_120313
	METHYLCYCLOHEXANE	21.05	<20	
CARR-7				
CCV 12/17/13 (C)	1,2,3-TRICHLOROBENZENE	-53.94	<20	RBSD12111301
	METHYLCYCLOHEXANE	21.05	<20	
CARR-14				
CCV 12/24/13 (C)	CARBON TETRACHLORIDE	30.19	<20	RBSD12181301
	2-HEXANONE	20.85	<20	
	1,2,3-TRICHLOROBENZENE	-40.44	<20	
CCV 12/20/13 (M)	TERT-BUTYL ALCOHOL	117	<20	BSBG SD307 0012 BSBG SD308 0012
	2,2-DICHLOROPROPANE	65.48	<20	
CCV 12/23/13 (S)	DICHLORODIFLUOROMETHANE	46.48	<20	BSBG SD307 0012 RA BSBG SD308 0012 RA

Table A-2 Surrogates

Sample ID	Surrogate	% Recovery	Lower Limit	Upper Limit
CARR-7				
BSBG SD302 0012	DIBROMOFLUOROMETHANE	135	64	130
CARR-12				
BSBG SD303 0012	4-BROMOFLUOROBENZENE	80.2	85	120
BSBG SD305 0012	4-BROMOFLUOROBENZENE	74.2	85	120
BSBG SD306 0012	4-BROMOFLUOROBENZENE	76.2	85	120
FDSD12121302	4-BROMOFLUOROBENZENE	74.1	85	120
FDSD12131302	TOLUENE-D8	73.4	85	115
FDSD12131302	4-BROMOFLUOROBENZENE	58.6	85	120
CARR-14				

Sample ID	Surrogate	% Recovery	Lower Limit	Upper Limit
BSBG SD307 0012	4-BROMOFLUOROBENZENE	65.9	85	120
BSBG SD307 0012 RA	TOLUENE-D8	84.7	85	115
BSBG SD307 0012 RA	4-BROMOFLUOROBENZENE	71.7	85	120
BSBG SD308 0012	TOLUENE-D8	83.4	85	115
BSBG SD308 0012	4-BROMOFLUOROBENZENE	54.8	85	120
BSBG SD308 0012 RA	4-BROMOFLUOROBENZENE	64.8	85	120
VOC-SIM				
CARR-12				
BSBG SD303 0012	1,2-DICHLOROETHANE-D4	131	70	130
CARR-14				
RBSD 12181301	DIBROMOFLUOROMETHANE	131	70	130
BSBG SD308 0012	1,2-DICHLOROETHANE-D4	133	70	130
BSBG SD307 0012	1,2-DICHLOROETHANE-D4	135	70	130

Table A-3 Matrix Spikes

Sample ID	Compound	MS % Recovery	MSD % Recovery	Lower Limit	Upper Limit	RPD	RPD Limit
BSBG SD302 0012	BROMOMETHANE	54.8	73.6	30	160	31	30
BSBG SD302 0012	1,1,1,2-TETRACHLOROETHANE	74.1	76.9	75	125	5	30
BSBG SD302 0012	ACETONE	200	103	20	160	26	30
BSBG SD302 0012	CHLOROFORM	132	130	70	125	0	30
BSBG SD302 0012	CARBON TETRACHLORIDE	86.2	122	65	135	36	30
BSBG SD302 0012	1,1,1-TRICHLOROETHANE	141	138	70	135	0	30
BSBG SD302 0012	BROMOFORM	54.8	67.4	55	135	22	30
BSBG SD302 0012	TERT-BUTANOL	249	241	62	148	3	30
BSBG SD302 0012	DICHLORODIFLUOROMETHANE	140	138	35	135	1	30
BSBG SD302 0012	CIS-1,3-DICHLOROPROPENE	15.3	21.4	70	125	34	30
BSBG SD302 0012	TRANS-1,3-DICHLOROPROPENE	19.0	25.1	65	125	29	30
BSBG SD302 0012	1,2,4-TRICHLOROBENZENE	42.8	47.8	65	130	13	30
BSBG SD302 0012	2,2-DICHLOROPROPANE	229	232	65	135	3	30
BSBG SD302 0012	1,2,3-TRICHLOROBENZENE	38.6	42.7	60	135	12	30
BSBG SD302 0012	HEXACHLOROBUTADIENE	30.7	35.9	55	140	17	30

Table A-4 Lab Control Samples

LCS ID	Compound	LCS % Recovery	Lower Limit	Upper Limit	Associated Samples
WG136508-1	2,2-DICHLOROPROPANE	147	65	135	BSBG SD307 0012 BSBG SD308 0012

LCS ID	Compound	LCS % Recovery	Lower Limit	Upper Limit	Associated Samples
WG136508-1	TERT-BUTANOL	206	62	148	BSBG SD307 0012 BSBG SD308 0012
WG136508-1	DICHLORODIFLUOROMETHANE	157	35	135	BSBG SD307 0012 BSBG SD308 0012
WG136654-1	ACETONE	234	20	160	BSBG SD307 0012 RA BSBG SD308 0012 RA
WG136493-8	1,2-DIBROMOETHANE	142	70	125	TBSD 121213 01 BSBG SD305 0012 FDSD 12121302 BSBG SD306 0012 BSBG SD304 0012 BSBG SD303 0012 FDSD 12131302
WG136493-8	METHYL TERT-BUTYL ETHER	131	81	125	TBSD 121213 01 BSBG SD305 0012 FDSD 12121302 BSBG SD306 0012 BSBG SD304 0012 BSBG SD303 0012 FDSD 12131302
WG136493-8	ACETONE	191	20	160	TBSD 121213 01 BSBG SD305 0012 FDSD 12121302 BSBG SD306 0012 BSBG SD304 0012 BSBG SD303 0012 FDSD 12131302
WG136493-8	DICHLORODIFLUOROMETHANE	145	35	135	TBSD 121213 01 BSBG SD305 0012 FDSD 12121302 BSBG SD306 0012 BSBG SD304 0012 BSBG SD303 0012 FDSD 12131302

Table A-5 Internal Standards

Sample ID	Internal Standard	IS AREA	Lower Limit (50%)	Lower Limit (20%)	Upper Limit
CARR-7					
BSBG SD302 0012	1,4-DICHLOROBENZENE-D4	99832	122517	49006.8	490068
CARR-14					
BSBG SD307 0012	1,4-DICHLOROBENZENE-D4	92629	106277.5	42511	425110
BSBG SD308 0012	1,4-DICHLOROBENZENE-D4	78100	106277.5	42511	425110
BSBG SD308 0012 RA	1,4-DICHLOROBENZENE-D4	93682	115873	46349.2	463492
CARR-12 SIM					

Sample ID	Internal Standard	IS AREA	Lower Limit (50%)	Lower Limit (20%)	Upper Limit
BSBG SD303 0012	PENTAFLUOROBENZENE	13914	14957	5982.8	59828
BSBG SD303 0012	CHLOROBENZENE-D5	13613	15729.5	6291.8	62918

Attachment B

Qualifier Codes and Explanations

Qualifier	Explanation
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
UJ	The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual quantitation limit necessary to accurately and precisely measure the analyte in the sample.
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

Attachment C

Reason Codes and Explanations

Reason Code	Explanation
be	Equipment blank contamination
bf	Field blank contamination
bl	Laboratory blank contamination
c	Calibration issue
d	Reporting limit raised due to chromatographic interference
fd	Field duplicate RPDs
h	Holding times
i	Internal standard areas
k	Estimated Maximum Possible Concentration (EMPC)
l	LCS or OPR recoveries
lc	Labeled compound recovery
ld	Laboratory duplicate RPDs
lp	Laboratory control sample/laboratory control sample duplicate RPDs
m	Matrix spike recovery
md	Matrix spike/matrix spike duplicate RPDs
nb	Negative laboratory blank contamination
p	Chemical preservation issue
r	Dual column RPD
q	Quantitation issue
s	Surrogate recovery
su	Ion suppression
t	Temperature preservation issue
x	Percent solids
y	Serial dilution results
z	ICS results

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Data Validation Report

Project:	MRP Site 1 (OU9) Remedial Investigation, NAVSTA Newport, Rhode Island CTO WE06
Laboratory:	Katahdin Analytical Services, Scarborough, Maine
Service Request:	CARR-1
Analyses/Method:	Polycyclic Aromatic Hydrocarbons (GC/MS) Full Scan and SIM / EPA SW-846 Method 8270D
Validation Level:	Limited
Resolution Consultants Project Number:	60250336 SA.DV
Prepared by:	Helen Jones Parry/Resolution Consultants — Completed on: 02/27/2014
Reviewed by:	Kristin Rutherford/Resolution Consultants — File Name: CARR-1_SE_8270_DVRpt.docx

SUMMARY

The samples listed below were collected by Resolution Consultants from the MRP Site 1 (OU9), NAVSTA Newport, Rhode Island on December 2 and 3, 2013.

Sample ID	Matrix/Sample Type
RB-01_120313	Equipment blank
OU09 SD107 1224	Sediment
OU09 SD107 2436	Sediment
OU09 SD117 1224	Sediment
OU09 SD117 2436	Sediment

The data have been validated in accordance with the project-specific Sampling and Analysis Plan, *Sampling and Analysis Plan, Former Carr Point Shooting Range (MRP Site 1, OU9), Naval Station (NAVSTA) Newport, Rhode Island, Final* (Naval Facilities Engineering Command, Mid-Atlantic, 2013) and the following references:

- *DoD Quality Systems Manual (QMS) for Environmental Laboratories, version 4.2* (DoD EDQW, 2010);
- *USEPA Region 1, EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses* (December 1996);
- *USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review* (June 2008);
- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW846, Method 8270D, Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)* (USEPA, 1996);
- laboratory quality control (QC) limits, as applicable.

The USEPA Region 1 and National Data Validation Functional Guidelines were modified to accommodate the non-CLP methodologies. In the absence of method-specific direction for validation, Resolution Consultants professional judgment was used as appropriate.

REVIEW ELEMENTS

The data were evaluated based on the following parameters (where applicable to the method):

✓	Data completeness (chain-of-custody (COC)/sample integrity
✓	Holding times and sample preservation
✓	Instrument tuning
✗	Initial calibration/continuing calibration verification
✓	Laboratory blanks/equipment blanks
✓	Surrogate spike recoveries
NA	Matrix spike (MS) and/or matrix spike duplicate (MSD) results
✗	Laboratory control sample (LCS)/laboratory control sample duplicate (LCSD) results
NA	Field duplicates
✓	Internal standards
✓	Sample results/reporting issues

The symbol (✓) indicates that no validation qualifiers were applied based on this parameter. NA indicates that the parameter was not included as part of this data set or was not applicable to this validation and therefore not reviewed. The symbol (✗) indicates that a quality control (QC) nonconformance resulted in the qualification of data. Any QC nonconformance that resulted in the qualification of data is discussed below. In addition, nonconformances or other issues that were noted during validation, but did not result in qualification of data, may be discussed for informational purposes only.

The data appear valid as reported and may be used for decision making purposes. Selected data points were estimated, negated, and/or rejected due to nonconformances of certain QC criteria (see discussion below). Qualified sample results are presented in Table 1.

RESULTS

<u>Data Completeness</u>

The data package was reviewed and found to meet acceptance criteria for completeness:

- The COCs were reviewed for completeness of information relevant to the samples and requested analyses, and for signatures indicating transfer of sample custody.
- The laboratory sample login sheet(s) were reviewed for issues potentially affecting sample integrity, including the condition of sample containers upon receipt at the laboratory.
- Completeness of analyses was verified by comparing the reported results to the COC requests.

Holding Times/Sample Preservation

Sample preservation and preparation/analysis holding times were reviewed for conformance with the QC acceptance criteria.

The QC acceptance criteria were met.

GC/MS Performance Checks

The data were reviewed to ensure that the decafluorotriphenylphosphine (DFTPP) tuning was performed at the correct frequency and that the method acceptance criteria were met. All samples were analyzed within 12 hours of the DFTPP tunes.

Initial Calibration/Continuing Calibration Verification

Calibration data were reviewed for conformance with the QC acceptance criteria to ensure that:

- the initial calibration (ICAL) percent relative standard deviation (%RSD), correlation coefficient (r)/coefficient of determination (r2), and/or response factor method acceptance criteria were met;
- the initial calibration verification standard (ICV) percent recovery acceptance criteria were met;
- the continuing calibration verification standard (CCV) method percent difference or percent drift (%Ds) and RF acceptance criteria were met; and
- the retention time method acceptance criteria were met.

Nonconformances are summarized in Attachment A in Table A-1. Data qualification to the analytes associated with the specific ICAL and/or CCV was as follows:

ICAL and CCV Response Factor Nonconformances

Criteria	Actions	
	Detected Results	**Nondetected Results[4]**
SPCCs		
RF<0.050 for N-nitroso-di-n-propylamine; hexachlorocyclopentadiene; 2,4-dinitrophenol; and 4-nitrophenol.	J[1]	UJ[1]
All compounds except SPCCs and Poor Performing Compounds[2]		
RF<0.050	J	R[3]
RF<0.05 but>0.010 (if low standard response is adequate)	J[1]	UJ[1]
Poor Performing Compounds[2]		
RF<0.010	J	R
[1]No guidance in NFG, thus Resolution Consultants professional judgment was used.		
[2]As defined in Table 28 of the NFG.		
[3]Resolution Consultants professional judgment may be used to either raise reporting level or to estimate reporting limit if low standard response is adequate.		
[4]Sample results qualified as not detected (U) due to blank contamination are not rejected, but estimated (UJ).		
SPCCs - System Performance Check Compounds as listed in SW-846 Method 8270C		

ICAL Linearity Nonconformances

Criteria	Actions	
	Detected Results	Nondetected
%RSD > 30% for CCCs (acenaphthene, 1,4-dichlorobenzene, hexachlorobutadiene, diphenylamine, di-n-octyl phthalate, fluoranthene, and benzo(a)pyrene; 4-chloro-3-methylphenol, 2,4-dichlorophenol, 2-nitrophenol, phenol, pentachlorophenol, and 2,4,6-trichlorophenol)	J*	UJ*
%RSD > 15% and quantitation based on mean RF	J	UJ
r or r^2 < 0.99 and quantitation based on linear regression	J*	UJ*
* No guidance in NFG, thus Resolution Consultants professional judgment was used		
CCCs - Calibration Check Compounds as listed in SW-846 Method 8270C		

ICV Recovery Nonconformances

Criteria	Actions*	
	Detected Results	Nondetected Results
Recovery > 120	J	UJ
Recovery < 80	J	UJ
* No guidance in NFG, thus Resolution Consultants professional judgment was used		

CCV Linearity Nonconformances

Criteria	Actions	
	Detected Results	Nondetected Results
%D > 20%	J	UJ
%Drift >20%	J*	UJ*
* No guidance in NFG, thus Resolution Consultants professional judgment was used		

Qualified sample results are shown in Table 1.

<u>Laboratory Blanks/Equipment Blanks</u>

Laboratory method blanks and equipment rinsate blanks were evaluated as to whether there were contaminants detected above the method detection limit (MDL).

Data validation qualifications for individual samples are based on the maximum contaminant concentration detected in all associated blanks.

Detected results in blanks are not discussed in this data validation report if the associated results were nondetect or if qualification of sample results was not required.

The QC acceptance criteria were met and/or qualification of the sample results was not required. There were no detected target analytes reported in the equipment blank sample RB-01_120313.

Surrogate Spike Recoveries

The surrogate recoveries (%Rs) were reviewed for conformance with the QC acceptance criteria.

All QC acceptance criteria were met.

MS/MSD Results

An MS/MSD was not included in this SDG.

LCS/LCSD Results

The LCS/LCSD %Rs and/or relative percent recoveries (RPDs) were reviewed for conformance with the QC acceptance criteria.

Nonconformances are summarized in Attachment A in Table A-2. Data qualification to the analytes associated with the specific LCS %Rs or RPDs was as follows:

Criteria[1,2]	Action[3]	
	Detected Compounds	Nondetected Compounds
%R or RPD > UL	J	No qualification
10%≥%R < LL	J	UJ
%R < 10%	J	R
[1] In the absence of NFG 2008 guidance for LCS results, NFG 2008 MS/MSD guidance was applied with Resolution Consultants professional judgment. [2] NFG 2008 MS/MSD does not list a minimum limit. Based on Region 1 and Resolution Consultants professional judgment, a minimum limit of 10% was used.		
[3]If the %R of more than half of the analytes are not within limits, then reject (R) nondetects for the analytes with <10% recovery and estimate (J/UJ) all other analyte(s) in the associated samples.		

Qualified sample results are shown in Table 1.

Field Duplicate Results

A field duplicate was not included in the SDG.

Internal Standard Results

The internal standard (IS) recoveries were reviewed for conformance with the QC acceptance criteria.

All QC acceptance criteria were met.

Sample Results/Reporting Issues

All compounds detected at concentrations less than the limit of quantitation (LOQ) but greater than the method detection limit (MDL) were qualified by the laboratory as estimated (J). This "J" qualifier was retained during data validation.

Any sample that was analyzed at a dilution due to high concentrations of target or non-targets was checked to ensure that the results and/or sample specific LODs and LOQs were adjusted accordingly by the laboratory.

The percent solids data were reviewed to ensure that NFG 2008 specified criteria were met.

All percent solids criteria were met.

QUALIFICATION ACTIONS

Sample results qualified as a result of validation actions are summarized in Table 1. All actions are described above.

ATTACHMENTS

Attachment A: Nonconformance Summary Tables

Attachment B: Qualifier Codes and Explanations

Attachment C: Reason Codes and Explanations

Table 1 - Data Validation Summary of Qualified Data

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SD107 1224	SE	CHRYSENE	10	10	20	UG_KG	UJ	c
OU09 SD107 1224	SE	INDENO[1,2,3-CD]PYRENE	10	10	20	UG_KG	UJ	c
OU09 SD107 2436	SE	CHRYSENE	10	10	20	UG_KG	UJ	c
OU09 SD107 2436	SE	INDENO[1,2,3-CD]PYRENE	10	10	20	UG_KG	UJ	c
OU09 SD117 1224	SE	CHRYSENE	7.0	11	22	UG_KG	J	c
OU09 SD117 1224	SE	INDENO[1,2,3-CD]PYRENE	2.7	11	22	UG_KG	J	c
OU09 SD117 2436	SE	CHRYSENE	12	12	23	UG_KG	UJ	c
OU09 SD117 2436	SE	INDENO[1,2,3-CD]PYRENE	12	12	23	UG_KG	UJ	c
RB-01_120313	WQ	BENZO[A]ANTHRACENE	0.097	0.097	0.19	UG_L	UJ	l
RB-01_120313	WQ	BENZO[B]FLUORANTHENE	0.097	0.097	0.19	UG_L	UJ	l
RB-01_120313	WQ	CHRYSENE	0.097	0.097	0.19	UG_L	UJ	c
RB-01_120313	WQ	INDENO[1,2,3-CD]PYRENE	0.097	0.097	0.19	UG_L	UJ	c

Attachment A

Non Conformance Summary Tables

Table A-1 Continuing Calibration – SVOC SIM

CCAL	Compound	% D	%D Limit	Associated Samples
WG136503-2	CHRYSENE	23.32	<20	OU09 SD107 1224 OU09 SD107 2436 OU09 SD117 2436 OU09 SD117 1224
	INDENO(1,2,3-CD)PYRENE	24.08	<20	

Table A-2 Lab Control Samples

LCS ID	Compound	LCS % Recovery	LCSD % Recovery	Lower Limit	Upper Limit	RPD	RPD Limit	Associated Samples
SVOC FS								
WG135575-2	INDENO[1,2,3-CD]PYRENE	116	138	40	120	17	30	RB-01_120313
WG135575-2	BENZIDINE	45.0	71.0	10	100	45	30	RB-01_120313
SIM								
WG135576-2RA	INDENO[1,2,3-CD]PYRENE	114	122	61	112	7	30	RB-01_120313
WG135576-2RA	BENZO[B]FLUORANTHENE	61	61.5	67	102	1	30	RB-01_120313
WG135576-2RA	CHRYSENE	109	113	70	95	4	30	RB-01_120313
WG135576-2RA	BENZO[A]ANTHRACENE	67.5	65.5	70	110	3	30	RB-01_120313

Attachment B

Qualifier Codes and Explanations

Qualifier	Explanation
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
UJ	The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual quantitation limit necessary to accurately and precisely measure the analyte in the sample.
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

Attachment C

Reason Codes and Explanations

Reason Code	Explanation
be	Equipment blank contamination
bf	Field blank contamination
bl	Laboratory blank contamination
c	Calibration issue
d	Reporting limit raised due to chromatographic interference
fd	Field duplicate RPDs
h	Holding times
i	Internal standard areas
k	Estimated Maximum Possible Concentration (EMPC)
l	LCS or OPR recoveries
lc	Labeled compound recovery
ld	Laboratory duplicate RPDs
lp	Laboratory control sample/laboratory control sample duplicate RPDs
m	Matrix spike recovery
md	Matrix spike/matrix spike duplicate RPDs
nb	Negative laboratory blank contamination
p	Chemical preservation issue
r	Dual column RPD
q	Quantitation issue
s	Surrogate recovery
su	Ion suppression
t	Temperature preservation issue
x	Percent solids
y	Serial dilution results
z	ICS results

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Data Validation Report

Project:	MRP Site 1 (OU9) Remedial Investigation, NAVSTA Newport, Rhode Island CTO WE06
Laboratory:	Katahdin Analytical Services, Scarborough, Maine
Service Request:	CARR-3
Analyses/Method:	Polycyclic Aromatic Hydrocarbons (GC/MS) Full Scan and SIM / EPA SW-846 Method 8270D
Validation Level:	Limited
Resolution Consultants Project Number:	60250336 SA.DV
Prepared by:	Helen Jones Parry/Resolution Consultants — Completed on: 02/03/2014
Reviewed by:	Kristin Rutherford/Resolution Consultants — File Name: CARR-3_SE_8270_DVRpt.docx

SUMMARY

The samples listed below were collected by Resolution Consultants from the MRP Site 1 (OU9), NAVSTA Newport, Rhode Island on December 3, 2013.

Sample ID	Matrix/Sample Type
FD-02_SE_120313	Field Duplicate of OU09 SD110 1224
OU09 SD108 1224	Sediment
OU09 SD108 2436	Sediment
OU09 SD109 0012	Sediment
OU09 SD109 0012W	Sediment
OU09 SD109 1224	Sediment
OU09 SD109 2436	Sediment
OU09 SD110 0012	Sediment
OU09 SD110 0012W	Sediment
OU09 SD110 1224	Sediment
OU09 SD110 2436	Sediment

The data have been validated in accordance with the project-specific Sampling and Analysis Plan, *Sampling and Analysis Plan, Former Carr Point Shooting Range (MRP Site 1, OU9), Naval Station (NAVSTA) Newport, Rhode Island, Final* (Naval Facilities Engineering Command, Mid-Atlantic, 2013) and the following references:

- *DoD Quality Systems Manual (QMS) for Environmental Laboratories, version 4.2* (DoD EDQW, 2010);

- *USEPA Region 1, EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses* (December 1996);
- *USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review* (June 2008);
- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW846, Method 8270D, Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)* (USEPA, 1996);
- laboratory quality control (QC) limits, as applicable.

The USEPA Region 1 and National Data Validation Functional Guidelines were modified to accommodate the non-CLP methodologies. In the absence of method-specific direction for validation, Resolution Consultants professional judgment was used as appropriate.

REVIEW ELEMENTS

The data were evaluated based on the following parameters (where applicable to the method):

✓ Data completeness (chain-of-custody (COC)/sample integrity
✓ Holding times and sample preservation
✓ Instrument tuning
✗ Initial calibration/continuing calibration verification
✓ Laboratory blanks/equipment blanks
✓ Surrogate spike recoveries
✗ Matrix spike (MS) and/or matrix spike duplicate (MSD) results
✓ Laboratory control sample (LCS)/laboratory control sample duplicate (LCSD) results
✗ Field duplicates
✓ Internal standards
✓ Sample results/reporting issues

The symbol (✓) indicates that no validation qualifiers were applied based on this parameter. NA indicates that the parameter was not included as part of this data set or was not applicable to this validation and therefore not reviewed. The symbol (✗) indicates that a quality control (QC) nonconformance resulted in the qualification of data. Any QC nonconformance that resulted in the qualification of data is discussed below. In addition, nonconformances or other issues that were noted during validation, but did not result in qualification of data, may be discussed for informational purposes only.

The data appear valid as reported and may be used for decision making purposes. Selected data points were estimated, negated, and/or rejected due to nonconformances of certain QC criteria (see discussion below). Qualified sample results are presented in Table 1.

RESULTS

<u>Data Completeness</u>

The data package was reviewed and found to meet acceptance criteria for completeness:

- The COCs were reviewed for completeness of information relevant to the samples and requested analyses, and for signatures indicating transfer of sample custody.

- The laboratory sample login sheet(s) were reviewed for issues potentially affecting sample integrity, including the condition of sample containers upon receipt at the laboratory.
- Completeness of analyses was verified by comparing the reported results to the COC requests.

Holding Times/Sample Preservation

Sample preservation and preparation/analysis holding times were reviewed for conformance with the QC acceptance criteria.

The QC acceptance criteria were met.

GC/MS Performance Checks

The data were reviewed to ensure that the decafluorotriphenylphosphine (DFTPP) tuning was performed at the correct frequency and that the method acceptance criteria were met. All samples were analyzed within 12 hours of the DFTPP tunes.

Initial Calibration/Continuing Calibration Verification

Calibration data were reviewed for conformance with the QC acceptance criteria to ensure that:

- the initial calibration (ICAL) percent relative standard deviation (%RSD), correlation coefficient (r)/coefficient of determination (r2), and/or response factor method acceptance criteria were met;
- the initial calibration verification standard (ICV) percent recovery acceptance criteria were met;
- the continuing calibration verification standard (CCV) method percent difference or percent drift (%Ds) and RF acceptance criteria were met; and
- the retention time method acceptance criteria were met.

Nonconformances are summarized in Attachment A in Table A-1. Data qualification to the analytes associated with the specific ICAL and/or CCV was as follows:

ICAL and CCV Response Factor Nonconformances

Criteria	Actions	
	Detected Results	**Nondetected Results[4]**
SPCCs		
RF<0.050 for N-nitroso-di-n-propylamine; hexachlorocyclopentadiene; 2,4-dinitrophenol; and 4-nitrophenol.	J[1]	UJ[1]
All compounds except SPCCs and Poor Performing Compounds[2]		
RF<0.050	J	R[3]
RF<0.05 but>0.010 (if low standard response is adequate)	J[1]	UJ[1]
Poor Performing Compounds[2]		
RF<0.010	J	R
[1]No guidance in NFG, thus Resolution Consultants professional judgment was used.		
[2]As defined in Table 28 of the NFG.		
[3]Resolution Consultants professional judgment may be used to either raise reporting level or to estimate reporting limit if low standard response is adequate.		

[4]Sample results qualified as not detected (U) due to blank contamination are not rejected, but estimated (UJ).
SPCCs - System Performance Check Compounds as listed in SW-846 Method 8270C

ICAL Linearity Nonconformances

Criteria	Actions	
	Detected Results	Nondetected
%RSD > 30% for CCCs (acenaphthene, 1,4-dichlorobenzene, hexachlorobutadiene, diphenylamine, di-n-octyl phthalate, fluoranthene, and benzo(a)pyrene; 4-chloro-3-methylphenol, 2,4-dichlorophenol, 2-nitrophenol, phenol, pentachlorophenol, and 2,4,6-trichlorophenol)	J*	UJ*
%RSD > 15% and quantitation based on mean RF	J	UJ
r or r^2 < 0.99 and quantitation based on linear regression	J*	UJ*
* No guidance in NFG, thus Resolution Consultants professional judgment was used		
CCCs - Calibration Check Compounds as listed in SW-846 Method 8270C		

ICV Recovery Nonconformances

Criteria	Actions*	
	Detected Results	Nondetected Results
Recovery > 120	J	UJ
Recovery < 80	J	UJ
* No guidance in NFG, thus Resolution Consultants professional judgment was used		

CCV Linearity Nonconformances

Criteria	Actions	
	Detected Results	Nondetected Results
%D > 20%	J	UJ
%Drift >20%	J*	UJ*
* No guidance in NFG, thus Resolution Consultants professional judgment was used		

Qualified sample results are shown in Table 1.

<u>Laboratory Blanks/Equipment Blanks</u>

Laboratory method blanks and equipment rinsate blanks were evaluated as to whether there were contaminants detected above the method detection limit (MDL).

Data validation qualifications for individual samples are based on the maximum contaminant concentration detected in all associated blanks.

Detected results in blanks are not discussed in this data validation report if the associated results were nondetect or if qualification of sample results was not required.

The QC acceptance criteria were met and/or qualification of the sample results was not required. There were no detected target analytes reported in the method blank or equipment blank sample RB-01_120313 reported in SDG CARR-1.

Surrogate Spike Recoveries

The surrogate recoveries (%Rs) were reviewed for conformance with the QC acceptance criteria.

All QC acceptance criteria were met.

MS/MSD Results

The MS/MSD %Rs and relative percent differences (RPDs) were reviewed for conformance with the QC acceptance criteria.

Nonconformances are summarized in Attachment A in Table A-2. Data qualification to the analytes associated with the specific MS/MSD nonconformances was as follows:

Actions: (Based on NFG 2008, Region 1, and Resolution Consultants professional judgment)

Criteria	Action	
	Detected Compounds	**Nondetected Compounds**
%R> UL	J	No qualification
10% ≤ %R < LL*	J	UJ
%R <10%*	J	R
%RPD > UL	J	No qualification
* NFG 2008 does not list a minimum limit. Based on Region 1 and Resolution Consultants professional judgment, a minimum limit of 10% was used.		

Notes:

1. Based on NFG 2008 SVOC guidance, Resolution Consultants professional judgment is used to reject (R) non-detects in all associated samples for any analyte with < 10% recovery. Also, Resolution Consultants professional judgment is used to estimate (UJ) rather the reject (R) sample results previously negated (U) on the basis of blank contamination.

2. If a field duplicate sample was also collected for the native sample chosen for MS/MSD analysis, professional judgment is used to apply MS/MSD actions to the corresponding field duplicate sample as well as the native sample.

Qualified sample results are shown in Table 1.

LCS/LCSD Results

The LCS/LCSD %Rs and/or relative percent recoveries (RPDs) were reviewed for conformance with the QC acceptance criteria.

All QC acceptance criteria were met.

Field Duplicate Results

Field duplicate RPDs were reviewed for conformance with the Resolution Consultants QC criteria of ≤50% for solid matrices and ≤30% for aqueous matrices. These criteria apply if both results were greater than five times the limit of quantitation (LOQ).

Nonconformances are summarized in Attachment A in Table A-3. Data qualification to the analytes associated with the specific field duplicate RPDs was as follows:

Criteria	RPD	Action	
		Detected	Nondetected
Sample and duplicate are nondetect results	Not calculable (NC)	No qualification	No qualification
Sample and duplicate results ≥2xLOQ	>30 (aqueous) >50 (solids)	J	Not Applicable
Sample and duplicate results <2xLOQ	>60 (aqueous) >100 (solids)	J	Not Applicable
If sample or duplicate result is >2xLOQ and the other is not detected	NC	J	UJ
If sample or duplicate result is <2xLOQ and the other is not detected	NC	No qualification	No qualification

Actions: (Resolution Consultants professional judgment was used)

Qualified sample results are shown in Table 1.

Internal Standard Results

The internal standard (IS) recoveries were reviewed for conformance with the QC acceptance criteria.

All QC acceptance criteria were met.

Sample Results/Reporting Issues

All compounds detected at concentrations less than the limit of quantitation (LOQ) but greater than the method detection limit (MDL) were qualified by the laboratory as estimated (J). This "J" qualifier was retained during data validation.

Any sample that was analyzed at a dilution due to high concentrations of target or non-targets was checked to ensure that the results and/or sample specific LODs and LOQs were adjusted accordingly by the laboratory.

The percent solids data were reviewed to ensure that NFG 2008 specified criteria were met.

All percent solids criteria were met.

QUALIFICATION ACTIONS

Sample results qualified as a result of validation actions are summarized in Table 1. All actions are described above.

ATTACHMENTS

Attachment A: Nonconformance Summary Tables

Attachment B: Qualifier Codes and Explanations

Attachment C: Reason Codes and Explanations

Table 1 - Data Validation Summary of Qualified Data

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
FD-02_SE_120313	SE	BENZO[A]ANTHRACENE	3.3	11	22	UG_KG	J	fd
FD-02_SE_120313	SE	BENZO[B]FLUORANTHENE	4.3	11	22	UG_KG	J	fd
FD-02_SE_120313	SE	FLUORANTHENE	3.8	11	22	UG_KG	J	c,fd
FD-02_SE_120313	SE	INDENO[1,2,3-CD]PYRENE	2.5	11	22	UG_KG	J	c
FD-02_SE_120313	SE	PYRENE	11	11	22	UG_KG	UJ	c
OU09 SD108 1224	SE	BENZO[A]PYRENE	3.8	11	23	UG_KG	J	m
OU09 SD108 1224	SE	BENZO[G,H,I]PERYLENE	2.7	11	23	UG_KG	J	m
OU09 SD108 1224	SE	BENZO[K]FLUORANTHENE	3.5	11	23	UG_KG	UJ	m
OU09 SD108 2436	SE	FLUORANTHENE	8.6	12	23	UG_KG	J	c
OU09 SD108 2436	SE	INDENO[1,2,3-CD]PYRENE	5.2	12	23	UG_KG	J	c
OU09 SD108 2436	SE	PYRENE	5.1	12	23	UG_KG	J	c
OU09 SD109 0012W	SE	FLUORANTHENE	5.0	12	24	UG_KG	J	c
OU09 SD109 0012W	SE	INDENO[1,2,3-CD]PYRENE	12	12	24	UG_KG	UJ	c
OU09 SD109 0012W	SE	PYRENE	12	12	24	UG_KG	UJ	c
OU09 SD109 1224	SE	FLUORANTHENE	9.7	10	21	UG_KG	J	c
OU09 SD109 1224	SE	INDENO[1,2,3-CD]PYRENE	4.1	10	21	UG_KG	J	c
OU09 SD109 1224	SE	PYRENE	7.9	10	21	UG_KG	J	c
OU09 SD109 2436	SE	FLUORANTHENE	2.6	11	22	UG_KG	J	c
OU09 SD109 2436	SE	INDENO[1,2,3-CD]PYRENE	11	11	22	UG_KG	UJ	c
OU09 SD109 2436	SE	PYRENE	11	11	22	UG_KG	UJ	c
OU09 SD110 0012W	SE	FLUORANTHENE	16	12	24	UG_KG	J	c
OU09 SD110 0012W	SE	INDENO[1,2,3-CD]PYRENE	9.1	12	24	UG_KG	J	c
OU09 SD110 0012W	SE	PYRENE	17	12	24	UG_KG	J	c
OU09 SD110 1224	SE	BENZO[A]ANTHRACENE	12	11	22	UG_KG	J	fd
OU09 SD110 1224	SE	BENZO[B]FLUORANTHENE	18	11	22	UG_KG	J	fd
OU09 SD110 1224	SE	FLUORANTHENE	60	11	22	UG_KG	J	c,fd
OU09 SD110 1224	SE	INDENO[1,2,3-CD]PYRENE	7.5	11	22	UG_KG	J	c
OU09 SD110 1224	SE	PYRENE	48	11	22	UG_KG	J	c
OU09 SD110 2436	SE	BENZO[A]ANTHRACENE	2.3	11	22	UG_KG	J	m
OU09 SD110 2436	SE	BENZO[A]PYRENE	11	11	22	UG_KG	UJ	m
OU09 SD110 2436	SE	BENZO[B]FLUORANTHENE	11	11	22	UG_KG	UJ	m
OU09 SD110 2436	SE	BENZO[G,H,I]PERYLENE	11	11	22	UG_KG	UJ	m
OU09 SD110 2436	SE	DIBENZ[A,H]ANTHRACENE	11	11	22	UG_KG	UJ	m
OU09 SD110 2436	SE	FLUORANTHENE	2.6	11	22	UG_KG	J	c
OU09 SD110 2436	SE	INDENO[1,2,3-CD]PYRENE	11	11	22	UG_KG	UJ	c,m
OU09 SD110 2436	SE	PYRENE	11	11	22	UG_KG	UJ	c

Attachment A

Non Conformance Summary Tables

Table A-1 Continuing Calibration – SVOC SIM

CCAL	Compound	% D	%D Limit	Associated Samples
WG136358-2	FLUORANTHENE	24.14	<20	OU09 SD108 2436 OU09 SD109 1224 OU09 SD109 2436 OU09 SD110 1224 OU09 SD110 2436 FD-02_SE_120313 OU09 SD110 0012W OU09 SD109 0012W
	PYRENE	26.95	<20	
	INDENO(1,2,3-CD)PYRENE	20.87	<20	

Table A-2 Matrix Spikes

Sample ID	Compound	MS % Recovery	MSD % Recovery	Lower Limit	Upper Limit	RPD	RPD Limit
OU09 SD110 2436	BENZO(A)ANTHRACENE	49.8	41.5	48	100	8	50
OU09 SD110 2436	BENZO[B]FLUORANTHENE	58.7	44.6	53	100	18	50
OU09 SD110 2436	BENZO[G,H,I]PERYLENE	31.4	26.2	53	103	9	50
OU09 SD110 2436	BENZO[A]PYRENE	41.8	37.2	61	101	3	50
OU09 SD110 2436	INDENO[1,2,3-CD]PYRENE	55.7	49.2	50	105	3	50
OU09 SD110 2436	DIBENZ[A,H]ANTHRACENE	43.7	38.7	55	105	3	50
OU09 SD108 1224	BENZO[G,H,I]PERYLENE	47.6	48.1	53	103	6	50
OU09 SD108 1224	BENZO[K]FLUORANTHENE	41.4	35.2	49	96	21	50
OU09 SD108 1224	BENZO[A]PYRENE	46.5	48.5	61	101	3	50

Table A-3 Field Duplicates

Sample ID	Duplicate ID	Compound	Sample Result	Qual	Duplicate Result	Qual	LOD	LOQ	Units	RPD
OU09 SD110 1224	FD-02_SE_120313	BENZO[B]FLUORANTHENE	4.3	J	18	J	11	22	UG_KG	123
OU09 SD110 1224	FD-02_SE_120313	FLUORANTHENE	3.8	J	60		11	22	UG_KG	176
OU09 SD110 1224	FD-02_SE_120313	BENZO[A]ANTHRACENE	3.3	J	12	J	11	22	UG_KG	114
OU09 SD110 1224	FD-02_SE_120313	INDENO[1,2,3-CD]PYRENE	2.5	J	7.5	J	11	22	UG_KG	100

Attachment B

Qualifier Codes and Explanations

Qualifier	Explanation
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
UJ	The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual quantitation limit necessary to accurately and precisely measure the analyte in the sample.
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

Attachment C

Reason Codes and Explanations

Reason Code	Explanation
be	Equipment blank contamination
bf	Field blank contamination
bl	Laboratory blank contamination
c	Calibration issue
d	Reporting limit raised due to chromatographic interference
fd	Field duplicate RPDs
h	Holding times
i	Internal standard areas
k	Estimated Maximum Possible Concentration (EMPC)
l	LCS or OPR recoveries
lc	Labeled compound recovery
ld	Laboratory duplicate RPDs
lp	Laboratory control sample/laboratory control sample duplicate RPDs
m	Matrix spike recovery
md	Matrix spike/matrix spike duplicate RPDs
nb	Negative laboratory blank contamination
p	Chemical preservation issue
r	Dual column RPD
q	Quantitation issue
s	Surrogate recovery
su	Ion suppression
t	Temperature preservation issue
x	Percent solids
y	Serial dilution results
z	ICS results

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Data Validation Report

Project:	MRP Site 1 (OU9) Remedial Investigation, NAVSTA Newport, Rhode Island CTO WE06
Laboratory:	Katahdin Analytical Services, Scarborough, Maine
Service Request:	CARR-5
Analyses/Method:	Polycyclic Aromatic Hydrocarbons (GC/MS) Full Scan and SIM / EPA SW-846 Method 8270D
Validation Level:	Limited
Resolution Consultants Project Number:	60250336 SA.DV
Prepared by:	Helen Jones Parry/Resolution Consultants — Completed on: 02/03/2014
Reviewed by:	Kristin Rutherford/Resolution Consultants — File Name: CARR-5_SE_8270_DVRpt

SUMMARY

The samples listed below were collected by Resolution Consultants from MRP Site 1 (OU9), NAVSTA Newport, Rhode Island on December 5 and 6, 2013.

Sample ID	Matrix/Sample Type
OU09 SD105 0012	Sediment
OU09 SD105 0012W	Sediment
OU09 SD105 1224	Sediment
OU09 SD105 2436	Sediment
OU09 SD112 0012	Sediment
OU09 SD112 0012W	Sediment
OU09 SD112 1224	Sediment
OU09 SD112 2436	Sediment
OU09 SD113 0012	Sediment
OU09 SD113 0012W	Sediment
OU09 SD113 1224	Sediment
OU09 SD113 2436	Sediment
OU09 SD119 0012	Sediment
OU09 SD119 0012W	Sediment
OU09 SD119 1224	Sediment

The data have been validated in accordance with the project-specific Sampling and Analysis Plan, *Sampling and Analysis Plan, Former Carr Point Shooting Range (MRP Site 1, OU9), Naval Station*

(NAVSTA) Newport, Rhode Island, Final (Naval Facilities Engineering Command, Mid-Atlantic, 2013) and the following references:

- *DoD Quality Systems Manual (QMS) for Environmental Laboratories, version 4.2* (DoD EDQW, 2010);
- *USEPA Region 1, EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses* (December 1996);
- *USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review* (June 2008);
- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW846, Method 8270D, Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)* (USEPA, 1996);
- laboratory quality control (QC) limits, as applicable.

The USEPA Region 1 and National Data Validation Functional Guidelines were modified to accommodate the non-CLP methodologies. In the absence of method-specific direction for validation, Resolution Consultants professional judgment was used as appropriate.

REVIEW ELEMENTS

The data were evaluated based on the following parameters (where applicable to the method):

✓	Data completeness (chain-of-custody (COC)/sample integrity
✓	Holding times and sample preservation
✓	Instrument tuning
✗	Initial calibration/continuing calibration verification
✓	Laboratory blanks/equipment blanks
✓	Surrogate spike recoveries
NA	Matrix spike (MS) and/or matrix spike duplicate (MSD) results
✗	Laboratory control sample (LCS)/laboratory control sample duplicate (LCSD) results
NA	Field duplicates
✓	Internal standards
✓	Sample results/reporting issues

The symbol (✓) indicates that no validation qualifiers were applied based on this parameter. NA indicates that the parameter was not included as part of this data set or was not applicable to this validation and therefore not reviewed. The symbol (✗) indicates that a quality control (QC) nonconformance resulted in the qualification of data. Any QC nonconformance that resulted in the qualification of data is discussed below. In addition, nonconformances or other issues that were noted during validation, but did not result in qualification of data, may be discussed for informational purposes only.

The data appear valid as reported and may be used for decision making purposes. Selected data points were estimated, negated, and/or rejected due to nonconformances of certain QC criteria (see discussion below). Qualified sample results are presented in Table 1.

RESULTS

Data Completeness

The data package was reviewed and found to meet acceptance criteria for completeness:

- The COCs were reviewed for completeness of information relevant to the samples and requested analyses, and for signatures indicating transfer of sample custody.
- The laboratory sample login sheet(s) were reviewed for issues potentially affecting sample integrity, including the condition of sample containers upon receipt at the laboratory.
- Completeness of analyses was verified by comparing the reported results to the COC requests.

Holding Times/Sample Preservation

Sample preservation and preparation/analysis holding times were reviewed for conformance with the QC acceptance criteria.

The QC acceptance criteria were met.

GC/MS Performance Checks

The data were reviewed to ensure that the decafluorotriphenylphosphine (DFTPP) tuning was performed at the correct frequency and that the method acceptance criteria were met. All samples were analyzed within 12 hours of the DFTPP tunes.

Initial Calibration/Continuing Calibration Verification

Calibration data were reviewed for conformance with the QC acceptance criteria to ensure that:

- the initial calibration (ICAL) percent relative standard deviation (%RSD), correlation coefficient (r)/coefficient of determination (r2), and/or response factor method acceptance criteria were met;
- the initial calibration verification standard (ICV) percent recovery acceptance criteria were met;
- the continuing calibration verification standard (CCV) method percent difference or percent drift (%Ds) and RF acceptance criteria were met; and
- the retention time method acceptance criteria were met.

Nonconformances are summarized in Attachment A in Tables A-1. Data qualification to the analytes associated with the specific ICAL and/or CCV was as follows:

ICAL and CCV Response Factor Nonconformances

Criteria	Actions	
	Detected Results	Nondetected Results[4]
SPCCs		
RF<0.050 for N-nitroso-di-n-propylamine; hexachlorocyclopentadiene; 2,4-dinitrophenol; and 4-nitrophenol.	J[1]	UJ[1]
All compounds except SPCCs and Poor Performing Compounds[2]		
RF<0.050	J	R[3]
RF<0.05 but>0.010 (if low standard response is adequate)	J[1]	UJ[1]
Poor Performing Compounds[2]		
RF<0.010	J	R
[1]No guidance in NFG, thus Resolution Consultants professional judgment was used.		
[2]As defined in Table 28 of the NFG.		
[3]Resolution Consultants professional judgment may be used to either raise reporting level or to estimate reporting limit if low standard response is adequate.		
[4]Sample results qualified as not detected (U) due to blank contamination are not rejected, but estimated (UJ).		
SPCCs - System Performance Check Compounds as listed in SW-846 Method 8270C		

ICAL Linearity Nonconformances

Criteria	Actions	
	Detected Results	Nondetected
%RSD > 30% for CCCs (acenaphthene, 1,4-dichlorobenzene, hexachlorobutadiene, diphenylamine, di-n-octyl phthalate, fluoranthene, and benzo(a)pyrene; 4-chloro-3-methylphenol, 2,4-dichlorophenol, 2-nitrophenol, phenol, pentachlorophenol, and 2,4,6-trichlorophenol)	J*	UJ*
%RSD > 15% and quantitation based on mean RF	J	UJ
r or r^2 < 0.99 and quantitation based on linear regression	J*	UJ*
* No guidance in NFG, thus Resolution Consultants professional judgment was used		
CCCs - Calibration Check Compounds as listed in SW-846 Method 8270C		

ICV Recovery Nonconformances

Criteria	Actions*	
	Detected Results	Nondetected Results
Recovery > 120	J	UJ
Recovery < 80	J	UJ
* No guidance in NFG, thus Resolution Consultants professional judgment was used		

CCV Linearity Nonconformances

Criteria	Actions	
	Detected Results	Nondetected Results
%D > 20%	J	UJ
%Drift >20%	J*	UJ*
* No guidance in NFG, thus Resolution Consultants professional judgment was used		

Qualified sample results are shown in Table 1.

Laboratory Blanks/Equipment Blanks

Laboratory method blanks and equipment rinsate blanks were evaluated as to whether there were contaminants detected above the method detection limit (MDL).

Data validation qualifications for individual samples are based on the maximum contaminant concentration detected in all associated blanks.

Detected results in blanks are not discussed in this data validation report if the associated results were nondetect or if qualification of sample results was not required.

The QC acceptance criteria were met and/or qualification of the sample results was not required. There were no detected target analytes reported in the method blank or equipment blank sample RB-01_120313, associated with these samples.

Surrogate Spike Recoveries

The surrogate recoveries (%Rs) were reviewed for conformance with the QC acceptance criteria.

All QC acceptance criteria were met.

MS/MSD Results

An MS/MSD was not performed as a part of this SDG.

LCS/LCSD Results

The LCS/LCSD %Rs and/or relative percent recoveries (RPDs) were reviewed for conformance with the QC acceptance criteria.

Nonconformances are summarized in Attachment A in Table A-2. Data qualification to the analytes associated with the specific LCS %Rs or RPDs was as follows:

Criteria[1,2]	Action[3]	
	Detected Compounds	Nondetected Compounds
%R or RPD > UL	J	No qualification
10%≥%R < LL	J	UJ
%R < 10%	J	R

[1] In the absence of NFG 2008 guidance for LCS results, NFG 2008 MS/MSD guidance was applied with Resolution Consultants professional judgment. [2] NFG 2008 MS/MSD does not list a minimum limit. Based on Region 1 and Resolution Consultants professional judgment, a minimum limit of 10% was used.
[3]If the %R of more than half of the analytes are not within limits, then reject (R) nondetects for the analytes with <10% recovery and estimate (J/UJ) all other analyte(s) in the associated samples.

Qualified sample results are shown in Table 1.

Field Duplicate Results

A field duplicate sample was not collected as a part of this SDG.

Internal Standard Results

The internal standard (IS) recoveries were reviewed for conformance with the QC acceptance criteria.

All QC acceptance criteria were met.

Sample Results/Reporting Issues

All compounds detected at concentrations less than the limit of quantitation (LOQ) but greater than the method detection limit (MDL) were qualified by the laboratory as estimated (J). This "J" qualifier was retained during data validation.

Any sample that was analyzed at a dilution due to high concentrations of target or non-targets was checked to ensure that the results and/or sample specific LODs and LOQs were adjusted accordingly by the laboratory.

The percent solids data were reviewed to ensure that NFG 2008 specified criteria were met.

All percent solids criteria were met.

QUALIFICATION ACTIONS

Sample results qualified as a result of validation actions are summarized in Table 1. All actions are described above.

ATTACHMENTS

Attachment A: Nonconformance Summary Tables

Attachment B: Qualifier Codes and Explanations

Attachment C: Reason Codes and Explanations

Table 1 - Data Validation Summary of Qualified Data

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SD105 0012	SE	BENZO[G,H,I]PERYLENE	9.0	12	24	UG_KG	J	l
OU09 SD105 0012W	SE	BENZO[G,H,I]PERYLENE	15	13	26	UG_KG	J	l
OU09 SD105 1224	SE	BENZO[G,H,I]PERYLENE	5.5	12	24	UG_KG	J	c,l
OU09 SD105 1224	SE	BENZO[A]ANTHRACENE	12	12	24	UG_KG	J	c
OU09 SD105 1224	SE	BENZO[A]PYRENE	13	12	24	UG_KG	J	c
OU09 SD105 1224	SE	BENZO[B]FLUORANTHENE	18	12	24	UG_KG	J	c
OU09 SD105 2436	SE	BENZO[G,H,I]PERYLENE	7.9	13	26	UG_KG	J	l
OU09 SD112 0012	SE	BENZO[G,H,I]PERYLENE	12	12	25	UG_KG	UJ	l
OU09 SD112 0012W	SE	BENZO[G,H,I]PERYLENE	13	13	26	UG_KG	UJ	c,l
OU09 SD112 0012W	SE	BENZO[A]ANTHRACENE	3.8	13	26	UG_KG	J	c
OU09 SD112 0012W	SE	BENZO[A]PYRENE	13	13	26	UG_KG	UJ	c
OU09 SD112 0012W	SE	BENZO[B]FLUORANTHENE	4.3	13	26	UG_KG	J	c
OU09 SD112 1224	SE	BENZO[G,H,I]PERYLENE	12	12	23	UG_KG	UJ	c,l
OU09 SD112 1224	SE	BENZO[A]ANTHRACENE	3.6	12	23	UG_KG	J	c
OU09 SD112 1224	SE	BENZO[A]PYRENE	12	12	23	UG_KG	UJ	c
OU09 SD112 1224	SE	BENZO[B]FLUORANTHENE	5.4	12	23	UG_KG	J	c
OU09 SD112 2436	SE	BENZO[G,H,I]PERYLENE	13	13	25	UG_KG	UJ	c,l
OU09 SD112 2436	SE	BENZO[A]ANTHRACENE	13	13	25	UG_KG	UJ	c
OU09 SD112 2436	SE	BENZO[A]PYRENE	13	13	25	UG_KG	UJ	c
OU09 SD112 2436	SE	BENZO[B]FLUORANTHENE	13	13	25	UG_KG	UJ	c
OU09 SD113 0012	SE	BENZO[G,H,I]PERYLENE	5.6	12	25	UG_KG	J	l
OU09 SD113 0012W	SE	BENZO[G,H,I]PERYLENE	10	13	26	UG_KG	J	c,l
OU09 SD113 0012W	SE	BENZO[A]ANTHRACENE	22	13	26	UG_KG	J	c
OU09 SD113 0012W	SE	BENZO[A]PYRENE	27	13	26	UG_KG	J	c
OU09 SD113 0012W	SE	BENZO[B]FLUORANTHENE	35	13	26	UG_KG	J	c
OU09 SD113 1224	SE	BENZO[G,H,I]PERYLENE	12	12	25	UG_KG	UJ	c,l
OU09 SD113 1224	SE	BENZO[A]ANTHRACENE	4.5	12	25	UG_KG	J	c
OU09 SD113 1224	SE	BENZO[A]PYRENE	4.8	12	25	UG_KG	J	c
OU09 SD113 1224	SE	BENZO[B]FLUORANTHENE	7.4	12	25	UG_KG	J	c
OU09 SD113 2436	SE	BENZO[G,H,I]PERYLENE	2.5	12	24	UG_KG	J	c,l
OU09 SD113 2436	SE	BENZO[A]ANTHRACENE	6.4	12	24	UG_KG	J	c
OU09 SD113 2436	SE	BENZO[A]PYRENE	5.6	12	24	UG_KG	J	c
OU09 SD113 2436	SE	BENZO[B]FLUORANTHENE	7.7	12	24	UG_KG	J	c
OU09 SD119 0012	SE	BENZO[G,H,I]PERYLENE	24	13	25	UG_KG	J	l
OU09 SD119 0012W	SE	BENZO[G,H,I]PERYLENE	14	13	26	UG_KG	J	l
OU09 SD119 1224	SE	BENZO[G,H,I]PERYLENE	9.4	13	26	UG_KG	J	l

Attachment A

Non Conformance Summary Tables

Table A-1 Initial Calibration – SVOC SIM

ICAL	Compound	% RSD	%RSD Limit	ICV %R	ICV %R Limits	Associated Samples
WG136526-8 12/23/13	BENZO(A)ANTHRACENE			77.96	80-120	OU09 SD105 1224 OU09 SD112 0012W OU09 SD112 1224 OU09 SD112 2436 OU09 SD113 0012W OU09 SD113 1224 OU09 SD113 2436
	BENZO(B)FLUORANTHENE			76.92	80-120	
	BENZO(A)PYRENE			78.97	80-120	
	BENZO(G,H,I)PERYLENE			78.72	80-120	

Table A-2 Lab Control Samples

LCS ID	Compound	LCS % Recovery	LCSD % Recovery	Lower Limit	Upper Limit	RPD	RPD Limit	Associated Samples
WG135879-2	BENZO[G,H,I]PERYLENE	44.5	38.2	53	103	15	50	OU09 SD105 0012 OU09 SD105 0012W OU09 SD105 1224 OU09 SD105 2436 OU09 SD112 0012 OU09 SD112 0012W OU09 SD112 1224 OU09 SD112 2436 OU09 SD113 0012 OU09 SD113 0012W OU09 SD113 1224 OU09 SD113 2436 OU09 SD119 0012 OU09 SD119 0012W OU09 SD119 1224

Attachment B

Qualifier Codes and Explanations

Qualifier	Explanation
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
UJ	The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual quantitation limit necessary to accurately and precisely measure the analyte in the sample.
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

Attachment C

Reason Codes and Explanations

Reason Code	Explanation
be	Equipment blank contamination
bf	Field blank contamination
bl	Laboratory blank contamination
c	Calibration issue
d	Reporting limit raised due to chromatographic interference
fd	Field duplicate RPDs
h	Holding times
i	Internal standard areas
k	Estimated Maximum Possible Concentration (EMPC)
l	LCS or OPR recoveries
lc	Labeled compound recovery
ld	Laboratory duplicate RPDs
lp	Laboratory control sample/laboratory control sample duplicate RPDs
m	Matrix spike recovery
md	Matrix spike/matrix spike duplicate RPDs
nb	Negative laboratory blank contamination
p	Chemical preservation issue
r	Dual column RPD
q	Quantitation issue
s	Surrogate recovery
su	Ion suppression
t	Temperature preservation issue
x	Percent solids
y	Serial dilution results
z	ICS results

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Data Validation Report

Project:	MRP Site 1 (OU9) Remedial Investigation, NAVSTA Newport, Rhode Island CTO WE06
Laboratory:	Katahdin Analytical Services, Scarborough, Maine
Service Request:	CARR-4
Analyses/Method:	Polycyclic Aromatic Hydrocarbons (GC/MS) Full Scan and SIM / EPA SW-846 Method 8270D
Validation Level:	Limited
Resolution Consultants Project Number:	60250336 SA.DV
Prepared by:	Helen Jones Parry/Resolution Consultants — Completed on: 02/03/2014
Reviewed by:	Kristin Rutherford/Resolution Consultants — File Name: CARR-4_SE_8270_DVRpt.docx

SUMMARY

The samples listed below were collected by Resolution Consultants from the MRP Site 1 (OU9), NAVSTA Newport, Rhode Island on December 4, 2013 and December 5, 2013.

Sample ID	Matrix/Sample Type
OU09 SD111 0012	Sediment
OU09 SD111 0012W	Sediment
OU09 SD111 1224	Sediment
OU09 SD111 2436	Sediment
OU09 SD120 0012	Sediment
OU09 SD120 0012W	Sediment
OU09 SD120 1224	Sediment
OU09 SD120 2436	Sediment
OU09 SD121 0012	Sediment
OU09 SD121 0012W	Sediment
OU09 SD121 1224	Sediment
OU09 SD121 2436	Sediment

The data have been validated in accordance with the project-specific Sampling and Analysis Plan, *Sampling and Analysis Plan, Former Carr Point Shooting Range (MRP Site 1, OU9), Naval Station (NAVSTA) Newport, Rhode Island, Final* (Naval Facilities Engineering Command, Mid-Atlantic, 2013) and the following references:

- *DoD Quality Systems Manual (QMS) for Environmental Laboratories, version 4.2* (DoD EDQW, 2010);
- *USEPA Region 1, EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses* (December 1996);
- *USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review* (June 2008);
- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW846, Method 8270D, Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)* (USEPA, 1996);
- laboratory quality control (QC) limits, as applicable.

The USEPA Region 1 and National Data Validation Functional Guidelines were modified to accommodate the non-CLP methodologies. In the absence of method-specific direction for validation, Resolution Consultants professional judgment was used as appropriate.

REVIEW ELEMENTS

The data were evaluated based on the following parameters (where applicable to the method):

✓	Data completeness (chain-of-custody (COC)/sample integrity
✓	Holding times and sample preservation
✓	Instrument tuning
✗	Initial calibration/continuing calibration verification
✓	Laboratory blanks/equipment blanks
✓	Surrogate spike recoveries
NA	Matrix spike (MS) and/or matrix spike duplicate (MSD) results
✓	Laboratory control sample (LCS)/laboratory control sample duplicate (LCSD) results
NA	Field duplicates
✓	Internal standards
✓	Sample results/reporting issues

The symbol (✓) indicates that no validation qualifiers were applied based on this parameter. NA indicates that the parameter was not included as part of this data set or was not applicable to this validation and therefore not reviewed. The symbol (✗) indicates that a quality control (QC) nonconformance resulted in the qualification of data. Any QC nonconformance that resulted in the qualification of data is discussed below. In addition, nonconformances or other issues that were noted during validation, but did not result in qualification of data, may be discussed for informational purposes only.

The data appear valid as reported and may be used for decision making purposes. Selected data points were estimated, negated, and/or rejected due to nonconformances of certain QC criteria (see discussion below). Qualified sample results are presented in Table 1.

RESULTS

<u>Data Completeness</u>

The data package was reviewed and found to meet acceptance criteria for completeness:

- The COCs were reviewed for completeness of information relevant to the samples and requested analyses, and for signatures indicating transfer of sample custody.
- The laboratory sample login sheet(s) were reviewed for issues potentially affecting sample integrity, including the condition of sample containers upon receipt at the laboratory.
- Completeness of analyses was verified by comparing the reported results to the COC requests.

Holding Times/Sample Preservation

Sample preservation and preparation/analysis holding times were reviewed for conformance with the QC acceptance criteria.

The QC acceptance criteria were met.

GC/MS Performance Checks

The data were reviewed to ensure that the decafluorotriphenylphosphine (DFTPP) tuning was performed at the correct frequency and that the method acceptance criteria were met. All samples were analyzed within 12 hours of the DFTPP tunes.

Initial Calibration/Continuing Calibration Verification

Calibration data were reviewed for conformance with the QC acceptance criteria to ensure that:

- the initial calibration (ICAL) percent relative standard deviation (%RSD), correlation coefficient (r)/coefficient of determination (r2), and/or response factor method acceptance criteria were met;
- the initial calibration verification standard (ICV) percent recovery acceptance criteria were met;
- the continuing calibration verification standard (CCV) method percent difference or percent drift (%Ds) and RF acceptance criteria were met; and
- the retention time method acceptance criteria were met.

Nonconformances are summarized in Attachment A in Tables A-1a and A-1b. Data qualification to the analytes associated with the specific ICAL and/or CCV was as follows:

ICAL and CCV Response Factor Nonconformances

Criteria	Actions	
	Detected Results	Nondetected Results[4]
SPCCs		
RF<0.050 for N-nitroso-di-n-propylamine; hexachlorocyclopentadiene; 2,4-dinitrophenol; and 4-nitrophenol.	J[1]	UJ[1]
All compounds except SPCCs and Poor Performing Compounds[2]		
RF<0.050	J	R[3]
RF<0.05 but>0.010 (if low standard response is adequate)	J[1]	UJ[1]
Poor Performing Compounds[2]		
RF<0.010	J	R
[1]No guidance in NFG, thus Resolution Consultants professional judgment was used.		
[2]As defined in Table 28 of the NFG.		

[3]Resolution Consultants professional judgment may be used to either raise reporting level or to estimate reporting limit if low standard response is adequate.
[4]Sample results qualified as not detected (U) due to blank contamination are not rejected, but estimated (UJ).
SPCCs - System Performance Check Compounds as listed in SW-846 Method 8270C

ICAL Linearity Nonconformances

Criteria	Actions	
	Detected Results	Nondetected
%RSD > 30% for CCCs (acenaphthene, 1,4-dichlorobenzene, hexachlorobutadiene, diphenylamine, di-n-octyl phthalate, fluoranthene, and benzo(a)pyrene; 4-chloro-3-methylphenol, 2,4-dichlorophenol, 2-nitrophenol, phenol, pentachlorophenol, and 2,4,6-trichlorophenol)	J*	UJ*
%RSD > 15% and quantitation based on mean RF	J	UJ
r or r^2 < 0.99 and quantitation based on linear regression	J*	UJ*
* No guidance in NFG, thus Resolution Consultants professional judgment was used		
CCCs - Calibration Check Compounds as listed in SW-846 Method 8270C		

ICV Recovery Nonconformances

Criteria	Actions*	
	Detected Results	Nondetected Results
Recovery > 120	J	UJ
Recovery < 80	J	UJ
* No guidance in NFG, thus Resolution Consultants professional judgment was used		

CCV Linearity Nonconformances

Criteria	Actions	
	Detected Results	Nondetected Results
%D > 20%	J	UJ
%Drift >20%	J*	UJ*
* No guidance in NFG, thus Resolution Consultants professional judgment was used		

Qualified sample results are shown in Table 1.

<u>Laboratory Blanks/Equipment Blanks</u>

Laboratory method blanks and equipment rinsate blanks were evaluated as to whether there were contaminants detected above the method detection limit (MDL).

Data validation qualifications for individual samples are based on the maximum contaminant concentration detected in all associated blanks.

Detected results in blanks are not discussed in this data validation report if the associated results were nondetect or if qualification of sample results was not required.

The QC acceptance criteria were met and/or qualification of the sample results was not required. There were no detected target analytes reported in the method blank or equipment blank sample RB-01_120313, associated with these samples.

Surrogate Spike Recoveries

The surrogate recoveries (%Rs) were reviewed for conformance with the QC acceptance criteria.

All QC acceptance criteria were met.

MS/MSD Results

An MS/MSD was not performed as a part of this SDG.

LCS/LCSD Results

The LCS/LCSD %Rs and/or relative percent recoveries (RPDs) were reviewed for conformance with the QC acceptance criteria.

All QC acceptance criteria were met.

Field Duplicate Results

A field duplicate sample was not collected as a part of this SDG.

Internal Standard Results

The internal standard (IS) recoveries were reviewed for conformance with the QC acceptance criteria.

All QC acceptance criteria were met.

Sample Results/Reporting Issues

All compounds detected at concentrations less than the limit of quantitation (LOQ) but greater than the method detection limit (MDL) were qualified by the laboratory as estimated (J). This "J" qualifier was retained during data validation.

Any sample that was analyzed at a dilution due to high concentrations of target or non-targets was checked to ensure that the results and/or sample specific LODs and LOQs were adjusted accordingly by the laboratory.

The percent solids data were reviewed to ensure that NFG 2008 specified criteria were met.

All percent solids criteria were met.

QUALIFICATION ACTIONS

Sample results qualified as a result of validation actions are summarized in Table 1. All actions are described above.

ATTACHMENTS

Attachment A: Nonconformance Summary Tables

Attachment B: Qualifier Codes and Explanations

Attachment C: Reason Codes and Explanations

Table 1 - Data Validation Summary of Qualified Data

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SD111 0012	SE	BENZO[K]FLUORANTHENE	4.4	12	24	UG_KG	J	c
OU09 SD111 0012	SE	INDENO[1,2,3-CD]PYRENE	5.9	12	24	UG_KG	J	c
OU09 SD111 0012W	SE	BENZO[B]FLUORANTHENE	16	13	26	UG_KG	J	c
OU09 SD111 0012W	SE	INDENO[1,2,3-CD]PYRENE	9.6	13	26	UG_KG	J	c
OU09 SD111 1224	SE	BENZO[B]FLUORANTHENE	3.3	10	20	UG_KG	J	c
OU09 SD111 1224	SE	INDENO[1,2,3-CD]PYRENE	2.0	10	20	UG_KG	J	c
OU09 SD111 2436	SE	BENZO[B]FLUORANTHENE	11	11	23	UG_KG	UJ	c
OU09 SD111 2436	SE	INDENO[1,2,3-CD]PYRENE	11	11	23	UG_KG	UJ	c
OU09 SD120 0012	SE	BENZO[K]FLUORANTHENE	31	11	22	UG_KG	J	c
OU09 SD120 0012	SE	INDENO[1,2,3-CD]PYRENE	59	11	22	UG_KG	J	c
OU09 SD120 0012W	SE	BENZO[B]FLUORANTHENE	44	13	26	UG_KG	J	c
OU09 SD120 0012W	SE	INDENO[1,2,3-CD]PYRENE	22	13	26	UG_KG	J	c
OU09 SD120 1224	SE	BENZO[B]FLUORANTHENE	8.5	11	22	UG_KG	J	c
OU09 SD120 1224	SE	INDENO[1,2,3-CD]PYRENE	5.2	11	22	UG_KG	J	c
OU09 SD120 2436	SE	BENZO[B]FLUORANTHENE	11	11	22	UG_KG	UJ	c
OU09 SD120 2436	SE	INDENO[1,2,3-CD]PYRENE	11	11	22	UG_KG	UJ	c
OU09 SD121 0012	SE	BENZO[K]FLUORANTHENE	8.1	12	23	UG_KG	J	c
OU09 SD121 0012	SE	INDENO[1,2,3-CD]PYRENE	9.5	12	23	UG_KG	J	c
OU09 SD121 0012W	SE	BENZO[B]FLUORANTHENE	20.	12	24	UG_KG	J	c
OU09 SD121 0012W	SE	INDENO[1,2,3-CD]PYRENE	22	12	24	UG_KG	J	c
OU09 SD121 1224	SE	BENZO[B]FLUORANTHENE	3.8	11	22	UG_KG	J	c
OU09 SD121 1224	SE	INDENO[1,2,3-CD]PYRENE	3.7	11	22	UG_KG	J	c
OU09 SD121 2436	SE	BENZO[B]FLUORANTHENE	11	11	22	UG_KG	UJ	c
OU09 SD121 2436	SE	INDENO[1,2,3-CD]PYRENE	11	11	22	UG_KG	UJ	c

Attachment A

Non Conformance Summary Tables

Table A-1a Initial Calibration – SVOC SIM

ICAL	Compound	% RSD	%RSD Limit	ICV %R	ICV %R Limits	Associated Samples
WG135530-8 12/6/13	INDENO(1,2,3-CD)PYRENE			79.47	80-120	OU09 SD121 0012 OU09 SD111 0012 OU09 SD120 0012
WG136159-8 12/14/13	INDENO(1,2,3-CD)PYRENE			74.63	80-120	OU09 SD121 0012W OU09 SD121 1224 OU09 SD121 2436 OU09 SD111 1224 OU09 SD111 2436 OU09 SD120 2436 OU09 SD120 1224 OU09 SD120 0012W OU09 SD111 0012W

Table A-1b Continuing Calibration – SVOC SIM

CCAL	Compound	% D	%D Limit	Associated Samples
WG135938-2	BENZO(K)FLUORANTHENE	27.16	<20	OU09 SD121 0012 OU09 SD111 0012 OU09 SD120 0012
WG136448-2	BENZO(B)FLUORANTHENE	-21.23	<20	OU09 SD121 0012W OU09 SD121 1224 OU09 SD121 2436 OU09 SD111 1224 OU09 SD111 2436 OU09 SD120 2436 OU09 SD120 1224 OU09 SD120 0012W OU09 SD111 0012W
	INDENO(1,2,3-CD)PYRENE	21.49	<20	

Attachment B

Qualifier Codes and Explanations

Qualifier	Explanation
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
UJ	The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual quantitation limit necessary to accurately and precisely measure the analyte in the sample.
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

Attachment C

Reason Codes and Explanations

Reason Code	Explanation
be	Equipment blank contamination
bf	Field blank contamination
bl	Laboratory blank contamination
c	Calibration issue
d	Reporting limit raised due to chromatographic interference
fd	Field duplicate RPDs
h	Holding times
i	Internal standard areas
k	Estimated Maximum Possible Concentration (EMPC)
l	LCS or OPR recoveries
lc	Labeled compound recovery
ld	Laboratory duplicate RPDs
lp	Laboratory control sample/laboratory control sample duplicate RPDs
m	Matrix spike recovery
md	Matrix spike/matrix spike duplicate RPDs
nb	Negative laboratory blank contamination
p	Chemical preservation issue
r	Dual column RPD
q	Quantitation issue
s	Surrogate recovery
su	Ion suppression
t	Temperature preservation issue
x	Percent solids
y	Serial dilution results
z	ICS results

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Data Validation Report

Project:	MRP Site 1 (OU9) Remedial Investigation, NAVSTA Newport, Rhode Island CTO WE06
Laboratory:	Katahdin Analytical Services, Scarborough, Maine
Service Request:	CARR-7
Analyses/Method:	Semivolatile Organic Compounds (GC/MS) Full Scan and SIM / EPA SW-846 Method 8270D Polycyclic Aromatic Hydrocarbons (GC/MS) Full Scan and SIM / EPA SW-846 Method 8270D
Validation Level:	Limited
Resolution Consultants Project Number:	60250336 SA.DV

Prepared by:	Helen Jones Parry/Resolution Consultants	Completed on: 03/06/2014
Reviewed by:	Kristin Rutherford/Resolution Consultants	File Name: CARR-7_SE_8270_DVRpt.docx

SUMMARY

The samples listed below were collected by Resolution Consultants from MRP Site 1 (OU9), NAVSTA Newport, Rhode Island, on December 10 and 11, 2013.

Sample ID	Matrix/Sample Type
RBSD12111301	Equipment blank
FDSD12101301W	Field Duplicate of OU09 SD106 0012W
BSBG SD302 0012	Sediment
BSBG SD302 1224	Sediment
BSBG SD302 2436	Sediment
OU09 SD106 0012	Sediment
OU09 SD106 0012W	Sediment
OU09 SD106 1224	Sediment
OU09 SD106 2436	Sediment
OU09 SD107 0012	Sediment
OU09 SD108 0012	Sediment
OU09 SD117 0012	Sediment
OU09 SD118 0012	Sediment
OU09 SD118 0012W	Sediment
OU09 SD118 1224	Sediment
OU09 SD118 2436	Sediment

The data have been validated in accordance with the project-specific Sampling and Analysis Plan, *Sampling and Analysis Plan, Former Carr Point Shooting Range (MRP Site 1, OU9), Naval Station (NAVSTA) Newport, Rhode Island, Final* (Naval Facilities Engineering Command, Mid-Atlantic, 2013) and the following references:

- *DoD Quality Systems Manual (QMS) for Environmental Laboratories, version 4.2* (DoD EDQW, 2010);
- *USEPA Region 1, EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses* (December 1996);
- *USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review* (June 2008);
- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW846, Method 8270D, Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)* (USEPA, 1996);
- laboratory quality control (QC) limits, as applicable.

The USEPA Region 1 and National Data Validation Functional Guidelines were modified to accommodate the non-CLP methodologies. In the absence of method-specific direction for validation, Resolution Consultants professional judgment was used as appropriate.

REVIEW ELEMENTS

The data were evaluated based on the following parameters (where applicable to the method):

✓ Data completeness (chain-of-custody (COC)/sample integrity
✓ Holding times and sample preservation
✓ Instrument tuning
✗ Initial calibration/continuing calibration verification
✗ Laboratory blanks/equipment blanks
✓ Surrogate spike recoveries
✗ Matrix spike (MS) and/or matrix spike duplicate (MSD) results
✗ Laboratory control sample (LCS)/laboratory control sample duplicate (LCSD) results
✓ Field duplicates
✓ Internal standards
✓ Sample results/reporting issues

The symbol (✓) indicates that no validation qualifiers were applied based on this parameter. NA indicates that the parameter was not included as part of this data set or was not applicable to this validation and therefore not reviewed. The symbol (✗) indicates that a quality control (QC) nonconformance resulted in the qualification of data. Any QC nonconformance that resulted in the qualification of data is discussed below. In addition, nonconformances or other issues that were noted during validation, but did not result in qualification of data, may be discussed for informational purposes only.

The data appear valid as reported and may be used for decision making purposes. Selected data points were estimated, negated, and/or rejected due to nonconformances of certain QC criteria (see discussion below). Qualified sample results are presented in Table 1.

RESULTS

Data Completeness

The data package was reviewed and found to meet acceptance criteria for completeness:

- The COCs were reviewed for completeness of information relevant to the samples and requested analyses, and for signatures indicating transfer of sample custody.
- The laboratory sample login sheet(s) were reviewed for issues potentially affecting sample integrity, including the condition of sample containers upon receipt at the laboratory.
- Completeness of analyses was verified by comparing the reported results to the COC requests.

Holding Times/Sample Preservation

Sample preservation and preparation/analysis holding times were reviewed for conformance with the QC acceptance criteria.

The QC acceptance criteria were met.

GC/MS Performance Checks

The data were reviewed to ensure that the decafluorotriphenylphosphine (DFTPP) tuning was performed at the correct frequency and that the method acceptance criteria were met. All samples were analyzed within 12 hours of the DFTPP tunes.

Initial Calibration/Continuing Calibration Verification

Calibration data were reviewed for conformance with the QC acceptance criteria to ensure that:

- the initial calibration (ICAL) percent relative standard deviation (%RSD), correlation coefficient (r)/coefficient of determination (r2), and/or response factor method acceptance criteria were met;
- the initial calibration verification standard (ICV) percent recovery acceptance criteria were met;
- the continuing calibration verification standard (CCV) method percent difference or percent drift (%Ds) and RF acceptance criteria were met; and
- the retention time method acceptance criteria were met.

Nonconformances are summarized in Attachment A in Table A-1a through A-1d. Data qualification to the analytes associated with the specific ICAL and/or CCV was as follows:

ICAL and CCV Response Factor Nonconformances

Criteria	Actions	
	Detected Results	Nondetected Results[4]
SPCCs		
RF<0.050 for N-nitroso-di-n-propylamine;	J[1]	UJ[1]

hexachlorocyclopentadiene; 2,4-dinitrophenol; and 4-nitrophenol.		
All compounds except SPCCs and Poor Performing Compounds[2]		
RF<0.050	J	R[3]
RF<0.05 but>0.010 (if low standard response is adequate)	J[1]	UJ[1]
Poor Performing Compounds[2]		
RF<0.010	J	R
[1]No guidance in NFG, thus Resolution Consultants professional judgment was used.		
[2]As defined in Table 28 of the NFG.		
[3]Resolution Consultants professional judgment may be used to either raise reporting level or to estimate reporting limit if low standard response is adequate.		
[4]Sample results qualified as not detected (U) due to blank contamination are not rejected, but estimated (UJ).		
SPCCs - System Performance Check Compounds as listed in SW-846 Method 8270C		

ICAL Linearity Nonconformances

Criteria	Actions	
	Detected Results	**Nondetected**
%RSD > 30% for CCCs (acenaphthene, 1,4-dichlorobenzene, hexachlorobutadiene, diphenylamine, di-n-octyl phthalate, fluoranthene, and benzo(a)pyrene; 4-chloro-3-methylphenol, 2,4-dichlorophenol, 2-nitrophenol, phenol, pentachlorophenol, and 2,4,6-trichlorophenol)	J*	UJ*
%RSD > 15% and quantitation based on mean RF	J	UJ
r or r^2 < 0.99 and quantitation based on linear regression	J*	UJ*
* No guidance in NFG, thus Resolution Consultants professional judgment was used		
CCCs - Calibration Check Compounds as listed in SW-846 Method 8270C		

ICV Recovery Nonconformances

Criteria	Actions*	
	Detected Results	**Nondetected Results**
Recovery > 120	J	UJ
Recovery < 80	J	UJ
* No guidance in NFG, thus Resolution Consultants professional judgment was used		

CCV Linearity Nonconformances

Criteria	Actions	
	Detected Results	**Nondetected Results**
%D > 20%	J	UJ
%Drift >20%	J*	UJ*
* No guidance in NFG, thus Resolution Consultants professional judgment was used		

Qualified sample results are shown in Table 1.

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Laboratory Blanks/Equipment Blanks

Laboratory method blanks and equipment rinsate blanks were evaluated as to whether there were contaminants detected above the method detection limit (MDL).

Data validation qualifications for individual samples are based on the maximum contaminant concentration detected in all associated blanks.

Detected results in blanks are not discussed in this data validation report if the associated results were nondetect or if qualification of sample results was not required.

There were no detected target analytes reported in equipment blank sample RBSD12111301, associated with these samples.

Nonconformances are summarized in Attachment A in Table A-2. Sample results were qualified as follows:

Blank Actions:

Blank type	Blank result	Sample result	Action for samples
Method, Storage, Trip, Field, or Equipment	Detects	Not detected	No qualification
	≤ LOQ	< LOQ	Report sample LOQ value with a U
		≥ LOQ and ≤ 5x the blank result[2]	Report the sample result with a U[1]
		≥ 5x the blank result[2]	No qualifications[1]
	> LOQ	< LOQ	Report sample LOQ value with a U
		≥ LOQ and < blank contamination	Report the sample result with a U or reject the sample result as unusable R
		≥ LOQ and ≥ blank contamination	If the result is ≤5x blank result[2], report the sample result U[1] If the result is > 5x blank result[2], no qualification is required[1]
[1]Based on Resolution Consultants professional judgment			
[2]Use 10x blank result for all phthalates (common contaminants per Region I)			

LOD - Limit of Detection
LOQ - Limit of Quantitation (equivalent to lowest calibration standard)

Qualified sample results are shown in Table 1.

Surrogate Spike Recoveries

The surrogate recoveries (%Rs) were reviewed for conformance with the QC acceptance criteria.

All QC acceptance criteria were met.

MS/MSD Results

The MS/MSD %Rs and relative percent differences (RPDs) were reviewed for conformance with the QC acceptance criteria.

Nonconformances are summarized in Attachment A in Table A-3. Data qualification to the analytes associated with the specific MS/MSD nonconformances was as follows:

Actions: (Based on NFG 2008, Region 1, and Resolution Consultants professional judgment)

Criteria	Action	
	Detected Compounds	**Nondetected Compounds**
%R> UL	J	No qualification
10% ≤ %R < LL*	J	UJ
%R <10%*	J	R
%RPD > UL	J	No qualification
* NFG 2008 does not list a minimum limit. Based on Region 1 and Resolution Consultants professional judgment, a minimum limit of 10% was used.		

Notes:

1. Based on NFG 2008 SVOC guidance, Resolution Consultants professional judgment is used to reject (R) non-detects in all associated samples for any analyte with < 10% recovery. Also, Resolution Consultants professional judgment is used to estimate (UJ) rather the reject (R) sample results previously negated (U) on the basis of blank contamination.

2. If a field duplicate sample was also collected for the native sample chosen for MS/MSD analysis, professional judgment is used to apply MS/MSD actions to the corresponding field duplicate sample as well as the native sample.

Qualified sample results are shown in Table 1.

LCS/LCSD Results

The LCS/LCSD %Rs and/or relative percent recoveries (RPDs) were reviewed for conformance with the QC acceptance criteria.

Nonconformances are summarized in Attachment A in Table A-4. Data qualification to the analytes associated with the specific LCS %Rs or RPDs was as follows:

Criteria[1,2]	Action[3]	
	Detected Compounds	**Nondetected Compounds**
%R or RPD > UL	J	No qualification
10%≥%R < LL	J	UJ
%R < 10%	J	R
[1] In the absence of NFG 2008 guidance for LCS results, NFG 2008 MS/MSD guidance was applied with Resolution Consultants professional judgment. [2] NFG 2008 MS/MSD does not list a minimum limit. Based on Region 1 and Resolution Consultants professional judgment, a minimum limit of 10% was used.		
[3]If the %R of more than half of the analytes are not within limits, then reject (R) nondetects for the analytes with <10% recovery and estimate (J/UJ) all other analyte(s) in the associated samples.		

Qualified sample results are shown in Table 1.

Field Duplicate Results

Field duplicate RPDs were reviewed for conformance with the Resolution Consultants QC criteria of ≤50% for solid matrices and ≤30% for aqueous matrices. These criteria apply if both results were greater than five times the limit of quantitation (LOQ).

Sample FDSD12101301W was collected as the field duplicate of sample OU09 SD106 0012W in this SDG. RPD criteria were met for this field duplicate pair; therefore, no qualifications were required these samples.

All QC acceptance criteria were met and/or qualification of the data was not required.

Internal Standard Results

The internal standard (IS) recoveries were reviewed for conformance with the QC acceptance criteria.

All QC acceptance criteria were met.

Sample Results/Reporting Issues

All compounds detected at concentrations less than the limit of quantitation (LOQ) but greater than the method detection limit (MDL) were qualified by the laboratory as estimated (J). This "J" qualifier was retained during data validation.

Any sample that was analyzed at a dilution due to high concentrations of target or non-targets was checked to ensure that the results and/or sample specific LODs and LOQs were adjusted accordingly by the laboratory.

The percent solids data were reviewed to ensure that NFG 2008 specified criteria were met.

All percent solids criteria were met.

QUALIFICATION ACTIONS

Sample results qualified as a result of validation actions are summarized in Table 1. All actions are described above.

ATTACHMENTS

Attachment A: Nonconformance Summary Tables

Attachment B: Qualifier Codes and Explanations

Attachment C: Reason Codes and Explanations

Table 1 Data Validation Summary of Qualified Data

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
BSBG SD302 0012	SE	1,2,4-TRICHLOROBENZENE	280	280	380	UG_KG	UJ	m
BSBG SD302 0012	SE	1,2-DICHLOROBENZENE	280	280	380	UG_KG	UJ	m
BSBG SD302 0012	SE	1,2-DIPHENYLHYDRAZINE	560	560	750	UG_KG	UJ	m
BSBG SD302 0012	SE	1,3-DICHLOROBENZENE	280	280	380	UG_KG	UJ	m
BSBG SD302 0012	SE	2,4-DICHLOROPHENOL	280	280	380	UG_KG	UJ	m
BSBG SD302 0012	SE	2,6-DINITROTOLUENE	280	280	380	UG_KG	UJ	m
BSBG SD302 0012	SE	2-CHLORONAPHTHALENE	280	280	380	UG_KG	UJ	c,m
BSBG SD302 0012	SE	2-CHLOROPHENOL	280	280	380	UG_KG	UJ	m
BSBG SD302 0012	SE	2-METHYLNAPHTHALENE	280	280	380	UG_KG	UJ	m
BSBG SD302 0012	SE	2-METHYLPHENOL	280	280	380	UG_KG	UJ	m
BSBG SD302 0012	SE	BENZIDINE	1300	1300	1700	UG_KG	R	c,l,m
BSBG SD302 0012	SE	BENZOIC ACID	700	700	930	UG_KG	UJ	c
BSBG SD302 0012	SE	BIS(2-CHLOROETHOXY)METHANE	280	280	380	UG_KG	UJ	m
BSBG SD302 0012	SE	BIS(2-CHLOROETHYL)ETHER	280	280	380	UG_KG	UJ	m
BSBG SD302 0012	SE	DIBENZOFURAN	280	280	380	UG_KG	UJ	m
BSBG SD302 0012	SE	DIETHYLPHTHALATE	280	280	380	UG_KG	UJ	c
BSBG SD302 0012	SE	HEXACHLOROBUTADIENE	280	280	380	UG_KG	UJ	m
BSBG SD302 0012	SE	HEXACHLOROETHANE	280	280	380	UG_KG	UJ	m
BSBG SD302 0012	SE	ISOPHORONE	280	280	380	UG_KG	UJ	m
BSBG SD302 0012	SE	N-NITROSODIPHENYLAMINE	280	280	380	UG_KG	UJ	m
BSBG SD302 0012	SE	N-NITROSOPYRROLIDINE	280	280	380	UG_KG	R	l,m
BSBG SD302 0012	SE	PENTACHLOROPHENOL	700	700	930	UG_KG	UJ	c
BSBG SD302 0012	SE	BENZO[A]ANTHRACENE	23	23	23	UG_KG	UJ	bl,m
BSBG SD302 0012	SE	BENZO[A]PYRENE	23	23	23	UG_KG	UJ	c,bl,m,l
BSBG SD302 0012	SE	BENZO[B]FLUORANTHENE	23	23	23	UG_KG	UJ	c,bl,m
BSBG SD302 0012	SE	BENZO[G,H,I]PERYLENE	3.5	11	23	UG_KG	J	m,l
BSBG SD302 0012	SE	BENZO[K]FLUORANTHENE	23	23	23	UG_KG	U	bl
BSBG SD302 0012	SE	CHRYSENE	23	23	23	UG_KG	U	bl
BSBG SD302 0012	SE	DIBENZ[A,H]ANTHRACENE	23	23	23	UG_KG	UJ	bl,m,l
BSBG SD302 0012	SE	FLUORANTHENE	23	23	23	UG_KG	U	bl
BSBG SD302 0012	SE	INDENO[1,2,3-CD]PYRENE	23	23	23	UG_KG	UJ	bl,m
BSBG SD302 0012	SE	PHENANTHRENE	23	23	23	UG_KG	U	bl
BSBG SD302 0012	SE	PYRENE	23	23	23	UG_KG	U	bl
BSBG SD302 1224	SE	BENZO[A]ANTHRACENE	23	23	23	UG_KG	U	bl
BSBG SD302 1224	SE	BENZO[G,H,I]PERYLENE	4.8	11	23	UG_KG	J	l
BSBG SD302 1224	SE	CHRYSENE	13	11	23	UG_KG	J	c
BSBG SD302 1224	SE	FLUORANTHENE	23	23	23	UG_KG	U	bl
BSBG SD302 1224	SE	INDENO[1,2,3-CD]PYRENE	8.7	11	23	UG_KG	J	l,lp
BSBG SD302 2436	SE	BENZO[G,H,I]PERYLENE	11	11	22	UG_KG	UJ	l

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
BSBG SD302 2436	SE	CHRYSENE	2.5	11	22	UG_KG	J	c
BSBG SD302 2436	SE	INDENO[1,2,3-CD]PYRENE	11	11	22	UG_KG	UJ	lp
FDSD12101301W	SE	BENZO[A]ANTHRACENE	39	13	26	UG_KG	J	c
FDSD12101301W	SE	BENZO[A]PYRENE	45	13	26	UG_KG	J	c
FDSD12101301W	SE	BENZO[B]FLUORANTHENE	56	13	26	UG_KG	J	c
FDSD12101301W	SE	BENZO[G,H,I]PERYLENE	20	13	26	UG_KG	J	c,l
OU09 SD106 0012	SE	BENZO[A]ANTHRACENE	42	12	24	UG_KG	J	c
OU09 SD106 0012	SE	BENZO[A]PYRENE	51	12	24	UG_KG	J	c
OU09 SD106 0012	SE	BENZO[B]FLUORANTHENE	66	12	24	UG_KG	J	c
OU09 SD106 0012	SE	BENZO[G,H,I]PERYLENE	24	12	24	UG_KG	J	c,l
OU09 SD106 0012W	SE	BENZO[A]ANTHRACENE	36	13	26	UG_KG	J	c
OU09 SD106 0012W	SE	BENZO[A]PYRENE	42	13	26	UG_KG	J	c
OU09 SD106 0012W	SE	BENZO[B]FLUORANTHENE	54	13	26	UG_KG	J	c
OU09 SD106 0012W	SE	BENZO[G,H,I]PERYLENE	19	13	26	UG_KG	J	c,l
OU09 SD106 1224	SE	BENZO[A]ANTHRACENE	8.0	11	22	UG_KG	J	c
OU09 SD106 1224	SE	BENZO[A]PYRENE	10	11	22	UG_KG	J	c
OU09 SD106 1224	SE	BENZO[B]FLUORANTHENE	22	22	22	UG_KG	UJ	bl,c
OU09 SD106 1224	SE	BENZO[G,H,I]PERYLENE	5.2	11	22	UG_KG	J	c,l
OU09 SD106 1224	SE	FLUORANTHENE	22	22	22	UG_KG	U	bl
OU09 SD106 1224	SE	PYRENE	22	22	22	UG_KG	U	bl
OU09 SD106 2436	SE	BENZO[A]ANTHRACENE	5.1	11	23	UG_KG	J	c
OU09 SD106 2436	SE	BENZO[A]PYRENE	10	11	23	UG_KG	J	c
OU09 SD106 2436	SE	BENZO[B]FLUORANTHENE	23	23	23	UG_KG	UJ	bl,c
OU09 SD106 2436	SE	BENZO[G,H,I]PERYLENE	6.4	11	23	UG_KG	J	c,l
OU09 SD106 2436	SE	FLUORANTHENE	23	23	23	UG_KG	U	bl
OU09 SD106 2436	SE	PYRENE	23	23	23	UG_KG	U	bl
OU09 SD107 0012	SE	BENZO[G,H,I]PERYLENE	22	11	21	UG_KG	J	l
OU09 SD107 0012	SE	CHRYSENE	33	11	21	UG_KG	J	c
OU09 SD107 0012	SE	INDENO[1,2,3-CD]PYRENE	23	11	21	UG_KG	J	l,lp
OU09 SD108 0012	SE	BENZO[A]ANTHRACENE	22	22	22	UG_KG	U	bl
OU09 SD108 0012	SE	BENZO[G,H,I]PERYLENE	2.2	11	22	UG_KG	UJ	l
OU09 SD108 0012	SE	CHRYSENE	3.4	11	22	UG_KG	J	c
OU09 SD108 0012	SE	FLUORANTHENE	22	22	22	UG_KG	U	bl
OU09 SD108 0012	SE	INDENO[1,2,3-CD]PYRENE	4.6	11	22	UG_KG	J	l,lp
OU09 SD117 0012	SE	BENZO[A]ANTHRACENE	22	22	22	UG_KG	U	bl
OU09 SD117 0012	SE	BENZO[G,H,I]PERYLENE	15	11	22	UG_KG	J	l
OU09 SD117 0012	SE	CHRYSENE	24	11	22	UG_KG	J	c
OU09 SD117 0012	SE	INDENO[1,2,3-CD]PYRENE	18	11	22	UG_KG	J	l,lp
OU09 SD118 0012	SE	BENZO[A]ANTHRACENE	24	24	24	UG_KG	U	bl

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SD118 0012	SE	BENZO[G,H,I]PERYLENE	12	12	24	UG_KG	UJ	l
OU09 SD118 0012	SE	CHRYSENE	5.8	12	24	UG_KG	J	c
OU09 SD118 0012	SE	FLUORANTHENE	24	24	24	UG_KG	U	bl
OU09 SD118 0012	SE	INDENO[1,2,3-CD]PYRENE	4.4	12	24	UG_KG	J	l,lp
OU09 SD118 0012W	SE	BENZO[A]PYRENE	5.9	13	25	UG_KG	J	l
OU09 SD118 0012W	SE	BENZO[G,H,I]PERYLENE	13	13	25	UG_KG	UJ	l
OU09 SD118 0012W	SE	CHRYSENE	8.1	13	25	UG_KG	J	c
OU09 SD118 1224	SE	BENZO[A]ANTHRACENE	22	22	22	UG_KG	U	bl
OU09 SD118 1224	SE	BENZO[G,H,I]PERYLENE	7.4	11	22	UG_KG	J	l
OU09 SD118 1224	SE	CHRYSENE	16	11	22	UG_KG	J	c
OU09 SD118 1224	SE	FLUORANTHENE	22	22	22	UG_KG	U	bl
OU09 SD118 1224	SE	INDENO[1,2,3-CD]PYRENE	10	11	22	UG_KG	J	l,lp
OU09 SD118 2436	SE	BENZO[A]ANTHRACENE	23	23	23	UG_KG	U	bl
OU09 SD118 2436	SE	BENZO[G,H,I]PERYLENE	11	11	23	UG_KG	UJ	l
OU09 SD118 2436	SE	CHRYSENE	3.2	11	23	UG_KG	J	c
OU09 SD118 2436	SE	FLUORANTHENE	23	23	23	UG_KG	U	bl
OU09 SD118 2436	SE	INDENO[1,2,3-CD]PYRENE	2.7	11	23	UG_KG	J	l,lp
RBSD12111301	WQ	BENZO[A]ANTHRACENE	0.094	0.094	0.19	UG_L	UJ	c,l
RBSD12111301	WQ	BENZO[A]PYRENE	0.094	0.094	0.19	UG_L	UJ	c
RBSD12111301	WQ	BENZO[B]FLUORANTHENE	0.094	0.094	0.19	UG_L	UJ	c,l
RBSD12111301	WQ	BENZO[G,H,I]PERYLENE	0.094	0.094	0.19	UG_L	UJ	c
RBSD12111301	WQ	FLUORANTHENE	0.094	0.094	0.19	UG_L	UJ	l

Attachment A

Non Conformance Summary Tables

Table A-1a Initial Calibration - SVOC SIM

ICAL	Compound	% RSD	%RSD Limit	ICV %R	ICV %R Limits	Associated Samples
12/30/13 G WG136784-8	CHRYSENE	15.29	<15			OU09 SD108 0012 RA OU09 SD107 0012 RA OU09 SD117 0012 RA OU09 SD118 0012 RA OU09 SD118 0012W RA OU09 SD118 1224 RA OU09 SD118 2436 RA BSBG SD302 1224 RA BSBG SD302 2436 RA
12/23/13 N WG136526-8	BENZO[A]ANTHRACENE			77.96	80-120	RBSD12111301 OU09 SD106 2436 OU09 SD106 1224 OU09 SD106 0012 OU09 SD106 0012W FDSD12101301W
	BENZO(B)FLUORANTHENE			76.92	80-120	
	BENZO(A)PYRENE			78.97	80-120	
	BENZO[G,H,I]PERYLENE			78.72	80-120	

Table A-1b Initial Calibration - SVOC full scan

ICAL	Compound	% RSD	%RSD Limit	ICV %R	ICV %R Limits	Associated Samples
12/11/13 U WG135960-8	BENZOIC ACID	42.12	<15	127.06	80-120	BSBG SD302 0012 RBSD12111301
	2-CHLORONAPHTHALENE	20.70	<15	120.61	80-120	
	DIETHYLPHTHALATE	15.01	<15			
	PENTACHLOROPHENOL			122.89	80-120	
	BENZIDINE			47.60	80-120	

Table A-1c Continuing Calibration – SVOC SIM

CCAL	Compound	% D	%D Limit	Associated Samples
WG136788-2	BENZO(B)FLUORANTHENE	34.01	<20	BSBG SD302 0012
	BENZO(A)PYRENE	20.20	<20	

Table A-1d Continuing Calibration – SVOC full scan

CCAL	Compound	% D	%D Limit	Associated Samples
WG136353-2	BENZOIC ACID	35.16	<20	BSBG SD302 0012

Table A-2 Lab Blanks

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
SIM						
WG136232-1	BENZO[A]ANTHRACENE	8.0	10	20	UG_KG	BSBG SD302 0012
WG136232-1	BENZO[A]PYRENE	6.8	10	20	UG_KG	BSBG SD302 0012
WG136232-1	BENZO[B]FLUORANTHENE	8.7	10	20	UG_KG	BSBG SD302 0012
WG136232-1	BENZO[K]FLUORANTHENE	10	10	20	UG_KG	BSBG SD302 0012
WG136232-1	CHRYSENE	2.2	10	20	UG_KG	BSBG SD302 0012
WG136232-1	DIBENZ[A,H]ANTHRACENE	3.6	10	20	UG_KG	BSBG SD302 0012
WG136232-1	FLUORANTHENE	6.1	10	20	UG_KG	BSBG SD302 0012
WG136232-1	INDENO[1,2,3-CD]PYRENE	6.4	10	20	UG_KG	BSBG SD302 0012
WG136232-1	PHENANTHRENE	2.1	10	20	UG_KG	BSBG SD302 0012
WG136232-1	PYRENE	5.9	10	20	UG_KG	BSBG SD302 0012
WG136233-1	BENZO[A]ANTHRACENE	7.5	10	20	UG_KG	BSBG SD302 1224 BSBG SD302 2436 OU09 SD107 0012 OU09 SD108 0012 OU09 SD117 0012 OU09 SD118 0012 OU09 SD118 1224 OU09 SD118 2436
WG136233-1	FLUORANTHENE	2.3	10	20	UG_KG	BSBG SD302 1224 BSBG SD302 2436 OU09 SD107 0012 OU09 SD108 0012 OU09 SD117 0012 OU09 SD118 0012 OU09 SD118 1224 OU09 SD118 2436
WG136118-1	BENZO[B]FLUORANTHENE	2.5	10	20	UG_KG	FDSD12101301W OU09 SD106 0012 OU09 SD106 0012W OU09 SD106 1224 OU09 SD106 2436
WG136118-1	FLUORANTHENE	2.4	10	20	UG_KG	FDSD12101301W OU09 SD106 0012 OU09 SD106 0012W OU09 SD106 1224 OU09 SD106 2436
WG136118-1	PYRENE	2.3	10	20	UG_KG	FDSD12101301W OU09 SD106 0012 OU09 SD106 0012W OU09 SD106 1224 OU09 SD106 2436

Table A-3 Matrix Spikes

Sample ID	Compound	MS % Recovery	MSD % Recovery	Lower Limit	Upper Limit	RPD	RPD Limit
SIM							
BSBG SD302 0012	BENZO[A]ANTHRACENE	46.5	42.3	48	100	7	50
BSBG SD302 0012	BENZO[A]PYRENE	47.8	39.8	61	101	14	50
BSBG SD302 0012	BENZO[G,H,I]PERYLENE	33.6	23.0	53	103	32	50
BSBG SD302 0012	DIBENZ[A,H]ANTHRACENE	48.3	47.8	55	105	1	50
BSBG SD302 0012	INDENO[1,2,3-CD]PYRENE	42.4	37.8	50	105	9	50
BSBG SD302 0012	BENZO[B]FLUORANTHENE	57.3	43.3	53	100	22	50
SVOC FS							
BSBG SD302 0012	ANTHRACENE	50.0	64.4	55	105	17	30
BSBG SD302 0012	BENZO[G,H,I]PERYLENE	31.9	40.1	40	125	15	30
BSBG SD302 0012	FLUORANTHENE	52.8	65.6	55	115	14	30
BSBG SD302 0012	ACENAPHTHYLENE	43.1	57.2	45	105	20	30
BSBG SD302 0012	BENZO[A]PYRENE	48.5	60.3	50	110	14	30
BSBG SD302 0012	FLUORENE	49.8	66.2	50	110	20	30
BSBG SD302 0012	4-CHLOROANILINE	26.2	39.9	10	100	33	30
BSBG SD302 0012	BIS(2-CHLOROETHYL)ETHER	39.8	54.9	40	105	24	30
BSBG SD302 0012	BIS(2-CHLOROETHOXY)METHANE	34.4	48	45	110	25	30
BSBG SD302 0012	1,2,4-TRICHLOROBENZENE	38	52.2	45	110	24	30
BSBG SD302 0012	2,4-DICHLOROPHENOL	44	61.5	45	110	25	30
BSBG SD302 0012	1,2-DIPHENYLHYDRAZINE	47.1	62	50	110	19	30
BSBG SD302 0012	1,3-DICHLOROBENZENE	34.7	47.2	40	100	23	30
BSBG SD302 0012	2,6-DINITROTOLUENE	49.4	66.7	50	110	22	30
BSBG SD302 0012	HEXACHLOROETHANE	33	44.4	35	110	22	30
BSBG SD302 0012	ISOPHORONE	43.2	60.9	45	110	26	30
BSBG SD302 0012	N-NITROSODIPHENYLAMINE	43.2	56.1	50	115	18	30
BSBG SD302 0012	HEXACHLOROBUTADIENE	37.3	50.8	40	115	23	30
BSBG SD302 0012	2-METHYLNAPHTHALENE	43.7	58.5	45	105	21	30
BSBG SD302 0012	2-CHLORONAPHTHALENE	39.2	53.3	45	105	23	30
BSBG SD302 0012	BENZIDINE	8.64	10.4	10	150	10	30
BSBG SD302 0012	N-NITROSOPYRROLIDINE	0	0	30	150	0	30
BSBG SD302 0012	2-METHYLPHENOL	38.9	53.9	40	105	24	30
BSBG SD302 0012	1,2-DICHLOROBENZENE	35.7	49.6	45	100	25	30
BSBG SD302 0012	2-CHLOROPHENOL	40.2	56.2	45	105	25	30

Table A-4 Lab Control Samples

LCS ID	Compound	LCS % Recovery	LCSD % Recovery	Lower Limit	Upper Limit	RPD	RPD Limit	Associated Samples
SIM								
WG136118-2	BENZO[G,H,I]PERYLENE	38.7	42.1	53	103	8	50	FDSD12101301W OU09 SD106 0012 OU09 SD106 0012W OU09 SD106 1224 OU09 SD106 2436
WG136221-2	INDENO[1,2,3-CD]PYRENE	118	114	61	112	2	30	RBSD12111301
WG136221-2	BENZO[B]FLUORANTHENE	61.0	65.5	67	102	7	30	RBSD12111301
WG136221-2	FLUORANTHENE	78.5	80.0	81	109	2	30	RBSD12111301
WG136221-2	CHRYSENE	102	104	70	95	1	30	RBSD12111301
WG136221-2	BENZO[A]ANTHRACENE	67.0	68.0	70	110	1	30	RBSD12111301
WG136232-2	BENZO[G,H,I]PERYLENE	41.7	36.3	53	103	14	50	BSBG SD302 0012
WG136232-2	BENZO[A]PYRENE	59.1	51.4	61	101	14	50	BSBG SD302 0012
WG136232-2	DIBENZ[A,H]ANTHRACENE	63.7	54.7	55	105	15	50	BSBG SD302 0012
WG136233-2	BENZO[G,H,I]PERYLENE	49.0	49.8	53	103	2	50	BSBG SD302 1224 RA BSBG SD302 2436 RA OU09 SD107 0012 RA OU09 SD108 0012 RA OU09 SD117 0012 RA OU09 SD118 0012 RA OU09 SD118 1224 RA OU09 SD118 2436 RA
WG136233-2	INDENO[1,2,3-CD]PYRENE	60.3	172	50	105	96	50	BSBG SD302 1224 RA BSBG SD302 2436 RA OU09 SD107 0012 RA OU09 SD108 0012 RA OU09 SD117 0012 RA OU09 SD118 0012 RA OU09 SD118 1224 RA OU09 SD118 2436 RA
WG136350-2	BENZO[G,H,I]PERYLENE	48.7	52.9	53	103	8	50	OU09 SD118 0012W RA
WG136350-2	BENZO[A]PYRENE	74.4	52.2	61	101	35	50	OU09 SD118 0012W RA
SVOC FS								
WG136231-2	BENZOIC ACID	36.3	25.5	0	110	35	30	BSBG SD302 0012
WG136231-2	BENZIDINE	0	0	10	150	0	30	BSBG SD302 0012
WG136231-2	N-NITROSOPYRROLIDINE	0	0	30	150	0	30	BSBG SD302 0012

Attachment B

Qualifier Codes and Explanations

Qualifier	Explanation
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
UJ	The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual quantitation limit necessary to accurately and precisely measure the analyte in the sample.
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

Attachment C

Reason Codes and Explanations

Reason Code	Explanation
be	Equipment blank contamination
bf	Field blank contamination
bl	Laboratory blank contamination
c	Calibration issue
d	Reporting limit raised due to chromatographic interference
fd	Field duplicate RPDs
h	Holding times
i	Internal standard areas
k	Estimated Maximum Possible Concentration (EMPC)
l	LCS or OPR recoveries
lc	Labeled compound recovery
ld	Laboratory duplicate RPDs
lp	Laboratory control sample/laboratory control sample duplicate RPDs
m	Matrix spike recovery
md	Matrix spike/matrix spike duplicate RPDs
nb	Negative laboratory blank contamination
p	Chemical preservation issue
r	Dual column RPD
q	Quantitation issue
s	Surrogate recovery
su	Ion suppression
t	Temperature preservation issue
x	Percent solids
y	Serial dilution results
z	ICS results

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Data Validation Report

Project:	MRP Site 1 (OU9) Remedial Investigation, NAVSTA Newport, Rhode Island CTO WE06
Laboratory:	Katahdin Analytical Services, Scarborough, Maine
Service Request:	CARR-10
Analyses/Method:	Polycyclic Aromatic Hydrocarbons (GC/MS) Full Scan and SIM / EPA SW-846 Method 8270D
Validation Level:	Limited
Resolution Consultants Project Number:	60250336 SA.DV
Prepared by:	Helen Jones Parry/Resolution Consultants — Completed on: 02/04/2014
Reviewed by:	Kristin Rutherford/Resolution Consultants — File Name: CARR-10_SE_8270_DVRpt

SUMMARY

The samples listed below were collected by Resolution Consultants from MRP Site 1 (OU9), NAVSTA Newport, Rhode Island on December 11 and 12, 2013.

Sample ID	Matrix/Sample Type
OU09 SD122 0012	Sediment
OU09 SD122 0012W	Sediment
OU09 SD123 0012	Sediment
OU09 SD124 0012	Sediment
OU09 SD125 0012	Sediment
OU09 SD125 1224	Sediment
OU09 SD125 2436	Sediment
OU09 SD126 0012	Sediment
OU09 SD126 1224	Sediment
OU09 SD126 2436	Sediment

The data have been validated in accordance with the project-specific Sampling and Analysis Plan, *Sampling and Analysis Plan, Former Carr Point Shooting Range (MRP Site 1, OU9), Naval Station (NAVSTA) Newport, Rhode Island, Final* (Naval Facilities Engineering Command, Mid-Atlantic, 2013) and the following references:

- *DoD Quality Systems Manual (QMS) for Environmental Laboratories, version 4.2* (DoD EDQW, 2010);
- *USEPA Region 1, EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses* (December 1996);

- *USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review* (June 2008);
- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW846, Method 8270D, Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)* (USEPA, 1996);
- laboratory quality control (QC) limits, as applicable.

The USEPA Region 1 and National Data Validation Functional Guidelines were modified to accommodate the non-CLP methodologies. In the absence of method-specific direction for validation, Resolution Consultants professional judgment was used as appropriate.

REVIEW ELEMENTS

The data were evaluated based on the following parameters (where applicable to the method):

✓	Data completeness (chain-of-custody (COC)/sample integrity
✓	Holding times and sample preservation
✓	Instrument tuning
✗	Initial calibration/continuing calibration verification
✓	Laboratory blanks/equipment blanks
✗	Surrogate spike recoveries
NA	Matrix spike (MS) and/or matrix spike duplicate (MSD) results
✗	Laboratory control sample (LCS)/laboratory control sample duplicate (LCSD) results
NA	Field duplicates
✗	Internal standards
✓	Sample results/reporting issues

The symbol (✓) indicates that no validation qualifiers were applied based on this parameter. NA indicates that the parameter was not included as part of this data set or was not applicable to this validation and therefore not reviewed. The symbol (✗) indicates that a quality control (QC) nonconformance resulted in the qualification of data. Any QC nonconformance that resulted in the qualification of data is discussed below. In addition, nonconformances or other issues that were noted during validation, but did not result in qualification of data, may be discussed for informational purposes only.

The data appear valid as reported and may be used for decision making purposes. Selected data points were estimated, negated, and/or rejected due to nonconformances of certain QC criteria (see discussion below). Qualified sample results are presented in Table 1.

RESULTS

<u>Data Completeness</u>

The data package was reviewed and found to meet acceptance criteria for completeness:

- The COCs were reviewed for completeness of information relevant to the samples and requested analyses, and for signatures indicating transfer of sample custody.
- The laboratory sample login sheet(s) were reviewed for issues potentially affecting sample integrity, including the condition of sample containers upon receipt at the laboratory.

- Completeness of analyses was verified by comparing the reported results to the COC requests.

Holding Times/Sample Preservation

Sample preservation and preparation/analysis holding times were reviewed for conformance with the QC acceptance criteria.

The QC acceptance criteria were met.

GC/MS Performance Checks

The data were reviewed to ensure that the decafluorotriphenylphosphine (DFTPP) tuning was performed at the correct frequency and that the method acceptance criteria were met. All samples were analyzed within 12 hours of the DFTPP tunes.

Initial Calibration/Continuing Calibration Verification

Calibration data were reviewed for conformance with the QC acceptance criteria to ensure that:

- the initial calibration (ICAL) percent relative standard deviation (%RSD), correlation coefficient (r)/coefficient of determination (r2), and/or response factor method acceptance criteria were met;
- the initial calibration verification standard (ICV) percent recovery acceptance criteria were met;
- the continuing calibration verification standard (CCV) method percent difference or percent drift (%Ds) and RF acceptance criteria were met; and
- the retention time method acceptance criteria were met.

Nonconformances are summarized in Attachment A in Table A-1a and 1b. Data qualification to the analytes associated with the specific ICAL and/or CCV was as follows:

ICAL and CCV Response Factor Nonconformances

Criteria	Actions	
	Detected Results	Nondetected Results[4]
SPCCs		
RF<0.050 for N-nitroso-di-n-propylamine; hexachlorocyclopentadiene; 2,4-dinitrophenol; and 4-nitrophenol.	J[1]	UJ[1]
All compounds except SPCCs and Poor Performing Compounds[2]		
RF<0.050	J	R[3]
RF<0.05 but>0.010 (if low standard response is adequate)	J[1]	UJ[1]
Poor Performing Compounds[2]		
RF<0.010	J	R
[1]No guidance in NFG, thus Resolution Consultants professional judgment was used.		
[2]As defined in Table 28 of the NFG.		
[3]Resolution Consultants professional judgment may be used to either raise reporting level or to estimate reporting limit if low standard response is adequate.		
[4]Sample results qualified as not detected (U) due to blank contamination are not rejected, but estimated (UJ).		
SPCCs - System Performance Check Compounds as listed in SW-846 Method 8270C		

ICAL Linearity Nonconformances

Criteria	Actions	
	Detected Results	Nondetected
%RSD > 30% for CCCs (acenaphthene, 1,4-dichlorobenzene, hexachlorobutadiene, diphenylamine, di-n-octyl phthalate, fluoranthene, and benzo(a)pyrene; 4-chloro-3-methylphenol, 2,4-dichlorophenol, 2-nitrophenol, phenol, pentachlorophenol, and 2,4,6-trichlorophenol)	J*	UJ*
%RSD > 15% and quantitation based on mean RF	J	UJ
r or r^2 < 0.99 and quantitation based on linear regression	J*	UJ*
* No guidance in NFG, thus Resolution Consultants professional judgment was used		
CCCs - Calibration Check Compounds as listed in SW-846 Method 8270C		

ICV Recovery Nonconformances

Criteria	Actions*	
	Detected Results	Nondetected Results
Recovery > 120	J	UJ
Recovery < 80	J	UJ
* No guidance in NFG, thus Resolution Consultants professional judgment was used		

CCV Linearity Nonconformances

Criteria	Actions	
	Detected Results	Nondetected Results
%D > 20%	J	UJ
%Drift >20%	J*	UJ*
* No guidance in NFG, thus Resolution Consultants professional judgment was used		

Qualified sample results are shown in Table 1.

<u>Laboratory Blanks/Equipment Blanks</u>

Laboratory method blanks and equipment rinsate blanks were evaluated as to whether there were contaminants detected above the method detection limit (MDL).

Data validation qualifications for individual samples are based on the maximum contaminant concentration detected in all associated blanks.

Detected results in blanks are not discussed in this data validation report if the associated results were nondetect or if qualification of sample results was not required.

The QC acceptance criteria were met and/or qualification of the sample results was not required. There were no detected target analytes reported in the method blanks or equipment blank samples RBSD 121113 01 (reported in SDG CARR-7) and RBSD 121313 01 (reported in SDG CARR-12).

Surrogate Spike Recoveries

The surrogate recoveries (%Rs) were reviewed for conformance with the QC acceptance criteria.

Nonconformances are summarized in Attachment A in Table A-2. Data qualification on the basis of surrogate recovery nonconformances was as follows:

Actions: (Based on NFG 2008, except as noted)

Actions are only taken when one surrogate %R is <10% or when 2 or more surrogates in one fraction are outside limits.

Actions apply to only the compounds in the affected fraction. *i.e.* if 2 acid surrogate %Rs are below the LL, then all acid compounds will be qualified as indicated in the table

Criteria	Action	
	Detected Results	**Nondetected Results**
%R> upper limit (UL)	J	No qualification
10% ≤ %R < lower limit (LL)[1]	J	UJ
%R <10% (sample dilution is not a factor)[1]	J	R
%R <10% (sample dilution is a factor)[1,2]	No qualification	No qualification

[1] NFG 2008 does not list a minimum limit. Based on Region 1 and Resolution Consultants professional judgment, a minimum limit of 1 was used.

[2] If there is no surrogate information due to dilution then estimate (J/UJ) all results. However, in cases where there is surrogate information from multiple runs then base the surrogate actions on the least diluted run.

**NFG recommends professional judgment, thus Resolution Consultants professional judgment was used

Qualified sample results are shown in Table 1.

MS/MSD Results

An MS/MSD was not performed as a part of this SDG.

LCS/LCSD Results

The LCS/LCSD %Rs and/or relative percent recoveries (RPDs) were reviewed for conformance with the QC acceptance criteria.

There was no LCS prepared and analyzed in the WG136996 batch associated with the full scan analyses of samples OU09 SD124 0012 and OU09 SD123 0012; therefore, the associated results were qualified as estimated (J/UJ).

Nonconformances are summarized in Attachment A in Table A-3. Data qualification to the analytes associated with the specific LCS %Rs or RPDs was as follows:

Criteria[1,2]	Action[3]	
	Detected Compounds	**Nondetected Compounds**
%R or RPD > UL	J	No qualification
10%≥%R < LL	J	UJ
%R < 10%	J	R

[1] In the absence of NFG 2008 guidance for LCS results, NFG 2008 MS/MSD guidance was applied with Resolution Consultants professional judgment.

[2] NFG 2008 MS/MSD does not list a minimum limit. Based on Region 1 and Resolution Consultants professional

judgment, a minimum limit of 10% was used.
[3]If the %R of more than half of the analytes are not within limits, then reject (R) nondetects for the analytes with <10% recovery and estimate (J/UJ) all other analyte(s) in the associated samples.

Qualified sample results are shown in Table 1.

Field Duplicate Results

A field duplicate sample was not included in this SDG.

Internal Standard Results

The internal standard (IS) recoveries were reviewed for conformance with the QC acceptance criteria.

Nonconformances are summarized in Attachment A in Table A-4. Data qualification to the analytes associated with the specific IS on the basis of IS recoveries was as follows:

Sample IS area compared to CCV and CCV IS area compared to ICAL*		
Qualify results	**<50%**	**> 200%**
Positive Results	J	J
Nondetected Results	R	A
* Per the DoD QSM v4.2, the laboratory may use the IS area of the CCV in place of the ICV. If an IS area fails with respect to the ICAL, but passes with respect to the CCV, then use professional judgment to evaluate the sensitivity and linearity of the analysis before applying validation actions. (Resolution Consultants professional judgment)		

Qualified sample results are shown in Table 1.

Sample Results/Reporting Issues

All compounds detected at concentrations less than the limit of quantitation (LOQ) but greater than the method detection limit (MDL) were qualified by the laboratory as estimated (J). This "J" qualifier was retained during data validation.

Any sample that was analyzed at a dilution due to high concentrations of target or non-targets was checked to ensure that the results and/or sample specific LODs and LOQs were adjusted accordingly by the laboratory.

The percent solids data were reviewed to ensure that NFG 2008 specified criteria were met.

All percent solids criteria were met.

QUALIFICATION ACTIONS

Sample results qualified as a result of validation actions are summarized in Table 1. All actions are described above.

ATTACHMENTS

Attachment A: Nonconformance Summary Tables

Attachment B: Qualifier Codes and Explanations

Attachment C: Reason Codes and Explanations

Table 1 - Data Validation Summary of Qualified Data

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SD122 0012	SE	BENZO[A]PYRENE	110	12	25	UG_KG	J	l
OU09 SD122 0012	SE	BENZO[G,H,I]PERYLENE	43	12	25	UG_KG	J	l
OU09 SD122 0012	SE	CHRYSENE	120	12	25	UG_KG	J	c
OU09 SD122 0012	SE	PYRENE	100	12	25	UG_KG	J	c
OU09 SD122 0012W	SE	BENZO[A]PYRENE	160	12	23	UG_KG	J	l
OU09 SD122 0012W	SE	BENZO[G,H,I]PERYLENE	64	12	23	UG_KG	J	l
OU09 SD122 0012W	SE	CHRYSENE	220	12	23	UG_KG	J	c
OU09 SD122 0012W	SE	PYRENE	140	12	23	UG_KG	J	c
OU09 SD123 0012	SE	BENZO[A]ANTHRACENE	420	260	340	UG_KG	J	l
OU09 SD123 0012	SE	CHRYSENE	690	260	340	UG_KG	J	c,l
OU09 SD123 0012	SE	PYRENE	560	260	340	UG_KG	J	c,l
OU09 SD123 0012	SE	BENZO[A]PYRENE	310	10	21	UG_KG	J	l
OU09 SD123 0012	SE	BENZO[G,H,I]PERYLENE	130	10	21	UG_KG	J	l
OU09 SD124 0012	SE	BENZO[A]ANTHRACENE	400	260	340	UG_KG	J	l,s
OU09 SD124 0012	SE	BENZO[A]PYRENE	480	260	340	UG_KG	J	s,i,l
OU09 SD124 0012	SE	CHRYSENE	630	260	340	UG_KG	J	c,s,l
OU09 SD124 0012	SE	FLUORANTHENE	520	260	340	UG_KG	J	l,s
OU09 SD124 0012	SE	PYRENE	840	260	340	UG_KG	J	c,s,l
OU09 SD124 0012	SE	BENZO[G,H,I]PERYLENE	160	10	20	UG_KG	J	l
OU09 SD125 0012	SE	BENZO[A]PYRENE	5.1	12	24	UG_KG	J	l
OU09 SD125 0012	SE	BENZO[G,H,I]PERYLENE	12	12	24	UG_KG	UJ	l
OU09 SD125 0012	SE	CHRYSENE	9.8	12	24	UG_KG	J	c
OU09 SD125 0012	SE	PYRENE	5.5	12	24	UG_KG	J	c
OU09 SD125 1224	SE	BENZO[A]PYRENE	12	12	23	UG_KG	UJ	l
OU09 SD125 1224	SE	BENZO[G,H,I]PERYLENE	12	12	23	UG_KG	UJ	l
OU09 SD125 1224	SE	CHRYSENE	5.1	12	23	UG_KG	J	c
OU09 SD125 1224	SE	PYRENE	5.5	12	23	UG_KG	J	c
OU09 SD125 2436	SE	BENZO[A]PYRENE	13	13	27	UG_KG	UJ	l
OU09 SD125 2436	SE	BENZO[G,H,I]PERYLENE	13	13	27	UG_KG	UJ	l
OU09 SD125 2436	SE	CHRYSENE	13	13	27	UG_KG	UJ	c
OU09 SD125 2436	SE	PYRENE	13	13	27	UG_KG	UJ	c
OU09 SD126 0012	SE	BENZO[A]PYRENE	15	12	23	UG_KG	J	l
OU09 SD126 0012	SE	BENZO[G,H,I]PERYLENE	4.9	12	23	UG_KG	J	l
OU09 SD126 0012	SE	CHRYSENE	16	12	23	UG_KG	J	c
OU09 SD126 0012	SE	PYRENE	13	12	23	UG_KG	J	c
OU09 SD126 1224	SE	BENZO[A]PYRENE	47	12	24	UG_KG	J	l
OU09 SD126 1224	SE	BENZO[G,H,I]PERYLENE	22	12	24	UG_KG	J	l
OU09 SD126 1224	SE	CHRYSENE	42	12	24	UG_KG	J	c
OU09 SD126 1224	SE	PYRENE	39	12	24	UG_KG	J	c

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SD126 2436	SE	BENZO[A]PYRENE	21	12	24	UG_KG	J	l
OU09 SD126 2436	SE	BENZO[G,H,I]PERYLENE	8.1	12	24	UG_KG	J	l
OU09 SD126 2436	SE	CHRYSENE	22	12	24	UG_KG	J	c
OU09 SD126 2436	SE	PYRENE	18	12	24	UG_KG	J	c

Attachment A

Non Conformance Summary Tables

Table A-1a - Initial Calibration - SVOC SIM

ICV	Compound	%RSD	%RSD Limit	Associated Samples
12/30/13 G WG136784-8	CHRYSENE	15.29	<15	OU09 SD125 0012 OU09 SD125 1224 OU09 SD125 2436 OU09 SD122 0012 OU09 SD122 0012W OU09 SD126 0012 OU09 SD126 2436 OU09 SD123 0012 OU09 SD124 0012 OU09 SD126 1224

Table A-1b Continuing Calibration – SVOC SIM

CCAL	Compound	% D	%D Limit	Associated Samples
WG136942-2	PYRENE	-23.61	<20	OU09 SD125 0012 OU09 SD125 1224 OU09 SD125 2436 OU09 SD122 0012 OU09 SD122 0012W OU09 SD126 0012 OU09 SD126 2436 OU09 SD123 0012 OU09 SD124 0012 OU09 SD126 1224

Table A-2 - Lab Control Samples

LCS ID	Compound	LCS % Recovery	LCSD % Recovery	Lower Limit	Upper Limit	RPD	RPD Limit	Associated Samples
WG136350-2RA	BENZO[G,H,I]PERYLENE	41.8	56.8	53	103	30	50	OU09 SD125 0012 OU09 SD125 1224 OU09 SD125 2436 OU09 SD122 0012 OU09 SD122 0012W OU09 SD126 0012 OU09 SD126 2436 OU09 SD123 0012 OU09 SD124 0012 OU09 SD126 1224

LCS ID	Compound	LCS % Recovery	LCSD % Recovery	Lower Limit	Upper Limit	RPD	RPD Limit	Associated Samples
WG136350-2RA	BENZO[A]PYRENE	58.6	68.8	61	101	16	50	OU09 SD125 0012 OU09 SD125 1224 OU09 SD125 2436 OU09 SD122 0012 OU09 SD122 0012W OU09 SD126 0012 OU09 SD126 2436 OU09 SD123 0012 OU09 SD124 0012 OU09 SD126 1224

Table A-3 Surrogates

Sample ID	Surrogate	Recovery	Lower Limit	Upper Limit
SVOC-full scan				
OU09 SD124 0012	TERPHENYL-D14	126	30	125

Table A-4 Internal Standards

Sample ID	Internal Standard	IS AREA	Lower Limit (50%)	Lower Limit (20%)	Upper Limit
SVOC-full scan					
OU09 SD124 0012	PERYLENE-D12	174607	258363.5	103345	1033454

SVOC

PERYLENE-D12 Associated PAH compounds

BENZO[B]FLUORANTHENE
BENZO[K]FLUORANTHENE
BENZO[A]PYRENE
INDENO[1,2,3-CD]PYRENE
DIBENZ[A,H]ANTHRACENE
BENZO[G,H,I]PERYLENE

Attachment B

Qualifier Codes and Explanations

Qualifier	Explanation
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
UJ	The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual quantitation limit necessary to accurately and precisely measure the analyte in the sample.
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

Attachment C

Reason Codes and Explanations

Reason Code	Explanation
be	Equipment blank contamination
bf	Field blank contamination
bl	Laboratory blank contamination
c	Calibration issue
d	Reporting limit raised due to chromatographic interference
fd	Field duplicate RPDs
h	Holding times
i	Internal standard areas
k	Estimated Maximum Possible Concentration (EMPC)
l	LCS or OPR recoveries
lc	Labeled compound recovery
ld	Laboratory duplicate RPDs
lp	Laboratory control sample/laboratory control sample duplicate RPDs
m	Matrix spike recovery
md	Matrix spike/matrix spike duplicate RPDs
nb	Negative laboratory blank contamination
p	Chemical preservation issue
r	Dual column RPD
q	Quantitation issue
s	Surrogate recovery
su	Ion suppression
t	Temperature preservation issue
x	Percent solids
y	Serial dilution results
z	ICS results

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Data Validation Report

Project:	MRP Site 1 (OU9) Remedial Investigation, NAVSTA Newport, Rhode Island CTO WE06
Laboratory:	Katahdin Analytical Services, Scarborough, Maine
Service Request:	CARR-12
Analyses/Method:	Semivolatile Organic Compounds (GC/MS) Full Scan and SIM / EPA SW-846 Method 8270D Polycyclic Aromatic Hydrocarbons (GC/MS) Full Scan and SIM / EPA SW-846 Method 8270D
Validation Level:	Limited
Resolution Consultants Project Number:	60250336 SA.DV
Prepared by:	Helen Jones Parry/Resolution Consultants — Completed on: 03/10/2014
Reviewed by:	Kristin Rutherford/Resolution Consultants — File Name: CARR-12_SE_8270_DVRpt

SUMMARY

The samples listed below were collected by Resolution Consultants from the MRP Site 1 (OU9), NAVSTA Newport, Rhode Island on December 12 and 13, 2013.

Sample ID	Matrix/Sample Type
RBSD12131301	Equipment blank
FDSD12131302	Field Duplicate of BSBG SD303 0012
FDSD12131301	Field Duplicate of BSBG SD304 0012
FDSD12121302	Field Duplicate of BSBG SD305 0012
FDSD12131303	Field Duplicate of OU09 SD101 0012
BSBG SD303 0012	Sediment
BSBG SD304 0012	Sediment
BSBG SD305 0012	Sediment
BSBG SD305 1224	Sediment
BSBG SD305 2436	Sediment
BSBG SD306 0012	Sediment
BSBG SD306 1224	Sediment
BSBG SD306 2436	Sediment
OU09 SD101 0012	Sediment
OU09 SD102 0012	Sediment
OU09 SD102 0012W	Sediment
OU09 SD103 0012	Sediment

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The data have been validated in accordance with the project-specific Sampling and Analysis Plan, *Sampling and Analysis Plan, Former Carr Point Shooting Range (MRP Site 1, OU9), Naval Station (NAVSTA) Newport, Rhode Island, Final* (Naval Facilities Engineering Command, Mid-Atlantic, 2013) and the following references:

- *DoD Quality Systems Manual (QMS) for Environmental Laboratories, version 4.2* (DoD EDQW, 2010);
- *USEPA Region 1, EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses* (December 1996);
- *USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review* (June 2008);
- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW846, Method 8270D, Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)* (USEPA, 1996);
- laboratory quality control (QC) limits, as applicable.

The USEPA Region 1 and National Data Validation Functional Guidelines were modified to accommodate the non-CLP methodologies. In the absence of method-specific direction for validation, Resolution Consultants professional judgment was used as appropriate.

REVIEW ELEMENTS

The data were evaluated based on the following parameters (where applicable to the method):

✓ Data completeness (chain-of-custody (COC)/sample integrity
✓ Holding times and sample preservation
✓ Instrument tuning
✗ Initial calibration/continuing calibration verification
✗ Laboratory blanks/equipment blanks
✗ Surrogate spike recoveries
✗ Matrix spike (MS) and/or matrix spike duplicate (MSD) results
✗ Laboratory control sample (LCS)/laboratory control sample duplicate (LCSD) results
✗ Field duplicates
✗ Internal standards
✓ Sample results/reporting issues

The symbol (✓) indicates that no validation qualifiers were applied based on this parameter. NA indicates that the parameter was not included as part of this data set or was not applicable to this validation and therefore not reviewed. The symbol (✗) indicates that a quality control (QC) nonconformance resulted in the qualification of data. Any QC nonconformance that resulted in the qualification of data is discussed below. In addition, nonconformances or other issues that were noted during validation, but did not result in qualification of data, may be discussed for informational purposes only.

The data appear valid as reported and may be used for decision making purposes. Selected data points were estimated, negated, and/or rejected due to nonconformances of certain QC criteria (see discussion below). Qualified sample results are presented in Table 1.

RESULTS

Data Completeness

The data package was reviewed and found to meet acceptance criteria for completeness:

- The COCs were reviewed for completeness of information relevant to the samples and requested analyses, and for signatures indicating transfer of sample custody.
- The laboratory sample login sheet(s) were reviewed for issues potentially affecting sample integrity, including the condition of sample containers upon receipt at the laboratory.
- Completeness of analyses was verified by comparing the reported results to the COC requests.

Holding Times/Sample Preservation

Sample preservation and preparation/analysis holding times were reviewed for conformance with the QC acceptance criteria.

The QC acceptance criteria were met.

GC/MS Performance Checks

The data were reviewed to ensure that the decafluorotriphenylphosphine (DFTPP) tuning was performed at the correct frequency and that the method acceptance criteria were met. All samples were analyzed within 12 hours of the DFTPP tunes.

Initial Calibration/Continuing Calibration Verification

Calibration data were reviewed for conformance with the QC acceptance criteria to ensure that:

- the initial calibration (ICAL) percent relative standard deviation (%RSD), correlation coefficient (r)/coefficient of determination (r2), and/or response factor method acceptance criteria were met;
- the initial calibration verification standard (ICV) percent recovery acceptance criteria were met;
- the continuing calibration verification standard (CCV) method percent difference or percent drift (%Ds) and RF acceptance criteria were met; and
- the retention time method acceptance criteria were met.

Nonconformances are summarized in Attachment A in Table A-1a through A-1d. Data qualification to the analytes associated with the specific ICAL and/or CCV was as follows:

ICAL and CCV Response Factor Nonconformances

Criteria	Actions	
	Detected Results	**Nondetected Results[4]**
SPCCs		
RF<0.050 for N-nitroso-di-n-propylamine; hexachlorocyclopentadiene; 2,4-dinitrophenol; and 4-nitrophenol.	J[1]	UJ[1]
All compounds except SPCCs and Poor Performing Compounds[2]		
RF<0.050	J	R[3]

RF<0.05 but>0.010 (if low standard response is adequate)	J[1]	UJ[1]
Poor Performing Compounds[2]		
RF<0.010	J	R
[1]No guidance in NFG, thus Resolution Consultants professional judgment was used.		
[2]As defined in Table 28 of the NFG.		
[3]Resolution Consultants professional judgment may be used to either raise reporting level or to estimate reporting limit if low standard response is adequate.		
[4]Sample results qualified as not detected (U) due to blank contamination are not rejected, but estimated (UJ).		
SPCCs - System Performance Check Compounds as listed in SW-846 Method 8270C		

ICAL Linearity Nonconformances

Criteria	Actions	
	Detected Results	**Nondetected**
%RSD > 30% for CCCs (acenaphthene, 1,4-dichlorobenzene, hexachlorobutadiene, diphenylamine, di-n-octyl phthalate, fluoranthene, and benzo(a)pyrene; 4-chloro-3-methylphenol, 2,4-dichlorophenol, 2-nitrophenol, phenol, pentachlorophenol, and 2,4,6-trichlorophenol)	J*	UJ*
%RSD > 15% and quantitation based on mean RF	J	UJ
r or r^2 < 0.99 and quantitation based on linear regression	J*	UJ*
* No guidance in NFG, thus Resolution Consultants professional judgment was used		
CCCs - Calibration Check Compounds as listed in SW-846 Method 8270C		

ICV Recovery Nonconformances

Criteria	Actions*	
	Detected Results	**Nondetected Results**
Recovery > 120	J	UJ
Recovery < 80	J	UJ
* No guidance in NFG, thus Resolution Consultants professional judgment was used		

CCV Linearity Nonconformances

Criteria	Actions	
	Detected Results	**Nondetected Results**
%D > 20%	J	UJ
%Drift >20%	J*	UJ*
* No guidance in NFG, thus Resolution Consultants professional judgment was used		

Qualified sample results are shown in Table 1.

<u>Laboratory Blanks/Equipment Blanks</u>

Laboratory method blanks and equipment rinsate blanks were evaluated as to whether there were contaminants detected above the method detection limit (MDL).

Data validation qualifications for individual samples are based on the maximum contaminant concentration detected in all associated blanks.

Detected results in blanks are not discussed in this data validation report if the associated results were nondetect or if qualification of sample results was not required.

The QC acceptance criteria were met and/or qualification of the sample results was not required. There were no detected target analytes reported in the method blanks or equipment blank sample RBSD 121313 01.

Nonconformances are summarized in Attachment A in Table A-2. Sample results were qualified as follows:

Blank Actions:

Blank type	Blank result	Sample result	Action for samples
Method, Storage, Trip, Field, or Equipment	Detects	Not detected	No qualification
	≤ LOQ	< LOQ	Report sample LOQ value with a U
		≥ LOQ and ≤ 5x the blank result[2]	Report the sample result with a U[1]
		≥ 5x the LOQ[2]	No qualifications[1]
	> LOQ	< LOQ	Report sample LOQ value with a U
		≥ LOQ and < blank contamination	Report the sample result with a U or reject the sample result as unusable R
		≥ LOQ and = blank contamination	If the result is ≤5x blank result[2], report the sample result U[1] If the result is > 5x blank result[2], no qualification is required[1]
[1]Based on Resolution Consultants professional judgment			
[2]Use 10x blank result for all phthalates (common contaminants per Region I)			

LOD - Limit of Detection
LOQ - Limit of Quantitation (equivalent to lowest calibration standard)

Qualified sample results are shown in Table 1.

Surrogate Spike Recoveries

The surrogate recoveries (%Rs) were reviewed for conformance with the QC acceptance criteria.

Nonconformances are summarized in Attachment A in Table A-3. Data qualification on the basis of surrogate recovery nonconformances was as follows:

Actions: (Based on NFG 2008, except as noted)

Actions are only taken when one surrogate %R is <10% or when 2 or more surrogates in one fraction are outside limits.

Actions apply to only the compounds in the affected fraction. *i.e.* if 2 acid surrogate %Rs are below the LL, then all acid compounds will be qualified as indicated in the table

Criteria	Action	
	Detected Results	**Nondetected Results**
%R> upper limit (UL)	J	No qualification
10% ≤ %R < lower limit (LL)[1]	J	UJ
%R <10% (sample dilution is not a factor)[1]	J	R
%R <10% (sample dilution is a factor)[1,2]	No qualification	No qualification

[1] NFG 2008 does not list a minimum limit. Based on Region 1 and Resolution Consultants professional judgment, a minimum limit of 1 was used.

[2] If there is no surrogate information due to dilution then estimate (J/UJ) all results. However, in cases where there is surrogate information from multiple runs then base the surrogate actions on the least diluted run.

**NFG recommends professional judgment, thus Resolution Consultants professional judgment was used

Qualified sample results are shown in Table 1.

MS/MSD Results

The MS/MSD %Rs and relative percent differences (RPDs) were reviewed for conformance with the QC acceptance criteria.

Nonconformances are summarized in Attachment A in Table A-4. Data qualification to the analytes associated with the specific MS/MSD nonconformances was as follows:

Actions: (Based on NFG 2008, Region 1, and Resolution Consultants professional judgment)

Criteria	Action	
	Detected Compounds	**Nondetected Compounds**
%R> UL	J	No qualification
10% ≤ %R < LL*	J	UJ
%R <10%*	J	R
%RPD > UL	J	No qualification

* NFG 2008 does not list a minimum limit. Based on Region 1 and Resolution Consultants professional judgment, a minimum limit of 10% was used.

Notes:

1. Based on NFG 2008 SVOC guidance, Resolution Consultants professional judgment is used to reject (R) non-detects in all associated samples for any analyte with < 10% recovery. Also, Resolution Consultants professional judgment is used to estimate (UJ) rather the reject (R) sample results previously negated (U) on the basis of blank contamination.

2. If a field duplicate sample was also collected for the native sample chosen for MS/MSD analysis, professional judgment is used to apply MS/MSD actions to the corresponding field duplicate sample as well as the native sample.

Qualified sample results are shown in Table 1.

LCS/LCSD Results

The LCS/LCSD %Rs and/or relative percent recoveries (RPDs) were reviewed for conformance with the QC acceptance criteria.

Nonconformances are summarized in Attachment A in Table A-5. Data qualification to the analytes associated with the specific LCS %Rs or RPDs was as follows:

Criteria[1,2]	Action[3]	
	Detected Compounds	**Nondetected Compounds**
%R or RPD > UL	J	No qualification
10%≥%R < LL	J	UJ
%R < 10%	J	R
[1] In the absence of NFG 2008 guidance for LCS results, NFG 2008 MS/MSD guidance was applied with Resolution Consultants professional judgment. [2] NFG 2008 MS/MSD does not list a minimum limit. Based on Region 1 and Resolution Consultants professional judgment, a minimum limit of 10% was used.		
[3]If the %R of more than half of the analytes are not within limits, then reject (R) nondetects for the analytes with <10% recovery and estimate (J/UJ) all other analyte(s) in the associated samples.		

Qualified sample results are shown in Table 1.

Field Duplicate Results

Field duplicate RPDs were reviewed for conformance with the Resolution Consultants QC criteria of ≤50% for solid matrices and ≤30% for aqueous matrices. These criteria apply if both results were greater than five times the limit of quantitation (LOQ).

Nonconformances are summarized in Attachment A in Table A-6. Data qualification to the analytes associated with the specific field duplicate RPDs was as follows:

Criteria	RPD	Action	
		Detected	**Nondetected**
Sample and duplicate are nondetect results	Not calculable (NC)	No qualification	No qualification
Sample and duplicate results ≥2xLOQ	>30 (aqueous) >50 (solids)	J	Not Applicable
Sample and duplicate results <2xLOQ	>60 (aqueous) >100 (solids)	J	Not Applicable
If sample or duplicate result is >2xLOQ and the other is not detected	NC	J	UJ
If sample or duplicate result is <2xLOQ and the other is not detected	NC	No qualification	No qualification

Actions: (Resolution Consultants professional judgment was used)

Qualified sample results are shown in Table 1.

Internal Standard Results

The internal standard (IS) recoveries were reviewed for conformance with the QC acceptance criteria.

The internal standard area for perylene-d12 for sample OU09 SD101 0012 was less than 50%. The positive benzo(b)fluoranthene result was qualified "J", as estimated, due to poor method accuracy.

Nonconformances are summarized in Attachment A in Table A-7. Data qualification to the analytes associated with the specific IS on the basis of IS recoveries was as follows:

Sample IS area compared to CCV and CCV IS area compared to ICAL*		
Qualify results	**<50%**	**> 200%**
Positive Results	J	J
Nondetected Results	R	A
* Per the DoD QSM v4.2, the laboratory may use the IS area of the CCV in place of the ICV. If an IS area fails with respect to the ICAL, but passes with respect to the CCV, then use professional judgment to evaluate the sensitivity and linearity of the analysis before applying validation actions. (Resolution Consultants professional judgment)		

Qualified sample results are shown in Table 1.

Sample Results/Reporting Issues

All compounds detected at concentrations less than the limit of quantitation (LOQ) but greater than the method detection limit (MDL) were qualified by the laboratory as estimated (J). This "J" qualifier was retained during data validation.

Any sample that was analyzed at a dilution due to high concentrations of target or non-targets was checked to ensure that the results and/or sample specific LODs and LOQs were adjusted accordingly by the laboratory.

The percent solids data were reviewed to ensure that NFG 2008 specified criteria were met.

All percent solids criteria were met.

QUALIFICATION ACTIONS

Sample results qualified as a result of validation actions are summarized in Table 1. All actions are described above.

ATTACHMENTS

Attachment A: Nonconformance Summary Tables

Attachment B: Qualifier Codes and Explanations

Attachment C: Reason Codes and Explanations

Table 1 - Data Validation Summary of Qualified Data

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
BSBG SD303 0012	SE	2-CHLORONAPHTHALENE	270	270	360	UG_KG	UJ	c
BSBG SD303 0012	SE	BENZIDINE	1200	1200	1600	UG_KG	UJ	c
BSBG SD303 0012	SE	BENZOIC ACID	660	660	880	UG_KG	UJ	c
BSBG SD303 0012	SE	BIS(2-CHLOROETHOXY)METHANE	270	270	360	UG_KG	UJ	l
BSBG SD303 0012	SE	CHRYSENE	900	270	360	UG_KG	J	fd
BSBG SD303 0012	SE	DIETHYLPHTHALATE	270	270	360	UG_KG	UJ	c
BSBG SD303 0012	SE	N-NITROSODIMETHYLAMINE	270	270	360	UG_KG	UJ	c
BSBG SD303 0012	SE	PENTACHLOROPHENOL	660	660	880	UG_KG	UJ	c
BSBG SD303 0012	SE	BENZO[G,H,I]PERYLENE	280	11	22	UG_KG	J	c,l
BSBG SD303 0012	SE	BENZO[K]FLUORANTHENE	320	11	22	UG_KG	J	fd
BSBG SD304 0012	SE	2-CHLORONAPHTHALENE	260	260	350	UG_KG	UJ	c
BSBG SD304 0012	SE	BENZIDINE	1200	1200	1600	UG_KG	UJ	c
BSBG SD304 0012	SE	BENZOIC ACID	650	650	870	UG_KG	UJ	c
BSBG SD304 0012	SE	BIS(2-CHLOROETHOXY)METHANE	260	260	350	UG_KG	UJ	l
BSBG SD304 0012	SE	DIETHYLPHTHALATE	260	260	350	UG_KG	UJ	c
BSBG SD304 0012	SE	N-NITROSODIMETHYLAMINE	260	260	350	UG_KG	UJ	c
BSBG SD304 0012	SE	PENTACHLOROPHENOL	650	650	870	UG_KG	UJ	c
BSBG SD304 0012	SE	BENZO[A]ANTHRACENE	21	21	21	UG_KG	UJ	bl,c
BSBG SD304 0012	SE	BENZO[A]PYRENE	21	21	21	UG_KG	UJ	bl,c
BSBG SD304 0012	SE	BENZO[B]FLUORANTHENE	29	11	21	UG_KG	J	c
BSBG SD304 0012	SE	BENZO[G,H,I]PERYLENE	12	11	21	UG_KG	J	c,l
BSBG SD304 0012	SE	PYRENE	22	11	21	UG_KG	J	c
BSBG SD305 0012	SE	2-CHLORONAPHTHALENE	430	430	570	UG_KG	UJ	c
BSBG SD305 0012	SE	4,6-DINITRO-2-METHYLPHENOL	1100	1100	1400	UG_KG	UJ	c
BSBG SD305 0012	SE	4-NITROANILINE	1100	1100	1400	UG_KG	UJ	c
BSBG SD305 0012	SE	4-NITROPHENOL	1100	1100	1400	UG_KG	UJ	c
BSBG SD305 0012	SE	BENZIDINE	1900	1900	2600	UG_KG	UJ	c
BSBG SD305 0012	SE	BENZOIC ACID	1100	1100	1400	UG_KG	UJ	c
BSBG SD305 0012	SE	BIS(2-CHLOROETHOXY)METHANE	430	430	570	UG_KG	UJ	l
BSBG SD305 0012	SE	CAPROLACTAM	430	430	570	UG_KG	UJ	c
BSBG SD305 0012	SE	DIETHYLPHTHALATE	430	430	570	UG_KG	UJ	c
BSBG SD305 0012	SE	DI-N-OCTYLPHTHALATE	430	430	570	UG_KG	UJ	c
BSBG SD305 0012	SE	PENTACHLOROPHENOL	1100	1100	1400	UG_KG	UJ	c
BSBG SD305 0012	SE	BENZO[A]ANTHRACENE	53	17	34	UG_KG	J	c
BSBG SD305 0012	SE	BENZO[A]PYRENE	66	17	34	UG_KG	J	c
BSBG SD305 0012	SE	BENZO[B]FLUORANTHENE	120	17	34	UG_KG	J	c
BSBG SD305 0012	SE	BENZO[G,H,I]PERYLENE	35	17	34	UG_KG	J	c,l
BSBG SD305 0012	SE	PYRENE	92	17	34	UG_KG	J	c
BSBG SD305 1224	SE	BENZO[A]ANTHRACENE	120	22	45	UG_KG	J	c

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
BSBG SD305 1224	SE	BENZO[A]PYRENE	140	22	45	UG_KG	J	c
BSBG SD305 1224	SE	BENZO[B]FLUORANTHENE	240	22	45	UG_KG	J	c
BSBG SD305 1224	SE	BENZO[G,H,I]PERYLENE	57	22	45	UG_KG	J	c,l
BSBG SD305 1224	SE	CHRYSENE	140	22	45	UG_KG	J	c
BSBG SD305 2436	SE	BENZO[A]ANTHRACENE	37	16	32	UG_KG	J	c
BSBG SD305 2436	SE	BENZO[A]PYRENE	40	16	32	UG_KG	J	c
BSBG SD305 2436	SE	BENZO[B]FLUORANTHENE	66	16	32	UG_KG	J	c
BSBG SD305 2436	SE	BENZO[G,H,I]PERYLENE	20	16	32	UG_KG	J	c,l
BSBG SD305 2436	SE	CHRYSENE	35	16	32	UG_KG	J	c
BSBG SD306 0012	SE	2-CHLORONAPHTHALENE	290	290	380	UG_KG	UJ	c
BSBG SD306 0012	SE	BENZIDINE	1300	1300	1700	UG_KG	UJ	c
BSBG SD306 0012	SE	BENZOIC ACID	720	720	960	UG_KG	UJ	c
BSBG SD306 0012	SE	BIS(2-CHLOROETHOXY)METHANE	290	290	380	UG_KG	UJ	l
BSBG SD306 0012	SE	DIETHYLPHTHALATE	290	290	380	UG_KG	UJ	c
BSBG SD306 0012	SE	N-NITROSODIMETHYLAMINE	290	290	380	UG_KG	UJ	c
BSBG SD306 0012	SE	PENTACHLOROPHENOL	720	720	960	UG_KG	UJ	c
BSBG SD306 0012	SE	BENZO[A]ANTHRACENE	23	23	23	UG_KG	UJ	bl,c
BSBG SD306 0012	SE	BENZO[A]PYRENE	23	23	23	UG_KG	UJ	bl,c
BSBG SD306 0012	SE	BENZO[B]FLUORANTHENE	23	23	23	UG_KG	UJ	bl,c
BSBG SD306 0012	SE	BENZO[G,H,I]PERYLENE	3.2	12	23	UG_KG	J	c,l
BSBG SD306 0012	SE	FLUORANTHENE	23	23	23	UG_KG	U	bl
BSBG SD306 0012	SE	PYRENE	4.4	12	23	UG_KG	J	c
BSBG SD306 1224	SE	BENZO[A]ANTHRACENE	18	12	24	UG_KG	J	c
BSBG SD306 1224	SE	BENZO[A]PYRENE	17	12	24	UG_KG	J	c
BSBG SD306 1224	SE	BENZO[B]FLUORANTHENE	25	12	24	UG_KG	J	c
BSBG SD306 1224	SE	BENZO[G,H,I]PERYLENE	11	12	24	UG_KG	J	c,l
BSBG SD306 1224	SE	PYRENE	18	12	24	UG_KG	J	c
BSBG SD306 2436	SE	BENZO[A]ANTHRACENE	2.5	12	23	UG_KG	J	c
BSBG SD306 2436	SE	BENZO[A]PYRENE	12	12	23	UG_KG	UJ	c
BSBG SD306 2436	SE	BENZO[B]FLUORANTHENE	12	12	23	UG_KG	UJ	c
BSBG SD306 2436	SE	BENZO[G,H,I]PERYLENE	12	12	23	UG_KG	UJ	c,l
BSBG SD306 2436	SE	PYRENE	12	12	23	UG_KG	UJ	c
FDSD12121302	SE	2-CHLORONAPHTHALENE	480	480	650	UG_KG	UJ	c
FDSD12121302	SE	BENZIDINE	2200	2200	2900	UG_KG	UJ	c
FDSD12121302	SE	BENZOIC ACID	1200	1200	1600	UG_KG	UJ	c
FDSD12121302	SE	BIS(2-CHLOROETHOXY)METHANE	480	480	650	UG_KG	UJ	l
FDSD12121302	SE	BIS(2-CHLOROETHYL)ETHER	480	480	650	UG_KG	UJ	c
FDSD12121302	SE	DIETHYLPHTHALATE	480	480	650	UG_KG	UJ	c
FDSD12121302	SE	DI-N-OCTYLPHTHALATE	480	480	650	UG_KG	UJ	c

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
FDSD12121302	SE	PENTACHLOROPHENOL	1200	1200	1600	UG_KG	UJ	c
FDSD12121302	SE	BENZO[A]ANTHRACENE	45	20	39	UG_KG	J	c
FDSD12121302	SE	BENZO[A]PYRENE	56	20	39	UG_KG	J	c
FDSD12121302	SE	BENZO[B]FLUORANTHENE	98	20	39	UG_KG	J	c
FDSD12121302	SE	BENZO[G,H,I]PERYLENE	30	20	39	UG_KG	J	c,l
FDSD12121302	SE	PYRENE	74	20	39	UG_KG	J	c
FDSD12131301	SE	BENZO[A]ANTHRACENE	19	11	22	UG_KG	J	c
FDSD12131301	SE	BENZO[A]PYRENE	19	11	22	UG_KG	J	c
FDSD12131301	SE	BENZO[B]FLUORANTHENE	26	11	22	UG_KG	J	c
FDSD12131301	SE	BENZO[G,H,I]PERYLENE	9.2	11	22	UG_KG	J	c,l
FDSD12131301	SE	PYRENE	23	11	22	UG_KG	J	c
FDSD12131302	SE	1,1-BIPHENYL	270	270	350	UG_KG	UJ	s
FDSD12131302	SE	1,2,4-TRICHLOROBENZENE	270	270	350	UG_KG	UJ	s
FDSD12131302	SE	1,2-DICHLOROBENZENE	270	270	350	UG_KG	UJ	s
FDSD12131302	SE	1,2-DIPHENYLHYDRAZINE	530	530	710	UG_KG	UJ	s
FDSD12131302	SE	1,3-DICHLOROBENZENE	270	270	350	UG_KG	UJ	s
FDSD12131302	SE	1,4-DICHLOROBENZENE	270	270	350	UG_KG	UJ	s
FDSD12131302	SE	2,2'-OXYBIS(1-CHLOROPROPANE)	270	270	350	UG_KG	UJ	s
FDSD12131302	SE	2,4,5-TRICHLOROPHENOL	660	660	880	UG_KG	UJ	s
FDSD12131302	SE	2,4,6-TRICHLOROPHENOL	270	270	350	UG_KG	UJ	s
FDSD12131302	SE	2,4-DICHLOROPHENOL	270	270	350	UG_KG	UJ	s
FDSD12131302	SE	2,4-DIMETHYLPHENOL	270	270	350	UG_KG	UJ	s
FDSD12131302	SE	2,4-DINITROPHENOL	660	660	880	UG_KG	UJ	s
FDSD12131302	SE	2,4-DINITROTOLUENE	270	270	350	UG_KG	UJ	s
FDSD12131302	SE	2,6-DICHLOROPHENOL	270	270	350	UG_KG	UJ	s
FDSD12131302	SE	2,6-DINITROTOLUENE	270	270	350	UG_KG	UJ	s
FDSD12131302	SE	2-CHLORONAPHTHALENE	270	270	350	UG_KG	UJ	c,s
FDSD12131302	SE	2-CHLOROPHENOL	270	270	350	UG_KG	UJ	s
FDSD12131302	SE	2-METHYLNAPHTHALENE	270	270	350	UG_KG	UJ	s
FDSD12131302	SE	2-METHYLPHENOL	270	270	350	UG_KG	UJ	s
FDSD12131302	SE	2-NITROANILINE	660	660	880	UG_KG	UJ	s
FDSD12131302	SE	2-NITROPHENOL	270	270	350	UG_KG	UJ	s
FDSD12131302	SE	3- AND 4-METHYLPHENOL	270	270	350	UG_KG	UJ	s
FDSD12131302	SE	3,3-DICHLOROBENZIDINE	270	270	350	UG_KG	UJ	s
FDSD12131302	SE	3-NITROANILINE	660	660	880	UG_KG	UJ	s
FDSD12131302	SE	4,6-DINITRO-2-METHYLPHENOL	660	660	880	UG_KG	UJ	s
FDSD12131302	SE	4-BROMOPHENYL-PHENYLETHER	270	270	350	UG_KG	UJ	s
FDSD12131302	SE	4-CHLORO-3-METHYLPHENOL	270	270	350	UG_KG	UJ	s
FDSD12131302	SE	4-CHLOROANILINE	270	270	350	UG_KG	UJ	s

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
FDSD12131302	SE	4-CHLOROPHENYL-PHENYLETHER	270	270	350	UG_KG	UJ	s
FDSD12131302	SE	4-NITROANILINE	660	660	880	UG_KG	UJ	s
FDSD12131302	SE	4-NITROPHENOL	660	660	880	UG_KG	UJ	s
FDSD12131302	SE	BENZIDINE	1200	1200	1600	UG_KG	UJ	c,s
FDSD12131302	SE	BENZO[A]PYRENE	560	270	350	UG_KG	J	s
FDSD12131302	SE	BENZO[B]FLUORANTHENE	560	270	350	UG_KG	J	s
FDSD12131302	SE	BENZOIC ACID	660	660	880	UG_KG	UJ	c,s
FDSD12131302	SE	BENZYL ALCOHOL	530	530	710	UG_KG	UJ	s
FDSD12131302	SE	BIS(2-CHLOROETHOXY)METHANE	270	270	350	UG_KG	UJ	l,s
FDSD12131302	SE	BIS(2-CHLOROETHYL)ETHER	270	270	350	UG_KG	UJ	c,s
FDSD12131302	SE	BIS(2-ETHYLHEXYL)PHTHALATE	270	270	350	UG_KG	UJ	s
FDSD12131302	SE	BUTYLBENZYLPHTHALATE	270	270	350	UG_KG	UJ	s
FDSD12131302	SE	CAPROLACTAM	270	270	350	UG_KG	UJ	s
FDSD12131302	SE	CARBAZOLE	270	270	350	UG_KG	UJ	s
FDSD12131302	SE	CHRYSENE	530	270	350	UG_KG	J	s,fd
FDSD12131302	SE	DIBENZOFURAN	270	270	350	UG_KG	UJ	s
FDSD12131302	SE	DIETHYLPHTHALATE	270	270	350	UG_KG	UJ	c,s
FDSD12131302	SE	DIMETHYL PHTHALATE	270	270	350	UG_KG	UJ	s
FDSD12131302	SE	DI-N-BUTYLPHTHALATE	270	270	350	UG_KG	UJ	s
FDSD12131302	SE	DI-N-OCTYLPHTHALATE	270	270	350	UG_KG	UJ	c,s
FDSD12131302	SE	FLUORANTHENE	600	270	350	UG_KG	J	s
FDSD12131302	SE	HEXACHLOROBENZENE	270	270	350	UG_KG	UJ	s
FDSD12131302	SE	HEXACHLOROBUTADIENE	270	270	350	UG_KG	UJ	s
FDSD12131302	SE	HEXACHLOROETHANE	270	270	350	UG_KG	UJ	s
FDSD12131302	SE	ISOPHORONE	270	270	350	UG_KG	UJ	s
FDSD12131302	SE	NITROBENZENE	270	270	350	UG_KG	UJ	s
FDSD12131302	SE	N-NITROSODIMETHYLAMINE	270	270	350	UG_KG	UJ	s
FDSD12131302	SE	N-NITROSODINPROPYLAMINE	270	270	350	UG_KG	UJ	s
FDSD12131302	SE	N-NITROSODIPHENYLAMINE	270	270	350	UG_KG	UJ	s
FDSD12131302	SE	N-NITROSOPYRROLIDINE	270	270	350	UG_KG	UJ	s
FDSD12131302	SE	PENTACHLOROPHENOL	660	660	880	UG_KG	UJ	c,s
FDSD12131302	SE	PHENOL	270	270	350	UG_KG	UJ	s
FDSD12131302	SE	PYRENE	650	270	350	UG_KG	J	s
FDSD12131302	SE	BENZO[A]ANTHRACENE	350	11	22	UG_KG	J	c
FDSD12131302	SE	BENZO[G,H,I]PERYLENE	180	11	22	UG_KG	J	c,l
FDSD12131302	SE	BENZO[K]FLUORANTHENE	180	11	22	UG_KG	J	fd
FDSD12131303	SE	ACENAPHTHENE	25	12	24	UG_KG	J	fd
FDSD12131303	SE	BENZO[A]ANTHRACENE	280	12	24	UG_KG	J	c
FDSD12131303	SE	BENZO[A]PYRENE	270	12	24	UG_KG	J	c

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
FDSD12131303	SE	BENZO[B]FLUORANTHENE	340	12	24	UG_KG	J	c
FDSD12131303	SE	BENZO[G,H,I]PERYLENE	100	12	24	UG_KG	J	c,l
FDSD12131303	SE	NAPHTHALENE	7.1	12	24	UG_KG	J	fd
FDSD12131303	SE	PYRENE	290	12	24	UG_KG	J	c
OU09 SD101 0012	SE	BENZO[B]FLUORANTHENE	470	290	380	UG_KG	J	c,i
OU09 SD101 0012	SE	PYRENE	670	290	380	UG_KG	J	l
OU09 SD101 0012	SE	ACENAPHTHENE	47	12	23	UG_KG	J	fd
OU09 SD101 0012	SE	BENZO[A]ANTHRACENE	380	12	23	UG_KG	J	c
OU09 SD101 0012	SE	BENZO[A]PYRENE	370	12	23	UG_KG	J	c
OU09 SD101 0012	SE	BENZO[G,H,I]PERYLENE	130	12	23	UG_KG	J	c,l
OU09 SD101 0012	SE	NAPHTHALENE	30	12	23	UG_KG	J	fd
OU09 SD102 0012	SE	BENZO[A]ANTHRACENE	74	11	22	UG_KG	J	c
OU09 SD102 0012	SE	BENZO[A]PYRENE	80	11	22	UG_KG	J	c
OU09 SD102 0012	SE	BENZO[B]FLUORANTHENE	100	11	22	UG_KG	J	c
OU09 SD102 0012	SE	BENZO[G,H,I]PERYLENE	36	11	22	UG_KG	J	c,l
OU09 SD102 0012	SE	PYRENE	90	11	22	UG_KG	J	c
OU09 SD102 0012W	SE	BENZO[A]ANTHRACENE	45	11	23	UG_KG	J	c
OU09 SD102 0012W	SE	BENZO[A]PYRENE	45	11	23	UG_KG	J	c,m
OU09 SD102 0012W	SE	BENZO[B]FLUORANTHENE	55	11	23	UG_KG	J	c
OU09 SD102 0012W	SE	BENZO[G,H,I]PERYLENE	20	11	23	UG_KG	J	c,m,l
OU09 SD102 0012W	SE	DIBENZ[A,H]ANTHRACENE	11	11	23	UG_KG	J	m
OU09 SD102 0012W	SE	INDENO[1,2,3-CD]PYRENE	25	11	23	UG_KG	J	m
OU09 SD102 0012W	SE	PYRENE	54	11	23	UG_KG	J	c
OU09 SD103 0012	SE	ACENAPHTHENE	10	12	24	UG_KG	J	m
OU09 SD103 0012	SE	ANTHRACENE	15	12	24	UG_KG	J	m
OU09 SD103 0012	SE	BENZO[A]ANTHRACENE	98	12	24	UG_KG	J	c,m
OU09 SD103 0012	SE	BENZO[A]PYRENE	94	12	24	UG_KG	J	c,m
OU09 SD103 0012	SE	BENZO[B]FLUORANTHENE	130	12	24	UG_KG	J	c,m
OU09 SD103 0012	SE	BENZO[G,H,I]PERYLENE	36	12	24	UG_KG	J	c,m,l
OU09 SD103 0012	SE	BENZO[K]FLUORANTHENE	44	12	24	UG_KG	J	m
OU09 SD103 0012	SE	CHRYSENE	110	12	24	UG_KG	J	c,m
OU09 SD103 0012	SE	DIBENZ[A,H]ANTHRACENE	19	12	24	UG_KG	J	m
OU09 SD103 0012	SE	FLUORANTHENE	140	12	24	UG_KG	J	m
OU09 SD103 0012	SE	FLUORENE	7.2	12	24	UG_KG	J	m
OU09 SD103 0012	SE	INDENO[1,2,3-CD]PYRENE	49	12	24	UG_KG	J	m
OU09 SD103 0012	SE	PHENANTHRENE	77	12	24	UG_KG	J	m
OU09 SD103 0012	SE	PYRENE	130	12	24	UG_KG	J	m
RBSD12131301	WQ	BENZO[A]ANTHRACENE	0.097	0.097	0.19	UG_L	UJ	c,l
RBSD12131301	WQ	BENZO[A]PYRENE	0.097	0.097	0.19	UG_L	UJ	c

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
RBSD12131301	WQ	BENZO[B]FLUORANTHENE	0.097	0.097	0.19	UG_L	UJ	c,l
RBSD12131301	WQ	BENZO[G,H,I]PERYLENE	0.097	0.097	0.19	UG_L	UJ	c
RBSD12131301	WQ	FLUORANTHENE	0.097	0.097	0.19	UG_L	UJ	l

Attachment A

Non Conformance Summary Tables

Table A-1a Initial Calibration - SIM

ICAL	Compound	% RSD	%RSD Limit	ICV %R	ICV %R Limits	Associated Samples
12/23/13 N WG136526-8	BENZO[A]ANTHRACENE			77.96	80-120	RBSD12131301 BSBG SD306 0012 BSBG SD304 0012 BSBG SD303 0012 FDSD12131302 BSBG SD306 1224 BSBG SD306 2436 FDSD12131301 OU09 SD102 0012 OU09 SD102 0012W OU09 SD101 0012 FDSD12131303 BSBG SD305 0012 FDSD12121302 OU09 SD103 0012 BSBG SD305 2436 BSBG SD305 1224
	BENZO[B]FLUORANTHENE			76.92	80-120	
	BENZO(A)PYRENE			78.97	80-120	
	BENZO[G,H,I]PERYLENE			78.72	80-120	

Table A-1b Initial Calibration - SVOC full scan

ICAL	Compound	% RSD	%RSD Limit	ICV %R	ICV %R Limits	Associated Samples
12/11/13 U WG135960-8	BENZOIC ACID	42.12	<15			BSBG SD306 0012 BSBG SD305 0012 BSBG SD304 0012 BSBG SD303 0012 FDSD12131302 FDSD12121302 OU09 SD101 0012
	2-CHLORONAPHTHALENE	20.70	<15	120.61	80-120	
	DIETHYLPHTHALATE	15.01	<15			
	PENTACHLOROPHENOL			122.89	80-120	
	BENZIDINE			47.60	80-120	

Table A-1c Continuing Calibration – SVOC SIM

CCAL	Compound	% D	%D Limit	Associated Samples
WG136926-2	PYRENE	-20.05	<20	BSBG SD306 0012 BSBG SD304 0012 BSBG SD303 0012 FDSD12131302 BSBG SD306 1224 BSBG SD306 2436 FDSD12131301 OU09 SD102 0012 OU09 SD102 0012W OU09 SD101 0012 FDSD12131303 BSBG SD305 0012 FDSD12121302
WG137076-2	CHRYSENE	24.44	<20	OU09 SD103 0012 BSBG SD305 2436 BSBG SD305 1224

Table A-1d Continuing Calibration – SVOC full scan

CCAL	Compound	% D	%D Limit	Associated Samples
WG138311-2 (WG136684-2)	N-NITROSODIMETHYLAMINE	-21.11	<20	BSBG SD306 0012 BSBG SD304 0012 BSBG SD303 0012
WG138312-2 (WG136728-2)	BENZOIC ACID	51.70	<20	BSBG SD305 0012
	CAPROLACTUM	21.15	<20	
	4-NITROPHENOL	28.27	<20	
	4-NITROANILINE	20.09	<20	
	4,6-DINITRO-2-METHYLPHENOL	27.78	<20	
	PENTACHLOROPHENOL	22.55	<20	
	DI-N-OCTYLPHTHALATE	29.40	<20	
WG138315-2 (WG136976-2)	BIS(2-CHLOROETHYL)ETHER	20.48	<20	FDSD12131302 FDSD12121302
	BENZOIC ACID	-64.40	<20	
	2-CHLORONAPHTHALENE	45.30	<20	
	BENZIDINE	-38.95	<20	
	DI-N-OCTYLPHTHALATE	33.99	<20	
WG137144-2	BENZO(B)FLUORANTHENE	21.70	<20	OU09 SD101 0012

Table A-2 Lab Blanks

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
SIM						
WG136440-1	BENZO[A]ANTHRACENE	3.7	10	20	UG_KG	BSBG SD303 0012 BSBG SD304 0012 BSBG SD305 0012 BSBG SD306 0012 FDSD12121302 FDSD12131302
WG136440-1	BENZO[A]PYRENE	4.7	10	20	UG_KG	BSBG SD303 0012 BSBG SD304 0012 BSBG SD305 0012 BSBG SD306 0012 FDSD12121302 FDSD12131302
WG136440-1	BENZO[B]FLUORANTHENE	7.3	10	20	UG_KG	BSBG SD303 0012 BSBG SD304 0012 BSBG SD305 0012 BSBG SD306 0012 FDSD12121302 FDSD12131302
WG136440-1	FLUORANTHENE	2.6	10	20	UG_KG	BSBG SD303 0012 BSBG SD304 0012 BSBG SD305 0012 BSBG SD306 0012 FDSD12121302 FDSD12131302

Table A-3 Surrogates

Sample ID	Surrogate	% Recovery	Lower Limit	Upper Limit
SVOC full scan				
FDSD12121302 RA	NITROBENZENE-D5	34.0	35	100
FDSD12131302 RA	PHENOL-D5	37.7	40	100
FDSD12131302 RA	2-FLUOROBIPHENYL	44.7	45	105
FDSD12131302 RA	2-FLUOROPHENOL	33.5	35	105
FDSD12131302 RA	NITROBENZENE-D5	34.6	35	100

Table A-4 Matrix Spikes

Sample ID	Compound	MS % Recovery	MSD % Recovery	Lower Limit	Upper Limit	RPD	RPD Limit
SIM							
OU09 SD102 0012W	INDENO[1,2,3-CD]PYRENE	41.3	57.6	50	105	24	50
OU09 SD102 0012W	BENZO[A]PYRENE	31.9	30.3	61	101	0	50
OU09 SD102 0012W	DIBENZ[A,H]ANTHRACENE	52.3	59.9	55	105	16	50
OU09 SD102 0012W	BENZO[G,H,I]PERYLENE	27.9	33	53	103	13	50
OU09 SD103 0012	ANTHRACENE	28.7	43.2	34	96	22	50
OU09 SD103 0012	PYRENE	0	0	35	111	21	50
OU09 SD103 0012	BENZO[G,H,I]PERYLENE	0	13.3	53	103	34	50
OU09 SD103 0012	INDENO[1,2,3-CD]PYRENE	0	18.5	50	105	38	50
OU09 SD103 0012	BENZO[B]FLUORANTHENE	0	27.1	53	100	38	50
OU09 SD103 0012	FLUORANTHENE	0	9.05	38	116	33	50
OU09 SD103 0012	BENZO[K]FLUORANTHENE	7.89	20.3	49	96	16	50
OU09 SD103 0012	CHRYSENE	0	7.75	46	101	20	50
OU09 SD103 0012	BENZO[A]PYRENE	0	5.43	61	101	28	50
OU09 SD103 0012	DIBENZ[A,H]ANTHRACENE	14.2	32.3	55	105	35	50
OU09 SD103 0012	BENZO[A]ANTHRACENE	0	11.6	48	100	25	50
OU09 SD103 0012	ACENAPHTHENE	31.1	45.7	33	98	23	50
OU09 SD103 0012	PHENANTHRENE	1.31	36.7	46	96	30	50
OU09 SD103 0012	FLUORENE	36.0	48.8	40	92	18	50

Table A-5 Lab Control Samples

LCS ID	Compound	LCS % Recovery	LCSD % Recovery	Lower Limit	Upper Limit	RPD	RPD Limit	Associated Samples
SIM								
WG136221-2	INDENO[1,2,3-CD]PYRENE	118	114	61	112	2	30	RBSD12131301
WG136221-2	BENZO[B]FLUORANTHENE	61	65.5	67	102	7	30	RBSD12131301
WG136221-2	FLUORANTHENE	78.5	80.0	81	109	2	30	RBSD12131301
WG136221-2	CHRYSENE	102	104	70	95	1	30	RBSD12131301
WG136221-2	BENZO[A]ANTHRACENE	67.0	68.0	70	110	1	30	RBSD12131301
WG136634-2	BENZO[G,H,I]PERYLENE	52.6	45.0	53	103	16	50	BSBG SD305 1224 BSBG SD305 2436 BSBG SD306 1224 BSBG SD306 2436 FDSD12131301 FDSD12131303 OU09 SD101 0012 OU09 SD102 0012 OU09 SD102 0012W OU09 SD103 0012

LCS ID	Compound	LCS % Recovery	LCSD % Recovery	Lower Limit	Upper Limit	RPD	RPD Limit	Associated Samples
WG136440-2	BENZO[G,H,I]PERYLENE	62.4	50.2	53	103	22	50	BSBG SD303 0012 BSBG SD304 0012 BSBG SD305 0012 BSBG SD306 0012 FDSD12121302 FDSD12131302
SVOC full scan								
WG138306-2 (WG136438-2)	N-NITROSO-DI-N-PROPYLAMINE	61.1	44.8	40	115	31	30	BSBG SD303 0012 BSBG SD304 0012 BSBG SD305 0012 BSBG SD306 0012 FDSD12121302 FDSD12131302
WG138306-2 (WG136438-2)	BIS(2-CHLOROETHOXY)METHANE	51.0	39.2	45	110	26	30	BSBG SD303 0012 BSBG SD304 0012 BSBG SD305 0012 BSBG SD306 0012 FDSD12121302 FDSD12131302
WG136632-2	2,4-DIMETHYLPHENOL	38.4	57.4	30	105	39	30	OU09 SD101 0012
WG136632-2	PYRENE	66.5	91	45	125	31	30	OU09 SD101 0012
WG136632-2	BENZO[G,H,I]PERYLENE	29.8	33.7	40	125	12	30	OU09 SD101 0012
WG136632-2	INDENO[1,2,3-CD]PYRENE	42.3	60.5	40	120	35	30	OU09 SD101 0012

Table A-6 Field Duplicates

Sample ID	Duplicate ID	Compound	Sample Result	Qual	Duplicate Result	Qual	LOD	LOQ	Units	RPD
BSBG SD303 0012	FDSD12131302	CHRYSENE	900		530		270	360	UG_KG	51.7
BSBG SD303 0012	FDSD12131302	PHENANTHRENE	600		340		270	360	UG_KG	55.3
BSBG SD303 0012	FDSD12131302	BENZO[K]FLUORANTHENE	320		180		11	22	UG_KG	56.0
BSBG SD303 0012	FDSD12131302	INDENO[1,2,3-CD]PYRENE	450		250		270	360	UG_KG	57.1
BSBG SD303 0012	FDSD12131302	BENZO[A]ANTHRACENE	640		350		270	360	UG_KG	58.6
BSBG SD304 0012	FDSD12131301	ACENAPHTHENE	2	J	11	U	11	21	UG_KG	138.5
OU09 SD101 0012	FDSD12131303	ACENAPHTHENE	47		25		12	23	UG_KG	61.1
OU09 SD101 0012	FDSD12131303	NAPHTHALENE	30		7.1	J	12	23	UG_KG	123.5

Sample ID	Duplicate ID	Compound	Sample Result	Qual	Duplicate Result	Qual	LOD	LOQ	Units	RPD
OU09 SD101 0012	FDSD121313 03	CHRYSENE	680		360		290	380	UG_KG	61.5
OU09 SD101 0012	FDSD121313 03	FLUORANTHENE	550		300		290	380	UG_KG	58.8
OU09 SD101 0012	FDSD121313 03	PYRENE	670		290		290	380	UG_KG	79.2

Table A-7 Internal Standards

Sample ID	Internal Standards	Area	Lower Limit (50%)	Lower Limit (20%)	Upper Limit
SVOC-full scan					
OU09 SD101 0012	PERYLENE-D12	245704	258363.5	103345	1033454

SVOC

PERYLENE-D12 Associated PAH compounds

BENZO[B]FLUORANTHENE
BENZO[K]FLUORANTHENE
BENZO[A]PYRENE
INDENO[1,2,3-CD]PYRENE
DIBENZ[A,H]ANTHRACENE
BENZO[G,H,I]PERYLENE

Attachment B

Qualifier Codes and Explanations

Qualifier	Explanation
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
UJ	The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual quantitation limit necessary to accurately and precisely measure the analyte in the sample.
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

Attachment C

Reason Codes and Explanations

Reason Code	Explanation
be	Equipment blank contamination
bf	Field blank contamination
bl	Laboratory blank contamination
c	Calibration issue
d	Reporting limit raised due to chromatographic interference
fd	Field duplicate RPDs
h	Holding times
i	Internal standard areas
k	Estimated Maximum Possible Concentration (EMPC)
l	LCS or OPR recoveries
lc	Labeled compound recovery
ld	Laboratory duplicate RPDs
lp	Laboratory control sample/laboratory control sample duplicate RPDs
m	Matrix spike recovery
md	Matrix spike/matrix spike duplicate RPDs
nb	Negative laboratory blank contamination
p	Chemical preservation issue
r	Dual column RPD
q	Quantitation issue
s	Surrogate recovery
su	Ion suppression
t	Temperature preservation issue
x	Percent solids
y	Serial dilution results
z	ICS results

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Data Validation Report

Project:	MRP Site 1 (OU9) Remedial Investigation, NAVSTA Newport, Rhode Island CTO WE06
Laboratory:	Katahdin Analytical Services, Scarborough, Maine
Service Request:	CARR-13
Analyses/Method:	Polycyclic Aromatic Hydrocarbons (GC/MS) Full Scan and SIM / EPA SW-846 Method 8270D
Validation Level:	Limited
Resolution Consultants Project Number:	60250336 SA.DV
Prepared by:	Helen Jones Parry/Resolution Consultants — Completed on: 02/04/2014
Reviewed by:	Kristin Rutherford/Resolution Consultants — File Name: CARR-13_SE_8270_DVRpt

SUMMARY

The samples listed below were collected by Resolution Consultants from MRP Site 1 (OU9), NAVSTA Newport, Rhode Island on December 17, 2013.

Sample ID	Matrix/Sample Type
FDSD12171301	Field Duplicate of OU09 SD115 1224
OU09 SD115 0012	Sediment
OU09 SD115 1224	Sediment
OU09 SD115 2436	Sediment

The data have been validated in accordance with the project-specific Sampling and Analysis Plan, *Sampling and Analysis Plan, Former Carr Point Shooting Range (MRP Site 1, OU9), Naval Station (NAVSTA) Newport, Rhode Island, Final* (Naval Facilities Engineering Command, Mid-Atlantic, 2013) and the following references:

- *DoD Quality Systems Manual (QMS) for Environmental Laboratories, version 4.2* (DoD EDQW, 2010);
- *USEPA Region 1, EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses* (December 1996);
- *USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review* (June 2008);
- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW846, Method 8270D, Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)* (USEPA, 1996);
- laboratory quality control (QC) limits, as applicable.

The USEPA Region 1 and National Data Validation Functional Guidelines were modified to accommodate the non-CLP methodologies. In the absence of method-specific direction for validation, Resolution Consultants professional judgment was used as appropriate.

REVIEW ELEMENTS

The data were evaluated based on the following parameters (where applicable to the method):

✓ Data completeness (chain-of-custody (COC)/sample integrity
✓ Holding times and sample preservation
✓ Instrument tuning
✗ Initial calibration/continuing calibration verification
✓ Laboratory blanks/equipment blanks
✓ Surrogate spike recoveries
✗ Matrix spike (MS) and/or matrix spike duplicate (MSD) results
✗ Laboratory control sample (LCS)/laboratory control sample duplicate (LCSD) results
✓ Field duplicates
✓ Internal standards
✓ Sample results/reporting issues

The symbol (✓) indicates that no validation qualifiers were applied based on this parameter. NA indicates that the parameter was not included as part of this data set or was not applicable to this validation and therefore not reviewed. The symbol (✗) indicates that a quality control (QC) nonconformance resulted in the qualification of data. Any QC nonconformance that resulted in the qualification of data is discussed below. In addition, nonconformances or other issues that were noted during validation, but did not result in qualification of data, may be discussed for informational purposes only.

The data appear valid as reported and may be used for decision making purposes. Selected data points were estimated, negated, and/or rejected due to nonconformances of certain QC criteria (see discussion below). Qualified sample results are presented in Table 1.

RESULTS

<u>Data Completeness</u>

The data package was reviewed and found to meet acceptance criteria for completeness:

- The COCs were reviewed for completeness of information relevant to the samples and requested analyses, and for signatures indicating transfer of sample custody.
- The laboratory sample login sheet(s) were reviewed for issues potentially affecting sample integrity, including the condition of sample containers upon receipt at the laboratory.
- Completeness of analyses was verified by comparing the reported results to the COC requests.

Holding Times/Sample Preservation

Sample preservation and preparation/analysis holding times were reviewed for conformance with the QC acceptance criteria.

The QC acceptance criteria were met.

GC/MS Performance Checks

The data were reviewed to ensure that the decafluorotriphenylphosphine (DFTPP) tuning was performed at the correct frequency and that the method acceptance criteria were met. All samples were analyzed within 12 hours of the DFTPP tunes.

Initial Calibration/Continuing Calibration Verification

Calibration data were reviewed for conformance with the QC acceptance criteria to ensure that:

- the initial calibration (ICAL) percent relative standard deviation (%RSD), correlation coefficient (r)/coefficient of determination (r2), and/or response factor method acceptance criteria were met;
- the initial calibration verification standard (ICV) percent recovery acceptance criteria were met;
- the continuing calibration verification standard (CCV) method percent difference or percent drift (%Ds) and RF acceptance criteria were met; and
- the retention time method acceptance criteria were met.

Nonconformances are summarized in Attachment A in Tables A-1a and A-1b. Data qualification to the analytes associated with the specific ICAL and/or CCV was as follows:

ICAL and CCV Response Factor Nonconformances

Criteria	Actions	
	Detected Results	**Nondetected Results[4]**
SPCCs		
RF<0.050 for N-nitroso-di-n-propylamine; hexachlorocyclopentadiene; 2,4-dinitrophenol; and 4-nitrophenol.	J[1]	UJ[1]
All compounds except SPCCs and Poor Performing Compounds[2]		
RF<0.050	J	R[3]
RF<0.05 but>0.010 (if low standard response is adequate)	J[1]	UJ[1]
Poor Performing Compounds[2]		
RF<0.010	J	R
[1]No guidance in NFG, thus Resolution Consultants professional judgment was used.		
[2]As defined in Table 28 of the NFG.		
[3]Resolution Consultants professional judgment may be used to either raise reporting level or to estimate reporting limit if low standard response is adequate.		
[4]Sample results qualified as not detected (U) due to blank contamination are not rejected, but estimated (UJ).		
SPCCs - System Performance Check Compounds as listed in SW-846 Method 8270C		

ICAL Linearity Nonconformances

Criteria	Actions	
	Detected Results	Nondetected
%RSD > 30% for CCCs (acenaphthene, 1,4-dichlorobenzene, hexachlorobutadiene, diphenylamine, di-n-octyl phthalate, fluoranthene, and benzo(a)pyrene; 4-chloro-3-methylphenol, 2,4-dichlorophenol, 2-nitrophenol, phenol, pentachlorophenol, and 2,4,6-trichlorophenol)	J*	UJ*
%RSD > 15% and quantitation based on mean RF	J	UJ
r or r^2 < 0.99 and quantitation based on linear regression	J*	UJ*
* No guidance in NFG, thus Resolution Consultants professional judgment was used		
CCCs - Calibration Check Compounds as listed in SW-846 Method 8270C		

ICV Recovery Nonconformances

Criteria	Actions*	
	Detected Results	Nondetected Results
Recovery > 120	J	UJ
Recovery < 80	J	UJ
* No guidance in NFG, thus Resolution Consultants professional judgment was used		

CCV Linearity Nonconformances

Criteria	Actions	
	Detected Results	Nondetected Results
%D > 20%	J	UJ
%Drift >20%	J*	UJ*
* No guidance in NFG, thus Resolution Consultants professional judgment was used		

Qualified sample results are shown in Table 1.

<u>Laboratory Blanks/Equipment Blanks</u>

Laboratory method blanks and equipment rinsate blanks were evaluated as to whether there were contaminants detected above the method detection limit (MDL).

Data validation qualifications for individual samples are based on the maximum contaminant concentration detected in all associated blanks.

Detected results in blanks are not discussed in this data validation report if the associated results were nondetect or if qualification of sample results was not required.

The QC acceptance criteria were met and/or qualification of the sample results was not required. There were no detected target analytes reported in the method blank or equipment blank sample (RBSD12181301).

Surrogate Spike Recoveries

The surrogate recoveries (%Rs) were reviewed for conformance with the QC acceptance criteria.

All QC acceptance criteria were met.

MS/MSD Results

The MS/MSD %Rs and relative percent differences (RPDs) were reviewed for conformance with the QC acceptance criteria.

Nonconformances are summarized in Attachment A in Table A-2. Data qualification to the analytes associated with the specific MS/MSD nonconformances was as follows:

Actions: (Based on NFG 2008, Region 1, and Resolution Consultants professional judgment)

Criteria	Action	
	Detected Compounds	**Nondetected Compounds**
%R> UL	J	No qualification
10% ≤ %R < LL*	J	UJ
%R <10%*	J	R
%RPD > UL	J	No qualification
* NFG 2008 does not list a minimum limit. Based on Region 1 and Resolution Consultants professional judgment, a minimum limit of 10% was used.		

Notes:

1. Based on NFG 2008 SVOC guidance, Resolution Consultants professional judgment is used to reject (R) non-detects in all associated samples for any analyte with < 10% recovery. Also, Resolution Consultants professional judgment is used to estimate (UJ) rather the reject (R) sample results previously negated (U) on the basis of blank contamination.

2. If a field duplicate sample was also collected for the native sample chosen for MS/MSD analysis, professional judgment is used to apply MS/MSD actions to the corresponding field duplicate sample as well as the native sample.

Qualified sample results are shown in Table 1.

LCS/LCSD Results

The LCS/LCSD %Rs and/or relative percent recoveries (RPDs) were reviewed for conformance with the QC acceptance criteria.

Nonconformances are summarized in Attachment A in Table A-3. Data qualification to the analytes associated with the specific LCS %Rs or RPDs was as follows:

Criteria[1,2]	Action[3]	
	Detected Compounds	**Nondetected Compounds**
%R or RPD > UL	J	No qualification
10%≥%R < LL	J	UJ
%R < 10%	J	R
[1] In the absence of NFG 2008 guidance for LCS results, NFG 2008 MS/MSD guidance was applied with Resolution Consultants professional judgment.		

[2] NFG 2008 MS/MSD does not list a minimum limit. Based on Region 1 and Resolution Consultants professional judgment, a minimum limit of 10% was used.
[3]If the %R of more than half of the analytes are not within limits, then reject (R) nondetects for the analytes with <10% recovery and estimate (J/UJ) all other analyte(s) in the associated samples.

Qualified sample results are shown in Table 1.

Field Duplicate Results

Field duplicate RPDs were reviewed for conformance with the Resolution Consultants QC criteria of ≤50% for solid matrices and ≤30% for aqueous matrices. These criteria apply if both results were greater than five times the limit of quantitation (LOQ).

All QC acceptance criteria were met and/or qualification of the data was not required.

Internal Standard Results

The internal standard (IS) recoveries were reviewed for conformance with the QC acceptance criteria.

All QC acceptance criteria were met.

Sample Results/Reporting Issues

All compounds detected at concentrations less than the limit of quantitation (LOQ) but greater than the method detection limit (MDL) were qualified by the laboratory as estimated (J). This "J" qualifier was retained during data validation.

Any sample that was analyzed at a dilution due to high concentrations of target or non-targets was checked to ensure that the results and/or sample specific LODs and LOQs were adjusted accordingly by the laboratory.

The percent solids data were reviewed to ensure that NFG 2008 specified criteria were met.

All percent solids criteria were met.

QUALIFICATION ACTIONS

Sample results qualified as a result of validation actions are summarized in Table 1. All actions are described above.

ATTACHMENTS

Attachment A: Nonconformance Summary Tables

Attachment B: Qualifier Codes and Explanations

Attachment C: Reason Codes and Explanations

Table 1 - Data Validation Summary of Qualified Data

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
FDSD12171301	SE	BENZO[A]ANTHRACENE	5.4	12	24	UG_KG	J	c
FDSD12171301	SE	BENZO[A]PYRENE	9.2	12	24	UG_KG	J	c
FDSD12171301	SE	BENZO[B]FLUORANTHENE	11	12	24	UG_KG	J	c
FDSD12171301	SE	BENZO[G,H,I]PERYLENE	2.9	12	24	UG_KG	J	c,l
FDSD12171301	SE	CHRYSENE	4.4	12	24	UG_KG	J	c
OU09 SD115 0012	SE	BENZO[A]ANTHRACENE	11	11	23	UG_KG	J	c
OU09 SD115 0012	SE	BENZO[A]PYRENE	14	11	23	UG_KG	J	c,m
OU09 SD115 0012	SE	BENZO[B]FLUORANTHENE	18	11	23	UG_KG	J	c,m
OU09 SD115 0012	SE	BENZO[G,H,I]PERYLENE	5.6	11	23	UG_KG	J	c,m,l
OU09 SD115 0012	SE	CHRYSENE	11	11	23	UG_KG	J	c
OU09 SD115 0012	SE	DIBENZ[A,H]ANTHRACENE	2.8	11	23	UG_KG	J	m
OU09 SD115 0012	SE	FLUORANTHENE	14	11	23	UG_KG	J	m
OU09 SD115 0012	SE	INDENO[1,2,3-CD]PYRENE	7.6	11	23	UG_KG	J	m
OU09 SD115 0012	SE	PHENANTHRENE	7.8	11	23	UG_KG	J	m,md
OU09 SD115 1224	SE	BENZO[A]ANTHRACENE	2.3	12	23	UG_KG	J	c
OU09 SD115 1224	SE	BENZO[A]PYRENE	4.2	12	23	UG_KG	J	c
OU09 SD115 1224	SE	BENZO[B]FLUORANTHENE	5.3	12	23	UG_KG	J	c
OU09 SD115 1224	SE	BENZO[G,H,I]PERYLENE	12	12	23	UG_KG	UJ	c,l
OU09 SD115 1224	SE	CHRYSENE	12	12	23	UG_KG	UJ	c
OU09 SD115 2436	SE	BENZO[A]ANTHRACENE	2.6	12	24	UG_KG	J	c
OU09 SD115 2436	SE	BENZO[A]PYRENE	12	12	24	UG_KG	UJ	c
OU09 SD115 2436	SE	BENZO[B]FLUORANTHENE	4.9	12	24	UG_KG	J	c
OU09 SD115 2436	SE	BENZO[G,H,I]PERYLENE	12	12	24	UG_KG	UJ	c,l
OU09 SD115 2436	SE	CHRYSENE	12	12	24	UG_KG	UJ	c

Attachment A

Non Conformance Summary Tables

Table A-1a Initial Calibration - SIM

ICAL	Compound	% RSD	%RSD Limit	ICV %R	ICV %R Limits	Associated Samples
12/23/13 N WG136526-8	BENZO[A]ANTHRACENE			77.96	80-120	FDSD12171301 OU09 SD115 0012 OU09 SD115 1224 OU09 SD115 2436
	BENZO[B]FLUORANTHENE			76.92	80-120	
	BENZO(A)PYRENE			78.97	80-120	
	BENZO[G,H,I]PERYLENE			78.72	80-120	

Table A-1b Continuing Calibration – SVOC SIM

CCAL	Compound	% D	%D Limit	Associated Samples
WG137076-2	CHRYSENE	24.44	<20	OU09 SD115 0012 OU09 SD115 1224 OU09 SD115 2436 FDSD12171301

Table A-2 Matrix Spikes

Sample ID	Compound	MS % Recovery	MSD % Recovery	Lower Limit	Upper Limit	RPD	RPD Limit
OU09 SD115 0012	PHENANTHRENE	66.8	110	46	96	51	50
OU09 SD115 0012	FLUORANTHENE	76.8	121	38	116	44	50
OU09 SD115 0012	BENZO(B)FLUORANTHENE	74.2	106	53	100	34	50
OU09 SD115 0012	BENZO[G,H,I]PERYLENE	26.8	38.4	53	103	35	50
OU09 SD115 0012	INDENO[1,2,3-CD]PYRENE	48.5	57.1	50	105	20	50
OU09 SD115 0012	BENZO[A]PYRENE	52.0	62.4	61	101	20	50
OU09 SD115 0012	DIBENZ[A,H]ANTHRACENE	44.3	51.5	55	105	21	5

Table A-3 Lab Control Samples

LCS ID	Compound	LCS % Recovery	LCSD % Recovery	Lower Limit	Upper Limit	RPD	RPD Limit	Associated Samples
WG136634-2	BENZO[G,H,I]PERYLENE	52.6	45.0	53	103	16	50	OU09 SD115 0012 OU09 SD115 1224 OU09 SD115 2436 FDSD12171301

Attachment B

Qualifier Codes and Explanations

Qualifier	Explanation
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
UJ	The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual quantitation limit necessary to accurately and precisely measure the analyte in the sample.
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

Attachment C

Reason Codes and Explanations

Reason Code	Explanation
be	Equipment blank contamination
bf	Field blank contamination
bl	Laboratory blank contamination
c	Calibration issue
d	Reporting limit raised due to chromatographic interference
fd	Field duplicate RPDs
h	Holding times
i	Internal standard areas
k	Estimated Maximum Possible Concentration (EMPC)
l	LCS or OPR recoveries
lc	Labeled compound recovery
ld	Laboratory duplicate RPDs
lp	Laboratory control sample/laboratory control sample duplicate RPDs
m	Matrix spike recovery
md	Matrix spike/matrix spike duplicate RPDs
nb	Negative laboratory blank contamination
p	Chemical preservation issue
r	Dual column RPD
q	Quantitation issue
s	Surrogate recovery
su	Ion suppression
t	Temperature preservation issue
x	Percent solids
y	Serial dilution results
z	ICS results

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Data Validation Report

Project:	MRP Site 1 (OU9) Remedial Investigation, NAVSTA Newport, Rhode Island CTO WE06
Laboratory:	Katahdin Analytical Services, Scarborough, Maine
Service Request:	CARR-14
Analyses/Method:	Semivolatile Organic Compounds (GC/MS) Full Scan and SIM / EPA SW-846 Method 8270D Polycyclic Aromatic Hydrocarbons (GC/MS) Full Scan and SIM / EPA SW-846 Method 8270D
Validation Level:	Limited
Resolution Consultants Project Number:	60250336 SA.DV
Prepared by:	Helen Jones Parry/Resolution Consultants — Completed on: 03/26/2014
Reviewed by:	Kristin Rutherford/Resolution Consultants — File Name: CARR-14_SE_8270_DVRpt

SUMMARY

The samples listed below were collected by Resolution Consultants from MRP Site 1 (OU9), NAVSTA Newport, Rhode Island on December 17 and 18, 2013.

Sample ID	Matrix/Sample Type
RBSD12181301	Equipment blank
FDSD12171302	Field Duplicate of OU09 SD114 1224
BSBG SD307 0012	Sediment
BSBG SD307 1224	Sediment
BSBG SD307 2436	Sediment
BSBG SD308 0012	Sediment
BSBG SD308 1224	Sediment
BSBG SD308 2436	Sediment
OU09 SD114 0012	Sediment
OU09 SD114 1224	Sediment
OU09 SD114 2436	Sediment

The data have been validated in accordance with the project-specific Sampling and Analysis Plan, *Sampling and Analysis Plan, Former Carr Point Shooting Range (MRP Site 1, OU9), Naval Station (NAVSTA) Newport, Rhode Island, Final* (Naval Facilities Engineering Command, Mid-Atlantic, 2013) and the following references:

- *DoD Quality Systems Manual (QMS) for Environmental Laboratories, version 4.2* (DoD EDQW, 2010);
- *USEPA Region 1, EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses* (December 1996);
- *USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review* (June 2008);
- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW846, Method 8270D, Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)* (USEPA, 1996);
- laboratory quality control (QC) limits, as applicable.

The USEPA Region 1 and National Data Validation Functional Guidelines were modified to accommodate the non-CLP methodologies. In the absence of method-specific direction for validation, Resolution Consultants professional judgment was used as appropriate.

REVIEW ELEMENTS

The data were evaluated based on the following parameters (where applicable to the method):

✓	Data completeness (chain-of-custody (COC)/sample integrity
✓	Holding times and sample preservation
✓	Instrument tuning
✗	Initial calibration/continuing calibration verification
✓	Laboratory blanks/equipment blanks
✓	Surrogate spike recoveries
✗	Matrix spike (MS) and/or matrix spike duplicate (MSD) results
✗	Laboratory control sample (LCS)/laboratory control sample duplicate (LCSD) results
✓	Field duplicates
✓	Internal standards
✓	Sample results/reporting issues

The symbol (✓) indicates that no validation qualifiers were applied based on this parameter. NA indicates that the parameter was not included as part of this data set or was not applicable to this validation and therefore not reviewed. The symbol (✗) indicates that a quality control (QC) nonconformance resulted in the qualification of data. Any QC nonconformance that resulted in the qualification of data is discussed below. In addition, nonconformances or other issues that were noted during validation, but did not result in qualification of data, may be discussed for informational purposes only.

The data appear valid as reported and may be used for decision making purposes. Selected data points were estimated, negated, and/or rejected due to nonconformances of certain QC criteria (see discussion below). Qualified sample results are presented in Table 1.

RESULTS

<u>Data Completeness</u>

The data package was reviewed and found to meet acceptance criteria for completeness:

- The COCs were reviewed for completeness of information relevant to the samples and requested analyses, and for signatures indicating transfer of sample custody.
- The laboratory sample login sheet(s) were reviewed for issues potentially affecting sample integrity, including the condition of sample containers upon receipt at the laboratory.
- Completeness of analyses was verified by comparing the reported results to the COC requests.

Holding Times/Sample Preservation

Sample preservation and preparation/analysis holding times were reviewed for conformance with the QC acceptance criteria.

The QC acceptance criteria were met.

GC/MS Performance Checks

The data were reviewed to ensure that the decafluorotriphenylphosphine (DFTPP) tuning was performed at the correct frequency and that the method acceptance criteria were met. All samples were analyzed within 12 hours of the DFTPP tunes.

Initial Calibration/Continuing Calibration Verification

Calibration data were reviewed for conformance with the QC acceptance criteria to ensure that:

- the initial calibration (ICAL) percent relative standard deviation (%RSD), correlation coefficient (r)/coefficient of determination (r2), and/or response factor method acceptance criteria were met;
- the initial calibration verification standard (ICV) percent recovery acceptance criteria were met;
- the continuing calibration verification standard (CCV) method percent difference or percent drift (%Ds) and RF acceptance criteria were met; and
- the retention time method acceptance criteria were met.

Nonconformances are summarized in Attachment A in Tables A-1a through A-1d. Data qualification to the analytes associated with the specific ICAL and/or CCV was as follows:

ICAL and CCV Response Factor Nonconformances

Criteria	Actions	
	Detected Results	Nondetected Results[4]
SPCCs		
RF<0.050 for N-nitroso-di-n-propylamine; hexachlorocyclopentadiene; 2,4-dinitrophenol; and 4-nitrophenol.	J[1]	UJ[1]
All compounds except SPCCs and Poor Performing Compounds[2]		
RF<0.050	J	R[3]
RF<0.05 but>0.010 (if low standard response is adequate)	J[1]	UJ[1]
Poor Performing Compounds[2]		
RF<0.010	J	R
[1]No guidance in NFG, thus Resolution Consultants professional judgment was used.		
[2]As defined in Table 28 of the NFG.		

[3]Resolution Consultants professional judgment may be used to either raise reporting level or to estimate reporting limit if low standard response is adequate.
[4]Sample results qualified as not detected (U) due to blank contamination are not rejected, but estimated (UJ).
SPCCs - System Performance Check Compounds as listed in SW-846 Method 8270C

ICAL Linearity Nonconformances

Criteria	Actions	
	Detected Results	Nondetected
%RSD > 30% for CCCs (acenaphthene, 1,4-dichlorobenzene, hexachlorobutadiene, diphenylamine, di-n-octyl phthalate, fluoranthene, and benzo(a)pyrene; 4-chloro-3-methylphenol, 2,4-dichlorophenol, 2-nitrophenol, phenol, pentachlorophenol, and 2,4,6-trichlorophenol)	J*	UJ*
%RSD > 15% and quantitation based on mean RF	J	UJ
r or r^2 < 0.99 and quantitation based on linear regression	J*	UJ*
* No guidance in NFG, thus Resolution Consultants professional judgment was used		
CCCs - Calibration Check Compounds as listed in SW-846 Method 8270C		

ICV Recovery Nonconformances

Criteria	Actions*	
	Detected Results	Nondetected Results
Recovery > 120	J	UJ
Recovery < 80	J	UJ
* No guidance in NFG, thus Resolution Consultants professional judgment was used		

CCV Linearity Nonconformances

Criteria	Actions	
	Detected Results	Nondetected Results
%D > 20%	J	UJ
%Drift >20%	J*	UJ*
* No guidance in NFG, thus Resolution Consultants professional judgment was used		

Qualified sample results are shown in Table 1.

<u>Laboratory Blanks/Equipment Blanks</u>

Laboratory method blanks and equipment rinsate blanks were evaluated as to whether there were contaminants detected above the method detection limit (MDL).

Data validation qualifications for individual samples are based on the maximum contaminant concentration detected in all associated blanks.

Detected results in blanks are not discussed in this data validation report if the associated results were nondetect or if qualification of sample results was not required.

The QC acceptance criteria were met and/or qualification of the sample results was not required. There were no detected target analytes reported in equipment blank sample RBSD12181301.

Surrogate Spike Recoveries

The surrogate recoveries (%Rs) were reviewed for conformance with the QC acceptance criteria.

All QC acceptance criteria were met.

MS/MSD Results

The MS/MSD %Rs and relative percent differences (RPDs) were reviewed for conformance with the QC acceptance criteria.

Nonconformances are summarized in Attachment A in Table A-2. Data qualification to the analytes associated with the specific MS/MSD nonconformances was as follows:

Actions: (Based on NFG 2008, Region 1, and Resolution Consultants professional judgment)

Criteria	Action	
	Detected Compounds	**Nondetected Compounds**
%R> UL	J	No qualification
10% ≤ %R < LL*	J	UJ
%R <10%*	J	R
%RPD > UL	J	No qualification
* NFG 2008 does not list a minimum limit. Based on Region 1 and Resolution Consultants professional judgment, a minimum limit of 10% was used.		

Notes:

1. Based on NFG 2008 SVOC guidance, Resolution Consultants professional judgment is used to reject (R) non-detects in all associated samples for any analyte with < 10% recovery. Also, Resolution Consultants professional judgment is used to estimate (UJ) rather the reject (R) sample results previously negated (U) on the basis of blank contamination.

2. If a field duplicate sample was also collected for the native sample chosen for MS/MSD analysis, professional judgment is used to apply MS/MSD actions to the corresponding field duplicate sample as well as the native sample.

Qualified sample results are shown in Table 1.

LCS/LCSD Results

The LCS/LCSD %Rs and/or relative percent recoveries (RPDs) were reviewed for conformance with the QC acceptance criteria.

Nonconformances are summarized in Attachment A in Table A-3. Data qualification to the analytes associated with the specific %Rs or RPDs was as follows:

Criteria[1,2]	Action[3]	
	Detected Compounds	**Nondetected Compounds**
%R or RPD > UL	J	No qualification
10%≥%R < LL	J	UJ
%R < 10%	J	R
[1] In the absence of NFG 2008 guidance for LCS results, NFG 2008 MS/MSD guidance was applied with Resolution Consultants professional judgment. [2] NFG 2008 MS/MSD does not list a minimum limit. Based on Region 1 and Resolution Consultants professional judgment, a minimum limit of 10% was used.		
[3]If the %R of more than half of the analytes are not within limits, then reject (R) nondetects for the analytes with <10% recovery and estimate (J/UJ) all other analyte(s) in the associated samples.		

Qualified sample results are shown in Table 1.

Field Duplicate Results

Field duplicate RPDs were reviewed for conformance with the Resolution Consultants QC criteria of ≤50% for solid matrices and ≤30% for aqueous matrices. These criteria apply if both results were greater than five times the limit of quantitation (LOQ).

All QC acceptance criteria were met and/or qualification of the data was not required.

Internal Standard Results

The internal standard (IS) recoveries were reviewed for conformance with the QC acceptance criteria.

All QC acceptance criteria were met.

Sample Results/Reporting Issues

All compounds detected at concentrations less than the limit of quantitation (LOQ) but greater than the method detection limit (MDL) were qualified by the laboratory as estimated (J). This "J" qualifier was retained during data validation.

Any sample that was analyzed at a dilution due to high concentrations of target or non-targets was checked to ensure that the results and/or sample specific LODs and LOQs were adjusted accordingly by the laboratory.

The percent solids data were reviewed to ensure that NFG 2008 specified criteria were met.

All percent solids criteria were met.

QUALIFICATION ACTIONS

Sample results qualified as a result of validation actions are summarized in Table 1. All actions are described above.

ATTACHMENTS

Attachment A: Nonconformance Summary Tables

Attachment B: Qualifier Codes and Explanations

Attachment C: Reason Codes and Explanations

Table 1 - Data Validation Summary of Qualified Data

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
BSBG SD307 0012	SE	1,2-DICHLOROBENZENE	300	300	400	UG_KG	UJ	l
BSBG SD307 0012	SE	2-CHLORONAPHTHALENE	300	300	400	UG_KG	UJ	c
BSBG SD307 0012	SE	2-CHLOROPHENOL	300	300	400	UG_KG	UJ	l
BSBG SD307 0012	SE	BENZIDINE	1300	1300	1800	UG_KG	R	c,l
BSBG SD307 0012	SE	BENZOIC ACID	740	740	980	UG_KG	UJ	c
BSBG SD307 0012	SE	BIS(2-CHLOROETHOXY)METHANE	300	300	400	UG_KG	UJ	l
BSBG SD307 0012	SE	BIS(2-CHLOROETHYL)ETHER	300	300	400	UG_KG	UJ	c
BSBG SD307 0012	SE	DIETHYLPHTHALATE	300	300	400	UG_KG	UJ	c
BSBG SD307 0012	SE	DI-N-OCTYLPHTHALATE	300	300	400	UG_KG	UJ	c
BSBG SD307 0012	SE	N-NITROSOPYRROLIDINE	300	300	400	UG_KG	R	l
BSBG SD307 0012	SE	PENTACHLOROPHENOL	740	740	980	UG_KG	UJ	c
BSBG SD307 0012	SE	BENZO[A]ANTHRACENE	14	12	24	UG_KG	J	c
BSBG SD307 0012	SE	BENZO[A]PYRENE	20	12	24	UG_KG	J	c
BSBG SD307 0012	SE	BENZO[B]FLUORANTHENE	36	12	24	UG_KG	J	c
BSBG SD307 0012	SE	BENZO[G,H,I]PERYLENE	9.8	12	24	UG_KG	J	c,l
BSBG SD307 0012	SE	CHRYSENE	16	12	24	UG_KG	J	c
BSBG SD307 1224	SE	BENZO[A]ANTHRACENE	2.4	11	21	UG_KG	J	c
BSBG SD307 1224	SE	BENZO[A]PYRENE	11	11	21	UG_KG	UJ	l
BSBG SD307 1224	SE	BENZO[B]FLUORANTHENE	11	11	21	UG_KG	UJ	c
BSBG SD307 1224	SE	BENZO[G,H,I]PERYLENE	11	11	21	UG_KG	UJ	l
BSBG SD307 2436	SE	BENZO[A]ANTHRACENE	11	11	22	UG_KG	UJ	c
BSBG SD307 2436	SE	BENZO[A]PYRENE	11	11	22	UG_KG	UJ	l
BSBG SD307 2436	SE	BENZO[B]FLUORANTHENE	13	11	22	UG_KG	J	c
BSBG SD307 2436	SE	BENZO[G,H,I]PERYLENE	11	11	22	UG_KG	UJ	l
BSBG SD307 2436	SE	BENZO[K]FLUORANTHENE	3.7	11	22	UG_KG	J	c
BSBG SD307 2436	SE	DIBENZ[A,H]ANTHRACENE	11	11	22	UG_KG	UJ	c
BSBG SD308 0012	SE	1,2-DICHLOROBENZENE	430	430	570	UG_KG	UJ	l
BSBG SD308 0012	SE	2-CHLORONAPHTHALENE	430	430	570	UG_KG	UJ	c
BSBG SD308 0012	SE	2-CHLOROPHENOL	430	430	570	UG_KG	UJ	l
BSBG SD308 0012	SE	BENZIDINE	1900	1900	2600	UG_KG	R	c,l
BSBG SD308 0012	SE	BENZOIC ACID	1100	1100	1400	UG_KG	UJ	c
BSBG SD308 0012	SE	BIS(2-CHLOROETHOXY)METHANE	430	430	570	UG_KG	UJ	l
BSBG SD308 0012	SE	BIS(2-CHLOROETHYL)ETHER	430	430	570	UG_KG	UJ	c
BSBG SD308 0012	SE	DIETHYLPHTHALATE	430	430	570	UG_KG	UJ	c
BSBG SD308 0012	SE	DI-N-OCTYLPHTHALATE	430	430	570	UG_KG	UJ	c
BSBG SD308 0012	SE	N-NITROSOPYRROLIDINE	430	430	570	UG_KG	R	l
BSBG SD308 0012	SE	PENTACHLOROPHENOL	1100	1100	1400	UG_KG	UJ	c
BSBG SD308 0012	SE	BENZO[A]ANTHRACENE	65	17	35	UG_KG	J	c
BSBG SD308 0012	SE	BENZO[A]PYRENE	87	17	35	UG_KG	J	c

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
BSBG SD308 0012	SE	BENZO[B]FLUORANTHENE	120	17	35	UG_KG	J	c
BSBG SD308 0012	SE	BENZO[G,H,I]PERYLENE	40	17	35	UG_KG	J	c,l
BSBG SD308 0012	SE	CHRYSENE	84	17	35	UG_KG	J	c
BSBG SD308 1224	SE	BENZO[A]ANTHRACENE	120	17	33	UG_KG	J	c
BSBG SD308 1224	SE	BENZO[A]PYRENE	120	17	33	UG_KG	J	l
BSBG SD308 1224	SE	BENZO[B]FLUORANTHENE	160	17	33	UG_KG	J	c
BSBG SD308 1224	SE	BENZO[G,H,I]PERYLENE	64	17	33	UG_KG	J	l
BSBG SD308 1224	SE	BENZO[K]FLUORANTHENE	69	17	33	UG_KG	J	c
BSBG SD308 1224	SE	DIBENZ[A,H]ANTHRACENE	51	17	33	UG_KG	J	c
BSBG SD308 2436	SE	BENZO[A]ANTHRACENE	2.6	12	23	UG_KG	J	c
BSBG SD308 2436	SE	BENZO[A]PYRENE	12	12	23	UG_KG	UJ	l
BSBG SD308 2436	SE	BENZO[B]FLUORANTHENE	15	12	23	UG_KG	J	c
BSBG SD308 2436	SE	BENZO[G,H,I]PERYLENE	12	12	23	UG_KG	UJ	l
BSBG SD308 2436	SE	BENZO[K]FLUORANTHENE	4.4	12	23	UG_KG	J	c
BSBG SD308 2436	SE	DIBENZ[A,H]ANTHRACENE	12	12	23	UG_KG	UJ	c
FDSD12171302	SE	BENZO[A]ANTHRACENE	7.7	12	24	UG_KG	J	c
FDSD12171302	SE	BENZO[A]PYRENE	8.0	12	24	UG_KG	J	l
FDSD12171302	SE	BENZO[B]FLUORANTHENE	7.3	12	24	UG_KG	J	c
FDSD12171302	SE	BENZO[G,H,I]PERYLENE	12	12	24	UG_KG	UJ	l
OU09 SD114 0012	SE	BENZO[A]ANTHRACENE	20	12	25	UG_KG	J	c
OU09 SD114 0012	SE	BENZO[A]PYRENE	21	12	25	UG_KG	J	m,l
OU09 SD114 0012	SE	BENZO[B]FLUORANTHENE	14	12	25	UG_KG	J	c
OU09 SD114 0012	SE	BENZO[G,H,I]PERYLENE	10	12	25	UG_KG	J	m,l
OU09 SD114 0012	SE	BENZO[K]FLUORANTHENE	16	12	25	UG_KG	J	m
OU09 SD114 1224	SE	BENZO[A]ANTHRACENE	8.2	12	23	UG_KG	J	c
OU09 SD114 1224	SE	BENZO[A]PYRENE	9.0	12	23	UG_KG	J	l
OU09 SD114 1224	SE	BENZO[B]FLUORANTHENE	8.2	12	23	UG_KG	J	c
OU09 SD114 1224	SE	BENZO[G,H,I]PERYLENE	12	12	23	UG_KG	UJ	l
OU09 SD114 2436	SE	BENZO[A]ANTHRACENE	12	12	24	UG_KG	U	c
OU09 SD114 2436	SE	BENZO[A]PYRENE	12	12	24	UG_KG	UJ	l
OU09 SD114 2436	SE	BENZO[B]FLUORANTHENE	12	12	24	UG_KG	UJ	c
OU09 SD114 2436	SE	BENZO[G,H,I]PERYLENE	12	12	24	UG_KG	UJ	l
RBSD12181301	WQ	CHRYSENE	0.097	0.097	0.19	UG_L	UJ	c
RBSD12181301	WQ	FLUORANTHENE	0.097	0.097	0.19	UG_L	UJ	l
RBSD12181301	WQ	PYRENE	0.097	0.097	0.19	UG_L	UJ	c,l

Attachment A

Non Conformance Summary Tables

Table A-1a Initial Calibration - SVOC SIM

ICAL	Compound	% RSD	%RSD Limit	ICV %R	ICV %R Limits	Associated Samples
12/30/13 G WG136784-8	CHRYSENE	15.29	<15			RBSD12181301
1/2/14 G WG136966-8	BENZO[B]FLUORANTHENE	15.04	<15	75.17	80-120	OU09 SD114 0012 OU09 SD114 1224 OU09 SD114 2436 FDSD12171302 BSBG SD307 1224
	BENZO[A]ANTHRACENE			79.85	80-120	
1/6/14 G WG137075-8	BENZO[B]FLUORANTHENE			78.60	80-120	BSBG SD307 2436 BSBG SD308 2436 BSBG SD308 1224
12/23/13 N WG136526-8	BENZO[A]ANTHRACENE			77.96	80-120	BSBG SD307 0012 BSBG SD308 0012
	BENZO[B]FLUORANTHENE			76.92	80-120	
	BENZO(A)PYRENE			78.97	80-120	
	BENZO[G,H,I]PERYLENE			78.72	80-120	

Table A-1b Initial Calibration - SVOC full scan

ICAL	Compound	% RSD	%RSD Limit	ICV %R	ICV %R Limits	Associated Samples
12/11/13 U WG135960-8	BENZOIC ACID	42.12	<15	127.06	80-120	RBSD12181301 BSBG SD307 0012 BSBG SD308 0012
	2-CHLORONAPHTHALENE	20.70	<15	120.61	80-120	
	DIETHYLPHTHALATE	15.01	<15			
	PENTACHLOROPHENOL			122.89	80-120	
	BENZIDINE			47.60	80-120	

Table A-1c Continuing Calibration – SVOC SIM

CCAL	Compound	% D	%D Limit	Associated Samples
WG136942-2	PYRENE	-23.61	<20	RBSD12181301
WG137198-2	BENZO(A)ANTHRACENE	27.17	<20	BSBG SD307 2436 BSBG SD308 2436 BSBG SD308 1224
	BENZO(K)FLUORANTHENE	-20.70	<20	
	DIBENZO(A,H)ANTHRACENE	21.88	<20	
WG137076-2	CHRYSENE	24.44	<20	BSBG SD307 0012 BSBG SD308 0012

Table A-1d Continuing Calibration – SVOC full scan

CCAL	Compound	% D	%D Limit	Associated Samples
WG138314-2 (WG136728-2) 12/26/13 10:11	BENZOIC ACID	51.70	<20	RBSD12181301
	CAPROLACTAM	21.15	<20	
	4-NITROPHENOL	28.27	<20	
	4-NITROANILINE	20.09	<20	
	4,6-DINITRO-2-METHYLPHENOL	27.78	<20	
	PENTACHLOROPHENOL	22.55	<20	
	DI-N-OCTYLPHTHALATE	29.40	<20	
WG138315-2 (WG136976-2) 1/2/14 12:20	BIS(2-CHLOROETHYL)ETHER	20.48	<20	BSBG SD307 0012 BSBG SD308 0012
	BENZOIC ACID	-64.40	<20	
	2-CHLORONAPHTHALENE	45.30	<20	
	BENZIDINE	-38.95	<20	
	DI-N-OCTYLPHTHALATE	33.99	<20	

Table A-2 Matrix Spikes

Sample ID	Compound	MS % Recovery	MSD % Recovery	Lower Limit	Upper Limit	RPD	RPD Limit
OU09 SD114 0012	BENZO[G,H,I]PERYLENE	26.4	22.2	53	103	10	50
OU09 SD114 0012	BENZO[K]FLUORANTHENE	59.4	40.8	49	96	25	50
OU09 SD114 0012	BENZO[A]PYRENE	54.4	48.0	61	101	7	50

Table A-3 Lab Control Samples

LCS ID	Compound	LCS % Recovery	LCSD % Recovery	Lower Limit	Upper Limit	RPD	RPD Limit	Associated Samples
SVOC FULL SCAN								
WG136626-2	BENZO[K]FLUORANTHENE	136	134	45	125	2	30	RBSD12181301
WG136632-2	BENZYL ALCOHOL	49.5	70	20	125	34	30	BSBG SD307 0012 BSBG SD308 0012
WG136632-2	2,4-DIMETHYLPHENOL	38.4	57.4	30	105	39	30	BSBG SD307 0012 BSBG SD308 0012
WG136632-2	4-CHLOROANILINE	36.8	61.7	10	100	51	30	BSBG SD307 0012 BSBG SD308 0012
WG136632-2	3- AND 4-METHYLPHENOL	45.9	62.8	40	105	31	30	BSBG SD307 0012 BSBG SD308 0012
WG136632-2	2,2'-OXYBIS(1-CHLOROPROPANE)	33.4	45.6	20	115	31	30	BSBG SD307 0012 BSBG SD308 0012
WG136632-2	PHENOL	46.2	63.1	40	100	31	30	BSBG SD307 0012 BSBG SD308 0012
WG136632-2	BIS(2-CHLOROETHOXY)METHANE	39	54	45	110	32	30	BSBG SD307 0012 BSBG SD308 0012
WG136632-2	2,4-DINITROPHENOL	40.2	55.6	15	130	32	30	BSBG SD307 0012 BSBG SD308 0012

LCS ID	Compound	LCS % Recovery	LCSD % Recovery	Lower Limit	Upper Limit	RPD	RPD Limit	Associated Samples
WG136632-2	1,3-DICHLOROBENZENE	40.5	55.4	40	100	31	30	BSBG SD307 0012 BSBG SD308 0012
WG136632-2	N-NITROSODIMETHYLAMINE	32.6	45.4	20	115	33	30	BSBG SD307 0012 BSBG SD308 0012
WG136632-2	BENZOIC ACID	31.2	49.8	0	110	46	30	BSBG SD307 0012 BSBG SD308 0012
WG136632-2	HEXACHLOROETHANE	38.8	53.3	35	110	31	30	BSBG SD307 0012 BSBG SD308 0012
WG136632-2	ISOPHORONE	47.8	65.3	45	110	31	30	BSBG SD307 0012 BSBG SD308 0012
WG136632-2	3,3-DICHLOROBENZIDINE	39.9	62.5	10	130	44	30	BSBG SD307 0012 BSBG SD308 0012
WG136632-2	BENZIDINE	0	6.65	10	150	200	30	BSBG SD307 0012 BSBG SD308 0012
WG136632-2	N-NITROSOPYRROLIDINE	0	0	30	150	0	30	BSBG SD307 0012 BSBG SD308 0012
WG136632-2	1,2-DICHLOROBENZENE	41.6	56.7	45	100	31	30	BSBG SD307 0012 BSBG SD308 0012
WG136632-2	2-CHLOROPHENOL	44.1	60.1	45	105	30	30	BSBG SD307 0012 BSBG SD308 0012
WG136632-2	3-NITROANILINE	48.4	70	25	110	37	30	BSBG SD307 0012 BSBG SD308 0012
SIM								
WG136627-2	PYRENE	68.0	67.5	71	104	1	30	RBSD12181301 1
WG136627-2	FLUORANTHENE	87.0	78.5	81	109	10	30	RBSD12181301 1
WG136634-2	BENZO[G,H,I]PERYLENE	52.6	45	53	103	16	50	BSBG SD307 0012 BSBG SD308 0012
WG136683-2	BENZO[G,H,I]PERYLENE	43.6	37.0	53	103	16	50	BSBG SD307 1224 BSBG SD307 2436 BSBG SD308 1224 BSBG SD308 2436 FDSD12171302 OU09 SD114 0012 OU09 SD114 1224 OU09 SD114 2436
WG136683-2	BENZO[A]PYRENE	66.3	58.8	61	101	12	50	BSBG SD307 1224 BSBG SD307 2436 BSBG SD308 1224 BSBG SD308 2436 FDSD12171302 OU09 SD114 0012 OU09 SD114 1224 OU09 SD114 2436

Attachment B

Qualifier Codes and Explanations

Qualifier	Explanation
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
UJ	The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual quantitation limit necessary to accurately and precisely measure the analyte in the sample.
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

Attachment C

Reason Codes and Explanations

Reason Code	Explanation
be	Equipment blank contamination
bf	Field blank contamination
bl	Laboratory blank contamination
c	Calibration issue
d	Reporting limit raised due to chromatographic interference
fd	Field duplicate RPDs
h	Holding times
i	Internal standard areas
k	Estimated Maximum Possible Concentration (EMPC)
l	LCS or OPR recoveries
lc	Labeled compound recovery
ld	Laboratory duplicate RPDs
lp	Laboratory control sample/laboratory control sample duplicate RPDs
m	Matrix spike recovery
md	Matrix spike/matrix spike duplicate RPDs
nb	Negative laboratory blank contamination
p	Chemical preservation issue
r	Dual column RPD
q	Quantitation issue
s	Surrogate recovery
su	Ion suppression
t	Temperature preservation issue
x	Percent solids
y	Serial dilution results
z	ICS results

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Data Validation Report

Project:	MRP Site 1 (OU9) Remedial Investigation, NAVSTA Newport, Rhode Island CTO WE06
Laboratory:	Katahdin Analytical Services, Scarborough, Maine
Service Request:	CARR-17
Analyses/Method:	Polycyclic Aromatic Hydrocarbons (GC/MS) SIM / EPA SW-846 Method 8270D
Validation Level:	Limited
Resolution Consultants Project Number:	60250336 SA.DV
Prepared by:	Constance Lapite/Resolution Consultants Completed on: 06/19/2014
Reviewed by:	Kristin Rutherford/Resolution Consultants File Name: CARR-17_SE_8270_DVRpt

SUMMARY

The samples listed below were collected by Resolution Consultants from MRP Site 1 (OU9), NAVSTA Newport, Rhode Island on April 1-3, 2014.

Sample ID	Matrix/Sample Type
BSBG SD301 0012	Sediment
BSBG SD309 0012	Sediment
BSBG SD309 1224	Sediment
BSBG SD309 2436	Sediment
BSBG SD310 0012	Sediment
BSBG SD310 1224	Sediment (MS/MSD)
BSBG SD310 2436	Sediment
BSBG SD312 0012	Sediment
BSBG SD312 1224	Sediment
BSBG SD312 2436	Sediment
BSBG SD313 0012	Sediment
BSBG SD313 1224	Sediment
BSBG SD313 2436	Sediment
FDSD040114	Field Duplicate of OU09 SD130 0012
FDSD04021401	Field Duplicate of BSBG SD309 1224
OU09 SD104 0012	Sediment
OU09 SD104 1224	Sediment
OU09 SD116 0012	Sediment
OU09 SD116 1224	Sediment
OU09 SD128 0012	Sediment
OU09 SD128 1224	Sediment

Sample ID	Matrix/Sample Type
OU09 SD128 2436	Sediment
OU09 SD129 0012	Sediment (MS/MSD)
OU09 SD130 0012	Sediment
OU09 SD131 0012	Sediment
OU09 SD131 1224	Sediment
OU09 SD131 2436	Sediment
OU09 SD132 0012	Sediment
OU09 SD132 1224	Sediment
OU09 SD132 2436	Sediment
OU09 SD133 0012	Sediment
OU09 SD133 1224	Sediment
RBSD04011401	Equipment Blank
RBSD04031401	Equipment Blank

The data have been validated in accordance with the project-specific Sampling and Analysis Plan, *Sampling and Analysis Plan, Former Carr Point Shooting Range (MRP Site 1, OU9), Naval Station (NAVSTA) Newport, Rhode Island, Final* (Naval Facilities Engineering Command, Mid-Atlantic, 2013) and the following references:

- *DoD Quality Systems Manual (QSM) for Environmental Laboratories, version 4.2* (DoD EDQW, 2010);
- *USEPA Region 1, EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses* (December 1996);
- *USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review* (June 2008);
- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW846, Method 8270D, Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)* (USEPA, 1996);
- laboratory quality control (QC) limits, as applicable.

The USEPA Region 1 and National Data Validation Functional Guidelines were modified to accommodate the non-CLP methodologies. In the absence of method-specific direction for validation, Resolution Consultants professional judgment was used as appropriate.

REVIEW ELEMENTS

The data were evaluated based on the following parameters (where applicable to the method):

✓ Data completeness (chain-of-custody (COC)/sample integrity
✓ Holding times and sample preservation
✓ Instrument tuning
✗ Initial calibration/continuing calibration verification
✗ Laboratory blanks/equipment blanks
✓ Surrogate spike recoveries
✗ Matrix spike (MS) and/or matrix spike duplicate (MSD) results
✗ Laboratory control sample (LCS)/laboratory control sample duplicate (LCSD)

results
✗ Field duplicates
✗ Internal standards
✓ Sample results/reporting issues

Data Completeness

The data package was reviewed and found to meet acceptance criteria for completeness:

- The COCs were reviewed for completeness of information relevant to the samples and requested analyses, and for signatures indicating transfer of sample custody.
- The laboratory sample login sheet(s) were reviewed for issues potentially affecting sample integrity, including the condition of sample containers upon receipt at the laboratory.
- Completeness of analyses was verified by comparing the reported results to the COC requests.

Holding Times/Sample Preservation

Sample preservation and preparation/analysis holding times were reviewed for conformance with the QC acceptance criteria. The QC acceptance criteria were met.

GC/MS Performance Checks

The data were reviewed to ensure that the decafluorotriphenylphosphine (DFTPP) tuning was performed at the correct frequency and that the method acceptance criteria were met. All samples were analyzed within 12 hours of the DFTPP tunes.

Initial Calibration/Continuing Calibration Verification

Calibration data were reviewed for conformance with the QC acceptance criteria to ensure that:

- the initial calibration (ICAL) percent relative standard deviation (%RSD), correlation coefficient (r)/coefficient of determination (r2), and/or response factor method acceptance criteria were met;
- the initial calibration verification standard (ICV) percent recovery acceptance criteria were met;
- the continuing calibration verification standard (CCV) method percent difference or percent drift (%Ds) and RF acceptance criteria were met; and
- the retention time method acceptance criteria were met.

Nonconformances are summarized in Attachment A in Table A-1. Data qualification to the analytes associated with the specific ICAL and/or CCV was as follows:

ICAL and CCV Response Factor Nonconformances

Criteria	Actions	
	Detected Results	Nondetected Results[4]
SPCCs		
RF<0.050 for N-nitroso-di-n-propylamine; hexachlorocyclopentadiene; 2,4-dinitrophenol; and 4-nitrophenol.	J[1]	UJ[1]

All compounds except SPCCs and Poor Performing Compounds[2]		
RF<0.050	J	R[3]
RF<0.05 but>0.010 (if low standard response is adequate)	J[1]	UJ[1]
Poor Performing Compounds[2]		
RF<0.010	J	R
[1]No guidance in NFG, thus Resolution Consultants professional judgment was used.		
[2]As defined in Table 28 of the NFG.		
[3]Resolution Consultants professional judgment may be used to either raise reporting level or to estimate reporting limit if low standard response is adequate.		
[4]Sample results qualified as not detected (U) due to blank contamination are not rejected, but estimated (UJ).		
SPCCs - System Performance Check Compounds as listed in SW-846 Method 8270C		

ICAL Linearity Nonconformances

Criteria	Actions	
	Detected Results	Nondetected
%RSD > 30% for CCCs (acenaphthene, 1,4-dichlorobenzene, hexachlorobutadiene, diphenylamine, di-n-octyl phthalate, fluoranthene, and benzo(a)pyrene; 4-chloro-3-methylphenol, 2,4-dichlorophenol, 2-nitrophenol, phenol, pentachlorophenol, and 2,4,6-trichlorophenol)	J*	UJ*
%RSD > 15% and quantitation based on mean RF	J	UJ
r < 0.995 for linear regression or r^2 < 0.99 for nonlinear	J*	UJ*
* No guidance in NFG, thus Resolution Consultants professional judgment was used		
CCCs - Calibration Check Compounds as listed in SW-846 Method 8270C		

ICV Recovery Nonconformances

Criteria	Actions*	
	Detected Results	Nondetected Results
Recovery > 120	J	UJ
Recovery < 80	J	UJ
* No guidance in NFG, thus Resolution Consultants professional judgment was used		

CCV Linearity Nonconformances

Criteria	Actions	
	Detected Results	Nondetected Results
%D > 20%	J	UJ
%Drift >20%	J*	UJ*
* No guidance in NFG, thus Resolution Consultants professional judgment was used		

Qualified sample results are shown in Table 1.

Laboratory Blanks/Equipment Blanks

Laboratory method blanks and equipment rinsate blanks were evaluated as to whether there were contaminants detected above the method detection limit (MDL).

Data validation qualifications for individual samples are based on the maximum contaminant concentration detected in all associated blanks.

Detected results in blanks are not discussed in this data validation report if the associated results were nondetect or if qualification of sample results was not required.

Nonconformances are summarized in Attachment A in Table A-2. Sample results were qualified as follows:

Blank Actions:

Blank type	Blank result	Sample result	Action for samples
Method, Storage, Trip, Field, or Equipment	Detects	Not detected	No qualification
	≤ LOQ	< LOQ	Report sample LOQ value with a U
		≥ LOQ and ≤ 5x the blank result[2]	Report the sample result with a U[1]
		≥ 5x the LOQ[2]	No qualifications[1]
	> LOQ	< LOQ	Report sample LOQ value with a U
		≥ LOQ and < blank contamination	Report the sample result with a U or reject the sample result as unusable R
		≥ LOQ and = blank contamination	If the result is ≤5x blank result[2], report the sample result U[1] If the result is > 5x blank result[2], no qualification is required[1]
[1]Based on Resolution Consultants professional judgment			
[2]Use 10x blank result for all phthalates (common contaminants per Region I)			

LOD - Limit of Detection
LOQ - Limit of Quantitation (equivalent to lowest calibration standard)

Qualified sample results are shown in Table 1.

Surrogate Spike Recoveries

The surrogate recoveries (%Rs) were reviewed for conformance with the QC acceptance criteria. All QC acceptance criteria were met.

MS/MSD Results

The MS/MSD %Rs and relative percent differences (RPDs) were reviewed for conformance with the QC acceptance criteria.

Nonconformances are summarized in Attachment A in Table A-3. Data qualification to the analytes associated with the specific MS/MSD nonconformances was as follows:

Actions: (Based on NFG 2008, Region 1, and Resolution Consultants professional judgment)

Criteria	Action	
	Detected Compounds	Nondetected Compounds
%R> UL	J	No qualification
10% ≤ %R < LL*	J	UJ
%R <10%*	J	R
%RPD > UL	J	No qualification
* NFG 2008 does not list a minimum limit. Based on Region 1 and Resolution Consultants professional judgment, a minimum limit of 10% was used.		

Notes:

1. Based on NFG 2008 SVOC guidance, Resolution Consultants professional judgment is used to reject (R) non-detects in all associated samples for any analyte with < 10% recovery. Also, Resolution Consultants professional judgment is used to estimate (UJ) rather the reject (R) sample results previously negated (U) on the basis of blank contamination.

2. If a field duplicate sample was also collected for the native sample chosen for MS/MSD analysis, professional judgment is used to apply MS/MSD actions to the corresponding field duplicate sample as well as the native sample.

Qualified sample results are shown in Table 1.

LCS/LCSD Results

The LCS/LCSD %Rs and/or relative percent recoveries (RPDs) were reviewed for conformance with the QC acceptance criteria. Nonconformances are summarized in Attachment A in Table A-4. The LCSD associated with RBSD04031401 has 13 of 16 analytes and 2 of 3 surrogates that recovered low. The associated LCS meets criteria. It is likely that poor extraction efficiency impacted the LCSD since the LCS recoveries were acceptable. Surrogates were within criteria for sample RBSD04031401 suggesting that the poor extraction that impacted the associated LCSD did not impact the sample, therefore no data were qualified.

Field Duplicate Results

Field duplicate RPDs were reviewed for conformance with the Resolution Consultants QC criteria of ≤50% for solid matrices and ≤30% for aqueous matrices. These criteria apply if both results were greater than five times the limit of quantitation (LOQ).

Nonconformances are summarized in Attachment A in Table A-5. Data qualification to the analytes associated with the specific field duplicate RPDs was as follows:

Criteria	RPD	Action	
		Detected	Nondetected
Sample and duplicate are nondetect results	Not calculable (NC)	No qualification	No qualification
Sample and duplicate results ≥2xLOQ	>30 (aqueous) >50 (solids)	J	Not Applicable
Sample and duplicate results <2xLOQ	>60 (aqueous) >100 (solids)	J	Not Applicable
If sample or duplicate result is >2xLOQ and the other is not detected	NC	J	UJ
If sample or duplicate result is <2xLOQ and the other is not detected	NC	No qualification	No qualification

Actions: (Resolution Consultants professional judgment was used)

Qualified sample results are shown in Table 1.

Internal Standard Results

The internal standard (IS) recoveries were reviewed for conformance with the QC acceptance criteria.

Nonconformances are summarized in Attachment A in Table A-6. Data qualification to the analytes associated with the specific IS on the basis of IS recoveries was as follows:

Sample IS area compared to CCV and CCV IS area compared to ICAL			
Qualify results	**≤ 20%**	**≥ 20% and <50%**	**> 200%**
Positive Results	J	J	J
Nondetected Results	R	UJ	A

Qualified sample results are shown in Table 1.

Sample Results/Reporting Issues

All compounds detected at concentrations less than the limit of quantitation (LOQ) but greater than the method detection limit (MDL) were qualified by the laboratory as estimated (J). This "J" qualifier was retained during data validation.

Any sample that was analyzed at a dilution due to high concentrations of target or non-targets was checked to ensure that the results and/or sample specific LODs and LOQs were adjusted accordingly by the laboratory.

The percent solids data were reviewed to ensure that NFG 2008 specified criteria were met. All percent solids criteria were met.

QUALIFICATION ACTIONS

Sample results qualified as a result of validation actions are summarized in Table 1. All actions are described above.

ATTACHMENTS

Attachment A: Nonconformance Summary Tables

Attachment B: Qualifier Codes and Explanations

Attachment C: Reason Codes and Explanations

Table 1 - Data Validation Summary of Qualified Data

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
BSBG SD301 0012	SE	BENZO[K]FLUORANTHENE	12	12	24	UG_KG	UJ	c
BSBG SD301 0012	SE	INDENO[1,2,3-CD]PYRENE	24	24	24	UG_KG	U	bl
BSBG SD309 0012	SE	BENZO[K]FLUORANTHENE	12	12	24	UG_KG	UJ	c
BSBG SD309 0012	SE	INDENO[1,2,3-CD]PYRENE	24	24	24	UG_KG	U	bl
BSBG SD309 1224	SE	BENZO[K]FLUORANTHENE	11	11	23	UG_KG	UJ	c
BSBG SD309 1224	SE	INDENO[1,2,3-CD]PYRENE	23	23	23	UG_KG	U	bl
BSBG SD309 2436	SE	BENZO[K]FLUORANTHENE	11	11	22	UG_KG	UJ	c
BSBG SD309 2436	SE	INDENO[1,2,3-CD]PYRENE	22	22	22	UG_KG	U	bl
BSBG SD310 0012	SE	BENZO[A]ANTHRACENE	17	12	23	UG_KG	J	i
BSBG SD310 0012	SE	BENZO[A]PYRENE	20	12	23	UG_KG	J	i
BSBG SD310 0012	SE	BENZO[B]FLUORANTHENE	28	12	23	UG_KG	J	i
BSBG SD310 0012	SE	BENZO[G,H,I]PERYLENE	11	12	23	UG_KG	J	i
BSBG SD310 0012	SE	BENZO[K]FLUORANTHENE	4.7	12	23	UG_KG	J	c,i
BSBG SD310 0012	SE	CHRYSENE	20	12	23	UG_KG	J	i
BSBG SD310 0012	SE	DIBENZ[A,H]ANTHRACENE	4.7	12	23	UG_KG	J	i
BSBG SD310 0012	SE	INDENO[1,2,3-CD]PYRENE	23	23	23	UG_KG	U	bl
BSBG SD310 0012	SE	PYRENE	20	12	23	UG_KG	J	i
BSBG SD310 1224	SE	BENZO[G,H,I]PERYLENE	12	12	23	UG_KG	UJ	m
BSBG SD310 1224	SE	BENZO[K]FLUORANTHENE	12	12	23	UG_KG	UJ	c
BSBG SD310 1224	SE	INDENO[1,2,3-CD]PYRENE	23	23	23	UG_KG	U	bl
BSBG SD310 2436	SE	BENZO[K]FLUORANTHENE	12	12	23	UG_KG	UJ	c
BSBG SD312 1224	SE	INDENO[1,2,3-CD]PYRENE	23	23	23	UG_KG	U	bl
BSBG SD313 0012	SE	BENZO[A]ANTHRACENE	20	13	26	UG_KG	J	i
BSBG SD313 0012	SE	BENZO[A]PYRENE	20	13	26	UG_KG	J	i
BSBG SD313 0012	SE	BENZO[B]FLUORANTHENE	27	13	26	UG_KG	J	i
BSBG SD313 0012	SE	BENZO[G,H,I]PERYLENE	9.5	13	26	UG_KG	J	i
BSBG SD313 0012	SE	BENZO[K]FLUORANTHENE	10	13	26	UG_KG	J	c,i
BSBG SD313 0012	SE	CHRYSENE	23	13	26	UG_KG	J	i
BSBG SD313 0012	SE	DIBENZ[A,H]ANTHRACENE	4.3	13	26	UG_KG	J	i
BSBG SD313 0012	SE	INDENO[1,2,3-CD]PYRENE	26	26	26	UG_KG	U	bl
BSBG SD313 0012	SE	PYRENE	31	13	26	UG_KG	J	i
BSBG SD313 1224	SE	BENZO[A]ANTHRACENE	8.0	12	25	UG_KG	J	i
BSBG SD313 1224	SE	BENZO[A]PYRENE	8.5	12	25	UG_KG	J	i
BSBG SD313 1224	SE	BENZO[B]FLUORANTHENE	10	12	25	UG_KG	J	i
BSBG SD313 1224	SE	BENZO[G,H,I]PERYLENE	3.3	12	25	UG_KG	J	i
BSBG SD313 1224	SE	BENZO[K]FLUORANTHENE	12	12	25	UG_KG	UJ	c
BSBG SD313 1224	SE	CHRYSENE	9.7	12	25	UG_KG	J	i
BSBG SD313 1224	SE	DIBENZ[A,H]ANTHRACENE	2.7	12	25	UG_KG	J	i

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
BSBG SD313 1224	SE	INDENO[1,2,3-CD]PYRENE	25	25	25	UG_KG	U	bl
BSBG SD313 1224	SE	PYRENE	15	12	25	UG_KG	J	i
BSBG SD313 2436	SE	BENZO[B]FLUORANTHENE	4.2	12	24	UG_KG	J	c,i
BSBG SD313 2436	SE	DIBENZ[A,H]ANTHRACENE	2.5	12	24	UG_KG	J	i
BSBG SD313 2436	SE	INDENO[1,2,3-CD]PYRENE	24	24	24	UG_KG	UJ	bl,c
FDSD040114	SE	BENZO[A]ANTHRACENE	150	13	27	UG_KG	J	fd,m,i
FDSD040114	SE	BENZO[A]PYRENE	150	13	27	UG_KG	J	i
FDSD040114	SE	BENZO[B]FLUORANTHENE	170	13	27	UG_KG	J	i
FDSD040114	SE	BENZO[G,H,I]PERYLENE	82	13	27	UG_KG	J	i
FDSD040114	SE	BENZO[K]FLUORANTHENE	42	13	27	UG_KG	J	i
FDSD040114	SE	CHRYSENE	180	13	27	UG_KG	J	i
FDSD040114	SE	DIBENZ[A,H]ANTHRACENE	38	13	27	UG_KG	J	i
FDSD040114	SE	INDENO[1,2,3-CD]PYRENE	140	13	27	UG_KG	J	c,i
FDSD040114	SE	PYRENE	140	13	27	UG_KG	J	i
FDSD04021401	SE	BENZO[A]PYRENE	5.5	12	23	UG_KG	J	i
FDSD04021401	SE	BENZO[B]FLUORANTHENE	6.4	12	23	UG_KG	J	i
FDSD04021401	SE	BENZO[K]FLUORANTHENE	12	12	23	UG_KG	UJ	c
FDSD04021401	SE	DIBENZ[A,H]ANTHRACENE	3.8	12	23	UG_KG	J	i
FDSD04021401	SE	INDENO[1,2,3-CD]PYRENE	23	23	23	UG_KG	U	bl
OU09 SD104 0012	SE	BENZO[A]ANTHRACENE	5.5	12	24	UG_KG	J	i
OU09 SD104 0012	SE	BENZO[A]PYRENE	6.5	12	24	UG_KG	J	i
OU09 SD104 0012	SE	BENZO[B]FLUORANTHENE	8.0	12	24	UG_KG	J	c,i
OU09 SD104 0012	SE	BENZO[G,H,I]PERYLENE	2.9	12	24	UG_KG	J	i
OU09 SD104 0012	SE	CHRYSENE	7.0	12	24	UG_KG	J	i
OU09 SD104 0012	SE	DIBENZ[A,H]ANTHRACENE	2.6	12	24	UG_KG	J	i
OU09 SD104 0012	SE	INDENO[1,2,3-CD]PYRENE	24	24	24	UG_KG	UJ	bl,c
OU09 SD104 0012	SE	PYRENE	6.6	12	24	UG_KG	J	i
OU09 SD104 1224	SE	BENZO[B]FLUORANTHENE	12	12	24	UG_KG	UJ	c
OU09 SD104 1224	SE	INDENO[1,2,3-CD]PYRENE	12	12	24	UG_KG	UJ	c
OU09 SD116 0012	SE	BENZO[A]ANTHRACENE	24	24	24	UG_KG	U	bl
OU09 SD116 0012	SE	BENZO[A]PYRENE	12	12	24	UG_KG	J	i
OU09 SD116 0012	SE	BENZO[B]FLUORANTHENE	13	12	24	UG_KG	J	i
OU09 SD116 0012	SE	BENZO[G,H,I]PERYLENE	7.2	12	24	UG_KG	J	i
OU09 SD116 0012	SE	BENZO[K]FLUORANTHENE	12	12	24	UG_KG	UJ	c
OU09 SD116 0012	SE	CHRYSENE	24	24	24	UG_KG	U	bl
OU09 SD116 0012	SE	DIBENZ[A,H]ANTHRACENE	5.5	12	24	UG_KG	J	i
OU09 SD116 0012	SE	INDENO[1,2,3-CD]PYRENE	14	12	24	UG_KG	J	i
OU09 SD116 1224	SE	BENZO[A]ANTHRACENE	22	22	22	UG_KG	U	bl
OU09 SD116 1224	SE	BENZO[K]FLUORANTHENE	11	11	22	UG_KG	UJ	c

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SD116 1224	SE	CHRYSENE	22	22	22	UG_KG	U	bl
OU09 SD128 0012	SE	BENZO[A]ANTHRACENE	24	24	24	UG_KG	U	bl
OU09 SD128 0012	SE	BENZO[A]PYRENE	17	12	24	UG_KG	J	i
OU09 SD128 0012	SE	BENZO[B]FLUORANTHENE	18	12	24	UG_KG	J	i
OU09 SD128 0012	SE	BENZO[G,H,I]PERYLENE	9.5	12	24	UG_KG	J	i
OU09 SD128 0012	SE	BENZO[K]FLUORANTHENE	3.8	12	24	UG_KG	J	i
OU09 SD128 0012	SE	CHRYSENE	24	24	24	UG_KG	U	bl
OU09 SD128 0012	SE	DIBENZ[A,H]ANTHRACENE	5.7	12	24	UG_KG	J	i
OU09 SD128 0012	SE	INDENO[1,2,3-CD]PYRENE	17	12	24	UG_KG	J	c,i
OU09 SD128 1224	SE	BENZO[A]ANTHRACENE	23	23	23	UG_KG	U	bl
OU09 SD128 1224	SE	BENZO[A]PYRENE	12	11	23	UG_KG	J	i
OU09 SD128 1224	SE	BENZO[B]FLUORANTHENE	12	11	23	UG_KG	J	i
OU09 SD128 1224	SE	BENZO[G,H,I]PERYLENE	6.4	11	23	UG_KG	J	i
OU09 SD128 1224	SE	CHRYSENE	23	23	23	UG_KG	U	bl
OU09 SD128 1224	SE	DIBENZ[A,H]ANTHRACENE	4.6	11	23	UG_KG	J	i
OU09 SD128 1224	SE	INDENO[1,2,3-CD]PYRENE	13	11	23	UG_KG	J	c,i
OU09 SD128 2436	SE	CHRYSENE	24	24	24	UG_KG	U	bl
OU09 SD128 2436	SE	INDENO[1,2,3-CD]PYRENE	12	12	24	UG_KG	UJ	c
OU09 SD129 0012	SE	ACENAPHTHENE	19	12	24	UG_KG	J	m,md
OU09 SD129 0012	SE	ACENAPHTHYLENE	12	12	24	UG_KG	UJ	m,md
OU09 SD129 0012	SE	ANTHRACENE	38	12	24	UG_KG	J	m,md
OU09 SD129 0012	SE	BENZO[A]ANTHRACENE	240	12	24	UG_KG	J	m,md,i
OU09 SD129 0012	SE	BENZO[A]PYRENE	240	12	24	UG_KG	J	m,md,i
OU09 SD129 0012	SE	BENZO[B]FLUORANTHENE	200	12	24	UG_KG	J	m,md,i
OU09 SD129 0012	SE	BENZO[G,H,I]PERYLENE	95	12	24	UG_KG	J	m,md,i
OU09 SD129 0012	SE	BENZO[K]FLUORANTHENE	48	12	24	UG_KG	J	m,md,i
OU09 SD129 0012	SE	CHRYSENE	280	12	24	UG_KG	J	m,md,i
OU09 SD129 0012	SE	DIBENZ[A,H]ANTHRACENE	53	12	24	UG_KG	J	m,md,i
OU09 SD129 0012	SE	FLUORANTHENE	220	12	24	UG_KG	J	m,md
OU09 SD129 0012	SE	FLUORENE	14	12	24	UG_KG	J	m,md
OU09 SD129 0012	SE	INDENO[1,2,3-CD]PYRENE	120	12	24	UG_KG	J	c,m,md,i
OU09 SD129 0012	SE	NAPHTHALENE	4.4	12	24	UG_KG	J	m,md
OU09 SD129 0012	SE	PHENANTHRENE	160	12	24	UG_KG	J	m,md
OU09 SD129 0012	SE	PYRENE	210	12	24	UG_KG	J	i,m,md
OU09 SD130 0012	SE	BENZO[A]ANTHRACENE	88	13	26	UG_KG	J	fd,i
OU09 SD130 0012	SE	BENZO[A]PYRENE	100	13	26	UG_KG	J	i
OU09 SD130 0012	SE	BENZO[B]FLUORANTHENE	110	13	26	UG_KG	J	i
OU09 SD130 0012	SE	BENZO[G,H,I]PERYLENE	64	13	26	UG_KG	J	i
OU09 SD130 0012	SE	BENZO[K]FLUORANTHENE	44	13	26	UG_KG	J	i

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SD130 0012	SE	CHRYSENE	110	13	26	UG_KG	J	i
OU09 SD130 0012	SE	DIBENZ[A,H]ANTHRACENE	26	13	26	UG_KG	J	i
OU09 SD130 0012	SE	INDENO[1,2,3-CD]PYRENE	100	13	26	UG_KG	J	c,i
OU09 SD130 0012	SE	PYRENE	88	13	26	UG_KG	J	i
OU09 SD131 0012	SE	BENZO[A]ANTHRACENE	34	13	27	UG_KG	J	i
OU09 SD131 0012	SE	BENZO[A]PYRENE	39	13	27	UG_KG	J	i
OU09 SD131 0012	SE	BENZO[B]FLUORANTHENE	56	13	27	UG_KG	J	i
OU09 SD131 0012	SE	BENZO[G,H,I]PERYLENE	23	13	27	UG_KG	J	i
OU09 SD131 0012	SE	BENZO[K]FLUORANTHENE	14	13	27	UG_KG	J	c,i
OU09 SD131 0012	SE	CHRYSENE	39	13	27	UG_KG	J	i
OU09 SD131 0012	SE	DIBENZ[A,H]ANTHRACENE	8.0	13	27	UG_KG	J	i
OU09 SD131 0012	SE	INDENO[1,2,3-CD]PYRENE	42	13	27	UG_KG	J	i
OU09 SD131 0012	SE	PYRENE	43	13	27	UG_KG	J	i
OU09 SD131 1224	SE	BENZO[A]ANTHRACENE	30	30	30	UG_KG	UJ	bl
OU09 SD131 1224	SE	BENZO[A]PYRENE	5.9	15	30	UG_KG	J	i
OU09 SD131 1224	SE	BENZO[B]FLUORANTHENE	8.1	15	30	UG_KG	J	i
OU09 SD131 1224	SE	CHRYSENE	30	30	30	UG_KG	UJ	bl
OU09 SD131 1224	SE	DIBENZ[A,H]ANTHRACENE	3.6	15	30	UG_KG	J	i
OU09 SD131 1224	SE	INDENO[1,2,3-CD]PYRENE	8.2	15	30	UG_KG	J	c,i
OU09 SD131 1224	SE	PYRENE	11	15	30	UG_KG	J	i
OU09 SD131 2436	SE	DIBENZ[A,H]ANTHRACENE	4.0	18	35	UG_KG	J	i
OU09 SD131 2436	SE	INDENO[1,2,3-CD]PYRENE	3.8	18	35	UG_KG	J	c,i
OU09 SD132 0012	SE	BENZO[A]ANTHRACENE	140	13	27	UG_KG	J	i
OU09 SD132 0012	SE	BENZO[A]PYRENE	160	13	27	UG_KG	J	i
OU09 SD132 0012	SE	BENZO[B]FLUORANTHENE	190	13	27	UG_KG	J	c,i
OU09 SD132 0012	SE	BENZO[G,H,I]PERYLENE	110	13	27	UG_KG	J	i
OU09 SD132 0012	SE	BENZO[K]FLUORANTHENE	75	13	27	UG_KG	J	i
OU09 SD132 0012	SE	CHRYSENE	160	13	27	UG_KG	J	i
OU09 SD132 0012	SE	DIBENZ[A,H]ANTHRACENE	42	13	27	UG_KG	J	i
OU09 SD132 0012	SE	INDENO[1,2,3-CD]PYRENE	190	13	27	UG_KG	J	c,i
OU09 SD132 0012	SE	PYRENE	150	13	27	UG_KG	J	i
OU09 SD132 1224	SE	BENZO[A]ANTHRACENE	37	12	24	UG_KG	J	i
OU09 SD132 1224	SE	BENZO[A]PYRENE	42	12	24	UG_KG	J	i
OU09 SD132 1224	SE	BENZO[B]FLUORANTHENE	51	12	24	UG_KG	J	c,i
OU09 SD132 1224	SE	BENZO[G,H,I]PERYLENE	27	12	24	UG_KG	J	i
OU09 SD132 1224	SE	BENZO[K]FLUORANTHENE	16	12	24	UG_KG	J	i
OU09 SD132 1224	SE	CHRYSENE	45	12	24	UG_KG	J	i
OU09 SD132 1224	SE	DIBENZ[A,H]ANTHRACENE	7.3	12	24	UG_KG	J	i
OU09 SD132 1224	SE	INDENO[1,2,3-CD]PYRENE	44	12	24	UG_KG	J	c,i

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SD132 1224	SE	PYRENE	45	12	24	UG_KG	J	i
OU09 SD132 2436	SE	BENZO[B]FLUORANTHENE	4.7	12	24	UG_KG	J	c
OU09 SD132 2436	SE	INDENO[1,2,3-CD]PYRENE	24	24	24	UG_KG	UJ	bl,c
OU09 SD133 0012	SE	INDENO[1,2,3-CD]PYRENE	33	12	24	UG_KG	J	c,i
OU09 SD133 0012	SE	BENZO[A]PYRENE	35	12	24	UG_KG	J	i
OU09 SD133 0012	SE	BENZO[B]FLUORANTHENE	35	12	24	UG_KG	J	i
OU09 SD133 0012	SE	BENZO[G,H,I]PERYLENE	18	12	24	UG_KG	J	i
OU09 SD133 0012	SE	BENZO[K]FLUORANTHENE	8.0	12	24	UG_KG	J	i
OU09 SD133 0012	SE	DIBENZ[A,H]ANTHRACENE	10	12	24	UG_KG	J	i
OU09 SD133 0012	SE	BENZO[A]ANTHRACENE	33	12	24	UG_KG	J	i
OU09 SD133 0012	SE	CHRYSENE	43	12	24	UG_KG	J	i
OU09 SD133 0012	SE	PYRENE	32	12	24	UG_KG	J	i
OU09 SD133 1224	SE	BENZO[A]ANTHRACENE	23	23	23	UG_KG	UJ	bl
OU09 SD133 1224	SE	BENZO[A]PYRENE	13	12	23	UG_KG	J	i
OU09 SD133 1224	SE	BENZO[B]FLUORANTHENE	15	12	23	UG_KG	J	i
OU09 SD133 1224	SE	BENZO[G,H,I]PERYLENE	6.8	12	23	UG_KG	J	i
OU09 SD133 1224	SE	CHRYSENE	23	23	23	UG_KG	UJ	bl
OU09 SD133 1224	SE	DIBENZ[A,H]ANTHRACENE	4.2	12	23	UG_KG	J	i
OU09 SD133 1224	SE	INDENO[1,2,3-CD]PYRENE	16	12	23	UG_KG	J	c,i
OU09 SD133 1224	SE	PYRENE	11	12	23	UG_KG	J	i
RBSD04031401	WQ	BENZO[B]FLUORANTHENE	0.10	0.10	0.21	UG_L	UJ	c
RBSD04031401	WQ	INDENO[1,2,3-CD]PYRENE	0.10	0.10	0.21	UG_L	UJ	c

Attachment A

Non Conformance Summary Tables

Table A-1 Continuing Calibration – SVOC SIM

CCAL	Compound	% D	%D Limit	Associated Samples
WG141279-2	INDENO(1,2,3-CD)PYRENE	-22.97	<20	OU09 SD128 0012 OU09 SD128 1224 OU09 SD128 2436 OU09 SD131 1224 OU09 SD131 2436 OU09 SD130 0012 FDSD040114 OU09 SD129 0012 OU09 SD133 0012 OU09 SD133 1224
WG141316-2	BENZO(K)FLUORANTHENE	-22.68	<20	BSBG SD301 0012 BSBG SD309 0012 BSBG SD309 1224 FDSD04021401 BSBG SD309 2436 BSBG SD310 0012 OU09 SD116 0012 OU09 SD116 1224 BSBG SD310 1224 BSBG SD310 2436 BSBG SD313 0012 BSBG SD313 1224 OU09 SD131 0012
WG141392-2	BENZO(B)FLUORANTHENE	-27.11	<20	RBSD04031401 BSBG SD313 2436 OU09 SD104 1224 OU09 SD132 2436 OU09 SD104 0012 OU09 SD132 1224 OU09 SD132 0012
	INDENO(1,2,3-CD)PYRENE	-21.30	<20	

Table A-2 - Lab Blanks

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
WG140864-1RA	BENZO[A]ANTHRACENE	2.0	10	20	UG_KG	FDSD040114 OU09 SD116 0012 OU09 SD116 1224 OU09 SD128 0012 OU09 SD128 1224 OU09 SD129 0012 OU09 SD130 0012 OU09 SD131 0012 OU09 SD131 1224 OU09 SD133 0012 OU09 SD133 1224
WG140864-1RA	CHRYSENE	2.7	10	20	UG_KG	FDSD040114 OU09 SD116 0012 OU09 SD116 1224 OU09 SD128 0012 OU09 SD128 1224 OU09 SD128 2436 OU09 SD129 0012 OU09 SD130 0012 OU09 SD131 0012 OU09 SD131 1224 OU09 SD133 0012 OU09 SD133 1224
WG140911-1RA	INDENO[1,2,3-CD]PYRENE	3.0	10	20	UG_KG	BSBG SD301 0012 BSBG SD309 0012 BSBG SD309 1224 BSBG SD309 2436 BSBG SD310 0012 BSBG SD310 1224 BSBG SD312 0012 BSBG SD312 1224 BSBG SD313 0012 BSBG SD313 1224 BSBG SD313 2436 FDSD04021401 OU09 SD104 0012 OU09 SD132 0012 OU09 SD132 1224 OU09 SD132 2436

Table A-3 – Matrix Spikes

Sample ID	Compound	MS % Recovery	MSD % Recovery	Lower Limit	Upper Limit	RPD	RPD Limit
BSBG SD310 1224	BENZO[G,H,I]PERYLENE	37.8	40.2	40	125	7	50
OU09 SD129 0012	ANTHRACENE	62.2	238	55	105	90	50
OU09 SD129 0012	PYRENE	15.8	416	45	125	84	50
OU09 SD129 0012	BENZO[G,H,I]PERYLENE	44.1	248	40	125	78	50
OU09 SD129 0012	INDENO[1,2,3-CD]PYRENE	82.8	562	40	120	103	50
OU09 SD129 0012	BENZO[B]FLUORANTHENE	24.3	669	45	115	110	50
OU09 SD129 0012	FLUORANTHENE	42.6	955	55	115	119	50
OU09 SD129 0012	BENZO[K]FLUORANTHENE	97	349	45	125	90	50
OU09 SD129 0012	BENZO[A]PYRENE	24.3	503	50	110	87	50
OU09 SD129 0012	BENZO[A]ANTHRACENE	35.3	480	50	110	80	50
OU09 SD129 0012	CHRYSENE	26.8	440	55	110	73	50
OU09 SD129 0012	DIBENZ[A,H]ANTHRACENE	62.3	170	40	125	60	50
OU09 SD129 0012	ACENAPHTHENE	61.2	184	33	98	85	50
OU09 SD129 0012	PHENANTHRENE	41.4	643	50	110	113	50
OU09 SD129 0012	FLUORENE	70.2	157	50	110	67	50

Table A-4 - Lab Control Samples

LCS ID	Compound	LCS % Recovery	LCSD % Recovery	Lower Limit	Upper Limit	RPD	RPD Limit	Associated Samples
WG140920-2RA	BENZO[K]FLUORANTHENE	86.5	53	45	125	48	30	RBSD04031401
WG140920-2RA	BENZO[A]ANTHRACENE	73.5	41.6	55	110	55	30	RBSD04031401
WG140920-2RA	FLUORENE	73	36	50	110	68	30	RBSD04031401
WG140920-2RA	NAPHTHALENE	66	32.1	40	100	69	30	RBSD04031401
WG140920-2RA	ACENAPHTHYLENE	61.5	29.4	50	105	71	30	RBSD04031401
WG140920-2RA	CHRYSENE	79.5	47.2	55	110	51	30	RBSD04031401
WG140920-2RA	ANTHRACENE	85	42.4	55	110	67	30	RBSD04031401
WG140920-2RA	PYRENE	68.5	38	50	130	57	30	RBSD04031401
WG140920-2RA	BENZO[G,H,I]PERYLENE	77.5	52	40	125	39	30	RBSD04031401
WG140920-2RA	INDENO[1,2,3-CD]PYRENE	58.5	35.3	45	125	49	30	RBSD04031401
WG140920-2RA	BENZO[B]FLUORANTHENE	68	38.4	45	120	56	30	RBSD04031401
WG140920-2RA	FLUORANTHENE	88.5	46.4	55	115	62	30	RBSD04031401
WG140920-2RA	BENZO[A]PYRENE	71	43.4	55	110	48	30	RBSD04031401
WG140920-2RA	ACENAPHTHENE	65	32.1	45	110	68	30	RBSD04031401
WG140920-2RA	PHENANTHRENE	79.5	39.8	50	115	66	30	RBSD04031401

Table A-5 - Field Duplicates

Sample ID	Duplicate ID	Compound	Sample Result	Qual	Duplicate Result	Qual	LOD	LOQ	Units	RPD
OU09 SD130 0012	FDSD040114	BENZO[A]-ANTHRACENE	88		150		10	20	UG/KG	52

Table A-6 Internal Standards

Sample ID	Internal Standard	IS AREA	Lower Limit (50%)	Lower Limit (20%)	Upper Limit
OU09 SD128 0012	PERYLENE-D12	40763	9247.5	3699	36990
OU09 SD128 1224	PERYLENE-D12	46104	9247.5	3699	36990
OU09 SD131 1224	CHRYSENE-D12	62193	15163.5	6065.4	60654
	PERYLENE-D12	43983	9247.5	3699	36990
OU09 SD131 2436	CHRYSENE-D12	61263	15163.5	6065.4	60654
	PERYLENE-D12	40253	9247.5	3699	36990
OU09 SD130 0012	CHRYSENE-D12	75352	15163.5	6065.4	60654
	PERYLENE-D12	53032	9247.5	3699	36990
FDSD040114	CHRYSENE-D12	79426	15163.5	6065.4	60654
	PERYLENE-D12	57451	9247.5	3699	36990
OU09 SD129 0012	CHRYSENE-D12	90246	15163.5	6065.4	60654
	PERYLENE-D12	62176	9247.5	3699	36990
OU09 SD133 0012	CHRYSENE-D12	84618	15163.5	6065.4	60654
	PERYLENE-D12	62950	9247.5	3699	36990
OU09 SD133 1224	CHRYSENE-D12	70853	15163.5	6065.4	60654
	PERYLENE-D12	52637	9247.5	3699	36990
FDSD04021401	PERYLENE-D12	37757	9247.5	3699	36990
BSBG SD310 0012	CHRYSENE-D12	62207	15163.5	6065.4	60654
	PERYLENE-D12	41199	9247.5	3699	36990
OU09 SD116 0012	PERYLENE-D12	37691	9247.5	3699	36990
BSBG SD310 1224	PERYLENE-D12	37891	9247.5	3699	36990
BSBG SD313 0012	CHRYSENE-D12	68569	15163.5	6065.4	60654
	PERYLENE-D12	46723	9247.5	3699	36990
BSBG SD313 1224	CHRYSENE-D12	62023	15163.5	6065.4	60654
	PERYLENE-D12	43573	9247.5	3699	36990
OU09 SD131 0012	CHRYSENE-D12	62941	15163.5	6065.4	60654
	PERYLENE-D12	42480	9247.5	3699	36990
BSBG SD313 2436	PERYLENE-D12	37037	9247.5	3699	36990
OU09 SD104 0012	CHRYSENE-D12	67183	15163.5	6065.4	60654
	PERYLENE-D12	43704	9247.5	3699	36990
OU09 SD132 1224	CHRYSENE-D12	70474	15163.5	6065.4	60654
	PERYLENE-D12	50983	9247.5	3699	36990

Sample ID	Internal Standard	IS AREA	Lower Limit (50%)	Lower Limit (20%)	Upper Limit
OU09 SD132 0012	CHRYSENE-D12	76105	15163.5	6065.4	60654
	PERYLENE-D12	54297	9247.5	3699	36990

CHRYSENE-D12 Associated PAH compounds
CHRYSENE
PYRENE
BENZO[A]ANTHRACENE

PERYLENE-D12 Associated PAH compounds
BENZO[B]FLUORANTHENE
BENZO[K]FLUORANTHENE
BENZO[A]PYRENE
INDENO[1,2,3-CD]PYRENE
DIBENZ[A,H]ANTHRACENE
BENZO[G,H,I]PERYLENE

Attachment B

Qualifier Codes and Explanations

Qualifier	Explanation
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
UJ	The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual quantitation limit necessary to accurately and precisely measure the analyte in the sample.
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

Attachment C

Reason Codes and Explanations

Reason Code	Explanation
be	Equipment blank contamination
bf	Field blank contamination
bl	Laboratory blank contamination
c	Calibration issue
d	Reporting limit raised due to chromatographic interference
fd	Field duplicate RPDs
h	Holding times
i	Internal standard areas
k	Estimated Maximum Possible Concentration (EMPC)
l	LCS or OPR recoveries
lc	Labeled compound recovery
ld	Laboratory duplicate RPDs
lp	Laboratory control sample/laboratory control sample duplicate RPDs
m	Matrix spike recovery
md	Matrix spike/matrix spike duplicate RPDs
nb	Negative laboratory blank contamination
p	Chemical preservation issue
r	Dual column RPD
q	Quantitation issue
s	Surrogate recovery
su	Ion suppression
t	Temperature preservation issue
x	Percent solids
y	Serial dilution results
z	ICS results

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Data Validation Report

Project:	MRP Site 1 (OU9) Remedial Investigation, NAVSTA Newport, Rhode Island CTO WE06
Laboratory:	Katahdin Analytical Services, Scarborough, Maine
Service Request:	CARR-17
Analyses/Method:	Organochlorine Pesticides / EPA SW-846 Method 8081B
Validation Level:	Limited
Resolution Consultants Project Number:	60250336 SA.DV
Prepared by:	Kristin Rutherford/Resolution Consultants Completed on: 06/26/2014
Reviewed by:	Constance Lapite/Resolution Consultants File Name: CARR-17_SE_8081_DVRpt

SUMMARY

The samples listed below were collected by Resolution Consultants from the MRP Site 1 (OU9) Remedial Investigation, NAVSTA Newport, Rhode Island on April 1, 2 and 3, 2014.

Sample ID	Matrix/Sample Type
BSBG SD301 0012	Sediment
BSBG SD309 0012	Sediment
BSBG SD310 0012	Sediment
BSBG SD312 0012	Sediment
BSBG SD313 0012	Sediment
RBSD04011401	Equipment blank

The data have been validated in accordance with the project-specific Sampling and Analysis Plan, *Sampling and Analysis Plan, Former Carr Point Shooting Range (MRP Site 1, OU9), Naval Station (NAVSTA) Newport, Rhode Island, Final* (Naval Facilities Engineering Command, Mid-Atlantic, 2013) and the following references:

- *DoD Quality Systems Manual (QMS) for Environmental Laboratories, version 4.2* (DoD EDQW, 2010);
- *USEPA Region 1, EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses* (December 1996);
- *USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review* (June 2008);
- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW846, Method 8081B, Organochlorine Pesticides by Gas Chromatography* (USEPA, 1996);
- laboratory quality control (QC) limits, as applicable.

The USEPA Region 1 and National Data Validation Functional Guidelines were modified to accommodate the non-CLP methodologies. In the absence of method-specific direction for validation, Resolution Consultants professional judgment was used as appropriate.

REVIEW ELEMENTS

The data were evaluated based on the following parameters (where applicable to the method):

✓	Data completeness (chain-of-custody (COC)/sample integrity
✗	Holding times and sample preservation
✗	Initial calibration/continuing calibration verification
✗	Laboratory blanks/equipment blanks
✓	Surrogate spike recoveries
NA	Matrix spike (MS) and/or matrix spike duplicate (MSD) results
✗	Laboratory control sample (LCS)
NA	Field duplicates
✓	Sample results/reporting issues

The symbol (✓) indicates that no validation qualifiers were applied based on this parameter. NA indicates that the parameter was not included as part of this data set or was not applicable to this validation and therefore not reviewed. The symbol (✗) indicates that a QC nonconformance resulted in the qualification of data. Any QC nonconformance that resulted in the qualification of data is discussed below. In addition, nonconformances or other issues that were noted during validation, but did not result in qualification of data, may be discussed for informational purposes only.

The data appear valid as reported and may be used for decision making purposes. Selected data points were qualified as estimated and/or negated due to nonconformances of certain QC criteria (see discussion below). Qualified sample results are presented in Table 1.

<u>Data Completeness</u>

The data package was reviewed and found to meet acceptance criteria for completeness:

- The COCs were reviewed for completeness of information relevant to the samples and requested analyses, and for signatures indicating transfer of sample custody.
- The laboratory sample login sheet(s) were reviewed for issues potentially affecting sample integrity, including the condition of sample containers.
- Completeness of analyses was verified by comparing the reported results to the COC requests.

<u>Holding Times/Sample Preservation</u>

Sample preservation and preparation/analysis holding times were reviewed for conformance with the QC acceptance criteria.

The five sediment samples in this SDG were re-extracted past the 14 day holding time due to method blank contamination. Results reported from the reanalysis were qualified as estimated (J/UJ).

Nonconformances are summarized in Attachment A in Table A-1. Data qualification on the basis of sample preservation/analysis holding times was as follows:

Criteria: (Based on method)
Extraction HT: Aqueous: extract within 7 days from sample collection. Solids: extract within 14 days.
Analysis HT: Aqueous and Solids: Analyze within 40 days from date of sample extraction.

Criteria	Actions			
	Aqueous and waste		Solid	
	Detected	Nondetected	Detected	Nondetected
If extraction HT > HT criteria	J	UJ	J	UJ
If extraction or analysis HT >2xHT criteria	J	UJ or R	Not Applicable	
If extraction HT >260 days (PCBs), 200 days (Pesticides)	Not Applicable		J	UJ or R
Cooler/Storage T < 2C	No qualification		No qualification	
Cooler/Storage T>10C	J	UJ	J	UJ

Qualified sample results are shown in Table 1.

Initial Calibration/Continuing Calibration Verification

Calibration data were reviewed for conformance with the QC acceptance criteria to ensure that:

- the initial calibration (ICAL) percent relative standard deviation (%RSD), correlation coefficient (r)/coefficient of determination (r2), and method acceptance criteria were met;
- the second-source calibration verification (ICV) method acceptance criteria were met;
- the continuing calibration verification standard (CCV) method percent difference or percent drift (%Ds) acceptance criteria were met.

Nonconformances are summarized in Attachment A in Table A-2. Data qualification on the basis of the initial calibration was as follows:

Pesticides Initial Calibration

Criteria	Actions	
	Detected Results	Nondetected Results
%RSD > 20%	J	UJ[1]
r < 0.995 or r^2 < 0.99 for each peak[2,3]	J[4]	UJ[4]

[1] NFG recommends professional judgment, thus Resolution Consultants professional judgment was used
[2] 6 points required for second order; 7 points required for third order
[3] For toxaphene and technical chlordane each peak, not the average must meet the criteria
[4] No guidance in NFG, thus Resolution Consultants professional judgment was used

Data qualification on the basis of the ICVs was as follows:

Pesticides Second Source Calibration

Criteria	Actions[1]	
	Detected	Nondetected
%D or %Drift >20%	J	UJ
[1] Actions are applied to positive results reported from the nonconforming column. Do not qualify nondetect results unless both columns are noncompliant.		

Data qualification on the basis of the CCVs was as follows:

Pesticides Continuing Calibration

Criteria	Actions[1]	
	Detected	Nondetected
%D or %Drift >20%	J	UJ
[1] Actions are applied to positive results reported from the nonconforming column. Do not qualify nondetect results unless both columns are noncompliant.		

Qualified results are shown in Table 1.

Laboratory Blanks/Equipment Blanks

Laboratory method blanks and equipment rinsate blanks were evaluated as to whether there were contaminants detected above the method detection limit (MDL).

Data validation qualifications for individual samples are based on the maximum contaminant concentration detected in all associated blanks.

There were no detected target analytes reported in equipment blank sample (RBSD04011401).

Nonconformances are summarized in Attachment A in Table A-3. Sample results were qualified as follows:

Blank type	Blank result	Sample result	Action for samples
Method, Field, Equipment, Instrument, or Clean-up	Detects	Not detected	No qualification
	< LOQ	< LOQ	Report LOQ value with a U
		≥ LOQ	If the result is ≤ 5x blank result, report the sample result with a U* If the result is >5x blank result, no qualification is required*
	>LOQ	< LOQ	Report sample LOQ value with a U
		≥ LOQ and ≤ blank concentration	Report the sample result with a U*

Blank type	Blank result	Sample result	Action for samples
		≥ LOQ and blank concentration	If the result is ≤ 5x blank result, report the sample result with a U* If the result is >5x blank result, no qualification is required*
	= LOQ	< LOQ	Report sample LOQ value with a U
		≥ LOQ	If the result is ≤ 5x blank result, report the sample result with a U* If the result is >5x blank result, no qualification is required*
*Based on Resolution Consultants professional judgment LOQ= limit of quantitation			

Qualified sample results are shown in Table 1.

Surrogate Spike Recoveries

The surrogate recoveries (%Rs) were reviewed for conformance.

The surrogate recoveries were within the QC acceptance criteria.

MS/MSD Results

MS/MSD analyses were not performed on samples reported in this SDG. There were no validation actions taken on this basis.

LCS Results

The LCS %Rs were reviewed for conformance with the QC acceptance criteria.

Nonconformances are summarized in Attachment A in Table A-4. Data qualification on the basis of LCS %Rs was as follows:

Criteria	Action**	
	Detected Results	Nondetected Results
%R or RPD > upper limit (UL)	J	No qualification
10% < %R < lower limit (LL)	J	UJ[2]
%R <10%[1]	J	R[2]
[1]NFG recommends rejecting results below the LL; however, Resolution Consultants professional judgment used qualifications similar to the NFG guidance for MS/MSDs. [2] The10% criterion is based on EPA Region I MS/MSD criteria.		

Qualified sample results are shown in Table 1.

Field Duplicate Results

There were no field duplicate samples submitted with this data set. No validation actions were taken on this basis.

Sample Results/Reporting Issues

All compounds detected at concentrations less than the LOQ but greater than the DL were qualified by the laboratory as estimated (J). This "J" qualifier was retained during data validation

Dual Column Precision

Sample results were reviewed to ensure that the dual column precision RPD criteria were met.

Nonconformances are summarized in Attachment A in Table A-5. Dual column RPD criteria were not met for some compounds; however, since the results were negated due to blank contamination, no qualifications were made for dual column precision.

Percent Solids

The percent solids data were reviewed to ensure that NFG specified criteria were met.

All percent solids criteria were met.

QUALIFICATION ACTIONS

Sample results qualified as a result of validation actions are summarized in Table 1. All actions are described above.

ATTACHMENTS

Attachment A: Nonconformance Summary Tables

Attachment B: Qualifier Codes and Explanations

Attachment C: Reason Codes and Explanations

Table 1 - Data Validation Summary of Qualified Data

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
BSBG SD301 0012	SE	4,4-DDD	0.69	0.69	0.68	UG_KG	UJ	bl,h,l
BSBG SD301 0012	SE	4,4-DDE	0.067	0.34	0.68	UG_KG	J	c,h
BSBG SD301 0012	SE	4,4-DDT	0.68	0.68	0.68	UG_KG	UJ	bl,h
BSBG SD301 0012	SE	ALDRIN	0.17	0.17	0.35	UG_KG	UJ	h
BSBG SD301 0012	SE	ALPHA-BHC	0.17	0.17	0.35	UG_KG	UJ	h
BSBG SD301 0012	SE	ALPHA-CHLORDANE	0.17	0.17	0.35	UG_KG	UJ	h
BSBG SD301 0012	SE	BETA-BHC	0.17	0.17	0.35	UG_KG	UJ	h
BSBG SD301 0012	SE	DELTA-BHC	0.17	0.17	0.35	UG_KG	UJ	h
BSBG SD301 0012	SE	DIELDRIN	0.34	0.34	0.68	UG_KG	UJ	h
BSBG SD301 0012	SE	ENDOSULFAN I	0.17	0.17	0.35	UG_KG	UJ	h
BSBG SD301 0012	SE	ENDOSULFAN II	0.34	0.34	0.68	UG_KG	UJ	h
BSBG SD301 0012	SE	ENDOSULFAN SULFATE	0.34	0.34	0.68	UG_KG	UJ	h
BSBG SD301 0012	SE	ENDRIN	0.34	0.34	0.68	UG_KG	UJ	h
BSBG SD301 0012	SE	ENDRIN ALDEHYDE	0.34	0.34	0.68	UG_KG	UJ	h
BSBG SD301 0012	SE	ENDRIN KETONE	0.34	0.34	0.68	UG_KG	UJ	h
BSBG SD301 0012	SE	GAMMA-CHLORDANE	0.17	0.17	0.35	UG_KG	UJ	h
BSBG SD301 0012	SE	HEPTACHLOR	0.17	0.17	0.35	UG_KG	UJ	h
BSBG SD301 0012	SE	HEPTACHLOR EPOXIDE	0.17	0.17	0.35	UG_KG	UJ	h
BSBG SD301 0012	SE	LINDANE	0.17	0.17	0.35	UG_KG	UJ	h
BSBG SD301 0012	SE	METHOXYCHLOR	1.7	1.7	3.5	UG_KG	UJ	h
BSBG SD301 0012	SE	TOXAPHENE	3.4	3.4	6.8	UG_KG	UJ	c,h
BSBG SD309 0012	SE	4,4-DDD	0.82	0.82	0.82	UG_KG	UJ	bl,h,l
BSBG SD309 0012	SE	4,4-DDE	0.41	0.41	0.82	UG_KG	UJ	c,h
BSBG SD309 0012	SE	4,4-DDT	0.82	0.82	0.82	UG_KG	UJ	bl,h
BSBG SD309 0012	SE	ALDRIN	0.21	0.21	0.42	UG_KG	UJ	h
BSBG SD309 0012	SE	ALPHA-BHC	0.21	0.21	0.42	UG_KG	UJ	h
BSBG SD309 0012	SE	ALPHA-CHLORDANE	0.21	0.21	0.42	UG_KG	UJ	h
BSBG SD309 0012	SE	BETA-BHC	0.21	0.21	0.42	UG_KG	UJ	h
BSBG SD309 0012	SE	DELTA-BHC	0.21	0.21	0.42	UG_KG	UJ	h
BSBG SD309 0012	SE	DIELDRIN	0.41	0.41	0.82	UG_KG	UJ	h
BSBG SD309 0012	SE	ENDOSULFAN I	0.21	0.21	0.42	UG_KG	UJ	h
BSBG SD309 0012	SE	ENDOSULFAN II	0.41	0.41	0.82	UG_KG	UJ	h
BSBG SD309 0012	SE	ENDOSULFAN SULFATE	0.41	0.41	0.82	UG_KG	UJ	h
BSBG SD309 0012	SE	ENDRIN	0.41	0.41	0.82	UG_KG	UJ	h
BSBG SD309 0012	SE	ENDRIN ALDEHYDE	0.41	0.41	0.82	UG_KG	UJ	h
BSBG SD309 0012	SE	ENDRIN KETONE	0.41	0.41	0.82	UG_KG	UJ	h
BSBG SD309 0012	SE	GAMMA-CHLORDANE	0.21	0.21	0.42	UG_KG	UJ	h
BSBG SD309 0012	SE	HEPTACHLOR	0.21	0.21	0.42	UG_KG	UJ	h
BSBG SD309 0012	SE	HEPTACHLOR EPOXIDE	0.21	0.21	0.42	UG_KG	UJ	h

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
BSBG SD309 0012	SE	LINDANE	0.21	0.21	0.42	UG_KG	UJ	h
BSBG SD309 0012	SE	METHOXYCHLOR	2.1	2.1	4.2	UG_KG	UJ	h
BSBG SD309 0012	SE	TOXAPHENE	4.1	4.1	8.2	UG_KG	UJ	c,h
BSBG SD310 0012	SE	4,4-DDD	0.80	0.80	0.80	UG_KG	UJ	bl,h,l
BSBG SD310 0012	SE	4,4-DDE	0.11	0.40	0.80	UG_KG	J	c,h
BSBG SD310 0012	SE	4,4-DDT	0.80	0.80	0.80	UG_KG	UJ	bl,h
BSBG SD310 0012	SE	ALDRIN	0.21	0.21	0.41	UG_KG	UJ	h
BSBG SD310 0012	SE	ALPHA-BHC	0.21	0.21	0.41	UG_KG	UJ	h
BSBG SD310 0012	SE	ALPHA-CHLORDANE	0.21	0.21	0.41	UG_KG	UJ	h
BSBG SD310 0012	SE	BETA-BHC	0.21	0.21	0.41	UG_KG	UJ	h
BSBG SD310 0012	SE	DELTA-BHC	0.21	0.21	0.41	UG_KG	UJ	h
BSBG SD310 0012	SE	DIELDRIN	0.40	0.40	0.80	UG_KG	UJ	h
BSBG SD310 0012	SE	ENDOSULFAN I	0.21	0.21	0.41	UG_KG	UJ	h
BSBG SD310 0012	SE	ENDOSULFAN II	0.40	0.40	0.80	UG_KG	UJ	h
BSBG SD310 0012	SE	ENDOSULFAN SULFATE	0.40	0.40	0.80	UG_KG	UJ	h
BSBG SD310 0012	SE	ENDRIN	0.40	0.40	0.80	UG_KG	UJ	h
BSBG SD310 0012	SE	ENDRIN ALDEHYDE	0.40	0.40	0.80	UG_KG	UJ	h
BSBG SD310 0012	SE	ENDRIN KETONE	0.40	0.40	0.80	UG_KG	UJ	h
BSBG SD310 0012	SE	GAMMA-CHLORDANE	0.21	0.21	0.41	UG_KG	UJ	h
BSBG SD310 0012	SE	HEPTACHLOR	0.21	0.21	0.41	UG_KG	UJ	h
BSBG SD310 0012	SE	HEPTACHLOR EPOXIDE	0.21	0.21	0.41	UG_KG	UJ	h
BSBG SD310 0012	SE	LINDANE	0.21	0.21	0.41	UG_KG	UJ	h
BSBG SD310 0012	SE	METHOXYCHLOR	2.1	2.1	4.1	UG_KG	UJ	h
BSBG SD310 0012	SE	TOXAPHENE	4.0	4.0	8.0	UG_KG	UJ	c,h
BSBG SD312 0012	SE	4,4-DDD	0.76	0.76	0.76	UG_KG	UJ	bl,h,l
BSBG SD312 0012	SE	4,4-DDE	0.098	0.38	0.76	UG_KG	J	c,h
BSBG SD312 0012	SE	4,4-DDT	0.76	0.76	0.76	UG_KG	UJ	bl,h
BSBG SD312 0012	SE	ALDRIN	0.19	0.19	0.39	UG_KG	UJ	h
BSBG SD312 0012	SE	ALPHA-BHC	0.19	0.19	0.39	UG_KG	UJ	h
BSBG SD312 0012	SE	ALPHA-CHLORDANE	0.19	0.19	0.39	UG_KG	UJ	h
BSBG SD312 0012	SE	BETA-BHC	0.19	0.19	0.39	UG_KG	UJ	h
BSBG SD312 0012	SE	DELTA-BHC	0.19	0.19	0.39	UG_KG	UJ	h
BSBG SD312 0012	SE	DIELDRIN	0.38	0.38	0.76	UG_KG	UJ	h
BSBG SD312 0012	SE	ENDOSULFAN I	0.19	0.19	0.39	UG_KG	UJ	h
BSBG SD312 0012	SE	ENDOSULFAN II	0.38	0.38	0.76	UG_KG	UJ	h
BSBG SD312 0012	SE	ENDOSULFAN SULFATE	0.38	0.38	0.76	UG_KG	UJ	h
BSBG SD312 0012	SE	ENDRIN	0.38	0.38	0.76	UG_KG	UJ	h
BSBG SD312 0012	SE	ENDRIN ALDEHYDE	0.38	0.38	0.76	UG_KG	UJ	h
BSBG SD312 0012	SE	ENDRIN KETONE	0.38	0.38	0.76	UG_KG	UJ	h

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
BSBG SD312 0012	SE	GAMMA-CHLORDANE	0.19	0.19	0.39	UG_KG	UJ	h
BSBG SD312 0012	SE	HEPTACHLOR	0.19	0.19	0.39	UG_KG	UJ	h
BSBG SD312 0012	SE	HEPTACHLOR EPOXIDE	0.19	0.19	0.39	UG_KG	UJ	h
BSBG SD312 0012	SE	LINDANE	0.19	0.19	0.39	UG_KG	UJ	h
BSBG SD312 0012	SE	METHOXYCHLOR	1.9	1.9	3.9	UG_KG	UJ	h
BSBG SD312 0012	SE	TOXAPHENE	3.8	3.8	7.6	UG_KG	UJ	c,h
BSBG SD313 0012	SE	4,4-DDD	0.88	0.88	0.84	UG_KG	UJ	bl,h,l
BSBG SD313 0012	SE	4,4-DDE	0.23	0.42	0.84	UG_KG	J	c, h
BSBG SD313 0012	SE	4,4-DDT	0.84	0.84	0.84	UG_KG	UJ	bl,h
BSBG SD313 0012	SE	ALDRIN	0.22	0.22	0.43	UG_KG	UJ	h
BSBG SD313 0012	SE	ALPHA-BHC	0.22	0.22	0.43	UG_KG	UJ	h
BSBG SD313 0012	SE	ALPHA-CHLORDANE	0.22	0.22	0.43	UG_KG	UJ	h
BSBG SD313 0012	SE	BETA-BHC	0.22	0.22	0.43	UG_KG	UJ	h
BSBG SD313 0012	SE	DELTA-BHC	0.22	0.22	0.43	UG_KG	UJ	h
BSBG SD313 0012	SE	DIELDRIN	0.42	0.42	0.84	UG_KG	UJ	h
BSBG SD313 0012	SE	ENDOSULFAN I	0.22	0.22	0.43	UG_KG	UJ	h
BSBG SD313 0012	SE	ENDOSULFAN II	0.42	0.42	0.84	UG_KG	UJ	h
BSBG SD313 0012	SE	ENDOSULFAN SULFATE	0.42	0.42	0.84	UG_KG	UJ	h
BSBG SD313 0012	SE	ENDRIN	0.42	0.42	0.84	UG_KG	UJ	h
BSBG SD313 0012	SE	ENDRIN ALDEHYDE	0.42	0.42	0.84	UG_KG	UJ	h
BSBG SD313 0012	SE	ENDRIN KETONE	0.42	0.42	0.84	UG_KG	UJ	h
BSBG SD313 0012	SE	GAMMA-CHLORDANE	0.22	0.22	0.43	UG_KG	UJ	h
BSBG SD313 0012	SE	HEPTACHLOR	0.22	0.22	0.43	UG_KG	UJ	h
BSBG SD313 0012	SE	HEPTACHLOR EPOXIDE	0.22	0.22	0.43	UG_KG	UJ	h
BSBG SD313 0012	SE	LINDANE	0.22	0.22	0.43	UG_KG	UJ	h
BSBG SD313 0012	SE	METHOXYCHLOR	2.2	2.2	4.3	UG_KG	UJ	h
BSBG SD313 0012	SE	TOXAPHENE	4.2	4.2	8.4	UG_KG	UJ	c,h

Attachment A

Non Conformance Summary Tables

Table A-1 Hold Times

Sample ID	Days from Sampling to Prep	Status	Days from Prep to Analysis	Status	Days from Sampling to Analysis
BSBG SD301 0012 RE3	20	>14 days	2	OK @40 days	22
BSBG SD309 0012 RE3	20	>14 days	2	OK @40 days	22
BSBG SD310 0012 RE3	20	>14 days	2	OK @40 days	22
BSBG SD312 0012 RE3	19	>14 days	2	OK @40 days	21
BSBG SD313 0012 RE3	19	>14 days	2	OK @40 days	21

Table A-2 Calibrations

Lab ID(s)	Compound	%D	Column	Associated samples	Qualifier
WG141686-13 CCV 4/24/14 15:43	4,4'-DDE	21.29	A	BSBG SD301 0012RE3 BSBG SD309 0012RE3 BSBG SD310 0012RE3 BSBG SD313 0012RE3 BSBG SD312 0012RE3	BSBG SD301 0012RE3 (J) BSBG SD310 0012RE3 (J) BSBG SD313 0012RE3 (J) BSBG SD312 0012RE3 (J) No qualification was required for BSBG SD309 0012RE3 since the result was reported from column B.
WG141686-15 CCV 4/24/14 16:00	Toxaphene (3)	20.07	A	BSBG SD301 0012RE3 BSBG SD309 0012RE3 BSBG SD310 0012RE3 BSBG SD313 0012RE3 BSBG SD312 0012RE3	J/UJ all
	Toxaphene (4)	21.40	A		
	Toxaphene (1)	26.12	A		
	Toxaphene (1)	26.54	B		
	Toxaphene (2)	27.14	A		

Table A-3 Lab Blanks

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
WG141626-1	4,4-DDD	0.25	0.33	0.66	UG_KG	BSBG SD301 0012 RE3 BSBG SD309 0012 RE3 BSBG SD310 0012 RE3 BSBG SD312 0012 RE3 BSBG SD313 0012 RE3
WG141626-1	4,4-DDT	0.22	0.33	0.66	UG_KG	BSBG SD301 0012 RE3 BSBG SD309 0012 RE3 BSBG SD310 0012 RE3 BSBG SD312 0012 RE3 BSBG SD313 0012 RE3

Table A-4 Lab Control Samples

LCS ID	Compound	LCS % Recovery	LCSD % Recovery	Lower Limit	Upper Limit	RPD	RPD Limit	Associated Samples
WG141626-2	4,4-DDD	95.2	119	30	135	34	30	BSBG SD301 0012 BSBG SD309 0012 BSBG SD310 0012 BSBG SD312 0012 BSBG SD313 0012

Table A-5 Dual Column Precision

Sample ID	Compound	%D	%D Limit
BSBG SD309 0012 RE3	4,4'-DDD*	55.4	40
BSBG SD310 0012 RE3	4,4'-DDD*	118.2	40
	4,4'-DDT*	61.3	40
BSBG SD313 0012 RE3	4,4'-DDD*	87.2	40
	4,4'-DDT*	70.9	40
BSBG SD312 0012 RE3	4,4'-DDD*	58.5	40
*The result was considered to be not detected (U) due to blank contamination. Therefore, no further actions were required.			

Attachment B

Qualifier Codes and Explanations

Qualifier	Explanation
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
JN	The analyte was tentatively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
UJ	The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual quantitation limit necessary to accurately and precisely measure the analyte in the sample.
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

Attachment C

Reason Codes and Explanations

Reason Code	Explanation
be	Equipment blank contamination
bf	Field blank contamination
bl	Laboratory blank contamination
c	Calibration issue
d	Reporting limit raised due to chromatographic interference
fd	Field duplicate RPDs
h	Holding times
i	Internal standard areas
k	Estimated Maximum Possible Concentration (EMPC)
l	LCS recoveries
lc	Labeled compound recovery
ld	Laboratory duplicate RPDs
lp	Laboratory control sample/laboratory control sample duplicate RPDs
m	Matrix spike recovery
md	Matrix spike/matrix spike duplicate RPDs
nb	Negative laboratory blank contamination
p	Chemical preservation issue
r	Dual column RPD
q	Quantitation issue
s	Surrogate recovery
su	Ion suppression
t	Temperature preservation issue
x	Percent solids
y	Serial dilution results
z	ICS results

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Data Validation Report

Project:	MRP Site 1 (OU9) Remedial Investigation, NAVSTA Newport, Rhode Island CTO WE06
Laboratory:	Katahdin Analytical Services, Scarborough, Maine
Service Request:	CARR-1, CARR-7, CARR-12, and CARR-14
Analyses/Method:	Organochlorine Pesticides / EPA SW-846 Method 8081B PCB Aroclors / EPA SW-846 Method 8082A
Validation Level:	Limited
Resolution Consultants Project Number:	60250336 SA.DV
Prepared by:	Charlene Livingston Flint/Resolution Consultants — Completed on: 04/04/2014
Reviewed by:	Kristin Rutherford/Resolution Consultants — File Name: CARR-1,7,12,14_SE_8081_8082_DVRpt

SUMMARY

The samples listed below were collected by Resolution Consultants from the MRP Site 1 (OU9) Remedial Investigation, NAVSTA Newport, Rhode Island, on December 3,11,12,13,17 and 18 2013.

Sample ID	Matrix/Sample Type
RB-01_120313	Equipment blank
RBSD12111301	Equipment blank
RBSD12181301	Equipment blank
FDSD12121302	Field Duplicate of BSBG SD305 0012
FDSD12131302	Field Duplicate of BSBG SD303 0012
BSBG SD302 0012	Sediment
BSBG SD303 0012	Sediment
BSBG SD304 0012	Sediment
BSBG SD305 0012	Sediment
BSBG SD306 0012	Sediment
BSBG SD307 0012	Sediment
BSBG SD308 0012	Sediment

The data have been validated in accordance with the project-specific Sampling and Analysis Plan, *Sampling and Analysis Plan, Former Carr Point Shooting Range (MRP Site 1, OU9), Naval Station (NAVSTA) Newport, Rhode Island, Final* (Naval Facilities Engineering Command, Mid-Atlantic, 2013) and the following references:

- *DoD Quality Systems Manual (QMS) for Environmental Laboratories, version 4.2* (DoD EDQW, 2010);

- *USEPA Region 1, EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses* (December 1996);
- *USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review* (June 2008);
- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW846, Method 8081B, Organochlorine Pesticides by Gas Chromatography* (USEPA, 1996);
- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW846, Method 8082A, Polychlorinated Biphenyls (PCBs) by Gas Chromatography* (USEPA, 1996);
- laboratory quality control (QC) limits, as applicable.

The USEPA Region 1 and National Data Validation Functional Guidelines were modified to accommodate the non-CLP methodologies. In the absence of method-specific direction for validation, Resolution Consultants professional judgment was used as appropriate.

REVIEW ELEMENTS

The data were evaluated based on the following parameters (where applicable to the method):

✓ Data completeness (chain-of-custody (COC)/sample integrity
✓ Holding times and sample preservation
✗ Initial calibration/continuing calibration verification
✗ Laboratory blanks/equipment blanks
✗ Surrogate spike recoveries
✗ Matrix spike (MS) and/or matrix spike duplicate (MSD) results
✗ Laboratory control sample (LCS)/laboratory control sample duplicate (LCSD) results
✗ Field duplicates
✗ Sample results/reporting issues

The symbol (✓) indicates that no validation qualifiers were applied based on this parameter. NA indicates that the parameter was not included as part of this data set or was not applicable to this validation and therefore not reviewed. The symbol (✗) indicates that a QC nonconformance resulted in the qualification of data. Any QC nonconformance that resulted in the qualification of data is discussed below. In addition, nonconformances or other issues that were noted during validation, but did not result in qualification of data, may be discussed for informational purposes only.

The data appear valid as reported and may be used for decision making purposes. Selected data points were qualified as estimated, negated, and/or rejected due to nonconformances of certain QC criteria (see discussion below). Qualified sample results are presented in Table 1.

RESULTS

<u>Data Completeness</u>

The data package was reviewed and found to meet acceptance criteria for completeness:

- The COCs were reviewed for completeness of information relevant to the samples and requested analyses, and for signatures indicating transfer of sample custody.
- The laboratory sample login sheet(s) were reviewed for issues potentially affecting sample integrity, including the condition of sample containers.

- Completeness of analyses was verified by comparing the reported results to the COC requests.

Holding Times/Sample Preservation

Sample preservation and preparation/analysis holding times were reviewed for conformance with the QC acceptance criteria.

The QC acceptance criteria were met.

Initial Calibration/Continuing Calibration Verification

Calibration data were reviewed for conformance with the QC acceptance criteria to ensure that:

- The initial calibration (ICAL) percent relative standard deviation (%RSD), correlation coefficient (r)/coefficient of determination (r2), and method acceptance criteria were met;
- The second-source calibration verification (ICV) method acceptance criteria were met;
- The continuing calibration verification standard (CCV) method percent difference or percent drift (%Ds) acceptance criteria were met.

Nonconformances are summarized in Table A-1a and A-1b. Data qualification on the basis of the initial calibration was as follows:

PCBs Initial Calibration

Criteria	Actions[3]	
	Detected Results	Nondetected Results
%RSD > 20% for each peak	J	UJ
r < 0.995 or r^2 < 0.99 for each peak[1]	J[2]	UJ[2]

[1] 6 points required for second order; 7 points required for third order
[2] No guidance in NFG, thus Resolution Consultants professional judgment was used.
[3] In the absence of an ICAL for a particular Aroclor, Resolution Consultants professional judgment was used as follows: If the traditional model of a linear calibration was employed by the laboratory, validation actions were applied to Aroclors with similar retention time ranges. Actions were applied to Aroclors 1016, 1221, 1232, 1242, and 1248 when Aroclor 1016 exceeded ICAL criteria and actions were applied to Aroclors 1248, 1254, and 1260 when Aroclor 1260 exceeded ICAL criteria. If multipoint calibration was performed for the individual Aroclors, the calibration factors for those calibrations were used to evaluate linearity.

Pesticides Initial Calibration

Criteria	Actions	
	Detected Results	Nondetected Results
%RSD > 20%	J	UJ[1]
r < 0.995 or r^2 < 0.99 for each peak[2,3]	J[4]	UJ[4]

[1] NFG recommends professional judgment, thus Resolution Consultants professional judgment was used
[2] 6 points required for second order; 7 points required for third order
[3] For toxaphene and technical chlordane each peak, not the average must meet the criteria
[4] No guidance in NFG, thus Resolution Consultants professional judgment was used

Data qualification on the basis of the ICVs was as follows:

PCBs Second-Source Calibration

Criteria	Actions[1,2]	
	Detected	Nondetected
%D or %Drift[3] >20% for each peak	J	UJ

[1] Actions are applied to positive results reported from the nonconforming column. Do not qualify nondetect results unless both columns are noncompliant.
[2] In the absence of an ICV for a particular Aroclor, Resolution Consultants professional judgment was used to apply validation actions to Aroclors with similar retention time ranges. Actions were applied to Aroclors 1016, 1221, 1232, 1242, and 1248 when Aroclor 1016 exceeded ICV criteria and actions were applied to Aroclors 1248, 1254, and 1260 when Aroclor 1260 exceeded ICV criteria.
[3] No guidance for % drift in NFG, thus Resolution Consultants professional judgment was used.

Pesticides Second Source Calibration

Criteria	Actions[1]	
	Detected	Nondetected
%D or %Drift >20%	J	UJ

[1] Actions are applied to positive results reported from the nonconforming column. Do not qualify nondetect results unless both columns are noncompliant.

Qualified results are shown in Table 1.

Data qualification on the basis of the CCVs was as follows:

PCBs Continuing Calibration

Criteria	Actions[1,2]	
	Detected	Nondetected
%D or %Drift[3] >20% for each peak	J	UJ

[1] Actions are applied to positive results reported from the nonconforming column. Do not qualify nondetect results unless both columns are noncompliant.
[2] In the absence of a CCV for a particular Aroclor, Resolution Consultants professional judgment was used to apply validation actions to Aroclors with similar retention time ranges. Actions were applied to Aroclors 1016, 1221, 1232, 1242, and 1248 when Aroclor 1016 exceeded CCV criteria and actions were applied to Aroclors 1248, 1254, and 1260 when Aroclor 1260 exceeded CCV criteria.
[3] No guidance for % drift in NFG, thus Resolution Consultants professional judgment was used.

Pesticides Continuing Calibration

Criteria	Actions[1]	
	Detected	Nondetected
%D or %Drift >20%	J	UJ
[1] Actions are applied to positive results reported from the nonconforming column. Do not qualify nondetect results unless both columns are noncompliant.		

Qualified results are shown in Table 1.

Laboratory Blanks/Equipment Blanks

Laboratory method blanks and equipment rinsate blanks were evaluated as to whether there were contaminants detected above the method detection limit (MDL).

Data validation qualifications for individual samples are based on the maximum contaminant concentration detected in all associated blanks.

Detected results in blanks are not discussed in this data validation report if the associated results were nondetect or if qualification of sample results was not required.

Nonconformances are summarized in Attachment A in Table A-2a and A-2b. Sample results were qualified as follows:

Blank type	Blank result	Sample result	Action for samples
Method, Field, Equipment, Instrument, or Clean-up	Detects	Not detected	No qualification
	< LOQ	< LOQ	Report LOQ value with a U
		≥ LOQ	If the result is ≤ 5x blank result, report the sample result with a U* If the result is >5x blank result, no qualification is required*
	>LOQ	< LOQ	Report sample LOQ value with a U
		≥ LOQ and ≤ blank concentration	Report the sample result with a U*
		≥ LOQ and blank concentration	If the result is ≤ 5x blank result, report the sample result with a U* If the result is >5x blank result, no qualification is required*
	= LOQ	< LOQ	Report sample LOQ value with a U
		≥ LOQ	If the result is ≤ 5x blank result, report the sample result with a U* If the result is >5x blank result, no qualification is required*
*Based on Resolution Consultants professional judgment LOQ= limit of quantitation			

Qualified sample results are shown in Table 1.

Surrogate Spike Recoveries

The surrogate recoveries (%Rs) were reviewed for conformance.

Several samples had surrogate recoveries that did not meet the DoD QSM QC limits. Samples are flagged accordingly. In addition, surrogates were diluted out of several samples as a result of elevated concentrations of target Aroclors / compounds present in the sample. No validation actions were taken on this basis.

Nonconformances are summarized in Attachment A in Table A-3. Data qualification on the basis of surrogate recoveries was as follows:

Criteria[2]	Action	
	Detected Compounds	Nondetected Compounds
%R>upper limit (UL)	J	No qualification[1]
10% ≤ %R < lower limit (LL)	J	UJ
%R <10% (sample dilution is not a factor)	J	R
%R <10% (sample dilution is a factor)	No qualification[2]	No qualification[2]

[1] NFG recommends no NFG recommends no qualification if %R >UL, but <200%, and professional judgment if %R >200%, thus Resolution Consultants professional judgment was used.
[2] Resolution Consultants professional judgment was used.

Qualified sample results are shown in Table 1.

MS/MSD Results

The MS/MSD %Rs and relative percent differences (RPDs) were reviewed for conformance with the QC acceptance criteria.

Nonconformances are summarized in Attachment A in Table A-4. Data qualification to the analytes associated with the specific MS/MSD nonconformances was as follows:

Criteria	Action	
	Detected Compounds	Nondetected Compounds
%R> UL	J	No qualification
20% ≤ %R < LL	J	UJ
%R <20% (see note 1)	J	R*
%RPD > UL	J	No qualification

Note: Actions are applied to the native unspiked sample only (see note 2)
*When the native sample concentration is >4X the concentration of the spike added (based on Region I criteria), evaluate the MS, MSD, and native sample with regards to %RSD rather than %R (Resolution Consultants professional judgment)

Qualified sample results are shown in Table 1.

LCS/LCSD Results

The LCS and/or LCSD %Rs and/or RPDs were reviewed for conformance with the QC acceptance criteria.

Nonconformances are summarized in Attachment A in Table A-5. Data qualification on the basis of LCS/LCSD %Rs and/or RPDs was as follows:

Criteria	Action**	
	Detected Results	Nondetected Results
%R or RPD > upper limit (UL)	J	No qualification
20% < %R < lower limit (LL)	J	UJ[2]
%R <20%[1]	J	R[2]

[1]NFG recommends rejecting results below the LL; however, Resolution Consultants professional judgment used qualifications similar to the NFG guidance for MS/MSDs.
[2] The 20% criterion is based on NFG MS/MSD criteria.

Notes: *(applies to PCBs)*

1. Based on Resolution Consultants professional judgment, apply actions to Aroclors with similar retention time ranges. Apply actions to Aroclors 1016, 1221, 1232, 1242 and 1248 if Aroclor 1016 exceeds MS/MSD %R or RPD criteria and apply actions to Aroclors 1248, 1254 and 1260 if Aroclor 1260 exceeds MS/MSD %R or RPD criteria.

Qualified sample results are shown in Table 1.

Field Duplicate Results

Field duplicate RPDs were reviewed for conformance with the Resolution Consultants QC criteria of ≤50% for solid matrices and ≤30% for aqueous matrices. These criteria apply if both results were greater than two times the sample limit of quantitation (LOQ).

Nonconformances are summarized in Attachment A in Table A-6. Data qualification to the analytes associated with the specific field duplicate RPDs was as follows:

Criteria	RPD	Action	
		Detected	Nondetected
Sample and duplicate are nondetect results	Not calculable (NC)	No qualification	No qualification
Sample and duplicate results ≥2xLOQ	>30 (aqueous) >50 (solids)	J	Not Applicable
Sample and duplicate results <2xLOQ	>60 (aqueous) >100 (solids)	J	Not Applicable
If sample or duplicate result is >2xLOQ and the other is not detected	NC	J	UJ
If sample or duplicate result is <2xLOQ and the other is not detected	NC	No qualification	No qualification

Actions: (Resolution Consultants professional judgment was used)

Qualified sample results are shown in Table 1.

Sample Results/Reporting Issues

Consistent with the DoD QSM v4.2, positive results were reported from the primary column unless otherwise indicated.

All compounds detected at concentrations less than the LOQ but greater than the MDL were qualified by the laboratory as estimated (J). This "J" qualifier was retained during data validation

Dual Column Precision

Sample results were reviewed to ensure that the dual column precision RPD criteria were met.

Dual column precision was not met for all analytes. The laboratory did note that Aroclor 1260 was present in some samples and that several peaks from target analytes have similar retention times as peaks from Aroclor 1260. Consequently, some of the confirmed target analytes may be false positives due to the interference of the PCB. The concentrations of the confirmed target analytes may differ substantially from one channel to the other. This resulted in RPD's for target analytes that were very high.

Nonconformances are summarized in Attachment A in Table A-7. Data qualification on the basis of dual column RPDs was as follows:

Criteria	Action
RPD > 40 and no interference	J (report higher result)
RPD > 40 and interference on 1 column	J (report result from column without interference)
RPD > 40 and interference on both columns	J (report lower result)

Actions: (Based on Resolution Consultants professional judgment)

Qualified results are shown in Table 1.

Percent Solids

The percent solids data were reviewed to ensure that NFG specified criteria were met.

All percent solids criteria were met.

QUALIFICATION ACTIONS

Sample results qualified as a result of validation actions are summarized in Table 1. All actions are described above.

Table 1 - Data Validation Summary of Qualified Data

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
BSBG SD302 0012	SE	4,4-DDD	0.33	0.33	0.66	UG_KG	UJ	s
BSBG SD302 0012	SE	4,4-DDE	0.17	0.33	0.66	UG_KG	J	s,m
BSBG SD302 0012	SE	4,4-DDT	0.33	0.33	0.66	UG_KG	UJ	c,s
BSBG SD302 0012	SE	ALDRIN	0.17	0.17	0.34	UG_KG	UJ	s
BSBG SD302 0012	SE	ALPHA-BHC	0.17	0.17	0.34	UG_KG	UJ	s
BSBG SD302 0012	SE	ALPHA-CHLORDANE	0.17	0.17	0.34	UG_KG	UJ	s,m
BSBG SD302 0012	SE	BETA-BHC	0.17	0.17	0.34	UG_KG	UJ	s
BSBG SD302 0012	SE	DELTA-BHC	0.17	0.17	0.34	UG_KG	UJ	s
BSBG SD302 0012	SE	DIELDRIN	0.33	0.33	0.66	UG_KG	UJ	s,m
BSBG SD302 0012	SE	ENDOSULFAN I	0.17	0.17	0.34	UG_KG	UJ	s
BSBG SD302 0012	SE	ENDOSULFAN II	0.33	0.33	0.66	UG_KG	UJ	s
BSBG SD302 0012	SE	ENDOSULFAN SULFATE	0.33	0.33	0.66	UG_KG	UJ	s,m
BSBG SD302 0012	SE	ENDRIN	0.33	0.33	0.66	UG_KG	UJ	s,m
BSBG SD302 0012	SE	ENDRIN ALDEHYDE	0.33	0.33	0.66	UG_KG	UJ	s
BSBG SD302 0012	SE	ENDRIN KETONE	0.33	0.33	0.66	UG_KG	UJ	c,s
BSBG SD302 0012	SE	GAMMA-CHLORDANE	0.17	0.17	0.34	UG_KG	UJ	s,m
BSBG SD302 0012	SE	HEPTACHLOR	0.17	0.17	0.34	UG_KG	UJ	s
BSBG SD302 0012	SE	HEPTACHLOR EPOXIDE	0.17	0.17	0.34	UG_KG	UJ	s,m
BSBG SD302 0012	SE	LINDANE	0.17	0.17	0.34	UG_KG	UJ	s
BSBG SD302 0012	SE	METHOXYCHLOR	1.7	1.7	3.4	UG_KG	UJ	s
BSBG SD302 0012	SE	TOXAPHENE	3.3	3.3	6.6	UG_KG	UJ	s
BSBG SD303 0012	SE	4,4-DDD	18	3.7	7.4	UG_KG	J	r
BSBG SD303 0012	SE	4,4-DDT	21	3.7	7.4	UG_KG	J	r
BSBG SD303 0012	SE	ENDRIN KETONE	30	3.7	7.4	UG_KG	J	fd,r
BSBG SD303 0012	SE	AROCLOR-1260	180	1.9	3.8	UG_KG	J	c,fd
BSBG SD306 0012	SE	4,4-DDT	0.38	0.38	0.77	UG_KG	UJ	c
BSBG SD306 0012	SE	ENDRIN KETONE	0.38	0.38	0.77	UG_KG	UJ	c
BSBG SD307 0012	SE	4,4-DDD	1.9	1.9	3.7	UG_KG	UJ	s
BSBG SD307 0012	SE	4,4-DDE	1.9	1.9	3.7	UG_KG	UJ	s
BSBG SD307 0012	SE	4,4-DDT	1.9	1.9	3.7	UG_KG	UJ	s
BSBG SD307 0012	SE	ALDRIN	0.96	0.96	1.9	UG_KG	UJ	s
BSBG SD307 0012	SE	ALPHA-BHC	0.96	0.96	1.9	UG_KG	UJ	s
BSBG SD307 0012	SE	ALPHA-CHLORDANE	0.96	0.96	1.9	UG_KG	UJ	s
BSBG SD307 0012	SE	BETA-BHC	0.96	0.96	1.9	UG_KG	UJ	s
BSBG SD307 0012	SE	DELTA-BHC	0.96	0.96	1.9	UG_KG	UJ	c,s
BSBG SD307 0012	SE	DIELDRIN	1.9	1.9	3.7	UG_KG	UJ	s

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
BSBG SD307 0012	SE	ENDOSULFAN I	0.96	0.96	1.9	UG_KG	UJ	s
BSBG SD307 0012	SE	ENDOSULFAN II	1.9	1.9	3.7	UG_KG	UJ	s
BSBG SD307 0012	SE	ENDOSULFAN SULFATE	1.9	1.9	3.7	UG_KG	UJ	s
BSBG SD307 0012	SE	ENDRIN	1.9	1.9	3.7	UG_KG	UJ	l,lp,s
BSBG SD307 0012	SE	ENDRIN ALDEHYDE	1.9	1.9	3.7	UG_KG	UJ	s
BSBG SD307 0012	SE	ENDRIN KETONE	1.9	1.9	3.7	UG_KG	UJ	s
BSBG SD307 0012	SE	GAMMA-CHLORDANE	0.96	0.96	1.9	UG_KG	UJ	s
BSBG SD307 0012	SE	HEPTACHLOR	0.96	0.96	1.9	UG_KG	UJ	s
BSBG SD307 0012	SE	HEPTACHLOR EPOXIDE	0.96	0.96	1.9	UG_KG	UJ	s
BSBG SD307 0012	SE	LINDANE	0.96	0.96	1.9	UG_KG	UJ	s
BSBG SD307 0012	SE	METHOXYCHLOR	9.6	9.6	19	UG_KG	UJ	s
BSBG SD307 0012	SE	TOXAPHENE	19	19	37	UG_KG	UJ	s
BSBG SD308 0012	SE	4,4-DDE	0.62	2.6	5.3	UG_KG	J	r
BSBG SD308 0012	SE	DELTA-BHC	1.4	1.4	2.7	UG_KG	UJ	c
BSBG SD308 0012	SE	ENDRIN	2.6	2.6	5.3	UG_KG	UJ	l,lp
FDSD12131302	SE	ENDRIN KETONE	14	3.8	7.6	UG_KG	J	fd,r
FDSD12131302	SE	AROCLOR-1260	96	2.0	3.9	UG_KG	J	fd
RB-01_120313	WQ	4,4-DDT	0.0050	0.0050	0.0099	UG_L	UJ	c
RB-01_120313	WQ	ENDRIN KETONE	0.0050	0.0050	0.0099	UG_L	UJ	c
RBSD12111301	WQ	4,4-DDD	0.11	0.0048	0.0096	UG_L	J	l,lp
RBSD12111301	WQ	4,4-DDT	0.047	0.0048	0.0096	UG_L	J	c,l
RBSD12111301	WQ	DIELDRIN	0.012	0.0048	0.0096	UG_L	J	c,r
RBSD12111301	WQ	METHOXYCHLOR	0.024	0.024	0.048	UG_L	UJ	c
RBSD12111301	WQ	AROCLOR-1260	0.024	0.024	0.048	UG_L	UJ	c
RBSD12181301	WQ	ENDRIN ALDEHYDE	0.0055	0.0055	0.011	UG_L	UJ	l

Attachment A

Non Conformance Summary Tables

Table A-1a Initial Calibration (Pesticides)

Lab ID(s)	Compound	%Recovery ICV	Column	Associated samples
WG136796-15	alpha-BHC	127.67	A only	all samples nondetect; no qualifications

Table A-1b Continuing Calibration (PCB)

Lab ID(s)	Aroclor	%D/%Drift	Column	Associated samples
WG136644-5	Ar-1260 (5)	21.62	A	CARR-7 RBSD12111301
	Ar-1260 (3)	26.82		
	Ar-1260 (2)	21.36		
	Ar-1260 (4)	28.64		
	Ar-1260 (1)	-27.49		
WG136644-6	Ar-1260 (1)	-20.57	B	
	Ar-1260 (3)	-20.51		
WG136804-5	Ar-1016(3)	23.14	A only	CARR-7 BSBG SD302 0012
	Ar-1016(5)	20.55		
	Ar-1016(2)	22.55		
	Ar-1016(1)	20.03		
	Ar-1016(4)	22.93		
WG137027-3	Ar-1260 (4)	-21.85	A only	CARR-12 BSBG SD305 0012 RA FDSD 12121302 RA BSBG SD306 0012 RA BSBG SD304 0012 RA BSBG SD303 0012 RA CARR-14 RBSB 12181301
	Ar-1260 (1)	-22.65		
	Ar-1260 (5)	-25.53		
	Ar-1260 (3)	-22.24		
WG137027-6	Ar-1260 (3)	-21.98	B only	CARR-12 BSBG SD305 0012 RA FDSD 12121302 RA BSBG SD306 0012 RA BSBG SD304 0012 RA BSBG SD303 0012 RA FDSD12131302
WG137103-3	Ar-1016(3)	20.01	A only	CARR-14 BSBG SD307 0012 BSBG SD308 0012
	Ar-1016(2)	20.82		
	Ar-1016(1)	21.52		
	Ar-1016(4)	20.52		

Table A-1b Continuing Calibration (Pesticides)

Lab ID(s)	Compound	%D/%Drift	Column	Associated samples
WG136796-16	4,4'-DDT	24.00	A	CARR-1 RB-01_120313 CARR-7 BSBG SD 302 0012
	Endrin ketone	23.32		
WG136796-17	4,4'-DDT	25.83	B	
	Methoxychlor	21.38		
	Endrin ketone	20.22		
WG136796-20	Dieldrin	-20.88	A	CARR-7 RBSD 12111301
	4,4'-DDT	-51.00		
	Methoxychlor	-50.52		
	Endosulfan sulfate	-20.53		
WG136796-21	Delta-BHC	-20.87	B	
	4,4'-DDT	-47.54		
	Methoxychlor	-34.66		
WG137188-5	Alpha-BHC	22.00	A only	CARR-12 BSBG SD305 0012 DL FDSD 12121302 DL BSBG SD304 0012 DL BSBG SD303 0012 DL FDSD12131302 DL BSBG SD306 0012 RA RBSD12181301 RA
WG137188-7	Alpha-BHC	24.12	A	CARR-12 BSBG SD306 0012 RA
	Dieldrin	20.25		
	4,4'-DDT	27.17		
	Endrin aldehyde	20.77		
	Methoxychlor	25.11		
	Endrin ketone	31.26		
WG137188-8	4,4'-DDT	21.60	B	
	Endrin ketone	24.60		
WG137142-5	Toxaphene(7)	-21.03	A only	CARR-14 BSBG SD307 0012 DL BSBG SD308 0012 DL
WG137142-7	Alpha-BHC	30.61	A	CARR-14 BSBG SD307 0012 DL BSBG SD308 0012 DL
	Gamma- BHC	21.20		
	Delta-BHC	26.02		
	Endrin ketone	20.18		
WG137142-8	Delta-BHC	22.41	B	

Table A-2a Lab Blanks

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
WG136295-1RA	4,4-DDD	0.0012	0.0050	0.010	UG_L	RBSD12111301 (no action, >10X)

Table A-2b Field Blanks

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
RBSD12111301	4,4-DDD	0.11	0.0048	0.0096	UG_L	BSBGSD3020012
RBSD12111301	4,4-DDE	0.0027	0.0048	0.0096	UG_L	BSBGSD3020012 (no action >10X)
RBSD12111301	4,4-DDT	0.047	0.0048	0.0096	UG_L	BSBGSD3020012
RBSD12111301	DIELDRIN	0.012	0.0048	0.0096	UG_L	BSBGSD3020012

Table A-3 Surrogates

Sample ID	Surrogate	% Recovery	Lower Limit	Upper Limit
Pesticides				
BSBG SD303 0012	PCB-209 (A)	0	55	130
BSBG SD303 0012	PCB-209 (B)	0	55	130
BSBG SD303 0012	TETRACHLORO-M-XYLENE (B)	0	70	125
BSBG SD303 0012	TETRACHLORO-M-XYLENE (B)	0	70	125
BSBG SD307 0012	TETRACHLORO-M-XYLENE (A)	65.8	70	125
BSBG SD307 0012	TETRACHLORO-M-XYLENE (B)	69.1	70	125
BSBG SD308 0012	TETRACHLORO-M-XYLENE (B)	68.8	70	125
FDSD12131302	PCB-209 (A)	0	55	130
FDSD12131302	PCB-209 (B)	0	55	130
FDSD12131302	TETRACHLORO-M-XYLENE (A)	0	70	125
FDSD12131302	TETRACHLORO-M-XYLENE (B)	0	70	125
BSBG SD302 0012	TETRACHLORO-M-XYLENE (A)	55.5	70	125
BSBG SD302 0012	TETRACHLORO-M-XYLENE (B)	66.6	70	125
PCBs				
BSBG SD303 0012	PCB-209 (A)	136	60	125
FDSD12131302	PCB-209 (A)	125	60	125
BSBG SD302 0012	PCB-209 (B)	53.4	60	125

Table –A-4 Matrix Spikes

Sample ID	Compound	MS % Recovery	MSD % Recovery	Lower Limit	Upper Limit	RPD	RPD Limit
BSBG SD302 0012	HEPTACHLOR EPOXIDE	57.5	65.5	65	130	8	30
BSBG SD302 0012	DIELDRIN	62.0	67.3	65	125	3	30
BSBG SD302 0012	ENDRIN	58.0	62.3	60	135	2	30
BSBG SD302 0012	4,4-DDE	62.2	64.6	70	125	1	30
BSBG SD302 0012	ENDOSULFAN SULFATE	58.3	67.6	60	135	10	30
BSBG SD302 0012	ALPHA-BHC	67.2	93.4	60	125	33	30
BSBG SD302 0012	ALPHA-CHLORDANE	60.6	70.5	65	120	10	30
BSBG SD302 0012	GAMMA-CHLORDANE	60.3	67.3	65	125	6	30

Table –A-5 Lab Control Samples

LCS ID	Compound	LCS % Recovery	LCSD % Recovery	Lower Limit	Upper Limit	RPD	RPD Limit	Associated Samples
WG136636-2RA	ENDRIN	32.6	66.2	60	135	72	30	BSBG SD307 0012 BSBG SD308 0012
WG136623-2RA	ENDRIN ALDEHYDE	64.6	53.6	55	135	19	30	RBSD12181301
WG136242-2	4,4-DDT	112	147	45	140	26	30	BSBG SD302 0012
WG136295-2RA	4,4-DDT	113	142	45	140	28	30	RBSD12111301
WG136295-2RA	4,4-DDD	100	173	25	150	53	30	RBSD12111301
WG135845-2RA	ENDRIN ALDEHYDE	73.4	102	55	135	32	30	RB-01_120313
WG136635-2RA	AROCLOR-1016	54.8	100	40	140	60	30	BSBG SD307 0012 BSBG SD308 0012

Table –A-6 Field Duplicates

Sample ID	Duplicate ID	Compound	Sample Result	Qual	Duplicate Result	Qual	LOD	LOQ	Units	RPD
BSBG SD303 0012	FDSD12131302	ENDOSULFAN SULFATE	9.5		4.9	J	3.7	7.4	UG_KG	63.9
BSBG SD303 0012	FDSD12131302	ENDOSULFAN II	1.8	J	1.0	J	3.7	7.4	UG_KG	57.1
BSBG SD303 0012	FDSD12131302	ENDRIN KETONE	30		14		3.7	7.4	UG_KG	72.7
BSBG SD303 0012	FDSD12131302	4,4-DDD	18	J	3.8	U	3.7	7.4	UG_KG	NC
BSBG SD303 0012	FDSD12131302	4,4-DDT	21	J	3.8	U	3.7	7.4	UG_KG	NC
BSBG SD305 0012	FDSD12121302	4,4-DDE	0.49	J	3.1	U			UG_KG	NC
BSBG SD303 0012	FDSD12131302	AROCLOR-1260	180		96		1.9	3.8	UG_KG	60.9

Table A-7 Dual Column Non-Conformance

Client ID	Laboratory ID	Analyte	Column	Retention Time	Concentration	RPD
RBSD12111301	SG9707-20	Dieldrin	A	7.17	0.123	
			B	7.31	0.00165	152.7
BSBGSD3030012	SG9804-25DL	4,4'-DDD	A	7.68	18.4	
			B	7.83	.651	186.3
		4,4'-DDT	A	8.12	1.92	
			B	8.2	20.9	166.3
		Endrin Ketone	A	8.99	30.2	
			B	9.45	2.66	167.6
FDSD12131302	SG9804-27DL	Endrin Ketone	A	8.99	14.3	
			B	9.45	1.61	159.5
BSBGSD3080012	SG9908-13DL	4,4'-DDE	A	6.94	.62	
			B	6.99	.376	49

Attachment B

Qualifier Codes and Explanations

Qualifier	Explanation
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
UJ	The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual quantitation limit necessary to accurately and precisely measure the analyte in the sample.
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

Attachment C

Reason Codes and Explanations

Reason Code	Explanation
be	Equipment blank contamination
bf	Field blank contamination
bl	Laboratory blank contamination
c	Calibration issue
d	Reporting limit raised due to chromatographic interference
fd	Field duplicate RPDs
h	Holding times
i	Internal standard areas
k	Estimated Maximum Possible Concentration (EMPC)
l	LCS recoveries
lc	Labeled compound recovery
ld	Laboratory duplicate RPDs
lp	Laboratory control sample/laboratory control sample duplicate RPDs
m	Matrix spike recovery
md	Matrix spike/matrix spike duplicate RPDs
nb	Negative laboratory blank contamination
p	Chemical preservation issue
r	Dual column RPD
q	Quantitation issue
s	Surrogate recovery
su	Ion suppression
t	Temperature preservation issue
x	Percent solids
y	Serial dilution results
z	ICS results

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Data Validation Report

Project:	MRP Site 1 (OU9) Remedial Investigation, NAVSTA Newport, Rhode Island CTO WE06
Laboratory:	KATAHDIN ANALYTICAL
Service Request:	CARR-1
Analyses/Method:	EPA SW-846 Methods 6010C, 6020A, 7470A, 7471B for TAL Metals
Validation Level:	Limited
Resolution Consultants Project Number:	60250336 SA.DV
Prepared by:	Kristin Rutherford/Resolution Consultants Completed on: 02/19/2014
Reviewed by:	Waverly Braunstein/Resolution Consultants File Name: CARR-1_SE_Metals

SUMMARY

The samples listed below were collected by Resolution Consultants from MRP Site 1 (OU9), NAVSTA Newport, Rhode Island on December 2 and 3, 2013.

Sample ID	Matrix/Sample Type
RB-01_120313	Equipment blank
OU09 SD107 0612	Sediment
OU09 SD107 1224	Sediment
OU09 SD107 2436	Sediment
OU09 SD117 0612	Sediment
OU09 SD117 1224	Sediment
OU09 SD117 2436	Sediment

The data have been validated in accordance with the project-specific Sampling and Analysis Plan, *Sampling and Analysis Plan, Former Carr Point Shooting Range (MRP Site 1, OU9), Naval Station (NAVSTA) Newport, Rhode Island, Final* (Naval Facilities Engineering Command, Mid-Atlantic, 2013) and the following references:

- *DoD Quality Systems Manual (QMS) for Environmental Laboratories, version 4.2* (DoD EDQW, 2010);
- *USEPA Region 1, EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses* (December 1996);
- *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review* (January 2010);
- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW846, Method 6010C, Inductively Coupled Plasma-Atomic Emission Spectrometry* (USEPA, 1996);
- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW846, Method 6020A, Inductively Coupled Plasma-Mass Spectrometry* (USEPA, 1996);

- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW846, Method 7471B, Mercury in Solid or Semisolid Waste (Manual Cold-Vapor Technique)* (USEPA, 1996);
- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW846, Method 7470A, Mercury in Liquid Waste (Manual Cold-Vapor Technique)* (USEPA, 1996);
- laboratory quality control (QC) limits, as applicable.

The USEPA Region 1 and National Data Validation Functional Guidelines were modified to accommodate the non-CLP methodologies. In the absence of method-specific direction for validation, Resolution Consultants professional judgment was used as appropriate.

REVIEW ELEMENTS

The data were evaluated based on the following parameters (where applicable to the method):

✓	Data completeness (chain-of-custody (COC)/sample integrity
✓	Holding times and sample preservation
✓	ICP/MS Instrument tuning
✓	Initial calibration/continuing calibration verification
✗	Laboratory blanks/equipment blanks
✓	ICP interference check standards
NA	Matrix spike (MS) and/or matrix spike duplicate (MSD) results
NA	Laboratory duplicate results
✓	Laboratory control sample (LCS)/laboratory control sample duplicate (LCSD) results
✓	Field duplicates
NA	ICP/ICPMS serial dilution results
✓	ICP/MS internal standard performance
✓	Sample results/reporting issues

The symbol (✓) indicates that no validation qualifiers were applied based on this parameter. NA indicates that the parameter was not included as part of this data set or was not applicable to this validation and therefore not reviewed. The symbol (✗) indicates that a quality control (QC) nonconformance resulted in the qualification of data. Any QC nonconformance that resulted in the qualification of data is discussed below. In addition, nonconformances or other issues that were noted during validation, but did not result in qualification of data, may be discussed for informational purposes only.

The data appear valid as reported and may be used for decision making purposes. Selected data points were estimated, negated, and/or rejected due to nonconformances of certain QC criteria (see discussion below). Qualified sample results are presented in Table 1.

RESULTS

<u>Data Completeness</u>

The data package was reviewed and found to meet acceptance criteria for completeness:

- The COCs were reviewed for completeness of information relevant to the samples and requested analyses, and for signatures indicating transfer of sample custody.

- The laboratory sample login sheet(s) were reviewed for issues potentially affecting sample integrity, including the condition of sample containers upon receipt at the laboratory.
- Completeness of analyses was verified by comparing the reported results to the COC requests.

Holding Times/Sample Preservation

Sample preservation and preparation/analysis holding times were reviewed for conformance with the QC acceptance criteria.

The QC acceptance criteria were met.

ICP/MS Instrument Tuning

ICP/MS tuning results were reviewed for conformance with the QC acceptance criteria to ensure that:

- the proper tuning solution was used with elements representing all of the mass regions of interest;
- the tunings were performed at the begining of each analysis and prior to calibration;
- the tuning solution was analyzed at least 4 times as required by the method;
- the mass calibration was within 0.1 amu of the true value for all masses within the region of interest;
- the resolution was verified to be <0.9 amu full width at 10% peak height; and
- the %RSD was $\leq$ 5% for the analytes contained in the tuning solution.

The QC acceptance criteria were met.

Initial Calibration/Continuing Calibration Verification

Calibration data were reviewed for conformance with the QC acceptance criteria to ensure that:

- all criteria were met for the calibration curves
- the initial calibration verification (ICV) percent recovery (%R) criteria were met;
- the continuing calibration verification standard (CCV) method percent difference (%Ds) were met; and
- the low level check standards (CRI or CRA) %R criteria were met.

The QC acceptance criteria were met.

Laboratory Blanks/Equipment Blanks

Laboratory method blanks and equipment rinsate blanks were evaluated as to whether there were contaminants detected above the method detection limit (MDL). Data validation qualifications for individual samples are based on the maximum contaminant concentration detected in all associated blanks.

Method and equipment rinsate results were reviewed for conformance with the QC acceptance criteria. Detected results in blanks are not discussed in this data validation report if the associated results were nondetect or if qualification of sample results was not required.

Nonconformances are summarized in Attachment A in Tables A-1a and A-1b. Sample results were qualified as follows:

Blank Type	Blank Result	Sample Result	Action for Samples
PB / EB/ FB (Positive)	> LOQ	≥IDL/MDL but ≤ LOQ	Qualify as nondetect (U) at the LOQ
		>LOQ but < 10x Blank Result	Qualify results as unusable
		≥10x Blank Result	No action
	≥IDL/MDL but ≤LOQ	Nondetect	No action
		≥IDL/MDL but ≤LOQ	Qualify as nondetect (U) at the LOQ
		> LOQ	Use Resolution Consultants professional judgment (see below [1])
PB (Negative)	< (-LOQ)	< 10x LOQ	Qualify positive results <10x LOQ as estimated (J) and nondetects as estimated (UJ)
		≥10x LOQ	No action

[1] Establish an action level (AL) at 5x the blank contamination. If sample result is <AL, qualify the reported result with a U.

Qualified sample results are shown in Table 1.

ICP Interference Check Standards

The ICP interference check standards (ICSA, ICSAB) were reviewed for conformance.

All criteria were met for the ICSA and ICSAB.

MS Results

The MS and/or MSD analyses were not performed on a site sample in this SDG; therefore, batch QC was not assessed.

Laboratory Duplicate Results

The laboratory duplicate analyses were not performed on a site sample; therefore, batch QC was not assessed.

LCS/LCSD Results

The LCS/LCSD %Rs and/or RPDs were reviewed for conformance with the QC acceptance criteria.

The LCS and LCSD %Rs and RPDs were within the QC acceptance criteria.

Field Duplicate Results

Field duplicate RPDs were reviewed for conformance with the Resolution Consultants QC acceptance criterion of ≤50% for solid matrices and ≤30% for aqueous matrices. This criterion applies if both results were greater than 5 times the limit of quantitation (LOQ).

All field duplicate precision criteria were met.

ICP/ICPMS Serial Dilution Results

The serial dilution analyses were not performed on a site sample; therefore, batch QC was not assessed.

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ICP/MS Internal Standard Performance

ICP/MS Internal standard performance was reviewed for conformance and was within the QC acceptance criteria.

Sample Results/Reporting Issues

All analytes detected at concentrations less than the limit of quantitation (LOQ) but greater than the method detection limit (MDL) were qualified by the laboratory as estimated (J). This "J" qualifier was retained during data validation.

Resolution Consultants professional judgment was used to qualify sample results with percent solids that were <30%. All criteria were met.

QUALIFICATION ACTIONS

Sample results qualified as a result of validation actions are summarized in Table 1. All actions are described above.

ATTACHMENTS

Attachment A: Nonconformance Summary Tables

Attachment B: Qualifier Codes and Explanations

Attachment C: Reason Codes and Explanations

Table 1 - Data Validation Summary of Qualified Data

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
RB-01_120313	WQ	CALCIUM	100	100	100	UG_L	U	bl
RB-01_120313	WQ	POTASSIUM	1000	1000	1000	UG_L	U	bl
RB-01_120313	WQ	ANTIMONY	1.0	1.0	1.0	UG_L	U	bl
RB-01_120313	WQ	BARIUM	2.0	2.0	2.0	UG_L	U	bl
RB-01_120313	WQ	CHROMIUM, TOTAL	5.0	5.0	5.0	UG_L	U	bl
RB-01_120313	WQ	COBALT	1.0	1.0	1.0	UG_L	U	bl
RB-01_120313	WQ	COPPER	4.6	4.6	3.0	UG_L	U	bl
RB-01_120313	WQ	LEAD	1.0	1.0	1.0	UG_L	U	bl
RB-01_120313	WQ	MANGANESE	2.0	2.0	2.0	UG_L	U	bl

Attachment A

Non Conformance Summary Tables

Table A-1a Lab Blanks

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
PBSGL18ICS1	ALUMINUM	4.839	10	30	MG_KG	OU09 SD107 0612 OU09 SD107 1224 OU09 SD107 2436 OU09 SD117 0612 OU09 SD117 1224 OU09 SD117 2436
PBSGL18ICS1	CALCIUM	5.695	8.0	10	MG_KG	OU09 SD107 0612 OU09 SD107 1224 OU09 SD107 2436 OU09 SD117 0612 OU09 SD117 1224 OU09 SD117 2436
PBSGL18ICS1	IRON	3.438	8.0	10	MG_KG	OU09 SD107 0612 OU09 SD107 1224 OU09 SD107 2436 OU09 SD117 0612 OU09 SD117 1224 OU09 SD117 2436
PBSGL18ICS1	MAGNESIUM	1.806	8.0	10	MG_KG	OU09 SD107 0612 OU09 SD107 1224 OU09 SD107 2436 OU09 SD117 0612 OU09 SD117 1224 OU09 SD117 2436
PBSGL18ICS1	SODIUM	6.912	50	100	MG_KG	OU09 SD107 0612 OU09 SD107 1224 OU09 SD107 2436 OU09 SD117 0612 OU09 SD117 1224 OU09 SD117 2436
PBSGL18IMS1	BARIUM	0.072	0.10	0.20	MG_KG	OU09 SD107 0612 OU09 SD107 1224 OU09 SD107 2436 OU09 SD117 0612 OU09 SD117 1224 OU09 SD117 2436
PBSGL18IMS1	CHROMIUM, TOTAL	0.105	0.40	0.50	MG_KG	OU09 SD107 0612 OU09 SD107 1224 OU09 SD107 2436 OU09 SD117 0612 OU09 SD117 1224 OU09 SD117 2436

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
PBSGL18IMS1	COPPER	0.357	0.20	0.30	MG_KG	OU09 SD107 0612 OU09 SD107 1224 OU09 SD107 2436 OU09 SD117 0612 OU09 SD117 1224 OU09 SD117 2436
PBSGL18IMS1	LEAD	0.076	0.050	0.10	MG_KG	OU09 SD107 0612 OU09 SD107 1224 OU09 SD107 2436 OU09 SD117 0612 OU09 SD117 1224 OU09 SD117 2436
PBSGL18IMS1	MANGANESE	0.049	0.10	0.20	MG_KG	OU09 SD107 0612 OU09 SD107 1224 OU09 SD107 2436 OU09 SD117 0612 OU09 SD117 1224 OU09 SD117 2436
PBSGL18IMS1	NICKEL	0.156	0.12	0.20	MG_KG	OU09 SD107 0612 OU09 SD107 1224 OU09 SD107 2436 OU09 SD117 0612 OU09 SD117 1224 OU09 SD117 2436
PBSGL18IMS1	ZINC	1.515	0.80	1.0	MG_KG	OU09 SD107 0612 OU09 SD107 1224 OU09 SD107 2436 OU09 SD117 0612 OU09 SD117 1224 OU09 SD117 2436
PBWGL18ICW2	CALCIUM	22.740	80	100	UG_L	RB-01_120313
PBWGL18ICW2	POTASSIUM	78.280	500	1000	UG_L	RB-01_120313
PBWGL18IMW2	ANTIMONY	0.054	0.50	1.0	UG_L	RB-01_120313
PBWGL18IMW2	BARIUM	0.498	1.0	2.0	UG_L	RB-01_120313
PBWGL18IMW2	CHROMIUM, TOTAL	0.542	4.0	5.0	UG_L	RB-01_120313
PBWGL18IMW2	COBALT	0.304	0.30	1.0	UG_L	RB-01_120313
PBWGL18IMW2	MANGANESE	0.481	1.0	2.0	UG_L	RB-01_120313
PBWGL31IMW2	COPPER	2.657	2.0	3.0	UG_L	RB-01_120313
PBWGL31IMW2	LEAD	0.500	0.50	1.0	UG_L	RB-01_120313
PBSGL18ICS1	ALUMINUM	4.839	10	30	MG_KG	OU09 SD107 0612 OU09 SD107 1224 OU09 SD107 2436 OU09 SD117 0612 OU09 SD117 1224 OU09 SD117 2436

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
PBSGL18ICS1	CALCIUM	5.695	8.0	10	MG_KG	OU09 SD107 0612 OU09 SD107 1224 OU09 SD107 2436 OU09 SD117 0612 OU09 SD117 1224 OU09 SD117 2436
PBSGL18ICS1	IRON	3.438	8.0	10	MG_KG	OU09 SD107 0612 OU09 SD107 1224 OU09 SD107 2436 OU09 SD117 0612 OU09 SD117 1224 OU09 SD117 2436
PBSGL18ICS1	MAGNESIUM	1.806	8.0	10	MG_KG	OU09 SD107 0612 OU09 SD107 1224 OU09 SD107 2436 OU09 SD117 0612 OU09 SD117 1224 OU09 SD117 2436
PBSGL18ICS1	SODIUM	6.912	50	100	MG_KG	OU09 SD107 0612 OU09 SD107 1224 OU09 SD107 2436 OU09 SD117 0612 OU09 SD117 1224 OU09 SD117 2436
PBSGL18IMS1	BARIUM	0.072	0.10	0.20	MG_KG	OU09 SD107 0612 OU09 SD107 1224 OU09 SD107 2436 OU09 SD117 0612 OU09 SD117 1224 OU09 SD117 2436
PBSGL18IMS1	CHROMIUM, TOTAL	0.105	0.40	0.50	MG_KG	OU09 SD107 0612 OU09 SD107 1224 OU09 SD107 2436 OU09 SD117 0612 OU09 SD117 1224 OU09 SD117 2436
PBSGL18IMS1	COPPER	0.357	0.20	0.30	MG_KG	OU09 SD107 0612 OU09 SD107 1224 OU09 SD107 2436 OU09 SD117 0612 OU09 SD117 1224 OU09 SD117 2436
PBSGL18IMS1	LEAD	0.076	0.050	0.10	MG_KG	OU09 SD107 0612 OU09 SD107 1224 OU09 SD107 2436 OU09 SD117 0612 OU09 SD117 1224 OU09 SD117 2436

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
PBSGL18IMS1	MANGANESE	0.049	0.10	0.20	MG_KG	OU09 SD107 0612 OU09 SD107 1224 OU09 SD107 2436 OU09 SD117 0612 OU09 SD117 1224 OU09 SD117 2436
PBSGL18IMS1	NICKEL	0.156	0.12	0.20	MG_KG	OU09 SD107 0612 OU09 SD107 1224 OU09 SD107 2436 OU09 SD117 0612 OU09 SD117 1224 OU09 SD117 2436
PBSGL18IMS1	ZINC	1.515	0.80	1.0	MG_KG	OU09 SD107 0612 OU09 SD107 1224 OU09 SD107 2436 OU09 SD117 0612 OU09 SD117 1224 OU09 SD117 2436
PBWGL18ICW2	CALCIUM	22.740	80	100	UG_L	RB-01_120313
PBWGL18ICW2	POTASSIUM	78.280	500	1000	UG_L	RB-01_120313
PBWGL18IMW2	ANTIMONY	0.054	0.50	1.0	UG_L	RB-01_120313
PBWGL18IMW2	BARIUM	0.498	1.0	2.0	UG_L	RB-01_120313
PBWGL18IMW2	CHROMIUM, TOTAL	0.542	4.0	5.0	UG_L	RB-01_120313
PBWGL18IMW2	COBALT	0.304	0.30	1.0	UG_L	RB-01_120313
PBWGL18IMW2	MANGANESE	0.481	1.0	2.0	UG_L	RB-01_120313
PBWGL31IMW2	COPPER	2.657	2.0	3.0	UG_L	RB-01_120313
PBWGL31IMW2	LEAD	0.500	0.50	1.0	UG_L	RB-01_120313

Table A-1b Field Blanks

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
RB-01_120313	ALUMINUM	16.6	100	300	UG_L	OU09 SD107 0612 OU09 SD107 1224 OU09 SD107 2436 OU09 SD117 0612 OU09 SD117 1224 OU09 SD117 2436
RB-01_120313	CALCIUM	76.1	80	100	UG_L	OU09 SD107 0612 OU09 SD107 1224 OU09 SD107 2436 OU09 SD117 0612 OU09 SD117 1224 OU09 SD117 2436
RB-01_120313	IRON	120	80	100	UG_L	OU09 SD107 0612 OU09 SD107 1224 OU09 SD107 2436 OU09 SD117 0612 OU09 SD117 1224 OU09 SD117 2436
RB-01_120313	MAGNESIUM	24.4	80	100	UG_L	OU09 SD107 0612 OU09 SD107 1224 OU09 SD107 2436 OU09 SD117 0612 OU09 SD117 1224 OU09 SD117 2436
RB-01_120313	POTASSIUM	50.6	500	1000	UG_L	OU09 SD107 0612 OU09 SD107 1224 OU09 SD107 2436 OU09 SD117 0612 OU09 SD117 1224 OU09 SD117 2436
RB-01_120313	SODIUM	78.0	500	1000	UG_L	OU09 SD107 0612 OU09 SD107 1224 OU09 SD107 2436 OU09 SD117 0612 OU09 SD117 1224 OU09 SD117 2436
RB-01_120313	ANTIMONY	0.12	0.50	1.0	UG_L	OU09 SD107 0612 OU09 SD107 1224 OU09 SD107 2436 OU09 SD117 0612 OU09 SD117 1224 OU09 SD117 2436
RB-01_120313	BARIUM	0.59	1.0	2.0	UG_L	OU09 SD107 0612 OU09 SD107 1224 OU09 SD107 2436 OU09 SD117 0612 OU09 SD117 1224 OU09 SD117 2436

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
RB-01_120313	CADMIUM	0.06	0.20	1.0	UG_L	OU09 SD107 0612 OU09 SD107 1224 OU09 SD107 2436 OU09 SD117 0612 OU09 SD117 1224 OU09 SD117 2436
RB-01_120313	CHROMIUM, TOTAL	0.77	4.0	5.0	UG_L	OU09 SD107 0612 OU09 SD107 1224 OU09 SD107 2436 OU09 SD117 0612 OU09 SD117 1224 OU09 SD117 2436
RB-01_120313	COBALT	0.07	0.30	1.0	UG_L	OU09 SD107 0612 OU09 SD107 1224 OU09 SD107 2436 OU09 SD117 0612 OU09 SD117 1224 OU09 SD117 2436
RB-01_120313	COPPER	4.6	2.0	3.0	UG_L	OU09 SD107 0612 OU09 SD107 1224 OU09 SD107 2436 OU09 SD117 0612 OU09 SD117 1224 OU09 SD117 2436
RB-01_120313	LEAD	0.69	0.50	1.0	UG_L	OU09 SD107 0612 OU09 SD107 1224 OU09 SD107 2436 OU09 SD117 0612 OU09 SD117 1224 OU09 SD117 2436
RB-01_120313	MANGANESE	1.5	1.0	2.0	UG_L	OU09 SD107 0612 OU09 SD107 1224 OU09 SD107 2436 OU09 SD117 0612 OU09 SD117 1224 OU09 SD117 2436
RB-01_120313	NICKEL	0.34	1.2	2.0	UG_L	OU09 SD107 0612 OU09 SD107 1224 OU09 SD107 2436 OU09 SD117 0612 OU09 SD117 1224 OU09 SD117 2436
RB-01_120313	SELENIUM	0.38	3.0	5.0	UG_L	OU09 SD107 0612 OU09 SD107 1224 OU09 SD107 2436 OU09 SD117 0612 OU09 SD117 1224 OU09 SD117 2436

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
RB-01_120313	VANADIUM	1.1	4.0	5.0	UG_L	OU09 SD107 0612 OU09 SD107 1224 OU09 SD107 2436 OU09 SD117 0612 OU09 SD117 1224 OU09 SD117 2436
RB-01_120313	ZINC	5.5	8.0	10	UG_L	OU09 SD107 0612 OU09 SD107 1224 OU09 SD107 2436 OU09 SD117 0612 OU09 SD117 1224 OU09 SD117 2436

Attachment B

Qualifier Codes and Explanations

Qualifier	Explanation
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
UJ	The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual quantitation limit necessary to accurately and precisely measure the analyte in the sample.
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

Attachment C

Reason Codes and Explanations

Reason Code	Explanation
be	Equipment blank contamination
bf	Field blank contamination
bl	Laboratory blank contamination
c	Calibration issue
d	Reporting limit raised due to chromatographic interference
fd	Field duplicate RPDs
h	Holding times
i	Internal standard areas
k	Estimated Maximum Possible Concentration (EMPC)
l	LCS recoveries
lc	Labeled compound recovery
ld	Laboratory duplicate RPDs
lp	Laboratory control sample/laboratory control sample duplicate RPDs
m	Matrix spike recovery
md	Matrix spike/matrix spike duplicate RPDs
nb	Negative laboratory blank contamination
p	Chemical preservation issue
r	Dual column RPD
q	Quantitation issue
s	Surrogate recovery
su	Ion suppression
t	Temperature preservation issue
x	Percent solids
y	Serial dilution results
z	ICS results

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Data Validation Report

Project:	MRP Site 1 (OU9) Remedial Investigation, NAVSTA Newport, Rhode Island CTO WE06
Laboratory:	Katahdin Analytical Services, Scarborough, Maine
Service Request:	CARR-3
Analyses/Method:	TAL Metals/ EPA SW-846 Methods 6010C, 6020A, 7471B Acid Volatile Sulfide/Simultaneously Extracted Metals / EPA 821/R-91-100
Validation Level:	Limited
Resolution Consultants Project Number:	60250336 SA.DV
Prepared by:	Kristin Rutherford/Resolution Consultants — Completed on: 02/26/2014
Reviewed by:	Waverly Braunstein/Resolution Consultants — File Name: CARR-3_SE_Metals_AVSSEM_DVRpt

SUMMARY

The samples listed below were collected by Resolution Consultants from MRP Site 1 (OU9), NAVSTA Newport, Rhode Island on December 3, 2013.

Sample ID	Matrix/Sample Type
FD-01_SE_120313	Field Duplicate of OU09 SD108 0612
FD-02_SE_120313	Field Duplicate of OU09 SD110 1224
OU09 SD108 0612	Sediment
OU09 SD108 1224	Sediment
OU09 SD108 2436	Sediment
OU09 SD109 0012	Sediment
OU09 SD109 0012W	Sediment
OU09 SD109 1224	Sediment
OU09 SD109 2436	Sediment
OU09 SD110 0012	Sediment
OU09 SD110 0012W	Sediment
OU09 SD110 1224	Sediment
OU09 SD110 2436	Sediment

The data have been validated in accordance with the project-specific Sampling and Analysis Plan, *Sampling and Analysis Plan, Former Carr Point Shooting Range (MRP Site 1, OU9), Naval Station (NAVSTA) Newport, Rhode Island, Final* (Naval Facilities Engineering Command, Mid-Atlantic, 2013) and the following references:

- *DoD Quality Systems Manual (QMS) for Environmental Laboratories, version 4.2* (DoD EDQW, 2010);
- *USEPA Region 1, EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses* (December 1996);
- *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review* (January 2010);
- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW846, Method 6010C, Inductively Coupled Plasma-Atomic Emission Spectrometry* (USEPA, 1996);
- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW846, Method 6020A, Inductively Coupled Plasma-Mass Spectrometry* (USEPA, 1996);
- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW846, Method 7471B, Mercury in Solid or Semisolid Waste (Manual Cold-Vapor Technique)* (USEPA, 1996);
- *Draft Analytical Method for Determination of Acid Volatile Sulfide in Sediment, Method 821/R-91-100* (USEPA, 1991);
- laboratory quality control (QC) limits, as applicable.

The USEPA Region 1 and National Data Validation Functional Guidelines were modified to accommodate the non-CLP methodologies. In the absence of method-specific direction for validation, Resolution Consultants professional judgment was used as appropriate.

REVIEW ELEMENTS

The data were evaluated based on the following parameters (where applicable to the method):

✓ Data completeness (chain-of-custody (COC)/sample integrity
✓ Holding times and sample preservation
✓ ICP/MS Instrument tuning
✓ Initial calibration/continuing calibration verification
✗ Laboratory blanks/equipment blanks
✓ ICP interference check standards
✗ Matrix spike (MS) and/or matrix spike duplicate (MSD) results
✗ Laboratory duplicate results
✓ Laboratory control sample (LCS)/laboratory control sample duplicate (LCSD) results
✓ Field duplicates
✓ ICP/ICPMS serial dilution results
✓ ICP/MS internal standard performance
✓ Sample results/reporting issues

The symbol (✓) indicates that no validation qualifiers were applied based on this parameter. NA indicates that the parameter was not included as part of this data set or was not applicable to this validation and therefore not reviewed. The symbol (✗) indicates that a quality control (QC) nonconformance resulted in the qualification of data. Any QC nonconformance that resulted in the qualification of data is discussed below. In addition, nonconformances or other issues that were noted during validation, but did not result in qualification of data, may be discussed for informational purposes only.

The data appear valid as reported and may be used for decision making purposes. Selected data points were estimated, negated, and/or rejected due to nonconformances of certain QC criteria (see discussion below). Qualified sample results are presented in Table 1.

RESULTS

Data Completeness

The data package was reviewed and found to meet acceptance criteria for completeness:

- The COCs were reviewed for completeness of information relevant to the samples and requested analyses, and for signatures indicating transfer of sample custody.
- The laboratory sample login sheet(s) were reviewed for issues potentially affecting sample integrity, including the condition of sample containers upon receipt at the laboratory.
- Completeness of analyses was verified by comparing the reported results to the COC requests.

Holding Times/Sample Preservation

Sample preservation and preparation/analysis holding times were reviewed for conformance with the QC acceptance criteria.

The QC acceptance criteria were met.

ICP/MS Instrument Tuning

ICP/MS tuning results were reviewed for conformance with the QC acceptance criteria to ensure that:

- the proper tuning solution was used with elements representing all of the mass regions of interest;
- the tunings were performed at the beginning of each analysis and prior to calibration;
- the tuning solution was analyzed at least 4 times as required by the method;
- the mass calibration was within 0.1 amu of the true value for all masses within the region of interest;
- the resolution was verified to be <0.9 amu full width at 10% peak height; and
- the %RSD was $\leq$ 5% for the analytes contained in the tuning solution.

The QC acceptance criteria were met.

Initial Calibration/Continuing Calibration Verification

Calibration data were reviewed for conformance with the QC acceptance criteria to ensure that:

- all criteria were met for the calibration curves
- the initial calibration verification (ICV) percent recovery (%R) criteria were met;
- the continuing calibration verification standard (CCV) method percent difference (%Ds) were met; and
- the low level check standards (CRI or CRA) %R criteria were met.

The QC acceptance criteria were met.

Laboratory Blanks/Equipment Blanks

Laboratory method blanks and equipment rinsate blanks were evaluated as to whether there were contaminants detected above the method detection limit (MDL). Data validation qualifications for individual samples are based on the maximum contaminant concentration detected in all associated blanks.

Method and equipment rinsate results were reviewed for conformance with the QC acceptance criteria. Detected results in blanks are not discussed in this data validation report if the associated results were nondetect or if qualification of sample results was not required.

Nonconformances are summarized in Attachment A in Tables A-1a and A-1b. Sample results were qualified as follows:

Blank Type	Blank Result	Sample Result	Action for Samples
PB / EB/ FB (Positive)	> LOQ	≥IDL/MDL but ≤ LOQ	Qualify as nondetect (U) at the LOQ
		>LOQ but < 10x Blank Result	Qualify results as unusable
		≥10x Blank Result	No action
	≥IDL/MDL but ≤LOQ	Nondetect	No action
		≥IDL/MDL but ≤LOQ	Qualify as nondetect (U) at the LOQ
		> LOQ	Use Resolution Consultants professional judgment (see below [1])
PB (Negative)	< (-LOQ)	< 10x LOQ	Qualify positive results <10x LOQ as estimated (J) and nondetects as estimated (UJ)
		≥10x LOQ	No action

[1] Establish an action level (AL) at 5x the blank contamination. If sample result is <AL, qualify the reported result with a U.

Qualified sample results are shown in Table 1.

ICP Interference Check Standards

The ICP interference check standards (ICSA, ICSAB) were reviewed for conformance.

All criteria were met for the ICSA and ICSAB.

MS Results

The MS and/or MSD %Rs and/or RPDs were reviewed for conformance with the QC acceptance criteria.

Nonconformances are summarized in Attachment A in Table A-2. Data qualification on the basis of MS and/or MSD nonconformances was as follows:

Qualify Results	%R < 30	80 > %R ≥ 30	%R >120	RPD>20
Detected results	J	J	J	J
Nondetects	R	UJ	Accept	UJ

Notes: MS actions apply to all samples of the same matrix. This qualification will also be applied to the results of all samples within a given area of the site, if deemed appropriate.

1. If the sample result (SR) > 4x the spike concentration (S), no action is taken.

2. If any analyte does not meet the %R criteria and a post digestion spike (PDS) analysis was performed, use professional judgment to assess the results. Refer to the National Functional Guidelines (NFG) 2010 for recommended actions.
3. If either the MS or MSD does not meet %R criteria, qualify all associated samples.

Qualified sample results are shown in Table 1.

Laboratory Duplicate Results

Laboratory duplicate analyses were not performed on the samples in this SDG. Relative percent differences (RPDs) of the matrix spike and matrix spike duplicate were reviewed for conformance.

Nonconformances are summarized in Attachment A in Table A-2. Data qualification on the basis of laboratory duplicate RPDs was as follows:

Sample Results	RPD	Action (Detect/Nondetect)
≥5x LOQ (both sample and duplicate)	RPD>20%	Estimate (J/UJ)
<5x LOQ (either sample and/or duplicate)	if absolute difference is > the LOQ, estimate (J) positive results <5x the LOQ and nondetects (UJ).	

Qualified sample results are shown in Table 1.

LCS/LCSD Results

The LCS/LCSD %Rs and/or RPDs were reviewed for conformance with the QC acceptance criteria.

The LCS and LCSD %Rs and RPDs were within the QC acceptance criteria.

Field Duplicate Results

Field duplicate RPDs were reviewed for conformance with the Resolution Consultants QC acceptance criterion of ≤50% for solid matrices and ≤30% for aqueous matrices. This criterion applies if both results were greater than 5 times the limit of quantitation (LOQ).

All field duplicate precision criteria were met.

ICP/ICPMS Serial Dilution Results

The serial dilution percent differences (%Ds) were reviewed for conformance with the QC acceptance criteria.

The serial dilution %Ds were within the QC acceptance criteria.

ICP/MS Internal Standard Performance

ICP/MS Internal standard performance was reviewed for conformance and was within the QC acceptance criteria.

Sample Results/Reporting Issues

All analytes detected at concentrations less than the limit of quantitation (LOQ) but greater than the method detection limit (MDL) were qualified by the laboratory as estimated (J). This "J" qualifier was retained during data validation.

Resolution Consultants professional judgment was used to qualify sample results with percent solids that were <30%.

All criteria were met.

QUALIFICATION ACTIONS

Sample results qualified as a result of validation actions are summarized in Table 1. All actions are described above.

ATTACHMENTS

Attachment A: Nonconformance Summary Tables

Attachment B: Qualifier Codes and Explanations

Attachment C: Reason Codes and Explanations

Table 1 - Data Validation Summary of Qualified Data

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
FD-01_SE_120313	SE	SODIUM	1960	48	95	MG_KG	J-	m
FD-01_SE_120313	SE	ANTIMONY	0.05	0.048	0.095	MG_KG	J	m,md
FD-01_SE_120313	SE	CADMIUM	0.095	0.095	0.095	MG_KG	U	be
FD-01_SE_120313	SE	SELENIUM	0.48	0.48	0.48	MG_KG	U	be
FD-02_SE_120313	SE	SODIUM	2530	39	79	MG_KG	J-	m
FD-02_SE_120313	SE	ANTIMONY	0.05	0.039	0.079	MG_KG	J	m,md
FD-02_SE_120313	SE	CADMIUM	0.079	0.079	0.079	MG_KG	U	be
FD-02_SE_120313	SE	SELENIUM	0.39	0.39	0.39	MG_KG	U	be
OU09 SD108 0612	SE	SODIUM	2200	51	100	MG_KG	J-	m
OU09 SD108 0612	SE	ANTIMONY	0.05	0.051	0.10	MG_KG	J	m,md
OU09 SD108 0612	SE	CADMIUM	0.10	0.10	0.10	MG_KG	U	be
OU09 SD108 0612	SE	SELENIUM	0.51	0.51	0.51	MG_KG	U	be
OU09 SD108 1224	SE	SODIUM	2070	45	90	MG_KG	J-	m
OU09 SD108 1224	SE	ANTIMONY	0.05	0.045	0.090	MG_KG	J	m,md
OU09 SD108 1224	SE	CADMIUM	0.090	0.090	0.090	MG_KG	U	be
OU09 SD108 1224	SE	SELENIUM	0.45	0.45	0.45	MG_KG	U	be
OU09 SD108 2436	SE	SODIUM	1960	38	76	MG_KG	J-	m
OU09 SD108 2436	SE	ANTIMONY	0.07	0.038	0.076	MG_KG	J	m,md
OU09 SD108 2436	SE	CADMIUM	0.076	0.076	0.076	MG_KG	U	be
OU09 SD108 2436	SE	SELENIUM	0.38	0.38	0.38	MG_KG	U	be
OU09 SD109 0012	SE	SODIUM	2100	41	82	MG_KG	J-	m
OU09 SD109 0012	SE	ANTIMONY	0.05	0.041	0.082	MG_KG	J	m,md
OU09 SD109 0012	SE	CADMIUM	0.082	0.082	0.082	MG_KG	U	be
OU09 SD109 0012	SE	SELENIUM	0.41	0.41	0.41	MG_KG	U	be
OU09 SD109 0012W	SE	SODIUM	2800	38	77	MG_KG	J-	m
OU09 SD109 0012W	SE	ANTIMONY	0.06	0.038	0.077	MG_KG	J	m,md
OU09 SD109 0012W	SE	CADMIUM	0.077	0.077	0.077	MG_KG	U	be
OU09 SD109 0012W	SE	SELENIUM	0.38	0.38	0.38	MG_KG	U	be
OU09 SD109 1224	SE	SODIUM	1490	30	60	MG_KG	J-	m
OU09 SD109 1224	SE	ANTIMONY	0.14	0.030	0.060	MG_KG	J	m,md
OU09 SD109 1224	SE	CADMIUM	0.060	0.060	0.060	MG_KG	U	be
OU09 SD109 1224	SE	SELENIUM	0.30	0.30	0.30	MG_KG	U	be
OU09 SD109 2436	SE	SODIUM	2060	50	99	MG_KG	J-	m
OU09 SD109 2436	SE	ANTIMONY	0.06	0.050	0.099	MG_KG	J	m,md
OU09 SD109 2436	SE	CADMIUM	0.099	0.099	0.099	MG_KG	U	be
OU09 SD109 2436	SE	SELENIUM	0.50	0.50	0.50	MG_KG	U	be
OU09 SD110 0012	SE	SODIUM	3870	36	71	MG_KG	J-	m
OU09 SD110 0012	SE	ANTIMONY	0.05	0.036	0.071	MG_KG	J	m,md
OU09 SD110 0012	SE	SELENIUM	0.36	0.36	0.36	MG_KG	U	be

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SD110 0012W	SE	SODIUM	4130	31	62	MG_KG	J-	m
OU09 SD110 0012W	SE	ANTIMONY	0.04	0.031	0.062	MG_KG	J	m,md
OU09 SD110 0012W	SE	SELENIUM	0.31	0.31	0.31	MG_KG	U	be
OU09 SD110 1224	SE	SODIUM	2510	40	80	MG_KG	J-	m
OU09 SD110 1224	SE	ANTIMONY	0.05	0.040	0.080	MG_KG	J	m,md
OU09 SD110 1224	SE	CADMIUM	0.080	0.080	0.080	MG_KG	U	be
OU09 SD110 1224	SE	SELENIUM	0.40	0.40	0.40	MG_KG	U	be
OU09 SD110 2436	SE	SODIUM	2220	36	72	MG_KG	J-	m
OU09 SD110 2436	SE	ANTIMONY	0.04	0.036	0.072	MG_KG	J	m,md
OU09 SD110 2436	SE	CADMIUM	0.072	0.072	0.072	MG_KG	U	be
OU09 SD110 2436	SE	SELENIUM	0.36	0.36	0.36	MG_KG	U	be
OU09 SD109 0012	SE	CADMIUM	0.00102	0.00102	0.00102	UMOL_G	U	bl
OU09 SD109 0012	SE	ZINC	0.0621	0.0621	0.0070	UMOL_G	U	bl
OU09 SD110 0012	SE	CADMIUM	0.0024	0.0024	0.0024	UMOL_G	U	bl

Attachment A

Non Conformance Summary Tables

Table A-1a Lab Blanks

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
PBSGL06ICS1	ALUMINUM	3.980	10	30	MG_KG	OU09 SD109 0012 OU09 SD110 0012
PBSGL06ICS1	CALCIUM	10.040	8.0	10	MG_KG	OU09 SD109 0012 OU09 SD110 0012
PBSGL06ICS1	IRON	2.563	8.0	10	MG_KG	OU09 SD109 0012 OU09 SD110 0012
PBSGL06ICS1	MAGNESIUM	1.937	8.0	10	MG_KG	OU09 SD109 0012 OU09 SD110 0012
PBSGL06ICS1	SODIUM	7.212	50	100	MG_KG	OU09 SD109 0012 OU09 SD110 0012
PBSGL06IMS1	CHROMIUM, TOTAL	0.051	0.40	0.50	MG_KG	OU09 SD109 0012 OU09 SD110 0012
PBSGL06IMS1	COPPER	0.172	0.20	0.30	MG_KG	OU09 SD109 0012 OU09 SD110 0012
PBSGL06IMS1	LEAD	0.054	0.050	0.10	MG_KG	OU09 SD109 0012 OU09 SD110 0012
PBSGL06IMS1	MANGANESE	0.057	0.10	0.20	MG_KG	OU09 SD109 0012 OU09 SD110 0012
PBSGL06IMS1	NICKEL	0.099	0.12	0.20	MG_KG	OU09 SD109 0012 OU09 SD110 0012
PBSGL06IMS1	ZINC	1.954	0.80	1.0	MG_KG	OU09 SD109 0012 OU09 SD110 0012
PBSGL18ICS1	ALUMINUM	4.839	10	30	MG_KG	OU09 SD108 1224
PBSGL18ICS1	CALCIUM	5.695	8.0	10	MG_KG	OU09 SD108 1224
PBSGL18ICS1	IRON	3.438	8.0	10	MG_KG	OU09 SD108 1224
PBSGL18ICS1	MAGNESIUM	1.806	8.0	10	MG_KG	OU09 SD108 1224
PBSGL18ICS1	SODIUM	6.912	50	100	MG_KG	OU09 SD108 1224
PBSGL18ICS2	ALUMINUM	1.103	10	30	MG_KG	FD-01_SE_120313 FD-02_SE_120313 OU09 SD108 0612 OU09 SD108 2436 OU09 SD109 0012W OU09 SD109 1224 OU09 SD109 2436 OU09 SD110 0012W OU09 SD110 1224 OU09 SD110 2436

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
PBSGL18ICS2	CALCIUM	6.372	8.0	10	MG_KG	FD-01_SE_120313 FD-02_SE_120313 OU09 SD108 0612 OU09 SD108 2436 OU09 SD109 0012W OU09 SD109 1224 OU09 SD109 2436 OU09 SD110 0012W OU09 SD110 1224 OU09 SD110 2436
PBSGL18ICS2	IRON	2.049	8.0	10	MG_KG	FD-01_SE_120313 FD-02_SE_120313 OU09 SD108 0612 OU09 SD108 2436 OU09 SD109 0012W OU09 SD109 1224 OU09 SD109 2436 OU09 SD110 0012W OU09 SD110 1224 OU09 SD110 2436
PBSGL18ICS2	MAGNESIUM	2.000	8.0	10	MG_KG	FD-01_SE_120313 FD-02_SE_120313 OU09 SD108 0612 OU09 SD108 2436 OU09 SD109 0012W OU09 SD109 1224 OU09 SD109 2436 OU09 SD110 0012W OU09 SD110 1224 OU09 SD110 2436
PBSGL18ICS2	POTASSIUM	2.939	50	100	MG_KG	FD-01_SE_120313 FD-02_SE_120313 OU09 SD108 0612 OU09 SD108 2436 OU09 SD109 0012W OU09 SD109 1224 OU09 SD109 2436 OU09 SD110 0012W OU09 SD110 1224 OU09 SD110 2436
PBSGL18ICS2	SODIUM	13.610	50	100	MG_KG	FD-01_SE_120313 FD-02_SE_120313 OU09 SD108 0612 OU09 SD108 2436 OU09 SD109 0012W OU09 SD109 1224 OU09 SD109 2436 OU09 SD110 0012W OU09 SD110 1224 OU09 SD110 2436
PBSGL18IMS1	BARIUM	0.072	0.10	0.20	MG_KG	OU09 SD108 1224

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
PBSGL18IMS1	CHROMIUM, TOTAL	0.105	0.40	0.50	MG_KG	OU09 SD108 1224
PBSGL18IMS1	COPPER	0.357	0.20	0.30	MG_KG	OU09 SD108 1224
PBSGL18IMS1	LEAD	0.076	0.050	0.10	MG_KG	OU09 SD108 1224
PBSGL18IMS1	MANGANESE	0.049	0.10	0.20	MG_KG	OU09 SD108 1224
PBSGL18IMS1	NICKEL	0.156	0.12	0.20	MG_KG	OU09 SD108 1224
PBSGL18IMS2	CHROMIUM, TOTAL	0.087	0.40	0.50	MG_KG	FD-01_SE_120313 FD-02_SE_120313 OU09 SD108 0612 OU09 SD108 2436 OU09 SD109 0012W OU09 SD109 1224 OU09 SD109 2436 OU09 SD110 0012W OU09 SD110 1224 OU09 SD110 2436
PBSGL18IMS2	COPPER	0.226	0.20	0.30	MG_KG	FD-01_SE_120313 FD-02_SE_120313 OU09 SD108 0612 OU09 SD108 2436 OU09 SD109 0012W OU09 SD109 1224 OU09 SD109 2436 OU09 SD110 0012W OU09 SD110 1224 OU09 SD110 2436
PBSGL18IMS2	LEAD	0.085	0.050	0.10	MG_KG	FD-01_SE_120313 FD-02_SE_120313 OU09 SD108 0612 OU09 SD108 2436 OU09 SD109 0012W OU09 SD109 1224 OU09 SD109 2436 OU09 SD110 0012W OU09 SD110 1224 OU09 SD110 2436
PBSGL18IMS2	MANGANESE	0.184	0.10	0.20	MG_KG	FD-01_SE_120313 FD-02_SE_120313 OU09 SD108 0612 OU09 SD108 2436 OU09 SD109 0012W OU09 SD109 1224 OU09 SD109 2436 OU09 SD110 0012W OU09 SD110 1224 OU09 SD110 2436

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
PBSGL18IMS2	NICKEL	0.096	0.12	0.20	MG_KG	FD-01_SE_120313 FD-02_SE_120313 OU09 SD108 0612 OU09 SD108 2436 OU09 SD109 0012W OU09 SD109 1224 OU09 SD109 2436 OU09 SD110 0012W OU09 SD110 1224 OU09 SD110 2436
PBSGL18IMS2	ZINC	1.928	0.80	1.0	MG_KG	FD-01_SE_120313 FD-02_SE_120313 OU09 SD108 0612 OU09 SD108 2436 OU09 SD109 0012W OU09 SD109 1224 OU09 SD109 2436 OU09 SD110 0012W OU09 SD110 1224 OU09 SD110 2436
PBSGL18IMS2	BARIUM	0.105	0.10	0.20	MG_KG	FD-01_SE_120313 FD-02_SE_120313 OU09 SD108 0612 OU09 SD108 2436 OU09 SD109 0012W OU09 SD109 1224 OU09 SD109 2436 OU09 SD110 0012W OU09 SD110 1224 OU09 SD110 2436
PBSGL18IMS1	ZINC	1.515	0.80	1.0	MG_KG	OU09 SD108 1224
PBSGL08ICS1	CADMIUM	0.000018	0.030	0.050	UMOL_G	OU09 SD109 0012 OU09 SD110 0012
PBSGL08ICS1	COPPER	0.00088	0.10	0.25	UMOL_G	OU09 SD109 0012 OU09 SD110 0012
PBSGL08ICS1	NICKEL	0.00167	0.040	0.10	UMOL_G	OU09 SD109 0012 OU09 SD110 0012
PBSGL08ICS1	ZINC	0.0134	0.10	0.20	UMOL_G	OU09 SD109 0012 OU09 SD110 0012

Table A-1b Field Blanks

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
RB-01_120313	ALUMINUM	16.6	100	300	UG_L	FD-01_SE_120313 FD-02_SE_120313 OU09 SD108 0612 OU09 SD108 1224 OU09 SD108 2436 OU09 SD109 0012 OU09 SD109 0012W OU09 SD109 1224 OU09 SD109 2436 OU09 SD110 0012 OU09 SD110 0012W OU09 SD110 1224 OU09 SD110 2436
RB-01_120313	CALCIUM	76.1	80	100	UG_L	FD-01_SE_120313 FD-02_SE_120313 OU09 SD108 0612 OU09 SD108 1224 OU09 SD108 2436 OU09 SD109 0012 OU09 SD109 0012W OU09 SD109 1224 OU09 SD109 2436 OU09 SD110 0012 OU09 SD110 0012W OU09 SD110 1224 OU09 SD110 2436
RB-01_120313	IRON	120	80	100	UG_L	FD-01_SE_120313 FD-02_SE_120313 OU09 SD108 0612 OU09 SD108 1224 OU09 SD108 2436 OU09 SD109 0012 OU09 SD109 0012W OU09 SD109 1224 OU09 SD109 2436 OU09 SD110 0012 OU09 SD110 0012W OU09 SD110 1224 OU09 SD110 2436

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
RB-01_120313	MAGNESIUM	24.4	80	100	UG_L	FD-01_SE_120313 FD-02_SE_120313 OU09 SD108 0612 OU09 SD108 1224 OU09 SD108 2436 OU09 SD109 0012 OU09 SD109 0012W OU09 SD109 1224 OU09 SD109 2436 OU09 SD110 0012 OU09 SD110 0012W OU09 SD110 1224 OU09 SD110 2436
RB-01_120313	POTASSIUM	50.6	500	1000	UG_L	FD-01_SE_120313 FD-02_SE_120313 OU09 SD108 0612 OU09 SD108 1224 OU09 SD108 2436 OU09 SD109 0012 OU09 SD109 0012W OU09 SD109 1224 OU09 SD109 2436 OU09 SD110 0012 OU09 SD110 0012W OU09 SD110 1224 OU09 SD110 2436
RB-01_120313	SODIUM	78.0	500	1000	UG_L	FD-01_SE_120313 FD-02_SE_120313 OU09 SD108 0612 OU09 SD108 1224 OU09 SD108 2436 OU09 SD109 0012 OU09 SD109 0012W OU09 SD109 1224 OU09 SD109 2436 OU09 SD110 0012 OU09 SD110 0012W OU09 SD110 1224 OU09 SD110 2436
RB-01_120313	ANTIMONY	0.12	0.50	1.0	UG_L	FD-01_SE_120313 FD-02_SE_120313 OU09 SD108 0612 OU09 SD108 1224 OU09 SD108 2436 OU09 SD109 0012 OU09 SD109 0012W OU09 SD109 1224 OU09 SD109 2436 OU09 SD110 0012 OU09 SD110 0012W OU09 SD110 1224 OU09 SD110 2436

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
RB-01_120313	BARIUM	0.59	1.0	2.0	UG_L	FD-01_SE_120313 FD-02_SE_120313 OU09 SD108 0612 OU09 SD108 1224 OU09 SD108 2436 OU09 SD109 0012 OU09 SD109 0012W OU09 SD109 1224 OU09 SD109 2436 OU09 SD110 0012 OU09 SD110 0012W OU09 SD110 1224 OU09 SD110 2436
RB-01_120313	CADMIUM	0.06	0.20	1.0	UG_L	FD-01_SE_120313 FD-02_SE_120313 OU09 SD108 0612 OU09 SD108 1224 OU09 SD108 2436 OU09 SD109 0012 OU09 SD109 0012W OU09 SD109 1224 OU09 SD109 2436 OU09 SD110 0012 OU09 SD110 0012W OU09 SD110 1224 OU09 SD110 2436
RB-01_120313	CHROMIUM, TOTAL	0.77	4.0	5.0	UG_L	FD-01_SE_120313 FD-02_SE_120313 OU09 SD108 0612 OU09 SD108 1224 OU09 SD108 2436 OU09 SD109 0012 OU09 SD109 0012W OU09 SD109 1224 OU09 SD109 2436 OU09 SD110 0012 OU09 SD110 0012W OU09 SD110 1224 OU09 SD110 2436
RB-01_120313	COBALT	0.07	0.30	1.0	UG_L	FD-01_SE_120313 FD-02_SE_120313 OU09 SD108 0612 OU09 SD108 1224 OU09 SD108 2436 OU09 SD109 0012 OU09 SD109 0012W OU09 SD109 1224 OU09 SD109 2436 OU09 SD110 0012 OU09 SD110 0012W OU09 SD110 1224 OU09 SD110 2436

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
RB-01_120313	COPPER	4.6	2.0	3.0	UG_L	FD-01_SE_120313 FD-02_SE_120313 OU09 SD108 0612 OU09 SD108 1224 OU09 SD108 2436 OU09 SD109 0012 OU09 SD109 0012W OU09 SD109 1224 OU09 SD109 2436 OU09 SD110 0012 OU09 SD110 0012W OU09 SD110 1224 OU09 SD110 2436
RB-01_120313	LEAD	0.69	0.50	1.0	UG_L	FD-01_SE_120313 FD-02_SE_120313 OU09 SD108 0612 OU09 SD108 1224 OU09 SD108 2436 OU09 SD109 0012 OU09 SD109 0012W OU09 SD109 1224 OU09 SD109 2436 OU09 SD110 0012 OU09 SD110 0012W OU09 SD110 1224 OU09 SD110 2436
RB-01_120313	MANGANESE	1.5	1.0	2.0	UG_L	FD-01_SE_120313 FD-02_SE_120313 OU09 SD108 0612 OU09 SD108 1224 OU09 SD108 2436 OU09 SD109 0012 OU09 SD109 0012W OU09 SD109 1224 OU09 SD109 2436 OU09 SD110 0012 OU09 SD110 0012W OU09 SD110 1224 OU09 SD110 2436
RB-01_120313	NICKEL	0.34	1.2	2.0	UG_L	FD-01_SE_120313 FD-02_SE_120313 OU09 SD108 0612 OU09 SD108 1224 OU09 SD108 2436 OU09 SD109 0012 OU09 SD109 0012W OU09 SD109 1224 OU09 SD109 2436 OU09 SD110 0012 OU09 SD110 0012W OU09 SD110 1224 OU09 SD110 2436

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
RB-01_120313	SELENIUM	0.38	3.0	5.0	UG_L	FD-01_SE_120313 FD-02_SE_120313 OU09 SD108 0612 OU09 SD108 1224 OU09 SD108 2436 OU09 SD109 0012 OU09 SD109 0012W OU09 SD109 1224 OU09 SD109 2436 OU09 SD110 0012 OU09 SD110 0012W OU09 SD110 1224 OU09 SD110 2436
RB-01_120313	VANADIUM	1.1	4.0	5.0	UG_L	FD-01_SE_120313 FD-02_SE_120313 OU09 SD108 0612 OU09 SD108 1224 OU09 SD108 2436 OU09 SD109 0012 OU09 SD109 0012W OU09 SD109 1224 OU09 SD109 2436 OU09 SD110 0012 OU09 SD110 0012W OU09 SD110 1224 OU09 SD110 2436
RB-01_120313	ZINC	5.5	8.0	10	UG_L	FD-01_SE_120313 FD-02_SE_120313 OU09 SD108 0612 OU09 SD108 1224 OU09 SD108 2436 OU09 SD109 0012 OU09 SD109 0012W OU09 SD109 1224 OU09 SD109 2436 OU09 SD110 0012 OU09 SD110 0012W OU09 SD110 1224 OU09 SD110 2436

Table A-2 Matrix Spikes / Matrix Spike Duplicates

Sample ID	Compound	MS % Recovery	MSD % Recovery	Lower Limit	Upper Limit	RPD	RPD Limit
OU09 SD108 1224	SODIUM	79.2	56.1	80	120	3.2	20
OU09 SD108 1224	ANTIMONY	49.3	56.1	80	120	27.1	20
OU09 SD110 2436	ANTIMONY	40.5	38.5	80	120	9.7	20

Attachment B

Qualifier Codes and Explanations

Qualifier	Explanation
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
UJ	The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual quantitation limit necessary to accurately and precisely measure the analyte in the sample.
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

Attachment C

Reason Codes and Explanations

Reason Code	Explanation
be	Equipment blank contamination
bf	Field blank contamination
bl	Laboratory blank contamination
c	Calibration issue
d	Reporting limit raised due to chromatographic interference
fd	Field duplicate RPDs
h	Holding times
i	Internal standard areas
k	Estimated Maximum Possible Concentration (EMPC)
l	LCS recoveries
lc	Labeled compound recovery
ld	Laboratory duplicate RPDs
lp	Laboratory control sample/laboratory control sample duplicate RPDs
m	Matrix spike recovery
md	Matrix spike/matrix spike duplicate RPDs
nb	Negative laboratory blank contamination
p	Chemical preservation issue
r	Dual column RPD
q	Quantitation issue
s	Surrogate recovery
su	Ion suppression
t	Temperature preservation issue
x	Percent solids
y	Serial dilution results
z	ICS results

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Data Validation Report

Project:	MRP Site 1 (OU9) Remedial Investigation, NAVSTA Newport, Rhode Island CTO WE06
Laboratory:	Katahdin Analytical Services, Scarborough, Maine
Service Request:	CARR-4
Analyses/Method:	TAL Metals/ EPA SW-846 Methods 6010C, 6020A, 7471B Acid Volatile Sulfide/Simultaneously Extracted Metals / EPA 821/R-91-100
Validation Level:	Limited
Resolution Consultants Project Number:	60250336 SA.DV
Prepared by:	Kristin Rutherford/Resolution Consultants Completed on: 02/21/2014
Reviewed by:	Waverly Braunstein/Resolution Consultants File Name: CARR-4_SE_Metals_AVSSEM_DVRpt

SUMMARY

The samples listed below were collected by Resolution Consultants from MRP Site 1 (OU9), NAVSTA Newport, Rhode Island on December 4 and 5, 2013.

Sample ID	Matrix/Sample Type
OU09 SD111 0012	Sediment
OU09 SD111 0012W	Sediment
OU09 SD111 1224	Sediment
OU09 SD111 2436	Sediment
OU09 SD120 0012	Sediment
OU09 SD120 0012W	Sediment
OU09 SD120 1224	Sediment
OU09 SD120 2436	Sediment
OU09 SD121 0012	Sediment
OU09 SD121 0012W	Sediment
OU09 SD121 1224	Sediment
OU09 SD121 2436	Sediment

The data have been validated in accordance with the project-specific Sampling and Analysis Plan, *Sampling and Analysis Plan, Former Carr Point Shooting Range (MRP Site 1, OU9), Naval Station (NAVSTA) Newport, Rhode Island, Final* (Naval Facilities Engineering Command, Mid-Atlantic, 2013) and the following references:

- *DoD Quality Systems Manual (QMS) for Environmental Laboratories, version 4.2* (DoD EDQW, 2010);
- *USEPA Region 1, EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses* (December 1996);

- *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review* (January 2010);
- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW846, Method 6010C, Inductively Coupled Plasma-Atomic Emission Spectrometry* (USEPA, 1996);
- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW846, Method 6020A, Inductively Coupled Plasma-Mass Spectrometry* (USEPA, 1996);
- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW846, Method 7471B, Mercury in Solid or Semisolid Waste (Manual Cold-Vapor Technique)* (USEPA, 1996);
- *Draft Analytical Method for Determination of Acid Volatile Sulfide in Sediment, Method 821/R-91-100* (USEPA, 1991);
- laboratory quality control (QC) limits, as applicable.

The USEPA Region 1 and National Data Validation Functional Guidelines were modified to accommodate the non-CLP methodologies. In the absence of method-specific direction for validation, Resolution Consultants professional judgment was used as appropriate.

REVIEW ELEMENTS

The data were evaluated based on the following parameters (where applicable to the method):

✓	Data completeness (chain-of-custody (COC)/sample integrity
✓	Holding times and sample preservation
✓	ICP/MS Instrument tuning
✓	Initial calibration/continuing calibration verification
✗	Laboratory blanks/equipment blanks
✓	ICP interference check standards
✗	Matrix spike (MS) and/or matrix spike duplicate (MSD) results
✓	Laboratory duplicate results
✗	Laboratory control sample (LCS)/laboratory control sample duplicate (LCSD) results
✓	Field duplicates
NA	ICP/ICPMS serial dilution results
✓	ICP/MS internal standard performance
✓	Sample results/reporting issues

The symbol (✓) indicates that no validation qualifiers were applied based on this parameter. NA indicates that the parameter was not included as part of this data set or was not applicable to this validation and therefore not reviewed. The symbol (✗) indicates that a quality control (QC) nonconformance resulted in the qualification of data. Any QC nonconformance that resulted in the qualification of data is discussed below. In addition, nonconformances or other issues that were noted during validation, but did not result in qualification of data, may be discussed for informational purposes only.

The data appear valid as reported and may be used for decision making purposes. Selected data points were estimated, negated, and/or rejected due to nonconformances of certain QC criteria (see discussion below). Qualified sample results are presented in Table 1.

RESULTS

Data Completeness

The data package was reviewed and found to meet acceptance criteria for completeness:

- The COCs were reviewed for completeness of information relevant to the samples and requested analyses, and for signatures indicating transfer of sample custody.
- The laboratory sample login sheet(s) were reviewed for issues potentially affecting sample integrity, including the condition of sample containers upon receipt at the laboratory.
- Completeness of analyses was verified by comparing the reported results to the COC requests.

Holding Times/Sample Preservation

Sample preservation and preparation/analysis holding times were reviewed for conformance with the QC acceptance criteria. The QC acceptance criteria were met.

ICP/MS Instrument Tuning

ICP/MS tuning results were reviewed for conformance with the QC acceptance criteria to ensure that:

- the proper tuning solution was used with elements representing all of the mass regions of interest;
- the tunings were performed at the beginning of each analysis and prior to calibration;
- the tuning solution was analyzed at least 4 times as required by the method;
- the mass calibration was within 0.1 amu of the true value for all masses within the region of interest;
- the resolution was verified to be <0.9 amu full width at 10% peak height; and
- the %RSD was $\leq$ 5% for the analytes contained in the tuning solution.

The QC acceptance criteria were met.

Initial Calibration/Continuing Calibration Verification

Calibration data were reviewed for conformance with the QC acceptance criteria to ensure that:

- all criteria were met for the calibration curves
- the initial calibration verification (ICV) percent recovery (%R) criteria were met;
- the continuing calibration verification standard (CCV) method percent difference (%Ds) were met; and
- the low level check standards (CRI or CRA) %R criteria were met.

The QC acceptance criteria were met.

Laboratory Blanks/Equipment Blanks

Laboratory method blanks and equipment rinsate blanks were evaluated as to whether there were contaminants detected above the method detection limit (MDL). Data validation qualifications for individual samples are based on the maximum contaminant concentration detected in all associated blanks.

Method and equipment rinsate results were reviewed for conformance with the QC acceptance criteria. Detected results in blanks are not discussed in this data validation report if the associated results were nondetect or if qualification of sample results was not required.

Nonconformances are summarized in Attachment A in Table A-1a and A-1b. Sample results were qualified as follows:

Blank Type	Blank Result	Sample Result	Action for Samples
PB / EB/ FB (Positive)	> LOQ	≥IDL/MDL but ≤ LOQ	Qualify as nondetect (U) at the LOQ
		>LOQ but < 10x Blank Result	Qualify results as unusable
		≥10x Blank Result	No action
	≥IDL/MDL but ≤LOQ	Nondetect	No action
		≥IDL/MDL but ≤LOQ	Qualify as nondetect (U) at the LOQ
		> LOQ	Use Resolution Consultants professional judgment (see below [1])
PB (Negative)	< (-LOQ)	< 10x LOQ	Qualify positive results <10x LOQ as estimated (J) and nondetects as estimated (UJ)
		≥10x LOQ	No action

[1] Establish an action level (AL) at 5x the blank contamination. If sample result is <AL, qualify the reported result with a U.

Qualified sample results are shown in Table 1.

ICP Interference Check Standards

The ICP interference check standards (ICSA, ICSAB) were reviewed for conformance.

All criteria were met for the ICSA and ICSAB.

MS Results

Matrix spike analyses were performed on a site sample for AVS/SEM Metals only.

The MS and/or MSD %Rs and/or RPDs were reviewed for conformance with the QC acceptance criteria.

Nonconformances are summarized in Attachment A in Table A-2. Data qualification on the basis of MS and/or MSD nonconformances was as follows:

Qualify Results	%R < 30	80 > %R ≥ 30	%R >120	RPD>20
Detected results	J	J	J	J
Nondetects	R	UJ	Accept	UJ

Notes: MS actions apply to all samples of the same matrix. This qualification will also be applied to the results of all samples within a given area of the site, if deemed appropriate.

1. If the sample result (SR) > 4x the spike concentration (S), no action is taken.
2. If any analyte does not meet the %R criteria and a post digestion spike (PDS) analysis was performed, use professional judgment to assess the results. Refer to the National Functional Guidelines (NFG) 2010 for recommended actions.
3. If either the MS or MSD does not meet %R criteria, qualify all associated samples.

Qualified sample results are shown in Table 1.

Laboratory Duplicate Results

The laboratory duplicate relative percent differences (RPDs) were reviewed for conformance.

The laboratory duplicate RPDs were within the QC acceptance criteria.

LCS/LCSD Results

The LCS/LCSD %Rs and/or RPDs were reviewed for conformance with the QC acceptance criteria.

Nonconformances are summarized in Attachment A in Table A-3. Data qualification on the basis of LCS and/or LCSD %Rs or RPDs was as follows:

LCS	%R < 50	80 > %R = 50	%R > 120%	%R >150%
Positive Sample Results	J-	J-	J+	R
Nondetects	R	UJ	Accept	R

Apply actions to all samples in the same preparation batch.

Qualified sample results are shown in Table 1.

Field Duplicate Results

Field duplicate RPDs were reviewed for conformance with the Resolution Consultants QC acceptance criterion of ≤50% for solid matrices and ≤30% for aqueous matrices. This criterion applies if both results were greater than 5 times the limit of quantitation (LOQ).

All field duplicate precision criteria were met.

ICP/ICPMS Serial Dilution Results

The serial dilution analyses were not performed on a site sample; therefore, batch QC was not assessed.

ICP/MS Internal Standard Performance

ICP/MS Internal standard performance was reviewed for conformance and was within the QC acceptance criteria.

Sample Results/Reporting Issues

All analytes detected at concentrations less than the limit of quantitation (LOQ) but greater than the method detection limit (MDL) were qualified by the laboratory as estimated (J). This "J" qualifier was retained during data validation.

Resolution Consultants professional judgment was used to qualify sample results with percent solids that were <30%. All criteria were met.

QUALIFICATION ACTIONS

Sample results qualified as a result of validation actions are summarized in Table 1. All actions are described above.

ATTACHMENTS

Attachment A: Nonconformance Summary Tables

Attachment B: Qualifier Codes and Explanations

Attachment C: Reason Codes and Explanations

Table 1 - Data Validation Summary of Qualified Data

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SD111 0012	SE	ACID VOLATILE SULFIDES	2.1	0.74	0.97	UMOL_G	J-	m
OU09 SD111 0012	SE	CADMIUM	0.00103	0.00103	0.00103	UMOL_G	U	bl
OU09 SD111 0012	SE	MERCURY	0.000021	0.000021	0.000023	UMOL_G	R	m
OU09 SD111 0012	SE	NICKEL	0.0069	0.0069	0.0040	UMOL_G	U	bl
OU09 SD111 0012W	SE	ANTIMONY	0.10	0.10	0.10	MG_KG	U	be
OU09 SD111 0012W	SE	SELENIUM	0.52	0.52	0.52	MG_KG	U	be
OU09 SD111 0012W	SE	MERCURY	0.02	0.016	0.031	MG_KG	U	bl
OU09 SD111 1224	SE	MERCURY	0.01	0.014	0.028	MG_KG	U	bl
OU09 SD111 2436	SE	ANTIMONY	0.076	0.076	0.076	MG_KG	U	be
OU09 SD111 2436	SE	MERCURY	0.01	0.016	0.032	MG_KG	U	bl
OU09 SD120 0012	SE	SELENIUM	0.39	0.39	0.39	MG_KG	U	be
OU09 SD120 0012	SE	ACID VOLATILE SULFIDES	1.7	0.37	0.49	UMOL_G	J-	m
OU09 SD120 0012	SE	CADMIUM	0.00100	0.00100	0.00100	UMOL_G	U	bl
OU09 SD120 0012	SE	MERCURY	0.000020	0.000020	0.000022	UMOL_G	R	m
OU09 SD120 0012	SE	NICKEL	0.0083	0.0083	0.0038	UMOL_G	U	bl
OU09 SD121 0012	SE	ACID VOLATILE SULFIDES	0.091	0.091	0.12	UMOL_G	UJ	m
OU09 SD121 0012	SE	CADMIUM	0.00098	0.00098	0.00098	UMOL_G	U	bl
OU09 SD121 0012	SE	MERCURY	0.000018	0.000020	0.000022	UMOL_G	J	m,l
OU09 SD121 0012	SE	NICKEL	0.00615	0.00615	0.00375	UMOL_G	U	bl
OU09 SD121 0012	SE	ZINC	0.0582	0.0582	0.0067	UMOL_G	U	bl
OU09 SD121 0012W	SE	SELENIUM	0.44	0.44	0.44	MG_KG	U	be
OU09 SD121 0012W	SE	MERCURY	0.02	0.019	0.037	MG_KG	U	bl

Attachment A

Non Conformance Summary Tables

Table A-1a Lab Blanks

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
PBSGL08ICS1	CADMIUM	0.000018	0.030	0.050	UMOL_G	OU09 SD111 0012 OU09 SD120 0012 OU09 SD121 0012
PBSGL08ICS1	COPPER	0.00088	0.10	0.25	UMOL_G	OU09 SD111 0012 OU09 SD120 0012 OU09 SD121 0012
PBSGL08ICS1	NICKEL	0.00167	0.040	0.10	UMOL_G	OU09 SD111 0012 OU09 SD120 0012 OU09 SD121 0012
PBSGL08ICS1	ZINC	0.0134	0.10	0.20	UMOL_G	OU09 SD111 0012 OU09 SD120 0012 OU09 SD121 0012
PBSGL30HGS3	MERCURY	0.005	0.017	0.033	MG_KG	OU09 SD111 0012W OU09 SD111 1224 OU09 SD111 2436 OU09 SD121 0012W
PBSGL06ICS1	ALUMINUM	3.980	10	30	MG_KG	OU09 SD111 0012 OU09 SD121 0012
PBSGL06ICS1	CALCIUM	10.040	8.0	10	MG_KG	OU09 SD111 0012 OU09 SD121 0012
PBSGL06ICS1	IRON	2.563	8.0	10	MG_KG	OU09 SD111 0012 OU09 SD121 0012
PBSGL06ICS1	MAGNESIUM	1.937	8.0	10	MG_KG	OU09 SD111 0012 OU09 SD121 0012
PBSGL06ICS1	SODIUM	7.212	50	100	MG_KG	OU09 SD111 0012 OU09 SD121 0012
PBSGL06IMS1	CHROMIUM, TOTAL	0.051	0.40	0.50	MG_KG	OU09 SD111 0012 OU09 SD121 0012
PBSGL06IMS1	COPPER	0.172	0.20	0.30	MG_KG	OU09 SD111 0012 OU09 SD121 0012
PBSGL06IMS1	LEAD	0.054	0.050	0.10	MG_KG	OU09 SD111 0012 OU09 SD121 0012
PBSGL06IMS1	MANGANESE	0.057	0.10	0.20	MG_KG	OU09 SD111 0012 OU09 SD121 0012
PBSGL06IMS1	NICKEL	0.099	0.12	0.20	MG_KG	OU09 SD111 0012 OU09 SD121 0012
PBSGL06IMS1	ZINC	1.954	0.80	1.0	MG_KG	OU09 SD111 0012 OU09 SD121 0012
PBSGL09ICS1	ALUMINUM	2.193	10	30	MG_KG	OU09 SD120 0012
PBSGL09ICS1	CALCIUM	4.112	8.0	10	MG_KG	OU09 SD120 0012
PBSGL09ICS1	MAGNESIUM	1.184	8.0	10	MG_KG	OU09 SD120 0012

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
PBSGL09ICS1	POTASSIUM	7.959	50	100	MG_KG	OU09 SD120 0012
PBSGL09ICS1	SODIUM	6.772	50	100	MG_KG	OU09 SD120 0012
PBSGL09IMS1	BARIUM	0.165	0.10	0.20	MG_KG	OU09 SD120 0012
PBSGL09IMS1	CHROMIUM, TOTAL	0.116	0.40	0.50	MG_KG	OU09 SD120 0012
PBSGL09IMS1	COPPER	0.390	0.20	0.30	MG_KG	OU09 SD120 0012
PBSGL09IMS1	LEAD	0.192	0.050	0.10	MG_KG	OU09 SD120 0012
PBSGL09IMS1	MANGANESE	0.074	0.10	0.20	MG_KG	OU09 SD120 0012
PBSGL09IMS1	NICKEL	0.651	0.12	0.20	MG_KG	OU09 SD120 0012
PBSGL09IMS1	ZINC	4.673	0.80	1.0	MG_KG	OU09 SD120 0012
PBSGL20ICS1	ALUMINUM	3.202	10	30	MG_KG	OU09 SD111 0012W OU09 SD111 1224 OU09 SD111 2436 OU09 SD120 0012W OU09 SD120 1224 OU09 SD120 2436 OU09 SD121 0012W OU09 SD121 1224 OU09 SD121 2436
PBSGL20ICS1	CALCIUM	7.562	8.0	10	MG_KG	OU09 SD111 0012W OU09 SD111 1224 OU09 SD111 2436 OU09 SD120 0012W OU09 SD120 1224 OU09 SD120 2436 OU09 SD121 0012W OU09 SD121 1224 OU09 SD121 2436
PBSGL20ICS1	IRON	3.129	8.0	10	MG_KG	OU09 SD111 0012W OU09 SD111 1224 OU09 SD111 2436 OU09 SD120 0012W OU09 SD120 1224 OU09 SD120 2436 OU09 SD121 0012W OU09 SD121 1224 OU09 SD121 2436
PBSGL20ICS1	MAGNESIUM	3.002	8.0	10	MG_KG	OU09 SD111 0012W OU09 SD111 1224 OU09 SD111 2436 OU09 SD120 0012W OU09 SD120 1224 OU09 SD120 2436 OU09 SD121 0012W OU09 SD121 1224 OU09 SD121 2436

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
PBSGL20ICS1	POTASSIUM	3.682	50	100	MG_KG	OU09 SD111 0012W OU09 SD111 1224 OU09 SD111 2436 OU09 SD120 0012W OU09 SD120 1224 OU09 SD120 2436 OU09 SD121 0012W OU09 SD121 1224 OU09 SD121 2436
PBSGL20ICS1	SODIUM	7.882	50	100	MG_KG	OU09 SD111 0012W OU09 SD111 1224 OU09 SD111 2436 OU09 SD120 0012W OU09 SD120 1224 OU09 SD120 2436 OU09 SD121 0012W OU09 SD121 1224 OU09 SD121 2436
PBSGL20IMS1	BARIUM	0.085	0.10	0.20	MG_KG	OU09 SD111 0012W OU09 SD111 1224 OU09 SD111 2436 OU09 SD120 0012W OU09 SD120 1224 OU09 SD120 2436 OU09 SD121 0012W OU09 SD121 1224 OU09 SD121 2436
PBSGL20IMS1	CHROMIUM, TOTAL	0.089	0.40	0.50	MG_KG	OU09 SD111 0012W OU09 SD111 1224 OU09 SD111 2436 OU09 SD120 0012W OU09 SD120 1224 OU09 SD120 2436 OU09 SD121 0012W OU09 SD121 1224 OU09 SD121 2436
PBSGL20IMS1	COPPER	0.328	0.20	0.30	MG_KG	OU09 SD111 0012W OU09 SD111 1224 OU09 SD111 2436 OU09 SD120 0012W OU09 SD120 1224 OU09 SD120 2436 OU09 SD121 0012W OU09 SD121 1224 OU09 SD121 2436

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
PBSGL20IMS1	LEAD	0.077	0.050	0.10	MG_KG	OU09 SD111 0012W OU09 SD111 1224 OU09 SD111 2436 OU09 SD120 0012W OU09 SD120 1224 OU09 SD120 2436 OU09 SD121 0012W OU09 SD121 1224 OU09 SD121 2436
PBSGL20IMS1	MANGANESE	0.069	0.10	0.20	MG_KG	OU09 SD111 0012W OU09 SD111 1224 OU09 SD111 2436 OU09 SD120 0012W OU09 SD120 1224 OU09 SD120 2436 OU09 SD121 0012W OU09 SD121 1224 OU09 SD121 2436
PBSGL20IMS1	NICKEL	0.082	0.12	0.20	MG_KG	OU09 SD111 0012W OU09 SD111 1224 OU09 SD111 2436 OU09 SD120 0012W OU09 SD120 1224 OU09 SD120 2436 OU09 SD121 0012W OU09 SD121 1224 OU09 SD121 2436
PBSGL20IMS1	ZINC	1.306	0.80	1.0	MG_KG	OU09 SD111 0012W OU09 SD111 1224 OU09 SD111 2436 OU09 SD120 0012W OU09 SD120 1224 OU09 SD120 2436 OU09 SD121 0012W OU09 SD121 1224 OU09 SD121 2436

Table A-1b Field Blanks

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
RB-01_120313	ALUMINUM	16.6	100	300	UG_L	OU09 SD111 0012 OU09 SD111 0012W OU09 SD111 1224 OU09 SD111 2436 OU09 SD120 0012 OU09 SD120 0012W OU09 SD120 1224 OU09 SD120 2436 OU09 SD121 0012 OU09 SD121 0012W OU09 SD121 1224 OU09 SD121 2436
RB-01_120313	CALCIUM	76.1	80	100	UG_L	OU09 SD111 0012 OU09 SD111 0012W OU09 SD111 1224 OU09 SD111 2436 OU09 SD120 0012 OU09 SD120 0012W OU09 SD120 1224 OU09 SD120 2436 OU09 SD121 0012 OU09 SD121 0012W OU09 SD121 1224 OU09 SD121 2436
RB-01_120313	IRON	120	80	100	UG_L	OU09 SD111 0012 OU09 SD111 0012W OU09 SD111 1224 OU09 SD111 2436 OU09 SD120 0012 OU09 SD120 0012W OU09 SD120 1224 OU09 SD120 2436 OU09 SD121 0012 OU09 SD121 0012W OU09 SD121 1224 OU09 SD121 2436
RB-01_120313	MAGNESIUM	24.4	80	100	UG_L	OU09 SD111 0012 OU09 SD111 0012W OU09 SD111 1224 OU09 SD111 2436 OU09 SD120 0012 OU09 SD120 0012W OU09 SD120 1224 OU09 SD120 2436 OU09 SD121 0012 OU09 SD121 0012W OU09 SD121 1224 OU09 SD121 2436

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
RB-01_120313	POTASSIUM	50.6	500	1000	UG_L	OU09 SD111 0012 OU09 SD111 0012W OU09 SD111 1224 OU09 SD111 2436 OU09 SD120 0012 OU09 SD120 0012W OU09 SD120 1224 OU09 SD120 2436 OU09 SD121 0012 OU09 SD121 0012W OU09 SD121 1224 OU09 SD121 2436
RB-01_120313	SODIUM	78.0	500	1000	UG_L	OU09 SD111 0012 OU09 SD111 0012W OU09 SD111 1224 OU09 SD111 2436 OU09 SD120 0012 OU09 SD120 0012W OU09 SD120 1224 OU09 SD120 2436 OU09 SD121 0012 OU09 SD121 0012W OU09 SD121 1224 OU09 SD121 2436
RB-01_120313	ANTIMONY	0.12	0.50	1.0	UG_L	OU09 SD111 0012 OU09 SD111 0012W OU09 SD111 1224 OU09 SD111 2436 OU09 SD120 0012 OU09 SD120 0012W OU09 SD120 1224 OU09 SD120 2436 OU09 SD121 0012 OU09 SD121 0012W OU09 SD121 1224 OU09 SD121 2436
RB-01_120313	BARIUM	0.59	1.0	2.0	UG_L	OU09 SD111 0012 OU09 SD111 0012W OU09 SD111 1224 OU09 SD111 2436 OU09 SD120 0012 OU09 SD120 0012W OU09 SD120 1224 OU09 SD120 2436 OU09 SD121 0012 OU09 SD121 0012W OU09 SD121 1224 OU09 SD121 2436

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
RB-01_120313	CADMIUM	0.06	0.20	1.0	UG_L	OU09 SD111 0012 OU09 SD111 0012W OU09 SD111 1224 OU09 SD111 2436 OU09 SD120 0012 OU09 SD120 0012W OU09 SD120 1224 OU09 SD120 2436 OU09 SD121 0012 OU09 SD121 0012W OU09 SD121 1224 OU09 SD121 2436
RB-01_120313	CHROMIUM, TOTAL	0.77	4.0	5.0	UG_L	OU09 SD111 0012 OU09 SD111 0012W OU09 SD111 1224 OU09 SD111 2436 OU09 SD120 0012 OU09 SD120 0012W OU09 SD120 1224 OU09 SD120 2436 OU09 SD121 0012 OU09 SD121 0012W OU09 SD121 1224 OU09 SD121 2436
RB-01_120313	COBALT	0.07	0.30	1.0	UG_L	OU09 SD111 0012 OU09 SD111 0012W OU09 SD111 1224 OU09 SD111 2436 OU09 SD120 0012 OU09 SD120 0012W OU09 SD120 1224 OU09 SD120 2436 OU09 SD121 0012 OU09 SD121 0012W OU09 SD121 1224 OU09 SD121 2436
RB-01_120313	COPPER	4.6	2.0	3.0	UG_L	OU09 SD111 0012 OU09 SD111 0012W OU09 SD111 1224 OU09 SD111 2436 OU09 SD120 0012 OU09 SD120 0012W OU09 SD120 1224 OU09 SD120 2436 OU09 SD121 0012 OU09 SD121 0012W OU09 SD121 1224 OU09 SD121 2436

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
RB-01_120313	LEAD	0.69	0.50	1.0	UG_L	OU09 SD111 0012 OU09 SD111 0012W OU09 SD111 1224 OU09 SD111 2436 OU09 SD120 0012 OU09 SD120 0012W OU09 SD120 1224 OU09 SD120 2436 OU09 SD121 0012 OU09 SD121 0012W OU09 SD121 1224 OU09 SD121 2436
RB-01_120313	MANGANESE	1.5	1.0	2.0	UG_L	OU09 SD111 0012 OU09 SD111 0012W OU09 SD111 1224 OU09 SD111 2436 OU09 SD120 0012 OU09 SD120 0012W OU09 SD120 1224 OU09 SD120 2436 OU09 SD121 0012 OU09 SD121 0012W OU09 SD121 1224 OU09 SD121 2436
RB-01_120313	NICKEL	0.34	1.2	2.0	UG_L	OU09 SD111 0012 OU09 SD111 0012W OU09 SD111 1224 OU09 SD111 2436 OU09 SD120 0012 OU09 SD120 0012W OU09 SD120 1224 OU09 SD120 2436 OU09 SD121 0012 OU09 SD121 0012W OU09 SD121 1224 OU09 SD121 2436
RB-01_120313	SELENIUM	0.38	3.0	5.0	UG_L	OU09 SD111 0012 OU09 SD111 0012W OU09 SD111 1224 OU09 SD111 2436 OU09 SD120 0012 OU09 SD120 0012W OU09 SD120 1224 OU09 SD120 2436 OU09 SD121 0012 OU09 SD121 0012W OU09 SD121 1224 OU09 SD121 2436

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
RB-01_120313	VANADIUM	1.1	4.0	5.0	UG_L	OU09 SD111 0012 OU09 SD111 0012W OU09 SD111 1224 OU09 SD111 2436 OU09 SD120 0012 OU09 SD120 0012W OU09 SD120 1224 OU09 SD120 2436 OU09 SD121 0012 OU09 SD121 0012W OU09 SD121 1224 OU09 SD121 2436
RB-01_120313	ZINC	5.5	8.0	10	UG_L	OU09 SD111 0012 OU09 SD111 0012W OU09 SD111 1224 OU09 SD111 2436 OU09 SD120 0012 OU09 SD120 0012W OU09 SD120 1224 OU09 SD120 2436 OU09 SD121 0012 OU09 SD121 0012W OU09 SD121 1224 OU09 SD121 2436

Table A-2 Matrix Spikes

Sample ID	Compound	MS % Recovery	Lower Limit	Upper Limit
OU09 SD111 0012	MERCURY (SEM)	20	80	120
OU09 SD111 0012	ACID VOLATILE SULFIDES	39	75	125

Table A-3 Lab Control Samples

LCS ID	Compound	LCS % Recovery	Lower Limit	Upper Limit	Associated Samples
LCSOGL08ICS1	MERCURY (SEM)	136.5	80	120	OU09 SD111 0012 OU09 SD120 0012 OU09 SD121 0012

Attachment B

Qualifier Codes and Explanations

Qualifier	Explanation
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
UJ	The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual quantitation limit necessary to accurately and precisely measure the analyte in the sample.
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

Attachment C

Reason Codes and Explanations

Reason Code	Explanation
be	Equipment blank contamination
bf	Field blank contamination
bl	Laboratory blank contamination
c	Calibration issue
d	Reporting limit raised due to chromatographic interference
fd	Field duplicate RPDs
h	Holding times
i	Internal standard areas
k	Estimated Maximum Possible Concentration (EMPC)
l	LCS recoveries
lc	Labeled compound recovery
ld	Laboratory duplicate RPDs
lp	Laboratory control sample/laboratory control sample duplicate RPDs
m	Matrix spike recovery
md	Matrix spike/matrix spike duplicate RPDs
nb	Negative laboratory blank contamination
p	Chemical preservation issue
r	Dual column RPD
q	Quantitation issue
s	Surrogate recovery
su	Ion suppression
t	Temperature preservation issue
x	Percent solids
y	Serial dilution results
z	ICS results

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Data Validation Report

Project:	MRP Site 1 (OU9) Remedial Investigation, NAVSTA Newport, Rhode Island CTO WE06
Laboratory:	Katahdin Analytical Services, Scarborough, Maine
Service Request:	CARR-5
Analyses/Method:	TAL Metals/ EPA SW-846 Methods 6010C, 6020A, 7471B
Validation Level:	Limited
Resolution Consultants Project Number:	60250336 SA.DV
Prepared by:	Kristin Rutherford/Resolution Consultants Completed on: 02/20/2014
Reviewed by:	Waverly Braunstein/Resolution Consultants File Name: CARR-5_SE_Metals_DVRpt

SUMMARY

The samples listed below were collected by Resolution Consultants from MRP Site 1 (OU9), NAVSTA Newport, Rhode Island site on December 5 and 6, 2013.

Sample ID	Matrix/Sample Type
OU09 SD105 0012	Sediment
OU09 SD105 0012W	Sediment
OU09 SD105 1224	Sediment
OU09 SD105 2436	Sediment
OU09 SD112 0012	Sediment
OU09 SD112 0012W	Sediment
OU09 SD112 1224	Sediment
OU09 SD112 2436	Sediment
OU09 SD113 0012	Sediment
OU09 SD113 0012W	Sediment
OU09 SD113 1224	Sediment
OU09 SD113 2436	Sediment
OU09 SD119 0012	Sediment
OU09 SD119 0012W	Sediment
OU09 SD119 1224	Sediment

The data have been validated in accordance with the project-specific Sampling and Analysis Plan, *Sampling and Analysis Plan, Former Carr Point Shooting Range (MRP Site 1, OU9), Naval Station (NAVSTA) Newport, Rhode Island, Final* (Naval Facilities Engineering Command, Mid-Atlantic, 2013) and the following references:

- *DoD Quality Systems Manual (QMS) for Environmental Laboratories, version 4.2* (DoD EDQW, 2010);
- *USEPA Region 1, EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses* (December 1996);
- *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review* (January 2010);
- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW846, Method 6010C, Inductively Coupled Plasma-Atomic Emission Spectrometry* (USEPA, 1996);
- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW846, Method 6020A, Inductively Coupled Plasma-Mass Spectrometry* (USEPA, 1996);
- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW846, Method 7471B, Mercury in Solid or Semisolid Waste (Manual Cold-Vapor Technique)* (USEPA, 1996);
- laboratory quality control (QC) limits, as applicable.

The USEPA Region 1 and National Data Validation Functional Guidelines were modified to accommodate the non-CLP methodologies. In the absence of method-specific direction for validation, Resolution Consultants professional judgment was used as appropriate.

REVIEW ELEMENTS

The data were evaluated based on the following parameters (where applicable to the method):

✓	Data completeness (chain-of-custody (COC)/sample integrity
✓	Holding times and sample preservation
✓	ICP/MS Instrument tuning
✓	Initial calibration/continuing calibration verification
✗	Laboratory blanks/equipment blanks
✓	ICP interference check standards
✗	Matrix spike (MS) and/or matrix spike duplicate (MSD) results
NA	Laboratory duplicate results
✗	Laboratory control sample (LCS)/laboratory control sample duplicate (LCSD) results
✓	Field duplicates
✓	ICP/ICPMS serial dilution results
✓	ICP/MS internal standard performance
✓	Sample results/reporting issues

The symbol (✓) indicates that no validation qualifiers were applied based on this parameter. NA indicates that the parameter was not included as part of this data set or was not applicable to this validation and therefore not reviewed. The symbol (✗) indicates that a quality control (QC) nonconformance resulted in the qualification of data. Any QC nonconformance that resulted in the qualification of data is discussed below. In addition, nonconformances or other issues that were noted during validation, but did not result in qualification of data, may be discussed for informational purposes only.

The data appear valid as reported and may be used for decision making purposes. Selected data points were estimated, negated, and/or rejected due to nonconformances of certain QC criteria (see discussion below). Qualified sample results are presented in Table 1.

RESULTS

Data Completeness

The data package was reviewed and found to meet acceptance criteria for completeness:

- The COCs were reviewed for completeness of information relevant to the samples and requested analyses, and for signatures indicating transfer of sample custody.
- The laboratory sample login sheet(s) were reviewed for issues potentially affecting sample integrity, including the condition of sample containers upon receipt at the laboratory.
- Completeness of analyses was verified by comparing the reported results to the COC requests.

Holding Times/Sample Preservation

Sample preservation and preparation/analysis holding times were reviewed for conformance with the QC acceptance criteria.

The QC acceptance criteria were met.

ICP/MS Instrument Tuning

ICP/MS tuning results were reviewed for conformance with the QC acceptance criteria to ensure that:

- the proper tuning solution was used with elements representing all of the mass regions of interest;
- the tunings were performed at the begining of each analysis and prior to calibration;
- the tuning solution was analyzed at least 4 times as required by the method;
- the mass calibration was within 0.1 amu of the true value for all masses within the region of interest;
- the resolution was verified to be <0.9 amu full width at 10% peak height; and
- the %RSD was $\leq$ 5% for the analytes contained in the tuning solution.

The QC acceptance criteria were met.

Initial Calibration/Continuing Calibration Verification

Calibration data were reviewed for conformance with the QC acceptance criteria to ensure that:

- all criteria were met for the calibration curves
- the initial calibration verification (ICV) percent recovery (%R) criteria were met;
- the continuing calibration verification standard (CCV) method percent difference (%Ds) were met; and
- the low level check standards (CRI or CRA) %R criteria were met.

The QC acceptance criteria were met.

Laboratory Blanks/Equipment Blanks

Laboratory method blanks and equipment rinsate blanks were evaluated as to whether there were contaminants detected above the method detection limit (MDL). Data validation qualifications for individual samples are based on the maximum contaminant concentration detected in all associated blanks.

Method and equipment rinsate results were reviewed for conformance with the QC acceptance criteria. Detected results in blanks are not discussed in this data validation report if the associated results were nondetect or if qualification of sample results was not required.

Nonconformances are summarized in Attachment A in Tables A-1a and A-1b. Sample results were qualified as follows:

Blank Type	Blank Result	Sample Result	Action for Samples
PB / EB/ FB (Positive)	> LOQ	≥IDL/MDL but ≤ LOQ	Qualify as nondetect (U) at the LOQ
		>LOQ but < 10x Blank Result	Qualify results as unusable
		≥10x Blank Result	No action
	≥IDL/MDL but ≤LOQ	Nondetect	No action
		≥IDL/MDL but ≤LOQ	Qualify as nondetect (U) at the LOQ
		> LOQ	Use Resolution Consultants professional judgment (see below [1])
PB (Negative)	< (-LOQ)	< 10x LOQ	Qualify positive results <10x LOQ as estimated (J) and nondetects as estimated (UJ)
		≥10x LOQ	No action

[1] Establish an action level (AL) at 5x the blank contamination. If sample result is <AL, qualify the reported result with a U.

Qualified sample results are shown in Table 1.

ICP Interference Check Standards

The ICP interference check standards (ICSA, ICSAB) were reviewed for conformance.

All criteria were met for the ICSA and ICSAB.

MS Results

Matrix spike analyses were performed on a site sample for AVS/SEM Metals only.

The MS and/or MSD %Rs and/or RPDs were reviewed for conformance with the QC acceptance criteria.

Nonconformances are summarized in Attachment A in Table A-2. Data qualification on the basis of MS and/or MSD nonconformances was as follows:

Qualify Results	%R < 30	80 > %R ≥ 30	%R >120	RPD>20
Detected results	J	J	J	J
Nondetects	R	UJ	Accept	UJ

Notes: MS actions apply to all samples of the same matrix. This qualification will also be applied to the results of all samples within a given area of the site, if deemed appropriate.

1. If the sample result (SR) > 4x the spike concentration (S), no action is taken.
2. If any analyte does not meet the %R criteria and a post digestion spike (PDS) analysis was performed, use professional judgment to assess the results. Refer to the National Functional Guidelines (NFG) 2010 for recommended actions.
3. If either the MS or MSD does not meet %R criteria, qualify all associated samples.

Qualified sample results are shown in Table 1.

Laboratory Duplicate Results

The laboratory duplicate analyses were not performed on a site sample; therefore, batch QC was not assessed.

LCS/LCSD Results

The LCS/LCSD %Rs and/or RPDs were reviewed for conformance with the QC acceptance criteria.

Nonconformances are summarized in Attachment A in Table A-3. Data qualification on the basis of LCS and/or LCSD %Rs or RPDs was as follows:

LCS	%R < 50	80 > %R = 50	%R > 120%	%R >150%
Positive Sample Results	J-	J-	J+	R
Nondetects	R	UJ	Accept	R

Apply actions to all samples in the same preparation batch.

Qualified sample results are shown in Table 1.

Field Duplicate Results

Field duplicate RPDs were reviewed for conformance with the Resolution Consultants QC acceptance criterion of ≤50% for solid matrices and ≤30% for aqueous matrices. This criterion applies if both results were greater than 5 times the limit of quantitation (LOQ).

All field duplicate precision criteria were met.

ICP/ICPMS Serial Dilution Results

The serial dilution percent differences (%Ds) were reviewed for conformance with the QC acceptance criteria.

The serial dilution %Ds were within the QC acceptance criteria for AVS/SEM mercury.

Serial dilution analyses were not performed on a site sample for total metals; therefore, batch QC was not assessed.

ICP/MS Internal Standard Performance

ICP/MS Internal standard performance was reviewed for conformance and was within the QC acceptance criteria.

Sample Results/Reporting Issues

All analytes detected at concentrations less than the limit of quantitation (LOQ) but greater than the method detection limit (MDL) were qualified by the laboratory as estimated (J). This "J" qualifier was retained during data validation.

Resolution Consultants professional judgment was used to qualify sample results with percent solids that were <30%.

All criteria were met.

QUALIFICATION ACTIONS

Sample results qualified as a result of validation actions are summarized in Table 1. All actions are described above.

ATTACHMENTS

Attachment A: Nonconformance Summary Tables

Attachment B: Qualifier Codes and Explanations

Attachment C: Reason Codes and Explanations

Table 1 - Data Validation Summary of Qualified Data

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SD105 0012	SE	ANTIMONY	0.067	0.067	0.067	MG_KG	U	be
OU09 SD105 0012	SE	SELENIUM	0.34	0.34	0.34	MG_KG	U	be
OU09 SD105 0012	SE	CADMIUM	0.0011	0.011	0.0011	UMOL_G	U	bl
OU09 SD105 0012	SE	LEAD	0.010	0.00048	0.00060	UMOL_G	J+	m
OU09 SD105 0012	SE	MERCURY	0.000022	0.000022	0.000025	UMOL_G	R	m
OU09 SD105 0012	SE	NICKEL	0.0046	0.0046	0.0042	UMOL_G	U	bl
OU09 SD105 0012	SE	ZINC	0.0076	0.0076	0.0076	UMOL_G	U	bl
OU09 SD105 0012W	SE	SELENIUM	0.41	0.41	0.41	MG_KG	U	bl
OU09 SD105 1224	SE	ANTIMONY	0.091	0.091	0.091	MG_KG	U	be
OU09 SD105 1224	SE	SELENIUM	0.46	0.46	0.46	MG_KG	U	bl
OU09 SD105 2436	SE	ANTIMONY	0.081	0.081	0.081	MG_KG	U	be
OU09 SD105 2436	SE	SELENIUM	0.41	0.41	0.41	MG_KG	U	bl
OU09 SD112 0012	SE	ANTIMONY	0.081	0.081	0.081	MG_KG	U	be
OU09 SD112 0012	SE	SELENIUM	0.40	0.40	0.40	MG_KG	U	be
OU09 SD112 0012	SE	CADMIUM	0.0010	0.0010	0.0010	UMOL_G	U	bl
OU09 SD112 0012	SE	LEAD	0.012	0.00044	0.00056	UMOL_G	J+	m
OU09 SD112 0012	SE	MERCURY	0.000021	0.000021	0.000023	UMOL_G	R	m
OU09 SD112 0012	SE	NICKEL	0.0082	0.0082	0.0039	UMOL_G	U	bl
OU09 SD112 0012W	SE	ANTIMONY	0.087	0.087	0.087	MG_KG	U	be
OU09 SD112 0012W	SE	SELENIUM	0.43	0.43	0.43	MG_KG	U	be
OU09 SD112 1224	SE	ANTIMONY	0.086	0.086	0.086	MG_KG	U	be
OU09 SD112 1224	SE	SELENIUM	0.43	0.43	0.43	MG_KG	U	be
OU09 SD112 2436	SE	ANTIMONY	0.074	0.074	0.074	MG_KG	U	be
OU09 SD112 2436	SE	SELENIUM	0.37	0.37	0.37	MG_KG	U	be
OU09 SD113 0012	SE	CADMIUM	0.0011	0.0011	0.0011	UMOL_G	U	bl
OU09 SD113 0012	SE	COPPER	0.0094	0.0094	0.0094	UMOL_G	U	bl
OU09 SD113 0012	SE	LEAD	0.020	0.00046	0.00058	UMOL_G	J+	m
OU09 SD113 0012	SE	MERCURY	0.000024	0.000024	0.000024	UMOL_G	UJ	bl,m,l
OU09 SD113 0012	SE	NICKEL	0.0064	0.0064	0.0041	UMOL_G	U	bl
OU09 SD113 0012	SE	ZINC	0.064	0.064	0.0073	UMOL_G	U	bl
OU09 SD113 0012W	SE	SELENIUM	0.41	0.41	0.41	MG_KG	U	be
OU09 SD113 1224	SE	SELENIUM	0.31	0.31	0.31	MG_KG	U	be
OU09 SD113 2436	SE	SELENIUM	0.41	0.41	0.41	MG_KG	U	bl
OU09 SD119 0012	SE	SELENIUM	0.35	0.35	0.35	MG_KG	U	be
OU09 SD119 0012	SE	CADMIUM	0.0011	0.0011	0.0011	UMOL_G	U	bl
OU09 SD119 0012	SE	LEAD	0.24	0.00048	0.00060	UMOL_G	J+	m
OU09 SD119 0012	SE	MERCURY	0.000022	0.000022	0.000025	UMOL_G	R	m
OU09 SD119 0012W	SE	SELENIUM	0.22	0.22	0.22	MG_KG	U	bl
OU09 SD119 1224	SE	SELENIUM	0.40	0.40	0.40	MG_KG	U	bl

Attachment A

Non Conformance Summary Tables

Table A-1a Lab Blanks

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
PBSGL08ICS1	CADMIUM	0.000018	0.030	0.050	UMOL_G	OU09 SD105 0012 OU09 SD112 0012 OU09 SD113 0012 OU09 SD119 0012
PBSGL08ICS1	COPPER	0.00088	0.10	0.25	UMOL_G	OU09 SD105 0012 OU09 SD112 0012 OU09 SD113 0012 OU09 SD119 0012
PBSGL08ICS1	NICKEL	0.00167	0.040	0.10	UMOL_G	OU09 SD105 0012 OU09 SD112 0012 OU09 SD113 0012 OU09 SD119 0012
PBSGL08ICS1	ZINC	0.0134	0.10	0.20	UMOL_G	OU09 SD105 0012 OU09 SD112 0012 OU09 SD113 0012 OU09 SD119 0012
PBSGL08ICS1	MERCURY	0.0017	0.000018	0.000020	UMOL_G	OU09 SD105 0012 OU09 SD112 0012 OU09 SD113 0012 OU09 SD119 0012
PBSGL09ICS1	ALUMINUM	2.193	10	30	MG_KG	OU09 SD105 0012 OU09 SD112 0012 OU09 SD113 0012 OU09 SD119 0012
PBSGL09ICS1	CALCIUM	4.112	8.0	10	MG_KG	OU09 SD105 0012 OU09 SD112 0012 OU09 SD113 0012 OU09 SD119 0012
PBSGL09ICS1	MAGNESIUM	1.184	8.0	10	MG_KG	OU09 SD105 0012 OU09 SD112 0012 OU09 SD113 0012 OU09 SD119 0012
PBSGL09ICS1	POTASSIUM	7.959	50	100	MG_KG	OU09 SD105 0012 OU09 SD112 0012 OU09 SD113 0012 OU09 SD119 0012
PBSGL09ICS1	SODIUM	6.772	50	100	MG_KG	OU09 SD105 0012 OU09 SD112 0012 OU09 SD113 0012 OU09 SD119 0012

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
PBSGL09IMS1	BARIUM	0.165	0.10	0.20	MG_KG	OU09 SD105 0012 OU09 SD112 0012 OU09 SD113 0012 OU09 SD119 0012
PBSGL09IMS1	CHROMIUM, TOTAL	0.116	0.40	0.50	MG_KG	OU09 SD105 0012 OU09 SD112 0012 OU09 SD113 0012 OU09 SD119 0012
PBSGL09IMS1	COPPER	0.390	0.20	0.30	MG_KG	OU09 SD105 0012 OU09 SD112 0012 OU09 SD113 0012 OU09 SD119 0012
PBSGL09IMS1	LEAD	0.192	0.050	0.10	MG_KG	OU09 SD105 0012 OU09 SD112 0012 OU09 SD113 0012 OU09 SD119 0012
PBSGL09IMS1	MANGANESE	0.074	0.10	0.20	MG_KG	OU09 SD105 0012 OU09 SD112 0012 OU09 SD113 0012 OU09 SD119 0012
PBSGL09IMS1	NICKEL	0.651	0.12	0.20	MG_KG	OU09 SD105 0012 OU09 SD112 0012 OU09 SD113 0012 OU09 SD119 0012
PBSGL09IMS1	ZINC	4.673	0.80	1.0	MG_KG	OU09 SD105 0012 OU09 SD119 0012
PBSGL17IMS1	ZINC	1.033	0.80	1.0	MG_KG	OU09 SD112 0012 OU09 SD113 0012
PBSGL20ICS1	ALUMINUM	3.202	10	30	MG_KG	OU09 SD112 0012W OU09 SD112 1224 OU09 SD112 2436 OU09 SD113 0012W OU09 SD113 1224
PBSGL20ICS1	CALCIUM	7.562	8.0	10	MG_KG	OU09 SD112 0012W OU09 SD112 1224 OU09 SD112 2436 OU09 SD113 0012W OU09 SD113 1224
PBSGL20ICS1	IRON	3.129	8.0	10	MG_KG	OU09 SD112 0012W OU09 SD112 1224 OU09 SD112 2436 OU09 SD113 0012W OU09 SD113 1224
PBSGL20ICS1	MAGNESIUM	3.002	8.0	10	MG_KG	OU09 SD112 0012W OU09 SD112 1224 OU09 SD112 2436 OU09 SD113 0012W OU09 SD113 1224

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
PBSGL20ICS1	POTASSIUM	3.682	50	100	MG_KG	OU09 SD112 0012W OU09 SD112 1224 OU09 SD112 2436 OU09 SD113 0012W OU09 SD113 1224
PBSGL20ICS1	SODIUM	7.882	50	100	MG_KG	OU09 SD112 0012W OU09 SD112 1224 OU09 SD112 2436 OU09 SD113 0012W OU09 SD113 1224
PBSGL20IMS1	BARIUM	0.085	0.10	0.20	MG_KG	OU09 SD112 0012W OU09 SD112 1224 OU09 SD112 2436 OU09 SD113 0012W OU09 SD113 1224
PBSGL20IMS1	CHROMIUM, TOTAL	0.089	0.40	0.50	MG_KG	OU09 SD112 0012W OU09 SD112 1224 OU09 SD112 2436 OU09 SD113 0012W OU09 SD113 1224
PBSGL20IMS1	COPPER	0.328	0.20	0.30	MG_KG	OU09 SD112 0012W OU09 SD112 1224 OU09 SD112 2436 OU09 SD113 0012W OU09 SD113 1224
PBSGL20IMS1	LEAD	0.077	0.050	0.10	MG_KG	OU09 SD112 0012W OU09 SD112 1224 OU09 SD112 2436 OU09 SD113 0012W OU09 SD113 1224
PBSGL20IMS1	MANGANESE	0.069	0.10	0.20	MG_KG	OU09 SD112 0012W OU09 SD112 1224 OU09 SD112 2436 OU09 SD113 0012W OU09 SD113 1224
PBSGL20IMS1	NICKEL	0.082	0.12	0.20	MG_KG	OU09 SD112 0012W OU09 SD112 1224 OU09 SD112 2436 OU09 SD113 0012W OU09 SD113 1224
PBSGL20IMS1	ZINC	1.306	0.80	1.0	MG_KG	OU09 SD112 0012W OU09 SD112 1224 OU09 SD112 2436 OU09 SD113 0012W OU09 SD113 1224

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
PBSGL30ICS1	CALCIUM	5.253	8.0	10	MG_KG	OU09 SD105 0012W OU09 SD105 1224 OU09 SD105 2436 OU09 SD113 2436 OU09 SD119 0012W OU09 SD119 1224
PBSGL30ICS1	MAGNESIUM	1.444	8.0	10	MG_KG	OU09 SD105 0012W OU09 SD105 1224 OU09 SD105 2436 OU09 SD113 2436 OU09 SD119 0012W OU09 SD119 1224
PBSGL30ICS1	POTASSIUM	-10.030	50	100	MG_KG	OU09 SD105 0012W OU09 SD105 1224 OU09 SD105 2436 OU09 SD113 2436 OU09 SD119 0012W OU09 SD119 1224
PBSGL30ICS1	SODIUM	10.000	50	100	MG_KG	OU09 SD105 0012W OU09 SD105 1224 OU09 SD105 2436 OU09 SD113 2436 OU09 SD119 0012W OU09 SD119 1224
PBSGL30IMS1	BARIUM	0.076	0.10	0.20	MG_KG	OU09 SD105 0012W OU09 SD105 1224 OU09 SD105 2436 OU09 SD113 2436 OU09 SD119 0012W OU09 SD119 1224
PBSGL30IMS1	CHROMIUM, TOTAL	0.130	0.40	0.50	MG_KG	OU09 SD105 0012W OU09 SD105 1224 OU09 SD105 2436 OU09 SD113 2436 OU09 SD119 0012W OU09 SD119 1224
PBSGL30IMS1	COPPER	0.114	0.20	0.30	MG_KG	OU09 SD105 0012W OU09 SD105 1224 OU09 SD105 2436 OU09 SD113 2436 OU09 SD119 0012W OU09 SD119 1224
PBSGL30IMS1	LEAD	0.016	0.050	0.10	MG_KG	OU09 SD105 0012W OU09 SD105 1224 OU09 SD105 2436 OU09 SD113 2436 OU09 SD119 0012W OU09 SD119 1224

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
PBSGL30IMS1	MANGANESE	0.063	0.10	0.20	MG_KG	OU09 SD105 0012W OU09 SD105 1224 OU09 SD105 2436 OU09 SD113 2436 OU09 SD119 0012W OU09 SD119 1224
PBSGL30IMS1	NICKEL	0.031	0.12	0.20	MG_KG	OU09 SD105 0012W OU09 SD105 1224 OU09 SD105 2436 OU09 SD113 2436 OU09 SD119 0012W OU09 SD119 1224 OU09 SD112 0012 OU09 SD112 0012W
PBSGL30IMS1	SELENIUM	0.076	0.30	0.50	MG_KG	OU09 SD105 0012W OU09 SD105 1224 OU09 SD105 2436 OU09 SD113 2436 OU09 SD119 0012W OU09 SD119 1224
PBSGL30IMS1	ZINC	0.440	0.80	1.0	MG_KG	OU09 SD105 0012W OU09 SD105 1224 OU09 SD105 2436 OU09 SD113 2436 OU09 SD119 0012W OU09 SD119 1224

Table A-1b Field Blanks

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
RB-01_120313	ALUMINUM	16.6	100	300	UG_L	OU09 SD105 0012 OU09 SD105 0012W OU09 SD105 1224 OU09 SD105 2436 OU09 SD112 0012 OU09 SD112 0012W OU09 SD112 1224 OU09 SD112 2436 OU09 SD113 0012 OU09 SD113 0012W OU09 SD113 1224 OU09 SD113 2436 OU09 SD119 0012 OU09 SD119 0012W OU09 SD119 1224

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
RB-01_120313	CALCIUM	76.1	80	100	UG_L	OU09 SD105 0012 OU09 SD105 0012W OU09 SD105 1224 OU09 SD105 2436 OU09 SD112 0012 OU09 SD112 0012W OU09 SD112 1224 OU09 SD112 2436 OU09 SD113 0012 OU09 SD113 0012W OU09 SD113 1224 OU09 SD113 2436 OU09 SD119 0012 OU09 SD119 0012W OU09 SD119 1224
RB-01_120313	IRON	120	80	100	UG_L	OU09 SD105 0012 OU09 SD105 0012W OU09 SD105 1224 OU09 SD105 2436 OU09 SD112 0012 OU09 SD112 0012W OU09 SD112 1224 OU09 SD112 2436 OU09 SD113 0012 OU09 SD113 0012W OU09 SD113 1224 OU09 SD113 2436 OU09 SD119 0012 OU09 SD119 0012W OU09 SD119 1224
RB-01_120313	MAGNESIUM	24.4	80	100	UG_L	OU09 SD105 0012 OU09 SD105 0012W OU09 SD105 1224 OU09 SD105 2436 OU09 SD112 0012 OU09 SD112 0012W OU09 SD112 1224 OU09 SD112 2436 OU09 SD113 0012 OU09 SD113 0012W OU09 SD113 1224 OU09 SD113 2436 OU09 SD119 0012 OU09 SD119 0012W OU09 SD119 1224

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
RB-01_120313	POTASSIUM	50.6	500	1000	UG_L	OU09 SD105 0012 OU09 SD105 0012W OU09 SD105 1224 OU09 SD105 2436 OU09 SD112 0012 OU09 SD112 0012W OU09 SD112 1224 OU09 SD112 2436 OU09 SD113 0012 OU09 SD113 0012W OU09 SD113 1224 OU09 SD113 2436 OU09 SD119 0012 OU09 SD119 0012W OU09 SD119 1224
RB-01_120313	SODIUM	78.0	500	1000	UG_L	OU09 SD105 0012 OU09 SD105 0012W OU09 SD105 1224 OU09 SD105 2436 OU09 SD112 0012 OU09 SD112 0012W OU09 SD112 1224 OU09 SD112 2436 OU09 SD113 0012 OU09 SD113 0012W OU09 SD113 1224 OU09 SD113 2436 OU09 SD119 0012 OU09 SD119 0012W OU09 SD119 1224
RB-01_120313	ANTIMONY	0.12	0.50	1.0	UG_L	OU09 SD105 0012 OU09 SD105 0012W OU09 SD105 1224 OU09 SD105 2436 OU09 SD112 0012 OU09 SD112 0012W OU09 SD112 1224 OU09 SD112 2436 OU09 SD113 0012 OU09 SD113 0012W OU09 SD113 1224 OU09 SD113 2436 OU09 SD119 0012 OU09 SD119 0012W OU09 SD119 1224

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
RB-01_120313	BARIUM	0.59	1.0	2.0	UG_L	OU09 SD105 0012 OU09 SD105 0012W OU09 SD105 1224 OU09 SD105 2436 OU09 SD112 0012 OU09 SD112 0012W OU09 SD112 1224 OU09 SD112 2436 OU09 SD113 0012 OU09 SD113 0012W OU09 SD113 1224 OU09 SD113 2436 OU09 SD119 0012 OU09 SD119 0012W OU09 SD119 1224
RB-01_120313	CADMIUM	0.06	0.20	1.0	UG_L	OU09 SD105 0012 OU09 SD105 0012W OU09 SD105 1224 OU09 SD105 2436 OU09 SD112 0012 OU09 SD112 0012W OU09 SD112 1224 OU09 SD112 2436 OU09 SD113 0012 OU09 SD113 0012W OU09 SD113 1224 OU09 SD113 2436 OU09 SD119 0012 OU09 SD119 0012W OU09 SD119 1224
RB-01_120313	CHROMIUM, TOTAL	0.77	4.0	5.0	UG_L	OU09 SD105 0012 OU09 SD105 0012W OU09 SD105 1224 OU09 SD105 2436 OU09 SD112 0012 OU09 SD112 0012W OU09 SD112 1224 OU09 SD112 2436 OU09 SD113 0012 OU09 SD113 0012W OU09 SD113 1224 OU09 SD113 2436 OU09 SD119 0012 OU09 SD119 0012W OU09 SD119 1224

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
RB-01_120313	COBALT	0.07	0.30	1.0	UG_L	OU09 SD105 0012 OU09 SD105 0012W OU09 SD105 1224 OU09 SD105 2436 OU09 SD112 0012 OU09 SD112 0012W OU09 SD112 1224 OU09 SD112 2436 OU09 SD113 0012 OU09 SD113 0012W OU09 SD113 1224 OU09 SD113 2436 OU09 SD119 0012 OU09 SD119 0012W OU09 SD119 1224
RB-01_120313	COPPER	4.6	2.0	3.0	UG_L	OU09 SD105 0012 OU09 SD105 0012W OU09 SD105 1224 OU09 SD105 2436 OU09 SD112 0012 OU09 SD112 0012W OU09 SD112 1224 OU09 SD112 2436 OU09 SD113 0012 OU09 SD113 0012W OU09 SD113 1224 OU09 SD113 2436 OU09 SD119 0012 OU09 SD119 0012W OU09 SD119 1224
RB-01_120313	LEAD	0.69	0.50	1.0	UG_L	OU09 SD105 0012 OU09 SD105 0012W OU09 SD105 1224 OU09 SD105 2436 OU09 SD112 0012 OU09 SD112 0012W OU09 SD112 1224 OU09 SD112 2436 OU09 SD113 0012 OU09 SD113 0012W OU09 SD113 1224 OU09 SD113 2436 OU09 SD119 0012 OU09 SD119 0012W OU09 SD119 1224

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
RB-01_120313	MANGANESE	1.5	1.0	2.0	UG_L	OU09 SD105 0012 OU09 SD105 0012W OU09 SD105 1224 OU09 SD105 2436 OU09 SD112 0012 OU09 SD112 0012W OU09 SD112 1224 OU09 SD112 2436 OU09 SD113 0012 OU09 SD113 0012W OU09 SD113 1224 OU09 SD113 2436 OU09 SD119 0012 OU09 SD119 0012W OU09 SD119 1224
RB-01_120313	NICKEL	0.34	1.2	2.0	UG_L	OU09 SD105 0012 OU09 SD105 0012W OU09 SD105 1224 OU09 SD105 2436 OU09 SD112 0012 OU09 SD112 0012W OU09 SD112 1224 OU09 SD112 2436 OU09 SD113 0012 OU09 SD113 0012W OU09 SD113 1224 OU09 SD113 2436 OU09 SD119 0012 OU09 SD119 0012W OU09 SD119 1224
RB-01_120313	SELENIUM	0.38	3.0	5.0	UG_L	OU09 SD105 0012 OU09 SD105 0012W OU09 SD105 1224 OU09 SD105 2436 OU09 SD112 0012 OU09 SD112 0012W OU09 SD112 1224 OU09 SD112 2436 OU09 SD113 0012 OU09 SD113 0012W OU09 SD113 1224 OU09 SD113 2436 OU09 SD119 0012 OU09 SD119 0012W OU09 SD119 1224

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
RB-01_120313	VANADIUM	1.1	4.0	5.0	UG_L	OU09 SD105 0012 OU09 SD105 0012W OU09 SD105 1224 OU09 SD105 2436 OU09 SD112 0012 OU09 SD112 0012W OU09 SD112 1224 OU09 SD112 2436 OU09 SD113 0012 OU09 SD113 0012W OU09 SD113 1224 OU09 SD113 2436 OU09 SD119 0012 OU09 SD119 0012W OU09 SD119 1224
RB-01_120313	ZINC	5.5	8.0	10	UG_L	OU09 SD105 0012 OU09 SD105 0012W OU09 SD105 1224 OU09 SD105 2436 OU09 SD112 0012 OU09 SD112 0012W OU09 SD112 1224 OU09 SD112 2436 OU09 SD113 0012 OU09 SD113 0012W OU09 SD113 1224 OU09 SD113 2436 OU09 SD119 0012 OU09 SD119 0012W OU09 SD119 1224

Table A-2 Matrix Spikes

Sample ID	Compound	MS % Recovery	Lower Limit	Upper Limit
OU09 SD113 0012	MERCURY	53.9	80	120
OU09 SD113 0012	LEAD	177.8	80	120
OU09 SD111 0012	MERCURY (SEM)	20	80	120

Table A-3 Lab Control Samples

LCS ID	Compound	LCS % Recovery	Lower Limit	Upper Limit	Associated Samples
LCSOGL08ICS1	MERCURY	136.5	80	120	OU09 SD105 0012 OU09 SD112 0012 OU09 SD113 0012 OU09 SD119 0012

Attachment B

Qualifier Codes and Explanations

Qualifier	Explanation
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
UJ	The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual quantitation limit necessary to accurately and precisely measure the analyte in the sample.
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

Attachment C

Reason Codes and Explanations

Reason Code	Explanation
be	Equipment blank contamination
bf	Field blank contamination
bl	Laboratory blank contamination
c	Calibration issue
d	Reporting limit raised due to chromatographic interference
fd	Field duplicate RPDs
h	Holding times
i	Internal standard areas
k	Estimated Maximum Possible Concentration (EMPC)
l	LCS recoveries
lc	Labeled compound recovery
ld	Laboratory duplicate RPDs
lp	Laboratory control sample/laboratory control sample duplicate RPDs
m	Matrix spike recovery
md	Matrix spike/matrix spike duplicate RPDs
nb	Negative laboratory blank contamination
p	Chemical preservation issue
r	Dual column RPD
q	Quantitation issue
s	Surrogate recovery
su	Ion suppression
t	Temperature preservation issue
x	Percent solids
y	Serial dilution results
z	ICS results

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Data Validation Report

Project:	MRP Site 1 (OU9) Remedial Investigation, NAVSTA Newport, Rhode Island CTO WE06
Laboratory:	Katahdin Analytical Services, Scarborough, Maine
Service Request:	CARR-7
Analyses/Method:	TAL Metals/ EPA SW-846 Methods 6010C, 6020A, 7471B Acid Volatile Sulfide/Simultaneously Extracted Metals / EPA 821/R-91-100
Validation Level:	Limited
Resolution Consultants Project Number:	60250336 SA.DV
Prepared by:	Kristin Rutherford/Resolution Consultants Completed on: 02/25/2014
Reviewed by:	Waverly Braunstein/Resolution Consultants File Name: CARR-7_SE_Metals_AVSSEM_DVRpt

SUMMARY

The samples listed below were collected by Resolution Consultants from MRP Site 1 (OU9), NAVSTA Newport, Rhode Island on December 10 and 11, 2013.

Sample ID	Matrix/Sample Type
RBSD12111301	Equipment blank
FDSD12101301W	Field Duplicate of OU09 SD106 0012W
BSBG SD302 0012	Sediment
BSBG SD302 1224	Sediment
BSBG SD302 2436	Sediment
OU09 SD106 0012	Sediment
OU09 SD106 0012W	Sediment
OU09 SD106 1224	Sediment
OU09 SD106 2436	Sediment
OU09 SD107 0012	Sediment
OU09 SD108 0012	Sediment
OU09 SD117 0012	Sediment
OU09 SD118 0012	Sediment
OU09 SD118 0012W	Sediment
OU09 SD118 1224	Sediment
OU09 SD118 2436	Sediment

The data have been validated in accordance with the project-specific Sampling and Analysis Plan, *Sampling and Analysis Plan, Former Carr Point Shooting Range (MRP Site 1, OU9), Naval Station (NAVSTA) Newport, Rhode Island, Final* (Naval Facilities Engineering Command, Mid-Atlantic, 2013) and the following references:

- *DoD Quality Systems Manual (QMS) for Environmental Laboratories, version 4.2* (DoD EDQW, 2010);
- *USEPA Region 1, EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses* (December 1996);
- *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review* (January 2010);
- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW846, Method 6010C, Inductively Coupled Plasma-Atomic Emission Spectrometry* (USEPA, 1996);
- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW846, Method 6020A, Inductively Coupled Plasma-Mass Spectrometry* (USEPA, 1996);
- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW846, Method 7471B, Mercury in Solid or Semisolid Waste (Manual Cold-Vapor Technique)* (USEPA, 1996);
- *Draft Analytical Method for Determination of Acid Volatile Sulfide in Sediment, Method 821/R-91-100* (USEPA, 1991);
- laboratory quality control (QC) limits, as applicable.

The USEPA Region 1 and National Data Validation Functional Guidelines were modified to accommodate the non-CLP methodologies. In the absence of method-specific direction for validation, Resolution Consultants professional judgment was used as appropriate.

REVIEW ELEMENTS

The data were evaluated based on the following parameters (where applicable to the method):

✓ Data completeness (chain-of-custody (COC)/sample integrity
✓ Holding times and sample preservation
✓ ICP/MS Instrument tuning
✓ Initial calibration/continuing calibration verification
✗ Laboratory blanks/equipment blanks
✓ ICP interference check standards
✗ Matrix spike (MS) and/or matrix spike duplicate (MSD) results
✗ Laboratory duplicate results
✓ Laboratory control sample (LCS)/laboratory control sample duplicate (LCSD) results
✗ Field duplicates
✓ ICP/ICPMS serial dilution results
✓ ICP/MS internal standard performance
✓ Sample results/reporting issues

The symbol (✓) indicates that no validation qualifiers were applied based on this parameter. NA indicates that the parameter was not included as part of this data set or was not applicable to this validation and therefore not reviewed. The symbol (✗) indicates that a quality control (QC) nonconformance resulted in the qualification of data. Any QC nonconformance that resulted in the qualification of data is discussed below. In addition, nonconformances or other issues that were

noted during validation, but did not result in qualification of data, may be discussed for informational purposes only.

The data appear valid as reported and may be used for decision making purposes. Selected data points were estimated, negated, and/or rejected due to nonconformances of certain QC criteria (see discussion below). Qualified sample results are presented in Table 1.

RESULTS

Data Completeness

The data package was reviewed and found to meet acceptance criteria for completeness:

- The COCs were reviewed for completeness of information relevant to the samples and requested analyses, and for signatures indicating transfer of sample custody.
- The laboratory sample login sheet(s) were reviewed for issues potentially affecting sample integrity, including the condition of sample containers upon receipt at the laboratory.
- Completeness of analyses was verified by comparing the reported results to the COC requests.

Holding Times/Sample Preservation

Sample preservation and preparation/analysis holding times were reviewed for conformance with the QC acceptance criteria.

The QC acceptance criteria were met.

An aliquot for metals was not received by the laboratory for rinsate blank RBSB12111304. An unpreserved aliquot was poured off from the explosives bottle and preserved with nitric acid. No qualifications were required.

ICP/MS Instrument Tuning

ICP/MS tuning results were reviewed for conformance with the QC acceptance criteria to ensure that:

- the proper tuning solution was used with elements representing all of the mass regions of interest;
- the tunings were performed at the beginning of each analysis and prior to calibration;
- the tuning solution was analyzed at least 4 times as required by the method;
- the mass calibration was within 0.1 amu of the true value for all masses within the region of interest;
- the resolution was verified to be <0.9 amu full width at 10% peak height; and
- the %RSD was $\leq$ 5% for the analytes contained in the tuning solution.

The QC acceptance criteria were met.

Initial Calibration/Continuing Calibration Verification

Calibration data were reviewed for conformance with the QC acceptance criteria to ensure that:

- all criteria were met for the calibration curves

- the initial calibration verification (ICV) percent recovery (%R) criteria were met;
- the continuing calibration verification standard (CCV) method percent difference (%Ds) were met; and
- the low level check standards (CRI or CRA) %R criteria were met.

The QC acceptance criteria were met.

Laboratory Blanks/Equipment Blanks

Laboratory method blanks and equipment rinsate blanks were evaluated as to whether there were contaminants detected above the method detection limit (MDL). Data validation qualifications for individual samples are based on the maximum contaminant concentration detected in all associated blanks.

Method and equipment rinsate results were reviewed for conformance with the QC acceptance criteria. Detected results in blanks are not discussed in this data validation report if the associated results were nondetect or if qualification of sample results was not required.

Nonconformances are summarized in Attachment A in Tables A-1a and A-1b. Sample results were qualified as follows:

Blank Type	Blank Result	Sample Result	Action for Samples
PB / EB/ FB (Positive)	> LOQ	≥IDL/MDL but ≤ LOQ	Qualify as nondetect (U) at the LOQ
		>LOQ but < 10x Blank Result	Qualify results as unusable
		≥10x Blank Result	No action
	≥IDL/MDL but ≤LOQ	Nondetect	No action
		≥IDL/MDL but ≤LOQ	Qualify as nondetect (U) at the LOQ
		> LOQ	Use Resolution Consultants professional judgment (see below [1])
PB (Negative)	< (-LOQ)	< 10x LOQ	Qualify positive results <10x LOQ as estimated (J) and nondetects as estimated (UJ)
		≥10x LOQ	No action

[1] Establish an action level (AL) at 5x the blank contamination. If sample result is <AL, qualify the reported result with a U.

Qualified sample results are shown in Table 1.

ICP Interference Check Standards

The ICP interference check standards (ICSA, ICSAB) were reviewed for conformance.

All criteria were met for the ICSA and ICSAB.

MS Results

The MS and/or MSD %Rs and/or RPDs were reviewed for conformance with the QC acceptance criteria.

Nonconformances are summarized in Attachment A in Table A-2. Data qualification on the basis of MS and/or MSD nonconformances was as follows:

Qualify Results	%R < 30	80 > %R ≥ 30	%R >120	RPD>20
Detected results	J	J	J	J

Nondetects	R	UJ	Accept	UJ

Notes: MS actions apply to all samples of the same matrix. This qualification will also be applied to the results of all samples within a given area of the site, if deemed appropriate.

1. If the sample result (SR) > 4x the spike concentration (S), no action is taken.
2. If any analyte does not meet the %R criteria and a post digestion spike (PDS) analysis was performed, use professional judgment to assess the results. Refer to the National Functional Guidelines (NFG) 2010 for recommended actions.
3. If either the MS or MSD does not meet %R criteria, qualify all associated samples.

Qualified sample results are shown in Table 1.

Laboratory Duplicate Results

The laboratory duplicate relative percent differences (RPDs) were reviewed for conformance.

Laboratory duplicate analyses were not performed for total metals. Matrix spike duplicate precision was used to assess precision and results were within the QC acceptance criteria.

Nonconformances are summarized in Attachment A in Table A-3. Data qualification on the basis of laboratory duplicate RPDs was as follows:

Sample Results	RPD	Action (Detect/Nondetect)
≥5x LOQ (both sample and duplicate)	RPD>20%	Estimate (J/UJ)
<5x LOQ (either sample and/or duplicate)	if absolute difference is > the LOQ, estimate (J) positive results <5x the LOQ and nondetects (UJ).	

Qualified sample results are shown in Table 1.

LCS/LCSD Results

The LCS/LCSD %Rs and/or RPDs were reviewed for conformance with the QC acceptance criteria.

The LCS and LCSD %Rs and RPDs were within the QC acceptance criteria.

Field Duplicate Results

Field duplicate RPDs were reviewed for conformance with the Resolution Consultants QC acceptance criterion of ≤50% for solid matrices and ≤30% for aqueous matrices. This criterion applies if both results were greater than 5 times the limit of quantitation (LOQ).

Nonconformances are summarized in Attachment A in Table A-4. Data qualification on the basis of field duplicate RPDs was as follows:

Actions: (Based on Resolution Consultants professional judgment)

Criteria	RPD	Action	
		Detected	Nondetected

Sample and duplicate are nondetect results	Not calculable (NC)	No qualification	No qualification
Sample and duplicate results <SLOQ	Not applicable	No qualification	No qualification
Sample and duplicate results ≥5xSLOQ	>30% Aqueous >50% All other sample types	J	Not Applicable
Sample and duplicate results are >SLOQ and <5xSLOQ	>60% Aqueous >100% All other sample types	J	Not Applicable
If sample or duplicate result is =SLOQ and the other is not detected	NC	J	UJ
If sample or duplicate result is <SLOQ and the other is not detected	NC	No qualification	No qualification

Qualified sample results are summarized in Table 1.

ICP/ICPMS Serial Dilution Results

The serial dilution percent differences (%Ds) were reviewed for conformance with the QC acceptance criteria.

The serial dilution %Ds were within the QC acceptance criteria.

ICP/MS Internal Standard Performance

ICP/MS Internal standard performance was reviewed for conformance and was within the QC acceptance criteria.

Sample Results/Reporting Issues

All analytes detected at concentrations less than the limit of quantitation (LOQ) but greater than the method detection limit (MDL) were qualified by the laboratory as estimated (J). This "J" qualifier was retained during data validation.

Resolution Consultants professional judgment was used to qualify sample results with percent solids that were <30%.

All criteria were met.

QUALIFICATION ACTIONS

Sample results qualified as a result of validation actions are summarized in Table 1. All actions are described above.

ATTACHMENTS

Attachment A: Nonconformance Summary Tables

Attachment B: Qualifier Codes and Explanations

Attachment C: Reason Codes and Explanations

Table 1 - Data Validation Summary of Qualified Data

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
BSBG SD302 0012	SE	CALCIUM	31200	6.4	7.9	MG_KG	J	fd
BSBG SD302 0012	SE	POTASSIUM	1210	40	79	MG_KG	J+	m
BSBG SD302 0012	SE	ANTIMONY	0.08	0.040	0.079	MG_KG	J-	m
BSBG SD302 0012	SE	BARIUM	10.7	0.079	0.16	MG_KG	J	fd
BSBG SD302 0012	SE	CHROMIUM, TOTAL	19.0	0.32	0.40	MG_KG	J	fd
BSBG SD302 0012	SE	COPPER	14.3	0.16	0.24	MG_KG	J	fd
BSBG SD302 0012	SE	LEAD	22.2	0.040	0.079	MG_KG	J	fd
BSBG SD302 0012	SE	MANGANESE	127	0.079	0.16	MG_KG	J+	m
BSBG SD302 0012	SE	SILVER	0.27	0.032	0.079	MG_KG	J	fd
BSBG SD302 0012	SE	ZINC	54.7	0.64	0.79	MG_KG	J	fd
BSBG SD302 0012	SE	MERCURY	0.08	0.014	0.029	MG_KG	J	fd
BSBG SD302 0012	SE	ACID VOLATILE SULFIDES	34	0.086	0.11	UMOL_G	J	ld
BSBG SD302 0012	SE	ANTIMONY	0.00074	0.00087	0.0014	UMOL_G	J-	m
BSBG SD302 0012	SE	CADMIUM	0.00072	0.00057	0.00094	UMOL_G	J	fd
BSBG SD302 0012	SE	COPPER	0.11	0.0033	0.0084	UMOL_G	J	m,ld,fd
BSBG SD302 0012	SE	LEAD	0.071	0.00041	0.00051	UMOL_G	J	ld
BSBG SD302 0012	SE	MERCURY			0.000021	UMOL_G	R	m
BSBG SD302 0012	SE	NICKEL	0.035	0.0014	0.0036	UMOL_G	J	ld,fd
BSBG SD302 0012	SE	ZINC	0.41	0.0032	0.0065	UMOL_G	J	m,ld
BSBG SD302 1224	SE	CALCIUM	11600	7.4	9.2	MG_KG	J	fd
BSBG SD302 1224	SE	POTASSIUM	738	46	92	MG_KG	J+	m
BSBG SD302 1224	SE	ANTIMONY	0.08	0.046	0.092	MG_KG	J-	m
BSBG SD302 1224	SE	BARIUM	7.0	0.092	0.18	MG_KG	J	fd
BSBG SD302 1224	SE	CHROMIUM, TOTAL	14.9	0.37	0.46	MG_KG	J	fd
BSBG SD302 1224	SE	COPPER	9.2	0.18	0.28	MG_KG	J	fd
BSBG SD302 1224	SE	LEAD	12.9	0.046	0.092	MG_KG	J	fd
BSBG SD302 1224	SE	MANGANESE	155	0.092	0.18	MG_KG	J+	m
BSBG SD302 1224	SE	SILVER	0.08	0.037	0.092	MG_KG	J	fd
BSBG SD302 1224	SE	ZINC	49.9	0.74	0.92	MG_KG	J	fd
BSBG SD302 1224	SE	MERCURY	0.04	0.016	0.032	MG_KG	J	fd
BSBG SD302 2436	SE	CALCIUM	19700	6.4	8.0	MG_KG	J	fd
BSBG SD302 2436	SE	POTASSIUM	688	40	80	MG_KG	J+	m
BSBG SD302 2436	SE	ANTIMONY	0.06	0.040	0.080	MG_KG	J-	m
BSBG SD302 2436	SE	BARIUM	6.1	0.080	0.16	MG_KG	J	fd
BSBG SD302 2436	SE	CHROMIUM, TOTAL	9.3	0.32	0.40	MG_KG	J	fd
BSBG SD302 2436	SE	COPPER	4.3	0.16	0.24	MG_KG	J	fd
BSBG SD302 2436	SE	LEAD	4.9	0.040	0.080	MG_KG	J	fd
BSBG SD302 2436	SE	MANGANESE	101	0.080	0.16	MG_KG	J+	m
BSBG SD302 2436	SE	SILVER	0.02	0.032	0.080	MG_KG	J	fd

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
BSBG SD302 2436	SE	ZINC	25.8	0.64	0.80	MG_KG	J	fd
BSBG SD302 2436	SE	MERCURY	0.017	0.017	0.033	MG_KG	UJ	fd
FDSD12101301W	SE	POTASSIUM	716	39	78	MG_KG	J+	m
FDSD12101301W	SE	ANTIMONY	0.06	0.039	0.078	MG_KG	J-	m
FDSD12101301W	SE	MANGANESE	105	0.078	0.16	MG_KG	J+	m
OU09 SD106 0012	SE	CALCIUM	25600	7.2	9.0	MG_KG	J	fd
OU09 SD106 0012	SE	POTASSIUM	997	45	90	MG_KG	J+	m
OU09 SD106 0012	SE	ANTIMONY	0.07	0.045	0.090	MG_KG	J-	m
OU09 SD106 0012	SE	BARIUM	9.5	0.090	0.18	MG_KG	J	fd
OU09 SD106 0012	SE	CHROMIUM, TOTAL	14.3	0.36	0.45	MG_KG	J	fd
OU09 SD106 0012	SE	COPPER	10.2	0.18	0.27	MG_KG	J	fd
OU09 SD106 0012	SE	LEAD	18.0	0.045	0.090	MG_KG	J	fd
OU09 SD106 0012	SE	MANGANESE	167	0.090	0.18	MG_KG	J+	m
OU09 SD106 0012	SE	SILVER	0.14	0.036	0.090	MG_KG	J	fd
OU09 SD106 0012	SE	ZINC	46.0	0.72	0.90	MG_KG	J	fd
OU09 SD106 0012	SE	MERCURY	0.03	0.015	0.029	MG_KG	J	fd
OU09 SD106 0012	SE	ACID VOLATILE SULFIDES	0.80	0.098	0.13	UMOL_G	J	ld
OU09 SD106 0012	SE	ANTIMONY	0.00099	0.00099	0.0016	UMOL_G	UJ	m
OU09 SD106 0012	SE	CADMIUM	0.00014	0.00064	0.0011	UMOL_G	J	fd
OU09 SD106 0012	SE	COPPER	0.028	0.0038	0.0095	UMOL_G	J	m,ld,fd
OU09 SD106 0012	SE	LEAD	0.024	0.00046	0.00058	UMOL_G	J	ld
OU09 SD106 0012	SE	MERCURY			0.000024	UMOL_G	R	m
OU09 SD106 0012	SE	NICKEL	0.014	0.0016	0.0041	UMOL_G	J	ld,fd
OU09 SD106 0012	SE	ZINC	0.11	0.0037	0.0074	UMOL_G	J	m,ld
OU09 SD106 0012W	SE	POTASSIUM	775	47	94	MG_KG	J+	m
OU09 SD106 0012W	SE	ANTIMONY	0.07	0.047	0.094	MG_KG	J-	m
OU09 SD106 0012W	SE	MANGANESE	121	0.094	0.19	MG_KG	J+	m
OU09 SD106 1224	SE	CALCIUM	5800	7.1	8.9	MG_KG	J	fd
OU09 SD106 1224	SE	POTASSIUM	666	44	89	MG_KG	J+	m
OU09 SD106 1224	SE	ANTIMONY	0.21	0.044	0.089	MG_KG	J-	m
OU09 SD106 1224	SE	BARIUM	12.4	0.089	0.18	MG_KG	J	fd
OU09 SD106 1224	SE	CHROMIUM, TOTAL	12.9	0.35	0.44	MG_KG	J	fd
OU09 SD106 1224	SE	COPPER	6.5	0.18	0.26	MG_KG	J	fd
OU09 SD106 1224	SE	LEAD	10.5	0.044	0.089	MG_KG	J	fd
OU09 SD106 1224	SE	MANGANESE	145	0.089	0.18	MG_KG	J+	m
OU09 SD106 1224	SE	SILVER	0.03	0.035	0.089	MG_KG	J	fd
OU09 SD106 1224	SE	ZINC	31.3	0.71	0.89	MG_KG	J	fd
OU09 SD106 1224	SE	MERCURY	0.01	0.016	0.032	MG_KG	J	fd
OU09 SD106 2436	SE	CALCIUM	421	11	14	MG_KG	J	fd

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SD106 2436	SE	POTASSIUM	774	34	68	MG_KG	J+	m
OU09 SD106 2436	SE	ANTIMONY	0.11	0.034	0.068	MG_KG	J-	m
OU09 SD106 2436	SE	BARIUM	16.9	0.068	0.14	MG_KG	J	fd
OU09 SD106 2436	SE	CHROMIUM, TOTAL	13.1	0.27	0.34	MG_KG	J	fd
OU09 SD106 2436	SE	COPPER	16.4	0.14	0.20	MG_KG	J	fd
OU09 SD106 2436	SE	LEAD	8.4	0.034	0.068	MG_KG	J	fd
OU09 SD106 2436	SE	MANGANESE	163	0.068	0.14	MG_KG	J+	m
OU09 SD106 2436	SE	SILVER	0.02	0.027	0.068	MG_KG	J	fd
OU09 SD106 2436	SE	ZINC	34.3	0.55	0.68	MG_KG	J	fd
OU09 SD106 2436	SE	MERCURY	0.020	0.020	0.039	MG_KG	UJ	fd
OU09 SD107 0012	SE	CALCIUM	8010	6.6	8.3	MG_KG	J	fd
OU09 SD107 0012	SE	POTASSIUM	514	41	83	MG_KG	J+	m
OU09 SD107 0012	SE	ANTIMONY	0.10	0.041	0.083	MG_KG	J-	m
OU09 SD107 0012	SE	BARIUM	4.8	0.083	0.16	MG_KG	J	fd
OU09 SD107 0012	SE	CHROMIUM, TOTAL	10.4	0.33	0.41	MG_KG	J	fd
OU09 SD107 0012	SE	COPPER	6.2	0.16	0.25	MG_KG	J	fd
OU09 SD107 0012	SE	LEAD	9.9	0.041	0.083	MG_KG	J	fd
OU09 SD107 0012	SE	MANGANESE	91.4	0.083	0.16	MG_KG	J+	m
OU09 SD107 0012	SE	SILVER	0.06	0.033	0.083	MG_KG	J	fd
OU09 SD107 0012	SE	ZINC	30.1	0.66	0.83	MG_KG	J	fd
OU09 SD107 0012	SE	MERCURY	0.03	0.017	0.033	MG_KG	J	fd
OU09 SD107 0012	SE	ACID VOLATILE SULFIDES	0.094	0.094	0.12	UMOL_G	UJ	ld
OU09 SD107 0012	SE	ANTIMONY	0.00085	0.00085	0.0014	UMOL_G	UJ	m
OU09 SD107 0012	SE	CADMIUM	0.000056	0.00055	0.00092	UMOL_G	J	fd
OU09 SD107 0012	SE	COPPER	0.016	0.0032	0.0081	UMOL_G	J	m,ld,fd
OU09 SD107 0012	SE	LEAD	0.012	0.00040	0.00050	UMOL_G	J	ld
OU09 SD107 0012	SE	MERCURY	0.000030	0.000030	0.000021	UMOL_G	UJ	bl,m
OU09 SD107 0012	SE	NICKEL	0.0065	0.0014	0.0035	UMOL_G	J	ld,fd
OU09 SD107 0012	SE	ZINC	0.060	0.0032	0.0063	UMOL_G	J	m,ld
OU09 SD108 0012	SE	CALCIUM	940	6.2	7.8	MG_KG	J	fd
OU09 SD108 0012	SE	POTASSIUM	520	39	78	MG_KG	J+	m
OU09 SD108 0012	SE	ANTIMONY	0.08	0.039	0.078	MG_KG	J-	m
OU09 SD108 0012	SE	BARIUM	5.4	0.078	0.16	MG_KG	J	fd
OU09 SD108 0012	SE	CHROMIUM, TOTAL	10.5	0.31	0.39	MG_KG	J	fd
OU09 SD108 0012	SE	COPPER	4.9	0.16	0.23	MG_KG	J	fd
OU09 SD108 0012	SE	LEAD	8.8	0.039	0.078	MG_KG	J	fd
OU09 SD108 0012	SE	MANGANESE	79.9	0.078	0.16	MG_KG	J+	m
OU09 SD108 0012	SE	SILVER	0.05	0.031	0.078	MG_KG	J	fd
OU09 SD108 0012	SE	ZINC	25.3	0.62	0.78	MG_KG	J	fd

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SD108 0012	SE	MERCURY	0.02	0.019	0.038	MG_KG	J	fd
OU09 SD108 0012	SE	ACID VOLATILE SULFIDES	0.54	0.096	0.13	UMOL_G	J	ld
OU09 SD108 0012	SE	ANTIMONY	0.00099	0.00099	0.0016	UMOL_G	UJ	m
OU09 SD108 0012	SE	CADMIUM	0.00011	0.00065	0.0011	UMOL_G	J	fd
OU09 SD108 0012	SE	COPPER	0.011	0.0038	0.0095	UMOL_G	J	m,ld,fd
OU09 SD108 0012	SE	LEAD	0.010	0.00047	0.00058	UMOL_G	J	ld
OU09 SD108 0012	SE	MERCURY			0.000024	UMOL_G	R	m
OU09 SD108 0012	SE	NICKEL	0.011	0.0016	0.0041	UMOL_G	J	ld,fd
OU09 SD108 0012	SE	ZINC	0.077	0.0037	0.0074	UMOL_G	J	m,ld
OU09 SD117 0012	SE	CALCIUM	977	7.2	9.0	MG_KG	J	fd
OU09 SD117 0012	SE	POTASSIUM	452	45	90	MG_KG	J+	m
OU09 SD117 0012	SE	ANTIMONY	0.58	0.045	0.090	MG_KG	J-	m
OU09 SD117 0012	SE	BARIUM	5.4	0.090	0.18	MG_KG	J	fd
OU09 SD117 0012	SE	CHROMIUM, TOTAL	11.5	0.36	0.45	MG_KG	J	fd
OU09 SD117 0012	SE	COPPER	7.0	0.18	0.27	MG_KG	J	fd
OU09 SD117 0012	SE	LEAD	25.5	0.045	0.090	MG_KG	J	fd
OU09 SD117 0012	SE	MANGANESE	119	0.090	0.18	MG_KG	J+	m
OU09 SD117 0012	SE	SILVER	0.05	0.036	0.090	MG_KG	J	fd
OU09 SD117 0012	SE	ZINC	36.3	0.72	0.90	MG_KG	J	fd
OU09 SD117 0012	SE	MERCURY	0.01	0.019	0.037	MG_KG	J	fd
OU09 SD117 0012	SE	ACID VOLATILE SULFIDES	0.098	0.098	0.13	UMOL_G	UJ	ld
OU09 SD117 0012	SE	ANTIMONY	0.0010	0.0010	0.0016	UMOL_G	UJ	m
OU09 SD117 0012	SE	CADMIUM	0.00013	0.00066	0.0011	UMOL_G	J	fd
OU09 SD117 0012	SE	COPPER	0.0074	0.0039	0.0098	UMOL_G	J	m,ld,fd
OU09 SD117 0012	SE	LEAD	0.028	0.00048	0.00060	UMOL_G	J	ld
OU09 SD117 0012	SE	MERCURY			0.000025	UMOL_G	R	m
OU09 SD117 0012	SE	NICKEL	0.0077	0.0017	0.0042	UMOL_G	J	ld,fd
OU09 SD117 0012	SE	ZINC	0.047	0.0038	0.0076	UMOL_G	J	m,ld
OU09 SD118 0012	SE	CALCIUM	936	6.7	8.4	MG_KG	J	fd
OU09 SD118 0012	SE	POTASSIUM	456	42	84	MG_KG	J+	m
OU09 SD118 0012	SE	ANTIMONY	0.41	0.042	0.084	MG_KG	J-	m
OU09 SD118 0012	SE	BARIUM	6.8	0.084	0.17	MG_KG	J	fd
OU09 SD118 0012	SE	CHROMIUM, TOTAL	9.5	0.33	0.42	MG_KG	J	fd
OU09 SD118 0012	SE	COPPER	5.9	0.17	0.25	MG_KG	J	fd
OU09 SD118 0012	SE	LEAD	113	0.042	0.084	MG_KG	J	fd
OU09 SD118 0012	SE	MANGANESE	105	0.084	0.17	MG_KG	J+	m
OU09 SD118 0012	SE	SILVER	0.03	0.033	0.084	MG_KG	J	fd
OU09 SD118 0012	SE	ZINC	29.7	0.67	0.84	MG_KG	J	fd
OU09 SD118 0012	SE	MERCURY	0.01	0.018	0.036	MG_KG	J	fd

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SD118 0012W	SE	POTASSIUM	497	44	89	MG_KG	J+	m
OU09 SD118 0012W	SE	ANTIMONY	0.43	0.044	0.089	MG_KG	J-	m
OU09 SD118 0012W	SE	MANGANESE	131	0.089	0.18	MG_KG	J+	m
OU09 SD118 1224	SE	CALCIUM	2040	6.5	8.2	MG_KG	J	fd
OU09 SD118 1224	SE	POTASSIUM	569	41	82	MG_KG	J+	m
OU09 SD118 1224	SE	ANTIMONY	1.1	0.041	0.082	MG_KG	J-	m
OU09 SD118 1224	SE	BARIUM	9.8	0.082	0.16	MG_KG	J	fd
OU09 SD118 1224	SE	CHROMIUM, TOTAL	14.8	0.33	0.41	MG_KG	J	fd
OU09 SD118 1224	SE	COPPER	15.5	0.16	0.24	MG_KG	J	fd
OU09 SD118 1224	SE	LEAD	228	0.041	0.082	MG_KG	J	fd
OU09 SD118 1224	SE	MANGANESE	155	0.082	0.16	MG_KG	J+	m
OU09 SD118 1224	SE	SILVER	0.06	0.033	0.082	MG_KG	J	fd
OU09 SD118 1224	SE	ZINC	43.9	0.65	0.82	MG_KG	J	fd
OU09 SD118 1224	SE	MERCURY	0.01	0.020	0.038	MG_KG	J	fd
OU09 SD118 2436	SE	CALCIUM	834	14	18	MG_KG	J	fd
OU09 SD118 2436	SE	POTASSIUM	580	44	88	MG_KG	J+	m
OU09 SD118 2436	SE	ANTIMONY	3.9	0.044	0.088	MG_KG	J-	m
OU09 SD118 2436	SE	BARIUM	13.0	0.088	0.18	MG_KG	J	fd
OU09 SD118 2436	SE	CHROMIUM, TOTAL	15.0	0.35	0.44	MG_KG	J	fd
OU09 SD118 2436	SE	COPPER	15.5	0.18	0.26	MG_KG	J	fd
OU09 SD118 2436	SE	LEAD	334	0.044	0.088	MG_KG	J	fd
OU09 SD118 2436	SE	MANGANESE	192	0.088	0.18	MG_KG	J+	m
OU09 SD118 2436	SE	SILVER	0.05	0.035	0.088	MG_KG	J	fd
OU09 SD118 2436	SE	ZINC	49.9	0.70	0.88	MG_KG	J	fd
OU09 SD118 2436	SE	MERCURY	0.008	0.015	0.029	MG_KG	J	fd
RBSD12111301	WQ	CALCIUM	100	100	100	UG_L	U	bl
RBSD12111301	WQ	IRON	100	100	100	UG_L	U	bl
RBSD12111301	WQ	MAGNESIUM	100	100	100	UG_L	U	bl
RBSD12111301	WQ	SODIUM	1000	1000	1000	UG_L	U	bl
RBSD12111301	WQ	ANTIMONY	1.0	1.0	1.0	UG_L	U	bl
RBSD12111301	WQ	BARIUM	2.0	2.0	2.0	UG_L	U	bl
RBSD12111301	WQ	CADMIUM	1.0	1.0	1.0	UG_L	U	bl
RBSD12111301	WQ	CHROMIUM, TOTAL	5.0	5.0	5.0	UG_L	U	bl
RBSD12111301	WQ	COPPER	3.0	3.0	3.0	UG_L	U	bl
RBSD12111301	WQ	LEAD	1.0	1.0	1.0	UG_L	U	bl
RBSD12111301	WQ	MANGANESE	2.0	2.0	2.0	UG_L	U	bl
RBSD12111301	WQ	NICKEL	2.0	2.0	2.0	UG_L	U	bl
RBSD12111301	WQ	ZINC	10	10	10	UG_L	U	bl

Attachment A

Non Conformance Summary Tables

Table A-1a Lab Blanks

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
PBSHA03IMS2	BARIUM	0.050	0.10	0.20	MG_KG	BSBG SD302 0012 BSBG SD302 1224 BSBG SD302 2436 FDSD12101301W OU09 SD106 0012 OU09 SD106 0012W OU09 SD106 1224 OU09 SD106 2436 OU09 SD107 0012 OU09 SD108 0012 OU09 SD117 0012 OU09 SD118 0012 OU09 SD118 0012W OU09 SD118 1224 OU09 SD118 2436
PBSHA03IMS2	CHROMIUM, TOTAL	0.099	0.40	0.50	MG_KG	BSBG SD302 0012 BSBG SD302 1224 BSBG SD302 2436 FDSD12101301W OU09 SD106 0012 OU09 SD106 0012W OU09 SD106 1224 OU09 SD106 2436 OU09 SD107 0012 OU09 SD108 0012 OU09 SD117 0012 OU09 SD118 0012 OU09 SD118 0012W OU09 SD118 1224 OU09 SD118 2436
PBSHA03IMS2	COBALT	0.005	0.030	0.10	MG_KG	BSBG SD302 0012 BSBG SD302 1224 BSBG SD302 2436 FDSD12101301W OU09 SD106 0012 OU09 SD106 0012W OU09 SD106 1224 OU09 SD106 2436 OU09 SD107 0012 OU09 SD108 0012 OU09 SD117 0012 OU09 SD118 0012 OU09 SD118 0012W OU09 SD118 1224 OU09 SD118 2436

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
PBSHA03IMS2	LEAD	0.049	0.050	0.10	MG_KG	BSBG SD302 0012 BSBG SD302 1224 BSBG SD302 2436 FDSD12101301W OU09 SD106 0012 OU09 SD106 0012W OU09 SD106 1224 OU09 SD106 2436 OU09 SD107 0012 OU09 SD108 0012 OU09 SD117 0012 OU09 SD118 0012 OU09 SD118 0012W OU09 SD118 1224 OU09 SD118 2436
PBWHA03IMW2	COPPER	1.108	2.0	3.0	UG_L	RBSD12111301
PBWHA03IMW2	LEAD	0.442	0.50	1.0	UG_L	RBSD12111301
PBSHA03IMS2	MANGANESE	0.201	0.10	0.20	MG_KG	BSBG SD302 0012 BSBG SD302 1224 BSBG SD302 2436 FDSD12101301W OU09 SD106 0012 OU09 SD106 0012W OU09 SD106 1224 OU09 SD106 2436 OU09 SD107 0012 OU09 SD108 0012 OU09 SD117 0012 OU09 SD118 0012 OU09 SD118 0012W OU09 SD118 1224 OU09 SD118 2436
PBSHA03IMS2	ZINC	0.453	0.80	1.0	MG_KG	BSBG SD302 0012 BSBG SD302 1224 BSBG SD302 2436 FDSD12101301W OU09 SD106 0012 OU09 SD106 0012W OU09 SD106 1224 OU09 SD106 2436 OU09 SD107 0012 OU09 SD108 0012 OU09 SD117 0012 OU09 SD118 0012 OU09 SD118 0012W OU09 SD118 1224 OU09 SD118 2436
PBWGL20ICW1	ALUMINUM	21.450	100	300	UG_L	RBSD12111301
PBWGL20ICW1	CALCIUM	19.200	80	100	UG_L	RBSD12111301
PBWGL20ICW1	IRON	17.310	80	100	UG_L	RBSD12111301

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
PBWGL20ICW1	MAGNESIUM	10.940	80	100	UG_L	RBSD12111301
PBWGL20ICW1	POTASSIUM	58.350	500	1000	UG_L	RBSD12111301
PBWGL20ICW1	SODIUM	44.340	500	1000	UG_L	RBSD12111301
PBWGL20IMW1	ANTIMONY	0.092	0.50	1.0	UG_L	RBSD12111301
PBWGL20IMW1	BARIUM	0.360	1.0	2.0	UG_L	RBSD12111301
PBWGL20IMW1	CADMIUM	0.066	0.20	1.0	UG_L	RBSD12111301
PBWGL20IMW1	CHROMIUM, TOTAL	0.921	4.0	5.0	UG_L	RBSD12111301
PBWGL20IMW1	MANGANESE	0.401	1.0	2.0	UG_L	RBSD12111301
PBWHA03IMW2	BARIUM	0.453	1.0	2.0	UG_L	RBSD12111301
PBWHA03IMW2	CHROMIUM, TOTAL	0.729	4.0	5.0	UG_L	RBSD12111301
PBWHA03IMW2	COBALT	0.079	0.30	1.0	UG_L	RBSD12111301
PBWHA03IMW2	MANGANESE	0.671	1.0	2.0	UG_L	RBSD12111301
PBWHA03IMW2	NICKEL	0.168	1.2	2.0	UG_L	RBSD12111301
PBWHA03IMW2	ZINC	5.515	8.0	10	UG_L	RBSD12111301
PBSGL12ICS2	MERCURY	0.000037	0.0020	0.0040	UMOL_G	OU09 SD107 0012
PBSGL17ICS3	COPPER	0.00020	0.20	0.50	UMOL_G	OU09 SD106 0012 OU09 SD108 0012 OU09 SD107 0012 OU09 SD117 0012 BSBG SD302 0012
PBSGL17ICS3	MERCURY	0.00024	0.0020	0.0040	UMOL_G	OU09 SD106 0012 OU09 SD108 0012 OU09 SD107 0012 OU09 SD117 0012 BSBG SD302 0012
PBSGL17ICS3	NICKEL	0.00040	0.080	0.20	UMOL_G	OU09 SD106 0012 OU09 SD108 0012 OU09 SD107 0012 OU09 SD117 0012 BSBG SD302 0012
PBSHA03ICS2	ALUMINUM	3.289	10	30	MG_KG	BSBG SD302 0012 BSBG SD302 1224 BSBG SD302 2436 FDSD12101301W OU09 SD106 0012 OU09 SD106 0012W OU09 SD106 1224 OU09 SD106 2436 OU09 SD107 0012 OU09 SD108 0012 OU09 SD117 0012 OU09 SD118 0012 OU09 SD118 0012W OU09 SD118 1224 OU09 SD118 2436

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
PBSHA03ICS2	IRON	1.603	8.0	10	MG_KG	BSBG SD302 0012 BSBG SD302 1224 BSBG SD302 2436 FDSD12101301W OU09 SD106 0012 OU09 SD106 0012W OU09 SD106 1224 OU09 SD106 2436 OU09 SD107 0012 OU09 SD108 0012 OU09 SD117 0012 OU09 SD118 0012 OU09 SD118 0012W OU09 SD118 1224 OU09 SD118 2436
PBSHA03ICS2	SODIUM	8.328	50	100	MG_KG	BSBG SD302 0012 BSBG SD302 1224 BSBG SD302 2436 FDSD12101301W OU09 SD106 0012 OU09 SD106 0012W OU09 SD106 1224 OU09 SD106 2436 OU09 SD107 0012 OU09 SD108 0012 OU09 SD117 0012 OU09 SD118 0012 OU09 SD118 0012W OU09 SD118 1224 OU09 SD118 2436
PBSHA03IMS2	BARIUM	0.050	0.10	0.20	MG_KG	BSBG SD302 0012 BSBG SD302 1224 BSBG SD302 2436 FDSD12101301W OU09 SD106 0012 OU09 SD106 0012W OU09 SD106 1224 OU09 SD106 2436 OU09 SD107 0012 OU09 SD108 0012 OU09 SD117 0012 OU09 SD118 0012 OU09 SD118 0012W OU09 SD118 1224 OU09 SD118 2436

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
PBSHA03IMS2	CHROMIUM, TOTAL	0.099	0.40	0.50	MG_KG	BSBG SD302 0012 BSBG SD302 1224 BSBG SD302 2436 FDSD12101301W OU09 SD106 0012 OU09 SD106 0012W OU09 SD106 1224 OU09 SD106 2436 OU09 SD107 0012 OU09 SD108 0012 OU09 SD117 0012 OU09 SD118 0012 OU09 SD118 0012W OU09 SD118 1224 OU09 SD118 2436
PBSHA03IMS2	COBALT	0.005	0.030	0.10	MG_KG	BSBG SD302 0012 BSBG SD302 1224 BSBG SD302 2436 FDSD12101301W OU09 SD106 0012 OU09 SD106 0012W OU09 SD106 1224 OU09 SD106 2436 OU09 SD107 0012 OU09 SD108 0012 OU09 SD117 0012 OU09 SD118 0012 OU09 SD118 0012W OU09 SD118 1224 OU09 SD118 2436
PBSHA03IMS2	LEAD	0.049	0.050	0.10	MG_KG	BSBG SD302 0012 BSBG SD302 1224 BSBG SD302 2436 FDSD12101301W OU09 SD106 0012 OU09 SD106 0012W OU09 SD106 1224 OU09 SD106 2436 OU09 SD107 0012 OU09 SD108 0012 OU09 SD117 0012 OU09 SD118 0012 OU09 SD118 0012W OU09 SD118 1224 OU09 SD118 2436

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
PBSHA03IMS2	MANGANESE	0.201	0.10	0.20	MG_KG	BSBG SD302 0012 BSBG SD302 1224 BSBG SD302 2436 FDSD12101301W OU09 SD106 0012 OU09 SD106 0012W OU09 SD106 1224 OU09 SD106 2436 OU09 SD107 0012 OU09 SD108 0012 OU09 SD117 0012 OU09 SD118 0012 OU09 SD118 0012W OU09 SD118 1224 OU09 SD118 2436
PBSHA03IMS2	ZINC	0.453	0.80	1.0	MG_KG	BSBG SD302 0012 BSBG SD302 1224 BSBG SD302 2436 FDSD12101301W OU09 SD106 0012 OU09 SD106 0012W OU09 SD106 1224 OU09 SD106 2436 OU09 SD107 0012 OU09 SD108 0012 OU09 SD117 0012 OU09 SD118 0012 OU09 SD118 0012W OU09 SD118 1224 OU09 SD118 2436
PBSHA04HGS1	MERCURY	0.005	0.017	0.033	MG_KG	FDSD12101301W OU09 SD106 0012 OU09 SD106 0012W OU09 SD106 1224 OU09 SD107 0012 OU09 SD108 0012 OU09 SD117 0012 OU09 SD118 0012 OU09 SD118 0012W OU09 SD118 1224 OU09 SD118 2436
PBSHA06HGS1	MERCURY	-0.006	0.017	0.033	MG_KG	BSBG SD302 1224
PBWGL20ICW1	ALUMINUM	21.450	100	300	UG_L	RBSD12111301
PBWGL20ICW1	CALCIUM	19.200	80	100	UG_L	RBSD12111301
PBWGL20ICW1	IRON	17.310	80	100	UG_L	RBSD12111301
PBWGL20ICW1	MAGNESIUM	10.940	80	100	UG_L	RBSD12111301
PBWGL20ICW1	POTASSIUM	58.350	500	1000	UG_L	RBSD12111301
PBWGL20ICW1	SODIUM	44.340	500	1000	UG_L	RBSD12111301
PBWGL20IMW1	ANTIMONY	0.092	0.50	1.0	UG_L	RBSD12111301

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
PBWGL20IMW1	BARIUM	0.360	1.0	2.0	UG_L	RBSD12111301
PBWGL20IMW1	CADMIUM	0.066	0.20	1.0	UG_L	RBSD12111301
PBWGL20IMW1	CHROMIUM, TOTAL	0.921	4.0	5.0	UG_L	RBSD12111301
PBWGL20IMW1	MANGANESE	0.401	1.0	2.0	UG_L	RBSD12111301
PBWHA03IMW2	BARIUM	0.453	1.0	2.0	UG_L	RBSD12111301
PBWHA03IMW2	CHROMIUM, TOTAL	0.729	4.0	5.0	UG_L	RBSD12111301
PBWHA03IMW2	COBALT	0.079	0.30	1.0	UG_L	RBSD12111301
PBWHA03IMW2	COPPER	1.108	2.0	3.0	UG_L	RBSD12111301
PBWHA03IMW2	LEAD	0.442	0.50	1.0	UG_L	RBSD12111301
PBWHA03IMW2	MANGANESE	0.671	1.0	2.0	UG_L	RBSD12111301
PBWHA03IMW2	NICKEL	0.168	1.2	2.0	UG_L	RBSD12111301
PBWHA03IMW2	ZINC	5.515	8.0	10	UG_L	RBSD12111301
PBWHA04HGW3	MERCURY	-0.051	0.10	0.20	UG_L	OU09 SD107 0012
PBWHA06HGW1	MERCURY	-0.020	0.10	0.20	UG_L	RBSD12111301
PBSHA03ICS2	ALUMINUM	3.289	10	30	MG_KG	BSBG SD302 0012 BSBG SD302 1224 BSBG SD302 2436 FDSD12101301W OU09 SD106 0012 OU09 SD106 0012W OU09 SD106 1224 OU09 SD106 2436 OU09 SD107 0012 OU09 SD108 0012 OU09 SD117 0012 OU09 SD118 0012 OU09 SD118 0012W OU09 SD118 1224 OU09 SD118 2436
PBSHA03ICS2	IRON	1.603	8.0	10	MG_KG	BSBG SD302 0012 BSBG SD302 1224 BSBG SD302 2436 FDSD12101301W OU09 SD106 0012 OU09 SD106 0012W OU09 SD106 1224 OU09 SD106 2436 OU09 SD107 0012 OU09 SD108 0012 OU09 SD117 0012 OU09 SD118 0012 OU09 SD118 0012W OU09 SD118 1224 OU09 SD118 2436

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
PBSHA03ICS2	SODIUM	8.328	50	100	MG_KG	BSBG SD302 0012 BSBG SD302 1224 BSBG SD302 2436 FDSD12101301W OU09 SD106 0012 OU09 SD106 0012W OU09 SD106 1224 OU09 SD106 2436 OU09 SD107 0012 OU09 SD108 0012 OU09 SD117 0012 OU09 SD118 0012 OU09 SD118 0012W OU09 SD118 1224 OU09 SD118 2436

Table A-1b Field Blanks

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
RBSD12111301	CALCIUM	39.3	80	100	UG_L	all sediments in this SDG
RBSD12111301	IRON	25.5	80	100	UG_L	all sediments in this SDG
RBSD12111301	MAGNESIUM	10.8	80	100	UG_L	all sediments in this SDG
RBSD12111301	SODIUM	182	500	1000	UG_L	all sediments in this SDG
RBSD12111301	ANTIMONY	0.06	0.50	1.0	UG_L	all sediments in this SDG
RBSD12111301	BARIUM	0.69	1.0	2.0	UG_L	all sediments in this SDG
RBSD12111301	CADMIUM	0.05	0.20	1.0	UG_L	all sediments in this SDG
RBSD12111301	CHROMIUM, TOTAL	0.93	4.0	5.0	UG_L	all sediments in this SDG
RBSD12111301	COPPER	0.39	2.0	3.0	UG_L	all sediments in this SDG
RBSD12111301	LEAD	0.29	0.50	1.0	UG_L	all sediments in this SDG
RBSD12111301	MANGANESE	0.45	1.0	2.0	UG_L	all sediments in this SDG
RBSD12111301	NICKEL	0.21	1.2	2.0	UG_L	all sediments in this SDG
RBSD12111301	VANADIUM	0.87	4.0	5.0	UG_L	all sediments in this SDG
RBSD12111301	ZINC	4.8	8.0	10	UG_L	all sediments in this SDG

Table A-2 Matrix Spikes

Sample ID	Compound	MS % Recovery	MSD % Recovery	Lower Limit	Upper Limit	RPD	RPD Limit
BSBG SD302 0012	POTASSIUM	140.7	133	80	120	4.5	20
BSBG SD302 0012	MANGANESE	129	115.9	80	120	4.1	20
BSBG SD302 0012	ANTIMONY	55.8	55	80	120	5.1	20
BSBG SD302 0012	MERCURY (SEM)	0		80	120		
BSBG SD302 0012	ANTIMONY (SEM)	31.1		80	120		
BSBG SD302 0012	COPPER (SEM)	-29.5		80	120		
BSBG SD302 0012	ZINC (SEM)	66.4		80	120		

Table A-3 Lab Duplicates

Sample ID	Compound	Sample Result	Qual	Duplicate Result	Qual	LOD	LOQ	Units	RPD
BSBG SD302 0012	NICKEL	0.035		0.022		0.0014	0.0036	UMOL_G	43.6
BSBG SD302 0012	COPPER	0.11		0.050		0.0033	0.0084	UMOL_G	72.2
BSBG SD302 0012	ZINC	0.41		0.32		0.0032	0.0065	UMOL_G	25.1
BSBG SD302 0012	LEAD	0.071		0.057		0.00041	0.00051	UMOL_G	21.5
BSBG SD302 0012	ACID VOLATILE SULFIDES	34		42		0.086	0.11	UMOL_G	21.1

Table A-4 Field Duplicates

Sample ID	Duplicate ID	Compound	Sample Result	Qual	Duplicate Result	Qual	LOQ	Units	RPD
SDG CARR-12									
BSBG SD305 0012	FDSD12121302	CADMIUM	0.00087		0.00164		0.0016	UMOL_G	61.4
BSBG SD305 0012	FDSD12121302	COPPER	0.112		0.219		0.014	UMOL_G	64.7
BSBG SD305 0012	FDSD12121302	NICKEL	0.0417		0.0834		0.0061	UMOL_G	66.7
BSBG SD305 0012	FDSD12121302	BARIUM	25.3		44.8		0.26	MG_KG	55.6
BSBG SD305 0012	FDSD12121302	CALCIUM	154000		79000		66	MG_KG	64.4
BSBG SD305 0012	FDSD12121302	CHROMIUM	31.0		72.2		0.66	MG_KG	79.8
BSBG SD305 0012	FDSD12121302	COPPER	25.4		73.3		0.40	MG_KG	97.1
BSBG SD305 0012	FDSD12121302	LEAD	38.0		84.5		0.13	MG_KG	75.9
BSBG SD305 0012	FDSD12121302	MERCURY	0.17		0.62		0.048	MG_KG	114
BSBG SD305 0012	FDSD12121302	SILVER	0.44		0.90		0.13	MG_KG	68.7
BSBG SD305 0012	FDSD12121302	ZINC	75.1		142		1.3	MG_KG	61.6

Attachment B

Qualifier Codes and Explanations

Qualifier	Explanation
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
UJ	The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual quantitation limit necessary to accurately and precisely measure the analyte in the sample.
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

Attachment C

Reason Codes and Explanations

Reason Code	Explanation
be	Equipment blank contamination
bf	Field blank contamination
bl	Laboratory blank contamination
c	Calibration issue
d	Reporting limit raised due to chromatographic interference
fd	Field duplicate RPDs
h	Holding times
i	Internal standard areas
k	Estimated Maximum Possible Concentration (EMPC)
l	LCS recoveries
lc	Labeled compound recovery
ld	Laboratory duplicate RPDs
lp	Laboratory control sample/laboratory control sample duplicate RPDs
m	Matrix spike recovery
md	Matrix spike/matrix spike duplicate RPDs
nb	Negative laboratory blank contamination
p	Chemical preservation issue
r	Dual column RPD
q	Quantitation issue
s	Surrogate recovery
su	Ion suppression
t	Temperature preservation issue
x	Percent solids
y	Serial dilution results
z	ICS results

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Data Validation Report

Project:	MRP Site 1 (OU9) Remedial Investigation, NAVSTA Newport, Rhode Island CTO WE06
Laboratory:	Katahdin Analytical Services, Scarborough, Maine
Service Request:	CARR-10
Analyses/Method:	TAL Metals/ EPA SW-846 Methods 6010C, 6020A, 7471B Acid Volatile Sulfide/Simultaneously Extracted Metals / EPA 821/R-91-100
Validation Level:	Limited
Resolution Consultants Project Number:	60250336 SA.DV

Prepared by:	Kristin Rutherford/Resolution Consultants	Completed on: 02/24/2014
Reviewed by:	Waverly Braunstein/Resolution Consultants	File Name: CARR-10_SE_Metals_AVSSEM_DVRpt

SUMMARY

The samples listed below were collected by Resolution Consultants from MRP Site 1 (OU9), NAVSTA Newport, Rhode Island on December 10, 11, and 12, 2013.

Sample ID	Matrix/Sample Type
OU09 SD118 0012	Sediment
OU09 SD122 0012	Sediment
OU09 SD122 0012W	Sediment
OU09 SD123 0012	Sediment
OU09 SD124 0012	Sediment
OU09 SD125 0012	Sediment
OU09 SD125 1224	Sediment
OU09 SD125 2436	Sediment
OU09 SD126 0012	Sediment
OU09 SD126 1224	Sediment
OU09 SD126 2436	Sediment

The data have been validated in accordance with the project-specific Sampling and Analysis Plan, *Sampling and Analysis Plan, Former Carr Point Shooting Range (MRP Site 1, OU9), Naval Station (NAVSTA) Newport, Rhode Island, Final* (Naval Facilities Engineering Command, Mid-Atlantic, 2013) and the following references:

- *DoD Quality Systems Manual (QMS) for Environmental Laboratories, version 4.2* (DoD EDQW, 2010);
- *USEPA Region 1, EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses* (December 1996);

- *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review* (January 2010);
- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW846, Method 6010C, Inductively Coupled Plasma-Atomic Emission Spectrometry* (USEPA, 1996);
- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW846, Method 6020A, Inductively Coupled Plasma-Mass Spectrometry* (USEPA, 1996);
- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW846, Method 7471B, Mercury in Solid or Semisolid Waste (Manual Cold-Vapor Technique)* (USEPA, 1996);
- *Draft Analytical Method for Determination of Acid Volatile Sulfide in Sediment, Method 821/R-91-100* (USEPA, 1991);
- laboratory quality control (QC) limits, as applicable.

The USEPA Region 1 and National Data Validation Functional Guidelines were modified to accommodate the non-CLP methodologies. In the absence of method-specific direction for validation, Resolution Consultants professional judgment was used as appropriate.

REVIEW ELEMENTS

The data were evaluated based on the following parameters (where applicable to the method):

✓ Data completeness (chain-of-custody (COC)/sample integrity
✗ Holding times and sample preservation
✓ ICP/MS Instrument tuning
✓ Initial calibration/continuing calibration verification
✗ Laboratory blanks/equipment blanks
✓ ICP interference check standards
✗ Matrix spike (MS) and/or matrix spike duplicate (MSD) results
✗ Laboratory duplicate results
✓ Laboratory control sample (LCS)/laboratory control sample duplicate (LCSD) results
✗ Field duplicates
✓ ICP/ICPMS serial dilution results
✓ ICP/MS internal standard performance
✓ Sample results/reporting issues

The symbol (✓) indicates that no validation qualifiers were applied based on this parameter. NA indicates that the parameter was not included as part of this data set or was not applicable to this validation and therefore not reviewed. The symbol (✗) indicates that a quality control (QC) nonconformance resulted in the qualification of data. Any QC nonconformance that resulted in the qualification of data is discussed below. In addition, nonconformances or other issues that were noted during validation, but did not result in qualification of data, may be discussed for informational purposes only.

The data appear valid as reported and may be used for decision making purposes. Selected data points were estimated, negated, and/or rejected due to nonconformances of certain QC criteria (see discussion below). Qualified sample results are presented in Table 1.

RESULTS

Data Completeness

The data package was reviewed and found to meet acceptance criteria for completeness:

- The COCs were reviewed for completeness of information relevant to the samples and requested analyses, and for signatures indicating transfer of sample custody.
- The laboratory sample login sheet(s) were reviewed for issues potentially affecting sample integrity, including the condition of sample containers upon receipt at the laboratory.
- Completeness of analyses was verified by comparing the reported results to the COC requests.

Holding Times/Sample Preservation

Sample preservation and preparation/analysis holding times were reviewed for conformance with the QC acceptance criteria.

SEM criteria:

SEM hold time is 14 days from collection to preparation and 14 days from preparation to analysis. Qualify detected results as estimated low (J-) and reject nondetects (R).

Nonconformances are summarized in Attachment A in Table A-1.

Qualified sample results are shown in Table 1.

ICP/MS Instrument Tuning

ICP/MS tuning results were reviewed for conformance with the QC acceptance criteria to ensure that:

- the proper tuning solution was used with elements representing all of the mass regions of interest;
- the tunings were performed at the beginning of each analysis and prior to calibration;
- the tuning solution was analyzed at least 4 times as required by the method;
- the mass calibration was within 0.1 amu of the true value for all masses within the region of interest;
- the resolution was verified to be <0.9 amu full width at 10% peak height; and
- the %RSD was $\leq$ 5% for the analytes contained in the tuning solution.

The QC acceptance criteria were met.

Initial Calibration/Continuing Calibration Verification

Calibration data were reviewed for conformance with the QC acceptance criteria to ensure that:

- all criteria were met for the calibration curves
- the initial calibration verification (ICV) percent recovery (%R) criteria were met;
- the continuing calibration verification standard (CCV) method percent difference (%Ds) were met; and
- the low level check standards (CRI or CRA) %R criteria were met.

The QC acceptance criteria were met.

Laboratory Blanks/Equipment Blanks

Laboratory method blanks and equipment rinsate blanks were evaluated as to whether there were contaminants detected above the method detection limit (MDL). Data validation qualifications for individual samples are based on the maximum contaminant concentration detected in all associated blanks.

Method and equipment rinsate results were reviewed for conformance with the QC acceptance criteria. Detected results in blanks are not discussed in this data validation report if the associated results were nondetect or if qualification of sample results was not required.

Nonconformances are summarized in Attachment A in Tables A-2a and A-2b. Sample results were qualified as follows:

Blank Type	Blank Result	Sample Result	Action for Samples
PB / EB/ FB (Positive)	> LOQ	≥IDL/MDL but ≤ LOQ	Qualify as nondetect (U) at the LOQ
		>LOQ but < 10x Blank Result	Qualify results as unusable
		≥10x Blank Result	No action
	≥IDL/MDL but ≤LOQ	Nondetect	No action
		≥IDL/MDL but ≤LOQ	Qualify as nondetect (U) at the LOQ
		> LOQ	Use Resolution Consultants professional judgment (see below [1])
PB (Negative)	< (-LOQ)	< 10x LOQ	Qualify positive results <10x LOQ as estimated (J) and nondetects as estimated (UJ)
		≥10x LOQ	No action

[1] Establish an action level (AL) at 5x the blank contamination. If sample result is <AL, qualify the reported result with a U.

Qualified sample results are shown in Table 1.

ICP Interference Check Standards

The ICP interference check standards (ICSA, ICSAB) were reviewed for conformance.

All criteria were met for the ICSA and ICSAB.

MS Results

The MS and/or MSD %Rs and/or RPDs were reviewed for conformance with the QC acceptance criteria.

Nonconformances are summarized in Attachment A in Table A-3. Data qualification on the basis of MS and/or MSD nonconformances was as follows:

Qualify Results	%R < 30	80 > %R ≥ 30	%R >120	RPD>20
Detected results	J	J	J	J
Nondetects	R	UJ	Accept	UJ

Notes: MS actions apply to all samples of the same matrix. This qualification will also be applied to the results of all samples within a given area of the site, if deemed appropriate.

1. If the sample result (SR) > 4x the spike concentration (S), no action is taken.
2. If any analyte does not meet the %R criteria and a post digestion spike (PDS) analysis was performed, use professional judgment to assess the results. Refer to the National Functional Guidelines (NFG) 2010 for recommended actions.
3. If either the MS or MSD does not meet %R criteria, qualify all associated samples.

Sample OU09 SD124 0012 was analyzed as the matrix spike for the SEM analysis. No qualifications were required for copper or lead since the sample concentration was greater than 4X the spiked amount.

Qualified sample results are shown in Table 1.

Laboratory Duplicate Results

The laboratory duplicate relative percent differences (RPDs) were reviewed for conformance.

Nonconformances are summarized in Attachment A in Table A-4. Data qualification on the basis of laboratory duplicate RPDs was as follows:

Sample Results	RPD	Action (Detect/Nondetect)
≥5x LOQ (both sample and duplicate)	RPD>20%	Estimate (J/UJ)
<5x LOQ (either sample and/or duplicate)	if absolute difference is > the LOQ, estimate (J) positive results <5x the LOQ and nondetects (UJ).	

Qualified sample results are shown in Table 1.

LCS/LCSD Results

The LCS/LCSD %Rs and/or RPDs were reviewed for conformance with the QC acceptance criteria.

The LCS and LCSD %Rs and RPDs were within the QC acceptance criteria.

Field Duplicate Results

Field duplicate RPDs were reviewed for conformance with the Resolution Consultants QC acceptance criterion of ≤50% for solid matrices and ≤30% for aqueous matrices. This criterion applies if both results were greater than 5 times the limit of quantitation (LOQ).

Sample FDSD12121302 was collected as a field duplicate of sample BSBG SD305 0012 (reported in SDG CARR-12). These field duplicates are associated with the samples in this SDG.

Nonconformances are summarized in Attachment A in Table A-5. Data qualification on the basis of field duplicate RPDs was as follows:

Actions: (Based on Resolution Consultants professional judgment)

Criteria	RPD	Action	
		Detected	Nondetected
Sample and duplicate are nondetect results	Not calculable (NC)	No qualification	No qualification
Sample and duplicate results <SLOQ	Not applicable	No qualification	No qualification
Sample and duplicate results ≥5xSLOQ	>30% Aqueous >50% All other sample types	J	Not Applicable
Sample and duplicate results are >SLOQ and <5xSLOQ	>60% Aqueous >100% All other sample types	J	Not Applicable
If sample or duplicate result is =SLOQ and the other is not detected	NC	J	UJ
If sample or duplicate result is <SLOQ and the other is not detected	NC	No qualification	No qualification

Qualified sample results are summarized in Table 1.

ICP/ICPMS Serial Dilution Results

The serial dilution percent differences (%Ds) were reviewed for conformance with the QC acceptance criteria.

The serial dilution %Ds were within the QC acceptance criteria.

ICP/MS Internal Standard Performance

ICP/MS Internal standard performance was reviewed for conformance and was within the QC acceptance criteria.

Sample Results/Reporting Issues

All analytes detected at concentrations less than the limit of quantitation (LOQ) but greater than the method detection limit (MDL) were qualified by the laboratory as estimated (J). This "J" qualifier was retained during data validation.

Resolution Consultants professional judgment was used to qualify sample results with percent solids that were <30%.

All criteria were met.

QUALIFICATION ACTIONS

Sample results qualified as a result of validation actions are summarized in Table 1. All actions are described above.

ATTACHMENTS

Attachment A: Nonconformance Summary Tables

Attachment B: Qualifier Codes and Explanations

Attachment C: Reason Codes and Explanations

Table 1 - Data Validation Summary of Qualified Data

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SD118 0012	SE	COPPER	0.018	0.0038	0.0094	UMOL_G	J	ld
OU09 SD118 0012	SE	LEAD	0.18	0.00046	0.00058	UMOL_G	J	ld
OU09 SD118 0012	SE	MERCURY			0.000024	UMOL_G	R	h
OU09 SD122 0012	SE	CALCIUM	1520	5.6	7.0	MG_KG	J	fd
OU09 SD122 0012	SE	BARIUM	26.6	0.070	0.14	MG_KG	J	fd
OU09 SD122 0012	SE	CHROMIUM, TOTAL	11.1	0.56	0.70	MG_KG	J	fd
OU09 SD122 0012	SE	COPPER	25.8	0.14	0.21	MG_KG	J	fd
OU09 SD122 0012	SE	LEAD	4290	0.70	1.4	MG_KG	J	fd
OU09 SD122 0012	SE	SELENIUM	0.35	0.35	0.35	MG_KG	U	bl
OU09 SD122 0012	SE	SILVER	0.15	0.028	0.070	MG_KG	J	fd
OU09 SD122 0012	SE	ZINC	91.6	0.56	0.70	MG_KG	J	fd
OU09 SD122 0012	SE	COPPER	5.2	0.0038	0.0096	UMOL_G	J	ld
OU09 SD122 0012	SE	LEAD	0.74	0.00047	0.00059	UMOL_G	J	ld
OU09 SD122 0012	SE	MERCURY	0.000024	0.000024	0.000024	UMOL_G	UJ	bl,h
OU09 SD122 0012W	SE	CALCIUM	2280	4.7	5.9	MG_KG	J	fd
OU09 SD122 0012W	SE	BARIUM	7.8	0.059	0.12	MG_KG	J	fd
OU09 SD122 0012W	SE	CHROMIUM, TOTAL	10.2	0.47	0.59	MG_KG	J	fd
OU09 SD122 0012W	SE	COPPER	27.6	0.12	0.18	MG_KG	J	fd
OU09 SD122 0012W	SE	LEAD	241	0.029	0.059	MG_KG	J	fd
OU09 SD122 0012W	SE	SELENIUM	0.29	0.29	0.29	MG_KG	U	bl
OU09 SD122 0012W	SE	SILVER	0.03	0.024	0.059	MG_KG	J	fd
OU09 SD122 0012W	SE	ZINC	89.9	0.47	0.59	MG_KG	J	fd
OU09 SD123 0012	SE	CALCIUM	4840	5.0	6.2	MG_KG	J	fd
OU09 SD123 0012	SE	BARIUM	15.2	0.062	0.12	MG_KG	J	fd
OU09 SD123 0012	SE	CHROMIUM, TOTAL	10.2	0.25	0.31	MG_KG	J	fd
OU09 SD123 0012	SE	COPPER	31.6	0.12	0.19	MG_KG	J	fd
OU09 SD123 0012	SE	LEAD	98.9	0.031	0.062	MG_KG	J	fd
OU09 SD123 0012	SE	SELENIUM	0.31	0.31	0.31	MG_KG	U	bl
OU09 SD123 0012	SE	SILVER	0.02	0.025	0.062	MG_KG	J	fd
OU09 SD123 0012	SE	ZINC	83.4	0.50	0.62	MG_KG	J	fd
OU09 SD123 0012	SE	COPPER	0.13	0.0032	0.0079	UMOL_G	J	ld
OU09 SD123 0012	SE	LEAD	0.53	0.00039	0.00048	UMOL_G	J	ld
OU09 SD123 0012	SE	MERCURY			0.000020	UMOL_G	R	h
OU09 SD124 0012	SE	CALCIUM	2300	4.8	6.0	MG_KG	J	fd
OU09 SD124 0012	SE	BARIUM	7.8	0.060	0.12	MG_KG	J	fd
OU09 SD124 0012	SE	CHROMIUM, TOTAL	12.0	0.48	0.60	MG_KG	J	fd
OU09 SD124 0012	SE	COPPER	42.0	0.12	0.18	MG_KG	J	fd
OU09 SD124 0012	SE	LEAD	131	0.030	0.060	MG_KG	J	fd
OU09 SD124 0012	SE	SELENIUM	0.30	0.30	0.30	MG_KG	U	bl

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SD124 0012	SE	SILVER	0.02	0.024	0.060	MG_KG	J	fd
OU09 SD124 0012	SE	ZINC	110	0.48	0.60	MG_KG	J	fd
OU09 SD124 0012	SE	COPPER	0.25	0.0034	0.0086	UMOL_G	J	ld
OU09 SD124 0012	SE	LEAD	0.22	0.00042	0.00053	UMOL_G	J	ld
OU09 SD124 0012	SE	MERCURY	0.000022	0.000022	0.000022	UMOL_G	UJ	bl,h
OU09 SD125 0012	SE	CALCIUM	1120	6.6	8.3	MG_KG	J	fd
OU09 SD125 0012	SE	BARIUM	5.9	0.083	0.16	MG_KG	J	fd
OU09 SD125 0012	SE	CHROMIUM, TOTAL	8.3	0.33	0.41	MG_KG	J	fd
OU09 SD125 0012	SE	COPPER	4.4	0.16	0.25	MG_KG	J	fd
OU09 SD125 0012	SE	LEAD	17.9	0.041	0.083	MG_KG	J	fd
OU09 SD125 0012	SE	SELENIUM	0.41	0.41	0.41	MG_KG	U	bl
OU09 SD125 0012	SE	SILVER	0.04	0.033	0.083	MG_KG	J	fd
OU09 SD125 0012	SE	ZINC	28.7	0.66	0.83	MG_KG	J	fd
OU09 SD125 0012	SE	COPPER	0.014	0.0036	0.0090	UMOL_G	J	ld
OU09 SD125 0012	SE	LEAD	0.027	0.00044	0.00055	UMOL_G	J	ld
OU09 SD125 0012	SE	MERCURY			0.000023	UMOL_G	R	h
OU09 SD125 1224	SE	CALCIUM	474	3.6	4.5	MG_KG	J	fd
OU09 SD125 1224	SE	BARIUM	5.5	0.045	0.090	MG_KG	J	fd
OU09 SD125 1224	SE	CHROMIUM, TOTAL	8.1	0.18	0.22	MG_KG	J	fd
OU09 SD125 1224	SE	COPPER	4.1	0.090	0.14	MG_KG	J	fd
OU09 SD125 1224	SE	LEAD	7.2	0.022	0.045	MG_KG	J	fd
OU09 SD125 1224	SE	SELENIUM	0.22	0.22	0.22	MG_KG	U	bl
OU09 SD125 1224	SE	SILVER	0.02	0.018	0.045	MG_KG	J	fd
OU09 SD125 1224	SE	ZINC	24.4	0.36	0.45	MG_KG	J	fd
OU09 SD125 2436	SE	CALCIUM	1470	5.1	6.4	MG_KG	J	fd
OU09 SD125 2436	SE	BARIUM	7.0	0.064	0.13	MG_KG	J	fd
OU09 SD125 2436	SE	CHROMIUM, TOTAL	8.7	0.26	0.32	MG_KG	J	fd
OU09 SD125 2436	SE	COPPER	4.2	0.13	0.19	MG_KG	J	fd
OU09 SD125 2436	SE	LEAD	3.7	0.032	0.064	MG_KG	J	fd
OU09 SD125 2436	SE	SELENIUM	0.32	0.32	0.32	MG_KG	U	bl
OU09 SD125 2436	SE	SILVER	0.02	0.026	0.064	MG_KG	J	fd
OU09 SD125 2436	SE	ZINC	19.9	0.51	0.64	MG_KG	J	fd
OU09 SD126 0012	SE	CALCIUM	15500	5.8	7.2	MG_KG	J	fd
OU09 SD126 0012	SE	BARIUM	6.2	0.072	0.14	MG_KG	J	fd
OU09 SD126 0012	SE	CHROMIUM, TOTAL	11.4	0.29	0.36	MG_KG	J	fd
OU09 SD126 0012	SE	COPPER	6.7	0.14	0.22	MG_KG	J	fd
OU09 SD126 0012	SE	LEAD	11.0	0.036	0.072	MG_KG	J	fd
OU09 SD126 0012	SE	SELENIUM	0.36	0.36	0.36	MG_KG	U	bl
OU09 SD126 0012	SE	SILVER	0.06	0.029	0.072	MG_KG	J	fd

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SD126 0012	SE	ZINC	30.8	0.58	0.72	MG_KG	J	fd
OU09 SD126 0012	SE	COPPER	0.057	0.0039	0.0096	UMOL_G	J	ld
OU09 SD126 0012	SE	LEAD	0.041	0.00047	0.00059	UMOL_G	J	ld
OU09 SD126 0012	SE	MERCURY			0.000024	UMOL_G	R	h
OU09 SD126 1224	SE	CALCIUM	12200	4.9	6.1	MG_KG	J	fd
OU09 SD126 1224	SE	BARIUM	8.2	0.061	0.12	MG_KG	J	fd
OU09 SD126 1224	SE	CHROMIUM, TOTAL	13.5	0.24	0.30	MG_KG	J	fd
OU09 SD126 1224	SE	COPPER	9.8	0.12	0.18	MG_KG	J	fd
OU09 SD126 1224	SE	LEAD	14.2	0.030	0.061	MG_KG	J	fd
OU09 SD126 1224	SE	SELENIUM	0.30	0.30	0.30	MG_KG	U	bl
OU09 SD126 1224	SE	SILVER	0.1	0.024	0.061	MG_KG	J	fd
OU09 SD126 1224	SE	ZINC	35.9	0.49	0.61	MG_KG	J	fd
OU09 SD126 1224	SE	MERCURY	0.04	0.015	0.029	MG_KG	J	fd
OU09 SD126 2436	SE	CALCIUM	15200	7.4	9.2	MG_KG	J	fd
OU09 SD126 2436	SE	BARIUM	7.6	0.092	0.18	MG_KG	J	fd
OU09 SD126 2436	SE	CHROMIUM, TOTAL	13.0	0.37	0.46	MG_KG	J	fd
OU09 SD126 2436	SE	COPPER	8.1	0.18	0.28	MG_KG	J	fd
OU09 SD126 2436	SE	LEAD	12.5	0.046	0.092	MG_KG	J	fd
OU09 SD126 2436	SE	SELENIUM	0.46	0.46	0.46	MG_KG	U	bl
OU09 SD126 2436	SE	SILVER	0.05	0.037	0.092	MG_KG	J	fd
OU09 SD126 2436	SE	ZINC	34.5	0.74	0.92	MG_KG	J	fd

Attachment A

Non Conformance Summary Tables

Table A-1 Hold Times

Sample ID	Method/Analyte	Days from Sampling to Prep	Status	Days from Prep to Analysis	Status
OU09 SD118 0012	SEM/Mercury	27	>14	2	ok@14 days
OU09 SD122 0012	SEM/Mercury	25	>14	2	ok@14 days
OU09 SD123 0012	SEM/Mercury	25	>14	2	ok@14 days
OU09 SD124 0012	SEM/Mercury	25	>14	2	ok@14 days
OU09 SD125 0012	SEM/Mercury	26	>14	2	ok@14 days
OU09 SD126 0012	SEM/Mercury	26	>14	2	ok@14 days

Table A-2a Lab Blanks

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
PBSGL17ICS3	COPPER	0.00020	0.20	0.50	UMOL_G	OU09 SD118 0012 OU09 SD122 0012 OU09 SD123 0012 OU09 SD124 0012 OU09 SD125 0012 OU09 SD126 0012
PBSGL17ICS3	MERCURY	0.00024	0.0020	0.0040	UMOL_G	OU09 SD122 0012 OU09 SD124 0012
PBSGL17ICS3	NICKEL	0.00040	0.080	0.20	UMOL_G	OU09 SD118 0012 OU09 SD122 0012 OU09 SD123 0012 OU09 SD124 0012 OU09 SD125 0012 OU09 SD126 0012
PBSHA08ICS1	ALUMINUM	4.107	10	30	MG_KG	OU09 SD122 0012 OU09 SD122 0012W OU09 SD123 0012 OU09 SD124 0012 OU09 SD125 0012 OU09 SD125 1224 OU09 SD125 2436 OU09 SD126 0012 OU09 SD126 1224 OU09 SD126 2436
PBSHA08ICS1	CALCIUM	2.441	8.0	10	MG_KG	OU09 SD122 0012 OU09 SD122 0012W OU09 SD123 0012 OU09 SD124 0012 OU09 SD125 0012 OU09 SD125 1224 OU09 SD125 2436 OU09 SD126 0012 OU09 SD126 1224 OU09 SD126 2436

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
PBSHA08ICS1	IRON	1.576	8.0	10	MG_KG	OU09 SD122 0012 OU09 SD122 0012W OU09 SD123 0012 OU09 SD124 0012 OU09 SD125 0012 OU09 SD125 1224 OU09 SD125 2436 OU09 SD126 0012 OU09 SD126 1224 OU09 SD126 2436
PBSHA08ICS1	POTASSIUM	4.388	50	100	MG_KG	OU09 SD122 0012 OU09 SD122 0012W OU09 SD123 0012 OU09 SD124 0012 OU09 SD125 0012 OU09 SD125 1224 OU09 SD125 2436 OU09 SD126 0012 OU09 SD126 1224 OU09 SD126 2436
PBSHA08ICS1	SODIUM	1.599	50	100	MG_KG	OU09 SD122 0012 OU09 SD122 0012W OU09 SD123 0012 OU09 SD124 0012 OU09 SD125 0012 OU09 SD125 1224 OU09 SD125 2436 OU09 SD126 0012 OU09 SD126 1224 OU09 SD126 2436
PBSHA08IMS1	BARIUM	0.060	0.10	0.20	MG_KG	OU09 SD122 0012 OU09 SD122 0012W OU09 SD123 0012 OU09 SD124 0012 OU09 SD125 0012 OU09 SD125 1224 OU09 SD125 2436 OU09 SD126 0012 OU09 SD126 1224 OU09 SD126 2436
PBSHA08IMS1	CHROMIUM, TOTAL	0.098	0.40	0.50	MG_KG	OU09 SD122 0012 OU09 SD122 0012W OU09 SD123 0012 OU09 SD124 0012 OU09 SD125 0012 OU09 SD125 1224 OU09 SD125 2436 OU09 SD126 0012 OU09 SD126 1224 OU09 SD126 2436

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
PBSHA08IMS1	COBALT	0.007	0.030	0.10	MG_KG	OU09 SD122 0012 OU09 SD122 0012W OU09 SD123 0012 OU09 SD124 0012 OU09 SD125 0012 OU09 SD125 1224 OU09 SD125 2436 OU09 SD126 0012 OU09 SD126 1224 OU09 SD126 2436
PBSHA08IMS1	COPPER	0.086	0.20	0.30	MG_KG	OU09 SD122 0012 OU09 SD122 0012W OU09 SD123 0012 OU09 SD124 0012 OU09 SD125 0012 OU09 SD125 1224 OU09 SD125 2436 OU09 SD126 0012 OU09 SD126 1224 OU09 SD126 2436
PBSHA08IMS1	LEAD	0.020	0.050	0.10	MG_KG	OU09 SD122 0012 OU09 SD122 0012W OU09 SD123 0012 OU09 SD124 0012 OU09 SD125 0012 OU09 SD125 1224 OU09 SD125 2436 OU09 SD126 0012 OU09 SD126 1224 OU09 SD126 2436
PBSHA08IMS1	MANGANESE	0.134	0.10	0.20	MG_KG	OU09 SD122 0012 OU09 SD122 0012W OU09 SD123 0012 OU09 SD124 0012 OU09 SD125 0012 OU09 SD125 1224 OU09 SD125 2436 OU09 SD126 0012 OU09 SD126 1224 OU09 SD126 2436
PBSHA08IMS1	NICKEL	0.040	0.12	0.20	MG_KG	OU09 SD122 0012 OU09 SD122 0012W OU09 SD123 0012 OU09 SD124 0012 OU09 SD125 0012 OU09 SD125 1224 OU09 SD125 2436 OU09 SD126 0012 OU09 SD126 1224 OU09 SD126 2436

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
PBSHA08IMS1	SELENIUM	0.040	0.30	0.50	MG_KG	OU09 SD122 0012 OU09 SD122 0012W OU09 SD123 0012 OU09 SD124 0012 OU09 SD125 0012 OU09 SD125 1224 OU09 SD125 2436 OU09 SD126 0012 OU09 SD126 1224 OU09 SD126 2436
PBSHA08IMS1	ZINC	0.833	0.80	1.0	MG_KG	OU09 SD122 0012 OU09 SD122 0012W OU09 SD123 0012 OU09 SD124 0012 OU09 SD125 0012 OU09 SD125 1224 OU09 SD125 2436 OU09 SD126 0012 OU09 SD126 1224 OU09 SD126 2436

Table A-2b Field Blanks

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
RBSD12111301	CALCIUM	39.3	80	100	UG_L	sediments collected 12/10, 12/11/13
RBSD12111301	IRON	25.5	80	100	UG_L	sediments collected 12/10, 12/11/13
RBSD12111301	MAGNESIUM	10.8	80	100	UG_L	sediments collected 12/10, 12/11/13
RBSD12111301	SODIUM	182	500	1000	UG_L	sediments collected 12/10, 12/11/13
RBSD12111301	ANTIMONY	0.06	0.50	1.0	UG_L	sediments collected 12/10, 12/11/13
RBSD12111301	BARIUM	0.69	1.0	2.0	UG_L	sediments collected 12/10, 12/11/13
RBSD12111301	CADMIUM	0.05	0.20	1.0	UG_L	sediments collected 12/10, 12/11/13
RBSD12111301	CHROMIUM, TOTAL	0.93	4.0	5.0	UG_L	sediments collected 12/10, 12/11/13
RBSD12111301	COPPER	0.39	2.0	3.0	UG_L	sediments collected 12/10, 12/11/13
RBSD12111301	LEAD	0.29	0.50	1.0	UG_L	sediments collected 12/10, 12/11/13
RBSD12111301	MANGANESE	0.45	1.0	2.0	UG_L	sediments collected 12/10, 12/11/13
RBSD12111301	NICKEL	0.21	1.2	2.0	UG_L	sediments collected 12/10, 12/11/13
RBSD12111301	VANADIUM	0.87	4.0	5.0	UG_L	sediments collected 12/10, 12/11/13
RBSD12111301	ZINC	4.8	8.0	10	UG_L	sediments collected 12/10, 12/11/13
RBSD12131301	SODIUM	38.3	500	1000	UG_L	sediments collected 12/12
RBSD12131301	ANTIMONY	0.06	0.50	1.0	UG_L	sediments collected 12/12
RBSD12131301	BARIUM	0.50	1.0	2.0	UG_L	sediments collected 12/12
RBSD12131301	CHROMIUM, TOTAL	0.79	4.0	5.0	UG_L	sediments collected 12/12
RBSD12131301	COBALT	0.12	0.30	1.0	UG_L	sediments collected 12/12
RBSD12131301	COPPER	0.25	2.0	3.0	UG_L	sediments collected 12/12
RBSD12131301	LEAD	0.29	0.50	1.0	UG_L	sediments collected 12/12
RBSD12131301	MANGANESE	0.74	1.0	2.0	UG_L	sediments collected 12/12
RBSD12131301	SODIUM	38.3	500	1000	UG_L	sediments collected 12/12
RBSD12131301	ANTIMONY	0.06	0.50	1.0	UG_L	sediments collected 12/12
RBSD12131301	BARIUM	0.50	1.0	2.0	UG_L	sediments collected 12/12

Table A-3 Matrix Spikes

Sample ID	Compound	MS % Recovery	Lower Limit	Upper Limit
OU09 SD124 0012	LEAD (SEM)	-294.8	80	120
OU09 SD124 0012	COPPER (SEM)	-65.4	80	120

Table A-4 Laboratory Duplicates

Sample ID	Compound	Sample Result	Qual	Duplicate Result	Qual	LOD	LOQ	Units	RPD
OU09 SD124 0012	COPPER (SEM)	0.2532		0.1406		0.0034	0.0086	UMOL_G	57.2
OU09 SD124 0012	LEAD (SEM)	0.2205		0.1734		0.00042	0.00053	UMOL_G	23.9

Table A-5 Field Duplicates

Sample ID	Duplicate ID	Compound	Sample Result	Qual	Duplicate Result	Qual	LOD	LOQ	Units	RPD
BSBG SD305 0012	FDSD12121302	CALCIUM	154000		79000		53	66	MG_KG	64.4
BSBG SD305 0012	FDSD12121302	LEAD	38		84.5		0.066	0.13	MG_KG	75.9
BSBG SD305 0012	FDSD12121302	SILVER	0.44		0.9		0.053	0.13	MG_KG	68.7
BSBG SD305 0012	FDSD12121302	BARIUM	25.3		44.8		0.13	0.26	MG_KG	55.6
BSBG SD305 0012	FDSD12121302	CADMIUM	0.23		0.49		0.026	0.13	MG_KG	72.2
BSBG SD305 0012	FDSD12121302	CHROMIUM, TOTAL	31		72.2		0.53	0.66	MG_KG	79.8
BSBG SD305 0012	FDSD12121302	COPPER	25.4		73.3		0.26	0.4	MG_KG	97.1
BSBG SD305 0012	FDSD12121302	ZINC	75.1		142		1	1.3	MG_KG	61.6

Attachment B

Qualifier Codes and Explanations

Qualifier	Explanation
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
UJ	The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual quantitation limit necessary to accurately and precisely measure the analyte in the sample.
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

Attachment C

Reason Codes and Explanations

Reason Code	Explanation
be	Equipment blank contamination
bf	Field blank contamination
bl	Laboratory blank contamination
c	Calibration issue
d	Reporting limit raised due to chromatographic interference
fd	Field duplicate RPDs
h	Holding times
i	Internal standard areas
k	Estimated Maximum Possible Concentration (EMPC)
l	LCS recoveries
lc	Labeled compound recovery
ld	Laboratory duplicate RPDs
lp	Laboratory control sample/laboratory control sample duplicate RPDs
m	Matrix spike recovery
md	Matrix spike/matrix spike duplicate RPDs
nb	Negative laboratory blank contamination
p	Chemical preservation issue
r	Dual column RPD
q	Quantitation issue
s	Surrogate recovery
su	Ion suppression
t	Temperature preservation issue
x	Percent solids
y	Serial dilution results
z	ICS results

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Data Validation Report

Project:	MRP Site 1 (OU9) Remedial Investigation, NAVSTA Newport, Rhode Island CTO WE06
Laboratory:	Katahdin Analytical Services, Scarborough, Maine
Service Request:	CARR-12
Analyses/Method:	TAL Metals/ EPA SW-846 Methods 6010C, 6020A, 7471B Acid Volatile Sulfide/Simultaneously Extracted Metals / EPA 821/R-91-100
Validation Level:	Limited
Resolution Consultants Project Number:	60250336 SA.DV

Prepared by:	Kristin Rutherford/Resolution Consultants	Completed on: 02/25/2014
Reviewed by:	Waverly Braunstein/Resolution Consultants	File Name: CARR-12_SE_Metals_AVSSEM_DVRpt

SUMMARY

The samples listed below were collected by Resolution Consultants from MRP Site 1 (OU9), NAVSTA Newport, Rhode Island on December 12 and 13, 2013.

Sample ID	Matrix/Sample Type
RBSD12131301	Equipment blank
FDSD12131302	Field Duplicate of BSBG SD303 0012
FDSD12131301	Field Duplicate of BSBG SD304 0012
FDSD12121302	Field Duplicate of BSBG SD305 0012
FDSD12131303	Field Duplicate of OU09 SD101 0012
BSBG SD303 0012	Sediment
BSBG SD304 0012	Sediment
BSBG SD305 0012	Sediment
BSBG SD305 1224	Sediment
BSBG SD305 2436	Sediment
BSBG SD306 0012	Sediment
BSBG SD306 1224	Sediment
BSBG SD306 2436	Sediment
OU09 SD101 0012	Sediment
OU09 SD102 0012	Sediment
OU09 SD102 0012W	Sediment
OU09 SD103 0012	Sediment

The data have been validated in accordance with the project-specific Sampling and Analysis Plan, *Sampling and Analysis Plan, Former Carr Point Shooting Range (MRP Site 1, OU9), Naval Station (NAVSTA) Newport, Rhode Island, Final* (Naval Facilities Engineering Command, Mid-Atlantic, 2013) and the following references:

- *DoD Quality Systems Manual (QMS) for Environmental Laboratories, version 4.2* (DoD EDQW, 2010);
- *USEPA Region 1, EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses* (December 1996);
- *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review* (January 2010);
- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW846, Method 6010C, Inductively Coupled Plasma-Atomic Emission Spectrometry* (USEPA, 1996);
- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW846, Method 6020A, Inductively Coupled Plasma-Mass Spectrometry* (USEPA, 1996);
- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW846, Method 7471B, Mercury in Solid or Semisolid Waste (Manual Cold-Vapor Technique)* (USEPA, 1996);
- *Draft Analytical Method for Determination of Acid Volatile Sulfide in Sediment, Method 821/R-91-100* (USEPA, 1991);
- laboratory quality control (QC) limits, as applicable.

The USEPA Region 1 and National Data Validation Functional Guidelines were modified to accommodate the non-CLP methodologies. In the absence of method-specific direction for validation, Resolution Consultants professional judgment was used as appropriate.

REVIEW ELEMENTS

The data were evaluated based on the following parameters (where applicable to the method):

✓	Data completeness (chain-of-custody (COC)/sample integrity
✗	Holding times and sample preservation
✓	ICP/MS Instrument tuning
✓	Initial calibration/continuing calibration verification
✗	Laboratory blanks/equipment blanks
✓	ICP interference check standards
✗	Matrix spike (MS) and/or matrix spike duplicate (MSD) results
NA	Laboratory duplicate results
✓	Laboratory control sample (LCS)/laboratory control sample duplicate (LCSD) results
✗	Field duplicates
✓	ICP/ICPMS serial dilution results
✓	ICP/MS internal standard performance
✓	Sample results/reporting issues

The symbol (✓) indicates that no validation qualifiers were applied based on this parameter. NA indicates that the parameter was not included as part of this data set or was not applicable to this validation and therefore not reviewed. The symbol (✗) indicates that a quality control (QC) nonconformance resulted in the qualification of data. Any QC nonconformance that resulted in the qualification of data is discussed below. In addition, nonconformances or other issues that were

noted during validation, but did not result in qualification of data, may be discussed for informational purposes only.

The data appear valid as reported and may be used for decision making purposes. Selected data points were estimated, negated, and/or rejected due to nonconformances of certain QC criteria (see discussion below). Qualified sample results are presented in Table 1.

RESULTS

Data Completeness

The data package was reviewed and found to meet acceptance criteria for completeness:

- The COCs were reviewed for completeness of information relevant to the samples and requested analyses, and for signatures indicating transfer of sample custody.
- The laboratory sample login sheet(s) were reviewed for issues potentially affecting sample integrity, including the condition of sample containers upon receipt at the laboratory.
- Completeness of analyses was verified by comparing the reported results to the COC requests.

Holding Times/Sample Preservation

Sample preservation and preparation/analysis holding times were reviewed for conformance with the QC acceptance criteria.

Metals criteria:

Mercury hold time is 28 days, other metals 180 days, aqueous preservation for all metals : pH $\leq$2 with nitric acid. Cooler temperature of 4 C $\pm$ 2C for solid matrices until preparation if mercury is an analyte. Professional judgment is used to qualify aqueous samples that are not properly preserved in the field or upon receipt, typically within 24 hours of sample collection or if samples are not digested within 24 hours. Qualify detected results as estimated low (J-) and reject nondetects (R). If hold times are grossly exceeded qualify detected results as estimated low (J-) and nondetects (R). SW-846 only requires thermal preservation for mercury in soils, therefore qualifying sample data for improper temperature must be justified.

SEM criteria:

SEM hold time is 14 days from collection to preparation and 14 days from preparation to analysis. Qualify detected results as estimated low (J-) and reject nondetects (R).

Nonconformances are summarized in Attachment A in Table A-1.

Qualified sample results are shown in Table 1.

ICP/MS Instrument Tuning

ICP/MS tuning results were reviewed for conformance with the QC acceptance criteria to ensure that:

- the proper tuning solution was used with elements representing all of the mass regions of interest;
- the tunings were performed at the beginning of each analysis and prior to calibration;

- the tuning solution was analyzed at least 4 times as required by the method;
- the mass calibration was within 0.1 amu of the true value for all masses within the region of interest;
- the resolution was verified to be <0.9 amu full width at 10% peak height; and
- the %RSD was ≤ 5% for the analytes contained in the tuning solution.

The QC acceptance criteria were met.

Initial Calibration/Continuing Calibration Verification

Calibration data were reviewed for conformance with the QC acceptance criteria to ensure that:

- all criteria were met for the calibration curves
- the initial calibration verification (ICV) percent recovery (%R) criteria were met;
- the continuing calibration verification standard (CCV) method percent difference (%Ds) were met; and
- the low level check standards (CRI or CRA) %R criteria were met.

The QC acceptance criteria were met.

Laboratory Blanks/Equipment Blanks

Laboratory method blanks and equipment rinsate blanks were evaluated as to whether there were contaminants detected above the method detection limit (MDL). Data validation qualifications for individual samples are based on the maximum contaminant concentration detected in all associated blanks.

Method and equipment rinsate results were reviewed for conformance with the QC acceptance criteria. Detected results in blanks are not discussed in this data validation report if the associated results were nondetect or if qualification of sample results was not required.

Nonconformances are summarized in Attachment A in Tables A-2a and A-2b. Sample results were qualified as follows:

Blank Type	Blank Result	Sample Result	Action for Samples
PB / EB/ FB (Positive)	> LOQ	≥IDL/MDL but ≤ LOQ	Qualify as nondetect (U) at the LOQ
		>LOQ but < 10x Blank Result	Qualify results as unusable
		≥10x Blank Result	No action
	≥IDL/MDL but ≤LOQ	Nondetect	No action
		≥IDL/MDL but ≤LOQ	Qualify as nondetect (U) at the LOQ
		> LOQ	Use Resolution Consultants professional judgment (see below [1])
PB (Negative)	< (-LOQ)	< 10x LOQ	Qualify positive results <10x LOQ as estimated (J) and nondetects as estimated (UJ)
		≥10x LOQ	No action

[1] Establish an action level (AL) at 5x the blank contamination. If sample result is <AL, qualify the reported result with a U.

Qualified sample results are shown in Table 1.

ICP Interference Check Standards

The ICP interference check standards (ICSA, ICSAB) were reviewed for conformance.

All criteria were met for the ICSA and ICSAB.

MS Results

The MS and/or MSD %Rs and/or RPDs were reviewed for conformance with the QC acceptance criteria.

Nonconformances are summarized in Attachment A in Table A-3. Data qualification on the basis of MS and/or MSD nonconformances was as follows:

Qualify Results	%R < 30	80 > %R ≥ 30	%R >120	RPD>20
Detected results	J	J	J	J
Nondetects	R	UJ	Accept	UJ

Notes: MS actions apply to all samples of the same matrix. This qualification will also be applied to the results of all samples within a given area of the site, if deemed appropriate.

1. If the sample result (SR) > 4x the spike concentration (S), no action is taken.
2. If any analyte does not meet the %R criteria and a post digestion spike (PDS) analysis was performed, use professional judgment to assess the results. Refer to the National Functional Guidelines (NFG) 2010 for recommended actions.
3. If either the MS or MSD does not meet %R criteria, qualify all associated samples.

Qualified sample results are shown in Table 1.

Laboratory Duplicate Results

Laboratory duplicate analyses were not performed for total metals. Matrix spike and matrix spike duplicate precision was used to assess precision (see MS results).

LCS/LCSD Results

The LCS/LCSD %Rs and/or RPDs were reviewed for conformance with the QC acceptance criteria.

The LCS and LCSD %Rs and RPDs were within the QC acceptance criteria.

Field Duplicate Results

Field duplicate RPDs were reviewed for conformance with the Resolution Consultants QC acceptance criterion of ≤50% for solid matrices and ≤30% for aqueous matrices. This criterion applies if both results were greater than 5 times the limit of quantitation (LOQ).

Nonconformances are summarized in Attachment A in Table A-4. Data qualification on the basis of field duplicate RPDs was as follows:

Actions: (Based on Resolution Consultants professional judgment)

Criteria	RPD	Action	
		Detected	Nondetected
Sample and duplicate are nondetect results	Not calculable (NC)	No qualification	No qualification
Sample and duplicate results <SLOQ	Not applicable	No qualification	No qualification
Sample and duplicate results ≥5xSLOQ	>30% Aqueous >50% All other sample types	J	Not Applicable
Sample and duplicate results are >SLOQ and <5xSLOQ	>60% Aqueous >100% All other sample types	J	Not Applicable
If sample or duplicate result is =SLOQ and the other is not detected	NC	J	UJ
If sample or duplicate result is <SLOQ and the other is not detected	NC	No qualification	No qualification

Qualified sample results are summarized in Table 1.

ICP/ICPMS Serial Dilution Results

The serial dilution percent differences (%Ds) were reviewed for conformance with the QC acceptance criteria.

The serial dilution %Ds were within the QC acceptance criteria.

ICP/MS Internal Standard Performance

ICP/MS Internal standard performance was reviewed for conformance and was within the QC acceptance criteria.

Sample Results/Reporting Issues

All analytes detected at concentrations less than the limit of quantitation (LOQ) but greater than the method detection limit (MDL) were qualified by the laboratory as estimated (J). This "J" qualifier was retained during data validation.

Resolution Consultants professional judgment was used to qualify sample results with percent solids that were <30%.

All criteria were met.

QUALIFICATION ACTIONS

Sample results qualified as a result of validation actions are summarized in Table 1. All actions are described above.

ATTACHMENTS

Attachment A: Nonconformance Summary Tables

Attachment B: Qualifier Codes and Explanations

Attachment C: Reason Codes and Explanations

Table 1 - Data Validation Summary of Qualified Data

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
BSBG SD303 0012	SE	POTASSIUM	322	28	57	MG_KG	J	m,md
BSBG SD303 0012	SE	ANTIMONY	0.06	0.028	0.057	MG_KG	J	m,md,fd
BSBG SD303 0012	SE	BERYLLIUM	0.17	0.011	0.057	MG_KG	J-	m
BSBG SD303 0012	SE	CADMIUM	0.02	0.011	0.057	MG_KG	J	fd
BSBG SD303 0012	SE	CHROMIUM, TOTAL	7.7	0.23	0.28	MG_KG	J-	m
BSBG SD303 0012	SE	COPPER	6.6	0.11	0.17	MG_KG	J	m,md,fd
BSBG SD303 0012	SE	LEAD	10.1	0.028	0.057	MG_KG	J	fd
BSBG SD303 0012	SE	NICKEL	8.4	0.068	0.11	MG_KG	J	m,md
BSBG SD303 0012	SE	SELENIUM	0.28	0.28	0.28	MG_KG	UJ	bl,m
BSBG SD303 0012	SE	SILVER	0.03	0.023	0.057	MG_KG	J	fd
BSBG SD303 0012	SE	VANADIUM	9.0	0.23	0.28	MG_KG	J-	m
BSBG SD303 0012	SE	ZINC	38.2	0.45	0.57	MG_KG	J-	m
BSBG SD303 0012	SE	ANTIMONY	0.00168	0.00092	0.0015	UMOL_G	J-	m
BSBG SD303 0012	SE	COPPER	0.0405	0.0035	0.0088	UMOL_G	J-	m
BSBG SD303 0012	SE	MERCURY	0.000026	0.000026	0.000022	UMOL_G	UJ	h,bl
BSBG SD303 0012	SE	ZINC	0.0464	0.0034	0.0068	UMOL_G	J-	m
BSBG SD304 0012	SE	POTASSIUM	328	33	66	MG_KG	J	m,md
BSBG SD304 0012	SE	ANTIMONY	0.07	0.033	0.066	MG_KG	J	m,md,fd
BSBG SD304 0012	SE	BERYLLIUM	0.24	0.013	0.066	MG_KG	J-	m
BSBG SD304 0012	SE	CADMIUM	0.04	0.013	0.066	MG_KG	J	fd
BSBG SD304 0012	SE	CHROMIUM, TOTAL	9.1	0.26	0.33	MG_KG	J-	m
BSBG SD304 0012	SE	COPPER	14.1	0.13	0.20	MG_KG	J	m,md,fd
BSBG SD304 0012	SE	LEAD	11.1	0.033	0.066	MG_KG	J	fd
BSBG SD304 0012	SE	NICKEL	17.7	0.079	0.13	MG_KG	J	m,md
BSBG SD304 0012	SE	SELENIUM	0.33	0.33	0.33	MG_KG	UJ	bl,m
BSBG SD304 0012	SE	SILVER	0.03	0.026	0.066	MG_KG	J	fd
BSBG SD304 0012	SE	VANADIUM	18.9	0.26	0.33	MG_KG	J-	m
BSBG SD304 0012	SE	ZINC	67.0	0.52	0.66	MG_KG	J-	m
BSBG SD304 0012	SE	ANTIMONY	0.00077	0.00088	0.0014	UMOL_G	J-	m
BSBG SD304 0012	SE	COPPER	0.0602	0.0034	0.0084	UMOL_G	J-	m
BSBG SD304 0012	SE	MERCURY	0.000028	0.000028	0.000021	UMOL_G	UJ	h,bl
BSBG SD304 0012	SE	ZINC	0.132	0.0033	0.0065	UMOL_G	J-	m
BSBG SD305 0012	SE	CALCIUM	154000	53	66	MG_KG	J	fd
BSBG SD305 0012	SE	POTASSIUM	2720	66	130	MG_KG	J	m,md
BSBG SD305 0012	SE	ANTIMONY	0.07	0.066	0.13	MG_KG	J	m,md
BSBG SD305 0012	SE	BARIUM	25.3	0.13	0.26	MG_KG	J	fd
BSBG SD305 0012	SE	BERYLLIUM	0.53	0.026	0.13	MG_KG	J-	m
BSBG SD305 0012	SE	CHROMIUM, TOTAL	31.0	0.53	0.66	MG_KG	J	m,fd
BSBG SD305 0012	SE	COPPER	25.4	0.26	0.40	MG_KG	J	m,md,fd

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
BSBG SD305 0012	SE	LEAD	38.0	0.066	0.13	MG_KG	J	fd
BSBG SD305 0012	SE	NICKEL	12.4	0.16	0.26	MG_KG	J	m,md
BSBG SD305 0012	SE	SELENIUM	0.76	0.40	0.66	MG_KG	J-	m
BSBG SD305 0012	SE	SILVER	0.44	0.053	0.13	MG_KG	J	fd
BSBG SD305 0012	SE	VANADIUM	27.2	0.53	0.66	MG_KG	J-	m
BSBG SD305 0012	SE	ZINC	75.1	1.0	1.3	MG_KG	J	m,fd
BSBG SD305 0012	SE	MERCURY	0.17	0.024	0.048	MG_KG	J	fd
BSBG SD305 0012	SE	ANTIMONY	0.00401	0.0015	0.0024	UMOL_G	J-	m
BSBG SD305 0012	SE	CADMIUM	0.00087	0.00095	0.0016	UMOL_G	J	fd
BSBG SD305 0012	SE	COPPER	0.112	0.0056	0.014	UMOL_G	J	m,fd
BSBG SD305 0012	SE	MERCURY	0.000032	0.000032	0.000036	UMOL_G	R	h
BSBG SD305 0012	SE	NICKEL	0.0417	0.0024	0.0061	UMOL_G	J	fd
BSBG SD305 0012	SE	ZINC	0.523	0.0055	0.011	UMOL_G	J-	m
BSBG SD305 1224	SE	CALCIUM	31400	16	20	MG_KG	J	fd
BSBG SD305 1224	SE	POTASSIUM	4460	99	200	MG_KG	J	m,md
BSBG SD305 1224	SE	ANTIMONY	0.18	0.099	0.20	MG_KG	J	m,md
BSBG SD305 1224	SE	BARIUM	38.1	0.20	0.40	MG_KG	J	fd
BSBG SD305 1224	SE	BERYLLIUM	0.88	0.040	0.20	MG_KG	J-	m
BSBG SD305 1224	SE	CHROMIUM, TOTAL	65.1	0.79	0.99	MG_KG	J	m,fd
BSBG SD305 1224	SE	COPPER	42.4	0.40	0.59	MG_KG	J	m,md,fd
BSBG SD305 1224	SE	LEAD	82.0	0.099	0.20	MG_KG	J	fd
BSBG SD305 1224	SE	NICKEL	20.3	0.24	0.40	MG_KG	J	m,md
BSBG SD305 1224	SE	SELENIUM	1.2	0.59	0.99	MG_KG	J-	m
BSBG SD305 1224	SE	SILVER	0.44	0.079	0.20	MG_KG	J	fd
BSBG SD305 1224	SE	VANADIUM	47.5	0.79	0.99	MG_KG	J-	m
BSBG SD305 1224	SE	ZINC	169	1.6	2.0	MG_KG	J	m,fd
BSBG SD305 1224	SE	MERCURY	0.98	0.034	0.066	MG_KG	J	fd
BSBG SD305 2436	SE	CALCIUM	17700	10	13	MG_KG	J	fd
BSBG SD305 2436	SE	POTASSIUM	2500	64	130	MG_KG	J	m,md
BSBG SD305 2436	SE	ANTIMONY	0.06	0.064	0.13	MG_KG	J	m,md
BSBG SD305 2436	SE	BARIUM	19.3	0.13	0.26	MG_KG	J	fd
BSBG SD305 2436	SE	BERYLLIUM	0.46	0.026	0.13	MG_KG	J-	m
BSBG SD305 2436	SE	CHROMIUM, TOTAL	29.6	0.51	0.64	MG_KG	J	m,fd
BSBG SD305 2436	SE	COPPER	15.4	0.26	0.39	MG_KG	J	m,md,fd
BSBG SD305 2436	SE	LEAD	34.0	0.064	0.13	MG_KG	J	fd
BSBG SD305 2436	SE	NICKEL	11.7	0.15	0.26	MG_KG	J	m,md
BSBG SD305 2436	SE	SELENIUM	0.64	0.64	0.64	MG_KG	UJ	bl,m
BSBG SD305 2436	SE	SILVER	0.14	0.051	0.13	MG_KG	J	fd
BSBG SD305 2436	SE	VANADIUM	26.0	0.51	0.64	MG_KG	J-	m

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
BSBG SD305 2436	SE	ZINC	96.2	1.0	1.3	MG_KG	J	m,fd
BSBG SD305 2436	SE	MERCURY	0.36	0.023	0.046	MG_KG	J	fd
BSBG SD306 0012	SE	CALCIUM	950	6.6	8.3	MG_KG	J	fd
BSBG SD306 0012	SE	POTASSIUM	467	41	83	MG_KG	J	m,md
BSBG SD306 0012	SE	ANTIMONY	0.03	0.041	0.083	MG_KG	J	m,md
BSBG SD306 0012	SE	BARIUM	5.2	0.083	0.16	MG_KG	J	fd
BSBG SD306 0012	SE	BERYLLIUM	0.12	0.016	0.083	MG_KG	J-	m
BSBG SD306 0012	SE	CHROMIUM, TOTAL	6.8	0.33	0.41	MG_KG	J	m,fd
BSBG SD306 0012	SE	COPPER	3.7	0.16	0.25	MG_KG	J	m,md,fd
BSBG SD306 0012	SE	LEAD	7.0	0.041	0.083	MG_KG	J	fd
BSBG SD306 0012	SE	NICKEL	5.6	0.099	0.16	MG_KG	J	m,md
BSBG SD306 0012	SE	SELENIUM	0.41	0.41	0.41	MG_KG	UJ	bl,m
BSBG SD306 0012	SE	SILVER	0.05	0.033	0.083	MG_KG	J	fd
BSBG SD306 0012	SE	VANADIUM	7.6	0.33	0.41	MG_KG	J-	m
BSBG SD306 0012	SE	ZINC	24.6	0.66	0.83	MG_KG	J	m,fd
BSBG SD306 0012	SE	MERCURY	0.02	0.014	0.027	MG_KG	J	fd
BSBG SD306 0012	SE	ANTIMONY	0.00096	0.00096	0.0015	UMOL_G	UJ	m
BSBG SD306 0012	SE	CADMIUM	0.00018	0.00062	0.0010	UMOL_G	J	fd
BSBG SD306 0012	SE	COPPER	0.00930	0.0037	0.0092	UMOL_G	J	m,fd
BSBG SD306 0012	SE	MERCURY	0.000021	0.000021	0.000023	UMOL_G	R	h
BSBG SD306 0012	SE	NICKEL	0.0040	0.0040	0.0040	UMOL_G	U	bl
BSBG SD306 0012	SE	ZINC	0.0556	0.0036	0.0071	UMOL_G	J-	m
BSBG SD306 1224	SE	CALCIUM	2000	6.0	7.5	MG_KG	J	fd
BSBG SD306 1224	SE	POTASSIUM	624	38	75	MG_KG	J	m,md
BSBG SD306 1224	SE	ANTIMONY	5.6	0.038	0.075	MG_KG	J	m,md
BSBG SD306 1224	SE	BARIUM	7.5	0.075	0.15	MG_KG	J	fd
BSBG SD306 1224	SE	BERYLLIUM	0.18	0.015	0.075	MG_KG	J-	m
BSBG SD306 1224	SE	CHROMIUM, TOTAL	9.9	0.30	0.38	MG_KG	J	m,fd
BSBG SD306 1224	SE	COPPER	6.8	0.15	0.22	MG_KG	J	m,md,fd
BSBG SD306 1224	SE	LEAD	9.9	0.038	0.075	MG_KG	J	fd
BSBG SD306 1224	SE	NICKEL	7.5	0.090	0.15	MG_KG	J	m,md
BSBG SD306 1224	SE	SELENIUM	0.38	0.38	0.38	MG_KG	UJ	bl,m
BSBG SD306 1224	SE	SILVER	0.08	0.030	0.075	MG_KG	J	fd
BSBG SD306 1224	SE	VANADIUM	12.2	0.30	0.38	MG_KG	J-	m
BSBG SD306 1224	SE	ZINC	35.2	0.60	0.75	MG_KG	J	m,fd
BSBG SD306 1224	SE	MERCURY	0.03	0.016	0.032	MG_KG	J	fd
BSBG SD306 2436	SE	CALCIUM	628	5.5	6.8	MG_KG	J	fd
BSBG SD306 2436	SE	POTASSIUM	675	34	68	MG_KG	J	m,md
BSBG SD306 2436	SE	ANTIMONY	0.05	0.034	0.068	MG_KG	J	m,md

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
BSBG SD306 2436	SE	BARIUM	9.0	0.068	0.14	MG_KG	J	fd
BSBG SD306 2436	SE	BERYLLIUM	0.18	0.014	0.068	MG_KG	J-	m
BSBG SD306 2436	SE	CHROMIUM, TOTAL	7.8	0.27	0.34	MG_KG	J	m,fd
BSBG SD306 2436	SE	COPPER	3.4	0.14	0.20	MG_KG	J	m,md,fd
BSBG SD306 2436	SE	LEAD	3.6	0.034	0.068	MG_KG	J	fd
BSBG SD306 2436	SE	NICKEL	7.8	0.082	0.14	MG_KG	J	m,md
BSBG SD306 2436	SE	SELENIUM	0.35	0.35	0.34	MG_KG	UJ	bl,m
BSBG SD306 2436	SE	SILVER	0.02	0.027	0.068	MG_KG	J	fd
BSBG SD306 2436	SE	VANADIUM	11.1	0.27	0.34	MG_KG	J-	m
BSBG SD306 2436	SE	ZINC	22.5	0.55	0.68	MG_KG	J	m,fd
FDSD12121302	SE	CALCIUM	79000	25	31	MG_KG	J	fd
FDSD12121302	SE	POTASSIUM	3940	77	150	MG_KG	J	m,md
FDSD12121302	SE	ANTIMONY	0.11	0.077	0.15	MG_KG	J	m,md
FDSD12121302	SE	BARIUM	44.8	0.15	0.31	MG_KG	J	fd
FDSD12121302	SE	BERYLLIUM	0.77	0.031	0.15	MG_KG	J-	m
FDSD12121302	SE	CHROMIUM, TOTAL	72.2	0.62	0.77	MG_KG	J	m,fd
FDSD12121302	SE	COPPER	73.3	0.31	0.46	MG_KG	J	m,md,fd
FDSD12121302	SE	LEAD	84.5	0.077	0.15	MG_KG	J	fd
FDSD12121302	SE	NICKEL	18.2	0.18	0.31	MG_KG	J	m,md
FDSD12121302	SE	SELENIUM	0.88	0.46	0.77	MG_KG	J-	m
FDSD12121302	SE	SILVER	0.90	0.062	0.15	MG_KG	J	fd
FDSD12121302	SE	VANADIUM	38.7	0.62	0.77	MG_KG	J-	m
FDSD12121302	SE	ZINC	142	1.2	1.5	MG_KG	J	m,fd
FDSD12121302	SE	MERCURY	0.62	0.030	0.058	MG_KG	J	fd
FDSD12121302	SE	ANTIMONY	0.00544	0.0016	0.0026	UMOL_G	J-	m
FDSD12121302	SE	CADMIUM	0.00164	0.0010	0.0017	UMOL_G	J	fd
FDSD12121302	SE	COPPER	0.219	0.0061	0.015	UMOL_G	J	m,fd
FDSD12121302	SE	MERCURY	0.000035	0.000035	0.000039	UMOL_G	R	h
FDSD12121302	SE	NICKEL	0.0834	0.0026	0.0066	UMOL_G	J	fd
FDSD12121302	SE	ZINC	0.807	0.0059	0.012	UMOL_G	J-	m
FDSD12131301	SE	POTASSIUM	316	31	62	MG_KG	J	m,md
FDSD12131301	SE	ANTIMONY	0.1	0.031	0.062	MG_KG	J	m,md,fd
FDSD12131301	SE	BERYLLIUM	0.23	0.012	0.062	MG_KG	J-	m
FDSD12131301	SE	CADMIUM	0.04	0.012	0.062	MG_KG	J	fd
FDSD12131301	SE	CHROMIUM, TOTAL	8.8	0.25	0.31	MG_KG	J-	m
FDSD12131301	SE	COPPER	11.3	0.12	0.18	MG_KG	J	m,md,fd
FDSD12131301	SE	LEAD	10.9	0.031	0.062	MG_KG	J	fd
FDSD12131301	SE	NICKEL	15.0	0.074	0.12	MG_KG	J	m,md
FDSD12131301	SE	SELENIUM	0.31	0.31	0.31	MG_KG	UJ	bl,m

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
FDSD12131301	SE	SILVER	0.03	0.025	0.062	MG_KG	J	fd
FDSD12131301	SE	VANADIUM	18.1	0.25	0.31	MG_KG	J-	m
FDSD12131301	SE	ZINC	59.0	0.50	0.62	MG_KG	J-	m
FDSD12131302	SE	POTASSIUM	472	37	73	MG_KG	J	m,md
FDSD12131302	SE	ANTIMONY	0.04	0.037	0.073	MG_KG	J	m,md,fd
FDSD12131302	SE	BERYLLIUM	0.18	0.015	0.073	MG_KG	J-	m
FDSD12131302	SE	CADMIUM	0.02	0.015	0.073	MG_KG	J	fd
FDSD12131302	SE	CHROMIUM, TOTAL	9.0	0.29	0.37	MG_KG	J-	m
FDSD12131302	SE	COPPER	9.0	0.15	0.22	MG_KG	J	m,md,fd
FDSD12131302	SE	LEAD	15.1	0.037	0.073	MG_KG	J	fd
FDSD12131302	SE	NICKEL	8.9	0.088	0.15	MG_KG	J	m,md
FDSD12131302	SE	SELENIUM	0.37	0.37	0.37	MG_KG	UJ	bl,m
FDSD12131302	SE	SILVER	0.04	0.029	0.073	MG_KG	J	fd
FDSD12131302	SE	VANADIUM	9.6	0.29	0.37	MG_KG	J-	m
FDSD12131302	SE	ZINC	36.1	0.59	0.73	MG_KG	J-	m
FDSD12131302	SE	ANTIMONY	0.00060	0.00092	0.0015	UMOL_G	J-	m
FDSD12131302	SE	COPPER	0.0344	0.0035	0.0088	UMOL_G	J-	m
FDSD12131302	SE	MERCURY	0.000029	0.000029	0.000022	UMOL_G	UJ	h,bl
FDSD12131302	SE	ZINC	0.0579	0.0034	0.0068	UMOL_G	J-	m
FDSD12131303	SE	POTASSIUM	636	42	85	MG_KG	J	m,md
FDSD12131303	SE	ANTIMONY	12.9	0.042	0.085	MG_KG	J	m,md,fd
FDSD12131303	SE	BERYLLIUM	0.34	0.017	0.085	MG_KG	J-	m
FDSD12131303	SE	CHROMIUM, TOTAL	16.2	0.34	0.42	MG_KG	J-	m
FDSD12131303	SE	COPPER	565	0.85	1.3	MG_KG	J	m,md,fd
FDSD12131303	SE	LEAD	1720	0.21	0.42	MG_KG	J	fd
FDSD12131303	SE	NICKEL	30.5	0.10	0.17	MG_KG	J	m,md
FDSD12131303	SE	SELENIUM	0.42	0.42	0.42	MG_KG	UJ	bl,m
FDSD12131303	SE	SILVER	0.30	0.034	0.085	MG_KG	J	fd
FDSD12131303	SE	VANADIUM	27.1	0.34	0.42	MG_KG	J-	m
FDSD12131303	SE	ZINC	132	0.68	0.85	MG_KG	J-	m
OU09 SD101 0012	SE	POTASSIUM	556	31	63	MG_KG	J	m,md
OU09 SD101 0012	SE	ANTIMONY	1.1	0.031	0.063	MG_KG	J	m,md,fd
OU09 SD101 0012	SE	BERYLLIUM	0.44	0.012	0.063	MG_KG	J-	m
OU09 SD101 0012	SE	CADMIUM	0.19	0.012	0.063	MG_KG	J	fd
OU09 SD101 0012	SE	CHROMIUM, TOTAL	13.5	0.25	0.31	MG_KG	J-	m
OU09 SD101 0012	SE	COPPER	39.1	0.12	0.19	MG_KG	J	m,md,fd
OU09 SD101 0012	SE	LEAD	180	0.031	0.063	MG_KG	J	fd
OU09 SD101 0012	SE	NICKEL	32.6	0.075	0.12	MG_KG	J	m,md
OU09 SD101 0012	SE	SELENIUM	0.35	0.35	0.31	MG_KG	UJ	bl,m

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SD101 0012	SE	SILVER	0.02	0.025	0.063	MG_KG	J	fd
OU09 SD101 0012	SE	VANADIUM	19.0	0.25	0.31	MG_KG	J-	m
OU09 SD101 0012	SE	ZINC	98.2	0.50	0.63	MG_KG	J-	m
OU09 SD101 0012	SE	ANTIMONY	0.0153	0.0010	0.0017	UMOL_G	J-	m
OU09 SD101 0012	SE	COPPER	0.253	0.0040	0.010	UMOL_G	J-	m
OU09 SD101 0012	SE	MERCURY	0.000030	0.000030	0.000025	UMOL_G	UJ	h,bl
OU09 SD101 0012	SE	ZINC	0.209	0.0039	0.0077	UMOL_G	J-	m
OU09 SD102 0012	SE	POTASSIUM	967	43	86	MG_KG	J	m,md
OU09 SD102 0012	SE	ANTIMONY	17.5	0.043	0.086	MG_KG	J	m,md,fd
OU09 SD102 0012	SE	BERYLLIUM	0.33	0.017	0.086	MG_KG	J-	m
OU09 SD102 0012	SE	CADMIUM	0.14	0.017	0.086	MG_KG	J	fd
OU09 SD102 0012	SE	CHROMIUM, TOTAL	13.5	0.34	0.43	MG_KG	J-	m
OU09 SD102 0012	SE	COPPER	92.2	0.17	0.26	MG_KG	J	m,md,fd
OU09 SD102 0012	SE	LEAD	1830	0.21	0.43	MG_KG	J	fd
OU09 SD102 0012	SE	NICKEL	23.6	0.10	0.17	MG_KG	J	m,md
OU09 SD102 0012	SE	SELENIUM	0.43	0.43	0.43	MG_KG	UJ	bl,m
OU09 SD102 0012	SE	SILVER	0.10	0.034	0.086	MG_KG	J	fd
OU09 SD102 0012	SE	VANADIUM	22.0	0.34	0.43	MG_KG	J-	m
OU09 SD102 0012	SE	ZINC	90.6	0.68	0.86	MG_KG	J-	m
OU09 SD102 0012	SE	ANTIMONY	0.00350	0.0010	0.0016	UMOL_G	J-	m
OU09 SD102 0012	SE	COPPER	0.0570	0.0040	0.0099	UMOL_G	J-	m
OU09 SD102 0012	SE	MERCURY	0.000023	0.000023	0.000025	UMOL_G	R	h
OU09 SD102 0012	SE	ZINC	0.0244	0.0038	0.0077	UMOL_G	J-	m
OU09 SD102 0012W	SE	POTASSIUM	758	35	70	MG_KG	J+	m
OU09 SD102 0012W	SE	ANTIMONY	36.6	0.035	0.070	MG_KG	J	fd
OU09 SD102 0012W	SE	CADMIUM	0.05	0.014	0.070	MG_KG	J	fd
OU09 SD102 0012W	SE	COPPER	120	0.14	0.21	MG_KG	J	fd
OU09 SD102 0012W	SE	LEAD	5960	0.70	1.4	MG_KG	J	fd
OU09 SD102 0012W	SE	NICKEL	30.0	0.17	0.28	MG_KG	J-	m
OU09 SD102 0012W	SE	SELENIUM	0.35	0.35	0.35	MG_KG	U	bl
OU09 SD102 0012W	SE	SILVER	0.26	0.028	0.070	MG_KG	J	fd
OU09 SD102 0012W	SE	ZINC	81.4	0.56	0.70	MG_KG	J	m,md
OU09 SD103 0012	SE	POTASSIUM	824	32	64	MG_KG	J	m,md
OU09 SD103 0012	SE	ANTIMONY	0.68	0.032	0.064	MG_KG	J	m,md,fd
OU09 SD103 0012	SE	BERYLLIUM	0.29	0.013	0.064	MG_KG	J-	m
OU09 SD103 0012	SE	CADMIUM	0.12	0.013	0.064	MG_KG	J	fd
OU09 SD103 0012	SE	CHROMIUM, TOTAL	12.4	0.26	0.32	MG_KG	J-	m
OU09 SD103 0012	SE	COPPER	43.5	0.13	0.19	MG_KG	J	m,md,fd
OU09 SD103 0012	SE	LEAD	128	0.032	0.064	MG_KG	J	fd

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SD103 0012	SE	NICKEL	33.7	0.077	0.13	MG_KG	J	m,md
OU09 SD103 0012	SE	SELENIUM	0.32	0.32	0.32	MG_KG	UJ	bl,m
OU09 SD103 0012	SE	SILVER	0.16	0.026	0.064	MG_KG	J	fd
OU09 SD103 0012	SE	VANADIUM	23.5	0.26	0.32	MG_KG	J-	m
OU09 SD103 0012	SE	ZINC	117	1.0	1.3	MG_KG	J-	m
OU09 SD103 0012	SE	ANTIMONY	0.00220	0.00098	0.0016	UMOL_G	J-	m
OU09 SD103 0012	SE	COPPER	1.80	0.0038	0.0094	UMOL_G	J-	m
OU09 SD103 0012	SE	MERCURY	0.000021	0.000021	0.000024	UMOL_G	R	h
OU09 SD103 0012	SE	ZINC	0.272	0.0036	0.0073	UMOL_G	J-	m
RBSD12131301	WQ	SODIUM	1000	1000	1000	UG_L	U	bl
RBSD12131301	WQ	BARIUM	2.0	2.0	2.0	UG_L	U	bl
RBSD12131301	WQ	CHROMIUM, TOTAL	5.0	5.0	5.0	UG_L	U	bl
RBSD12131301	WQ	COBALT	1.0	1.0	1.0	UG_L	U	bl
RBSD12131301	WQ	COPPER	3.0	3.0	3.0	UG_L	U	bl
RBSD12131301	WQ	LEAD	1.0	1.0	1.0	UG_L	U	bl
RBSD12131301	WQ	MANGANESE	2.0	2.0	2.0	UG_L	U	bl

Attachment A

Non Conformance Summary Tables

Table A-1 Hold Times

Sample ID	Method/Analyte	Days from Sampling to Prep	Status	Days from Prep to Analysis	Status
BSBG SD303 0012	SEM/Mercury	24	>14	2	ok@14 days
BSBG SD304 0012	SEM/Mercury	24	>14	2	ok@14 days
BSBG SD305 0012	SEM/Mercury	25	>14	2	ok@14 days
BSBG SD306 0012	SEM/Mercury	25	>14	2	ok@14 days
FDSD12121302	SEM/Mercury	25	>14	2	ok@14 days
FDSD12131302	SEM/Mercury	24	>14	2	ok@14 days
OU09 SD101 0012	SEM/Mercury	24	>14	2	ok@14 days
OU09 SD102 0012	SEM/Mercury	24	>14	2	ok@14 days
OU09 SD103 0012	SEM/Mercury	24	>14	2	ok@14 days

Table A-2a Lab Blanks

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
PBSGL17ICS3	COPPER	0.00020	0.20	0.50	UMOL_G	BSBG SD303 0012 BSBG SD304 0012 BSBG SD305 0012 BSBG SD306 0012 FDSD12121302 FDSD12131302 OU09 SD101 0012 OU09 SD102 0012 OU09 SD103 0012
PBSGL17ICS3	MERCURY	0.00024	0.0020	0.0040	UMOL_G	BSBG SD303 0012 BSBG SD304 0012 FDSD12131302 OU09 SD101 0012
PBSGL17ICS3	NICKEL	0.00040	0.080	0.20	UMOL_G	BSBG SD303 0012 BSBG SD304 0012 BSBG SD305 0012 BSBG SD306 0012 FDSD12121302 FDSD12131302 OU09 SD101 0012 OU09 SD102 0012 OU09 SD103 0012

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
PBSHA09ICS1	ALUMINUM	2.221	10	30	MG_KG	BSBG SD303 0012 BSBG SD304 0012 BSBG SD305 0012 BSBG SD305 1224 BSBG SD305 2436 BSBG SD306 0012 BSBG SD306 1224 BSBG SD306 2436 FDSD12121302 FDSD12131301 FDSD12131302 FDSD12131303 OU09 SD101 0012 OU09 SD102 0012 OU09 SD102 0012W OU09 SD103 0012
PBSHA09ICS1	CALCIUM	3.485	8.0	10	MG_KG	BSBG SD303 0012 BSBG SD304 0012 BSBG SD305 0012 BSBG SD305 1224 BSBG SD305 2436 BSBG SD306 0012 BSBG SD306 1224 BSBG SD306 2436 FDSD12121302 FDSD12131301 FDSD12131302 FDSD12131303 OU09 SD101 0012 OU09 SD102 0012 OU09 SD102 0012W OU09 SD103 0012
PBSHA09ICS1	IRON	1.606	8.0	10	MG_KG	BSBG SD303 0012 BSBG SD304 0012 BSBG SD305 0012 BSBG SD305 1224 BSBG SD305 2436 BSBG SD306 0012 BSBG SD306 1224 BSBG SD306 2436 FDSD12121302 FDSD12131301 FDSD12131302 FDSD12131303 OU09 SD101 0012 OU09 SD102 0012 OU09 SD102 0012W OU09 SD103 0012

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
PBSHA09ICS1	MAGNESIUM	1.737	8.0	10	MG_KG	BSBG SD303 0012 BSBG SD304 0012 BSBG SD305 0012 BSBG SD305 1224 BSBG SD305 2436 BSBG SD306 0012 BSBG SD306 1224 BSBG SD306 2436 FDSD12121302 FDSD12131301 FDSD12131302 FDSD12131303 OU09 SD101 0012 OU09 SD102 0012 OU09 SD102 0012W OU09 SD103 0012
PBSHA09ICS1	SODIUM	4.461	50	100	MG_KG	BSBG SD303 0012 BSBG SD304 0012 BSBG SD305 0012 BSBG SD305 1224 BSBG SD305 2436 BSBG SD306 0012 BSBG SD306 1224 BSBG SD306 2436 FDSD12121302 FDSD12131301 FDSD12131302 FDSD12131303 OU09 SD101 0012 OU09 SD102 0012 OU09 SD102 0012W OU09 SD103 0012
PBSHA09IMS1	BARIUM	0.059	0.10	0.20	MG_KG	BSBG SD303 0012 BSBG SD304 0012 BSBG SD305 0012 BSBG SD305 1224 BSBG SD305 2436 BSBG SD306 0012 BSBG SD306 1224 BSBG SD306 2436 FDSD12121302 FDSD12131301 FDSD12131302 FDSD12131303 OU09 SD101 0012 OU09 SD102 0012 OU09 SD102 0012W OU09 SD103 0012

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
PBSHA09IMS1	CHROMIUM, TOTAL	0.289	0.40	0.50	MG_KG	BSBG SD303 0012 BSBG SD304 0012 BSBG SD305 0012 BSBG SD305 1224 BSBG SD305 2436 BSBG SD306 0012 BSBG SD306 1224 BSBG SD306 2436 FDSD12121302 FDSD12131301 FDSD12131302 FDSD12131303 OU09 SD101 0012 OU09 SD102 0012 OU09 SD102 0012W OU09 SD103 0012
PBSHA09IMS1	COPPER	0.142	0.20	0.30	MG_KG	BSBG SD303 0012 BSBG SD304 0012 BSBG SD305 0012 BSBG SD305 1224 BSBG SD305 2436 BSBG SD306 0012 BSBG SD306 1224 BSBG SD306 2436 FDSD12121302 FDSD12131301 FDSD12131302 FDSD12131303 OU09 SD101 0012 OU09 SD102 0012 OU09 SD102 0012W OU09 SD103 0012
PBSHA09IMS1	LEAD	0.029	0.050	0.10	MG_KG	BSBG SD303 0012 BSBG SD304 0012 BSBG SD305 0012 BSBG SD305 1224 BSBG SD305 2436 BSBG SD306 0012 BSBG SD306 1224 BSBG SD306 2436 FDSD12121302 FDSD12131301 FDSD12131302 FDSD12131303 OU09 SD101 0012 OU09 SD102 0012 OU09 SD102 0012W OU09 SD103 0012

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
PBSHA09IMS1	MANGANESE	0.086	0.10	0.20	MG_KG	BSBG SD303 0012 BSBG SD304 0012 BSBG SD305 0012 BSBG SD305 1224 BSBG SD305 2436 BSBG SD306 0012 BSBG SD306 1224 BSBG SD306 2436 FDSD12121302 FDSD12131301 FDSD12131302 FDSD12131303 OU09 SD101 0012 OU09 SD102 0012 OU09 SD102 0012W OU09 SD103 0012
PBSHA09IMS1	NICKEL	0.075	0.12	0.20	MG_KG	BSBG SD303 0012 BSBG SD304 0012 BSBG SD305 0012 BSBG SD305 1224 BSBG SD305 2436 BSBG SD306 0012 BSBG SD306 1224 BSBG SD306 2436 FDSD12121302 FDSD12131301 FDSD12131302 FDSD12131303 OU09 SD101 0012 OU09 SD102 0012 OU09 SD102 0012W OU09 SD103 0012
PBSHA09IMS1	SELENIUM	0.081	0.30	0.50	MG_KG	BSBG SD303 0012 BSBG SD304 0012 BSBG SD305 0012 BSBG SD305 1224 BSBG SD305 2436 BSBG SD306 0012 BSBG SD306 1224 BSBG SD306 2436 FDSD12121302 FDSD12131301 FDSD12131302 FDSD12131303 OU09 SD101 0012 OU09 SD102 0012 OU09 SD102 0012W OU09 SD103 0012

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
PBSHA09IMS1	VANADIUM	0.246	0.40	0.50	MG_KG	BSBG SD303 0012 BSBG SD304 0012 BSBG SD305 0012 BSBG SD305 1224 BSBG SD305 2436 BSBG SD306 0012 BSBG SD306 1224 BSBG SD306 2436 FDSD12121302 FDSD12131301 FDSD12131302 FDSD12131303 OU09 SD101 0012 OU09 SD102 0012 OU09 SD102 0012W OU09 SD103 0012
PBSHA09IMS1	ZINC	0.255	0.80	1.0	MG_KG	BSBG SD303 0012 BSBG SD304 0012 BSBG SD305 0012 BSBG SD305 1224 BSBG SD305 2436 BSBG SD306 0012 BSBG SD306 1224 BSBG SD306 2436 FDSD12121302 FDSD12131301 FDSD12131302 FDSD12131303 OU09 SD101 0012 OU09 SD102 0012 OU09 SD102 0012W OU09 SD103 0012
PBWGL23ICW3	ALUMINUM	18.630	100	300	UG_L	RBSD12131301
PBWGL23ICW3	SODIUM	36.910	500	1000	UG_L	RBSD12131301
PBWHA03IMW2	BARIUM	0.453	1.0	2.0	UG_L	RBSD12131301
PBWHA03IMW2	CHROMIUM, TOTAL	0.729	4.0	5.0	UG_L	RBSD12131301
PBWHA03IMW2	COBALT	0.079	0.30	1.0	UG_L	RBSD12131301
PBWHA03IMW2	COPPER	1.108	2.0	3.0	UG_L	RBSD12131301
PBWHA03IMW2	LEAD	0.442	0.50	1.0	UG_L	RBSD12131301
PBWHA03IMW2	MANGANESE	0.671	1.0	2.0	UG_L	RBSD12131301
PBWHA03IMW2	NICKEL	0.168	1.2	2.0	UG_L	RBSD12131301
PBWHA03IMW2	ZINC	5.515	8.0	10	UG_L	RBSD12131301
PBWHA06HGW1	MERCURY	-0.020	0.10	0.20	UG_L	BSBG SD303 0012 BSBG SD304 0012 FDSD12131302 OU09 SD101 0012

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
PBSHA09ICS1	ALUMINUM	2.221	10	30	MG_KG	BSBG SD303 0012 BSBG SD304 0012 BSBG SD305 0012 BSBG SD305 1224 BSBG SD305 2436 BSBG SD306 0012 BSBG SD306 1224 BSBG SD306 2436 FDSD12121302 FDSD12131301 FDSD12131302 FDSD12131303 OU09 SD101 0012 OU09 SD102 0012 OU09 SD102 0012W OU09 SD103 0012
PBSHA09ICS1	CALCIUM	3.485	8.0	10	MG_KG	BSBG SD303 0012 BSBG SD304 0012 BSBG SD305 0012 BSBG SD305 1224 BSBG SD305 2436 BSBG SD306 0012 BSBG SD306 1224 BSBG SD306 2436 FDSD12121302 FDSD12131301 FDSD12131302 FDSD12131303 OU09 SD101 0012 OU09 SD102 0012 OU09 SD102 0012W OU09 SD103 0012
PBSHA09ICS1	IRON	1.606	8.0	10	MG_KG	BSBG SD303 0012 BSBG SD304 0012 BSBG SD305 0012 BSBG SD305 1224 BSBG SD305 2436 BSBG SD306 0012 BSBG SD306 1224 BSBG SD306 2436 FDSD12121302 FDSD12131301 FDSD12131302 FDSD12131303 OU09 SD101 0012 OU09 SD102 0012 OU09 SD102 0012W OU09 SD103 0012

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
PBSHA09ICS1	MAGNESIUM	1.737	8.0	10	MG_KG	BSBG SD303 0012 BSBG SD304 0012 BSBG SD305 0012 BSBG SD305 1224 BSBG SD305 2436 BSBG SD306 0012 BSBG SD306 1224 BSBG SD306 2436 FDSD12121302 FDSD12131301 FDSD12131302 FDSD12131303 OU09 SD101 0012 OU09 SD102 0012 OU09 SD102 0012W OU09 SD103 0012
PBSHA09ICS1	SODIUM	4.461	50	100	MG_KG	BSBG SD303 0012 BSBG SD304 0012 BSBG SD305 0012 BSBG SD305 1224 BSBG SD305 2436 BSBG SD306 0012 BSBG SD306 1224 BSBG SD306 2436 FDSD12121302 FDSD12131301 FDSD12131302 FDSD12131303 OU09 SD101 0012 OU09 SD102 0012 OU09 SD102 0012W OU09 SD103 0012
PBSHA09IMS1	BARIUM	0.059	0.10	0.20	MG_KG	BSBG SD303 0012 BSBG SD304 0012 BSBG SD305 0012 BSBG SD305 1224 BSBG SD305 2436 BSBG SD306 0012 BSBG SD306 1224 BSBG SD306 2436 FDSD12121302 FDSD12131301 FDSD12131302 FDSD12131303 OU09 SD101 0012 OU09 SD102 0012 OU09 SD102 0012W OU09 SD103 0012

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
PBSHA09IMS1	CHROMIUM, TOTAL	0.289	0.40	0.50	MG_KG	BSBG SD303 0012 BSBG SD304 0012 BSBG SD305 0012 BSBG SD305 1224 BSBG SD305 2436 BSBG SD306 0012 BSBG SD306 1224 BSBG SD306 2436 FDSD12121302 FDSD12131301 FDSD12131302 FDSD12131303 OU09 SD101 0012 OU09 SD102 0012 OU09 SD102 0012W OU09 SD103 0012
PBSHA09IMS1	NICKEL	0.075	0.12	0.20	MG_KG	BSBG SD303 0012 BSBG SD304 0012 BSBG SD305 0012 BSBG SD305 1224 BSBG SD305 2436 BSBG SD306 0012 BSBG SD306 1224 BSBG SD306 2436 FDSD12121302 FDSD12131301 FDSD12131302 FDSD12131303 OU09 SD101 0012 OU09 SD102 0012 OU09 SD102 0012W OU09 SD103 0012
PBSHA09IMS1	SELENIUM	0.081	0.30	0.50	MG_KG	BSBG SD303 0012 BSBG SD304 0012 BSBG SD305 0012 BSBG SD305 1224 BSBG SD305 2436 BSBG SD306 0012 BSBG SD306 1224 BSBG SD306 2436 FDSD12121302 FDSD12131301 FDSD12131302 FDSD12131303 OU09 SD101 0012 OU09 SD102 0012 OU09 SD102 0012W OU09 SD103 0012

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
PBSHA09IMS1	VANADIUM	0.246	0.40	0.50	MG_KG	BSBG SD303 0012 BSBG SD304 0012 BSBG SD305 0012 BSBG SD305 1224 BSBG SD305 2436 BSBG SD306 0012 BSBG SD306 1224 BSBG SD306 2436 FDSD12121302 FDSD12131301 FDSD12131302 FDSD12131303 OU09 SD101 0012 OU09 SD102 0012 OU09 SD102 0012W OU09 SD103 0012
PBSHA09IMS1	ZINC	0.255	0.80	1.0	MG_KG	BSBG SD303 0012 BSBG SD304 0012 BSBG SD305 0012 BSBG SD305 1224 BSBG SD305 2436 BSBG SD306 0012 BSBG SD306 1224 BSBG SD306 2436 FDSD12121302 FDSD12131301 FDSD12131302 FDSD12131303 OU09 SD101 0012 OU09 SD102 0012 OU09 SD102 0012W OU09 SD103 0012
PBWGL23ICW3	ALUMINUM	18.630	100	300	UG_L	RBSD12131301
PBWGL23ICW3	SODIUM	36.910	500	1000	UG_L	RBSD12131301
PBWHA03IMW2	BARIUM	0.453	1.0	2.0	UG_L	RBSD12131301
PBWHA03IMW2	CHROMIUM, TOTAL	0.729	4.0	5.0	UG_L	RBSD12131301
PBWHA03IMW2	COBALT	0.079	0.30	1.0	UG_L	RBSD12131301
PBWHA03IMW2	COPPER	1.108	2.0	3.0	UG_L	RBSD12131301
PBWHA03IMW2	LEAD	0.442	0.50	1.0	UG_L	RBSD12131301
PBWHA03IMW2	NICKEL	0.168	1.2	2.0	UG_L	RBSD12131301
PBWHA03IMW2	ZINC	5.515	8.0	10	UG_L	RBSD12131301

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
PBSHA09IMS1	COPPER	0.142	0.20	0.30	MG_KG	BSBG SD303 0012 BSBG SD304 0012 BSBG SD305 0012 BSBG SD305 1224 BSBG SD305 2436 BSBG SD306 0012 BSBG SD306 1224 BSBG SD306 2436 FDSD12121302 FDSD12131301 FDSD12131302 FDSD12131303 OU09 SD101 0012 OU09 SD102 0012 OU09 SD102 0012W OU09 SD103 0012
PBWHA03IMW2	MANGANESE	0.671	1.0	2.0	UG_L	RBSD12131301
PBSHA09IMS1	LEAD	0.029	0.050	0.10	MG_KG	BSBG SD303 0012 BSBG SD304 0012 BSBG SD305 0012 BSBG SD305 1224 BSBG SD305 2436 BSBG SD306 0012 BSBG SD306 1224 BSBG SD306 2436 FDSD12121302 FDSD12131301 FDSD12131302 FDSD12131303 OU09 SD101 0012 OU09 SD102 0012 OU09 SD102 0012W OU09 SD103 0012
PBSHA09IMS1	MANGANESE	0.086	0.10	0.20	MG_KG	BSBG SD303 0012 BSBG SD304 0012 BSBG SD305 0012 BSBG SD305 1224 BSBG SD305 2436 BSBG SD306 0012 BSBG SD306 1224 BSBG SD306 2436 FDSD12121302 FDSD12131301 FDSD12131302 FDSD12131303 OU09 SD101 0012 OU09 SD102 0012 OU09 SD102 0012W OU09 SD103 0012

Table A-2b Field Blanks

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
RBSD12131301	SODIUM	38.3	500	1000	UG_L	all sediments in this SDG
RBSD12131301	ANTIMONY	0.06	0.50	1.0	UG_L	all sediments in this SDG
RBSD12131301	BARIUM	0.50	1.0	2.0	UG_L	all sediments in this SDG
RBSD12131301	CHROMIUM, TOTAL	0.79	4.0	5.0	UG_L	all sediments in this SDG
RBSD12131301	COBALT	0.12	0.30	1.0	UG_L	all sediments in this SDG
RBSD12131301	COPPER	0.25	2.0	3.0	UG_L	all sediments in this SDG
RBSD12131301	LEAD	0.29	0.50	1.0	UG_L	all sediments in this SDG
RBSD12131301	MANGANESE	0.74	1.0	2.0	UG_L	all sediments in this SDG
RBSD12131301	SODIUM	38.3	500	1000	UG_L	all sediments in this SDG
RBSD12131301	ANTIMONY	0.06	0.50	1.0	UG_L	all sediments in this SDG
RBSD12131301	BARIUM	0.50	1.0	2.0	UG_L	all sediments in this SDG

Table A-3 Matrix Spikes

Sample ID	Compound	MS % Recovery	MSD % Recovery	Lower Limit	Upper Limit	RPD	RPD Limit
OU09 SD101 0012	ANTIMONY (SEM)	35.5		80	120		
OU09 SD101 0012	COPPER (SEM)	35.7		80	120		
OU09 SD101 0012	ZINC (SEM)	79.5		80	120		
OU09 SD102 0012W	POTASSIUM	139	136.1	80	120	2.7	20
OU09 SD102 0012W	ZINC	205.8	76	80	120	35.6	20
OU09 SD102 0012W	NICKEL	82.1	78.9	80	120	3.2	20
OU09 SD103 0012	POTASSIUM	196.1	138.6	80	120	22.9	20
OU09 SD103 0012	NICKEL	73.7	455.9	80	120	99.3	20
OU09 SD103 0012	ANTIMONY	39	26.6	80	120	33.2	20
OU09 SD103 0012	BERYLLIUM	87.8	79.3	80	120	15.2	20
OU09 SD103 0012	CHROMIUM, TOTAL	101.8	73.1	80	120	18.4	20
OU09 SD103 0012	COPPER	55.8	430.7	80	120	69.5	20
OU09 SD103 0012	VANADIUM	94.8	72.5	80	120	17.5	20
OU09 SD103 0012	SELENIUM	86.7	77.1	80	120	17.4	20
OU09 SD103 0012	ZINC	-18.8	-78.5	80	120	17.1	20

Table A-4 Field Duplicates

Sample ID	Duplicate ID	Compound	Sample Result	Qual	Duplicate Result	Qual	LOD	LOQ	Units	RPD
BSBG SD305 0012	FDSD12121302	CALCIUM	154000		79000		53	66	MG_KG	64.4
BSBG SD305 0012	FDSD12121302	LEAD	38		84.5		0.066	0.13	MG_KG	75.9
BSBG SD305 0012	FDSD12121302	SILVER	0.44		0.9		0.053	0.13	MG_KG	68.7
BSBG SD305 0012	FDSD12121302	BARIUM	25.3		44.8		0.13	0.26	MG_KG	55.6
BSBG SD305 0012	FDSD12121302	CADMIUM	0.23		0.49		0.026	0.13	MG_KG	72.2
BSBG SD305 0012	FDSD12121302	CHROMIUM, TOTAL	31		72.2		0.53	0.66	MG_KG	79.8
BSBG SD305 0012	FDSD12121302	COPPER	25.4		73.3		0.26	0.4	MG_KG	97.1
BSBG SD305 0012	FDSD12121302	ZINC	75.1		142		1	1.3	MG_KG	61.6
BSBG SD305 0012	FDSD12121302	MERCURY	0.17		0.62		0.024	0.048	MG_KG	114
BSBG SD305 0012	FDSD12121302	CADMIUM (SEM)	0.00087	J	0.00164	J	0.00095	0.0016	UMOL_G	61.4
BSBG SD305 0012	FDSD12121302	COPPER (SEM)	0.112		0.219		0.0056	0.014	UMOL_G	64.7
BSBG SD305 0012	FDSD12121302	NICKEL (SEM)	0.0417		0.0834		0.0024	0.0061	UMOL_G	66.7
OU09 SD101 0012	FDSD12131303	LEAD	180		1720		0.031	0.063	MG_KG	162.1
OU09 SD101 0012	FDSD12131303	SILVER	0.02	J	0.3		0.025	0.063	MG_KG	175
OU09 SD101 0012	FDSD12131303	ANTIMONY	1.1		12.9		0.031	0.063	MG_KG	168.6
OU09 SD101 0012	FDSD12131303	CADMIUM	0.19		0.017	U	0.012	0.063	MG_KG	167.1
OU09 SD101 0012	FDSD12131303	COPPER	39.1		565		0.12	0.19	MG_KG	174.1

Attachment B

Qualifier Codes and Explanations

Qualifier	Explanation
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
UJ	The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual quantitation limit necessary to accurately and precisely measure the analyte in the sample.
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

Attachment C

Reason Codes and Explanations

Reason Code	Explanation
be	Equipment blank contamination
bf	Field blank contamination
bl	Laboratory blank contamination
c	Calibration issue
d	Reporting limit raised due to chromatographic interference
fd	Field duplicate RPDs
h	Holding times
i	Internal standard areas
k	Estimated Maximum Possible Concentration (EMPC)
l	LCS recoveries
lc	Labeled compound recovery
ld	Laboratory duplicate RPDs
lp	Laboratory control sample/laboratory control sample duplicate RPDs
m	Matrix spike recovery
md	Matrix spike/matrix spike duplicate RPDs
nb	Negative laboratory blank contamination
p	Chemical preservation issue
r	Dual column RPD
q	Quantitation issue
s	Surrogate recovery
su	Ion suppression
t	Temperature preservation issue
x	Percent solids
y	Serial dilution results
z	ICS results

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Data Validation Report

Project:	MRP Site 1 (OU9) Remedial Investigation, NAVSTA Newport, Rhode Island CTO WE06
Laboratory:	Katahdin Analytical Services, Scarborough, Maine
Service Request:	CARR-13
Analyses/Method:	TAL Metals/ EPA SW-846 Methods 6010C, 6020A, 7471B Acid Volatile Sulfide/Simultaneously Extracted Metals / EPA 821/R-91-100
Validation Level:	Limited
Resolution Consultants Project Number:	60250336 SA.DV

Prepared by:	Kristin Rutherford/Resolution Consultants	Completed on: 03/03/2014
Reviewed by:	Waverly Braunstein/Resolution Consultants	File Name: CARR-13_SE_Metals_AVSSEM_DVRpt

SUMMARY

The samples listed below were collected by Resolution Consultants from MRP Site 1 (OU9), NAVSTA Newport, Rhode Island on December 17, 2013.

Sample ID	Matrix/Sample Type
FDSD12171301	Field Duplicate of OU09 SD115 1224
OU09 SD115 0012	Sediment
OU09 SD115 1224	Sediment
OU09 SD115 2436	Sediment

The data have been validated in accordance with the project-specific Sampling and Analysis Plan, *Sampling and Analysis Plan, Former Carr Point Shooting Range (MRP Site 1, OU9), Naval Station (NAVSTA) Newport, Rhode Island, Final* (Naval Facilities Engineering Command, Mid-Atlantic, 2013) and the following references:

- *DoD Quality Systems Manual (QMS) for Environmental Laboratories, version 4.2* (DoD EDQW, 2010);
- *USEPA Region 1, EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses* (December 1996);
- *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review* (January 2010);
- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW846, Method 6010C, Inductively Coupled Plasma-Atomic Emission Spectrometry* (USEPA, 1996);
- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW846, Method 6020A, Inductively Coupled Plasma-Mass Spectrometry* (USEPA, 1996);
- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW846, Method 7471B, Mercury in Solid or Semisolid Waste (Manual Cold-Vapor Technique)* (USEPA, 1996);
- *Draft Analytical Method for Determination of Acid Volatile Sulfide in Sediment, Method 821/R-91-100* (USEPA, 1991);

- laboratory quality control (QC) limits, as applicable.

The USEPA Region 1 and National Data Validation Functional Guidelines were modified to accommodate the non-CLP methodologies. In the absence of method-specific direction for validation, Resolution Consultants professional judgment was used as appropriate.

REVIEW ELEMENTS

The data were evaluated based on the following parameters (where applicable to the method):

✓ Data completeness (chain-of-custody (COC)/sample integrity
✗ Holding times and sample preservation
✓ ICP/MS Instrument tuning
✓ Initial calibration/continuing calibration verification
✗ Laboratory blanks/equipment blanks
✓ ICP interference check standards
✗ Matrix spike (MS) and/or matrix spike duplicate (MSD) results
✗ Laboratory duplicate results
✓ Laboratory control sample (LCS)/laboratory control sample duplicate (LCSD) results
✗ Field duplicates
✓ ICP/ICPMS serial dilution results
✓ ICP/MS internal standard performance
✓ Sample results/reporting issues

The symbol (✓) indicates that no validation qualifiers were applied based on this parameter. NA indicates that the parameter was not included as part of this data set or was not applicable to this validation and therefore not reviewed. The symbol (✗) indicates that a quality control (QC) nonconformance resulted in the qualification of data. Any QC nonconformance that resulted in the qualification of data is discussed below. In addition, nonconformances or other issues that were noted during validation, but did not result in qualification of data, may be discussed for informational purposes only.

The data appear valid as reported and may be used for decision making purposes. Selected data points were estimated, negated, and/or rejected due to nonconformances of certain QC criteria (see discussion below). Qualified sample results are presented in Table 1.

RESULTS

<u>Data Completeness</u>

The data package was reviewed and found to meet acceptance criteria for completeness:

- The COCs were reviewed for completeness of information relevant to the samples and requested analyses, and for signatures indicating transfer of sample custody.
- The laboratory sample login sheet(s) were reviewed for issues potentially affecting sample integrity, including the condition of sample containers upon receipt at the laboratory.
- Completeness of analyses was verified by comparing the reported results to the COC requests.

Holding Times/Sample Preservation

Sample preservation and preparation/analysis holding times were reviewed for conformance with the QC acceptance criteria.

SEM criteria:

SEM hold time is 14 days from collection to preparation and 14 days from preparation to analysis. Qualify detected results as estimated low (J-) and reject nondetects (R). Nonconformances are summarized in Attachment A in Table A-1.

Qualified sample results are shown in Table 1.

ICP/MS Instrument Tuning

ICP/MS tuning results were reviewed for conformance with the QC acceptance criteria to ensure that:

- the proper tuning solution was used with elements representing all of the mass regions of interest;
- the tunings were performed at the begining of each analysis and prior to calibration;
- the tuning solution was analyzed at least 4 times as required by the method;
- the mass calibration was within 0.1 amu of the true value for all masses within the region of interest;
- the resolution was verified to be <0.9 amu full width at 10% peak height; and
- the %RSD was $\leq$ 5% for the analytes contained in the tuning solution.

Initial Calibration/Continuing Calibration Verification

Calibration data were reviewed for conformance with the QC acceptance criteria to ensure that:

- all criteria were met for the calibration curves
- the initial calibration verification (ICV) percent recovery (%R) criteria were met;
- the continuing calibration verification standard (CCV) method percent difference (%Ds) were met; and
- the low level check standards (CRI or CRA) %R criteria were met.

The QC acceptance criteria were met.

Laboratory Blanks/Equipment Blanks

Laboratory method blanks and equipment rinsate blanks were evaluated as to whether there were contaminants detected above the method detection limit (MDL). Data validation qualifications for individual samples are based on the maximum contaminant concentration detected in all associated blanks.

Method and equipment rinsate results were reviewed for conformance with the QC acceptance criteria. Detected results in blanks are not discussed in this data validation report if the associated results were nondetect or if qualification of sample results was not required.

Nonconformances are summarized in Attachment A in Tables A-2a and A-2b. Sample results were qualified as follows:

Blank Type	Blank Result	Sample Result	Action for Samples
PB / EB/ FB (Positive)	> LOQ	≥IDL/MDL but ≤ LOQ	Qualify as nondetect (U) at the LOQ
		>LOQ but < 10x Blank Result	Qualify results as unusable
		≥10x Blank Result	No action
	≥IDL/MDL but ≤LOQ	Nondetect	No action
		≥IDL/MDL but ≤LOQ	Qualify as nondetect (U) at the LOQ
		> LOQ	Use Resolution Consultants professional judgment (see below [1])
PB (Negative)	< (-LOQ)	< 10x LOQ	Qualify positive results <10x LOQ as estimated (J) and nondetects as estimated (UJ)
		≥10x LOQ	No action

[1] Establish an action level (AL) at 5x the blank contamination. If sample result is <AL, qualify the reported result with a U.

Qualified sample results are shown in Table 1.

ICP Interference Check Standards

The ICP interference check standards (ICSA, ICSAB) were reviewed for conformance.

All criteria were met for the ICSA and ICSAB.

MS Results

The MS and/or MSD %Rs and/or RPDs were reviewed for conformance with the QC acceptance criteria.

Nonconformances are summarized in Attachment A in Table A-3. Data qualification on the basis of MS and/or MSD nonconformances was as follows:

Qualify Results	%R < 30	80 > %R ≥ 30	%R >120	RPD>20
Detected results	J	J	J	J
Nondetects	R	UJ	Accept	UJ

Notes: MS actions apply to all samples of the same matrix. This qualification will also be applied to the results of all samples within a given area of the site, if deemed appropriate.

1. If the sample result (SR) > 4x the spike concentration (S), no action is taken.
2. If any analyte does not meet the %R criteria and a post digestion spike (PDS) analysis was performed, use professional judgment to assess the results. Refer to the National Functional Guidelines (NFG) 2010 for recommended actions.
3. If either the MS or MSD does not meet %R criteria, qualify all associated samples.

Qualified sample results are shown in Table 1.

Laboratory Duplicate Results

The laboratory duplicate relative percent differences (RPDs) were reviewed for conformance.

Nonconformances are summarized in Attachment A in Table A-4. Data qualification on the basis of laboratory duplicate RPDs was as follows:

Sample Results	RPD	Action (Detect/Nondetect)
≥5x LOQ (both sample and duplicate)	RPD>20%	Estimate (J/UJ)
<5x LOQ (either sample and/or duplicate)	if absolute difference is > the LOQ, estimate (J) positive results <5x the LOQ and nondetects (UJ).	

Qualified sample results are shown in Table 1.

LCS/LCSD Results

The LCS/LCSD %Rs and/or RPDs were reviewed for conformance with the QC acceptance criteria.

The LCS and LCSD %Rs and RPDs were within the QC acceptance criteria.

Field Duplicate Results

Field duplicate RPDs were reviewed for conformance with the Resolution Consultants QC acceptance criterion of ≤50% for solid matrices and ≤30% for aqueous matrices. This criterion applies if both results were greater than 5 times the limit of quantitation (LOQ).

Nonconformances are summarized in Attachment A in Table A-5. Data qualification on the basis of field duplicate RPDs was as follows:

Actions: (Based on Resolution Consultants professional judgment)

Criteria	RPD	Action	
		Detected	Nondetected
Sample and duplicate are nondetect results	Not calculable (NC)	No qualification	No qualification
Sample and duplicate results <SLOQ	Not applicable	No qualification	No qualification
Sample and duplicate results ≥5xSLOQ	>30% Aqueous >50% All other sample types	J	Not Applicable
Sample and duplicate results are >SLOQ and <5xSLOQ	>60% Aqueous >100% All other sample types	J	Not Applicable
If sample or duplicate result is =SLOQ and the other is not detected	NC	J	UJ
If sample or duplicate result is <SLOQ and the other is not detected	NC	No qualification	No qualification

Qualified sample results are summarized in Table 1.

ICP/ICPMS Serial Dilution Results

The serial dilution percent differences (%Ds) were reviewed for conformance with the QC acceptance criteria.

The serial dilution %Ds were within the QC acceptance criteria.

ICP/MS Internal Standard Performance

ICP/MS Internal standard performance was reviewed for conformance and was within the QC acceptance criteria.

Sample Results/Reporting Issues

All analytes detected at concentrations less than the limit of quantitation (LOQ) but greater than the method detection limit (MDL) were qualified by the laboratory as estimated (J). This "J" qualifier was retained during data validation.

Resolution Consultants professional judgment was used to qualify sample results with percent solids that were <30%.

All criteria were met.

QUALIFICATION ACTIONS

Sample results qualified as a result of validation actions are summarized in Table 1. All actions are described above.

ATTACHMENTS

Attachment A: Nonconformance Summary Tables

Attachment B: Qualifier Codes and Explanations

Attachment C: Reason Codes and Explanations

Table 1 - Data Validation Summary of Qualified Data

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
FDSD12171301	SE	ANTIMONY	0.14	0.038	0.077	MG_KG	J-	m
FDSD12171301	SE	COPPER	4.2	0.14	0.20	MG_KG	J-	m
FDSD12171301	SE	LEAD	22.0	0.038	0.077	MG_KG	J	fd
FDSD12171301	SE	SELENIUM	0.38	0.38	0.38	MG_KG	U	bl
FDSD12171301	SE	ZINC	24.5	0.54	0.68	MG_KG	J-	m
FDSD12171301	SE	MERCURY	0.009	0.014	0.028	MG_KG	J	md
OU09 SD115 0012	SE	ANTIMONY	0.25	0.035	0.070	MG_KG	J-	m
OU09 SD115 0012	SE	COPPER	18.8	0.16	0.24	MG_KG	J-	m
OU09 SD115 0012	SE	LEAD	57.9	0.035	0.070	MG_KG	J	fd
OU09 SD115 0012	SE	SELENIUM	0.35	0.35	0.35	MG_KG	U	bl
OU09 SD115 0012	SE	ZINC	55.6	0.63	0.79	MG_KG	J-	m
OU09 SD115 0012	SE	MERCURY	0.01	0.016	0.031	MG_KG	J	md
OU09 SD115 0012	SE	LEAD	0.022	0.00044	0.00055	UMOL_G	J	m,ld
OU09 SD115 0012	SE	MERCURY	0.000023	0.000023	0.000023	UMOL_G	UJ	bl,h,ld
OU09 SD115 0012	SE	ZINC	0.034	0.0035	0.0070	UMOL_G	J	ld
OU09 SD115 1224	SE	ANTIMONY	0.09	0.036	0.072	MG_KG	J-	m
OU09 SD115 1224	SE	COPPER	5.2	0.17	0.25	MG_KG	J-	m
OU09 SD115 1224	SE	LEAD	10.5	0.036	0.072	MG_KG	J	fd
OU09 SD115 1224	SE	SELENIUM	0.36	0.36	0.36	MG_KG	U	bl
OU09 SD115 1224	SE	ZINC	27.5	0.68	0.84	MG_KG	J-	m
OU09 SD115 1224	SE	MERCURY	0.017	0.017	0.034	MG_KG	UJ	md
OU09 SD115 2436	SE	ANTIMONY	0.07	0.037	0.074	MG_KG	J-	m
OU09 SD115 2436	SE	COPPER	5.2	0.13	0.20	MG_KG	J-	m
OU09 SD115 2436	SE	LEAD	14.4	0.037	0.074	MG_KG	J	fd
OU09 SD115 2436	SE	SELENIUM	0.37	0.37	0.37	MG_KG	U	bl
OU09 SD115 2436	SE	ZINC	21.5	0.52	0.66	MG_KG	J-	m
OU09 SD115 2436	SE	MERCURY	0.005	0.015	0.029	MG_KG	J	md

Attachment A

Non Conformance Summary Tables

Table A-1 Hold Times

Sample ID	Compound	Days from Sampling to Prep	Status	Days from Prep to Analysis	Status	Days from Sampling to Analysis	Status
OU09 SD115 0012	MERCURY	20	>14 days	2		22	>14 days

Table A-2a Lab Blanks

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
PBSGL19ICS2	MERCURY	0.00220	0.000090	0.000010	UMOL_G	OU09 SD115 0012
PBSGL19ICS2	NICKEL	0.00058	0.0014	0.0034	UMOL_G	OU09 SD115 0012
PBSHA09ICS2	CALCIUM	11.730	8.0	10	MG_KG	FDSD12171301 OU09 SD115 0012 OU09 SD115 1224 OU09 SD115 2436
PBSHA09ICS2	IRON	1.438	8.0	10	MG_KG	FDSD12171301 OU09 SD115 0012 OU09 SD115 1224 OU09 SD115 2436
PBSHA09ICS2	MAGNESIUM	2.697	8.0	10	MG_KG	FDSD12171301 OU09 SD115 0012 OU09 SD115 1224 OU09 SD115 2436
PBSHA09ICS2	SODIUM	5.753	50	100	MG_KG	FDSD12171301 OU09 SD115 0012 OU09 SD115 1224 OU09 SD115 2436
PBSHA09IMS2	BARIUM	0.075	0.10	0.20	MG_KG	FDSD12171301 OU09 SD115 0012 OU09 SD115 1224 OU09 SD115 2436
PBSHA09IMS2	CHROMIUM, TOTAL	0.170	0.40	0.50	MG_KG	FDSD12171301 OU09 SD115 0012 OU09 SD115 1224 OU09 SD115 2436
PBSHA09IMS2	COBALT	0.009	0.030	0.10	MG_KG	FDSD12171301 OU09 SD115 0012 OU09 SD115 1224 OU09 SD115 2436
PBSHA09IMS2	COPPER	2.810	0.20	0.30	MG_KG	FDSD12171301 OU09 SD115 0012 OU09 SD115 1224 OU09 SD115 2436

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
PBSHA09IMS2	LEAD	0.527	0.050	0.10	MG_KG	FDSD12171301 OU09 SD115 0012 OU09 SD115 1224 OU09 SD115 2436
PBSHA09IMS2	MANGANESE	0.155	0.10	0.20	MG_KG	FDSD12171301 OU09 SD115 0012 OU09 SD115 1224 OU09 SD115 2436
PBSHA09IMS2	NICKEL	0.429	0.12	0.20	MG_KG	FDSD12171301 OU09 SD115 0012 OU09 SD115 1224 OU09 SD115 2436
PBSHA09IMS2	SELENIUM	0.117	0.30	0.50	MG_KG	FDSD12171301 OU09 SD115 0012 OU09 SD115 1224 OU09 SD115 2436
PBSHA09IMS2	ZINC	4.991	0.80	1.0	MG_KG	FDSD12171301 OU09 SD115 0012 OU09 SD115 1224 OU09 SD115 2436
PBSHA15IMS1	COPPER	0.618	0.20	0.30	MG_KG	FDSD12171301 OU09 SD115 0012 OU09 SD115 1224
PBSHA15IMS1	ZINC	2.441	0.80	1.0	MG_KG	FDSD12171301 OU09 SD115 0012 OU09 SD115 1224
PBSHA17IMS1	COPPER	0.277	0.20	0.30	MG_KG	OU09 SD115 2436
PBSHA17IMS1	ZINC	0.166	0.80	1.0	MG_KG	OU09 SD115 2436

Table A-2b Field Blanks

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
RBSD12181301	ALUMINUM	39.2	100	300	UG_L	OU09 SD115 0012 OU09 SD115 1224 OU09 SD115 2436 FDSD12171301
RBSD12181301	CALCIUM	76.9	80	100	UG_L	OU09 SD115 0012 OU09 SD115 1224 OU09 SD115 2436 FDSD12171301
RBSD12181301	IRON	23.4	80	100	UG_L	OU09 SD115 0012 OU09 SD115 1224 OU09 SD115 2436 FDSD12171301
RBSD12181301	MAGNESIUM	134	80	100	UG_L	OU09 SD115 0012 OU09 SD115 1224 OU09 SD115 2436 FDSD12171301

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
RBSD12181301	SODIUM	1180	500	1000	UG_L	OU09 SD115 0012 OU09 SD115 1224 OU09 SD115 2436 FDSD12171301
RBSD12181301	BARIUM	0.74	1.0	2.0	UG_L	OU09 SD115 0012 OU09 SD115 1224 OU09 SD115 2436 FDSD12171301
RBSD12181301	CHROMIUM, TOTAL	0.97	4.0	5.0	UG_L	OU09 SD115 0012 OU09 SD115 1224 OU09 SD115 2436 FDSD12171301
RBSD12181301	COBALT	0.06	0.30	1.0	UG_L	OU09 SD115 0012 OU09 SD115 1224 OU09 SD115 2436 FDSD12171301
RBSD12181301	COPPER	0.58	2.0	3.0	UG_L	OU09 SD115 0012 OU09 SD115 1224 OU09 SD115 2436 FDSD12171301
RBSD12181301	LEAD	0.44	0.50	1.0	UG_L	OU09 SD115 0012 OU09 SD115 1224 OU09 SD115 2436 FDSD12171301
RBSD12181301	MANGANESE	2.1	1.0	2.0	UG_L	OU09 SD115 0012 OU09 SD115 1224 OU09 SD115 2436 FDSD12171301
RBSD12181301	NICKEL	0.28	1.2	2.0	UG_L	OU09 SD115 0012 OU09 SD115 1224 OU09 SD115 2436 FDSD12171301
RBSD12181301	ZINC	4.5	8.0	10	UG_L	OU09 SD115 0012 OU09 SD115 1224 OU09 SD115 2436 FDSD12171301

Table A-3 Matrix Spikes

Sample ID	Compound	MS % Recovery	MSD % Recovery	Lower Limit	Upper Limit	RPD	RPD Limit
OU09 SD115 0012	ANTIMONY	48.5	49.5	80	120	5.2	20
OU09 SD115 0012	COPPER	6.6	13.8	80	120	5.7	20
OU09 SD115 0012	ZINC	4.9	15	80	120	5.5	20
OU09 SD115 0012	MERCURY	94.9	95.0	80	120	29.3	20
OU09 SD115 0012	LEAD (SEM)	441.8		80	120		

Table A-4 Lab Duplicates

Sample ID	Compound	Sample Result	Qual	Duplicate Result	Qual	LOD	LOQ	Units	RPD
OU09 SD115 0012	LEAD (SEM)	0.022		0.050		0.00044	0.00055	UMOL_G	77.7
OU09 SD115 0012	MERCURY (SEM)	0.00070		0.00056		0.000020	0.000023	UMOL_G	22.2
OU09 SD115 0012	ZINC (SEM)	0.034		0.056		0.0035	0.0070	UMOL_G	48.8

Table A-5 Field Duplicates

Sample ID	Duplicate ID	Compound	Sample Result	Qual	Duplicate Result	Qual	LOD	LOQ	Units	RPD
OU09 SD115 1224	FDSD12171301	LEAD	10.5		22.0		0.036	0.072	MG_KG	70.8

Attachment B

Qualifier Codes and Explanations

Qualifier	Explanation
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
UJ	The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual quantitation limit necessary to accurately and precisely measure the analyte in the sample.
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

Attachment C

Reason Codes and Explanations

Reason Code	Explanation
be	Equipment blank contamination
bf	Field blank contamination
bl	Laboratory blank contamination
c	Calibration issue
d	Reporting limit raised due to chromatographic interference
fd	Field duplicate RPDs
h	Holding times
i	Internal standard areas
k	Estimated Maximum Possible Concentration (EMPC)
l	LCS recoveries
lc	Labeled compound recovery
ld	Laboratory duplicate RPDs
lp	Laboratory control sample/laboratory control sample duplicate RPDs
m	Matrix spike recovery
md	Matrix spike/matrix spike duplicate RPDs
nb	Negative laboratory blank contamination
p	Chemical preservation issue
r	Dual column RPD
q	Quantitation issue
s	Surrogate recovery
su	Ion suppression
t	Temperature preservation issue
x	Percent solids
y	Serial dilution results
z	ICS results

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Data Validation Report

Project:	MRP Site 1 (OU9) Remedial Investigation, NAVSTA Newport, Rhode Island CTO WE06
Laboratory:	Katahdin Analytical Services, Scarborough, Maine
Service Request:	CARR-14
Analyses/Method:	TAL Metals/ EPA SW-846 Methods 6010C, 6020A, 7471B Acid Volatile Sulfide/Simultaneously Extracted Metals / EPA 821/R-91-100
Validation Level:	Limited
Resolution Consultants Project Number:	60250336 SA.DV

Prepared by:	Kristin Rutherford/Resolution Consultants	Completed on: 03/03/2014
Reviewed by:	Waverly Braunstein/Resolution Consultants	File Name: CARR-14_SE_Metals_AVSSEM_DVRpt

SUMMARY

The samples listed below were collected by Resolution Consultants from MRP Site 1 (OU9), NAVSTA Newport, Rhode Island, on December 17 and 18, 2013.

Sample ID	Matrix/Sample Type
RBSD12181301	Equipment blank
FDSD12171302	Field Duplicate of OU09 SD114 1224
BSBG SD307 0012	Sediment
BSBG SD307 1224	Sediment
BSBG SD307 2436	Sediment
BSBG SD308 0012	Sediment
BSBG SD308 1224	Sediment
BSBG SD308 2436	Sediment
OU09 SD114 0012	Sediment
OU09 SD114 1224	Sediment
OU09 SD114 2436	Sediment

The data have been validated in accordance with the project-specific Sampling and Analysis Plan, *Sampling and Analysis Plan, Former Carr Point Shooting Range (MRP Site 1, OU9), Naval Station (NAVSTA) Newport, Rhode Island, Final* (Naval Facilities Engineering Command, Mid-Atlantic, 2013) and the following references:

- *DoD Quality Systems Manual (QMS) for Environmental Laboratories, version 4.2* (DoD EDQW, 2010);
- *USEPA Region 1, EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses* (December 1996);

- *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review* (January 2010);
- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW846, Method 6010C, Inductively Coupled Plasma-Atomic Emission Spectrometry* (USEPA, 1996);
- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW846, Method 6020A, Inductively Coupled Plasma-Mass Spectrometry* (USEPA, 1996);
- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW846, Method 7471B, Mercury in Solid or Semisolid Waste (Manual Cold-Vapor Technique)* (USEPA, 1996);
- *Draft Analytical Method for Determination of Acid Volatile Sulfide in Sediment, Method 821/R-91-100* (USEPA, 1991);
- laboratory quality control (QC) limits, as applicable.

The USEPA Region 1 and National Data Validation Functional Guidelines were modified to accommodate the non-CLP methodologies. In the absence of method-specific direction for validation, Resolution Consultants professional judgment was used as appropriate.

REVIEW ELEMENTS

The data were evaluated based on the following parameters (where applicable to the method):

✓	Data completeness (chain-of-custody (COC)/sample integrity
✗	Holding times and sample preservation
✓	ICP/MS Instrument tuning
✓	Initial calibration/continuing calibration verification
✗	Laboratory blanks/equipment blanks
✓	ICP interference check standards
✗	Matrix spike (MS) and/or matrix spike duplicate (MSD) results
NA	Laboratory duplicate results
✓	Laboratory control sample (LCS)/laboratory control sample duplicate (LCSD) results
✓	Field duplicates
✓	ICP/ICPMS serial dilution results
✓	ICP/MS internal standard performance
✓	Sample results/reporting issues

The symbol (✓) indicates that no validation qualifiers were applied based on this parameter. NA indicates that the parameter was not included as part of this data set or was not applicable to this validation and therefore not reviewed. The symbol (✗) indicates that a quality control (QC) nonconformance resulted in the qualification of data. Any QC nonconformance that resulted in the qualification of data is discussed below. In addition, nonconformances or other issues that were noted during validation, but did not result in qualification of data, may be discussed for informational purposes only.

The data appear valid as reported and may be used for decision making purposes. Selected data points were estimated, negated, and/or rejected due to nonconformances of certain QC criteria (see discussion below). Qualified sample results are presented in Table 1.

RESULTS

Data Completeness

The data package was reviewed and found to meet acceptance criteria for completeness:

- The COCs were reviewed for completeness of information relevant to the samples and requested analyses, and for signatures indicating transfer of sample custody.
- The laboratory sample login sheet(s) were reviewed for issues potentially affecting sample integrity, including the condition of sample containers upon receipt at the laboratory.
- Completeness of analyses was verified by comparing the reported results to the COC requests.

Holding Times/Sample Preservation

Sample preservation and preparation/analysis holding times were reviewed for conformance with the QC acceptance criteria.

Samples were received at 0.7C. Since samples were received in good condition on ice, no qualifications were required.

Metals criteria:

Mercury hold time is 28 days, other metals 180 days, aqueous preservation for all metals : pH $\leq$2 with nitric acid. Cooler temperature of 4 C $\pm$ 2C for solid matrices until preparation if mercury is an analyte. Professional judgment is used to qualify aqueous samples that are not properly preserved in the field or upon receipt, typically within 24 hours of sample collection or if samples are not digested within 24 hours. Qualify detected results as estimated low (J-) and reject nondetects (R). If hold times are grossly exceeded qualify detected results as estimated low (J-) and nondetects (R). SW-846 only requires thermal preservation for mercury in soils, therefore qualifying sample data for improper temperature must be justified.

SEM criteria:

SEM hold time is 14 days from collection to preparation and 14 days from preparation to analysis. Qualify detected results as estimated low (J-) and reject nondetects (R).

Nonconformances are summarized in Attachment A in Table A-1.

Qualified sample results are shown in Table 1.

ICP/MS Instrument Tuning

ICP/MS tuning results were reviewed for conformance with the QC acceptance criteria to ensure that:

- the proper tuning solution was used with elements representing all of the mass regions of interest;
- the tunings were performed at the beginning of each analysis and prior to calibration;
- the tuning solution was analyzed at least 4 times as required by the method;
- the mass calibration was within 0.1 amu of the true value for all masses within the region of interest;
- the resolution was verified to be <0.9 amu full width at 10% peak height; and

- the %RSD was ≤ 5% for the analytes contained in the tuning solution.

The QC acceptance criteria were met.

Initial Calibration/Continuing Calibration Verification

Calibration data were reviewed for conformance with the QC acceptance criteria to ensure that:

- all criteria were met for the calibration curves
- the initial calibration verification (ICV) percent recovery (%R) criteria were met;
- the continuing calibration verification standard (CCV) method percent difference (%Ds) were met; and
- the low level check standards (CRI or CRA) %R criteria were met.

The QC acceptance criteria were met.

Laboratory Blanks/Equipment Blanks

Laboratory method blanks and equipment rinsate blanks were evaluated as to whether there were contaminants detected above the method detection limit (MDL). Data validation qualifications for individual samples are based on the maximum contaminant concentration detected in all associated blanks.

Method and equipment rinsate results were reviewed for conformance with the QC acceptance criteria. Detected results in blanks are not discussed in this data validation report if the associated results were nondetect or if qualification of sample results was not required.

Nonconformances are summarized in Attachment A in Tables A-2a and A-2b. Sample results were qualified as follows:

Blank Type	Blank Result	Sample Result	Action for Samples
PB / EB/ FB (Positive)	> LOQ	≥IDL/MDL but ≤ LOQ	Qualify as nondetect (U) at the LOQ
		>LOQ but < 10x Blank Result	Qualify nondetect results as unusable (R) and positive results as estimated (J)
		≥10x Blank Result	No action
	≥IDL/MDL but ≤LOQ	Nondetect	No action
		≥IDL/MDL but ≤LOQ	Qualify as nondetect (U) at the LOQ
		> LOQ	Use Resolution Consultants professional judgment (see below [1])
PB (Negative)	< (-LOQ)	< 10x LOQ	Qualify positive result10x LOQ as estimated (J) and nondetects as estimated (UJ)
		≥10x LOQ	No action

[1] Establish an action level (AL) at 5x the blank contamination. If sample result is <AL, qualify the reported result with a U.

Qualified sample results are shown in Table 1.

ICP Interference Check Standards

The ICP interference check standards (ICSA, ICSAB) were reviewed for conformance.

All criteria were met for the ICSA and ICSAB.

MS Results

The MS and/or MSD %Rs and/or RPDs were reviewed for conformance with the QC acceptance criteria.

Nonconformances are summarized in Attachment A in Table A-3. Data qualification on the basis of MS and/or MSD nonconformances was as follows:

Qualify Results	%R < 30	80 > %R ≥ 30	%R >120	RPD>20
Detected results	J	J	J	J
Nondetects	R	UJ	Accept	UJ

Notes: MS actions apply to all samples of the same matrix. This qualification will also be applied to the results of all samples within a given area of the site, if deemed appropriate.

1. If the sample result (SR) > 4x the spike concentration (S), no action is taken.
2. If any analyte does not meet the %R criteria and a post digestion spike (PDS) analysis was performed, use professional judgment to assess the results. Refer to the National Functional Guidelines (NFG) 2010 for recommended actions.
3. If either the MS or MSD does not meet %R criteria, qualify all associated samples.

Qualified sample results are shown in Table 1.

Laboratory Duplicate Results

Laboratory duplicate analyses were not performed for total metals. Matrix spike and matrix spike duplicate precision was used to assess precision (see MS results).

LCS/LCSD Results

The LCS/LCSD %Rs and/or RPDs were reviewed for conformance with the QC acceptance criteria.

Nonconformances are summarized in Attachment A in Table A-4. Data qualification on the basis of LCS and/or LCSD %Rs or RPDs was as follows:

LCS	%R < 50	80 > %R = 50	%R > 120%	%R >150%
Positive Sample Results	J-	J-	J+	R
Nondetects	R	UJ	Accept	R

Apply actions to all samples in the same preparation batch.

Qualified sample results are shown in Table 1.

Field Duplicate Results

Field duplicate RPDs were reviewed for conformance with the Resolution Consultants QC acceptance criterion of ≤50% for solid matrices and ≤30% for aqueous matrices. This criterion applies if both results were greater than 5 times the limit of quantitation (LOQ).

All field duplicate precision criteria were met.

ICP/ICPMS Serial Dilution Results

The serial dilution percent differences (%Ds) were reviewed for conformance with the QC acceptance criteria.

The serial dilution %Ds were within the QC acceptance criteria.

ICP/MS Internal Standard Performance

ICP/MS Internal standard performance was reviewed for conformance and was within the QC acceptance criteria.

Sample Results/Reporting Issues

All analytes detected at concentrations less than the limit of quantitation (LOQ) but greater than the method detection limit (MDL) were qualified by the laboratory as estimated (J). This "J" qualifier was retained during data validation.

Resolution Consultants professional judgment was used to qualify sample results with percent solids that were <30%.

All criteria were met.

QUALIFICATION ACTIONS

Sample results qualified as a result of validation actions are summarized in Table 1. All actions are described above.

ATTACHMENTS

Attachment A: Nonconformance Summary Tables

Attachment B: Qualifier Codes and Explanations

Attachment C: Reason Codes and Explanations

Table 1 - Data Validation Summary of Qualified Data

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
BSBG SD307 0012	SE	POTASSIUM	1050	40	79	MG_KG	J	m,md
BSBG SD307 0012	SE	ANTIMONY	0.08	0.040	0.079	MG_KG	J	m,md
BSBG SD307 0012	SE	LEAD	20.0	0.040	0.079	MG_KG	J+	m
BSBG SD307 0012	SE	MANGANESE	146	0.079	0.16	MG_KG	J+	m
BSBG SD307 0012	SE	SELENIUM	0.40	0.40	0.40	MG_KG	U	bl
BSBG SD307 0012	SE	MERCURY	0.000024	0.000024	0.000024	UMOL_G	UJ	h,bl
BSBG SD307 1224	SE	POTASSIUM	708	33	67	MG_KG	J	m,md
BSBG SD307 1224	SE	ANTIMONY	0.05	0.033	0.067	MG_KG	J	m,md
BSBG SD307 1224	SE	COPPER	5.7	0.14	0.22	MG_KG	J	bl
BSBG SD307 1224	SE	LEAD	7.0	0.033	0.067	MG_KG	J+	m
BSBG SD307 1224	SE	MANGANESE	142	0.067	0.13	MG_KG	J+	m
BSBG SD307 1224	SE	SELENIUM	0.33	0.33	0.33	MG_KG	U	bl
BSBG SD307 2436	SE	POTASSIUM	842	31	62	MG_KG	J	m,md
BSBG SD307 2436	SE	ANTIMONY	0.07	0.031	0.062	MG_KG	J	m,md
BSBG SD307 2436	SE	COPPER	25.3	0.12	0.18	MG_KG	J	bl
BSBG SD307 2436	SE	LEAD	7.6	0.031	0.062	MG_KG	J+	m
BSBG SD307 2436	SE	MANGANESE	151	0.062	0.12	MG_KG	J+	m
BSBG SD307 2436	SE	SELENIUM	0.31	0.31	0.31	MG_KG	U	bl
BSBG SD308 0012	SE	POTASSIUM	2500	54	110	MG_KG	J	m,md
BSBG SD308 0012	SE	ANTIMONY	0.09	0.054	0.11	MG_KG	J	m,md
BSBG SD308 0012	SE	LEAD	39.4	0.054	0.11	MG_KG	J+	m
BSBG SD308 0012	SE	MANGANESE	227	0.11	0.21	MG_KG	J+	m
BSBG SD308 0012	SE	MERCURY	0.000034	0.000034	0.000034	UMOL_G	UJ	h,bl
BSBG SD308 1224	SE	POTASSIUM	2140	50	100	MG_KG	J	m,md
BSBG SD308 1224	SE	ANTIMONY	0.1	0.050	0.10	MG_KG	J	m,md
BSBG SD308 1224	SE	LEAD	40.0	0.050	0.10	MG_KG	J+	m
BSBG SD308 1224	SE	MANGANESE	204	0.10	0.20	MG_KG	J+	m
BSBG SD308 2436	SE	POTASSIUM	526	28	56	MG_KG	J	m,md
BSBG SD308 2436	SE	ANTIMONY	0.05	0.028	0.056	MG_KG	J	m,md
BSBG SD308 2436	SE	LEAD	5.6	0.028	0.056	MG_KG	J+	m
BSBG SD308 2436	SE	MANGANESE	106	0.056	0.11	MG_KG	J+	m
BSBG SD308 2436	SE	SELENIUM	0.28	0.28	0.28	MG_KG	U	bl
FDSD12171302	SE	POTASSIUM	599	41	82	MG_KG	J	m,md
FDSD12171302	SE	ANTIMONY	0.10	0.041	0.082	MG_KG	J	m,md
FDSD12171302	SE	LEAD	18.9	0.041	0.082	MG_KG	J+	m
FDSD12171302	SE	MANGANESE	91.7	0.082	0.16	MG_KG	J+	m
FDSD12171302	SE	SELENIUM	0.41	0.41	0.41	MG_KG	U	bl
OU09 SD114 0012	SE	POTASSIUM	490	41	82	MG_KG	J	m,md
OU09 SD114 0012	SE	ANTIMONY	0.10	0.041	0.082	MG_KG	J	m,md

OU09 SD114 0012	SE	LEAD	21.2	0.041	0.082	MG_KG	J+	m
OU09 SD114 0012	SE	MANGANESE	86.4	0.082	0.16	MG_KG	J+	m
OU09 SD114 0012	SE	SELENIUM	0.41	0.41	0.41	MG_KG	U	bl
OU09 SD114 0012	SE	MERCURY	0.000023	0.000023	0.000023	UMOL_G	UJ	h,bl
OU09 SD114 1224	SE	POTASSIUM	542	39	78	MG_KG	J	m,md
OU09 SD114 1224	SE	ANTIMONY	0.08	0.039	0.078	MG_KG	J	m,md
OU09 SD114 1224	SE	LEAD	17.2	0.039	0.078	MG_KG	J+	m
OU09 SD114 1224	SE	MANGANESE	84.6	0.078	0.16	MG_KG	J+	m
OU09 SD114 1224	SE	SELENIUM	0.39	0.39	0.39	MG_KG	U	bl
OU09 SD114 2436	SE	POTASSIUM	448	30	61	MG_KG	J	m,md
OU09 SD114 2436	SE	ANTIMONY	0.05	0.030	0.061	MG_KG	J	m,md
OU09 SD114 2436	SE	COPPER	5.9	0.14	0.22	MG_KG	J	bl
OU09 SD114 2436	SE	LEAD	5.2	0.030	0.061	MG_KG	J+	m
OU09 SD114 2436	SE	MANGANESE	86.7	0.061	0.12	MG_KG	J+	m
OU09 SD114 2436	SE	SELENIUM	0.30	0.30	0.30	MG_KG	U	bl
RBSD12181301	WQ	ZINC	10	10	10	UG_L	U	bl

Attachment A

Non Conformance Summary Tables

Table A-1 Hold Times

Sample ID	Days from Sampling to Prep	Status	Days from Prep to Analysis	Status	Days from Sampling to Analysis	Status
BSBG SD307 0012	20	>14 days	2		22	>14 days
BSBG SD308 0012	20	>14 days	2		22	>14 days
OU09 SD114 0012	20	>14 days	2		22	>14 days

Table A-2a Lab Blanks

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
PBSGL19ICS2	MERCURY	0.00220	0.000090	0.000010	UMOL_G	BSBG SD307 0012 BSBG SD308 0012 OU09 SD114 0012
PBSGL19ICS2	NICKEL	0.00058	0.0014	0.0034	UMOL_G	BSBG SD307 0012 BSBG SD308 0012 OU09 SD114 0012
PBSHA09ICS2	CALCIUM	11.730	8.0	10	MG_KG	BSBG SD307 0012 BSBG SD307 1224 BSBG SD307 2436 BSBG SD308 0012 BSBG SD308 1224 BSBG SD308 2436 FDSD12171302 OU09 SD114 0012 OU09 SD114 1224 OU09 SD114 2436
PBSHA09ICS2	IRON	1.438	8.0	10	MG_KG	BSBG SD307 0012 BSBG SD307 1224 BSBG SD307 2436 BSBG SD308 0012 BSBG SD308 1224 BSBG SD308 2436 FDSD12171302 OU09 SD114 0012 OU09 SD114 1224 OU09 SD114 2436
PBSHA09ICS2	MAGNESIUM	2.697	8.0	10	MG_KG	BSBG SD307 0012 BSBG SD307 1224 BSBG SD307 2436 BSBG SD308 0012 BSBG SD308 1224 BSBG SD308 2436 FDSD12171302 OU09 SD114 0012 OU09 SD114 1224 OU09 SD114 2436

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
PBSHA09ICS2	SODIUM	5.753	50	100	MG_KG	BSBG SD307 0012 BSBG SD307 1224 BSBG SD307 2436 BSBG SD308 0012 BSBG SD308 1224 BSBG SD308 2436 FDSD12171302 OU09 SD114 0012 OU09 SD114 1224 OU09 SD114 2436
PBSHA09IMS2	BARIUM	0.075	0.10	0.20	MG_KG	BSBG SD307 0012 BSBG SD307 1224 BSBG SD307 2436 BSBG SD308 0012 BSBG SD308 1224 BSBG SD308 2436 FDSD12171302 OU09 SD114 0012 OU09 SD114 1224 OU09 SD114 2436
PBSHA09IMS2	CHROMIUM, TOTAL	0.170	0.40	0.50	MG_KG	BSBG SD307 0012 BSBG SD307 1224 BSBG SD307 2436 BSBG SD308 0012 BSBG SD308 1224 BSBG SD308 2436 FDSD12171302 OU09 SD114 0012 OU09 SD114 1224 OU09 SD114 2436
PBSHA09IMS2	COBALT	0.009	0.030	0.10	MG_KG	BSBG SD307 0012 BSBG SD307 1224 BSBG SD307 2436 BSBG SD308 0012 BSBG SD308 1224 BSBG SD308 2436 FDSD12171302 OU09 SD114 0012 OU09 SD114 1224 OU09 SD114 2436
PBSHA09IMS2	COPPER	2.810	0.20	0.30	MG_KG	BSBG SD307 2436 BSBG SD308 1224

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
PBSHA09IMS2	LEAD	0.527	0.050	0.10	MG_KG	BSBG SD307 0012 BSBG SD307 1224 BSBG SD307 2436 BSBG SD308 0012 BSBG SD308 1224 BSBG SD308 2436 FDSD12171302 OU09 SD114 0012 OU09 SD114 1224 OU09 SD114 2436
PBSHA09IMS2	MANGANESE	0.155	0.10	0.20	MG_KG	BSBG SD307 0012 BSBG SD307 1224 BSBG SD307 2436 BSBG SD308 0012 BSBG SD308 1224 BSBG SD308 2436 FDSD12171302 OU09 SD114 0012 OU09 SD114 1224 OU09 SD114 2436
PBSHA09IMS2	NICKEL	0.429	0.12	0.20	MG_KG	BSBG SD307 0012 BSBG SD307 1224 BSBG SD307 2436 BSBG SD308 0012 BSBG SD308 1224 BSBG SD308 2436 FDSD12171302 OU09 SD114 0012 OU09 SD114 1224 OU09 SD114 2436
PBSHA09IMS2	SELENIUM	0.117	0.30	0.50	MG_KG	BSBG SD307 0012 BSBG SD307 1224 BSBG SD307 2436 BSBG SD308 0012 BSBG SD308 1224 BSBG SD308 2436 FDSD12171302 OU09 SD114 0012 OU09 SD114 1224 OU09 SD114 2436
PBSHA09IMS2	ZINC	4.991	0.80	1.0	MG_KG	BSBG SD307 0012 BSBG SD307 1224 BSBG SD307 2436 BSBG SD308 0012 BSBG SD308 1224 BSBG SD308 2436
PBSHA15IMS1	COPPER	0.618	0.20	0.30	MG_KG	BSBG SD307 0012 BSBG SD307 1224 BSBG SD308 0012 OU09 SD114 2436

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
PBSHA15IMS1	ZINC	2.441	0.80	1.0	MG_KG	FDSD12171302 OU09 SD114 0012 OU09 SD114 1224 OU09 SD114 2436
PBSHA17IMS1	COPPER	0.277	0.20	0.30	MG_KG	BSBG SD308 2436 FDSD12171302 OU09 SD114 0012 OU09 SD114 1224
PBSHA17IMS1	ZINC	0.166	0.80	1.0	MG_KG	BSBG SD308 2436 FDSD12171302 OU09 SD114 0012 OU09 SD114 1224
PBWHA03ICW2	ALUMINUM	35.420	100	300	UG_L	RBSD12181301
PBWHA03ICW2	POTASSIUM	41.000	500	1000	UG_L	RBSD12181301
PBWHA03IMW2	BARIUM	0.453	1.0	2.0	UG_L	RBSD12181301
PBWHA03IMW2	CHROMIUM, TOTAL	0.729	4.0	5.0	UG_L	RBSD12181301
PBWHA03IMW2	COBALT	0.079	0.30	1.0	UG_L	RBSD12181301
PBWHA03IMW2	COPPER	1.108	2.0	3.0	UG_L	RBSD12181301
PBWHA03IMW2	LEAD	0.442	0.50	1.0	UG_L	RBSD12181301
PBWHA03IMW2	MANGANESE	0.671	1.0	2.0	UG_L	RBSD12181301
PBWHA03IMW2	NICKEL	0.168	1.2	2.0	UG_L	RBSD12181301
PBWHA03IMW2	ZINC	5.515	8.0	10	UG_L	RBSD12181301
PBWHA06HGW3	MERCURY	0.010	0.10	0.20	UG_L	BSBG SD307 0012 BSBG SD308 0012 OU09 SD114 0012

Table A-2b Field Blanks

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
RBSD12181301	ALUMINUM	39.2	100	300	UG_L	BSBG SD307 0012 BSBG SD307 1224 BSBG SD307 2436 BSBG SD308 0012 BSBG SD308 1224 BSBG SD308 2436 FDSD12171302 OU09 SD114 0012 OU09 SD114 1224 OU09 SD114 2436

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
RBSD12181301	CALCIUM	76.9	80	100	UG_L	BSBG SD307 0012 BSBG SD307 1224 BSBG SD307 2436 BSBG SD308 0012 BSBG SD308 1224 BSBG SD308 2436 FDSD12171302 OU09 SD114 0012 OU09 SD114 1224 OU09 SD114 2436
RBSD12181301	IRON	23.4	80	100	UG_L	BSBG SD307 0012 BSBG SD307 1224 BSBG SD307 2436 BSBG SD308 0012 BSBG SD308 1224 BSBG SD308 2436 FDSD12171302 OU09 SD114 0012 OU09 SD114 1224 OU09 SD114 2436
RBSD12181301	MAGNESIUM	134	80	100	UG_L	BSBG SD307 0012 BSBG SD307 1224 BSBG SD307 2436 BSBG SD308 0012 BSBG SD308 1224 BSBG SD308 2436 FDSD12171302 OU09 SD114 0012 OU09 SD114 1224 OU09 SD114 2436
RBSD12181301	SODIUM	1180	500	1000	UG_L	BSBG SD307 0012 BSBG SD307 1224 BSBG SD307 2436 BSBG SD308 0012 BSBG SD308 1224 BSBG SD308 2436 FDSD12171302 OU09 SD114 0012 OU09 SD114 1224 OU09 SD114 2436
RBSD12181301	BARIUM	0.74	1.0	2.0	UG_L	BSBG SD307 0012 BSBG SD307 1224 BSBG SD307 2436 BSBG SD308 0012 BSBG SD308 1224 BSBG SD308 2436 FDSD12171302 OU09 SD114 0012 OU09 SD114 1224 OU09 SD114 2436

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
RBSD12181301	CHROMIUM, TOTAL	0.97	4.0	5.0	UG_L	BSBG SD307 0012 BSBG SD307 1224 BSBG SD307 2436 BSBG SD308 0012 BSBG SD308 1224 BSBG SD308 2436 FDSD12171302 OU09 SD114 0012 OU09 SD114 1224 OU09 SD114 2436
RBSD12181301	COBALT	0.06	0.30	1.0	UG_L	BSBG SD307 0012 BSBG SD307 1224 BSBG SD307 2436 BSBG SD308 0012 BSBG SD308 1224 BSBG SD308 2436 FDSD12171302 OU09 SD114 0012 OU09 SD114 1224 OU09 SD114 2436
RBSD12181301	COPPER	0.58	2.0	3.0	UG_L	BSBG SD307 0012 BSBG SD307 1224 BSBG SD307 2436 BSBG SD308 0012 BSBG SD308 1224 BSBG SD308 2436 FDSD12171302 OU09 SD114 0012 OU09 SD114 1224 OU09 SD114 2436
RBSD12181301	LEAD	0.44	0.50	1.0	UG_L	BSBG SD307 0012 BSBG SD307 1224 BSBG SD307 2436 BSBG SD308 0012 BSBG SD308 1224 BSBG SD308 2436 FDSD12171302 OU09 SD114 0012 OU09 SD114 1224 OU09 SD114 2436
RBSD12181301	MANGANESE	2.1	1.0	2.0	UG_L	BSBG SD307 0012 BSBG SD307 1224 BSBG SD307 2436 BSBG SD308 0012 BSBG SD308 1224 BSBG SD308 2436 FDSD12171302 OU09 SD114 0012 OU09 SD114 1224 OU09 SD114 2436

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
RBSD12181301	NICKEL	0.28	1.2	2.0	UG_L	BSBG SD307 0012 BSBG SD307 1224 BSBG SD307 2436 BSBG SD308 0012 BSBG SD308 1224 BSBG SD308 2436 FDSD12171302 OU09 SD114 0012 OU09 SD114 1224 OU09 SD114 2436
RBSD12181301	ZINC	4.5	8.0	10	UG_L	BSBG SD307 0012 BSBG SD307 1224 BSBG SD307 2436 BSBG SD308 0012 BSBG SD308 1224 BSBG SD308 2436 FDSD12171302 OU09 SD114 0012 OU09 SD114 1224 OU09 SD114 2436

Table A-3 Matrix Spikes

Sample ID	Compound	MS % Recovery	MSD % Recovery	Lower Limit	Upper Limit	RPD	RPD Limit
OU09 SD114 0012	POTASSIUM	123.1	143.6	80	120	20.7	20
OU09 SD114 0012	ANTIMONY	47.5	53.6	80	120	27	20
OU09 SD114 0012	LEAD	124.9	115.7	80	120	2.4	20
OU09 SD114 0012	MANGANESE	131.2	139.9	80	120	8.2	20

Attachment B

Qualifier Codes and Explanations

Qualifier	Explanation
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
UJ	The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual quantitation limit necessary to accurately and precisely measure the analyte in the sample.
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

Attachment C

Reason Codes and Explanations

Reason Code	Explanation
be	Equipment blank contamination
bf	Field blank contamination
bl	Laboratory blank contamination
c	Calibration issue
d	Reporting limit raised due to chromatographic interference
fd	Field duplicate RPDs
h	Holding times
i	Internal standard areas
k	Estimated Maximum Possible Concentration (EMPC)
l	LCS recoveries
lc	Labeled compound recovery
ld	Laboratory duplicate RPDs
lp	Laboratory control sample/laboratory control sample duplicate RPDs
m	Matrix spike recovery
md	Matrix spike/matrix spike duplicate RPDs
nb	Negative laboratory blank contamination
p	Chemical preservation issue
r	Dual column RPD
q	Quantitation issue
s	Surrogate recovery
su	Ion suppression
t	Temperature preservation issue
x	Percent solids
y	Serial dilution results
z	ICS results

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Data Validation Report

Project:	MRP Site 1 (OU9) Remedial Investigation, NAVSTA Newport, Rhode Island CTO WE06
Laboratory:	Katahdin Analytical Services, Scarborough, Maine
Service Request:	CARR-17
Analyses/Method:	TAL Metals/ EPA SW-846 Methods 6010C, 6020A, 7471B Acid Volatile Sulfide/Simultaneously Extracted Metals / EPA 821/R-91-100
Validation Level:	Limited
Resolution Consultants Project Number:	60250336 SA.DV

Prepared by:	Kristin Rutherford/Resolution Consultants	Completed on: 06/24/2014
Reviewed by:	Constance Lapite/Resolution Consultants	File Name: CARR-17_SE_Metals_AVS/SEM_DVRpt

SUMMARY

The samples listed below were collected by Resolution Consultants from the MRP Site 1 (OU9) Remedial Investigation, NAVSTA Newport, Rhode Island on April 1, 2, and 3, 2014.

Sample ID	Matrix/Sample Type
BSBG SD301 0012	Sediment
BSBG SD309 0012	Sediment
BSBG SD309 1224	Sediment
BSBG SD309 2436	Sediment
BSBG SD310 0012	Sediment
BSBG SD310 1224	Sediment
BSBG SD310 2436	Sediment
BSBG SD312 0012	Sediment
BSBG SD312 1224	Sediment
BSBG SD312 2436	Sediment
BSBG SD313 0012	Sediment
BSBG SD313 1224	Sediment
BSBG SD313 2436	Sediment
FDSD040114	Field Duplicate of OU09 SD130 0012
FDSD04021401	Field Duplicate of BSBG SD309 1224
OU09 SD104 0012	Sediment
OU09 SD104 1224	Sediment
OU09 SD116 0012	Sediment
OU09 SD116 1224	Sediment

Sample ID	Matrix/Sample Type
OU09 SD128 0012	Sediment
OU09 SD128 1224	Sediment
OU09 SD128 2436	Sediment
OU09 SD129 0012	Sediment
OU09 SD130 0012	Sediment
OU09 SD131 0012	Sediment
OU09 SD131 1224	Sediment
OU09 SD131 2436	Sediment
OU09 SD132 0012	Sediment
OU09 SD132 1224	Sediment
OU09 SD132 2436	Sediment
OU09 SD133 0012	Sediment
OU09 SD133 1224	Sediment
RBSD04011401	Equipment blank
RBSD04031401	Equipment blank

The data have been validated in accordance with the project-specific Sampling and Analysis Plan, *Sampling and Analysis Plan, Former Carr Point Shooting Range (MRP Site 1, OU9), Naval Station (NAVSTA) Newport, Rhode Island, Final* (Naval Facilities Engineering Command, Mid-Atlantic, 2013) and the following references:

- *DoD Quality Systems Manual (QMS) for Environmental Laboratories, version 4.2* (DoD EDQW, 2010);
- *USEPA Region 1, EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses* (December 1996);
- *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review* (January 2010);
- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW846, Method 6010C, Inductively Coupled Plasma-Atomic Emission Spectrometry* (USEPA, 1996);
- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW846, Method 6020A, Inductively Coupled Plasma-Mass Spectrometry* (USEPA, 1996);
- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW846, Method 7471B, Mercury in Solid or Semisolid Waste (Manual Cold-Vapor Technique)* (USEPA, 1996);
- *Draft Analytical Method for Determination of Acid Volatile Sulfide in Sediment, Method 821/R-91-100* (USEPA, 1991);
- laboratory quality control (QC) limits, as applicable.

The USEPA Region 1 and National Data Validation Functional Guidelines were modified to accommodate the non-CLP methodologies. In the absence of method-specific direction for validation, Resolution Consultants professional judgment was used as appropriate.

REVIEW ELEMENTS

The data were evaluated based on the following parameters (where applicable to the method):

✓ Data completeness (chain-of-custody (COC)/sample integrity

✓ Holding times and sample preservation

✓ ICP/MS Instrument tuning
✓ Initial calibration/continuing calibration verification
✗ Laboratory blanks/equipment blanks
✓ ICP interference check standards
✗ Matrix spike (MS) and/or matrix spike duplicate (MSD) results
✗ Laboratory duplicate results
✓ Laboratory control sample (LCS) results
✗ Field duplicate results
✓ ICP/ICPMS serial dilution results
✓ ICP/MS internal standard performance
✓ Sample results/reporting issues

The symbol (✓) indicates that no validation qualifiers were applied based on this parameter. NA indicates that the parameter was not included as part of this data set or was not applicable to this validation and therefore not reviewed. The symbol (✗) indicates that a quality control (QC) nonconformance resulted in the qualification of data. Any QC nonconformance that resulted in the qualification of data is discussed below. In addition, nonconformances or other issues that were noted during validation, but did not result in qualification of data, may be discussed for informational purposes only.

The data appear valid as reported and may be used for decision making purposes. Selected data points were estimated, negated, and/or rejected due to nonconformances of certain QC criteria (see discussion below). Qualified sample results are presented in Table 1.

Data Completeness

The data package was reviewed and found to meet acceptance criteria for completeness:

- The COCs were reviewed for completeness of information relevant to the samples and requested analyses, and for signatures indicating transfer of sample custody.
- The laboratory sample login sheet(s) were reviewed for issues potentially affecting sample integrity, including the condition of sample containers upon receipt at the laboratory.
- Completeness of analyses was verified by comparing the reported results to the COC requests.

Holding Times/Sample Preservation

Sample preservation and preparation/analysis holding times were reviewed for conformance with the QC acceptance criteria.

The QC acceptance criteria were met.

ICP/MS Instrument Tuning

ICP/MS tuning results were reviewed for conformance with the QC acceptance criteria to ensure that:

- the proper tuning solution was used with elements representing all of the mass regions of interest;
- the tunings were performed at the begining of each analysis and prior to calibration;

- the tuning solution was analyzed at least 4 times as required by the method;
- the mass calibration was within 0.1 amu of the true value for all masses within the region of interest;
- the resolution was verified to be <0.9 amu full width at 10% peak height; and
- the %RSD was ≤ 5% for the analytes contained in the tuning solution.

The QC acceptance criteria were met.

Initial Calibration/Continuing Calibration Verification

Calibration data were reviewed for conformance with the QC acceptance criteria to ensure that:

- all criteria were met for the calibration curves
- the initial calibration verification (ICV) percent recovery (%R) criteria were met;
- the continuing calibration verification standard (CCV) method percent difference (%Ds) were met; and
- the low level check standards (CRI or CRA) %R criteria were met.

The QC acceptance criteria were met.

Laboratory Blanks/Equipment Blanks

Laboratory method blanks and equipment rinsate blanks were evaluated as to whether there were contaminants detected above the method detection limit (DL). Data validation qualifications for individual samples are based on the maximum contaminant concentration detected in all associated blanks.

Method and equipment rinsate results were reviewed for conformance with the QC acceptance criteria. Detected results in blanks are not discussed in this data validation report if the associated results were nondetect or if qualification of sample results was not required.

Nonconformances are summarized in Attachment A in Tables A-1a and A-1b. Sample results were qualified as follows:

Blank Type	Blank Result	Sample Result	Action for Samples
PB / EB/ FB (Positive)	> LOQ	≥IDL/MDL but ≤ LOQ	Qualify as nondetect (U) at the LOQ
		>LOQ but < 10x Blank Result	Qualify results as unusable
		≥10x Blank Result	No action
	≥IDL/MDL but ≤LOQ	Nondetect	No action
		≥IDL/MDL but ≤LOQ	Qualify as nondetect (U) at the LOQ
		> LOQ	Use Resolution Consultants professional judgment (see below [1])
PB (Negative)	< (-LOQ)	< 10x LOQ	Qualify positive results <10x LOQ as estimated (J) and nondetects as estimated (UJ)
		≥10x LOQ	No action

[1] Establish an action level (AL) at 5x the blank contamination. If sample result is <AL, qualify the reported result with a U.

Qualified sample results are shown in Table 1.

ICP Interference Check Standards

The ICP interference check standards (ICSA, ICSAB) were reviewed for conformance.

All criteria were met for the ICSA and ICSAB.

MS Results

The MS and/or MSD %Rs and/or RPDs were reviewed for conformance with the QC acceptance criteria.

Sample OU09 SD129 0012 was analyzed as an MS/MSD and was associated with all “OU09” samples in this SDG. Sample BSBG SD310 1224 was analyzed as an MS/MSD and was associated with all “BSBG” samples in this SDG.

Nonconformances are summarized in Attachment A in Table A-2. Data qualification on the basis of MS and/or MSD nonconformances was as follows:

Qualify Results	%R < 30	80 > %R ≥ 30	%R >120	RPD>20
Detected results	J-	J-	J+	J
Nondetects	R	UJ	Accept	UJ

Notes: MS actions apply to all samples of the same matrix. This qualification will also be applied to the results of all samples within a given area of the site, if deemed appropriate.

1. If the sample result (SR) > 4x the spike concentration (S), no action is taken.
2. If any analyte does not meet the %R criteria and a post digestion spike (PDS) analysis was performed, use professional judgment to assess the results. Refer to the National Functional Guidelines (NFG) 2010 for recommended actions.
3. If either the MS or MSD does not meet %R criteria, qualify all associated samples.

Qualified sample results are shown in Table 1.

Laboratory Duplicate Results

The laboratory duplicate relative percent differences (RPDs) were reviewed for conformance.

Laboratory duplicates were not analyzed; therefore, the MS/MSD RPD was used to assess precision. Sample OU09 SD129 0012 was analyzed as an MS/MSD and was associated with all “OU09” samples in this SDG. Sample BSBG SD310 1224 was analyzed as an MS/MSD and was associated with all “BSBG” samples in this SDG. No qualifications were made if the sample results were greater than 4X the spike concentration.

Nonconformances are summarized in Attachment A in the MS/MSD Table A-2. Data qualification on the basis of MS/MSD RPDs was as follows:

Qualify Results	%R < 30	80 > %R ≥ 30	%R >120	RPD>20
Detected results	J-	J-	J+	J
Nondetects	R	UJ	Accept	UJ

Qualified sample results are shown in Table 1.

LCS/LCSD Results

The LCS/LCSD %Rs and/or RPDs were reviewed for conformance with the QC acceptance criteria.

The LCS and LCSD %Rs and RPDs were within the QC acceptance criteria.

Field Duplicate Results

Field duplicate RPDs were reviewed for conformance with the Resolution Consultants QC acceptance criterion of ≤50% for solid matrices and ≤30% for aqueous matrices. This criterion applies if both results were greater than 5 times the limit of quantitation (LOQ).

Sample FDSD040114 was collected as a field duplicate of sample OU09 SD130 0012. The field duplicate RPD criteria were met.

Sample FDSD04021401 was collected as a field duplicate of sample BSBG SD309 1224. The RPD for arsenic (66%) did not meet quality control criteria. The positive results for arsenic in all "BSBG" samples were qualified as estimated (J) with an unknown direction of bias.

Nonconformances are summarized in Attachment A in Table A-3. Data qualifications on the basis of field duplicate RPDs were as follows:

Criteria	RPD	Action	
		Detected	Nondetected
Sample and duplicate are nondetect results	Not calculable (NC)	No qualification	No qualification
Sample and duplicate results <SLOQ	Not applicable	No qualification	No qualification
Sample and duplicate results ≥5xSLOQ	>30% Aqueous >50% All other sample types	J	Not Applicable
Sample and duplicate results are >SLOQ and <5xSLOQ	>60% Aqueous >100% All other sample types	J	Not Applicable
If sample or duplicate result is =SLOQ and the other is not detected	NC	J	UJ
If sample or duplicate result is <SLOQ and the other is not detected	NC	No qualification	No qualification

Actions: (Based on Resolution Consultants professional judgment)

Qualified sample results are summarized in Table 1.

ICP/ICPMS Serial Dilution Results

The serial dilution percent differences (%Ds) were reviewed for conformance with the QC acceptance criteria.

The serial dilution %Ds were within the QC acceptance criteria.

ICP/MS Internal Standard Performance

ICP/MS internal standard performance was reviewed for conformance and was within the QC acceptance criteria.

Sample Results/Reporting Issues

All analytes detected at concentrations less than the limit of quantitation (LOQ) but greater than the method detection limit (DL) were qualified by the laboratory as estimated (J). This "J" qualifier was retained during data validation.

Resolution Consultants professional judgment was used to qualify sample results with percent solids that were <30%.

All criteria were met.

QUALIFICATION ACTIONS

Sample results qualified as a result of validation actions are summarized in Table 1. All actions are described above.

ATTACHMENTS

Attachment A: Nonconformance Summary Tables

Attachment B: Qualifier Codes and Explanations

Attachment C: Reason Codes and Explanations

Table 1 - Data Validation Summary of Qualified Data

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
BSBG SD301 0012	SE	POTASSIUM	499	40	80	MG/KG	J+	m
BSBG SD301 0012	SE	SODIUM	2200	40	80	MG/KG	J+	m
BSBG SD301 0012	SE	ANTIMONY	0.068	0.040	0.080	MG/KG	J-	m
BSBG SD301 0012	SE	ARSENIC	2.07	0.32	0.40	MG/KG	J	fd
BSBG SD301 0012	SE	MANGANESE	86.8	0.080	0.16	MG/KG	J-	m
BSBG SD301 0012	SE	THALLIUM		0.080	0.080	MG/KG	U	be
BSBG SD309 0012	SE	POTASSIUM	532	34	68	MG/KG	J+	m
BSBG SD309 0012	SE	SODIUM	2670	34	68	MG/KG	J+	m
BSBG SD309 0012	SE	ANTIMONY	0.13	0.034	0.068	MG/KG	J-	m
BSBG SD309 0012	SE	ARSENIC	2.87	0.27	0.34	MG/KG	J	fd
BSBG SD309 0012	SE	MANGANESE	101	0.068	0.14	MG/KG	J-	m
BSBG SD309 0012	SE	THALLIUM		0.068	0.068	MG/KG	U	be
BSBG SD309 1224	SE	POTASSIUM	503	48	96	MG/KG	J+	m
BSBG SD309 1224	SE	SODIUM	2160	48	96	MG/KG	J+	m
BSBG SD309 1224	SE	ANTIMONY	0.13	0.048	0.096	MG/KG	J-	m
BSBG SD309 1224	SE	ARSENIC	2.44	0.38	0.48	MG/KG	J	fd
BSBG SD309 1224	SE	MANGANESE	95.6	0.096	0.19	MG/KG	J-	m
BSBG SD309 1224	SE	THALLIUM		0.096	0.096	MG/KG	U	be
BSBG SD309 2436	SE	POTASSIUM	374	43	86	MG/KG	J+	m
BSBG SD309 2436	SE	SODIUM	1320	43	86	MG/KG	J+	m
BSBG SD309 2436	SE	ANTIMONY	0.078	0.043	0.086	MG/KG	J-	m
BSBG SD309 2436	SE	ARSENIC	3.59	0.34	0.43	MG/KG	J	fd
BSBG SD309 2436	SE	MANGANESE	126	0.086	0.17	MG/KG	J-	m
BSBG SD309 2436	SE	THALLIUM		0.086	0.086	MG/KG	U	be
BSBG SD310 0012	SE	POTASSIUM	636	44	87	MG/KG	J+	m
BSBG SD310 0012	SE	SODIUM	2210	44	87	MG/KG	J+	m
BSBG SD310 0012	SE	ANTIMONY	0.060	0.044	0.087	MG/KG	J-	m
BSBG SD310 0012	SE	ARSENIC	2.54	0.35	0.44	MG/KG	J	fd
BSBG SD310 0012	SE	MANGANESE	103	0.087	0.17	MG/KG	J-	m
BSBG SD310 0012	SE	THALLIUM		0.087	0.087	MG/KG	U	be
BSBG SD310 1224	SE	POTASSIUM	637	40	81	MG/KG	J+	m
BSBG SD310 1224	SE	SODIUM	1560	40	81	MG/KG	J+	m
BSBG SD310 1224	SE	ANTIMONY	0.091	0.040	0.081	MG/KG	J-	m
BSBG SD310 1224	SE	ARSENIC	3.22	0.32	0.40	MG/KG	J	fd
BSBG SD310 1224	SE	MANGANESE	108	0.081	0.16	MG/KG	J-	m
BSBG SD310 1224	SE	THALLIUM		0.081	0.081	MG/KG	U	be
BSBG SD310 2436	SE	POTASSIUM	978	46	93	MG/KG	J+	m
BSBG SD310 2436	SE	SODIUM	1580	46	93	MG/KG	J+	m
BSBG SD310 2436	SE	ANTIMONY	0.12	0.046	0.093	MG/KG	J-	m

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
BSBG SD310 2436	SE	ARSENIC	7.30	0.37	0.46	MG/KG	J	fd
BSBG SD310 2436	SE	MANGANESE	89.7	0.093	0.19	MG/KG	J-	m
BSBG SD312 0012	SE	POTASSIUM	1080	37	74	MG/KG	J+	m
BSBG SD312 0012	SE	SODIUM	2530	37	74	MG/KG	J+	m
BSBG SD312 0012	SE	ANTIMONY	0.048	0.037	0.074	MG/KG	J-	m
BSBG SD312 0012	SE	ARSENIC	2.03	0.29	0.37	MG/KG	J	fd
BSBG SD312 0012	SE	MANGANESE	130	0.074	0.15	MG/KG	J-	m
BSBG SD312 1224	SE	POTASSIUM	919	34	68	MG/KG	J+	m
BSBG SD312 1224	SE	SODIUM	1780	34	68	MG/KG	J+	m
BSBG SD312 1224	SE	ANTIMONY	0.037	0.034	0.068	MG/KG	J-	m
BSBG SD312 1224	SE	ARSENIC	1.48	0.27	0.34	MG/KG	J	fd
BSBG SD312 1224	SE	MANGANESE	199	0.068	0.14	MG/KG	J-	m
BSBG SD312 1224	SE	THALLIUM		0.068	0.068	MG/KG	U	be
BSBG SD312 2436	SE	POTASSIUM	1500	29	58	MG/KG	J+	m
BSBG SD312 2436	SE	SODIUM	1540	29	58	MG/KG	J+	m
BSBG SD312 2436	SE	ANTIMONY	0.044	0.029	0.058	MG/KG	J-	m
BSBG SD312 2436	SE	ARSENIC	8.37	0.23	0.29	MG/KG	J	fd
BSBG SD312 2436	SE	MANGANESE	323	0.29	0.58	MG/KG	J-	m
BSBG SD313 0012	SE	POTASSIUM	1350	47	94	MG/KG	J+	m
BSBG SD313 0012	SE	SODIUM	3830	47	94	MG/KG	J+	m
BSBG SD313 0012	SE	ANTIMONY	0.057	0.047	0.094	MG/KG	J-	m
BSBG SD313 0012	SE	ARSENIC	2.56	0.37	0.47	MG/KG	J	fd
BSBG SD313 0012	SE	MANGANESE	116	0.094	0.19	MG/KG	J-	m
BSBG SD313 1224	SE	POTASSIUM	982	37	74	MG/KG	J+	m
BSBG SD313 1224	SE	SODIUM	2400	37	74	MG/KG	J+	m
BSBG SD313 1224	SE	ANTIMONY	0.044	0.037	0.074	MG/KG	J-	m
BSBG SD313 1224	SE	ARSENIC	2.24	0.29	0.37	MG/KG	J	fd
BSBG SD313 1224	SE	MANGANESE	139	0.074	0.15	MG/KG	J-	m
BSBG SD313 2436	SE	POTASSIUM	962	46	93	MG/KG	J+	m
BSBG SD313 2436	SE	SODIUM	2630	46	93	MG/KG	J+	m
BSBG SD313 2436	SE	ANTIMONY	0.058	0.046	0.093	MG/KG	J-	m
BSBG SD313 2436	SE	ARSENIC	2.37	0.37	0.46	MG/KG	J	fd
BSBG SD313 2436	SE	MANGANESE	115	0.093	0.18	MG/KG	J-	m
FDSD040114	SE	ANTIMONY	0.604	0.029	0.059	MG/KG	J-	m
FDSD040114	SE	ARSENIC	5.92	0.23	0.29	MG/KG	J-	m
FDSD040114	SE	COPPER	22.3	0.12	0.18	MG/KG	J+	m
FDSD040114	SE	SELENIUM		0.29	0.29	MG/KG	U	bl
FDSD040114	SE	THALLIUM		0.059	0.059	MG/KG	U	be
FDSD040114	SE	ZINC	94.1	0.47	0.59	MG/KG	J	m,md

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
FDSD040114	SE	ACID VOLATILE SULFIDES	0.11	0.099	0.13	UMOL/G	J-	m,md
FDSD040114	SE	COPPER	0.125	0.0042	0.010	UMOL/G	J	m,md
FDSD040114	SE	NICKEL	0.0434	0.0019	0.0046	UMOL/G	J	m,md
FDSD040114	SE	ZINC	0.212	0.0041	0.0083	UMOL/G	J	m,md
FDSD04021401	SE	POTASSIUM	497	47	95	MG/KG	J+	m
FDSD04021401	SE	SODIUM	2060	47	95	MG/KG	J+	m
FDSD04021401	SE	ANTIMONY	0.13	0.047	0.095	MG/KG	J-	m
FDSD04021401	SE	ARSENIC	4.86	0.38	0.47	MG/KG	J	fd
FDSD04021401	SE	MANGANESE	101	0.095	0.19	MG/KG	J-	m
FDSD04021401	SE	THALLIUM		0.095	0.095	MG/KG	U	be
OU09 SD104 0012	SE	ANTIMONY	0.072	0.034	0.068	MG/KG	J-	m
OU09 SD104 0012	SE	ARSENIC	5.44	0.27	0.34	MG/KG	J-	m
OU09 SD104 0012	SE	COPPER	9.24	0.14	0.20	MG/KG	J+	m
OU09 SD104 0012	SE	THALLIUM		0.068	0.068	MG/KG	U	be
OU09 SD104 0012	SE	ZINC	139	0.54	0.68	MG/KG	J	m,md
OU09 SD104 0012	SE	ACID VOLATILE SULFIDES	0.091	0.091	0.12	UMOL/G	UJ	m
OU09 SD104 0012	SE	COPPER	0.0319	0.0038	0.0093	UMOL/G	J	m,md
OU09 SD104 0012	SE	NICKEL	0.0413	0.0016	0.0041	UMOL/G	J	m,md
OU09 SD104 0012	SE	ZINC	0.295	0.0037	0.0072	UMOL/G	J	m,md
OU09 SD104 1224	SE	ANTIMONY	0.12	0.050	0.10	MG/KG	J-	m
OU09 SD104 1224	SE	ARSENIC	23.7	0.40	0.50	MG/KG	J-	m
OU09 SD104 1224	SE	COPPER	30.9	0.20	0.30	MG/KG	J+	m
OU09 SD104 1224	SE	THALLIUM		0.10	0.10	MG/KG	U	be
OU09 SD104 1224	SE	ZINC	242	0.81	1.0	MG/KG	J	m,md
OU09 SD116 0012	SE	ANTIMONY	0.184	0.039	0.077	MG/KG	J-	m
OU09 SD116 0012	SE	ARSENIC	2.67	0.31	0.39	MG/KG	J-	m
OU09 SD116 0012	SE	COPPER	4.56	0.15	0.23	MG/KG	J+	m
OU09 SD116 0012	SE	SELENIUM		0.39	0.39	MG/KG	U	bl
OU09 SD116 0012	SE	THALLIUM		0.077	0.077	MG/KG	U	be
OU09 SD116 0012	SE	ZINC	25.2	0.62	0.77	MG/KG	J	m,md
OU09 SD116 0012	SE	ACID VOLATILE SULFIDES	0.091	0.091	0.12	UMOL/G	UJ	m
OU09 SD116 0012	SE	COPPER	0.0087	0.0036	0.0090	UMOL/G	J	m,md
OU09 SD116 0012	SE	NICKEL	0.00458	0.0016	0.0039	UMOL/G	J	m,md
OU09 SD116 0012	SE	ZINC	0.0263	0.0035	0.0070	UMOL/G	J	m,md
OU09 SD116 1224	SE	ANTIMONY	0.223	0.045	0.090	MG/KG	J-	m
OU09 SD116 1224	SE	ARSENIC	3.15	0.36	0.45	MG/KG	J-	m
OU09 SD116 1224	SE	COPPER	4.23	0.18	0.27	MG/KG	J+	m

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SD116 1224	SE	THALLIUM		0.090	0.090	MG/KG	U	be
OU09 SD116 1224	SE	ZINC	23.5	0.72	0.90	MG/KG	J	m,md
OU09 SD128 0012	SE	ANTIMONY	0.13	0.042	0.084	MG/KG	J-	m
OU09 SD128 0012	SE	ARSENIC	1.73	0.34	0.42	MG/KG	J-	m
OU09 SD128 0012	SE	COPPER	5.88	0.17	0.25	MG/KG	J+	m
OU09 SD128 0012	SE	SELENIUM		0.42	0.42	MG/KG	U	bl
OU09 SD128 0012	SE	THALLIUM		0.084	0.084	MG/KG	U	be
OU09 SD128 0012	SE	ZINC	21.8	0.67	0.84	MG/KG	J	m,md
OU09 SD128 0012	SE	ACID VOLATILE SULFIDES	0.078	0.091	0.12	UMOL/G	J-	m,md
OU09 SD128 0012	SE	COPPER	0.0064	0.0036	0.0091	UMOL/G	J	m,md
OU09 SD128 0012	SE	NICKEL	0.0035	0.0016	0.0039	UMOL/G	J	m,md
OU09 SD128 0012	SE	ZINC	0.0292	0.0035	0.0072	UMOL/G	J	m,md
OU09 SD128 1224	SE	ANTIMONY	0.201	0.040	0.079	MG/KG	J-	m
OU09 SD128 1224	SE	ARSENIC	1.72	0.32	0.40	MG/KG	J-	m
OU09 SD128 1224	SE	COPPER	4.59	0.16	0.24	MG/KG	J+	m
OU09 SD128 1224	SE	SELENIUM		0.40	0.40	MG/KG	U	bl
OU09 SD128 1224	SE	THALLIUM		0.079	0.079	MG/KG	U	be
OU09 SD128 1224	SE	ZINC	21.2	0.63	0.79	MG/KG	J	m,md
OU09 SD128 2436	SE	ANTIMONY	0.14	0.042	0.085	MG/KG	J-	m
OU09 SD128 2436	SE	ARSENIC	2.81	0.34	0.42	MG/KG	J-	m
OU09 SD128 2436	SE	COPPER	9.60	0.17	0.26	MG/KG	J+	m
OU09 SD128 2436	SE	SELENIUM		0.42	0.42	MG/KG	U	bl
OU09 SD128 2436	SE	THALLIUM		0.085	0.085	MG/KG	U	be
OU09 SD128 2436	SE	ZINC	27.4	0.68	0.85	MG/KG	J	m,md
OU09 SD129 0012	SE	ANTIMONY	2.40	0.046	0.091	MG/KG	J-	m
OU09 SD129 0012	SE	ARSENIC	11.9	0.36	0.46	MG/KG	J-	m
OU09 SD129 0012	SE	COPPER	21.9	0.18	0.27	MG/KG	J+	m
OU09 SD129 0012	SE	SELENIUM		0.46	0.46	MG/KG	U	bl
OU09 SD129 0012	SE	THALLIUM		0.091	0.091	MG/KG	U	be
OU09 SD129 0012	SE	ZINC	82.8	0.73	0.91	MG/KG	J	m,md
OU09 SD129 0012	SE	ACID VOLATILE SULFIDES	0.091	0.091	0.12	UMOL/G	UJ	m
OU09 SD129 0012	SE	COPPER	0.0140	0.0036	0.0090	UMOL/G	J	m,md
OU09 SD129 0012	SE	NICKEL	0.0223	0.0015	0.0039	UMOL/G	J	m,md
OU09 SD129 0012	SE	ZINC	0.0322	0.0035	0.0069	UMOL/G	J	m,md
OU09 SD130 0012	SE	ANTIMONY	0.430	0.026	0.053	MG/KG	J-	m
OU09 SD130 0012	SE	ARSENIC	5.67	0.21	0.26	MG/KG	J-	m
OU09 SD130 0012	SE	COPPER	33.4	0.10	0.16	MG/KG	J+	m
OU09 SD130 0012	SE	SELENIUM		0.26	0.26	MG/KG	U	bl

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SD130 0012	SE	THALLIUM		0.053	0.053	MG/KG	U	be
OU09 SD130 0012	SE	ZINC	84.1	0.42	0.53	MG/KG	J	m,md
OU09 SD130 0012	SE	ACID VOLATILE SULFIDES	0.098	0.099	0.13	UMOL/G	J-	m,md
OU09 SD130 0012	SE	COPPER	0.106	0.0041	0.010	UMOL/G	J	m,md
OU09 SD130 0012	SE	NICKEL	0.0723	0.0017	0.0044	UMOL/G	J	m,md
OU09 SD130 0012	SE	ZINC	0.348	0.0040	0.0080	UMOL/G	J	m,md
OU09 SD131 0012	SE	ANTIMONY	0.079	0.047	0.094	MG/KG	J-	m
OU09 SD131 0012	SE	ARSENIC	3.04	0.38	0.47	MG/KG	J-	m
OU09 SD131 0012	SE	COPPER	8.62	0.19	0.28	MG/KG	J+	m
OU09 SD131 0012	SE	SELENIUM		0.47	0.47	MG/KG	U	bl
OU09 SD131 0012	SE	THALLIUM		0.094	0.094	MG/KG	U	be
OU09 SD131 0012	SE	ZINC	40.4	0.75	0.94	MG/KG	J	m,md
OU09 SD131 0012	SE	ACID VOLATILE SULFIDES	1.8	0.11	0.14	UMOL/G	J-	m,md
OU09 SD131 0012	SE	COPPER	0.0211	0.0041	0.010	UMOL/G	J	m,md
OU09 SD131 0012	SE	NICKEL	0.00965	0.0017	0.0044	UMOL/G	J	m,md
OU09 SD131 0012	SE	ZINC	0.135	0.0040	0.0078	UMOL/G	J	m,md
OU09 SD131 1224	SE	ANTIMONY	0.042	0.047	0.094	MG/KG	J-	m
OU09 SD131 1224	SE	ARSENIC	3.31	0.38	0.47	MG/KG	J-	m
OU09 SD131 1224	SE	COPPER	8.23	0.19	0.28	MG/KG	J+	m
OU09 SD131 1224	SE	SELENIUM		0.530	0.47	MG/KG	U	bl
OU09 SD131 1224	SE	ZINC	32.5	0.75	0.94	MG/KG	J	m,md
OU09 SD131 2436	SE	ANTIMONY	0.036	0.066	0.13	MG/KG	J-	m
OU09 SD131 2436	SE	ARSENIC	3.84	0.52	0.66	MG/KG	J-	m
OU09 SD131 2436	SE	COPPER	11.1	0.26	0.39	MG/KG	J+	m
OU09 SD131 2436	SE	SELENIUM		0.825	0.66	MG/KG	U	bl
OU09 SD131 2436	SE	ZINC	38.6	1.0	1.3	MG/KG	J	m,md
OU09 SD132 0012	SE	ANTIMONY	0.449	0.042	0.084	MG/KG	J-	m
OU09 SD132 0012	SE	ARSENIC	3.69	0.34	0.42	MG/KG	J-	m
OU09 SD132 0012	SE	COPPER	12.9	0.17	0.25	MG/KG	J+	m
OU09 SD132 0012	SE	THALLIUM		0.084	0.084	MG/KG	U	be
OU09 SD132 0012	SE	ZINC	50.6	0.67	0.84	MG/KG	J	m,md
OU09 SD132 0012	SE	ACID VOLATILE SULFIDES	0.11	0.11	0.14	UMOL/G	UJ	m
OU09 SD132 0012	SE	COPPER	0.0176	0.0041	0.010	UMOL/G	J	m,md
OU09 SD132 0012	SE	NICKEL	0.00823	0.0017	0.0044	UMOL/G	J	m,md
OU09 SD132 0012	SE	ZINC	0.0623	0.0040	0.0080	UMOL/G	J	m,md
OU09 SD132 1224	SE	ANTIMONY	0.363	0.039	0.078	MG/KG	J-	m
OU09 SD132 1224	SE	ARSENIC	3.76	0.31	0.39	MG/KG	J-	m

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SD132 1224	SE	COPPER	10.1	0.16	0.24	MG/KG	J+	m
OU09 SD132 1224	SE	THALLIUM		0.078	0.078	MG/KG	U	be
OU09 SD132 1224	SE	ZINC	37.8	0.63	0.78	MG/KG	J	m,md
OU09 SD132 2436	SE	ANTIMONY	0.156	0.029	0.058	MG/KG	J-	m
OU09 SD132 2436	SE	ARSENIC	5.31	0.23	0.29	MG/KG	J-	m
OU09 SD132 2436	SE	COPPER	11.1	0.12	0.18	MG/KG	J+	m
OU09 SD132 2436	SE	THALLIUM		0.058	0.058	MG/KG	U	be
OU09 SD132 2436	SE	ZINC	38.8	0.47	0.58	MG/KG	J	m,md
OU09 SD133 0012	SE	ANTIMONY	0.077	0.045	0.090	MG/KG	J-	m
OU09 SD133 0012	SE	ARSENIC	1.49	0.36	0.45	MG/KG	J-	m
OU09 SD133 0012	SE	COPPER	5.23	0.18	0.27	MG/KG	J+	m
OU09 SD133 0012	SE	SELENIUM		0.45	0.45	MG/KG	U	bl
OU09 SD133 0012	SE	THALLIUM		0.090	0.090	MG/KG	U	be
OU09 SD133 0012	SE	ZINC	26.7	0.72	0.90	MG/KG	J	m,md
OU09 SD133 0012	SE	ACID VOLATILE SULFIDES	0.091	0.091	0.12	UMOL/G	UJ	m
OU09 SD133 0012	SE	COPPER	0.0096	0.0039	0.0098	UMOL/G	J	m,md
OU09 SD133 0012	SE	NICKEL	0.0023	0.0017	0.0042	UMOL/G	J	m,md
OU09 SD133 0012	SE	ZINC	0.0288	0.0038	0.0076	UMOL/G	J	m,md
OU09 SD133 1224	SE	ANTIMONY	0.13	0.042	0.085	MG/KG	J-	m
OU09 SD133 1224	SE	ARSENIC	1.71	0.34	0.42	MG/KG	J-	m
OU09 SD133 1224	SE	COPPER	5.78	0.17	0.26	MG/KG	J+	m
OU09 SD133 1224	SE	SELENIUM		0.42	0.42	MG/KG	U	bl
OU09 SD133 1224	SE	THALLIUM		0.085	0.085	MG/KG	U	be
OU09 SD133 1224	SE	ZINC	26.8	0.68	0.85	MG/KG	J	m,md
RBSD04011401	WQ	POTASSIUM		1000	1000	UG/L	U	bl
RBSD04011401	WQ	ANTIMONY		1.0	1.0	UG/L	U	bl
RBSD04011401	WQ	CADMIUM		1.0	1.0	UG/L	U	bl
RBSD04011401	WQ	CHROMIUM, TOTAL		5.0	5.0	UG/L	U	bl
RBSD04011401	WQ	COPPER		3.0	3.0	UG/L	U	bl
RBSD04011401	WQ	SELENIUM		5.0	5.0	UG/L	U	bl
RBSD04011401	WQ	VANADIUM		5.0	5.0	UG/L	U	bl
RBSD04031401	WQ	POTASSIUM		1000	1000	UG/L	U	bl
RBSD04031401	WQ	SODIUM		1000	1000	UG/L	U	bl
RBSD04031401	WQ	CADMIUM		1.0	1.0	UG/L	U	bl
RBSD04031401	WQ	CHROMIUM, TOTAL		5.0	5.0	UG/L	U	bl
RBSD04031401	WQ	COPPER		3.0	3.0	UG/L	U	bl
RBSD04031401	WQ	LEAD		1.0	1.0	UG/L	U	bl

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
RBSD04031401	WQ	SELENIUM		5.0	5.0	UG/L	U	bl
RBSD04031401	WQ	VANADIUM		5.0	5.0	UG/L	U	bl

Attachment A

Non Conformance Summary Tables

Table A-1a Lab Blanks

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples	Qualifiers
PBSHD03ICS2	ZINC	0.00060	0.0030	0.0061	UMOL_G	FDSD040114 OU09 SD116 0012 OU09 SD128 0012 OU09 SD129 0012 OU09 SD130 0012 OU09 SD131 0012 OU09 SD133 0012	None – all >5X AL
PBSHD08ICS2	ZINC	0.00067	0.0030	0.0061	UMOL_G	BSBG SD301 0012 BSBG SD309 0012 BSBG SD310 0012 BSBG SD312 0012 BSBG SD313 0012 OU09 SD104 0012 OU09 SD132 0012	None – all >5X AL
PBSHD07ICS1	ALUMINUM	2.5	10	30	MG_KG	FDSD040114 OU09 SD116 0012 OU09 SD128 0012 OU09 SD128 1224 OU09 SD128 2436 OU09 SD129 0012 OU09 SD130 0012 OU09 SD131 0012 OU09 SD131 1224 OU09 SD131 2436 OU09 SD133 0012 OU09 SD133 1224	None – all >5X AL
PBSHD07ICS1	CALCIUM	8.6	8.0	10	MG_KG	FDSD040114 OU09 SD116 0012 OU09 SD128 0012 OU09 SD128 1224 OU09 SD128 2436 OU09 SD129 0012 OU09 SD130 0012 OU09 SD131 0012 OU09 SD131 1224 OU09 SD131 2436 OU09 SD133 0012 OU09 SD133 1224	None – all >5X AL
PBSHD07ICS1	IRON	2.7	8.0	10	MG_KG	FDSD040114 OU09 SD116 0012 OU09 SD128 0012 OU09 SD128 1224 OU09 SD128 2436 OU09 SD129 0012 OU09 SD130 0012 OU09 SD131 0012 OU09 SD131 1224 OU09 SD131 2436 OU09 SD133 0012 OU09 SD133 1224	None – all >5X AL

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples	Qualifiers
PBSHD07ICS1	MAGNESIUM	2.2	8.0	10	MG_KG	FDSD040114 OU09 SD116 0012 OU09 SD128 0012 OU09 SD128 1224 OU09 SD128 2436 OU09 SD129 0012 OU09 SD130 0012 OU09 SD131 0012 OU09 SD131 1224 OU09 SD131 2436 OU09 SD133 0012 OU09 SD133 1224	None – all >5X AL
PBSHD07ICS1	POTASSIUM	9.4	50	100	MG_KG	FDSD040114 OU09 SD116 0012 OU09 SD128 0012 OU09 SD128 1224 OU09 SD128 2436 OU09 SD129 0012 OU09 SD130 0012 OU09 SD131 0012 OU09 SD131 1224 OU09 SD131 2436 OU09 SD133 0012 OU09 SD133 1224	None – all >5X AL
PBSHD07ICS1	SODIUM	4.0	50	100	MG_KG	FDSD040114 OU09 SD116 0012 OU09 SD128 0012 OU09 SD128 1224 OU09 SD128 2436 OU09 SD129 0012 OU09 SD130 0012 OU09 SD131 0012 OU09 SD131 1224 OU09 SD131 2436 OU09 SD133 0012 OU09 SD133 1224	None – all >5X AL
PBSHD07IMS1	BARIUM	0.068	0.10	0.20	MG_KG	FDSD040114 OU09 SD116 0012 OU09 SD128 0012 OU09 SD128 1224 OU09 SD128 2436 OU09 SD129 0012 OU09 SD130 0012 OU09 SD131 0012 OU09 SD131 1224 OU09 SD131 2436 OU09 SD133 0012 OU09 SD133 1224	None – all >5X AL

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples	Qualifiers
PBSHD07IMS1	CHROMIUM, TOTAL	0.29	0.40	0.50	MG_KG	FDSD040114 OU09 SD116 0012 OU09 SD128 0012 OU09 SD128 1224 OU09 SD128 2436 OU09 SD129 0012 OU09 SD130 0012 OU09 SD131 0012 OU09 SD131 1224 OU09 SD131 2436 OU09 SD133 0012 OU09 SD133 1224	None – all >5X AL
PBSHD07IMS1	COPPER	0.075	0.20	0.30	MG_KG	FDSD040114 OU09 SD116 0012 OU09 SD128 0012 OU09 SD128 1224 OU09 SD128 2436 OU09 SD129 0012 OU09 SD130 0012 OU09 SD131 0012 OU09 SD131 1224 OU09 SD131 2436 OU09 SD133 0012 OU09 SD133 1224	None – all >5X AL
PBSHD07IMS1	LEAD	0.014	0.050	0.10	MG_KG	FDSD040114 OU09 SD116 0012 OU09 SD128 0012 OU09 SD128 1224 OU09 SD128 2436 OU09 SD129 0012 OU09 SD130 0012 OU09 SD131 0012 OU09 SD131 1224 OU09 SD131 2436 OU09 SD133 0012 OU09 SD133 1224	None – all >5X AL
PBSHD07IMS1	MANGANESE	0.20	0.10	0.20	MG_KG	FDSD040114 OU09 SD116 0012 OU09 SD128 0012 OU09 SD128 1224 OU09 SD128 2436 OU09 SD129 0012 OU09 SD130 0012 OU09 SD131 0012 OU09 SD131 1224 OU09 SD131 2436 OU09 SD133 0012 OU09 SD133 1224	None – all >5X AL

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples	Qualifiers
PBSHD07IMS1	NICKEL	0.028	0.12	0.20	MG_KG	FDSD040114 OU09 SD116 0012 OU09 SD128 0012 OU09 SD128 1224 OU09 SD128 2436 OU09 SD129 0012 OU09 SD130 0012 OU09 SD131 0012 OU09 SD131 1224 OU09 SD131 2436 OU09 SD133 0012 OU09 SD133 1224	None – all >5X AL
PBSHD07IMS1	SELENIUM	0.15	0.30	0.50	MG_KG	FDSD040114 OU09 SD116 0012 OU09 SD128 0012 OU09 SD128 1224 OU09 SD128 2436 OU09 SD129 0012 OU09 SD130 0012 OU09 SD131 0012 OU09 SD131 1224 OU09 SD131 2436 OU09 SD133 0012 OU09 SD133 1224	U@LOQ U@LOQ U@LOQ U@LOQ U@LOQ U@LOQ U@LOQ U@LOQ U@ sample result U@ sample result U@LOQ U@LOQ
PBSHD07IMS1	VANADIUM	0.18	0.40	0.50	MG_KG	FDSD040114 OU09 SD116 0012 OU09 SD128 0012 OU09 SD128 1224 OU09 SD128 2436 OU09 SD129 0012 OU09 SD130 0012 OU09 SD131 0012 OU09 SD131 1224 OU09 SD131 2436 OU09 SD133 0012 OU09 SD133 1224	None – all >5X AL
PBSHD08ICS1	ALUMINUM	1.4	10	30	MG_KG	BSBG SD301 0012 BSBG SD309 0012 BSBG SD309 1224 BSBG SD309 2436 BSBG SD310 0012 BSBG SD310 1224 BSBG SD310 2436 BSBG SD312 0012 BSBG SD312 1224 BSBG SD312 2436 BSBG SD313 0012 BSBG SD313 1224 BSBG SD313 2436 FDSD04021401 OU09 SD104 0012 OU09 SD104 1224 OU09 SD116 1224 OU09 SD132 0012 OU09 SD132 1224 OU09 SD132 2436	None – all >5X AL

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples	Qualifiers
PBSHD08ICS1	CALCIUM	4.0	8.0	10	MG_KG	BSBG SD301 0012 BSBG SD309 0012 BSBG SD309 1224 BSBG SD309 2436 BSBG SD310 0012 BSBG SD310 1224 BSBG SD310 2436 BSBG SD312 0012 BSBG SD312 1224 BSBG SD312 2436 BSBG SD313 0012 BSBG SD313 1224 BSBG SD313 2436 FDSD04021401 OU09 SD104 0012 OU09 SD104 1224 OU09 SD116 1224 OU09 SD132 0012 OU09 SD132 1224 OU09 SD132 2436	None – all >5X AL
PBSHD08ICS1	IRON	3.1	8.0	10	MG_KG	BSBG SD301 0012 BSBG SD309 0012 BSBG SD309 1224 BSBG SD309 2436 BSBG SD310 0012 BSBG SD310 1224 BSBG SD310 2436 BSBG SD312 0012 BSBG SD312 1224 BSBG SD312 2436 BSBG SD313 0012 BSBG SD313 1224 BSBG SD313 2436 FDSD04021401 OU09 SD104 0012 OU09 SD104 1224 OU09 SD116 1224 OU09 SD132 0012 OU09 SD132 1224 OU09 SD132 2436	None – all >5X AL
PBSHD08ICS1	MAGNESIUM	2.0	8.0	10	MG_KG	BSBG SD301 0012 BSBG SD309 0012 BSBG SD309 1224 BSBG SD309 2436 BSBG SD310 0012 BSBG SD310 1224 BSBG SD310 2436 BSBG SD312 0012 BSBG SD312 1224 BSBG SD312 2436 BSBG SD313 0012 BSBG SD313 1224 BSBG SD313 2436 FDSD04021401 OU09 SD104 0012 OU09 SD104 1224 OU09 SD116 1224 OU09 SD132 0012 OU09 SD132 1224 OU09 SD132 2436	None – all >5X AL

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples	Qualifiers
PBSHD08ICS1	SODIUM	2.0	50	100	MG_KG	BSBG SD301 0012 BSBG SD309 0012 BSBG SD309 1224 BSBG SD309 2436 BSBG SD310 0012 BSBG SD310 1224 BSBG SD310 2436 BSBG SD312 0012 BSBG SD312 1224 BSBG SD312 2436 BSBG SD313 0012 BSBG SD313 1224 BSBG SD313 2436 FDSD04021401 OU09 SD104 0012 OU09 SD104 1224 OU09 SD116 1224 OU09 SD132 0012 OU09 SD132 1224 OU09 SD132 2436	None – all >5X AL
PBSHD08IMS1	BARIUM	0.048	0.10	0.20	MG_KG	BSBG SD301 0012 BSBG SD309 0012 BSBG SD309 1224 BSBG SD309 2436 BSBG SD310 0012 BSBG SD310 1224 BSBG SD310 2436 BSBG SD312 0012 BSBG SD312 1224 BSBG SD312 2436 BSBG SD313 0012 BSBG SD313 1224 BSBG SD313 2436 FDSD04021401 OU09 SD104 0012 OU09 SD104 1224 OU09 SD116 1224 OU09 SD132 0012 OU09 SD132 1224 OU09 SD132 2436	None – all >5X AL

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples	Qualifiers
PBSHD08IMS1	CHROMIUM, TOTAL	0.23	0.40	0.50	MG_KG	BSBG SD301 0012 BSBG SD309 0012 BSBG SD309 1224 BSBG SD309 2436 BSBG SD310 0012 BSBG SD310 1224 BSBG SD310 2436 BSBG SD312 0012 BSBG SD312 1224 BSBG SD312 2436 BSBG SD313 0012 BSBG SD313 1224 BSBG SD313 2436 FDSD04021401 OU09 SD104 0012 OU09 SD104 1224 OU09 SD116 1224 OU09 SD132 0012 OU09 SD132 1224 OU09 SD132 2436	None – all >5X AL
PBSHD08IMS1	COPPER	0.25	0.20	0.30	MG_KG	BSBG SD301 0012 BSBG SD309 0012 BSBG SD309 1224 BSBG SD309 2436 BSBG SD310 0012 BSBG SD310 1224 BSBG SD310 2436 BSBG SD312 0012 BSBG SD312 1224 BSBG SD312 2436 BSBG SD313 0012 BSBG SD313 1224 BSBG SD313 2436 FDSD04021401 OU09 SD104 0012 OU09 SD104 1224 OU09 SD116 1224 OU09 SD132 0012 OU09 SD132 1224 OU09 SD132 2436	None – all >5X AL
PBSHD08IMS1	LEAD	0.010	0.050	0.10	MG_KG	BSBG SD301 0012 BSBG SD309 0012 BSBG SD309 1224 BSBG SD309 2436 BSBG SD310 0012 BSBG SD310 1224 BSBG SD310 2436 BSBG SD312 0012 BSBG SD312 1224 BSBG SD312 2436 BSBG SD313 0012 BSBG SD313 1224 BSBG SD313 2436 FDSD04021401 OU09 SD104 0012 OU09 SD104 1224 OU09 SD116 1224 OU09 SD132 0012 OU09 SD132 1224 OU09 SD132 2436	None – all >5X AL

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples	Qualifiers
PBSHD08IMS1	MANGANESE	0.094	0.10	0.20	MG_KG	BSBG SD301 0012 BSBG SD309 0012 BSBG SD309 1224 BSBG SD309 2436 BSBG SD310 0012 BSBG SD310 1224 BSBG SD310 2436 BSBG SD312 0012 BSBG SD312 1224 BSBG SD312 2436 BSBG SD313 0012 BSBG SD313 1224 BSBG SD313 2436 FDSD04021401 OU09 SD104 0012 OU09 SD104 1224 OU09 SD116 1224 OU09 SD132 0012 OU09 SD132 1224 OU09 SD132 2436	None – all >5X AL
PBSHD08IMS1	NICKEL	0.092	0.12	0.20	MG_KG	BSBG SD301 0012 BSBG SD309 0012 BSBG SD309 1224 BSBG SD309 2436 BSBG SD310 0012 BSBG SD310 1224 BSBG SD310 2436 BSBG SD312 0012 BSBG SD312 1224 BSBG SD312 2436 BSBG SD313 0012 BSBG SD313 1224 BSBG SD313 2436 FDSD04021401 OU09 SD104 0012 OU09 SD104 1224 OU09 SD116 1224 OU09 SD132 0012 OU09 SD132 1224 OU09 SD132 2436	None – all >5X AL
PBSHD08IMS1	VANADIUM	0.21	0.40	0.50	MG_KG	BSBG SD301 0012 BSBG SD309 0012 BSBG SD309 1224 BSBG SD309 2436 BSBG SD310 0012 BSBG SD310 1224 BSBG SD310 2436 BSBG SD312 0012 BSBG SD312 1224 BSBG SD312 2436 BSBG SD313 0012 BSBG SD313 1224 BSBG SD313 2436 FDSD04021401 OU09 SD104 0012 OU09 SD104 1224 OU09 SD116 1224 OU09 SD132 0012 OU09 SD132 1224 OU09 SD132 2436	None – all >5X AL

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples	Qualifiers
PBSHD08IMS1	ZINC	0.62	0.80	1.0	MG_KG	BSBG SD301 0012 BSBG SD309 0012 BSBG SD309 1224 BSBG SD309 2436 BSBG SD310 0012 BSBG SD310 1224 BSBG SD310 2436 BSBG SD312 0012 BSBG SD312 1224 BSBG SD312 2436 BSBG SD313 0012 BSBG SD313 1224 BSBG SD313 2436 FDSD04021401 OU09 SD104 0012 OU09 SD104 1224 OU09 SD116 1224 OU09 SD132 0012 OU09 SD132 1224 OU09 SD132 2436	None – all >5X AL
PBWHD04ICW2	IRON	11	80	100	UG_L	RBSD04011401 RBSD04031401	none (ND) none (ND)
PBWHD04ICW2	POTASSIUM	100	500	1000	UG_L	RBSD04011401 RBSD04031401	U@LOQ U@LOQ
PBWHD04ICW2	SODIUM	27	500	1000	UG_L	RBSD04011401 RBSD04031401	none (ND) U@LOQ
PBWHD04IMW3	ANTIMONY	0.10	0.50	1.0	UG_L	RBSD04011401 RBSD04031401	U@LOQ none (ND)
PBWHD04IMW3	CADMIUM	0.045	0.20	1.0	UG_L	RBSD04011401 RBSD04031401	U@LOQ U@LOQ
PBWHD04IMW3	CHROMIUM, TOTAL	1.3	4.0	5.0	UG_L	RBSD04011401 RBSD04031401	U@LOQ U@LOQ
PBWHD04IMW3	COPPER	0.60	2.0	3.0	UG_L	RBSD04011401 RBSD04031401	U@LOQ U@LOQ
PBWHD04IMW3	LEAD	0.098	0.50	1.0	UG_L	RBSD04011401 RBSD04031401	none (ND) U@LOQ
PBWHD04IMW3	SELENIUM	0.58	3.0	5.0	UG_L	RBSD04011401 RBSD04031401	U@LOQ U@LOQ
PBWHD04IMW3	VANADIUM	1.6	4.0	5.0	UG_L	RBSD04011401 RBSD04031401	U@LOQ U@LOQ

Table A-1b Field Blanks

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples	Qualifiers
RBSD04011401	ALUMINUM	16	100	300	UG/L	BSBG SD301 0012 BSBG SD309 0012 BSBG SD309 1224 BSBG SD309 2436 BSBG SD310 0012 BSBG SD310 1224 BSBG SD310 2436 BSBG SD312 0012 BSBG SD312 1224 BSBG SD312 2436 BSBG SD313 0012 BSBG SD313 1224 BSBG SD313 2436 FDSD04021401	None – all >5X AL
RBSD04011401	MANGANESE	0.37	1.0	2.0	UG/L	BSBG SD301 0012 BSBG SD309 0012 BSBG SD309 1224 BSBG SD309 2436 BSBG SD310 0012 BSBG SD310 1224 BSBG SD310 2436 BSBG SD312 0012 BSBG SD312 1224 BSBG SD312 2436 BSBG SD313 0012 BSBG SD313 1224 BSBG SD313 2436 FDSD04021401	None – all >5X AL
RBSD04011401	THALLIUM	0.18	0.40	1.0	UG/L	BSBG SD301 0012 BSBG SD309 0012 BSBG SD309 1224 BSBG SD309 2436 BSBG SD310 0012 BSBG SD310 1224 BSBG SD310 2436 BSBG SD312 0012 BSBG SD312 1224 BSBG SD312 2436 BSBG SD313 0012 BSBG SD313 1224 BSBG SD313 2436 FDSD04021401	U@LOQ U@LOQ U@LOQ U@LOQ U@LOQ U@LOQ None>5XAL None>5XAL U@LOQ None>5XAL None>5XAL None>5XAL None>5XAL U@LOQ

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples	Qualifiers
RBSD04031401	ALUMINUM	26	100	300	UG/L	OU09 SD104 0012 OU09 SD104 1224 OU09 SD116 0012 OU09 SD116 1224 OU09 SD128 0012 OU09 SD128 1224 OU09 SD128 2436 OU09 SD129 0012 OU09 SD130 0012 OU09 SD131 0012 OU09 SD131 1224 OU09 SD131 2436 OU09 SD132 0012 OU09 SD132 1224 OU09 SD132 2436 OU09 SD133 0012 OU09 SD133 1224 FDSD040114	None – all >5X AL
RBSD04031401	CALCIUM	24	80	100	UG/L	OU09 SD104 0012 OU09 SD104 1224 OU09 SD116 0012 OU09 SD116 1224 OU09 SD128 0012 OU09 SD128 1224 OU09 SD128 2436 OU09 SD129 0012 OU09 SD130 0012 OU09 SD131 0012 OU09 SD131 1224 OU09 SD131 2436 OU09 SD132 0012 OU09 SD132 1224 OU09 SD132 2436 OU09 SD133 0012 OU09 SD133 1224 FDSD040114	None – all >5X AL

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples	Qualifiers
RBSD04031401	MANGANESE	0.50	1.0	2.0	UG/L	OU09 SD104 0012 OU09 SD104 1224 OU09 SD116 0012 OU09 SD116 1224 OU09 SD128 0012 OU09 SD128 1224 OU09 SD128 2436 OU09 SD129 0012 OU09 SD130 0012 OU09 SD131 0012 OU09 SD131 1224 OU09 SD131 2436 OU09 SD132 0012 OU09 SD132 1224 OU09 SD132 2436 OU09 SD133 0012 OU09 SD133 1224 FDSD040114	None – all >5X AL
RBSD04031401	NICKEL	0.63	1.2	2.0	UG/L	OU09 SD104 0012 OU09 SD104 1224 OU09 SD116 0012 OU09 SD116 1224 OU09 SD128 0012 OU09 SD128 1224 OU09 SD128 2436 OU09 SD129 0012 OU09 SD130 0012 OU09 SD131 0012 OU09 SD131 1224 OU09 SD131 2436 OU09 SD132 0012 OU09 SD132 1224 OU09 SD132 2436 OU09 SD133 0012 OU09 SD133 1224 FDSD040114	None – all >5X AL

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples	Qualifiers
RBSD04031401	THALLIUM	0.067	0.40	1.0	UG/L	OU09 SD104 0012	U@LOQ
						OU09 SD104 1224	U@LOQ
						OU09 SD116 0012	U@LOQ
						OU09 SD116 1224	U@LOQ
						OU09 SD128 0012	U@LOQ
						OU09 SD128 1224	U@LOQ
						OU09 SD128 2436	U@LOQ
						OU09 SD129 0012	U@LOQ
						OU09 SD130 0012	U@LOQ
						OU09 SD131 0012	U@LOQ
						OU09 SD131 1224	None >5XAL
						OU09 SD131 2436	None >5XAL
						OU09 SD132 0012	U@LOQ
						OU09 SD132 1224	U@LOQ
						OU09 SD132 2436	U@LOQ
						OU09 SD133 0012	U@LOQ
						OU09 SD133 1224	U@LOQ
						FDSD040114	U@LOQ

Table A-2 Matrix Spikes

Sample ID	Compound	MS % Recovery	MSD % Recovery	Lower Limit	Upper Limit	RPD	RPD Limit
OU09 SD129 0012	ANTIMONY	43.6	40.6	80	120	14.7	20
OU09 SD129 0012	ARSENIC	52.1	43.4	80	120	9.4	20
OU09 SD129 0012	COPPER	98	150.2	80	120	14.4	20
OU09 SD129 0012	ZINC	169.9	127	80	120	20.6	20
BSBG SD310 1224	POTASSIUM	150.9	148.5	80	120	1.7	20
BSBG SD310 1224	ANTIMONY	58.9	57.5	80	120	1.9	20
BSBG SD310 1224	SODIUM	116.4	139.1	80	120	6.9	20
BSBG SD310 1224	MANGANESE	79	75.7	80	120	0	20
SEM Metals							
OU09 SD129 0012	COPPER	131.2	157.3	80	120	24.7	20
OU09 SD129 0012	NICKEL	97.8	125.3	80	120	30.8	20
OU09 SD129 0012	ZINC	102.4	134.7	80	120	31.6	20
AVS							
OU09 SD129 0012	ACID VOLATILE SULFIDES	72	98	75	125	32	20

Table A-3 Field Duplicates

Sample ID	Duplicate ID	Analyte	Sample Result	Qual	Duplicate Result	Qual	LOD	LOQ	Units	RPD
BSBG SD309 1224	FDSD04021401	ARSENIC	2.44		4.86		0.38	0.48	MG/KG	66

Attachment B

Qualifier Codes and Explanations

Qualifier	Explanation
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
UJ	The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual quantitation limit necessary to accurately and precisely measure the analyte in the sample.
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

Attachment C

Reason Codes and Explanations

Reason Code	Explanation
be	Equipment blank contamination
bf	Field blank contamination
bl	Laboratory blank contamination
c	Calibration issue
d	Reporting limit raised due to chromatographic interference
fd	Field duplicate RPDs
h	Holding times
i	Internal standard areas
k	Estimated Maximum Possible Concentration (EMPC)
l	LCS recoveries
lc	Labeled compound recovery
ld	Laboratory duplicate RPDs
lp	Laboratory control sample/laboratory control sample duplicate RPDs
m	Matrix spike recovery
md	Matrix spike/matrix spike duplicate RPDs
nb	Negative laboratory blank contamination
p	Chemical preservation issue
r	Dual column RPD
q	Quantitation issue
s	Surrogate recovery
su	Ion suppression
t	Temperature preservation issue
x	Percent solids
y	Serial dilution results
z	ICS results

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Data Validation Report

Project:	MRP Site 1 (OU9) Remedial Investigation, NAVSTA Newport, Rhode Island CTO WE06
Laboratory:	Katahdin Analytical Services, Scarborough, Maine
Service Request:	CARR-17
Analyses/Method:	EPA SW-846 Method 7196A for Chromium, Hexavalent (Colorimetric)
Validation Level:	Limited
Resolution Consultants Project Number:	60250336 SA.DV
Prepared by:	Dion Lewis/Resolution Consultants Completed on: 07/02/2014
Reviewed by:	Kristin Rutherford/Resolution Consultants File Name: CARR-17_SE_7196A_DVRpt

SUMMARY

The samples listed below were collected by Resolution Consultants from MRP Site 1 (OU9), NAVSTA Newport, Rhode Island on April 1-3, 2014.

Sample ID	Matrix/Sample Type
BSBG SD310 0012	Sediment
OU09 SD104 0012	Sediment
OU09 SD128 0012	Sediment
OU09 SD129 0012	Sediment
OU09 SD130 0012	Sediment
FDSD040114	Field Duplicate of OU09 SD130 0012
RBSD04011401	Equipment Blank

The data have been validated in accordance with the project-specific Sampling and Analysis Plan, *Sampling and Analysis Plan, Former Carr Point Shooting Range (MRP Site 1, OU9), Naval Station (NAVSTA) Newport, Rhode Island, Final* (Naval Facilities Engineering Command, Mid-Atlantic, 2013) and the following references:

- *DoD Quality Systems Manual (QSM) for Environmental Laboratories, version 4.2* (DoD EDQW, 2010);
- *USEPA Region 1, EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses* (December 1996);
- *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review* (January 2010);
- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW846* (USEPA, 1996);
- Laboratory quality control (QC) limits, as applicable.

The USEPA Region 1 and National Data Validation Functional Guidelines were modified to accommodate the non-CLP methodologies. In the absence of method-specific direction for validation, Resolution Consultants professional judgment was used as appropriate.

REVIEW ELEMENTS

The data were evaluated based on the following parameters (where applicable to the method):

✓ Data completeness (chain-of-custody (COC)/sample integrity
✓ Holding times and sample preservation
✓ Initial calibration/continuing calibration verification
✓ Laboratory blanks/equipment blanks
✓ Matrix spike (MS) results
✓ Post Digestion Spike
✓ Laboratory duplicate results
✓ Laboratory control sample (LCS) results
✓ Field duplicates
✓ Sample results/reporting issues

The symbol (✓) indicates that no validation qualifiers were applied based on this parameter. NA indicates that the parameter was not included as part of this data set or was not applicable to this validation and therefore not reviewed. The symbol (✗) indicates that a quality control (QC) nonconformance resulted in the qualification of data. Any QC nonconformance that resulted in the qualification of data is discussed below. In addition, nonconformances or other issues that were noted during validation, but did not result in qualification of data, may be discussed for informational purposes only.

The data appear valid as reported and may be used for decision making purposes. There were no data points qualified as a result of this data review.

RESULTS

Data Completeness

The data package was reviewed and found to meet acceptance criteria for completeness:

- The COCs were reviewed for completeness of information relevant to the samples and requested analyses, and for signatures indicating transfer of sample custody.
- The laboratory sample login sheet(s) were reviewed for issues potentially affecting sample integrity, including the condition of sample containers upon receipt at the laboratory.
- Completeness of analyses was verified by comparing the reported results to the COC requests.

The sample relinquish time was not recorded on several COC forms, and sample receipt time and date were not always recorded. Since the receipt dates were recorded on the laboratory login reports, no validation action was taken except to note these discrepancies.

Holding Times/Sample Preservation

Sample preservation and preparation/analysis holding times were reviewed for conformance with the QC acceptance criteria.

The QC acceptance criteria were met.

Initial Calibration/Continuing Calibration Verification

Calibration data were reviewed for conformance with the QC acceptance criteria to ensure that:

- all criteria were met for the calibration curves
- the initial calibration verification (ICV) percent recovery (%R) criteria were met; and
- the continuing calibration verification standard (CCV) method percent difference (%Ds) were met.

The QC acceptance criteria were met.

Laboratory Blanks/Equipment Blanks

Laboratory method blanks and equipment rinsate blanks were evaluated as to whether there were contaminants detected above the method detection limit (MDL). Data validation qualifications for individual samples are based on the maximum contaminant concentration detected in all associated blanks.

Method and equipment rinsate results were reviewed for conformance with the QC acceptance criteria. Detected results in blanks are not discussed in this data validation report if the associated results were nondetect or if qualification of sample results was not required.

The QC acceptance criteria were met and/or qualification of the sample results was not required.

MS Results

Sample OU09 SD129 0012 was selected for the matrix spike (MS) analysis associated with the samples in this SDG and was used for supporting data quality recommendations. The soluble and insoluble MS recoveries were 81% and 92%, respectively; which met the quality control criteria of 75-125%.

Laboratory Duplicate Results

The laboratory duplicate relative percent differences (RPDs) were reviewed for conformance.

The laboratory duplicate RPDs were within the QC acceptance criteria.

LCS Results

The LCS %Rs were reviewed for conformance with the QC acceptance criteria.

The LCS %Rs were within the QC acceptance criteria.

Field Duplicate Results

Field duplicate RPDs were reviewed for conformance with the Resolution Consultants QC acceptance criterion of ≤50% for solid matrices and ≤30% for aqueous matrices. This criterion applies if both results were greater than 5 times the limit of quantitation (LOQ).

All field duplicate precision criteria were met.

Sample Results/Reporting Issues

The percent solids data were reviewed to ensure that NFG specified criteria were met.

All percent solids criteria were met.

QUALIFICATION ACTIONS

There were no sample results qualified as a result of this data review.

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Data Validation Report

Project:	MRP Site 1 (OU9) Remedial Investigation, NAVSTA Newport, Rhode Island CTO WE06
Laboratory:	Katahdin Analytical Services, Scarborough, Maine
Service Request:	CARR-1, CARR-3, CARR-4, CARR-7, CARR-10, and CARR-12,
Analyses/Method:	Hexavalent Chromium by EPA SW-846 Method 7196A
Validation Level:	Limited
Resolution Consultants Project Number:	60250336 SA.DV

Prepared by:	Kristin Rutherford/Resolution Consultants	Completed on: 03/04/2014
Reviewed by:	Waverly Braunstein/Resolution Consultants	File Name: CARR-1,3,4,7,10,12_SE_HexChrom_DVRpt

SUMMARY

The samples listed below were collected by Resolution Consultants from MRP Site 1 (OU9), NAVSTA Newport, Rhode Island on December 3, 4, 10, 11, 12, and 13, 2013.

Sample ID	Matrix/Sample Type
RB-01_120313	Equipment blank
RBSD12111301	Equipment blank
FDSD12131302	Field Duplicate of BSBG SD303 0012
BSBG SD302 0012	Sediment
BSBG SD303 0012	Sediment
OU09 SD101 0012	Sediment
OU09 SD102 0012	Sediment
OU09 SD110 0012	Sediment
OU09 SD118 0012	Sediment
OU09 SD121 0012	Sediment
OU09 SD122 0012	Sediment
OU09 SD123 0012	Sediment
OU09 SD124 0012	Sediment

The data have been validated in accordance with the project-specific Sampling and Analysis Plan, *Sampling and Analysis Plan, Former Carr Point Shooting Range (MRP Site 1, OU9), Naval Station (NAVSTA) Newport, Rhode Island, Final* (Naval Facilities Engineering Command, Mid-Atlantic, 2013) and the following references:

- *DoD Quality Systems Manual (QMS) for Environmental Laboratories, version 4.2* (DoD EDQW, 2010);
- *USEPA Region 1, EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses* (December 1996);
- *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review* (January 2010);
- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW846, Method 3060A,Alkaline Digestion for Hexavalent Chromium* (USEPA, 1996);
- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW846, Method 7196A, Chromium, Hexavalent (Colorimetric)* (USEPA, 1996);
- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW846, Method 7199, Determination of Hexavalent Chromium in Drinking Water, Groundwater and Industrial Wastewater Effluents by Ion Chromatography* (USEPA, 1996);
- laboratory quality control (QC) limits, as applicable.

The USEPA Region 1 and National Data Validation Functional Guidelines were modified to accommodate the non-CLP methodologies. In the absence of method-specific direction for validation, Resolution Consultants professional judgment was used as appropriate.

REVIEW ELEMENTS

The data were evaluated based on the following parameters (where applicable to the method):

✓ Data completeness (chain-of-custody (COC)/sample integrity
✓ Holding times and sample preservation
✓ Initial calibration/continuing calibration verification
✓ Laboratory blanks/equipment blanks
✗ Matrix spike (MS) results
✓ Post Digestion Spike
✓ Laboratory duplicate results
✓ Laboratory control sample (LCS) results
✓ Field duplicates
✓ Sample results/reporting issues

The symbol (✓) indicates that no validation qualifiers were applied based on this parameter. NA indicates that the parameter was not included as part of this data set or was not applicable to this validation and therefore not reviewed. The symbol (✗) indicates that a quality control (QC) nonconformance resulted in the qualification of data. Any QC nonconformance that resulted in the qualification of data is discussed below. In addition, nonconformances or other issues that were noted during validation, but did not result in qualification of data, may be discussed for informational purposes only.

The data appear valid as reported and may be used for decision making purposes. Selected data points were estimated, negated, and/or rejected due to nonconformances of certain QC criteria (see discussion below). Qualified sample results are presented in Table 1.

RESULTS

Data Completeness

The data package was reviewed and found to meet acceptance criteria for completeness:

- The COCs were reviewed for completeness of information relevant to the samples and requested analyses, and for signatures indicating transfer of sample custody.
- The laboratory sample login sheet(s) were reviewed for issues potentially affecting sample integrity, including the condition of sample containers upon receipt at the laboratory.
- Completeness of analyses was verified by comparing the reported results to the COC requests.

A sample jar for hexavalent chromium analysis was provided for sample OU09 SD123 0012 (SG9758-27 in CARR-10) but was not marked on COC. The laboratory analyzed the sample and the results were included in data package and EDD.

Holding Times/Sample Preservation

Sample preservation and preparation/analysis holding times were reviewed for conformance with the QC acceptance criteria.

Samples were received by the laboratory at 1.1°C on December 11, 2013 (SDG CARR-11). Since the samples were received in good condition on ice, no qualifications were required.

Initial Calibration/Continuing Calibration Verification

Calibration data were reviewed for conformance with the QC acceptance criteria to ensure that:

- all criteria were met for the calibration curves
- the initial calibration verification (ICV) percent recovery (%R) criteria were met; and
- the continuing calibration verification standard (CCV) method percent difference (%Ds) were met.

The QC acceptance criteria were met.

Laboratory Blanks/Equipment Blanks

Laboratory method blanks and equipment rinsate blanks were evaluated as to whether there were contaminants detected above the method detection limit (MDL). Data validation qualifications for individual samples are based on the maximum contaminant concentration detected in all associated blanks.

Method and equipment rinsate results were reviewed for conformance with the QC acceptance criteria. Detected results in blanks are not discussed in this data validation report if the associated results were nondetect or if qualification of sample results was not required.

The QC acceptance criteria were met and/or qualification of the sample results was not required.

MS Results

Sample BSBG SD302 0012 (SG9707-16 in CARR-7 batch WG136979) was selected for soil matrix spike analysis and used for supporting data quality recommendations. The soluble and insoluble matrix spike (MS) recoveries from the initial batch were 68% and 107%, respectively. The soluble MS recovery did not meet quality control (QC) criteria of 75-125%R. The post digestion spike (PDS) recovery was 93.3%, which met the PDS criteria of 85-115%.

Based on poor MS recoveries, less than 75%R, the MS and associated samples were reanalyzed using Method 7196. The soluble and insoluble matrix spike recoveries from the re-analysis were 0.1% and 95.9%, respectively. The soluble MS recovery did not meet the QC criteria of 75-125%R. The post spike result for the re-analysis batch was recovered at 52.0%, which met the PDS criteria of 85-115%.

Since the soluble and/or insoluble MS recoveries were outside the acceptable QC limit of 75-125%, additional parameters were analyzed to determine if possible matrix interferences could be the cause for the poor matrix spike recoveries. All the soil samples were tested for pH and oxidation reduction potential (ORP) and plotted on an Eh/pH phase diagram chart. From this chart, the source sample for the matrix spike analysis was plotted below the phase change line, indicating reducing potential within the sample matrix, incapable of supporting hexavalent chromium. Analyses for ferrous iron, sulfide screen, and total organic carbon (TOC) were performed on the MS source sample to confirm the oxidizing/reducing potential within the sample matrix. The sulfide screen (310 mg/kg), the ferrous iron (1.0 mg/kg) and the TOC results (21,000 µg/g) were positive, indicating potential reducing agents within the sample matrix.

Since the MS recoveries from both the initial and reanalysis did not meet the MS QC requirements, but at least one MS recovery was greater than 50%, the highest detected hexavalent chromium result or the nondetect hexavalent chromium result with the lowest limit of detection (LOD) was reported for each soil sample. The reported hexavalent chromium results in all the sediment samples in this SDG were qualified as estimated (J/UJ) due to the poor MS recoveries.

No further qualification was taken based on the low reanalysis PDS recovery since the initial PDS %R was acceptable.

Sample OU09 SD102 0012 (SG9804-15 in CARR-12 batch WG137134) was also selected for soil matrix spike analysis and used for supporting data quality recommendations. The soluble and insoluble MS recoveries from the initial batch were 77% and 94%, respectively, which met QC criteria of 75-125%R. The PDS recovery was 90.9%, which met the PDS criteria of 85-115%. No qualifications were required for the samples associated with this batch.

Laboratory Duplicate Results

The laboratory duplicate relative percent differences (RPDs) were reviewed for conformance.

The laboratory duplicate RPDs were within the QC acceptance criteria.

LCS Results

The LCS %Rs were reviewed for conformance with the QC acceptance criteria.

The LCS %Rs were within the QC acceptance criteria.

Field Duplicate Results

Field duplicate RPDs were reviewed for conformance with the Resolution Consultants QC acceptance criterion of ≤50% for solid matrices and ≤30% for aqueous matrices. This criterion applies if both results were greater than 5 times the limit of quantitation (LOQ).

All field duplicate precision criteria were met.

Sample Results/Reporting Issues

The percent solids data were reviewed to ensure that NFG specified criteria were met.

All percent solids criteria were met.

QUALIFICATION ACTIONS

Sample results qualified as a result of validation actions are summarized in Table 1. All actions are described above.

ATTACHMENTS

Attachment A: Nonconformance Summary Tables

Attachment B: Qualifier Codes and Explanations

Attachment C: Reason Codes and Explanations

Table 1 - Data Validation Summary of Qualified Data

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
BSBG SD302 0012	SE	CHROMIUM VI	0.33	0.33	0.56	MG_KG	UJ	m
OU09 SD110 0012	SE	CHROMIUM VI	0.40	0.40	0.66	MG_KG	UJ	m
OU09 SD118 0012	SE	CHROMIUM VI	0.36	0.36	0.60	MG_KG	UJ	m
OU09 SD121 0012	SE	CHROMIUM VI	0.34	0.34	0.56	MG_KG	UJ	m
OU09 SD122 0012	SE	CHROMIUM VI	0.39	0.39	0.64	MG_KG	UJ	m
OU09 SD124 0012	SE	CHROMIUM VI	0.34	0.34	0.56	MG_KG	UJ	m

Attachment A

Non Conformance Summary Tables

Table A-1 Matrix Spikes

Sample ID	Compound	Soluble MS % Recovery	Insoluble MS % Recovery	Lower Limit	Upper Limit	PDS	PDS Limit
BSBG SD302 0012	CHROMIUM VI	68	107	75	125	93.3	85-115
BSBG SD302 0012 (RE)	CHROMIUM VI	0.1	96	75	125	52.0	85-115

Attachment B

Qualifier Codes and Explanations

Qualifier	Explanation
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
UJ	The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual quantitation limit necessary to accurately and precisely measure the analyte in the sample.
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

Attachment C

Reason Codes and Explanations

Reason Code	Explanation
be	Equipment blank contamination
bf	Field blank contamination
bl	Laboratory blank contamination
c	Calibration issue
d	Reporting limit raised due to chromatographic interference
fd	Field duplicate RPDs
h	Holding times
i	Internal standard areas
k	Estimated Maximum Possible Concentration (EMPC)
l	LCS recoveries
lc	Labeled compound recovery
ld	Laboratory duplicate RPDs
lp	Laboratory control sample/laboratory control sample duplicate RPDs
m	Matrix spike recovery
md	Matrix spike/matrix spike duplicate RPDs
nb	Negative laboratory blank contamination
p	Chemical preservation issue
r	Dual column RPD
q	Quantitation issue
s	Surrogate recovery
su	Ion suppression
t	Temperature preservation issue
x	Percent solids
y	Serial dilution results
z	ICS results

Data Validation Memos

Soil

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Data Validation Report

Project:	MR Site 1 (OU9) Remedial Investigation, NAVSTA Newport, Rhode Island CTO WE06
Laboratory:	Katahdin Analytical Services, Scarborough, Maine
Service Request:	CARR-6, CARR-9, and CARR-11
Analyses/Method:	EPA SW-846 Method 8260B for Volatile Organic Compounds (GC/MS)
Validation Level:	Limited
Resolution Consultants Project Number:	60250336 SA.DV
Prepared by:	Kristin Rutherford/Resolution Consultants — Completed on: 03/07/2014
Reviewed by:	Constance Lapite/Resolution Consultants — File Name: CARR-6,9,11_SO_VOCs_DVRpt

SUMMARY

The samples listed below were collected by Resolution Consultants from the MRP Site 1 (OU9), NAVSTA Newport, Rhode Island, on December 6, 10, 11, and 12, 2013.

Sample ID	Matrix/Sample Type
RBSB121113 03	Equipment blank
RBSB121113 04	Equipment blank
RBSS12061302	Equipment blank
FDSB12101302	Field Duplicate of OU09 SB302 0810
OU09 SB221 0305	Soil
OU09 SB221 0608	Soil
OU09 SB221 0810	Soil
OU09 SB223 0001	Soil
OU09 SB223 0304	Soil
OU09 SB302 0305	Soil
OU09 SB302 0810	Soil
OU09 SB303 0305	Soil
OU09 SB303 0810	Soil
OU09 SB324 0305	Soil
OU09 SB324 0810	Soil
OU09 SS221 0001	Soil
OU09 SS301 0001	Soil
OU09 SS302 0001	Soil
OU09 SS303 0001	Soil
OU09 SS324 0001	Soil

Sample ID	Matrix/Sample Type
TBSS12061301	Trip Blank
TBSS12101302	Trip Blank

The data have been validated in accordance with the project-specific Sampling and Analysis Plans, *Sampling and Analysis Plan, Former Carr Point Shooting Range (MRP Site 1, OU9), Naval Station (NAVSTA) Newport, Rhode Island, Final* (Naval Facilities Engineering Command, Mid-Atlantic, 2013); *Sampling and Analysis Plan, Former Carr Point Storage Area (IR Site 22, OU10), Naval Station (NAVSTA) Newport, Rhode Island, Draft Final* (Naval Facilities Engineering Command, Mid-Atlantic, 2013); and the following references:OU09 SS301 0001OU09 SS301 0001

- *DoD Quality Systems Manual (QMS) for Environmental Laboratories, version 4.2* (DoD EDQW, 2010);
- *USEPA Region 1, EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses* (December 1996);
- *USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review* (June 2008);
- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW846, Method 8260B, Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry* (USEPA, 1996);
- laboratory quality control (QC) limits, as applicable.

The USEPA Region 1 and National Data Validation Functional Guidelines were modified to accommodate the non-CLP methodologies. In the absence of method-specific direction for validation, Resolution Consultants professional judgment was used as appropriate.

REVIEW ELEMENTS

The data were evaluated based on the following parameters (where applicable to the method):

✓ Data completeness (chain-of-custody (COC)/sample integrity
✓ Holding times and sample preservation
✓ GC/MS performance checks
✗ Initial calibration/continuing calibration verification
✗ Laboratory blanks/trip blanks/equipment blanks
✗ Surrogate spike recoveries
✗ Matrix spike (MS) and/or matrix spike duplicate (MSD) results
✓ Laboratory control sample (LCS)/laboratory control sample duplicate (LCSD) results
✓ Field duplicates
✗ Internal standards
✓ Sample results/reporting issues

The symbol (✓) indicates that no validation qualifiers were applied based on this parameter. NA indicates that the parameter was not included as part of this data set or was not applicable to this validation and therefore not reviewed. The symbol (✗) indicates that a QC nonconformance resulted in the qualification of data. Any QC nonconformance that resulted in the qualification of data is discussed below. In addition, nonconformances or other issues that were noted during validation, but did not result in qualification of data, may be discussed for informational purposes only.

The data appear valid as reported and may be used for decision making purposes. Selected data points were qualified as estimated, negated, and/or rejected due to nonconformances of certain QC criteria (see discussion below). Qualified sample results are presented in Table 1.

RESULTS

Data Completeness

The data package was reviewed and found to meet acceptance criteria for completeness:

- The COCs were reviewed for completeness of information relevant to the samples and requested analyses, and for signatures indicating transfer of sample custody.
- The laboratory sample login sheet(s) were reviewed for issues potentially affecting sample integrity, including the condition of sample containers upon receipt at the laboratory.
- Completeness of analyses was verified by comparing the reported results to the COC requests.

Holding Times/Sample Preservation

Sample preservation and preparation/analysis holding times were reviewed for conformance with the QC acceptance criteria.

The QC acceptance criteria were met.

Samples were received at 1.1°C and 1.4°C, which is below the criteria of 4°±2°C. Since the samples were received in good condition on ice, no qualifications were required.

GC/MS Performance Checks

The data were reviewed to ensure that the 4-bromofluorobenzene (BFB) tuning was performed at the correct frequency and that the method acceptance criteria were met. All samples were analyzed within 12 hours of the BFB tunes.

Initial Calibration/Continuing Calibration Verification

Calibration data were reviewed for conformance with the QC acceptance criteria to ensure that:

- the initial calibration (ICAL) percent relative standard deviation (%RSD), correlation coefficient (r)/coefficient of determination (r^2), and/or response factor method acceptance criteria were met;
- the initial calibration verification standard (ICV) percent recovery acceptance criteria were met;
- the continuing calibration verification standard (CCV) method percent difference or percent drift (%Ds) and RF acceptance criteria were met; and
- the retention time method acceptance criteria were met.

Nonconformances are summarized in Attachment A in Tables A-1a and A-1b. Data qualification to the analytes associated with the specific ICAL and/or CCV was as follows:

ICAL and CCV Response Factor Nonconformances:

Criteria	Actions	
	Detected Results	Nondetected Results
SPCCs		
RF <0.10 for chloromethane, 1,1-dichloroethane, and bromoform or RF<0.30 for chlorobenzene and 1,1,2,2-tetrachloroethane	J[1]	UJ[1]
All compounds except SPCCs and Poor Performing Compounds[2]		
RF <0.05	J	R[3]
RF <0.05 but > 0.01 (if low standard response is adequate)	J[1]	UJ[1]
Poor Performing Compounds[2]		
RF <0.01	J	R
[1] No guidance in NFG, thus Resolution Consultants professional judgment was used.		
[2]As defined in Table 15 of the NFG.		
[3] Resolution Consultants professional judgment may be used to either raise reporting level or to estimate reporting limit if low standard response is adequate.		
Sample results qualified as not detected (U) due to blank contamination are not rejected, but estimated (UJ).		
SPCCs - System Performance Check Compounds		

ICAL Linearity Nonconformances:

Criteria	Actions	
	Detected Results	Nondetected
%RSD > 30% for CCCs (1,1-dichloroethene, toluene, chloroform, ethylbenzene, 1,2-dichloropropane, vinyl chloride)	J*	UJ*
%RSD > 15% and quantitation based on mean RF	J	UJ
r or r^2 < 0.99 and quantitation based on linear regression	J*	UJ*
* No guidance in NFG, thus Resolution Consultants professional judgment was used		
CCCs - Calibration Check Compounds		

ICV Recovery Nonconfomances:

Criteria	Actions*	
	Detected Results	Nondetected Results
Recovery > 120	J	UJ
Recovery < 80	J	UJ
* No guidance in NFG, thus Resolution Consultants professional judgment was used		

CCV Linearity Nonconfomances:

Criteria	Actions	
	Detected Results	Nondetected Results
%D > 20%	J	UJ
%Drift	J*	UJ*
* No guidance in NFG, thus Resolution Consultants professional judgment was used		

Qualified sample results are shown in Table 1.

Laboratory Blanks/Equipment Blanks/Trip Blanks

Laboratory method blanks, equipment rinsate and trip blanks were evaluated as to whether there were contaminants detected above the method detection limit (MDL).

Data validation qualifications for individual samples are based on the maximum contaminant concentration detected in all associated blanks.

Detected results in blanks are not discussed in this data validation report if the associated results were nondetect or if qualification of sample results was not required.

Nonconformances are summarized in Attachment A in Tables A-2a and A-2b. Sample results were qualified as follows:

For common lab contaminants (methylene chloride, acetone, 2-butanone):			
Blank type	**Blank result**	**Sample result**	**Action for samples**
Method, Storage, Trip, Field, or Equipment	Detects	Not detected	No qualification
	≤ 2x LOQ	< 2x LOQ	Report sample LOQ value with a U
		≥ 2x LOQ and ≤ 4x the LOQ	Report the sample result with a U**
		≥ 4x the LOQ	No qualifications
	> 2x LOQ	< LOD	Report sample LOD value with a U**
		≥ LOD and < 2x LOQ	Report sample LOQ value with a U
		≥ 2x LOQ and < blank contamination	Report the blank result with a U or reject the sample result as unusable R
		≥ 2x LOQ and ≥ blank contamination	If the result is ≤2x blank result, report the sample result U.** If the result is > 2x blank result, no qualification is required.**
****Based on Resolution Consultants professional judgment**			

For all other compounds:			
Blank type	**Blank result**	**Sample result**	**Action for samples**
Method, Storage, Trip, Field, or Equipment	Detects	Not detected	No qualification
	≤ LOQ	< LOQ	Report sample LOQ value with a U
		≥ LOQ and ≤ 2x the LOQ	Report the sample result with a U**
		≥ 2x the LOQ	No qualifications**
	> LOQ	<LOD	Report sample LOD value with a U**
		≥ LOD and < LOQ	Report sample LOQ value with a U
		≥ LOQ and < blank contamination	Report the blank result with a U or reject the sample result as unusable R
		≥ LOQ and ≥ blank contamination	If the result is ≤2x blank result, report the sample result U.** If the result is > 2x blank result, no qualification is required**
****Based on Resolution Consultants professional judgment**			

LOD - Limit of Detection
LOQ - Limit of Quantitation (equivalent to lowest calibration standard)

Qualified sample results are shown in Table 1.

Surrogate Spike Recoveries

The surrogate recoveries (%Rs) were reviewed for conformance with the QC acceptance criteria.

Nonconformances are summarized in Attachment A in Table A-3. Data qualification on the basis of surrogate recovery nonconformances was as follows:

Criteria	Action	
	Detected Compounds	Nondetected Compounds
%R > Upper Limit (UL)	J	No qualification
10% ≤%R < Lower Limit (LL)	J	UJ
%R < 10%	J	R

Qualified sample results are shown in Table 1.

MS/MSD Results

The MS/MSD %Rs and relative percent differences (RPDs) were reviewed for conformance with the QC acceptance criteria.

Nonconformances are summarized in Attachment A in Table A-4. Data qualification to the analytes associated with the specific MS/MSD nonconformances was as follows:

Criteria	Action	
	Detected Compounds	Nondetected Compounds
%R>UL	J	No qualification
10% ≤ %R < LL	J	UJ
%R <10% (see note 1)	J	R*
RPD >UL	J	No qualification
Note: Actions are applied to the native unspiked sample only (see note 2) *When the native sample concentration is >4X the concentration of the spike added (based on Region I criteria), evaluate the MS, MSD, and native sample with regards to %RSD rather than %R (Resolution Consultants professional judgment).		

1. Resolution Consultants professional judgment is used to estimate (UJ) rather the reject (R) sample results previously negated (U) on the basis of blank contamination.
2. If a field duplicate sample was also collected for the native sample chosen for MS/MSD analysis, professional judgment is used to apply MS/MSD actions to the corresponding field duplicate sample as well as the native sample.

Qualified sample results are shown in Table 1.

LCS/LCSD Results

The LCS/LCSD %Rs and/or relative percent recoveries (RPDs) were reviewed for conformance with the QC acceptance criteria.

Nonconformances are summarized in Attachment A in Table A-5. Data qualification to the analytes associated with the specific LCS %Rs or RPDs was as follows:

Criteria[1]	Action	
	Detected Compounds	**Nondetected Compounds**
%R or RPD > UL	J	No qualification
%R < LL	J	UJ
%R < 10% (see note 1)	J	R
(LL = lower limit, UL = upper limit)		

Notes:
1. Resolution Consultants professional judgment is used to estimate (UJ) rather reject sample results previously negated (U) on the basis of blank contamination.

Qualified sample results are shown in Table 1.

Field Duplicate Results

Field duplicate RPDs were reviewed for conformance with the Resolution Consultants QC criteria of ≤50% for solid matrices and ≤30% for aqueous matrices. These criteria apply if both results were greater than two times the limit of quantitation (LOQ).

All QC acceptance criteria were met.

Internal Standard Results

The internal standard (IS) recoveries were reviewed for conformance with the QC acceptance criteria.

Nonconformances are summarized in Attachment A in Table A-6. Data qualification to the analytes associated with the specific IS on the basis of IS recoveries was as follows:

Sample IS area compared to CCV and CCV IS area compared to ICAL			
Qualify results	**≤ 20%**	**≥ 20% and <50%**	**> 200%**
Positive Results	J	J	J
Nondetected Results	R	UJ	A

Due to poor internal standard recoveries in the initial analysis, the results for VOCs were reported from the reanalysis for samples OU09 SB221 0305, OU09 SB221 0608, OU09 SB302 0305, OU09 SB303 0810, OU09 SS302 0001, OU09 SS303 0001, and OU09 SB223 0304.

Qualified sample results are shown in Table 1.

Sample Results/Reporting Issues

All compounds detected at concentrations less than the limit of quantitation (LOQ) but greater than the MDL were qualified by the laboratory as estimated (J). This "J" qualifier was retained during data validation.

Any sample that was analyzed at a dilution because of high concentrations of target or non-targets was checked to confirm that the results and/or sample-specific LOQs and LODs were adjusted accordingly by the laboratory.

The percent solids data were reviewed to ensure that NFG 2008 specified criteria were met.

All percent solids criteria were met.

QUALIFICATION ACTIONS

Sample results qualified as a result of validation actions are summarized in Table 1. All actions are described above.

ATTACHMENTS

Attachment A: Nonconformance Summary Tables

Attachment B: Qualifier Codes and Explanations

Attachment C: Reason Codes and Explanations

Table 1 - Data Validation Summary of Qualified Data

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
FDSB12101302	SO	1,1,1,2-TETRACHLOROETHANE	3.0	3.0	6.0	UG_KG	UJ	s
FDSB12101302	SO	1,1,1-TRICHLOROETHANE	3.0	3.0	6.0	UG_KG	UJ	s
FDSB12101302	SO	1,1,2,2-TETRACHLOROETHANE	3.0	3.0	6.0	UG_KG	UJ	i,s
FDSB12101302	SO	1,1,2-TRICHLOROETHANE	3.0	3.0	6.0	UG_KG	UJ	s
FDSB12101302	SO	1,1-DICHLOROETHANE	3.0	3.0	6.0	UG_KG	UJ	s
FDSB12101302	SO	1,1-DICHLOROETHENE	3.0	3.0	6.0	UG_KG	UJ	s
FDSB12101302	SO	1,1-DICHLOROPROPENE	3.0	3.0	6.0	UG_KG	UJ	s
FDSB12101302	SO	1,2,3-TRICHLOROBENZENE	3.0	3.0	6.0	UG_KG	UJ	i,s
FDSB12101302	SO	1,2,3-TRICHLOROPROPANE	3.0	3.0	6.0	UG_KG	UJ	i,s
FDSB12101302	SO	1,2,4-TRICHLOROBENZENE	3.0	3.0	6.0	UG_KG	UJ	i,s
FDSB12101302	SO	1,2,4-TRIMETHYLBENZENE	3.0	3.0	6.0	UG_KG	UJ	i,s
FDSB12101302	SO	1,2-DIBROMO-3-CHLOROPROPANE	3.0	3.0	6.0	UG_KG	UJ	i,s
FDSB12101302	SO	1,2-DIBROMOETHANE	3.0	3.0	6.0	UG_KG	UJ	s
FDSB12101302	SO	1,2-DICHLOROBENZENE	3.0	3.0	6.0	UG_KG	UJ	i,s
FDSB12101302	SO	1,2-DICHLOROETHANE	3.0	3.0	6.0	UG_KG	UJ	s
FDSB12101302	SO	1,2-DICHLOROETHENE, TOTAL	6.0	6.0	12	UG_KG	UJ	s
FDSB12101302	SO	1,2-DICHLOROPROPANE	3.0	3.0	6.0	UG_KG	UJ	s
FDSB12101302	SO	1,3,5-TRIMETHYLBENZENE	3.0	3.0	6.0	UG_KG	UJ	i,s
FDSB12101302	SO	1,3-DICHLOROBENZENE	3.0	3.0	6.0	UG_KG	UJ	i,s
FDSB12101302	SO	1,3-DICHLOROPROPANE	3.0	3.0	6.0	UG_KG	UJ	s
FDSB12101302	SO	1,4-DICHLOROBENZENE	3.0	3.0	6.0	UG_KG	UJ	i,s
FDSB12101302	SO	2,2-DICHLOROPROPANE	3.0	3.0	6.0	UG_KG	UJ	s
FDSB12101302	SO	2-BUTANONE	15	15	30	UG_KG	UJ	s
FDSB12101302	SO	2-CHLOROTOLUENE	3.0	3.0	6.0	UG_KG	UJ	i,s
FDSB12101302	SO	2-HEXANONE	15	15	30	UG_KG	UJ	s
FDSB12101302	SO	4-CHLOROTOLUENE	3.0	3.0	6.0	UG_KG	UJ	i,s
FDSB12101302	SO	4-ISOPROPYLTOLUENE	3.0	3.0	6.0	UG_KG	UJ	s
FDSB12101302	SO	4-METHYL-2-PENTANONE	15	15	30	UG_KG	UJ	s
FDSB12101302	SO	ACETONE	15	15	30	UG_KG	UJ	s,c
FDSB12101302	SO	BENZENE	3.0	3.0	6.0	UG_KG	UJ	s
FDSB12101302	SO	BROMOBENZENE	3.0	3.0	6.0	UG_KG	UJ	i,s
FDSB12101302	SO	BROMOCHLOROMETHANE	3.0	3.0	6.0	UG_KG	UJ	s
FDSB12101302	SO	BROMODICHLOROMETHANE	3.0	3.0	6.0	UG_KG	UJ	s
FDSB12101302	SO	BROMOFORM	3.0	3.0	6.0	UG_KG	UJ	s
FDSB12101302	SO	BROMOMETHANE	6.0	6.0	12	UG_KG	UJ	s
FDSB12101302	SO	CARBON TETRACHLORIDE	3.0	3.0	6.0	UG_KG	UJ	s
FDSB12101302	SO	CHLOROBENZENE	3.0	3.0	6.0	UG_KG	UJ	s
FDSB12101302	SO	CHLOROETHANE	6.0	6.0	12	UG_KG	UJ	s,c
FDSB12101302	SO	CHLOROFORM	3.0	3.0	6.0	UG_KG	UJ	s

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
FDSB12101302	SO	CHLOROMETHANE	6.0	6.0	12	UG_KG	UJ	s
FDSB12101302	SO	CIS-1,2-DICHLOROETHENE	3.0	3.0	6.0	UG_KG	UJ	s
FDSB12101302	SO	CIS-1,3-DICHLOROPROPENE	3.0	3.0	6.0	UG_KG	UJ	s
FDSB12101302	SO	DIBROMOCHLOROMETHANE	3.0	3.0	6.0	UG_KG	UJ	s
FDSB12101302	SO	DIBROMOMETHANE	3.0	3.0	6.0	UG_KG	UJ	s
FDSB12101302	SO	DICHLORODIFLUOROMETHANE	6.0	6.0	12	UG_KG	UJ	s,c
FDSB12101302	SO	HEXACHLOROBUTADIENE	3.0	3.0	6.0	UG_KG	UJ	i,s
FDSB12101302	SO	ISOPROPYLBENZENE	3.0	3.0	6.0	UG_KG	UJ	i,s
FDSB12101302	SO	METHYL CYCLOHEXANE	3.0	3.0	6.0	UG_KG	UJ	s
FDSB12101302	SO	METHYL TERT-BUTYL ETHER	3.0	3.0	6.0	UG_KG	UJ	s
FDSB12101302	SO	METHYLENE CHLORIDE	15	15	30	UG_KG	UJ	s
FDSB12101302	SO	N-BUTYLBENZENE	3.0	3.0	6.0	UG_KG	UJ	i,s
FDSB12101302	SO	PROPYLBENZENE	3.0	3.0	6.0	UG_KG	UJ	i,s
FDSB12101302	SO	SEC-BUTYLBENZENE	3.0	3.0	6.0	UG_KG	UJ	i,s
FDSB12101302	SO	STYRENE	3.0	3.0	6.0	UG_KG	UJ	s
FDSB12101302	SO	TERT-BUTANOL	15	15	30	UG_KG	UJ	s,c
FDSB12101302	SO	TERT-BUTYLBENZENE	3.0	3.0	6.0	UG_KG	UJ	i,s
FDSB12101302	SO	TETRACHLOROETHENE	3.0	3.0	6.0	UG_KG	UJ	s
FDSB12101302	SO	TOLUENE	3.0	3.0	6.0	UG_KG	UJ	s
FDSB12101302	SO	TRANS-1,2-DICHLOROETHENE	3.0	3.0	6.0	UG_KG	UJ	s
FDSB12101302	SO	TRANS-1,3-DICHLOROPROPENE	3.0	3.0	6.0	UG_KG	UJ	s
FDSB12101302	SO	TRICHLOROETHENE	3.0	3.0	6.0	UG_KG	UJ	s
FDSB12101302	SO	TRICHLOROFLUOROMETHANE	6.0	6.0	12	UG_KG	UJ	s
FDSB12101302	SO	VINYL CHLORIDE	6.0	6.0	12	UG_KG	UJ	s
OU09 SB221 0305	SO	1,1,1,2-TETRACHLOROETHANE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SB221 0305	SO	1,1,1-TRICHLOROETHANE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SB221 0305	SO	1,1,2,2-TETRACHLOROETHANE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SB221 0305	SO	1,1,2-TRICHLOROETHANE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SB221 0305	SO	1,1-DICHLOROETHANE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SB221 0305	SO	1,1-DICHLOROETHENE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SB221 0305	SO	1,1-DICHLOROPROPENE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SB221 0305	SO	1,2,3-TRICHLOROBENZENE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SB221 0305	SO	1,2,3-TRICHLOROPROPANE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SB221 0305	SO	1,2,4-TRICHLOROBENZENE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SB221 0305	SO	1,2,4-TRIMETHYLBENZENE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SB221 0305	SO	1,2-DIBROMO-3-CHLOROPROPANE	2.5	2.5	5.0	UG_KG	UJ	s,c
OU09 SB221 0305	SO	1,2-DIBROMOETHANE	2.5	2.5	5.0	UG_KG	UJ	s,c
OU09 SB221 0305	SO	1,2-DICHLOROBENZENE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SB221 0305	SO	1,2-DICHLOROETHANE	2.5	2.5	5.0	UG_KG	UJ	s

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SB221 0305	SO	1,2-DICHLOROETHENE, TOTAL	5.0	5.0	10	UG_KG	UJ	s
OU09 SB221 0305	SO	1,2-DICHLOROPROPANE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SB221 0305	SO	1,3,5-TRIMETHYLBENZENE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SB221 0305	SO	1,3-DICHLOROBENZENE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SB221 0305	SO	1,3-DICHLOROPROPANE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SB221 0305	SO	1,4-DICHLOROBENZENE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SB221 0305	SO	2,2-DICHLOROPROPANE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SB221 0305	SO	2-BUTANONE	12	12	25	UG_KG	UJ	s
OU09 SB221 0305	SO	2-CHLOROTOLUENE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SB221 0305	SO	2-HEXANONE	12	12	25	UG_KG	UJ	s
OU09 SB221 0305	SO	4-CHLOROTOLUENE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SB221 0305	SO	4-ISOPROPYLTOLUENE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SB221 0305	SO	4-METHYL-2-PENTANONE	12	12	25	UG_KG	UJ	s
OU09 SB221 0305	SO	ACETONE	12	12	25	UG_KG	UJ	s,c
OU09 SB221 0305	SO	BENZENE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SB221 0305	SO	BROMOBENZENE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SB221 0305	SO	BROMOCHLOROMETHANE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SB221 0305	SO	BROMODICHLOROMETHANE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SB221 0305	SO	BROMOFORM	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SB221 0305	SO	BROMOMETHANE	5.0	5.0	10	UG_KG	UJ	s
OU09 SB221 0305	SO	CARBON TETRACHLORIDE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SB221 0305	SO	CHLOROBENZENE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SB221 0305	SO	CHLOROETHANE	5.0	5.0	10	UG_KG	UJ	s
OU09 SB221 0305	SO	CHLOROFORM	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SB221 0305	SO	CHLOROMETHANE	5.0	5.0	10	UG_KG	UJ	s
OU09 SB221 0305	SO	CIS-1,2-DICHLOROETHENE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SB221 0305	SO	CIS-1,3-DICHLOROPROPENE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SB221 0305	SO	DIBROMOCHLOROMETHANE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SB221 0305	SO	DIBROMOMETHANE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SB221 0305	SO	DICHLORODIFLUOROMETHANE	5.0	5.0	10	UG_KG	UJ	s,c
OU09 SB221 0305	SO	HEXACHLOROBUTADIENE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SB221 0305	SO	ISOPROPYLBENZENE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SB221 0305	SO	METHYL CYCLOHEXANE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SB221 0305	SO	METHYL TERT-BUTYL ETHER	2.5	2.5	5.0	UG_KG	UJ	s,c
OU09 SB221 0305	SO	METHYLENE CHLORIDE	12	12	25	UG_KG	UJ	s
OU09 SB221 0305	SO	N-BUTYLBENZENE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SB221 0305	SO	PROPYLBENZENE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SB221 0305	SO	SEC-BUTYLBENZENE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SB221 0305	SO	STYRENE	2.5	2.5	5.0	UG_KG	UJ	s

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SB221 0305	SO	TERT-BUTANOL	12	12	25	UG_KG	UJ	s
OU09 SB221 0305	SO	TERT-BUTYLBENZENE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SB221 0305	SO	TETRACHLOROETHENE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SB221 0305	SO	TOLUENE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SB221 0305	SO	TRANS-1,2-DICHLOROETHENE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SB221 0305	SO	TRANS-1,3-DICHLOROPROPENE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SB221 0305	SO	TRICHLOROETHENE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SB221 0305	SO	TRICHLOROFLUOROMETHANE	5.0	5.0	10	UG_KG	UJ	s
OU09 SB221 0305	SO	VINYL CHLORIDE	5.0	5.0	10	UG_KG	UJ	s
OU09 SB221 0608	SO	1,1,1,2-TETRACHLOROETHANE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB221 0608	SO	1,1,1-TRICHLOROETHANE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB221 0608	SO	1,1,2,2-TETRACHLOROETHANE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB221 0608	SO	1,1,2-TRICHLOROETHANE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB221 0608	SO	1,1-DICHLOROETHANE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB221 0608	SO	1,1-DICHLOROETHENE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB221 0608	SO	1,1-DICHLOROPROPENE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB221 0608	SO	1,2,3-TRICHLOROBENZENE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB221 0608	SO	1,2,3-TRICHLOROPROPANE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB221 0608	SO	1,2,4-TRICHLOROBENZENE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB221 0608	SO	1,2,4-TRIMETHYLBENZENE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB221 0608	SO	1,2-DIBROMO-3-CHLOROPROPANE	2.2	2.2	4.4	UG_KG	UJ	s,c
OU09 SB221 0608	SO	1,2-DIBROMOETHANE	2.2	2.2	4.4	UG_KG	UJ	s,c
OU09 SB221 0608	SO	1,2-DICHLOROBENZENE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB221 0608	SO	1,2-DICHLOROETHANE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB221 0608	SO	1,2-DICHLOROETHENE, TOTAL	4.4	4.4	8.8	UG_KG	UJ	s
OU09 SB221 0608	SO	1,2-DICHLOROPROPANE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB221 0608	SO	1,3,5-TRIMETHYLBENZENE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB221 0608	SO	1,3-DICHLOROBENZENE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB221 0608	SO	1,3-DICHLOROPROPANE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB221 0608	SO	1,4-DICHLOROBENZENE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB221 0608	SO	2,2-DICHLOROPROPANE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB221 0608	SO	2-BUTANONE	11	11	22	UG_KG	UJ	s
OU09 SB221 0608	SO	2-CHLOROTOLUENE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB221 0608	SO	2-HEXANONE	11	11	22	UG_KG	UJ	s
OU09 SB221 0608	SO	4-CHLOROTOLUENE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB221 0608	SO	4-ISOPROPYLTOLUENE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB221 0608	SO	4-METHYL-2-PENTANONE	11	11	22	UG_KG	UJ	s
OU09 SB221 0608	SO	ACETONE	11	11	22	UG_KG	UJ	s,c
OU09 SB221 0608	SO	BENZENE	2.2	2.2	4.4	UG_KG	UJ	s

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SB221 0608	SO	BROMOBENZENE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB221 0608	SO	BROMOCHLOROMETHANE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB221 0608	SO	BROMODICHLOROMETHANE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB221 0608	SO	BROMOFORM	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB221 0608	SO	BROMOMETHANE	4.4	4.4	8.8	UG_KG	UJ	s
OU09 SB221 0608	SO	CARBON TETRACHLORIDE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB221 0608	SO	CHLOROBENZENE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB221 0608	SO	CHLOROETHANE	4.4	4.4	8.8	UG_KG	UJ	s
OU09 SB221 0608	SO	CHLOROFORM	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB221 0608	SO	CHLOROMETHANE	4.4	4.4	8.8	UG_KG	UJ	s
OU09 SB221 0608	SO	CIS-1,2-DICHLOROETHENE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB221 0608	SO	CIS-1,3-DICHLOROPROPENE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB221 0608	SO	DIBROMOCHLOROMETHANE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB221 0608	SO	DIBROMOMETHANE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB221 0608	SO	DICHLORODIFLUOROMETHANE	4.4	4.4	8.8	UG_KG	UJ	s,c
OU09 SB221 0608	SO	HEXACHLOROBUTADIENE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB221 0608	SO	ISOPROPYLBENZENE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB221 0608	SO	METHYL CYCLOHEXANE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB221 0608	SO	METHYL TERT-BUTYL ETHER	2.2	2.2	4.4	UG_KG	UJ	s,c
OU09 SB221 0608	SO	METHYLENE CHLORIDE	11	11	22	UG_KG	UJ	s
OU09 SB221 0608	SO	N-BUTYLBENZENE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB221 0608	SO	PROPYLBENZENE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB221 0608	SO	SEC-BUTYLBENZENE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB221 0608	SO	STYRENE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB221 0608	SO	TERT-BUTANOL	11	11	22	UG_KG	UJ	s
OU09 SB221 0608	SO	TERT-BUTYLBENZENE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB221 0608	SO	TETRACHLOROETHENE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB221 0608	SO	TOLUENE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB221 0608	SO	TRANS-1,2-DICHLOROETHENE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB221 0608	SO	TRANS-1,3-DICHLOROPROPENE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB221 0608	SO	TRICHLOROETHENE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB221 0608	SO	TRICHLOROFLUOROMETHANE	4.4	4.4	8.8	UG_KG	UJ	s
OU09 SB221 0608	SO	VINYL CHLORIDE	4.4	4.4	8.8	UG_KG	UJ	s
OU09 SB221 0810	SO	1,1,1,2-TETRACHLOROETHANE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SB221 0810	SO	1,1,1-TRICHLOROETHANE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SB221 0810	SO	1,1,2,2-TETRACHLOROETHANE	2.5	2.5	5.0	UG_KG	UJ	i,s
OU09 SB221 0810	SO	1,1,2-TRICHLOROETHANE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SB221 0810	SO	1,1-DICHLOROETHANE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SB221 0810	SO	1,1-DICHLOROETHENE	2.5	2.5	5.0	UG_KG	UJ	s

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SB221 0810	SO	1,1-DICHLOROPROPENE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SB221 0810	SO	1,2,3-TRICHLOROBENZENE	2.5	2.5	5.0	UG_KG	UJ	i,s
OU09 SB221 0810	SO	1,2,3-TRICHLOROPROPANE	2.5	2.5	5.0	UG_KG	UJ	i,s
OU09 SB221 0810	SO	1,2,4-TRICHLOROBENZENE	2.5	2.5	5.0	UG_KG	UJ	i,s
OU09 SB221 0810	SO	1,2,4-TRIMETHYLBENZENE	2.5	2.5	5.0	UG_KG	UJ	i,s
OU09 SB221 0810	SO	1,2-DIBROMO-3-CHLOROPROPANE	2.5	2.5	5.0	UG_KG	UJ	i,s
OU09 SB221 0810	SO	1,2-DIBROMOETHANE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SB221 0810	SO	1,2-DICHLOROBENZENE	2.5	2.5	5.0	UG_KG	UJ	i,s
OU09 SB221 0810	SO	1,2-DICHLOROETHANE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SB221 0810	SO	1,2-DICHLOROETHENE, TOTAL	5.0	5.0	10	UG_KG	UJ	s
OU09 SB221 0810	SO	1,2-DICHLOROPROPANE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SB221 0810	SO	1,3,5-TRIMETHYLBENZENE	2.5	2.5	5.0	UG_KG	UJ	i,s
OU09 SB221 0810	SO	1,3-DICHLOROBENZENE	2.5	2.5	5.0	UG_KG	UJ	i,s
OU09 SB221 0810	SO	1,3-DICHLOROPROPANE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SB221 0810	SO	1,4-DICHLOROBENZENE	2.5	2.5	5.0	UG_KG	UJ	i,s
OU09 SB221 0810	SO	2,2-DICHLOROPROPANE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SB221 0810	SO	2-BUTANONE	12	12	25	UG_KG	UJ	s
OU09 SB221 0810	SO	2-CHLOROTOLUENE	2.5	2.5	5.0	UG_KG	UJ	i,s
OU09 SB221 0810	SO	2-HEXANONE	12	12	25	UG_KG	UJ	s
OU09 SB221 0810	SO	4-CHLOROTOLUENE	2.5	2.5	5.0	UG_KG	UJ	i,s
OU09 SB221 0810	SO	4-ISOPROPYLTOLUENE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SB221 0810	SO	4-METHYL-2-PENTANONE	12	12	25	UG_KG	UJ	s
OU09 SB221 0810	SO	ACETONE	12	12	25	UG_KG	UJ	s,c
OU09 SB221 0810	SO	BENZENE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SB221 0810	SO	BROMOBENZENE	2.5	2.5	5.0	UG_KG	UJ	i,s
OU09 SB221 0810	SO	BROMOCHLOROMETHANE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SB221 0810	SO	BROMODICHLOROMETHANE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SB221 0810	SO	BROMOFORM	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SB221 0810	SO	BROMOMETHANE	5.0	5.0	10	UG_KG	UJ	s
OU09 SB221 0810	SO	CARBON TETRACHLORIDE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SB221 0810	SO	CHLOROBENZENE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SB221 0810	SO	CHLOROETHANE	5.0	5.0	10	UG_KG	UJ	s,c
OU09 SB221 0810	SO	CHLOROFORM	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SB221 0810	SO	CHLOROMETHANE	5.0	5.0	10	UG_KG	UJ	s
OU09 SB221 0810	SO	CIS-1,2-DICHLOROETHENE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SB221 0810	SO	CIS-1,3-DICHLOROPROPENE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SB221 0810	SO	DIBROMOCHLOROMETHANE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SB221 0810	SO	DIBROMOMETHANE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SB221 0810	SO	DICHLORODIFLUOROMETHANE	5.0	5.0	10	UG_KG	UJ	s

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SB221 0810	SO	HEXACHLOROBUTADIENE	2.5	2.5	5.0	UG_KG	UJ	i,s
OU09 SB221 0810	SO	ISOPROPYLBENZENE	2.5	2.5	5.0	UG_KG	UJ	i,s
OU09 SB221 0810	SO	METHYL CYCLOHEXANE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SB221 0810	SO	METHYL TERT-BUTYL ETHER	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SB221 0810	SO	METHYLENE CHLORIDE	12	12	25	UG_KG	UJ	s
OU09 SB221 0810	SO	N-BUTYLBENZENE	2.5	2.5	5.0	UG_KG	UJ	i,s
OU09 SB221 0810	SO	PROPYLBENZENE	2.5	2.5	5.0	UG_KG	UJ	i,s
OU09 SB221 0810	SO	SEC-BUTYLBENZENE	2.5	2.5	5.0	UG_KG	UJ	i,s
OU09 SB221 0810	SO	STYRENE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SB221 0810	SO	TERT-BUTANOL	12	12	25	UG_KG	UJ	s,c
OU09 SB221 0810	SO	TERT-BUTYLBENZENE	2.5	2.5	5.0	UG_KG	UJ	i,s
OU09 SB221 0810	SO	TETRACHLOROETHENE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SB221 0810	SO	TOLUENE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SB221 0810	SO	TRANS-1,2-DICHLOROETHENE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SB221 0810	SO	TRANS-1,3-DICHLOROPROPENE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SB221 0810	SO	TRICHLOROETHENE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SB221 0810	SO	TRICHLOROFLUOROMETHANE	5.0	5.0	10	UG_KG	UJ	s
OU09 SB221 0810	SO	VINYL CHLORIDE	5.0	5.0	10	UG_KG	UJ	s
OU09 SB223 0001	SO	1,1,1,2-TETRACHLOROETHANE	4.2	4.2	8.5	UG_KG	UJ	s
OU09 SB223 0001	SO	1,1,1-TRICHLOROETHANE	4.2	4.2	8.5	UG_KG	UJ	s
OU09 SB223 0001	SO	1,1,2,2-TETRACHLOROETHANE	4.2	4.2	8.5	UG_KG	UJ	i,s
OU09 SB223 0001	SO	1,1,2-TRICHLOROETHANE	4.2	4.2	8.5	UG_KG	UJ	s
OU09 SB223 0001	SO	1,1-DICHLOROETHANE	4.2	4.2	8.5	UG_KG	UJ	s
OU09 SB223 0001	SO	1,1-DICHLOROETHENE	4.2	4.2	8.5	UG_KG	UJ	s
OU09 SB223 0001	SO	1,1-DICHLOROPROPENE	4.2	4.2	8.5	UG_KG	UJ	s
OU09 SB223 0001	SO	1,2,3-TRICHLOROBENZENE	4.2	4.2	8.5	UG_KG	UJ	i,s
OU09 SB223 0001	SO	1,2,3-TRICHLOROPROPANE	4.2	4.2	8.5	UG_KG	UJ	i,s
OU09 SB223 0001	SO	1,2,4-TRICHLOROBENZENE	4.2	4.2	8.5	UG_KG	UJ	i,s
OU09 SB223 0001	SO	1,2,4-TRIMETHYLBENZENE	4.2	4.2	8.5	UG_KG	UJ	i,s
OU09 SB223 0001	SO	1,2-DIBROMO-3-CHLOROPROPANE	4.2	4.2	8.5	UG_KG	UJ	i,s
OU09 SB223 0001	SO	1,2-DIBROMOETHANE	4.2	4.2	8.5	UG_KG	UJ	s
OU09 SB223 0001	SO	1,2-DICHLOROBENZENE	4.2	4.2	8.5	UG_KG	UJ	i,s
OU09 SB223 0001	SO	1,2-DICHLOROETHANE	4.2	4.2	8.5	UG_KG	UJ	s
OU09 SB223 0001	SO	1,2-DICHLOROETHENE, TOTAL	8.5	8.5	17	UG_KG	UJ	s
OU09 SB223 0001	SO	1,2-DICHLOROPROPANE	4.2	4.2	8.5	UG_KG	UJ	s
OU09 SB223 0001	SO	1,3,5-TRIMETHYLBENZENE	4.2	4.2	8.5	UG_KG	UJ	i,s
OU09 SB223 0001	SO	1,3-DICHLOROBENZENE	4.2	4.2	8.5	UG_KG	UJ	i,s
OU09 SB223 0001	SO	1,3-DICHLOROPROPANE	4.2	4.2	8.5	UG_KG	UJ	s
OU09 SB223 0001	SO	1,4-DICHLOROBENZENE	4.2	4.2	8.5	UG_KG	UJ	i,s

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SB223 0001	SO	2,2-DICHLOROPROPANE	4.2	4.2	8.5	UG_KG	UJ	s,c
OU09 SB223 0001	SO	2-BUTANONE	21	21	42	UG_KG	UJ	s
OU09 SB223 0001	SO	2-CHLOROTOLUENE	4.2	4.2	8.5	UG_KG	UJ	i,s
OU09 SB223 0001	SO	2-HEXANONE	21	21	42	UG_KG	UJ	s
OU09 SB223 0001	SO	4-CHLOROTOLUENE	4.2	4.2	8.5	UG_KG	UJ	i,s
OU09 SB223 0001	SO	4-ISOPROPYLTOLUENE	4.2	4.2	8.5	UG_KG	UJ	s
OU09 SB223 0001	SO	4-METHYL-2-PENTANONE	21	21	42	UG_KG	UJ	s
OU09 SB223 0001	SO	ACETONE	21	21	42	UG_KG	UJ	s,c
OU09 SB223 0001	SO	BENZENE	4.2	4.2	8.5	UG_KG	UJ	s
OU09 SB223 0001	SO	BROMOBENZENE	4.2	4.2	8.5	UG_KG	UJ	i,s
OU09 SB223 0001	SO	BROMOCHLOROMETHANE	4.2	4.2	8.5	UG_KG	UJ	s
OU09 SB223 0001	SO	BROMODICHLOROMETHANE	4.2	4.2	8.5	UG_KG	UJ	s
OU09 SB223 0001	SO	BROMOFORM	4.2	4.2	8.5	UG_KG	UJ	s
OU09 SB223 0001	SO	BROMOMETHANE	8.5	8.5	17	UG_KG	UJ	s
OU09 SB223 0001	SO	CARBON TETRACHLORIDE	4.2	4.2	8.5	UG_KG	UJ	s
OU09 SB223 0001	SO	CHLOROBENZENE	4.2	4.2	8.5	UG_KG	UJ	s
OU09 SB223 0001	SO	CHLOROETHANE	8.5	8.5	17	UG_KG	UJ	s,c
OU09 SB223 0001	SO	CHLOROFORM	4.2	4.2	8.5	UG_KG	UJ	s
OU09 SB223 0001	SO	CHLOROMETHANE	8.5	8.5	17	UG_KG	UJ	s
OU09 SB223 0001	SO	CIS-1,2-DICHLOROETHENE	4.2	4.2	8.5	UG_KG	UJ	s
OU09 SB223 0001	SO	CIS-1,3-DICHLOROPROPENE	4.2	4.2	8.5	UG_KG	UJ	s
OU09 SB223 0001	SO	DIBROMOCHLOROMETHANE	4.2	4.2	8.5	UG_KG	UJ	s
OU09 SB223 0001	SO	DIBROMOMETHANE	4.2	4.2	8.5	UG_KG	UJ	s
OU09 SB223 0001	SO	DICHLORODIFLUOROMETHANE	8.5	8.5	17	UG_KG	UJ	s
OU09 SB223 0001	SO	HEXACHLOROBUTADIENE	4.2	4.2	8.5	UG_KG	UJ	i,s
OU09 SB223 0001	SO	ISOPROPYLBENZENE	4.2	4.2	8.5	UG_KG	UJ	i,s
OU09 SB223 0001	SO	METHYL CYCLOHEXANE	4.2	4.2	8.5	UG_KG	UJ	s
OU09 SB223 0001	SO	METHYL TERT-BUTYL ETHER	4.2	4.2	8.5	UG_KG	UJ	s
OU09 SB223 0001	SO	METHYLENE CHLORIDE	21	21	42	UG_KG	UJ	s
OU09 SB223 0001	SO	N-BUTYLBENZENE	4.2	4.2	8.5	UG_KG	UJ	i,s
OU09 SB223 0001	SO	PROPYLBENZENE	4.2	4.2	8.5	UG_KG	UJ	i,s
OU09 SB223 0001	SO	SEC-BUTYLBENZENE	4.2	4.2	8.5	UG_KG	UJ	i,s
OU09 SB223 0001	SO	STYRENE	4.2	4.2	8.5	UG_KG	UJ	s
OU09 SB223 0001	SO	TERT-BUTANOL	21	21	42	UG_KG	UJ	s,c
OU09 SB223 0001	SO	TERT-BUTYLBENZENE	4.2	4.2	8.5	UG_KG	UJ	i,s
OU09 SB223 0001	SO	TETRACHLOROETHENE	4.2	4.2	8.5	UG_KG	UJ	s
OU09 SB223 0001	SO	TOLUENE	4.2	4.2	8.5	UG_KG	UJ	s
OU09 SB223 0001	SO	TRANS-1,2-DICHLOROETHENE	4.2	4.2	8.5	UG_KG	UJ	s
OU09 SB223 0001	SO	TRANS-1,3-DICHLOROPROPENE	4.2	4.2	8.5	UG_KG	UJ	s

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SB223 0001	SO	TRICHLOROETHENE	4.2	4.2	8.5	UG_KG	UJ	s
OU09 SB223 0001	SO	TRICHLOROFLUOROMETHANE	8.5	8.5	17	UG_KG	UJ	s
OU09 SB223 0001	SO	VINYL CHLORIDE	8.5	8.5	17	UG_KG	UJ	s
OU09 SB223 0304	SO	1,1,1,2-TETRACHLOROETHANE	3.2	3.2	6.5	UG_KG	UJ	s
OU09 SB223 0304	SO	1,1,1-TRICHLOROETHANE	3.2	3.2	6.5	UG_KG	UJ	s
OU09 SB223 0304	SO	1,1,2,2-TETRACHLOROETHANE	3.2	3.2	6.5	UG_KG	UJ	i,s
OU09 SB223 0304	SO	1,1,2-TRICHLOROETHANE	3.2	3.2	6.5	UG_KG	UJ	s
OU09 SB223 0304	SO	1,1-DICHLOROETHANE	3.2	3.2	6.5	UG_KG	UJ	s
OU09 SB223 0304	SO	1,1-DICHLOROETHENE	3.2	3.2	6.5	UG_KG	UJ	s
OU09 SB223 0304	SO	1,1-DICHLOROPROPENE	3.2	3.2	6.5	UG_KG	UJ	s
OU09 SB223 0304	SO	1,2,3-TRICHLOROBENZENE	3.2	3.2	6.5	UG_KG	UJ	i,s
OU09 SB223 0304	SO	1,2,3-TRICHLOROPROPANE	3.2	3.2	6.5	UG_KG	UJ	i,s
OU09 SB223 0304	SO	1,2,4-TRICHLOROBENZENE	3.2	3.2	6.5	UG_KG	UJ	i,s
OU09 SB223 0304	SO	1,2,4-TRIMETHYLBENZENE	3.2	3.2	6.5	UG_KG	UJ	i,s
OU09 SB223 0304	SO	1,2-DIBROMO-3-CHLOROPROPANE	3.2	3.2	6.5	UG_KG	UJ	i,s
OU09 SB223 0304	SO	1,2-DIBROMOETHANE	3.2	3.2	6.5	UG_KG	UJ	s
OU09 SB223 0304	SO	1,2-DICHLOROBENZENE	3.2	3.2	6.5	UG_KG	UJ	i,s
OU09 SB223 0304	SO	1,2-DICHLOROETHANE	3.2	3.2	6.5	UG_KG	UJ	s
OU09 SB223 0304	SO	1,2-DICHLOROETHENE, TOTAL	6.5	6.5	13	UG_KG	UJ	s
OU09 SB223 0304	SO	1,2-DICHLOROPROPANE	3.2	3.2	6.5	UG_KG	UJ	s
OU09 SB223 0304	SO	1,3,5-TRIMETHYLBENZENE	3.2	3.2	6.5	UG_KG	UJ	i,s
OU09 SB223 0304	SO	1,3-DICHLOROBENZENE	3.2	3.2	6.5	UG_KG	UJ	i,s
OU09 SB223 0304	SO	1,3-DICHLOROPROPANE	3.2	3.2	6.5	UG_KG	UJ	s
OU09 SB223 0304	SO	1,4-DICHLOROBENZENE	3.2	3.2	6.5	UG_KG	UJ	i,s
OU09 SB223 0304	SO	2,2-DICHLOROPROPANE	3.2	3.2	6.5	UG_KG	UJ	s,c
OU09 SB223 0304	SO	2-BUTANONE	16	16	32	UG_KG	UJ	s
OU09 SB223 0304	SO	2-CHLOROTOLUENE	3.2	3.2	6.5	UG_KG	UJ	i,s
OU09 SB223 0304	SO	2-HEXANONE	16	16	32	UG_KG	UJ	s
OU09 SB223 0304	SO	4-CHLOROTOLUENE	3.2	3.2	6.5	UG_KG	UJ	i,s
OU09 SB223 0304	SO	4-ISOPROPYLTOLUENE	3.2	3.2	6.5	UG_KG	UJ	s
OU09 SB223 0304	SO	4-METHYL-2-PENTANONE	16	16	32	UG_KG	UJ	s
OU09 SB223 0304	SO	ACETONE	16	16	32	UG_KG	UJ	s,c
OU09 SB223 0304	SO	BENZENE	3.2	3.2	6.5	UG_KG	UJ	s
OU09 SB223 0304	SO	BROMOBENZENE	3.2	3.2	6.5	UG_KG	UJ	i,s
OU09 SB223 0304	SO	BROMOCHLOROMETHANE	3.2	3.2	6.5	UG_KG	UJ	s
OU09 SB223 0304	SO	BROMODICHLOROMETHANE	3.2	3.2	6.5	UG_KG	UJ	s
OU09 SB223 0304	SO	BROMOFORM	3.2	3.2	6.5	UG_KG	UJ	s
OU09 SB223 0304	SO	BROMOMETHANE	6.5	6.5	13	UG_KG	UJ	s
OU09 SB223 0304	SO	CARBON TETRACHLORIDE	3.2	3.2	6.5	UG_KG	UJ	s,c

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SB223 0304	SO	CHLOROBENZENE	3.2	3.2	6.5	UG_KG	UJ	s
OU09 SB223 0304	SO	CHLOROETHANE	6.5	6.5	13	UG_KG	UJ	s,c
OU09 SB223 0304	SO	CHLOROFORM	3.2	3.2	6.5	UG_KG	UJ	s
OU09 SB223 0304	SO	CHLOROMETHANE	6.5	6.5	13	UG_KG	UJ	s
OU09 SB223 0304	SO	CIS-1,2-DICHLOROETHENE	3.2	3.2	6.5	UG_KG	UJ	s
OU09 SB223 0304	SO	CIS-1,3-DICHLOROPROPENE	3.2	3.2	6.5	UG_KG	UJ	s
OU09 SB223 0304	SO	DIBROMOCHLOROMETHANE	3.2	3.2	6.5	UG_KG	UJ	s
OU09 SB223 0304	SO	DIBROMOMETHANE	3.2	3.2	6.5	UG_KG	UJ	s
OU09 SB223 0304	SO	DICHLORODIFLUOROMETHANE	6.5	6.5	13	UG_KG	UJ	s,c
OU09 SB223 0304	SO	HEXACHLOROBUTADIENE	3.2	3.2	6.5	UG_KG	UJ	i,s
OU09 SB223 0304	SO	ISOPROPYLBENZENE	3.2	3.2	6.5	UG_KG	UJ	i,s
OU09 SB223 0304	SO	METHYL CYCLOHEXANE	3.2	3.2	6.5	UG_KG	UJ	s
OU09 SB223 0304	SO	METHYL TERT-BUTYL ETHER	3.2	3.2	6.5	UG_KG	UJ	s
OU09 SB223 0304	SO	METHYLENE CHLORIDE	16	16	32	UG_KG	UJ	s
OU09 SB223 0304	SO	N-BUTYLBENZENE	3.2	3.2	6.5	UG_KG	UJ	i,s
OU09 SB223 0304	SO	PROPYLBENZENE	3.2	3.2	6.5	UG_KG	UJ	i,s
OU09 SB223 0304	SO	SEC-BUTYLBENZENE	3.2	3.2	6.5	UG_KG	UJ	i,s
OU09 SB223 0304	SO	STYRENE	3.2	3.2	6.5	UG_KG	UJ	s
OU09 SB223 0304	SO	TERT-BUTANOL	16	16	32	UG_KG	UJ	s,c
OU09 SB223 0304	SO	TERT-BUTYLBENZENE	3.2	3.2	6.5	UG_KG	UJ	i,s
OU09 SB223 0304	SO	TETRACHLOROETHENE	3.2	3.2	6.5	UG_KG	UJ	s
OU09 SB223 0304	SO	TOLUENE	3.2	3.2	6.5	UG_KG	UJ	s
OU09 SB223 0304	SO	TRANS-1,2-DICHLOROETHENE	3.2	3.2	6.5	UG_KG	UJ	s
OU09 SB223 0304	SO	TRANS-1,3-DICHLOROPROPENE	3.2	3.2	6.5	UG_KG	UJ	s
OU09 SB223 0304	SO	TRICHLOROETHENE	3.2	3.2	6.5	UG_KG	UJ	s
OU09 SB223 0304	SO	TRICHLOROFLUOROMETHANE	6.5	6.5	13	UG_KG	UJ	s,c
OU09 SB223 0304	SO	VINYL CHLORIDE	6.5	6.5	13	UG_KG	UJ	s
OU09 SB302 0305	SO	1,1,1,2-TETRACHLOROETHANE	3.2	3.2	6.5	UG_KG	UJ	s
OU09 SB302 0305	SO	1,1,1-TRICHLOROETHANE	3.2	3.2	6.5	UG_KG	UJ	s
OU09 SB302 0305	SO	1,1,2,2-TETRACHLOROETHANE	3.2	3.2	6.5	UG_KG	UJ	s
OU09 SB302 0305	SO	1,1,2-TRICHLOROETHANE	3.2	3.2	6.5	UG_KG	UJ	s
OU09 SB302 0305	SO	1,1-DICHLOROETHANE	3.2	3.2	6.5	UG_KG	UJ	s
OU09 SB302 0305	SO	1,1-DICHLOROETHENE	3.2	3.2	6.5	UG_KG	UJ	s
OU09 SB302 0305	SO	1,1-DICHLOROPROPENE	3.2	3.2	6.5	UG_KG	UJ	s
OU09 SB302 0305	SO	1,2,3-TRICHLOROBENZENE	3.2	3.2	6.5	UG_KG	UJ	s
OU09 SB302 0305	SO	1,2,3-TRICHLOROPROPANE	3.2	3.2	6.5	UG_KG	UJ	s
OU09 SB302 0305	SO	1,2,4-TRICHLOROBENZENE	3.2	3.2	6.5	UG_KG	UJ	s
OU09 SB302 0305	SO	1,2,4-TRIMETHYLBENZENE	3.2	3.2	6.5	UG_KG	UJ	s
OU09 SB302 0305	SO	1,2-DIBROMO-3-CHLOROPROPANE	3.2	3.2	6.5	UG_KG	UJ	s,c

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SB302 0305	SO	1,2-DIBROMOETHANE	3.2	3.2	6.5	UG_KG	UJ	s,c
OU09 SB302 0305	SO	1,2-DICHLOROBENZENE	3.2	3.2	6.5	UG_KG	UJ	s
OU09 SB302 0305	SO	1,2-DICHLOROETHANE	3.2	3.2	6.5	UG_KG	UJ	s
OU09 SB302 0305	SO	1,2-DICHLOROETHENE, TOTAL	6.5	6.5	13	UG_KG	UJ	s
OU09 SB302 0305	SO	1,2-DICHLOROPROPANE	3.2	3.2	6.5	UG_KG	UJ	s
OU09 SB302 0305	SO	1,3,5-TRIMETHYLBENZENE	3.2	3.2	6.5	UG_KG	UJ	s
OU09 SB302 0305	SO	1,3-DICHLOROBENZENE	3.2	3.2	6.5	UG_KG	UJ	s
OU09 SB302 0305	SO	1,3-DICHLOROPROPANE	3.2	3.2	6.5	UG_KG	UJ	s
OU09 SB302 0305	SO	1,4-DICHLOROBENZENE	3.2	3.2	6.5	UG_KG	UJ	s
OU09 SB302 0305	SO	2,2-DICHLOROPROPANE	3.2	3.2	6.5	UG_KG	UJ	s
OU09 SB302 0305	SO	2-BUTANONE	16	16	32	UG_KG	UJ	s
OU09 SB302 0305	SO	2-CHLOROTOLUENE	3.2	3.2	6.5	UG_KG	UJ	s
OU09 SB302 0305	SO	2-HEXANONE	16	16	32	UG_KG	UJ	s
OU09 SB302 0305	SO	4-CHLOROTOLUENE	3.2	3.2	6.5	UG_KG	UJ	s
OU09 SB302 0305	SO	4-ISOPROPYLTOLUENE	3.2	3.2	6.5	UG_KG	UJ	s
OU09 SB302 0305	SO	4-METHYL-2-PENTANONE	16	16	32	UG_KG	UJ	s
OU09 SB302 0305	SO	ACETONE	16	16	32	UG_KG	UJ	s,c
OU09 SB302 0305	SO	BENZENE	3.2	3.2	6.5	UG_KG	UJ	s
OU09 SB302 0305	SO	BROMOBENZENE	3.2	3.2	6.5	UG_KG	UJ	s
OU09 SB302 0305	SO	BROMOCHLOROMETHANE	3.2	3.2	6.5	UG_KG	UJ	s
OU09 SB302 0305	SO	BROMODICHLOROMETHANE	3.2	3.2	6.5	UG_KG	UJ	s
OU09 SB302 0305	SO	BROMOFORM	3.2	3.2	6.5	UG_KG	UJ	s
OU09 SB302 0305	SO	BROMOMETHANE	6.5	6.5	13	UG_KG	UJ	s
OU09 SB302 0305	SO	CARBON TETRACHLORIDE	3.2	3.2	6.5	UG_KG	UJ	s
OU09 SB302 0305	SO	CHLOROBENZENE	3.2	3.2	6.5	UG_KG	UJ	s
OU09 SB302 0305	SO	CHLOROETHANE	6.5	6.5	13	UG_KG	UJ	s
OU09 SB302 0305	SO	CHLOROFORM	3.2	3.2	6.5	UG_KG	UJ	s
OU09 SB302 0305	SO	CHLOROMETHANE	6.5	6.5	13	UG_KG	UJ	s
OU09 SB302 0305	SO	CIS-1,2-DICHLOROETHENE	3.2	3.2	6.5	UG_KG	UJ	s
OU09 SB302 0305	SO	CIS-1,3-DICHLOROPROPENE	3.2	3.2	6.5	UG_KG	UJ	s
OU09 SB302 0305	SO	DIBROMOCHLOROMETHANE	3.2	3.2	6.5	UG_KG	UJ	s
OU09 SB302 0305	SO	DIBROMOMETHANE	3.2	3.2	6.5	UG_KG	UJ	s
OU09 SB302 0305	SO	DICHLORODIFLUOROMETHANE	6.5	6.5	13	UG_KG	UJ	s,c
OU09 SB302 0305	SO	HEXACHLOROBUTADIENE	3.2	3.2	6.5	UG_KG	UJ	s
OU09 SB302 0305	SO	ISOPROPYLBENZENE	3.2	3.2	6.5	UG_KG	UJ	s
OU09 SB302 0305	SO	METHYL CYCLOHEXANE	3.2	3.2	6.5	UG_KG	UJ	s
OU09 SB302 0305	SO	METHYL TERT-BUTYL ETHER	3.2	3.2	6.5	UG_KG	UJ	s,c
OU09 SB302 0305	SO	METHYLENE CHLORIDE	16	16	32	UG_KG	UJ	s
OU09 SB302 0305	SO	N-BUTYLBENZENE	3.2	3.2	6.5	UG_KG	UJ	s

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SB302 0305	SO	PROPYLBENZENE	3.2	3.2	6.5	UG_KG	UJ	s
OU09 SB302 0305	SO	SEC-BUTYLBENZENE	3.2	3.2	6.5	UG_KG	UJ	s
OU09 SB302 0305	SO	STYRENE	3.2	3.2	6.5	UG_KG	UJ	s
OU09 SB302 0305	SO	TERT-BUTANOL	16	16	32	UG_KG	UJ	s
OU09 SB302 0305	SO	TERT-BUTYLBENZENE	3.2	3.2	6.5	UG_KG	UJ	s
OU09 SB302 0305	SO	TETRACHLOROETHENE	3.2	3.2	6.5	UG_KG	UJ	s
OU09 SB302 0305	SO	TOLUENE	3.2	3.2	6.5	UG_KG	UJ	s
OU09 SB302 0305	SO	TRANS-1,2-DICHLOROETHENE	3.2	3.2	6.5	UG_KG	UJ	s
OU09 SB302 0305	SO	TRANS-1,3-DICHLOROPROPENE	3.2	3.2	6.5	UG_KG	UJ	s
OU09 SB302 0305	SO	TRICHLOROETHENE	3.2	3.2	6.5	UG_KG	UJ	s
OU09 SB302 0305	SO	TRICHLOROFLUOROMETHANE	6.5	6.5	13	UG_KG	UJ	s
OU09 SB302 0305	SO	VINYL CHLORIDE	6.5	6.5	13	UG_KG	UJ	s
OU09 SB302 0810	SO	1,1,1,2-TETRACHLOROETHANE	1.5	1.5	3.0	UG_KG	UJ	s
OU09 SB302 0810	SO	1,1,1-TRICHLOROETHANE	1.5	1.5	3.0	UG_KG	UJ	s
OU09 SB302 0810	SO	1,1,2,2-TETRACHLOROETHANE	1.5	1.5	3.0	UG_KG	UJ	s
OU09 SB302 0810	SO	1,1,2-TRICHLOROETHANE	1.5	1.5	3.0	UG_KG	UJ	s
OU09 SB302 0810	SO	1,1-DICHLOROETHANE	1.5	1.5	3.0	UG_KG	UJ	s
OU09 SB302 0810	SO	1,1-DICHLOROETHENE	1.5	1.5	3.0	UG_KG	UJ	s
OU09 SB302 0810	SO	1,1-DICHLOROPROPENE	1.5	1.5	3.0	UG_KG	UJ	s
OU09 SB302 0810	SO	1,2,3-TRICHLOROBENZENE	1.5	1.5	3.0	UG_KG	UJ	s
OU09 SB302 0810	SO	1,2,3-TRICHLOROPROPANE	1.5	1.5	3.0	UG_KG	UJ	s
OU09 SB302 0810	SO	1,2,4-TRICHLOROBENZENE	1.5	1.5	3.0	UG_KG	UJ	s
OU09 SB302 0810	SO	1,2,4-TRIMETHYLBENZENE	1.5	1.5	3.0	UG_KG	UJ	s
OU09 SB302 0810	SO	1,2-DIBROMO-3-CHLOROPROPANE	1.5	1.5	3.0	UG_KG	UJ	s
OU09 SB302 0810	SO	1,2-DIBROMOETHANE	1.5	1.5	3.0	UG_KG	UJ	s
OU09 SB302 0810	SO	1,2-DICHLOROBENZENE	1.5	1.5	3.0	UG_KG	UJ	s
OU09 SB302 0810	SO	1,2-DICHLOROETHANE	1.5	1.5	3.0	UG_KG	UJ	s
OU09 SB302 0810	SO	1,2-DICHLOROETHENE, TOTAL	3.0	3.0	6.0	UG_KG	UJ	s
OU09 SB302 0810	SO	1,2-DICHLOROPROPANE	1.5	1.5	3.0	UG_KG	UJ	s
OU09 SB302 0810	SO	1,3,5-TRIMETHYLBENZENE	1.5	1.5	3.0	UG_KG	UJ	s
OU09 SB302 0810	SO	1,3-DICHLOROBENZENE	1.5	1.5	3.0	UG_KG	UJ	s
OU09 SB302 0810	SO	1,3-DICHLOROPROPANE	1.5	1.5	3.0	UG_KG	UJ	s
OU09 SB302 0810	SO	1,4-DICHLOROBENZENE	1.5	1.5	3.0	UG_KG	UJ	s
OU09 SB302 0810	SO	2,2-DICHLOROPROPANE	1.5	1.5	3.0	UG_KG	UJ	s
OU09 SB302 0810	SO	2-BUTANONE	7.5	7.5	15	UG_KG	UJ	s
OU09 SB302 0810	SO	2-CHLOROTOLUENE	1.5	1.5	3.0	UG_KG	UJ	s
OU09 SB302 0810	SO	2-HEXANONE	7.5	7.5	15	UG_KG	UJ	s
OU09 SB302 0810	SO	4-CHLOROTOLUENE	1.5	1.5	3.0	UG_KG	UJ	s
OU09 SB302 0810	SO	4-ISOPROPYLTOLUENE	1.5	1.5	3.0	UG_KG	UJ	s

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SB302 0810	SO	4-METHYL-2-PENTANONE	7.5	7.5	15	UG_KG	UJ	s
OU09 SB302 0810	SO	ACETONE	7.5	7.5	15	UG_KG	UJ	s,c
OU09 SB302 0810	SO	BENZENE	1.5	1.5	3.0	UG_KG	UJ	s
OU09 SB302 0810	SO	BROMOBENZENE	1.5	1.5	3.0	UG_KG	UJ	s
OU09 SB302 0810	SO	BROMOCHLOROMETHANE	1.5	1.5	3.0	UG_KG	UJ	s
OU09 SB302 0810	SO	BROMODICHLOROMETHANE	1.5	1.5	3.0	UG_KG	UJ	s
OU09 SB302 0810	SO	BROMOFORM	1.5	1.5	3.0	UG_KG	UJ	s
OU09 SB302 0810	SO	BROMOMETHANE	3.0	3.0	6.0	UG_KG	UJ	s
OU09 SB302 0810	SO	CARBON TETRACHLORIDE	1.5	1.5	3.0	UG_KG	UJ	s
OU09 SB302 0810	SO	CHLOROBENZENE	1.5	1.5	3.0	UG_KG	UJ	s
OU09 SB302 0810	SO	CHLOROETHANE	3.0	3.0	6.0	UG_KG	UJ	s,c
OU09 SB302 0810	SO	CHLOROFORM	1.5	1.5	3.0	UG_KG	UJ	s
OU09 SB302 0810	SO	CHLOROMETHANE	3.0	3.0	6.0	UG_KG	UJ	s
OU09 SB302 0810	SO	CIS-1,2-DICHLOROETHENE	1.5	1.5	3.0	UG_KG	UJ	s
OU09 SB302 0810	SO	CIS-1,3-DICHLOROPROPENE	1.5	1.5	3.0	UG_KG	UJ	s
OU09 SB302 0810	SO	DIBROMOCHLOROMETHANE	1.5	1.5	3.0	UG_KG	UJ	s
OU09 SB302 0810	SO	DIBROMOMETHANE	1.5	1.5	3.0	UG_KG	UJ	s
OU09 SB302 0810	SO	DICHLORODIFLUOROMETHANE	3.0	3.0	6.0	UG_KG	UJ	s
OU09 SB302 0810	SO	HEXACHLOROBUTADIENE	1.5	1.5	3.0	UG_KG	UJ	s
OU09 SB302 0810	SO	ISOPROPYLBENZENE	1.5	1.5	3.0	UG_KG	UJ	s
OU09 SB302 0810	SO	METHYL CYCLOHEXANE	1.5	1.5	3.0	UG_KG	UJ	s
OU09 SB302 0810	SO	METHYL TERT-BUTYL ETHER	1.5	1.5	3.0	UG_KG	UJ	s
OU09 SB302 0810	SO	METHYLENE CHLORIDE	7.5	7.5	15	UG_KG	UJ	s
OU09 SB302 0810	SO	N-BUTYLBENZENE	1.5	1.5	3.0	UG_KG	UJ	s
OU09 SB302 0810	SO	PROPYLBENZENE	1.5	1.5	3.0	UG_KG	UJ	s
OU09 SB302 0810	SO	SEC-BUTYLBENZENE	1.5	1.5	3.0	UG_KG	UJ	s
OU09 SB302 0810	SO	STYRENE	1.5	1.5	3.0	UG_KG	UJ	s
OU09 SB302 0810	SO	TERT-BUTANOL	7.5	7.5	15	UG_KG	UJ	s,c
OU09 SB302 0810	SO	TERT-BUTYLBENZENE	1.5	1.5	3.0	UG_KG	UJ	s
OU09 SB302 0810	SO	TETRACHLOROETHENE	1.5	1.5	3.0	UG_KG	UJ	s
OU09 SB302 0810	SO	TOLUENE	1.5	1.5	3.0	UG_KG	UJ	s
OU09 SB302 0810	SO	TRANS-1,2-DICHLOROETHENE	1.5	1.5	3.0	UG_KG	UJ	s
OU09 SB302 0810	SO	TRANS-1,3-DICHLOROPROPENE	1.5	1.5	3.0	UG_KG	UJ	s
OU09 SB302 0810	SO	TRICHLOROETHENE	1.5	1.5	3.0	UG_KG	UJ	s
OU09 SB302 0810	SO	TRICHLOROFLUOROMETHANE	3.0	3.0	6.0	UG_KG	UJ	s
OU09 SB302 0810	SO	VINYL CHLORIDE	3.0	3.0	6.0	UG_KG	UJ	s
OU09 SB303 0305	SO	1,1,1,2-TETRACHLOROETHANE	2.0	2.0	4.0	UG_KG	UJ	s
OU09 SB303 0305	SO	1,1,1-TRICHLOROETHANE	2.0	2.0	4.0	UG_KG	UJ	s
OU09 SB303 0305	SO	1,1,2,2-TETRACHLOROETHANE	2.0	2.0	4.0	UG_KG	UJ	s

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SB303 0305	SO	1,1,2-TRICHLOROETHANE	2.0	2.0	4.0	UG_KG	UJ	s
OU09 SB303 0305	SO	1,1-DICHLOROETHANE	2.0	2.0	4.0	UG_KG	UJ	s
OU09 SB303 0305	SO	1,1-DICHLOROETHENE	2.0	2.0	4.0	UG_KG	UJ	s
OU09 SB303 0305	SO	1,1-DICHLOROPROPENE	2.0	2.0	4.0	UG_KG	UJ	s
OU09 SB303 0305	SO	1,2,3-TRICHLOROBENZENE	2.0	2.0	4.0	UG_KG	UJ	s
OU09 SB303 0305	SO	1,2,3-TRICHLOROPROPANE	2.0	2.0	4.0	UG_KG	UJ	s
OU09 SB303 0305	SO	1,2,4-TRICHLOROBENZENE	2.0	2.0	4.0	UG_KG	UJ	s
OU09 SB303 0305	SO	1,2,4-TRIMETHYLBENZENE	2.0	2.0	4.0	UG_KG	UJ	s
OU09 SB303 0305	SO	1,2-DIBROMO-3-CHLOROPROPANE	2.0	2.0	4.0	UG_KG	UJ	s,c
OU09 SB303 0305	SO	1,2-DIBROMOETHANE	2.0	2.0	4.0	UG_KG	UJ	s,c
OU09 SB303 0305	SO	1,2-DICHLOROBENZENE	2.0	2.0	4.0	UG_KG	UJ	s
OU09 SB303 0305	SO	1,2-DICHLOROETHANE	2.0	2.0	4.0	UG_KG	UJ	s
OU09 SB303 0305	SO	1,2-DICHLOROETHENE, TOTAL	4.0	4.0	8.0	UG_KG	UJ	s
OU09 SB303 0305	SO	1,2-DICHLOROPROPANE	2.0	2.0	4.0	UG_KG	UJ	s
OU09 SB303 0305	SO	1,3,5-TRIMETHYLBENZENE	2.0	2.0	4.0	UG_KG	UJ	s
OU09 SB303 0305	SO	1,3-DICHLOROBENZENE	2.0	2.0	4.0	UG_KG	UJ	s
OU09 SB303 0305	SO	1,3-DICHLOROPROPANE	2.0	2.0	4.0	UG_KG	UJ	s
OU09 SB303 0305	SO	1,4-DICHLOROBENZENE	2.0	2.0	4.0	UG_KG	UJ	s
OU09 SB303 0305	SO	2,2-DICHLOROPROPANE	2.0	2.0	4.0	UG_KG	UJ	s
OU09 SB303 0305	SO	2-BUTANONE	10	10	20	UG_KG	UJ	s
OU09 SB303 0305	SO	2-CHLOROTOLUENE	2.0	2.0	4.0	UG_KG	UJ	s
OU09 SB303 0305	SO	2-HEXANONE	10	10	20	UG_KG	UJ	s
OU09 SB303 0305	SO	4-CHLOROTOLUENE	2.0	2.0	4.0	UG_KG	UJ	s
OU09 SB303 0305	SO	4-ISOPROPYLTOLUENE	2.0	2.0	4.0	UG_KG	UJ	s
OU09 SB303 0305	SO	4-METHYL-2-PENTANONE	10	10	20	UG_KG	UJ	s
OU09 SB303 0305	SO	ACETONE	10	10	20	UG_KG	UJ	s,c
OU09 SB303 0305	SO	BENZENE	2.0	2.0	4.0	UG_KG	UJ	s
OU09 SB303 0305	SO	BROMOBENZENE	2.0	2.0	4.0	UG_KG	UJ	s
OU09 SB303 0305	SO	BROMOCHLOROMETHANE	2.0	2.0	4.0	UG_KG	UJ	s
OU09 SB303 0305	SO	BROMODICHLOROMETHANE	2.0	2.0	4.0	UG_KG	UJ	s
OU09 SB303 0305	SO	BROMOFORM	2.0	2.0	4.0	UG_KG	UJ	s
OU09 SB303 0305	SO	BROMOMETHANE	4.0	4.0	8.0	UG_KG	UJ	s
OU09 SB303 0305	SO	CARBON TETRACHLORIDE	2.0	2.0	4.0	UG_KG	UJ	s
OU09 SB303 0305	SO	CHLOROBENZENE	2.0	2.0	4.0	UG_KG	UJ	s
OU09 SB303 0305	SO	CHLOROETHANE	4.0	4.0	8.0	UG_KG	UJ	s
OU09 SB303 0305	SO	CHLOROFORM	2.0	2.0	4.0	UG_KG	UJ	s
OU09 SB303 0305	SO	CHLOROMETHANE	4.0	4.0	8.0	UG_KG	UJ	s
OU09 SB303 0305	SO	CIS-1,2-DICHLOROETHENE	2.0	2.0	4.0	UG_KG	UJ	s
OU09 SB303 0305	SO	CIS-1,3-DICHLOROPROPENE	2.0	2.0	4.0	UG_KG	UJ	s

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SB303 0305	SO	DIBROMOCHLOROMETHANE	2.0	2.0	4.0	UG_KG	UJ	s
OU09 SB303 0305	SO	DIBROMOMETHANE	2.0	2.0	4.0	UG_KG	UJ	s
OU09 SB303 0305	SO	DICHLORODIFLUOROMETHANE	4.0	4.0	8.0	UG_KG	UJ	s,c
OU09 SB303 0305	SO	HEXACHLOROBUTADIENE	2.0	2.0	4.0	UG_KG	UJ	s
OU09 SB303 0305	SO	ISOPROPYLBENZENE	2.0	2.0	4.0	UG_KG	UJ	s
OU09 SB303 0305	SO	METHYL CYCLOHEXANE	2.0	2.0	4.0	UG_KG	UJ	s
OU09 SB303 0305	SO	METHYL TERT-BUTYL ETHER	2.0	2.0	4.0	UG_KG	UJ	s,c
OU09 SB303 0305	SO	METHYLENE CHLORIDE	10	10	20	UG_KG	UJ	s
OU09 SB303 0305	SO	N-BUTYLBENZENE	2.0	2.0	4.0	UG_KG	UJ	s
OU09 SB303 0305	SO	PROPYLBENZENE	2.0	2.0	4.0	UG_KG	UJ	s
OU09 SB303 0305	SO	SEC-BUTYLBENZENE	2.0	2.0	4.0	UG_KG	UJ	s
OU09 SB303 0305	SO	STYRENE	2.0	2.0	4.0	UG_KG	UJ	s
OU09 SB303 0305	SO	TERT-BUTANOL	10	10	20	UG_KG	UJ	s
OU09 SB303 0305	SO	TERT-BUTYLBENZENE	2.0	2.0	4.0	UG_KG	UJ	s
OU09 SB303 0305	SO	TETRACHLOROETHENE	2.0	2.0	4.0	UG_KG	UJ	s
OU09 SB303 0305	SO	TOLUENE	2.0	2.0	4.0	UG_KG	UJ	s
OU09 SB303 0305	SO	TRANS-1,2-DICHLOROETHENE	2.0	2.0	4.0	UG_KG	UJ	s
OU09 SB303 0305	SO	TRANS-1,3-DICHLOROPROPENE	2.0	2.0	4.0	UG_KG	UJ	s
OU09 SB303 0305	SO	TRICHLOROETHENE	2.0	2.0	4.0	UG_KG	UJ	s
OU09 SB303 0305	SO	TRICHLOROFLUOROMETHANE	4.0	4.0	8.0	UG_KG	UJ	s
OU09 SB303 0305	SO	VINYL CHLORIDE	4.0	4.0	8.0	UG_KG	UJ	s
OU09 SB303 0810	SO	1,1,1,2-TETRACHLOROETHANE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB303 0810	SO	1,1,1-TRICHLOROETHANE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB303 0810	SO	1,1,2,2-TETRACHLOROETHANE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB303 0810	SO	1,1,2-TRICHLOROETHANE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB303 0810	SO	1,1-DICHLOROETHANE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB303 0810	SO	1,1-DICHLOROETHENE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB303 0810	SO	1,1-DICHLOROPROPENE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB303 0810	SO	1,2,3-TRICHLOROBENZENE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB303 0810	SO	1,2,3-TRICHLOROPROPANE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB303 0810	SO	1,2,4-TRICHLOROBENZENE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB303 0810	SO	1,2,4-TRIMETHYLBENZENE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB303 0810	SO	1,2-DIBROMO-3-CHLOROPROPANE	2.2	2.2	4.4	UG_KG	UJ	s,c
OU09 SB303 0810	SO	1,2-DIBROMOETHANE	2.2	2.2	4.4	UG_KG	UJ	s,c
OU09 SB303 0810	SO	1,2-DICHLOROBENZENE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB303 0810	SO	1,2-DICHLOROETHANE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB303 0810	SO	1,2-DICHLOROETHENE, TOTAL	4.4	4.4	8.7	UG_KG	UJ	s
OU09 SB303 0810	SO	1,2-DICHLOROPROPANE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB303 0810	SO	1,3,5-TRIMETHYLBENZENE	2.2	2.2	4.4	UG_KG	UJ	s

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SB303 0810	SO	1,3-DICHLOROBENZENE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB303 0810	SO	1,3-DICHLOROPROPANE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB303 0810	SO	1,4-DICHLOROBENZENE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB303 0810	SO	2,2-DICHLOROPROPANE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB303 0810	SO	2-BUTANONE	11	11	22	UG_KG	UJ	s
OU09 SB303 0810	SO	2-CHLOROTOLUENE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB303 0810	SO	2-HEXANONE	11	11	22	UG_KG	UJ	s
OU09 SB303 0810	SO	4-CHLOROTOLUENE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB303 0810	SO	4-ISOPROPYLTOLUENE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB303 0810	SO	4-METHYL-2-PENTANONE	11	11	22	UG_KG	UJ	s
OU09 SB303 0810	SO	ACETONE	11	11	22	UG_KG	UJ	s,c
OU09 SB303 0810	SO	BENZENE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB303 0810	SO	BROMOBENZENE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB303 0810	SO	BROMOCHLOROMETHANE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB303 0810	SO	BROMODICHLOROMETHANE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB303 0810	SO	BROMOFORM	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB303 0810	SO	BROMOMETHANE	4.4	4.4	8.7	UG_KG	UJ	s
OU09 SB303 0810	SO	CARBON TETRACHLORIDE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB303 0810	SO	CHLOROBENZENE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB303 0810	SO	CHLOROETHANE	4.4	4.4	8.7	UG_KG	UJ	s
OU09 SB303 0810	SO	CHLOROFORM	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB303 0810	SO	CHLOROMETHANE	4.4	4.4	8.7	UG_KG	UJ	s
OU09 SB303 0810	SO	CIS-1,2-DICHLOROETHENE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB303 0810	SO	CIS-1,3-DICHLOROPROPENE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB303 0810	SO	DIBROMOCHLOROMETHANE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB303 0810	SO	DIBROMOMETHANE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB303 0810	SO	DICHLORODIFLUOROMETHANE	4.4	4.4	8.7	UG_KG	UJ	s,c
OU09 SB303 0810	SO	HEXACHLOROBUTADIENE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB303 0810	SO	ISOPROPYLBENZENE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB303 0810	SO	METHYL CYCLOHEXANE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB303 0810	SO	METHYL TERT-BUTYL ETHER	2.2	2.2	4.4	UG_KG	UJ	s,c
OU09 SB303 0810	SO	METHYLENE CHLORIDE	11	11	22	UG_KG	UJ	s
OU09 SB303 0810	SO	N-BUTYLBENZENE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB303 0810	SO	PROPYLBENZENE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB303 0810	SO	SEC-BUTYLBENZENE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB303 0810	SO	STYRENE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB303 0810	SO	TERT-BUTANOL	11	11	22	UG_KG	UJ	s
OU09 SB303 0810	SO	TERT-BUTYLBENZENE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB303 0810	SO	TETRACHLOROETHENE	2.2	2.2	4.4	UG_KG	UJ	s

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SB303 0810	SO	TOLUENE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB303 0810	SO	TRANS-1,2-DICHLOROETHENE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB303 0810	SO	TRANS-1,3-DICHLOROPROPENE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB303 0810	SO	TRICHLOROETHENE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB303 0810	SO	TRICHLOROFLUOROMETHANE	4.4	4.4	8.7	UG_KG	UJ	s
OU09 SB303 0810	SO	VINYL CHLORIDE	4.4	4.4	8.7	UG_KG	UJ	s
OU09 SB324 0305	SO	2,2-DICHLOROPROPANE	2.8	2.8	5.5	UG_KG	UJ	c
OU09 SB324 0305	SO	CARBON TETRACHLORIDE	2.8	2.8	5.5	UG_KG	UJ	c
OU09 SB324 0305	SO	CHLOROETHANE	5.5	5.5	11	UG_KG	UJ	c
OU09 SB324 0305	SO	DICHLORODIFLUOROMETHANE	5.5	5.5	11	UG_KG	UJ	c
OU09 SB324 0305	SO	TERT-BUTANOL	14	14	28	UG_KG	UJ	c
OU09 SB324 0305	SO	TRICHLOROFLUOROMETHANE	5.5	5.5	11	UG_KG	UJ	c
OU09 SB324 0810	SO	1,2,3-TRICHLOROBENZENE	140	140	280	UG_KG	UJ	c
OU09 SB324 0810	SO	ACETONE	700	700	1400	UG_KG	UJ	c
OU09 SB324 0810	SO	CARBON TETRACHLORIDE	140	140	280	UG_KG	UJ	c
OU09 SB324 0810	SO	CHLOROETHANE	280	280	560	UG_KG	UJ	c
OU09 SB324 0810	SO	DICHLORODIFLUOROMETHANE	280	280	560	UG_KG	UJ	c
OU09 SB324 0810	SO	TERT-BUTANOL	700	700	1400	UG_KG	UJ	c
OU09 SS221 0001	SO	1,1,1,2-TETRACHLOROETHANE	2.3	2.3	4.6	UG_KG	UJ	s
OU09 SS221 0001	SO	1,1,1-TRICHLOROETHANE	2.3	2.3	4.6	UG_KG	UJ	s
OU09 SS221 0001	SO	1,1,2,2-TETRACHLOROETHANE	2.3	2.3	4.6	UG_KG	UJ	s,i
OU09 SS221 0001	SO	1,1,2-TRICHLOROETHANE	2.3	2.3	4.6	UG_KG	UJ	s
OU09 SS221 0001	SO	1,1-DICHLOROETHANE	2.3	2.3	4.6	UG_KG	UJ	s
OU09 SS221 0001	SO	1,1-DICHLOROETHENE	2.3	2.3	4.6	UG_KG	UJ	s
OU09 SS221 0001	SO	1,1-DICHLOROPROPENE	2.3	2.3	4.6	UG_KG	UJ	s
OU09 SS221 0001	SO	1,2,3-TRICHLOROBENZENE	2.3	2.3	4.6	UG_KG	UJ	s,i
OU09 SS221 0001	SO	1,2,3-TRICHLOROPROPANE	2.3	2.3	4.6	UG_KG	UJ	s,i
OU09 SS221 0001	SO	1,2,4-TRICHLOROBENZENE	2.3	2.3	4.6	UG_KG	UJ	s,i
OU09 SS221 0001	SO	1,2,4-TRIMETHYLBENZENE	2.3	2.3	4.6	UG_KG	UJ	s,i
OU09 SS221 0001	SO	1,2-DIBROMO-3-CHLOROPROPANE	2.3	2.3	4.6	UG_KG	UJ	s,i
OU09 SS221 0001	SO	1,2-DIBROMOETHANE	2.3	2.3	4.6	UG_KG	UJ	s
OU09 SS221 0001	SO	1,2-DICHLOROBENZENE	2.3	2.3	4.6	UG_KG	UJ	s,i
OU09 SS221 0001	SO	1,2-DICHLOROETHANE	2.3	2.3	4.6	UG_KG	UJ	s
OU09 SS221 0001	SO	1,2-DICHLOROETHENE, TOTAL	4.6	4.6	9.2	UG_KG	UJ	s
OU09 SS221 0001	SO	1,2-DICHLOROPROPANE	2.3	2.3	4.6	UG_KG	UJ	s
OU09 SS221 0001	SO	1,3,5-TRIMETHYLBENZENE	2.3	2.3	4.6	UG_KG	UJ	s,i
OU09 SS221 0001	SO	1,3-DICHLOROBENZENE	2.3	2.3	4.6	UG_KG	UJ	s,i
OU09 SS221 0001	SO	1,3-DICHLOROPROPANE	2.3	2.3	4.6	UG_KG	UJ	s
OU09 SS221 0001	SO	1,4-DICHLOROBENZENE	2.3	2.3	4.6	UG_KG	UJ	s,i

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SS221 0001	SO	2,2-DICHLOROPROPANE	2.3	2.3	4.6	UG_KG	UJ	s
OU09 SS221 0001	SO	2-BUTANONE	12	12	23	UG_KG	UJ	s
OU09 SS221 0001	SO	2-CHLOROTOLUENE	2.3	2.3	4.6	UG_KG	UJ	s,i
OU09 SS221 0001	SO	2-HEXANONE	12	12	23	UG_KG	UJ	s
OU09 SS221 0001	SO	4-CHLOROTOLUENE	2.3	2.3	4.6	UG_KG	UJ	s,i
OU09 SS221 0001	SO	4-ISOPROPYLTOLUENE	2.3	2.3	4.6	UG_KG	UJ	s
OU09 SS221 0001	SO	4-METHYL-2-PENTANONE	12	12	23	UG_KG	UJ	s
OU09 SS221 0001	SO	ACETONE	12	12	23	UG_KG	UJ	s,c
OU09 SS221 0001	SO	BENZENE	2.3	2.3	4.6	UG_KG	UJ	s
OU09 SS221 0001	SO	BROMOBENZENE	2.3	2.3	4.6	UG_KG	UJ	s,i
OU09 SS221 0001	SO	BROMOCHLOROMETHANE	2.3	2.3	4.6	UG_KG	UJ	s
OU09 SS221 0001	SO	BROMODICHLOROMETHANE	2.3	2.3	4.6	UG_KG	UJ	s
OU09 SS221 0001	SO	BROMOFORM	2.3	2.3	4.6	UG_KG	UJ	s
OU09 SS221 0001	SO	BROMOMETHANE	4.6	4.6	9.2	UG_KG	UJ	s
OU09 SS221 0001	SO	CARBON TETRACHLORIDE	2.3	2.3	4.6	UG_KG	UJ	s
OU09 SS221 0001	SO	CHLOROBENZENE	2.3	2.3	4.6	UG_KG	UJ	s
OU09 SS221 0001	SO	CHLOROETHANE	4.6	4.6	9.2	UG_KG	UJ	s,c
OU09 SS221 0001	SO	CHLOROFORM	2.3	2.3	4.6	UG_KG	UJ	s
OU09 SS221 0001	SO	CHLOROMETHANE	4.6	4.6	9.2	UG_KG	UJ	s
OU09 SS221 0001	SO	CIS-1,2-DICHLOROETHENE	2.3	2.3	4.6	UG_KG	UJ	s
OU09 SS221 0001	SO	CIS-1,3-DICHLOROPROPENE	2.3	2.3	4.6	UG_KG	UJ	s
OU09 SS221 0001	SO	DIBROMOCHLOROMETHANE	2.3	2.3	4.6	UG_KG	UJ	s
OU09 SS221 0001	SO	DIBROMOMETHANE	2.3	2.3	4.6	UG_KG	UJ	s
OU09 SS221 0001	SO	DICHLORODIFLUOROMETHANE	4.6	4.6	9.2	UG_KG	UJ	s
OU09 SS221 0001	SO	HEXACHLOROBUTADIENE	2.3	2.3	4.6	UG_KG	UJ	s,i
OU09 SS221 0001	SO	ISOPROPYLBENZENE	2.3	2.3	4.6	UG_KG	UJ	s,i
OU09 SS221 0001	SO	METHYL CYCLOHEXANE	2.3	2.3	4.6	UG_KG	UJ	s
OU09 SS221 0001	SO	METHYL TERT-BUTYL ETHER	2.3	2.3	4.6	UG_KG	UJ	s
OU09 SS221 0001	SO	METHYLENE CHLORIDE	12	12	23	UG_KG	UJ	s
OU09 SS221 0001	SO	N-BUTYLBENZENE	2.3	2.3	4.6	UG_KG	UJ	s,i
OU09 SS221 0001	SO	PROPYLBENZENE	2.3	2.3	4.6	UG_KG	UJ	s,i
OU09 SS221 0001	SO	SEC-BUTYLBENZENE	2.3	2.3	4.6	UG_KG	UJ	s,i
OU09 SS221 0001	SO	STYRENE	2.3	2.3	4.6	UG_KG	UJ	s
OU09 SS221 0001	SO	TERT-BUTANOL	12	12	23	UG_KG	UJ	s,c
OU09 SS221 0001	SO	TERT-BUTYLBENZENE	2.3	2.3	4.6	UG_KG	UJ	s,i
OU09 SS221 0001	SO	TETRACHLOROETHENE	2.3	2.3	4.6	UG_KG	UJ	s
OU09 SS221 0001	SO	TOLUENE	2.3	2.3	4.6	UG_KG	UJ	s
OU09 SS221 0001	SO	TRANS-1,2-DICHLOROETHENE	2.3	2.3	4.6	UG_KG	UJ	s
OU09 SS221 0001	SO	TRANS-1,3-DICHLOROPROPENE	2.3	2.3	4.6	UG_KG	UJ	s

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SS221 0001	SO	TRICHLOROETHENE	2.3	2.3	4.6	UG_KG	UJ	s
OU09 SS221 0001	SO	TRICHLOROFLUOROMETHANE	4.6	4.6	9.2	UG_KG	UJ	s
OU09 SS221 0001	SO	VINYL CHLORIDE	4.6	4.6	9.2	UG_KG	UJ	s
OU09 SS301 0001	SO	1,1,1,2-TETRACHLOROETHANE	2.8	2.8	5.5	UG_KG	UJ	s
OU09 SS301 0001	SO	1,1,1-TRICHLOROETHANE	2.8	2.8	5.5	UG_KG	UJ	i,s
OU09 SS301 0001	SO	1,1,2,2-TETRACHLOROETHANE	2.8	2.8	5.5	UG_KG	UJ	s
OU09 SS301 0001	SO	1,1,2-TRICHLOROETHANE	2.8	2.8	5.5	UG_KG	UJ	s
OU09 SS301 0001	SO	1,1-DICHLOROETHANE	2.8	2.8	5.5	UG_KG	UJ	i,s
OU09 SS301 0001	SO	1,1-DICHLOROETHENE	2.8	2.8	5.5	UG_KG	UJ	i,s
OU09 SS301 0001	SO	1,1-DICHLOROPROPENE	2.8	2.8	5.5	UG_KG	UJ	s
OU09 SS301 0001	SO	1,2,3-TRICHLOROBENZENE	2.8	2.8	5.5	UG_KG	UJ	s
OU09 SS301 0001	SO	1,2,3-TRICHLOROPROPANE	2.8	2.8	5.5	UG_KG	UJ	s
OU09 SS301 0001	SO	1,2,4-TRICHLOROBENZENE	2.8	2.8	5.5	UG_KG	UJ	s
OU09 SS301 0001	SO	1,2,4-TRIMETHYLBENZENE	2.8	2.8	5.5	UG_KG	UJ	s
OU09 SS301 0001	SO	1,2-DIBROMO-3-CHLOROPROPANE	2.8	2.8	5.5	UG_KG	UJ	s
OU09 SS301 0001	SO	1,2-DIBROMOETHANE	2.8	2.8	5.5	UG_KG	UJ	s
OU09 SS301 0001	SO	1,2-DICHLOROBENZENE	2.8	2.8	5.5	UG_KG	UJ	s
OU09 SS301 0001	SO	1,2-DICHLOROETHANE	2.8	2.8	5.5	UG_KG	UJ	s
OU09 SS301 0001	SO	1,2-DICHLOROETHENE, TOTAL	5.5	5.5	11	UG_KG	UJ	s
OU09 SS301 0001	SO	1,2-DICHLOROPROPANE	2.8	2.8	5.5	UG_KG	UJ	s
OU09 SS301 0001	SO	1,3,5-TRIMETHYLBENZENE	2.8	2.8	5.5	UG_KG	UJ	s
OU09 SS301 0001	SO	1,3-DICHLOROBENZENE	2.8	2.8	5.5	UG_KG	UJ	s
OU09 SS301 0001	SO	1,3-DICHLOROPROPANE	2.8	2.8	5.5	UG_KG	UJ	s
OU09 SS301 0001	SO	1,4-DICHLOROBENZENE	2.8	2.8	5.5	UG_KG	UJ	s
OU09 SS301 0001	SO	2,2-DICHLOROPROPANE	2.8	2.8	5.5	UG_KG	UJ	i,s
OU09 SS301 0001	SO	2-BUTANONE	14	14	28	UG_KG	UJ	i,s,c
OU09 SS301 0001	SO	2-CHLOROTOLUENE	2.8	2.8	5.5	UG_KG	UJ	s
OU09 SS301 0001	SO	2-HEXANONE	14	14	28	UG_KG	UJ	s,c
OU09 SS301 0001	SO	4-CHLOROTOLUENE	2.8	2.8	5.5	UG_KG	UJ	s
OU09 SS301 0001	SO	4-ISOPROPYLTOLUENE	2.8	2.8	5.5	UG_KG	UJ	s
OU09 SS301 0001	SO	4-METHYL-2-PENTANONE	14	14	28	UG_KG	UJ	s,c
OU09 SS301 0001	SO	ACETONE	14	14	28	UG_KG	UJ	i,s,c
OU09 SS301 0001	SO	BENZENE	2.8	2.8	5.5	UG_KG	UJ	s
OU09 SS301 0001	SO	BROMOBENZENE	2.8	2.8	5.5	UG_KG	UJ	s
OU09 SS301 0001	SO	BROMOCHLOROMETHANE	2.8	2.8	5.5	UG_KG	UJ	i,s
OU09 SS301 0001	SO	BROMODICHLOROMETHANE	2.8	2.8	5.5	UG_KG	UJ	s
OU09 SS301 0001	SO	BROMOFORM	2.8	2.8	5.5	UG_KG	UJ	s
OU09 SS301 0001	SO	BROMOMETHANE	5.5	5.5	11	UG_KG	UJ	i,s
OU09 SS301 0001	SO	CARBON DISULFIDE	2.8	2.8	5.5	UG_KG	UJ	i,s

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SS301 0001	SO	CARBON TETRACHLORIDE	2.8	2.8	5.5	UG_KG	UJ	s
OU09 SS301 0001	SO	CHLOROBENZENE	2.8	2.8	5.5	UG_KG	UJ	s
OU09 SS301 0001	SO	CHLOROETHANE	5.5	5.5	11	UG_KG	UJ	i,s
OU09 SS301 0001	SO	CHLOROFORM	2.8	2.8	5.5	UG_KG	UJ	i,s
OU09 SS301 0001	SO	CHLOROMETHANE	5.5	5.5	11	UG_KG	UJ	i,s
OU09 SS301 0001	SO	CIS-1,2-DICHLOROETHENE	2.8	2.8	5.5	UG_KG	UJ	i,s
OU09 SS301 0001	SO	CIS-1,3-DICHLOROPROPENE	2.8	2.8	5.5	UG_KG	UJ	s
OU09 SS301 0001	SO	DIBROMOCHLOROMETHANE	2.8	2.8	5.5	UG_KG	UJ	s
OU09 SS301 0001	SO	DIBROMOMETHANE	2.8	2.8	5.5	UG_KG	UJ	s
OU09 SS301 0001	SO	DICHLORODIFLUOROMETHANE	5.5	5.5	11	UG_KG	UJ	i,s,c
OU09 SS301 0001	SO	ETHYLBENZENE	2.8	2.8	5.5	UG_KG	UJ	s
OU09 SS301 0001	SO	HEXACHLOROBUTADIENE	2.8	2.8	5.5	UG_KG	UJ	s
OU09 SS301 0001	SO	ISOPROPYLBENZENE	2.8	2.8	5.5	UG_KG	UJ	s
OU09 SS301 0001	SO	M- AND P-XYLENE	5.5	5.5	11	UG_KG	UJ	s
OU09 SS301 0001	SO	METHYL CYCLOHEXANE	2.8	2.8	5.5	UG_KG	UJ	i,s
OU09 SS301 0001	SO	METHYL TERT-BUTYL ETHER	2.8	2.8	5.5	UG_KG	UJ	i,s
OU09 SS301 0001	SO	METHYLENE CHLORIDE	14	14	28	UG_KG	UJ	i,s
OU09 SS301 0001	SO	N-BUTYLBENZENE	2.8	2.8	5.5	UG_KG	UJ	s
OU09 SS301 0001	SO	O-XYLENE	2.8	2.8	5.5	UG_KG	UJ	s
OU09 SS301 0001	SO	PROPYLBENZENE	2.8	2.8	5.5	UG_KG	UJ	s
OU09 SS301 0001	SO	SEC-BUTYLBENZENE	2.8	2.8	5.5	UG_KG	UJ	s
OU09 SS301 0001	SO	STYRENE	2.8	2.8	5.5	UG_KG	UJ	s
OU09 SS301 0001	SO	TERT-BUTANOL	14	14	28	UG_KG	UJ	i,s,c
OU09 SS301 0001	SO	TERT-BUTYLBENZENE	2.8	2.8	5.5	UG_KG	UJ	s
OU09 SS301 0001	SO	TETRACHLOROETHENE	2.8	2.8	5.5	UG_KG	UJ	s
OU09 SS301 0001	SO	TOLUENE	2.8	2.8	5.5	UG_KG	UJ	s
OU09 SS301 0001	SO	TRANS-1,2-DICHLOROETHENE	2.8	2.8	5.5	UG_KG	UJ	i,s
OU09 SS301 0001	SO	TRANS-1,3-DICHLOROPROPENE	2.8	2.8	5.5	UG_KG	UJ	s
OU09 SS301 0001	SO	TRICHLOROETHENE	2.8	2.8	5.5	UG_KG	UJ	s
OU09 SS301 0001	SO	TRICHLOROFLUOROMETHANE	5.5	5.5	11	UG_KG	UJ	i,s
OU09 SS301 0001	SO	VINYL CHLORIDE	5.5	5.5	11	UG_KG	UJ	i,s
OU09 SS301 0001	SO	XYLENES, TOTAL	8.2	8.2	16	UG_KG	UJ	s
OU09 SS302 0001	SO	1,1,1,2-TETRACHLOROETHANE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SS302 0001	SO	1,1,1-TRICHLOROETHANE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SS302 0001	SO	1,1,2,2-TETRACHLOROETHANE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SS302 0001	SO	1,1,2-TRICHLOROETHANE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SS302 0001	SO	1,1-DICHLOROETHANE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SS302 0001	SO	1,1-DICHLOROETHENE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SS302 0001	SO	1,1-DICHLOROPROPENE	2.5	2.5	5.0	UG_KG	UJ	s

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SS302 0001	SO	1,2,3-TRICHLOROBENZENE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SS302 0001	SO	1,2,3-TRICHLOROPROPANE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SS302 0001	SO	1,2,4-TRICHLOROBENZENE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SS302 0001	SO	1,2,4-TRIMETHYLBENZENE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SS302 0001	SO	1,2-DIBROMO-3-CHLOROPROPANE	2.5	2.5	5.0	UG_KG	UJ	s,c
OU09 SS302 0001	SO	1,2-DIBROMOETHANE	2.5	2.5	5.0	UG_KG	UJ	s,c
OU09 SS302 0001	SO	1,2-DICHLOROBENZENE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SS302 0001	SO	1,2-DICHLOROETHANE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SS302 0001	SO	1,2-DICHLOROETHENE, TOTAL	5.0	5.0	10	UG_KG	UJ	s
OU09 SS302 0001	SO	1,2-DICHLOROPROPANE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SS302 0001	SO	1,3,5-TRIMETHYLBENZENE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SS302 0001	SO	1,3-DICHLOROBENZENE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SS302 0001	SO	1,3-DICHLOROPROPANE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SS302 0001	SO	1,4-DICHLOROBENZENE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SS302 0001	SO	2,2-DICHLOROPROPANE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SS302 0001	SO	2-BUTANONE	12	12	25	UG_KG	UJ	s
OU09 SS302 0001	SO	2-CHLOROTOLUENE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SS302 0001	SO	2-HEXANONE	12	12	25	UG_KG	UJ	s
OU09 SS302 0001	SO	4-CHLOROTOLUENE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SS302 0001	SO	4-ISOPROPYLTOLUENE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SS302 0001	SO	4-METHYL-2-PENTANONE	12	12	25	UG_KG	UJ	s
OU09 SS302 0001	SO	ACETONE	12	12	25	UG_KG	UJ	s,c
OU09 SS302 0001	SO	BENZENE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SS302 0001	SO	BROMOBENZENE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SS302 0001	SO	BROMOCHLOROMETHANE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SS302 0001	SO	BROMODICHLOROMETHANE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SS302 0001	SO	BROMOFORM	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SS302 0001	SO	BROMOMETHANE	5.0	5.0	10	UG_KG	UJ	s
OU09 SS302 0001	SO	CARBON TETRACHLORIDE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SS302 0001	SO	CHLOROBENZENE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SS302 0001	SO	CHLOROETHANE	5.0	5.0	10	UG_KG	UJ	s
OU09 SS302 0001	SO	CHLOROFORM	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SS302 0001	SO	CHLOROMETHANE	5.0	5.0	10	UG_KG	UJ	s
OU09 SS302 0001	SO	CIS-1,2-DICHLOROETHENE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SS302 0001	SO	CIS-1,3-DICHLOROPROPENE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SS302 0001	SO	DIBROMOCHLOROMETHANE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SS302 0001	SO	DIBROMOMETHANE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SS302 0001	SO	DICHLORODIFLUOROMETHANE	5.0	5.0	10	UG_KG	UJ	s,c
OU09 SS302 0001	SO	HEXACHLOROBUTADIENE	2.5	2.5	5.0	UG_KG	UJ	s

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SS302 0001	SO	ISOPROPYLBENZENE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SS302 0001	SO	METHYL CYCLOHEXANE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SS302 0001	SO	METHYL TERT-BUTYL ETHER	2.5	2.5	5.0	UG_KG	UJ	s,c
OU09 SS302 0001	SO	METHYLENE CHLORIDE	12	12	25	UG_KG	UJ	s
OU09 SS302 0001	SO	N-BUTYLBENZENE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SS302 0001	SO	PROPYLBENZENE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SS302 0001	SO	SEC-BUTYLBENZENE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SS302 0001	SO	STYRENE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SS302 0001	SO	TERT-BUTANOL	12	12	25	UG_KG	UJ	s
OU09 SS302 0001	SO	TERT-BUTYLBENZENE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SS302 0001	SO	TETRACHLOROETHENE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SS302 0001	SO	TOLUENE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SS302 0001	SO	TRANS-1,2-DICHLOROETHENE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SS302 0001	SO	TRANS-1,3-DICHLOROPROPENE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SS302 0001	SO	TRICHLOROETHENE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SS302 0001	SO	TRICHLOROFLUOROMETHANE	5.0	5.0	10	UG_KG	UJ	s
OU09 SS302 0001	SO	VINYL CHLORIDE	5.0	5.0	10	UG_KG	UJ	s
OU09 SS303 0001	SO	1,1,1,2-TETRACHLOROETHANE	2.8	2.8	5.5	UG_KG	UJ	s
OU09 SS303 0001	SO	1,1,1-TRICHLOROETHANE	2.8	2.8	5.5	UG_KG	UJ	s
OU09 SS303 0001	SO	1,1,2,2-TETRACHLOROETHANE	2.8	2.8	5.5	UG_KG	UJ	s
OU09 SS303 0001	SO	1,1,2-TRICHLOROETHANE	2.8	2.8	5.5	UG_KG	UJ	s
OU09 SS303 0001	SO	1,1-DICHLOROETHANE	2.8	2.8	5.5	UG_KG	UJ	s
OU09 SS303 0001	SO	1,1-DICHLOROETHENE	2.8	2.8	5.5	UG_KG	UJ	s
OU09 SS303 0001	SO	1,1-DICHLOROPROPENE	2.8	2.8	5.5	UG_KG	UJ	s
OU09 SS303 0001	SO	1,2,3-TRICHLOROBENZENE	2.8	2.8	5.5	UG_KG	UJ	s
OU09 SS303 0001	SO	1,2,3-TRICHLOROPROPANE	2.8	2.8	5.5	UG_KG	UJ	s
OU09 SS303 0001	SO	1,2,4-TRICHLOROBENZENE	2.8	2.8	5.5	UG_KG	UJ	s
OU09 SS303 0001	SO	1,2,4-TRIMETHYLBENZENE	2.8	2.8	5.5	UG_KG	UJ	s
OU09 SS303 0001	SO	1,2-DIBROMO-3-CHLOROPROPANE	2.8	2.8	5.5	UG_KG	UJ	s,c
OU09 SS303 0001	SO	1,2-DIBROMOETHANE	2.8	2.8	5.5	UG_KG	UJ	s,c
OU09 SS303 0001	SO	1,2-DICHLOROBENZENE	2.8	2.8	5.5	UG_KG	UJ	s
OU09 SS303 0001	SO	1,2-DICHLOROETHANE	2.8	2.8	5.5	UG_KG	UJ	s
OU09 SS303 0001	SO	1,2-DICHLOROETHENE, TOTAL	5.5	5.5	11	UG_KG	UJ	s
OU09 SS303 0001	SO	1,2-DICHLOROPROPANE	2.8	2.8	5.5	UG_KG	UJ	s
OU09 SS303 0001	SO	1,3,5-TRIMETHYLBENZENE	2.8	2.8	5.5	UG_KG	UJ	s
OU09 SS303 0001	SO	1,3-DICHLOROBENZENE	2.8	2.8	5.5	UG_KG	UJ	s
OU09 SS303 0001	SO	1,3-DICHLOROPROPANE	2.8	2.8	5.5	UG_KG	UJ	s
OU09 SS303 0001	SO	1,4-DICHLOROBENZENE	2.8	2.8	5.5	UG_KG	UJ	s
OU09 SS303 0001	SO	2,2-DICHLOROPROPANE	2.8	2.8	5.5	UG_KG	UJ	s

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SS303 0001	SO	2-BUTANONE	14	14	28	UG_KG	UJ	s,c
OU09 SS303 0001	SO	2-CHLOROTOLUENE	2.8	2.8	5.5	UG_KG	UJ	s
OU09 SS303 0001	SO	2-HEXANONE	14	14	28	UG_KG	UJ	s,c
OU09 SS303 0001	SO	4-CHLOROTOLUENE	2.8	2.8	5.5	UG_KG	UJ	s
OU09 SS303 0001	SO	4-ISOPROPYLTOLUENE	2.8	2.8	5.5	UG_KG	UJ	s
OU09 SS303 0001	SO	4-METHYL-2-PENTANONE	14	14	28	UG_KG	UJ	s,c
OU09 SS303 0001	SO	ACETONE	14	14	28	UG_KG	UJ	s,c
OU09 SS303 0001	SO	BENZENE	2.8	2.8	5.5	UG_KG	UJ	s
OU09 SS303 0001	SO	BROMOBENZENE	2.8	2.8	5.5	UG_KG	UJ	s
OU09 SS303 0001	SO	BROMOCHLOROMETHANE	2.8	2.8	5.5	UG_KG	UJ	s
OU09 SS303 0001	SO	BROMODICHLOROMETHANE	2.8	2.8	5.5	UG_KG	UJ	s
OU09 SS303 0001	SO	BROMOFORM	2.8	2.8	5.5	UG_KG	UJ	s
OU09 SS303 0001	SO	BROMOMETHANE	5.5	5.5	11	UG_KG	UJ	s
OU09 SS303 0001	SO	CARBON TETRACHLORIDE	2.8	2.8	5.5	UG_KG	UJ	s
OU09 SS303 0001	SO	CHLOROBENZENE	2.8	2.8	5.5	UG_KG	UJ	s
OU09 SS303 0001	SO	CHLOROETHANE	5.5	5.5	11	UG_KG	UJ	s
OU09 SS303 0001	SO	CHLOROFORM	2.8	2.8	5.5	UG_KG	UJ	s
OU09 SS303 0001	SO	CHLOROMETHANE	5.5	5.5	11	UG_KG	UJ	s
OU09 SS303 0001	SO	CIS-1,2-DICHLOROETHENE	2.8	2.8	5.5	UG_KG	UJ	s
OU09 SS303 0001	SO	CIS-1,3-DICHLOROPROPENE	2.8	2.8	5.5	UG_KG	UJ	s
OU09 SS303 0001	SO	DIBROMOCHLOROMETHANE	2.8	2.8	5.5	UG_KG	UJ	s
OU09 SS303 0001	SO	DIBROMOMETHANE	2.8	2.8	5.5	UG_KG	UJ	s
OU09 SS303 0001	SO	DICHLORODIFLUOROMETHANE	5.5	5.5	11	UG_KG	UJ	s,c
OU09 SS303 0001	SO	HEXACHLOROBUTADIENE	2.8	2.8	5.5	UG_KG	UJ	s
OU09 SS303 0001	SO	ISOPROPYLBENZENE	2.8	2.8	5.5	UG_KG	UJ	s
OU09 SS303 0001	SO	METHYL CYCLOHEXANE	2.8	2.8	5.5	UG_KG	UJ	s
OU09 SS303 0001	SO	METHYL TERT-BUTYL ETHER	2.8	2.8	5.5	UG_KG	UJ	s,c
OU09 SS303 0001	SO	METHYLENE CHLORIDE	14	14	28	UG_KG	UJ	s
OU09 SS303 0001	SO	N-BUTYLBENZENE	2.8	2.8	5.5	UG_KG	UJ	s
OU09 SS303 0001	SO	PROPYLBENZENE	2.8	2.8	5.5	UG_KG	UJ	s
OU09 SS303 0001	SO	SEC-BUTYLBENZENE	2.8	2.8	5.5	UG_KG	UJ	s
OU09 SS303 0001	SO	STYRENE	2.8	2.8	5.5	UG_KG	UJ	s
OU09 SS303 0001	SO	TERT-BUTANOL	14	14	28	UG_KG	UJ	s,c
OU09 SS303 0001	SO	TERT-BUTYLBENZENE	2.8	2.8	5.5	UG_KG	UJ	s
OU09 SS303 0001	SO	TETRACHLOROETHENE	2.8	2.8	5.5	UG_KG	UJ	s
OU09 SS303 0001	SO	TOLUENE	2.8	2.8	5.5	UG_KG	UJ	s
OU09 SS303 0001	SO	TRANS-1,2-DICHLOROETHENE	2.8	2.8	5.5	UG_KG	UJ	s
OU09 SS303 0001	SO	TRANS-1,3-DICHLOROPROPENE	2.8	2.8	5.5	UG_KG	UJ	s
OU09 SS303 0001	SO	TRICHLOROETHENE	2.8	2.8	5.5	UG_KG	UJ	s

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SS303 0001	SO	TRICHLOROFLUOROMETHANE	5.5	5.5	11	UG_KG	UJ	s
OU09 SS303 0001	SO	VINYL CHLORIDE	5.5	5.5	11	UG_KG	UJ	s
OU09 SS324 0001	SO	1,1,1,2-TETRACHLOROETHANE			2.3	UG_KG	R	s,m
OU09 SS324 0001	SO	1,1,1-TRICHLOROETHANE			2.3	UG_KG	R	s,m
OU09 SS324 0001	SO	1,1,2,2-TETRACHLOROETHANE			2.3	UG_KG	R	i,s,m
OU09 SS324 0001	SO	1,1,2-TRICHLOROETHANE			2.3	UG_KG	R	s,m
OU09 SS324 0001	SO	1,1-DICHLOROETHANE			2.3	UG_KG	R	s,m
OU09 SS324 0001	SO	1,1-DICHLOROETHENE			2.3	UG_KG	R	s,m
OU09 SS324 0001	SO	1,1-DICHLOROPROPENE			2.3	UG_KG	R	s,m
OU09 SS324 0001	SO	1,2,3-TRICHLOROBENZENE			2.3	UG_KG	R	i,s,m
OU09 SS324 0001	SO	1,2,3-TRICHLOROPROPANE			2.3	UG_KG	R	i,s,m
OU09 SS324 0001	SO	1,2,4-TRICHLOROBENZENE			2.3	UG_KG	R	i,s,m
OU09 SS324 0001	SO	1,2,4-TRIMETHYLBENZENE			2.3	UG_KG	R	i,s,m
OU09 SS324 0001	SO	1,2-DIBROMO-3-CHLOROPROPANE			2.3	UG_KG	R	i,s,m
OU09 SS324 0001	SO	1,2-DIBROMOETHANE			2.3	UG_KG	R	s,m
OU09 SS324 0001	SO	1,2-DICHLOROBENZENE			2.3	UG_KG	R	i,s,m
OU09 SS324 0001	SO	1,2-DICHLOROETHANE			2.3	UG_KG	R	s,m
OU09 SS324 0001	SO	1,2-DICHLOROETHENE, TOTAL			4.6	UG_KG	R	s,m
OU09 SS324 0001	SO	1,2-DICHLOROPROPANE			2.3	UG_KG	R	s,m
OU09 SS324 0001	SO	1,3,5-TRIMETHYLBENZENE			2.3	UG_KG	R	i,s,m
OU09 SS324 0001	SO	1,3-DICHLOROBENZENE			2.3	UG_KG	R	i,s,m
OU09 SS324 0001	SO	1,3-DICHLOROPROPANE			2.3	UG_KG	R	s,m
OU09 SS324 0001	SO	1,4-DICHLOROBENZENE			2.3	UG_KG	R	i,s,m
OU09 SS324 0001	SO	2,2-DICHLOROPROPANE			2.3	UG_KG	R	s,c
OU09 SS324 0001	SO	2-BUTANONE			12	UG_KG	R	s,m
OU09 SS324 0001	SO	2-CHLOROTOLUENE			2.3	UG_KG	R	i,s,m
OU09 SS324 0001	SO	2-HEXANONE			12	UG_KG	R	s,m
OU09 SS324 0001	SO	4-CHLOROTOLUENE			2.3	UG_KG	R	i,s,m
OU09 SS324 0001	SO	4-ISOPROPYLTOLUENE			2.3	UG_KG	R	s,m
OU09 SS324 0001	SO	4-METHYL-2-PENTANONE			12	UG_KG	R	s,m
OU09 SS324 0001	SO	ACETONE			12	UG_KG	R	s,m,c
OU09 SS324 0001	SO	BENZENE			2.3	UG_KG	R	s,m
OU09 SS324 0001	SO	BROMOBENZENE			2.3	UG_KG	R	i,s,m
OU09 SS324 0001	SO	BROMOCHLOROMETHANE			2.3	UG_KG	R	s,m
OU09 SS324 0001	SO	BROMODICHLOROMETHANE			2.3	UG_KG	R	s,m
OU09 SS324 0001	SO	BROMOFORM			2.3	UG_KG	R	s,m
OU09 SS324 0001	SO	BROMOMETHANE			4.6	UG_KG	R	s,m
OU09 SS324 0001	SO	CARBON TETRACHLORIDE			2.3	UG_KG	R	s,m
OU09 SS324 0001	SO	CHLOROBENZENE			2.3	UG_KG	R	s,m

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SS324 0001	SO	CHLOROETHANE			4.6	UG_KG	R	s,m,c
OU09 SS324 0001	SO	CHLOROFORM			2.3	UG_KG	R	s,m
OU09 SS324 0001	SO	CHLOROMETHANE			4.6	UG_KG	R	s,m
OU09 SS324 0001	SO	CIS-1,2-DICHLOROETHENE			2.3	UG_KG	R	s,m
OU09 SS324 0001	SO	CIS-1,3-DICHLOROPROPENE			2.3	UG_KG	R	s,m
OU09 SS324 0001	SO	DIBROMOCHLOROMETHANE			2.3	UG_KG	R	s,m
OU09 SS324 0001	SO	DIBROMOMETHANE			2.3	UG_KG	R	s,m
OU09 SS324 0001	SO	DICHLORODIFLUOROMETHANE			4.6	UG_KG	R	s
OU09 SS324 0001	SO	HEXACHLOROBUTADIENE			2.3	UG_KG	R	i,s,m
OU09 SS324 0001	SO	ISOPROPYLBENZENE			2.3	UG_KG	R	i,s,m
OU09 SS324 0001	SO	METHYL CYCLOHEXANE			2.3	UG_KG	R	s,m
OU09 SS324 0001	SO	METHYL TERT-BUTYL ETHER			2.3	UG_KG	R	s,m
OU09 SS324 0001	SO	METHYLENE CHLORIDE			12	UG_KG	R	s,m
OU09 SS324 0001	SO	N-BUTYLBENZENE			2.3	UG_KG	R	i,s,m
OU09 SS324 0001	SO	PROPYLBENZENE			2.3	UG_KG	R	i,s,m
OU09 SS324 0001	SO	SEC-BUTYLBENZENE			2.3	UG_KG	R	i,s,m
OU09 SS324 0001	SO	STYRENE			2.3	UG_KG	R	s,m
OU09 SS324 0001	SO	TERT-BUTANOL			12	UG_KG	R	s,c,m
OU09 SS324 0001	SO	TERT-BUTYLBENZENE			2.3	UG_KG	R	i,s,m
OU09 SS324 0001	SO	TETRACHLOROETHENE			2.3	UG_KG	R	s,m
OU09 SS324 0001	SO	TOLUENE			2.3	UG_KG	R	s,m
OU09 SS324 0001	SO	TRANS-1,2-DICHLOROETHENE			2.3	UG_KG	R	s,m
OU09 SS324 0001	SO	TRANS-1,3-DICHLOROPROPENE			2.3	UG_KG	R	s,m
OU09 SS324 0001	SO	TRICHLOROETHENE			2.3	UG_KG	R	s,m
OU09 SS324 0001	SO	TRICHLOROFLUOROMETHANE			4.6	UG_KG	R	s,m
OU09 SS324 0001	SO	VINYL CHLORIDE			4.6	UG_KG	R	s,m
RBSB121113 03	WQ	1,2,3-TRICHLOROBENZENE	0.50	0.50	1.0	UG_L	UJ	c
RBSB121113 03	WQ	ACETONE	2.5	2.5	5.0	UG_L	UJ	c
RBSB121113 03	WQ	DICHLORODIFLUOROMETHANE	1.0	1.0	2.0	UG_L	UJ	c
RBSB121113 03	WQ	METHYL CYCLOHEXANE	0.50	0.50	1.0	UG_L	UJ	c
RBSB121113 03	WQ	TERT-BUTANOL	2.5	2.5	5.0	UG_L	UJ	c
RBSB121113 04	WQ	1,2,3-TRICHLOROBENZENE	0.50	0.50	1.0	UG_L	UJ	c
RBSB121113 04	WQ	ACETONE	13	2.5	5.0	UG_L	J	c
RBSB121113 04	WQ	DICHLORODIFLUOROMETHANE	1.0	1.0	2.0	UG_L	UJ	c
RBSB121113 04	WQ	METHYL CYCLOHEXANE	0.50	0.50	1.0	UG_L	UJ	c
RBSB121113 04	WQ	TERT-BUTANOL	2.5	2.5	5.0	UG_L	UJ	c
RBSS12061302	WQ	1,2,3-TRICHLOROBENZENE	0.50	0.50	1.0	UG_L	UJ	c
RBSS12061302	WQ	ACETONE	2.5	2.5	5.0	UG_L	UJ	c
RBSS12061302	WQ	DICHLORODIFLUOROMETHANE	1.0	1.0	2.0	UG_L	UJ	c

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
RBSS12061302	WQ	METHYL CYCLOHEXANE	0.50	0.50	1.0	UG_L	UJ	c
RBSS12061302	WQ	TERT-BUTANOL	2.5	2.5	5.0	UG_L	UJ	c
TBSS12061301	WQ	1,1,1-TRICHLOROETHANE	2.5	2.5	5.0	UG_KG	UJ	i
TBSS12061301	WQ	1,1-DICHLOROETHANE	2.5	2.5	5.0	UG_KG	UJ	i
TBSS12061301	WQ	1,1-DICHLOROETHENE	2.5	2.5	5.0	UG_KG	UJ	i
TBSS12061301	WQ	2,2-DICHLOROPROPANE	2.5	2.5	5.0	UG_KG	UJ	i
TBSS12061301	WQ	2-BUTANONE	12	12	25	UG_KG	UJ	i,c
TBSS12061301	WQ	2-HEXANONE	12	12	25	UG_KG	UJ	c
TBSS12061301	WQ	ACETONE	8.5	12	25	UG_KG	J	i,c
TBSS12061301	WQ	BROMOCHLOROMETHANE	2.5	2.5	5.0	UG_KG	UJ	i
TBSS12061301	WQ	BROMOMETHANE	5.0	5.0	10	UG_KG	UJ	i
TBSS12061301	WQ	CARBON DISULFIDE	2.5	2.5	5.0	UG_KG	UJ	i
TBSS12061301	WQ	CHLOROETHANE	5.0	5.0	10	UG_KG	UJ	i
TBSS12061301	WQ	CHLOROFORM	2.5	2.5	5.0	UG_KG	UJ	i
TBSS12061301	WQ	CHLOROMETHANE	5.0	5.0	10	UG_KG	UJ	i
TBSS12061301	WQ	CIS-1,2-DICHLOROETHENE	2.5	2.5	5.0	UG_KG	UJ	i
TBSS12061301	WQ	DICHLORODIFLUOROMETHANE	5.0	5.0	10	UG_KG	UJ	i,c
TBSS12061301	WQ	METHYL CYCLOHEXANE	2.5	2.5	5.0	UG_KG	UJ	i
TBSS12061301	WQ	METHYL TERT-BUTYL ETHER	2.5	2.5	5.0	UG_KG	UJ	i
TBSS12061301	WQ	METHYLENE CHLORIDE	25	25	25	UG_KG	UJ	i,c,bl
TBSS12061301	WQ	TERT-BUTANOL	12	12	25	UG_KG	UJ	i,c
TBSS12061301	WQ	TRANS-1,2-DICHLOROETHENE	2.5	2.5	5.0	UG_KG	UJ	i
TBSS12061301	WQ	TRICHLOROFLUOROMETHANE	5.0	5.0	10	UG_KG	UJ	i
TBSS12061301	WQ	VINYL CHLORIDE	5.0	5.0	10	UG_KG	UJ	i
TBSS12101302	WQ	ACETONE	12	12	25	UG_KG	UJ	c
TBSS12101302	WQ	CHLOROETHANE	5.0	5.0	10	UG_KG	UJ	c
TBSS12101302	WQ	TERT-BUTANOL	12	12	25	UG_KG	UJ	c
TBSS12121302	SQ	1,1,2,2-TETRACHLOROETHANE	2.5	2.5	5.0	UG_KG	UJ	i
TBSS12121302	SQ	1,2,3-TRICHLOROBENZENE	2.5	2.5	5.0	UG_KG	UJ	i
TBSS12121302	SQ	1,2,3-TRICHLOROPROPANE	2.5	2.5	5.0	UG_KG	UJ	i
TBSS12121302	SQ	1,2,4-TRICHLOROBENZENE	2.5	2.5	5.0	UG_KG	UJ	i
TBSS12121302	SQ	1,2,4-TRIMETHYLBENZENE	2.5	2.5	5.0	UG_KG	UJ	i
TBSS12121302	SQ	1,2-DIBROMO-3-CHLOROPROPANE	2.5	2.5	5.0	UG_KG	UJ	i
TBSS12121302	SQ	1,2-DICHLOROBENZENE	2.5	2.5	5.0	UG_KG	UJ	i
TBSS12121302	SQ	1,3,5-TRIMETHYLBENZENE	2.5	2.5	5.0	UG_KG	UJ	i
TBSS12121302	SQ	1,3-DICHLOROBENZENE	2.5	2.5	5.0	UG_KG	UJ	i
TBSS12121302	SQ	1,4-DICHLOROBENZENE	2.5	2.5	5.0	UG_KG	UJ	i
TBSS12121302	SQ	2,2-DICHLOROPROPANE	2.5	2.5	5.0	UG_KG	UJ	c
TBSS12121302	SQ	2-CHLOROTOLUENE	2.5	2.5	5.0	UG_KG	UJ	i

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
TBSS12121302	SQ	4-CHLOROTOLUENE	2.5	2.5	5.0	UG_KG	UJ	i
TBSS12121302	SQ	ACETONE	12	12	25	UG_KG	UJ	c
TBSS12121302	SQ	BROMOBENZENE	2.5	2.5	5.0	UG_KG	UJ	i
TBSS12121302	SQ	CHLOROETHANE	5.0	5.0	10	UG_KG	UJ	c
TBSS12121302	SQ	HEXACHLOROBUTADIENE	2.5	2.5	5.0	UG_KG	UJ	i
TBSS12121302	SQ	ISOPROPYLBENZENE	2.5	2.5	5.0	UG_KG	UJ	i
TBSS12121302	SQ	N-BUTYLBENZENE	2.5	2.5	5.0	UG_KG	UJ	i
TBSS12121302	SQ	PROPYLBENZENE	2.5	2.5	5.0	UG_KG	UJ	i
TBSS12121302	SQ	SEC-BUTYLBENZENE	2.5	2.5	5.0	UG_KG	UJ	i
TBSS12121302	SQ	TERT-BUTANOL	12	12	25	UG_KG	UJ	c
TBSS12121302	SQ	TERT-BUTYLBENZENE	2.5	2.5	5.0	UG_KG	UJ	i
FDSB12101302	SO	CARBON DISULFIDE	3.0	3.0	6.0	UG_KG	UJ	s
FDSB12101302	SO	ETHYLBENZENE	3.0	3.0	6.0	UG_KG	UJ	s
FDSB12101302	SO	M- AND P-XYLENE	6.0	6.0	12	UG_KG	UJ	s
FDSB12101302	SO	O-XYLENE	3.0	3.0	6.0	UG_KG	UJ	s
FDSB12101302	SO	XYLENES, TOTAL	9.0	9.0	18	UG_KG	UJ	s
OU09 SB221 0305	SO	CARBON DISULFIDE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SB221 0305	SO	ETHYLBENZENE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SB221 0305	SO	M- AND P-XYLENE	5.0	5.0	10	UG_KG	UJ	s
OU09 SB221 0305	SO	O-XYLENE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SB221 0305	SO	XYLENES, TOTAL	7.5	7.5	15	UG_KG	UJ	s
OU09 SB221 0608	SO	CARBON DISULFIDE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB221 0608	SO	ETHYLBENZENE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB221 0608	SO	M- AND P-XYLENE	4.4	4.4	8.8	UG_KG	UJ	s
OU09 SB221 0608	SO	O-XYLENE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB221 0608	SO	XYLENES, TOTAL	6.6	6.6	13	UG_KG	UJ	s
OU09 SB221 0810	SO	CARBON DISULFIDE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SB221 0810	SO	ETHYLBENZENE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SB221 0810	SO	M- AND P-XYLENE	5.0	5.0	10	UG_KG	UJ	s
OU09 SB221 0810	SO	O-XYLENE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SB221 0810	SO	XYLENES, TOTAL	7.5	7.5	15	UG_KG	UJ	s
OU09 SB302 0305	SO	CARBON DISULFIDE	3.2	3.2	6.5	UG_KG	UJ	s
OU09 SB302 0305	SO	ETHYLBENZENE	3.2	3.2	6.5	UG_KG	UJ	s
OU09 SB302 0305	SO	M- AND P-XYLENE	6.5	6.5	13	UG_KG	UJ	s
OU09 SB302 0305	SO	O-XYLENE	3.2	3.2	6.5	UG_KG	UJ	s
OU09 SB302 0305	SO	XYLENES, TOTAL	9.8	9.8	20	UG_KG	UJ	s
OU09 SB302 0810	SO	CARBON DISULFIDE	1.5	1.5	3.0	UG_KG	UJ	s
OU09 SB302 0810	SO	ETHYLBENZENE	1.5	1.5	3.0	UG_KG	UJ	s

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SB302 0810	SO	M- AND P-XYLENE	3.0	3.0	6.0	UG_KG	UJ	s
OU09 SB302 0810	SO	O-XYLENE	1.5	1.5	3.0	UG_KG	UJ	s
OU09 SB302 0810	SO	XYLENES, TOTAL	4.5	4.5	9.0	UG_KG	UJ	s
OU09 SB303 0305	SO	CARBON DISULFIDE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB303 0305	SO	ETHYLBENZENE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB303 0305	SO	M- AND P-XYLENE	4.4	4.4	8.7	UG_KG	UJ	s
OU09 SB303 0305	SO	O-XYLENE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB303 0305	SO	XYLENES, TOTAL	6.5	6.5	13	UG_KG	UJ	s
OU09 SB303 0810	SO	CARBON DISULFIDE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB303 0810	SO	ETHYLBENZENE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB303 0810	SO	M- AND P-XYLENE	4.4	4.4	8.7	UG_KG	UJ	s
OU09 SB303 0810	SO	O-XYLENE	2.2	2.2	4.4	UG_KG	UJ	s
OU09 SB303 0810	SO	XYLENES, TOTAL	6.5	6.5	13	UG_KG	UJ	s
OU09 SS221 0001	SO	CARBON DISULFIDE	2.3	2.3	4.6	UG_KG	UJ	s
OU09 SS221 0001	SO	ETHYLBENZENE	2.3	2.3	4.6	UG_KG	UJ	s
OU09 SS221 0001	SO	M- AND P-XYLENE	4.6	4.6	9.2	UG_KG	UJ	s
OU09 SS221 0001	SO	O-XYLENE	2.3	2.3	4.6	UG_KG	UJ	s
OU09 SS221 0001	SO	XYLENES, TOTAL	6.9	6.9	14	UG_KG	UJ	s
OU09 SS302 0001	SO	CARBON DISULFIDE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SS302 0001	SO	ETHYLBENZENE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SS302 0001	SO	M- AND P-XYLENE	5.0	5.0	10	UG_KG	UJ	s
OU09 SS302 0001	SO	O-XYLENE	2.5	2.5	5.0	UG_KG	UJ	s
OU09 SS302 0001	SO	XYLENES, TOTAL	7.5	7.5	15	UG_KG	UJ	s
OU09 SS303 0001	SO	CARBON DISULFIDE	2.8	2.8	5.5	UG_KG	UJ	s
OU09 SS303 0001	SO	ETHYLBENZENE	2.8	2.8	5.5	UG_KG	UJ	s
OU09 SS303 0001	SO	M- AND P-XYLENE	5.5	5.5	11	UG_KG	UJ	s
OU09 SS303 0001	SO	O-XYLENE	2.8	2.8	5.5	UG_KG	UJ	s
OU09 SS303 0001	SO	XYLENES, TOTAL	8.2	8.2	16	UG_KG	UJ	s
OU09 SB223 0001	SO	CARBON DISULFIDE	4.2	4.2	8.5	UG_KG	UJ	s
OU09 SB223 0001	SO	ETHYLBENZENE	4.2	4.2	8.5	UG_KG	UJ	s
OU09 SB223 0001	SO	M- AND P-XYLENE	8.5	8.5	17	UG_KG	UJ	s
OU09 SB223 0001	SO	O-XYLENE	4.2	4.2	8.5	UG_KG	UJ	s
OU09 SB223 0001	SO	XYLENES, TOTAL	13	13	26	UG_KG	UJ	s
OU09 SB223 0304	SO	CARBON DISULFIDE	3.2	3.2	6.5	UG_KG	UJ	s
OU09 SB223 0304	SO	ETHYLBENZENE	3.2	3.2	6.5	UG_KG	UJ	s
OU09 SB223 0304	SO	M- AND P-XYLENE	6.5	6.5	13	UG_KG	UJ	s
OU09 SB223 0304	SO	O-XYLENE	3.2	3.2	6.5	UG_KG	UJ	s
OU09 SB223 0304	SO	XYLENES, TOTAL	9.8	9.8	20	UG_KG	UJ	s
OU09 SS324 0001	SO	CARBON DISULFIDE	1.2	1.2	2.3	UG_KG	UJ	s

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SS324 0001	SO	ETHYLBENZENE	1.2	1.2	2.3	UG_KG	UJ	m,s
OU09 SS324 0001	SO	M- AND P-XYLENE	2.3	2.3	4.6	UG_KG	UJ	m,s
OU09 SS324 0001	SO	O-XYLENE	1.2	1.2	2.3	UG_KG	UJ	m,s
OU09 SS324 0001	SO	XYLENES, TOTAL	3.4	3.4	6.9	UG_KG	UJ	m,s

Attachment A

Non Conformance Summary Tables

Table A-1a Initial Calibration

ICAL	Compound	% RSD or RF	%RSD/RF Limit	ICV %R	ICV %R Limits	Associated Samples
CARR-6						
12/10/13 (Inst. C)	TERT-BUTYL ALCOHOL	0.03293	>0.05			RBSS12061302
	DICHLORODIFLUOROMETHANE			128.95	80-120	
	ACETONE			129.47	80-120	
	1,2,3-TRICHLOROBENZENE			69.33	80-120	
12/10/13 (Inst.T)	2-HEXANONE	15.32	<15			OU09 SS301 0001 OU09 SS301 0001RA TBSS12061301
	TERT-BUTYL ALCOHOL	0.04086	>0.05			
	DICHLORODIFLUOROMETHANE			134.21	80-120	
	ACETONE			167.06	80-120	
	2-BUTANONE			121.66	80-120	
CARR-9						
12/10/13 (Inst.C)	TERT-BUTYL ALCOHOL	0.03293	>0.05			RBSB12111303 RBSB12111304
	DICHLORODIFLUOROMETHANE			128.95	80-120	
	ACETONE			129.47	80-120	
	1,2,3-TRICHLOROBENZENE			69.33	80-120	
12/16/13 (Inst.M)	CHLOROETHANE	34.94	<15			TBSS12101302 OU09 SS302 0001 OU09 SB302 0305 OU09 SB302 0810 FDSB12101302 OU09 SS221 0001 OU09 SB221 0305 OU09 SB221 0608 OU09 SB221 0810 OU09 SS303 0001 OU09 SB303 0305 OU09 SB303 0810
	TERT-BUTYL ALCOHOL	37.74	<15			
	TERT-BUTYL ALCOHOL	0.01416	>0.05			
	TERT-BUTYL ALCOHOL			73.47	80-120	
	ACETONE			137.18	80-120	
12/19/13 (Inst.S)	DICHLORODIFLUOROMETHANE			144.85	80-120	OU09 SB302 0305RA OU09 SB302 0810RA OU09 SS221 0001RA OU09 SB221 0305RA OU09 SB221 0608RA OU09 SB221 0810RA OU09 SS303 0001RA OU09 SB303 0305RA OU09 SB303 0810RA OU09 SS302 0001RA FDSB12101302RA

ICAL	Compound	% RSD or RF	%RSD/RF Limit	ICV %R	ICV %R Limits	Associated Samples
12/19/13 (Inst.S)	ACETONE			188.63	80-120	OU09 SB302 0305RA OU09 SB302 0810RA OU09 SS221 0001RA OU09 SB221 0305RA OU09 SB221 0608RA OU09 SB221 0810RA OU09 SS303 0001RA OU09 SB303 0305RA OU09 SB303 0810RA OU09 SS302 0001RA FDSB12101302RA
	METHYL TERT-BUTYL ETHER			130.65	80-120	
	1,2-DIBROMOETHANE			141.81	80-120	
	1,2-DIBROMO-3-CHLOROPROPANE			122.18	80-120	
CARR-11						
12/10/13 (Inst.C)	TERT-BUTYL ALCOHOL	0.03293	>0.05			OU09 SB324 0810
	DICHLORODIFLUOROMETHANE			128.95	80-120	
	ACETONE			129.47	80-120	
	1,2,3-TRICHLOROBENZENE			69.33	80-120	
12/16/13 (Inst.M)	CHLOROETHANE	34.94	<15			TBSS12121302 OU09 SS324 0001 OU09 SB223 0001 OU09 SB223 0304
	TERT-BUTYL ALCOHOL	37.74	<15			
	TERT-BUTYL ALCOHOL	0.01416	>0.05			
	TERT-BUTYL ALCOHOL			73.47	80-120	
	ACETONE			137.18	80-120	
12/19/13 (Inst.M)	CHLOROETHANE	35.33	<15			OU09 SB324 0305 RA OU09 SB223 0001 RA OU09 SB223 0304 RA
	TRICHLOROFLUOROMETHANE	15.22	<15			
	DICHLORODIFLUOROMETHANE			148.15	80-120	
	TERT-BUTYL ALCOHOL			170.37	80-120	
	CARBON TETRACHLORIDE			121.59	80-120	

Table A-1b Continuing Calibration

CCAL	Compound	% D	%D Limit	Associated Samples
CARR-6				
CCV 12/17/13 (Inst.C)	1,2,3-TRICHLOROBENZENE	-53.94	<20	RBSS12061302
	METHYLCYCLOHEXANE	21.05	<20	
CCV 12/11/13 (Inst.T)	2-BUTANONE	20.28	<20	OU09 SS301 0001 OU09 SS301 0001RA
	4-METHYL-2-PENTANONE	26.67	<20	
	2-HEXANONE	22.26	<20	
CCV 12/12/13 (Inst.T)	METHYLENE CHLORIDE	21.83	<20	TBSS12061301
CARR-9				
CCV 12/17/13 (Inst.C)	1,2,3-TRICHLOROBENZENE	-53.94	<20	RBSB12111303 RBSB12111304
	METHYLCYCLOHEXANE	21.05	<20	

CCAL	Compound	% D	%D Limit	Associated Samples
CCV 12/23/13 (Inst.S)	DICHLORODIFLUOROMETHANE	46.48	<20	OU09 SS302 0001 FDSB12101302
CARR-11				
CCV 12/23/13 (Inst.C)	CHLOROETHANE	-24.52	<20	OU09 SB324 0810
	CARBON TETRACHLORIDE	25.67	<20	
	1,2,3-TRICHLOROBENZENE	-39.58	<20	
CCV 12/18/13 (Inst.M)	TERT-BUTYL ALCOHOL	42.24	<20	TBSS12121302 OU09 SS324 0001 OU09 SB223 0001 OU09 SB223 0304
	ACETONE	27.80	<20	
	2,2-DICHLOROPROPANE	26.39	<20	
12/20/13 (Inst.M)	TERT-BUTYL ALCOHOL	117	<20	OU09 SB324 0305 RA OU09 SB223 0001 RA OU09 SB223 0304 RA
	2,2-DICHLOROPROPANE	65.48	<20	

Table A-2a Lab Blanks

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
WG136654-2	BROMOMETHANE	2.4	5.0	10	UG_KG	OU09 SS302 0001
WG136070-2	METHYLENE CHLORIDE	23	12	25	UG_KG	TBSS12061301
WG136309-2	METHYLENE CHLORIDE	3.1	2.5	5.0	UG_L	RBSS12061302

Table A-2b Field Blanks

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
RBSB121113 03	CHLOROFORM	2.6	0.50	1.0	UG_L	FDSB12101302 OU09 SB221 0305 OU09 SB221 0608 OU09 SB221 0810 OU09 SB223 0304 OU09 SB302 0305 OU09 SB302 0810 OU09 SB303 0305 OU09 SB303 0810 OU09 SB324 0305 OU09 SB324 0810
RBSB121113 03	TOLUENE	3.0	0.50	1.0	UG_L	FDSB12101302 OU09 SB221 0305 OU09 SB221 0608 OU09 SB221 0810 OU09 SB223 0304 OU09 SB302 0305 OU09 SB302 0810 OU09 SB303 0305 OU09 SB303 0810 OU09 SB324 0305 OU09 SB324 0810

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
RBSB121113 04	ACETONE	13	2.5	5.0	UG_L	OU09 SS223 0001 OU09 SS221 0001 OU09 SS302 0001 OU09 SS303 0001 OU09 SS324 0001
RBSB121113 04	TOLUENE	3.0	0.50	1.0	UG_L	OU09 SS223 0001 OU09 SS221 0001 OU09 SS302 0001 OU09 SS303 0001 OU09 SS324 0001
RBSB121113 04	M&P-XYLENES	0.65	1.0	2.0	UG_L	OU09 SS223 0001 OU09 SS221 0001 OU09 SS302 0001 OU09 SS303 0001 OU09 SS324 0001
RBSB121113 04	TOTAL XYLENES	0.65	1.5	3.0	UG_L	OU09 SS223 0001 OU09 SS221 0001 OU09 SS302 0001 OU09 SS303 0001 OU09 SS324 0001
TBSS12061301	ACETONE	8.5	12	25	UG_KG	RBSS12061302 OU09SS3010001

Table A-3 Surrogates

Sample ID	Surrogate	% Recovery	Lower Limit	Upper Limit
CARR-6				
OU09 SS301 0001	1,2-DICHLOROETHANE-D4	148	58	134
OU09 SS301 0001	DIBROMOFLUOROMETHANE	137	64	130
OU09 SS301 0001	4-BROMOFLUOROBENZENE	78.8	85	120
OU09 SS301 0001 RA	1,2-DICHLOROETHANE-D4	151	58	134
OU09 SS301 0001 RA	DIBROMOFLUOROMETHANE	135	64	130
OU09 SS301 0001 RA	4-BROMOFLUOROBENZENE	77.8	85	120
CARR-9				
FDSB12101302	4-BROMOFLUOROBENZENE	75.8	85	120
FDSB12101302 RA	4-BROMOFLUOROBENZENE	69.2	85	120
OU09 SB221 0305	4-BROMOFLUOROBENZENE	78.6	85	120
OU09 SB221 0305 RA	TOLUENE-D8	84.9	85	115
OU09 SB221 0305 RA	4-BROMOFLUOROBENZENE	66.6	85	120
OU09 SB221 0608	4-BROMOFLUOROBENZENE	66.9	85	120
OU09 SB221 0608 RA	4-BROMOFLUOROBENZENE	60.3	85	120
OU09 SB221 0810	4-BROMOFLUOROBENZENE	52.2	85	120
OU09 SB221 0810 RA	4-BROMOFLUOROBENZENE	68.4	85	120
OU09 SB302 0305	4-BROMOFLUOROBENZENE	25.9	85	120

Sample ID	Surrogate	% Recovery	Lower Limit	Upper Limit
OU09 SB302 0305 RA	TOLUENE-D8	78.9	85	115
OU09 SB302 0305 RA	4-BROMOFLUOROBENZENE	50.7	85	120
OU09 SB302 0810	TOLUENE-D8	80.5	85	115
OU09 SB302 0810	4-BROMOFLUOROBENZENE	45.5	85	120
OU09 SB302 0810 RA	4-BROMOFLUOROBENZENE	63.3	85	120
OU09 SB303 0305	TOLUENE-D8	66.4	85	115
OU09 SB303 0305	4-BROMOFLUOROBENZENE	34.9	85	120
OU09 SB303 0305 RA	4-BROMOFLUOROBENZENE	59.9	85	120
OU09 SB303 0810	4-BROMOFLUOROBENZENE	42.9	85	120
OU09 SB303 0810 RA	TOLUENE-D8	84.6	85	115
OU09 SB303 0810 RA	4-BROMOFLUOROBENZENE	48.7	85	120
OU09 SS221 0001	TOLUENE-D8	77.8	85	115
OU09 SS221 0001	4-BROMOFLUOROBENZENE	27.2	85	120
OU09 SS221 0001 RA	TOLUENE-D8	60.5	85	115
OU09 SS221 0001 RA	4-BROMOFLUOROBENZENE	23.6	85	120
OU09 SS302 0001	TOLUENE-D8	72.4	85	115
OU09 SS302 0001	4-BROMOFLUOROBENZENE	16.0	85	120
OU09 SS302 0001 RA	TOLUENE-D8	82.2	85	115
OU09 SS302 0001 RA	4-BROMOFLUOROBENZENE	67.0	85	120
OU09 SS303 0001	TOLUENE-D8	59.2	85	115
OU09 SS303 0001	4-BROMOFLUOROBENZENE	16.6	85	120
OU09 SS303 0001 RA	1,2-DICHLOROETHANE-D4	54.2	58	134
OU09 SS303 0001 RA	DIBROMOFLUOROMETHANE	57.0	64	130
OU09 SS303 0001 RA	TOLUENE-D8	44.2	85	115
OU09 SS303 0001 RA	4-BROMOFLUOROBENZENE	10.3	85	120
CARR-11				
OU09 SB223 0001	4-BROMOFLUOROBENZENE	60.4	85	120
OU09 SB223 0001 RA	4-BROMOFLUOROBENZENE	74.1	85	120
OU09 SB223 0304	TOLUENE-D8	63.9	85	115
OU09 SB223 0304	4-BROMOFLUOROBENZENE	19.2	85	120
OU09 SB223 0304 RA	4-BROMOFLUOROBENZENE	68.6	85	120
OU09 SS324 0001	1,2-DICHLOROETHANE-D4	48.7	58	134
OU09 SS324 0001	DIBROMOFLUOROMETHANE	49.8	64	130
OU09 SS324 0001	TOLUENE-D8	32.0	85	115
OU09 SS324 0001	4-BROMOFLUOROBENZENE	8.22	85	120

Table A-4 Matrix Spikes

Sample ID	Compound	MS % Recovery	MSD % Recovery	Lower Limit	Upper Limit	RPD	RPD Limit

Sample ID	Compound	MS % Recovery	MSD % Recovery	Lower Limit	Upper Limit	RPD	RPD Limit
OU09 SS324 0001	STYRENE	16.8	17.6	75	125	14	30
OU09 SS324 0001	CIS-1,3-DICHLOROPROPENE	32.6	35.2	70	125	18	30
OU09 SS324 0001	TRANS-1,3-DICHLOROPROPENE	27.4	30.5	65	125	21	30
OU09 SS324 0001	PROPYLBENZENE	37.9	28.6	65	135	18	30
OU09 SS324 0001	N-BUTYLBENZENE	18.9	13.3	65	140	25	30
OU09 SS324 0001	4-CHLOROTOLUENE	20.5	19	75	125	2	30
OU09 SS324 0001	1,4-DICHLOROBENZENE	13.7	13.8	70	125	11	30
OU09 SS324 0001	1,2-DIBROMOETHANE	35.8	37.1	70	125	14	30
OU09 SS324 0001	1,2-DICHLOROETHANE	55.8	54.3	70	135	7	30
OU09 SS324 0001	4-METHYL-2-PENTANONE	36.8	41.4	45	145	22	30
OU09 SS324 0001	1,3,5-TRIMETHYLBENZENE	30	25.7	65	135	5	30
OU09 SS324 0001	BROMOBENZENE	20	21.9	65	120	19	30
OU09 SS324 0001	METHYL CYCLOHEXANE	31.6	33.3	71	127	15	30
OU09 SS324 0001	TOLUENE	50.5	43.8	70	125	4	30
OU09 SS324 0001	CHLOROBENZENE	27.4	26.2	75	125	6	30
OU09 SS324 0001	1,2,4-TRICHLOROBENZENE	10.5	10.5	65	130	10	30
OU09 SS324 0001	DIBROMOCHLOROMETHANE	34.2	37.6	65	130	19	30
OU09 SS324 0001	TETRACHLOROETHENE	49.5	37.1	65	140	19	30
OU09 SS324 0001	SEC-BUTYLBENZENE	34.7	23.3	65	130	30	30
OU09 SS324 0001	1,3-DICHLOROPROPANE	38.9	42.4	75	125	18	30
OU09 SS324 0001	CIS-1,2-DICHLOROETHENE	64.2	52.8	65	125	9	30
OU09 SS324 0001	TRANS-1,2-DICHLOROETHENE	73.2	61.9	65	135	7	30
OU09 SS324 0001	METHYL TERT-BUTYL ETHER	56.4	61.4	81	125	16	30
OU09 SS324 0001	1,2-DICHLOROETHENE, TOTAL	66.9	57.4	82	120	8	30
OU09 SS324 0001	1,3-DICHLOROBENZENE	14.7	15.2	70	125	13	30
OU09 SS324 0001	1,1-DICHLOROPROPENE	82.1	59.5	70	135	22	30
OU09 SS324 0001	2-HEXANONE	18.4	19	45	145	13	30
OU09 SS324 0001	2,2-DICHLOROPROPANE	189	164	65	135	4	30
OU09 SS324 0001	1,1,1,2-TETRACHLOROETHANE	36.3	36.7	75	125	11	30
OU09 SS324 0001	BENZENE	63.7	58.1	75	125	1	30
OU09 SS324 0001	DIBROMOMETHANE	44.2	45.7	75	130	13	30
OU09 SS324 0001	BROMOCHLOROMETHANE	59.5	60	70	125	11	30
OU09 SS324 0001	METHYLENE CHLORIDE	46.8	43.8	55	140	3	30
OU09 SS324 0001	BROMOFORM	27.9	30	55	135	17	30
OU09 SS324 0001	BROMODICHLOROMETHANE	53.2	52.8	70	130	9	30
OU09 SS324 0001	1,1-DICHLOROETHANE	78.9	74.8	75	125	4	30
OU09 SS324 0001	TERT-BUTANOL	159	178	62	148	14	30
OU09 SS324 0001	DICHLORODIFLUOROMETHANE	138	106	35	135	16	30
OU09 SS324 0001	1,2-DICHLOROPROPANE	56.8	55.7	70	120	8	30

Sample ID	Compound	MS % Recovery	MSD % Recovery	Lower Limit	Upper Limit	RPD	RPD Limit
OU09 SS324 0001	1,1,2-TRICHLOROETHANE	41	43.8	60	125	16	30
OU09 SS324 0001	TRICHLOROETHENE	58.4	47.6	75	125	10	30
OU09 SS324 0001	1,1,2,2-TETRACHLOROETHANE	32.6	35.2	55	130	18	30
OU09 SS324 0001	1,2,3-TRICHLOROBENZENE	12.6	12.8	60	135	12	30
OU09 SS324 0001	HEXACHLOROBUTADIENE	9.47	7.14	55	140	18	30
OU09 SS324 0001	2-CHLOROTOLUENE	25.3	23.3	70	130	2	30
OU09 SS324 0001	1,2-DICHLOROBENZENE	13.2	13.8	75	120	15	30
OU09 SS324 0001	1,2,4-TRIMETHYLBENZENE	24.2	22.8	65	135	4	30
OU09 SS324 0001	1,2-DIBROMO-3-CHLOROPROPANE	25.3	29	40	135	24	30
OU09 SS324 0001	1,2,3-TRICHLOROPROPANE	37.9	41	65	130	18	30
OU09 SS324 0001	TERT-BUTYLBENZENE	36.3	28.1	65	130	16	30
OU09 SS324 0001	ISOPROPYLBENZENE	45.3	33.8	75	130	19	30
OU09 SS324 0001	4-ISOPROPYLTOLUENE	28.4	21	75	135	20	30
OU09 SS324 0001	ETHYLBENZENE	41.6	34.3	75	125	9	30
OU09 SS324 0001	M- AND P-XYLENE	36.9	32.1	80	125	6	30
OU09 SS324 0001	O-XYLENE	31.6	29.5	75	125	3	30
OU09 SS324 0001	XYLENES, TOTAL	35.2	31.4	81	114	3	30

Table A-5 Laboratory Control Samples

LCS ID	Compound	LCS % Recovery	Lower Limit	Upper Limit	Associated Samples
WG136508-1	2,2-DICHLOROPROPANE	147	65	135	OU09 SB223 0001 OU09 SB223 0304 OU09 SB324 0305
WG136508-1	TERT-BUTANOL	206	62	148	OU09 SB223 0001 OU09 SB223 0304 OU09 SB324 0305
WG136508-1	DICHLORODIFLUOROMETHANE	157	35	135	OU09 SB223 0001 OU09 SB223 0304 OU09 SB324 0305
WG136654-1	ACETONE	234	20	160	FDSB12101302 OU09 SS302 0001
WG136507-1	ACETONE	216	20	160	OU09 SB221 0305 OU09 SB221 0608 OU09 SB221 0810 OU09 SB302 0305 OU09 SB302 0810 OU09 SB303 0305 OU09 SB303 0810 OU09 SS221 0001 OU09 SS303 0001
WG136507-1	DICHLORODIFLUOROMETHANE	154	35	135	OU09 SB221 0305 OU09 SB221 0608 OU09 SB221 0810

					OU09 SB302 0305 OU09 SB302 0810 OU09 SB303 0305 OU09 SB303 0810 OU09 SS221 0001 OU09 SS303 0001
WG136384-1	ACETONE	174	20	160	OU09 SB223 0001 OU09 SB223 0304 OU09 SS324 0001 TBSS12121302
WG136070-1	DICHLORODIFLUOROMETHANE	138	35	135	TBSS12061301

Table A-6 Internal Standards

Sample ID	Internal Standard	IS AREA	Lower Limit (ICAL)	Lower Limit (CCV)	Upper Limit
CARR-6					
OU09 SS301 0001	PENTAFLUOROBENZENE	320190	333529	133412	1334116
OU09 SS301 0001RA	PENTAFLUOROBENZENE	323729	333529	133412	1334116
TBSS12061301	PENTAFLUOROBENZENE	333233	333529	133412	1334116
CARR-9					
OU09 SS302 0001	PENTAFLUOROBENZENE	150251	216221.5	86489	864886
OU09 SS302 0001	1,4-DIFLUOROBENZENE	241684	351412	140565	1405648
OU09 SS302 0001	CHLOROBENZENE-D5	152488	279273	111709	1117092
OU09 SS302 0001	1,4-DICHLOROBENZENE-D4	4665	122517	49007	490068
OU09 SS302 0305	PENTAFLUOROBENZENE	192077	216221.5	86489	864886
OU09 SS302 0305	1,4-DIFLUOROBENZENE	302895	351412	140565	1405648
OU09 SS302 0305	CHLOROBENZENE-D5	208795	279273	111709	1117092
OU09 SS302 0305	1,4-DICHLOROBENZENE-D4	13738	122517	49007	490068
OU09 SB221 0305	PENTAFLUOROBENZENE	175482	216221.5	86489	864886
OU09 SB221 0305	1,4-DIFLUOROBENZENE	256609	351412	140565	1405648
OU09 SB221 0305	CHLOROBENZENE-D5	248205	279273	111709	1117092
OU09 SB221 0305	1,4-DICHLOROBENZENE-D4	71963	122517	49007	490068
OU09 SS303 0001	CHLOROBENZENE-D5	277821	279273	111709	1117092
OU09 SS303 0001	1,4-DICHLOROBENZENE-D4	58827	122517	49007	490068
FDSB12101302	1,4-DICHLOROBENZENE-D4	117556	122517	49007	490068
FDSB12101302 RA	PENTAFLUOROBENZENE	108344	199502.5	79801	798010
FDSB12101302 RA	1,4-DIFLUOROBENZENE	153185	277553.3	111021	1110214
FDSB12101302 RA	CHLOROBENZENE-D5	143877	243705.5	97482	974822
FDSB12101302 RA	1,4-DICHLOROBENZENE-D4	55512	115873	46349	463492
OU09 SS221 0001	1,4-DICHLOROBENZENE-D4	68748	122517	49007	490068
OU09 SS221 0001 RA	1,4-DICHLOROBENZENE-D4	110216	115873	46349	463492
OU09 SS221 0608	1,4-DICHLOROBENZENE-D4	102394	122517	49007	490068
OU09 SS221 0810	1,4-DICHLOROBENZENE-D4	65491	122517	49007	490068
OU09 SB221 0810 RA	1,4-DIFLUOROBENZENE	259760	277553.5	111021	1110214
OU09 SB221 0810 RA	1,4-DICHLOROBENZENE-D4	105275	115873	46349	463492

Sample ID	Internal Standard	IS AREA	Lower Limit (ICAL)	Lower Limit (CCV)	Upper Limit
OU09 SS303 0001	1,4-DICHLOROBENZENE-D4	58827	122517	49007	490068
OU09 SS303 0810	1,4-DICHLOROBENZENE-D4	69680	122517	49007	490068
CARR-11					
OU09 SB223 0304	PENTAFLUOROBENZENE	99716	216221.5	86489	864886
OU09 SB223 0304	1,4-DIFLUOROBENZENE	159674	351412	140565	1405648
OU09 SB223 0304	CHLOROBENZENE-D5	121567	279273	111709	1117092
OU09 SB223 0304	1,4-DICHLOROBENZENE-D4	3267	122517	49007	490068
OU09 SB223 0304 RA	1,4-DICHLOROBENZENE-D4	78760	106277.5	42511	425110
TBSS12121302	1,4-DICHLOROBENZENE-D4	121683	122517	49007	490068
OU09 SS324 0001	1,4-DICHLOROBENZENE-D4	65263	122517	49007	490068
OU09 SS223 0001	1,4-DICHLOROBENZENE-D4	71711	122517	49007	490068
OU09 SB223 0001 RA	1,4-DICHLOROBENZENE-D4	82117	106277.5	42511	425110

Attachment B

Qualifier Codes and Explanations

Qualifier	Explanation
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
UJ	The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual quantitation limit necessary to accurately and precisely measure the analyte in the sample.
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

Attachment C

Reason Codes and Explanations

Reason Code	Explanation
be	Equipment blank contamination
bf	Field blank contamination
bl	Laboratory blank contamination
c	Calibration issue
d	Reporting limit raised due to chromatographic interference
fd	Field duplicate RPDs
h	Holding times
i	Internal standard areas
k	Estimated Maximum Possible Concentration (EMPC)
l	LCS or OPR recoveries
lc	Labeled compound recovery
ld	Laboratory duplicate RPDs
lp	Laboratory control sample/laboratory control sample duplicate RPDs
m	Matrix spike recovery
md	Matrix spike/matrix spike duplicate RPDs
nb	Negative laboratory blank contamination
p	Chemical preservation issue
r	Dual column RPD
q	Quantitation issue
s	Surrogate recovery
su	Ion suppression
t	Temperature preservation issue
x	Percent solids
y	Serial dilution results
z	ICS results

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Data Validation Report

Project:	MRP Site 1 (OU9) Remedial Investigation, NAVSTA Newport, Rhode Island CTO WE06
Laboratory:	Katahdin Analytical Services, Scarborough, Maine
Service Request:	CARR-2
Analyses/Method:	Polycyclic Aromatic Hydrocarbons (GC/MS) SIM / EPA SW-846 Method 8270D
Validation Level:	Limited
Resolution Consultants Project Number:	60250336 SA.DV
Prepared by:	Helen Jones Parry/Resolution Consultants — Completed on: 01/29/2014
Reviewed by:	Kristin Rutherford/Resolution Consultants — File Name: CARR-2_SO_8270_DVRpt.docx

SUMMARY

The samples listed below were collected by Resolution Consultants from the MRP Site 1 (OU9), Remedial Investigation, NAVSTA Newport, Rhode Island on December 3 and 4, 2013.

Sample ID	Matrix/Sample Type
OU09 SB207 0001	Soil
OU09 SB207 0102	Soil
OU09 SB207 0305	Soil
OU09 SB207 0709	Soil
OU09 SBMW11 0406	Soil

The data have been validated in accordance with the project-specific Sampling and Analysis Plan, *Sampling and Analysis Plan, Former Carr Point Shooting Range (MRP Site 1, OU9), Naval Station (NAVSTA) Newport, Rhode Island, Final* (Naval Facilities Engineering Command, Mid-Atlantic, 2013) and the following references:

- *DoD Quality Systems Manual (QMS) for Environmental Laboratories, version 4.2* (DoD EDQW, 2010);
- *USEPA Region 1, EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses* (December 1996);
- *USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review* (June 2008);
- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW846, Method 8270D, Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)* (USEPA, 1996);
- laboratory quality control (QC) limits, as applicable.

The USEPA Region 1 and National Data Validation Functional Guidelines were modified to accommodate the non-CLP methodologies. In the absence of method-specific direction for validation, Resolution Consultants professional judgment was used as appropriate.

REVIEW ELEMENTS

The data were evaluated based on the following parameters (where applicable to the method):

✓	Data completeness (chain-of-custody (COC)/sample integrity
✓	Holding times and sample preservation
✓	Instrument tuning
✗	Initial calibration/continuing calibration verification
✗	Laboratory blanks/equipment blanks
✓	Surrogate spike recoveries
NA	Matrix spike (MS) and/or matrix spike duplicate (MSD) results
✗	Laboratory control sample (LCS)/laboratory control sample duplicate (LCSD) results
NA	Field duplicates
✓	Internal standards
✓	Sample results/reporting issues

The symbol (✓) indicates that no validation qualifiers were applied based on this parameter. NA indicates that the parameter was not included as part of this data set or was not applicable to this validation and therefore not reviewed. The symbol (✗) indicates that a quality control (QC) nonconformance resulted in the qualification of data. Any QC nonconformance that resulted in the qualification of data is discussed below. In addition, nonconformances or other issues that were noted during validation, but did not result in qualification of data, may be discussed for informational purposes only.

The data appear valid as reported and may be used for decision making purposes. Selected data points were estimated, negated, and/or rejected due to nonconformances of certain QC criteria (see discussion below). Qualified sample results are presented in Table 1.

RESULTS

<u>Data Completeness</u>

The data package was reviewed and found to meet acceptance criteria for completeness:

- The COCs were reviewed for completeness of information relevant to the samples and requested analyses, and for signatures indicating transfer of sample custody.
- The laboratory sample login sheet(s) were reviewed for issues potentially affecting sample integrity, including the condition of sample containers upon receipt at the laboratory.
- Completeness of analyses was verified by comparing the reported results to the COC requests.

Holding Times/Sample Preservation

Sample preservation and preparation/analysis holding times were reviewed for conformance with the QC acceptance criteria.

The QC acceptance criteria were met.

GC/MS Performance Checks

The data were reviewed to ensure that the decafluorotriphenylphosphine (DFTPP) tuning was performed at the correct frequency and that the method acceptance criteria were met. All samples were analyzed within 12 hours of the DFTPP tunes.

Initial Calibration/Continuing Calibration Verification

Calibration data were reviewed for conformance with the QC acceptance criteria to ensure that:

- the initial calibration (ICAL) percent relative standard deviation (%RSD), correlation coefficient (r)/coefficient of determination (r2), and/or response factor method acceptance criteria were met;
- the initial calibration verification standard (ICV) percent recovery acceptance criteria were met;
- the continuing calibration verification standard (CCV) method percent difference or percent drift (%Ds) and RF acceptance criteria were met; and
- the retention time method acceptance criteria were met.

Nonconformances are summarized in Attachment A in Tables A-1a and A-1b. Data qualification to the analytes associated with the specific ICAL and/or CCV was as follows:

ICAL and CCV Response Factor Nonconformances

Criteria	Actions	
	Detected Results	**Nondetected Results[4]**
SPCCs		
RF<0.050 for N-nitroso-di-n-propylamine; hexachlorocyclopentadiene; 2,4-dinitrophenol; and 4-nitrophenol.	J[1]	UJ[1]
All compounds except SPCCs and Poor Performing Compounds[2]		
RF<0.050	J	R[3]
RF<0.05 but>0.010 (if low standard response is adequate)	J[1]	UJ[1]
Poor Performing Compounds[2]		
RF<0.010	J	R
[1]No guidance in NFG, thus Resolution Consultants professional judgment was used.		
[2]As defined in Table 28 of the NFG.		
[3]Resolution Consultants professional judgment may be used to either raise reporting level or to estimate reporting limit if low standard response is adequate.		
[4]Sample results qualified as not detected (U) due to blank contamination are not rejected, but estimated (UJ).		
SPCCs - System Performance Check Compounds as listed in SW-846 Method 8270C		

ICAL Linearity Nonconformances

Criteria	Actions	
	Detected Results	Nondetected
%RSD > 30% for CCCs (acenaphthene, 1,4-dichlorobenzene, hexachlorobutadiene, diphenylamine, di-n-octyl phthalate, fluoranthene, and benzo(a)pyrene; 4-chloro-3-methylphenol, 2,4-dichlorophenol, 2-nitrophenol, phenol, pentachlorophenol, and 2,4,6-trichlorophenol)	J*	UJ*
%RSD > 15% and quantitation based on mean RF	J	UJ
r or r^2 < 0.99 and quantitation based on linear regression	J*	UJ*
* No guidance in NFG, thus Resolution Consultants professional judgment was used		
CCCs - Calibration Check Compounds as listed in SW-846 Method 8270C		

ICV Recovery Nonconformances

Criteria	Actions*	
	Detected Results	Nondetected Results
Recovery > 120	J	UJ
Recovery < 80	J	UJ
* No guidance in NFG, thus Resolution Consultants professional judgment was used		

CCV Linearity Nonconformances

Criteria	Actions	
	Detected Results	Nondetected Results
%D > 20%	J	UJ
%Drift >20%	J*	UJ*
* No guidance in NFG, thus Resolution Consultants professional judgment was used		

Qualified sample results are shown in Table 1.

<u>Laboratory Blanks/Equipment Blanks</u>

Laboratory method blanks and equipment rinsate blanks were evaluated as to whether there were contaminants detected above the method detection limit (MDL).

Data validation qualifications for individual samples are based on the maximum contaminant concentration detected in all associated blanks.

Detected results in blanks are not discussed in this data validation report if the associated results were nondetect or if qualification of sample results was not required.

Rinsate blanks RBSB12061301 (reported in SDG CARR-6) and RBSB12111304 (reported in SDG CARR-9) were associated with the samples in this SDG.

Nonconformances are summarized in Attachment A in Tables A-2a and A-2b. Sample results were qualified as follows:

Blank Actions:

Blank type	Blank result	Sample result	Action for samples
Method, Storage, Trip, Field, or Equipment	Detects	Not detected	No qualification
	≤ LOQ	< LOQ	Report sample LOQ value with a U
		≥ LOQ and ≤ 5x the blank result[2]	Report the sample result with a U[1]
		≥ 5x the blank result[2]	No qualifications[1]
	> LOQ	< LOQ	Report sample LOQ value with a U
		≥ LOQ and < blank contamination	Report the sample result with a U or reject the sample result as unusable R
		≥ LOQ and ≥ blank contamination	If the result is ≤5x blank result[2], report the sample result U[1] If the result is > 5x blank result[2], no qualification is required[1]
[1]Based on Resolution Consultants professional judgment			
[2]Use 10x blank result for all phthalates (common contaminants per Region I)			

LOD - Limit of Detection
LOQ - Limit of Quantitation (equivalent to lowest calibration standard)

Qualified sample results are shown in Table 1.

Surrogate Spike Recoveries

The surrogate recoveries (%Rs) were reviewed for conformance with the QC acceptance criteria.

All QC acceptance criteria were met.

MS/MSD Results

MS/MSDs were not performed in these SDGs.

LCS/LCSD Results

The LCS/LCSD %Rs and/or relative percent recoveries (RPDs) were reviewed for conformance with the QC acceptance criteria.

Nonconformances are summarized in Attachment A in Table A-3. Data qualification to the analytes associated with the specific LCS %Rs or RPDs was as follows:

Criteria[1,2]	Action[3]	
	Detected Compounds	Nondetected Compounds
%R or RPD > UL	J	No qualification
10%≥%R < LL	J	UJ
%R < 10%	J	R
[1] In the absence of NFG 2008 guidance for LCS results, NFG 2008 MS/MSD guidance was applied with Resolution Consultants professional judgment.		

[2] NFG 2008 MS/MSD does not list a minimum limit. Based on Region 1 and Resolution Consultants professional judgment, a minimum limit of 10% was used.
[3]If the %R of more than half of the analytes are not within limits, then reject (R) nondetects for the analytes with <10% recovery and estimate (J/UJ) all other analyte(s) in the associated samples.

Qualified sample results are shown in Table 1.

Field Duplicate Results

Field duplicates were not included in this SDG.

Internal Standard Results

The internal standard (IS) recoveries were reviewed for conformance with the QC acceptance criteria.

All QC acceptance criteria were met.

Sample Results/Reporting Issues

All compounds detected at concentrations less than the limit of quantitation (LOQ) but greater than the method detection limit (MDL) were qualified by the laboratory as estimated (J). This "J" qualifier was retained during data validation.

Any sample that was analyzed at a dilution due to high concentrations of target or non-targets was checked to ensure that the results and/or sample specific LODs and LOQs were adjusted accordingly by the laboratory.

The percent solids data were reviewed to ensure that NFG 2008 specified criteria were met.

All percent solids criteria were met.

QUALIFICATION ACTIONS

Sample results qualified as a result of validation actions are summarized in Table 1. All actions are described above.

ATTACHMENTS

Attachment A: Nonconformance Summary Tables

Attachment B: Qualifier Codes and Explanations

Attachment C: Reason Codes and Explanations

Table 1 - Data Validation Summary of Qualified Data

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SBMW11 0406	SO	BENZO[A]ANTHRACENE	23	11	23	UG_KG	U	bl
OU09 SBMW11 0406	SO	BENZO[B]FLUORANTHENE	28	11	23	UG_KG	J	c
OU09 SBMW11 0406	SO	BENZO[G,H,I]PERYLENE	5.4	11	23	UG_KG	J	l
OU09 SBMW11 0406	SO	FLUORANTHENE	23	11	23	UG_KG	U	bl
OU09 SBMW11 0406	SO	INDENO[1,2,3-CD]PYRENE	18	11	23	UG_KG	J	c
OU09 SBMW11 0406	SO	PYRENE	23	11	23	UG_KG	U	bl

Attachment A

Non Conformance Tables

Table A-1a Initial Calibration - SVOC SIM

ICV	Compound	ICV %R	ICV %R Limits	Associated Samples
WG136159-8	INDENO(1,2,3-CD)PYRENE	74.63	80-120	OU09 SBMW11 0406

Table A-1b Continuing Calibration – SVOC SIM

CCAL	Compound	% D	%D Limit	Associated Samples
WG136448-2	BENZO(B)FLUORANTHENE	-21.23	<20	OU09 SBMW11 0406
	INDENO(1,2,3-CD)PYRENE	21.49	<20	

Table A-2a Lab Blanks

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
WG136036-1	BENZO[A]ANTHRACENE	3.0	10	20	UG_KG	OU09 SBMW11 0406
WG136036-1	FLUORANTHENE	2.2	10	20	UG_KG	OU09 SBMW11 0406
WG136036-1	PYRENE	3.3	10	20	UG_KG	OU09 SBMW11 0406

Table A-2b Field Blanks

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
RBSB12061301	BENZO[A]ANTHRACENE	0.059	0.10	0.20	UG_L	OU09 SBMW11 0406 OU09 SB207 0709
RBSB12061301	INDENO(1,2,3-cd)PYRENE	0.085	0.10	0.20	UG_L	OU09 SBMW11 0406 OU09 SB207 0709

Table A-3 Lab Control Samples

LCS ID	Compound	LCS % Recovery	LCSD % Recovery	Lower Limit	Upper Limit	RPD	RPD Limit	Associated Samples
WG136036-2	BENZO[G,H,I]PERYLENE	49.2	50.7	53	103	3	50	OU09 SBMW11 0406
WG136036-2RA	BENZO[G,H,I]PERYLENE	49.5	51	53	103	3	50	OU09 SBMW11 0406

Attachment B

Qualifier Codes and Explanations

Qualifier	Explanation
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
UJ	The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual quantitation limit necessary to accurately and precisely measure the analyte in the sample.
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

Attachment C

Reason Codes and Explanations

Reason Code	Explanation
be	Equipment blank contamination
bf	Field blank contamination
bl	Laboratory blank contamination
c	Calibration issue
d	Reporting limit raised due to chromatographic interference
fd	Field duplicate RPDs
h	Holding times
i	Internal standard areas
k	Estimated Maximum Possible Concentration (EMPC)
l	LCS or OPR recoveries
lc	Labeled compound recovery
ld	Laboratory duplicate RPDs
lp	Laboratory control sample/laboratory control sample duplicate RPDs
m	Matrix spike recovery
md	Matrix spike/matrix spike duplicate RPDs
nb	Negative laboratory blank contamination
p	Chemical preservation issue
r	Dual column RPD
q	Quantitation issue
s	Surrogate recovery
su	Ion suppression
t	Temperature preservation issue
x	Percent solids
y	Serial dilution results
z	ICS results

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Data Validation Report

Project:	MRP Site 1 (OU9) Remedial Investigation, NAVSTA Newport, Rhode Island CTO WE06
Laboratory:	Katahdin Analytical, Scarborough, Maine
Service Request:	CARR-6
Analyses/Method:	Semivolatile Organic Compounds (GC/MS) Full Scan and SIM / EPA SW-846 Method 8270D Polycyclic Aromatic Hydrocarbons (GC/MS) Full Scan and SIM / EPA SW-846 Method 8270D
Validation Level:	Limited
Resolution Consultants Project Number:	60250336 SA.DV
Prepared by:	Helen Jones Parry/Resolution Consultants — Completed on: 04/07/2014
Reviewed by:	Kristin Rutherford/Resolution Consultants — File Name: CARR-6_SO_8270_DVRpt.docx

SUMMARY

The samples listed below were collected by Resolution Consultants from the MRP Site 1 (OU9), NAVSTA Newport, Rhode Island on December 5 and 6, 2013.

Sample ID	Matrix/Sample Type
RBSB12061301	Equipment blank
RBSS12061302	Equipment blank
FDSS12061301	Field Duplicate of OU09 SS224 0001
OU09 SS210 0012	Soil
OU09 SS224 0001	Soil
OU09 SS225 0001	Soil
OU09 SS226 0001	Soil
OU09 SS227 0001	Soil
OU09 SS301 0001	Soil

The data have been validated in accordance with the project-specific Sampling and Analysis Plans, *Sampling and Analysis Plan, Former Carr Point Shooting Range (MRP Site 1, OU9), Naval Station (NAVSTA) Newport, Rhode Island, Final* (Naval Facilities Engineering Command, Mid-Atlantic, 2013); *Sampling and Analysis Plan, Former Carr Point Storage Area (IR Site 22, OU10), Naval Station (NAVSTA) Newport, Rhode Island, Draft Final* (Naval Facilities Engineering Command, Mid-Atlantic, 2013); and the following references:

- *DoD Quality Systems Manual (QMS) for Environmental Laboratories, version 4.2* (DoD EDQW, 2010);

- *USEPA Region 1, EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses* (December 1996);
- *USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review* (June 2008);
- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW846, Method 8270D, Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)* (USEPA, 1996);
- laboratory quality control (QC) limits, as applicable.

The USEPA Region 1 and National Data Validation Functional Guidelines were modified to accommodate the non-CLP methodologies. In the absence of method-specific direction for validation, Resolution Consultants professional judgment was used as appropriate.

REVIEW ELEMENTS

The data were evaluated based on the following parameters (where applicable to the method):

✓	Data completeness (chain-of-custody (COC)/sample integrity
✓	Holding times and sample preservation
✓	Instrument tuning
✗	Initial calibration/continuing calibration verification
✗	Laboratory blanks/equipment blanks
✓	Surrogate spike recoveries
NA	Matrix spike (MS) and/or matrix spike duplicate (MSD) results
✗	Laboratory control sample (LCS)/laboratory control sample duplicate (LCSD) results
✗	Field duplicates
✗	Internal standards
✓	Sample results/reporting issues

The symbol (✓) indicates that no validation qualifiers were applied based on this parameter. NA indicates that the parameter was not included as part of this data set or was not applicable to this validation and therefore not reviewed. The symbol (✗) indicates that a quality control (QC) nonconformance resulted in the qualification of data. Any QC nonconformance that resulted in the qualification of data is discussed below. In addition, nonconformances or other issues that were noted during validation, but did not result in qualification of data, may be discussed for informational purposes only.

The data appear valid as reported and may be used for decision making purposes. Selected data points were estimated, negated, and/or rejected due to nonconformances of certain QC criteria (see discussion below). Qualified sample results are presented in Table 1.

RESULTS

<u>Data Completeness</u>

The data package was reviewed and found to meet acceptance criteria for completeness:

- The COCs were reviewed for completeness of information relevant to the samples and requested analyses, and for signatures indicating transfer of sample custody.
- The laboratory sample login sheet(s) were reviewed for issues potentially affecting sample integrity, including the condition of sample containers upon receipt at the laboratory.
- Completeness of analyses was verified by comparing the reported results to the COC requests.

Holding Times/Sample Preservation

Sample preservation and preparation/analysis holding times were reviewed for conformance with the QC acceptance criteria.

The QC acceptance criteria were met.

GC/MS Performance Checks

The data were reviewed to ensure that the decafluorotriphenylphosphine (DFTPP) tuning was performed at the correct frequency and that the method acceptance criteria were met. All samples were analyzed within 12 hours of the DFTPP tunes.

Initial Calibration/Continuing Calibration Verification

Calibration data were reviewed for conformance with the QC acceptance criteria to ensure that:

- the initial calibration (ICAL) percent relative standard deviation (%RSD), correlation coefficient (r)/coefficient of determination (r2), and/or response factor method acceptance criteria were met;
- the initial calibration verification standard (ICV) percent recovery acceptance criteria were met;
- the continuing calibration verification standard (CCV) method percent difference or percent drift (%Ds) and RF acceptance criteria were met; and
- the retention time method acceptance criteria were met.

Nonconformances are summarized in Attachment A in Table A-1a and A-1b. Data qualification to the analytes associated with the specific ICAL and/or CCV was as follows:

ICAL and CCV Response Factor Nonconformances

Criteria	Actions	
	Detected Results	Nondetected Results[4]
SPCCs		
RF<0.050 for N-nitroso-di-n-propylamine; hexachlorocyclopentadiene; 2,4-dinitrophenol; and 4-nitrophenol.	J[1]	UJ[1]
All compounds except SPCCs and Poor Performing Compounds[2]		
RF<0.050	J	R[3]
RF<0.05 but>0.010 (if low standard response is adequate)	J[1]	UJ[1]
Poor Performing Compounds[2]		
RF<0.010	J	R
[1]No guidance in NFG, thus Resolution Consultants professional judgment was used.		
[2]As defined in Table 28 of the NFG.		

[3]Resolution Consultants professional judgment may be used to either raise reporting level or to estimate reporting limit if low standard response is adequate.
[4]Sample results qualified as not detected (U) due to blank contamination are not rejected, but estimated (UJ).
SPCCs - System Performance Check Compounds as listed in SW-846 Method 8270C

ICAL Linearity Nonconformances

Criteria	Actions	
	Detected Results	Nondetected
%RSD > 30% for CCCs (acenaphthene, 1,4-dichlorobenzene, hexachlorobutadiene, diphenylamine, di-n-octyl phthalate, fluoranthene, and benzo(a)pyrene; 4-chloro-3-methylphenol, 2,4-dichlorophenol, 2-nitrophenol, phenol, pentachlorophenol, and 2,4,6-trichlorophenol)	J*	UJ*
%RSD > 15% and quantitation based on mean RF	J	UJ
r or r^2 < 0.99 and quantitation based on linear regression	J*	UJ*
* No guidance in NFG, thus Resolution Consultants professional judgment was used		
CCCs - Calibration Check Compounds as listed in SW-846 Method 8270C		

ICV Recovery Nonconformances

Criteria	Actions*	
	Detected Results	Nondetected Results
Recovery > 120	J	UJ
Recovery < 80	J	UJ
* No guidance in NFG, thus Resolution Consultants professional judgment was used		

CCV Linearity Nonconformances

Criteria	Actions	
	Detected Results	Nondetected Results
%D > 20%	J	UJ
%Drift >20%	J*	UJ*
* No guidance in NFG, thus Resolution Consultants professional judgment was used		

Qualified sample results are shown in Table 1.

<u>Laboratory Blanks/Equipment Blanks</u>

Laboratory method blanks and equipment rinsate blanks were evaluated as to whether there were contaminants detected above the method detection limit (MDL).

Data validation qualifications for individual samples are based on the maximum contaminant concentration detected in all associated blanks.

Detected results in blanks are not discussed in this data validation report if the associated results were nondetect or if qualification of sample results was not required.

Rinsate blank RBSS12061302 was associated with the samples in this SDG. No blank qualifications were required due to rinsate blanks.

Nonconformances are summarized in Attachment A in Tables A-2a and A-2b. Sample results were qualified as follows:

Blank Actions:

Blank type	Blank result	Sample result	Action for samples
Method, Storage, Trip, Field, or Equipment	Detects	Not detected	No qualification
	≤ LOQ	< LOQ	Report sample LOQ value with a U
		≥ LOQ and ≤ 5x the blank result[2]	Report the sample result with a U[1]
		≥ 5x the blank result[2]	No qualifications[1]
	> LOQ	< LOQ	Report sample LOQ value with a U
		≥ LOQ and < blank contamination	Report the sample result with a U or reject the sample result as unusable R
		≥ LOQ and ≥ blank contamination	If the result is ≤5x blank result[2], report the sample result U[1] If the result is > 5x blank result[2], no qualification is required[1]
[1]Based on Resolution Consultants professional judgment			
[2]Use 10x blank result for all phthalates (common contaminants per Region I)			

LOD - Limit of Detection
LOQ - Limit of Quantitation (equivalent to lowest calibration standard)

Qualified sample results are shown in Table 1.

Surrogate Spike Recoveries

The surrogate recoveries (%Rs) were reviewed for conformance with the QC acceptance criteria.

Nonconformances are summarized in Attachment A in Table A-3. Data qualification on the basis of surrogate recovery nonconformances was as follows:

Actions: (Based on NFG 2008, except as noted)

Actions are only taken when one surrogate %R is <10% or when 2 or more surrogates in one fraction are outside limits.

Actions apply to only the compounds in the affected fraction. *i.e.* if 2 acid surrogate %Rs are below the LL, then all acid compounds will be qualified as indicated in the table

Criteria	Action	
	Detected Results	Nondetected Results
%R> upper limit (UL)	J	No qualification
10% ≤ %R < lower limit (LL)[1]	J	UJ
%R <10% (sample dilution is not a factor)[1]	J	R
%R <10% (sample dilution is a factor)[1,2]	No qualification	No qualification

[1] NFG 2008 does not list a minimum limit. Based on Region 1 and Resolution Consultants professional judgment, a minimum limit of 1 was used.

[2] If there is no surrogate information due to dilution then estimate (J/UJ) all results. However, in cases where there is surrogate information from multiple runs then base the surrogate actions on the least diluted run.

**NFG recommends professional judgment, thus Resolution Consultants professional judgment was used

Qualified sample results are shown in Table 1.

MS/MSD Results

MS/MSDs were not included in the SDG.

LCS/LCSD Results

The LCS/LCSD %Rs and/or relative percent recoveries (RPDs) were reviewed for conformance with the QC acceptance criteria.

Nonconformances are summarized in Attachment A in Table A-4. Data qualification to the analytes associated with the specific LCS %Rs or RPDs was as follows:

Criteria[1,2]	Action[3]	
	Detected Compounds	Nondetected Compounds
%R or RPD > UL	J	No qualification
10%≥%R < LL	J	UJ
%R < 10%	J	R
[1] In the absence of NFG 2008 guidance for LCS results, NFG 2008 MS/MSD guidance was applied with Resolution Consultants professional judgment. [2] NFG 2008 MS/MSD does not list a minimum limit. Based on Region 1 and Resolution Consultants professional judgment, a minimum limit of 10% was used.		
[3]If the %R of more than half of the analytes are not within limits, then reject (R) nondetects for the analytes with <10% recovery and estimate (J/UJ) all other analyte(s) in the associated samples.		

Qualified sample results are shown in Table 1.

Field Duplicate Results

Field duplicate RPDs were reviewed for conformance with the Resolution Consultants QC criteria of ≤50% for solid matrices and ≤30% for aqueous matrices. These criteria apply if both results were greater than two times the limit of quantitation (LOQ).

Nonconformances are summarized in Attachment A in Table A-5. Data qualification to the analytes associated with the specific field duplicate RPDs was as follows:

Criteria	RPD	Action	
		Detected	Nondetected
Sample and duplicate are nondetect results	Not calculable (NC)	No qualification	No qualification
Sample and duplicate results ≥2xLOQ	>30 (aqueous) >50 (solids)	J	Not Applicable
Sample and duplicate results <2xLOQ	>60 (aqueous) >100 (solids)	J	Not Applicable
If sample or duplicate result is >2xLOQ and the other is not detected	NC	J	UJ
If sample or duplicate result is <2xLOQ and the other is not detected	NC	No qualification	No qualification

Actions: (Resolution Consultants professional judgment was used)

Qualified sample results are shown in Table 1.

Internal Standard Results

The internal standard (IS) recoveries were reviewed for conformance with the QC acceptance criteria.

Nonconformances are summarized in Attachment A in Table A-6. Data qualification to the analytes associated with the specific IS on the basis of IS recoveries was as follows:

Sample IS area compared to CCV and CCV IS area compared to ICAL			
Qualify results	**≤ 20%**	**≥ 20% and <50%**	**> 200%**
Positive Results	J	J	J
Nondetected Results	R	UJ	A

Qualified sample results are shown in Table 1.

Sample Results/Reporting Issues

All compounds detected at concentrations less than the limit of quantitation (LOQ) but greater than the method detection limit (MDL) were qualified by the laboratory as estimated (J). This "J" qualifier was retained during data validation.

Any sample that was analyzed at a dilution due to high concentrations of target or non-targets was checked to ensure that the results and/or sample specific LODs and LOQs were adjusted accordingly by the laboratory.

The percent solids data were reviewed to ensure that NFG 2008 specified criteria were met.

All percent solids criteria were met.

QUALIFICATION ACTIONS

Sample results qualified as a result of validation actions are summarized in Table 1. All actions are described above.

ATTACHMENTS

Attachment A: Nonconformance Summary Tables

Attachment B: Qualifier Codes and Explanations

Attachment C: Reason Codes and Explanations

Table 1 - Data Validation Summary of Qualified Data

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
FDSS12061301	SO	BENZO[A]ANTHRACENE	410	240	320	UG_KG	J	fd
FDSS12061301	SO	BENZO[A]PYRENE	480	240	320	UG_KG	J	fd
FDSS12061301	SO	BENZO[B]FLUORANTHENE	510	240	320	UG_KG	J	fd
FDSS12061301	SO	BENZO[K]FLUORANTHENE	450	240	320	UG_KG	J	fd
FDSS12061301	SO	CHRYSENE	560	240	320	UG_KG	J	fd
FDSS12061301	SO	FLUORANTHENE	580	240	320	UG_KG	J	fd
FDSS12061301	SO	PHENANTHRENE	420	240	320	UG_KG	J	fd
FDSS12061301	SO	PYRENE	720	240	320	UG_KG	J	fd
FDSS12061301	SO	ACENAPHTHENE	72	9.8	20	UG_KG	J	fd
FDSS12061301	SO	ANTHRACENE	84	9.8	20	UG_KG	J	fd
FDSS12061301	SO	BENZO[G,H,I]PERYLENE	120	9.8	20	UG_KG	J	l
FDSS12061301	SO	FLUORENE	39	9.8	20	UG_KG	J	fd
FDSS12061301	SO	NAPHTHALENE	26	9.8	20	UG_KG	J	fd
OU09 SS210 0012	SO	BENZO[G,H,I]PERYLENE	210	12	23	UG_KG	J	l
OU09 SS224 0001	SO	ACENAPHTHENE	22	11	22	UG_KG	J	fd
OU09 SS224 0001	SO	ANTHRACENE	33	11	22	UG_KG	J	fd
OU09 SS224 0001	SO	BENZO[A]ANTHRACENE	180	11	22	UG_KG	J	fd
OU09 SS224 0001	SO	BENZO[A]PYRENE	230	11	22	UG_KG	J	fd
OU09 SS224 0001	SO	BENZO[B]FLUORANTHENE	200	11	22	UG_KG	J	fd
OU09 SS224 0001	SO	BENZO[G,H,I]PERYLENE	87	11	22	UG_KG	J	l
OU09 SS224 0001	SO	BENZO[K]FLUORANTHENE	180	11	22	UG_KG	J	fd
OU09 SS224 0001	SO	CHRYSENE	240	11	22	UG_KG	J	fd
OU09 SS224 0001	SO	FLUORANTHENE	210	11	22	UG_KG	J	fd
OU09 SS224 0001	SO	NAPHTHALENE	8.1	11	22	UG_KG	J	fd
OU09 SS224 0001	SO	PHENANTHRENE	150	11	22	UG_KG	J	fd
OU09 SS224 0001	SO	PYRENE	230	11	22	UG_KG	J	fd
OU09 SS225 0001	SO	BENZO[A]PYRENE	1500	280	380	UG_KG	J	i
OU09 SS225 0001	SO	BENZO[B]FLUORANTHENE	1300	280	380	UG_KG	J	i
OU09 SS225 0001	SO	BENZO[G,H,I]PERYLENE	680	280	380	UG_KG	J	i
OU09 SS225 0001	SO	BENZO[K]FLUORANTHENE	1300	280	380	UG_KG	J	i
OU09 SS225 0001	SO	INDENO[1,2,3-CD]PYRENE	820	280	380	UG_KG	J	i
OU09 SS226 0001	SO	BENZO[G,H,I]PERYLENE	20	10	20	UG_KG	UJ	bl,l
OU09 SS226 0001	SO	DIBENZ[A,H]ANTHRACENE	20	10	20	UG_KG	U	bl
OU09 SS227 0001	SO	BENZO[G,H,I]PERYLENE	76	10	20	UG_KG	J	l

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SS301 0001	SO	2-CHLORONAPHTHALENE	260	260	340	UG_KG	UJ	c
OU09 SS301 0001	SO	BENZIDINE	1200	1200	1600	UG_KG	R	l,c
OU09 SS301 0001	SO	BENZOIC ACID	640	640	850	UG_KG	UJ	c
OU09 SS301 0001	SO	BIS(2-CHLOROETHOXY)METHANE	260	260	340	UG_KG	UJ	l
OU09 SS301 0001	SO	DIETHYLPHTHALATE	260	260	340	UG_KG	UJ	c
OU09 SS301 0001	SO	BENZO[A]ANTHRACENE	21	10	21	UG_KG	U	bl
OU09 SS301 0001	SO	BENZO[A]PYRENE	21	10	21	UG_KG	U	bl
OU09 SS301 0001	SO	BENZO[G,H,I]PERYLENE	21	10	21	UG_KG	UJ	bl,l
OU09 SS301 0001	SO	DIBENZ[A,H]ANTHRACENE	21	10	21	UG_KG	U	bl
OU09 SS301 0001	SO	INDENO[1,2,3-CD]PYRENE	21	10	21	UG_KG	U	bl
OU09 SS301 0001	SO	N-NITROSOPYRROLIDINE	260	260	340	UG_KG	R	l
OU09 SS301 0001	SO	PENTACHLOROPHENOL	640	640	850	UG_KG	UJ	c
RBSB12061301	WQ	BENZO[G,H,I]PERYLENE	0.10	0.10	0.20	UG_L	UJ	l
RBSB12061301	WQ	ACENAPHTHYLENE	0.10	0.10	0.20	UG_L	UJ	l
RBSB12061301	WQ	ANTHRACENE	0.10	0.10	0.20	UG_L	UJ	l
RBSB12061301	WQ	BENZO[A]ANTHRACENE	0.059	0.10	0.20	UG_L	J	l,ld
RBSB12061301	WQ	BENZO[B]FLUORANTHENE	0.10	0.10	0.20	UG_L	UJ	l
RBSB12061301	WQ	BENZO[K]FLUORANTHENE	0.10	0.10	0.20	UG_L	UJ	l
RBSB12061301	WQ	CHRYSENE	0.10	0.10	0.20	UG_L	UJ	l
RBSB12061301	WQ	FLUORANTHENE	0.10	0.10	0.20	UG_L	UJ	l
RBSB12061301	WQ	FLUORENE	0.10	0.10	0.20	UG_L	UJ	l
RBSB12061301	WQ	PHENANTHRENE	0.10	0.10	0.20	UG_L	UJ	l
RBSB12061301	WQ	PYRENE	0.10	0.10	0.20	UG_L	UJ	l
RBSS12061302	WQ	BENZO[G,H,I]PERYLENE	0.094	0.094	0.19	UG_L	UJ	l
RBSS12061302	WQ	ACENAPHTHYLENE	0.094	0.094	0.19	UG_L	UJ	l
RBSS12061302	WQ	ANTHRACENE	0.094	0.094	0.19	UG_L	UJ	l
RBSS12061302	WQ	BENZO[A]ANTHRACENE	0.19	0.19	0.19	UG_L	UJ	bl,l,ld
RBSS12061302	WQ	BENZO[B]FLUORANTHENE	0.094	0.094	0.19	UG_L	UJ	l
RBSS12061302	WQ	CHRYSENE	0.094	0.094	0.19	UG_L	UJ	l
RBSS12061302	WQ	FLUORANTHENE	0.094	0.094	0.19	UG_L	UJ	l
RBSS12061302	WQ	FLUORENE	0.094	0.094	0.19	UG_L	UJ	l
RBSS12061302	WQ	PHENANTHRENE	0.094	0.094	0.19	UG_L	UJ	l
RBSS12061302	WQ	PYRENE	0.094	0.094	0.19	UG_L	UJ	l
RBSS12061302	WQ	2-CHLORONAPHTHALENE	7.1	7.1	9.4	UG_L	UJ	c
RBSS12061302	WQ	4-NITROANILINE	18	18	24	UG_L	UJ	c
RBSS12061302	WQ	4-NITROPHENOL	18	18	24	UG_L	UJ	c
RBSS12061302	WQ	BENZIDINE	35	35	47	UG_L	UJ	c

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
RBSS12061302	WQ	BENZOIC ACID	18	18	24	UG_L	UJ	c
RBSS12061302	WQ	DIETHYLPHTHALATE	7.1	7.1	9.4	UG_L	UJ	c
RBSS12061302	WQ	PENTACHLOROPHENOL	18	18	24	UG_L	UJ	c

Attachment A

Non Conformance Summary Tables

Table A-1a Initial Calibration - SVOC full scan

ICAL	Compound	% RSD	%RSD Limit	ICV %R	ICV %R Limits	Associated Samples
12/11/13 (U)	BENZOIC ACID	42.12	<15			OU09 SS301 0001 RBSS12061302
	2-CHLORONAPHTHALENE	20.70	<15			
	DIETHYLPHTHALATE	15.01	<15			
WG135960-8	BENZOIC ACID			127.06	80-120	RBSS12061302 OU09 SS301 0001
	2-CHLORONAPHTHALENE			120.61	80-120	
	PENTACHLOROPHENOL			122.89	80-120	
	BENZIDINE			47.60	80-120	

Table A-1b Continuing Calibration – SVOC full scan

CCAL	Compound	% D	%D Limit	Associated Samples
WG136160-2	BENZIDINE	22.49	<20	OU09 SS301 0001
WG136055-2	BENZOIC ACID	42.34	<20	RBSS12061302
	4-NITROPHENOL	35.08	<20	RBSS12061302
	4-NITROANILINE	23.12	<20	RBSS12061302

Table A-2a Lab Blanks

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
WG135796-1	BENZO[A]ANTHRACENE	0.076	0.10	0.20	UG_L	RBSB12061301 RBSS12061302
WG136036-1	BENZO[A]ANTHRACENE	3.0	10	20	UG_KG	FDSS12061301 OU09 SS210 0012 OU09 SS224 0001 OU09 SS225 0001 OU09 SS226 0001 OU09 SS227 0001 OU09 SS301 0001
WG136036-1	FLUORANTHENE	2.2	10	20	UG_KG	FDSS12061301 OU09 SS210 0012 OU09 SS224 0001 OU09 SS225 0001 OU09 SS226 0001 OU09 SS227 0001 OU09 SS301 0001

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
WG136036-1	PYRENE	3.3	10	20	UG_KG	FDSS12061301 OU09 SS210 0012 OU09 SS224 0001 OU09 SS225 0001 OU09 SS226 0001 OU09 SS227 0001 OU09 SS301 0001
WG136036-1RA	BENZO[A]ANTHRACENE	4.8	10	20	UG_KG	FDSS12061301 OU09 SS210 0012 OU09 SS224 0001 OU09 SS225 0001 OU09 SS226 0001 OU09 SS227 0001 OU09 SS301 0001
WG136036-1RA	BENZO[A]PYRENE	5.7	10	20	UG_KG	FDSS12061301 OU09 SS210 0012 OU09 SS224 0001 OU09 SS225 0001 OU09 SS226 0001 OU09 SS227 0001 OU09 SS301 0001
WG136036-1RA	BENZO[G,H,I]PERYLENE	4.2	10	20	UG_KG	FDSS12061301 OU09 SS210 0012 OU09 SS224 0001 OU09 SS225 0001 OU09 SS226 0001 OU09 SS227 0001 OU09 SS301 0001
WG136036-1RA	DIBENZ[A,H]ANTHRACENE	4.4	10	20	UG_KG	FDSS12061301 OU09 SS210 0012 OU09 SS224 0001 OU09 SS225 0001 OU09 SS226 0001 OU09 SS227 0001 OU09 SS301 0001
WG136036-1RA	INDENO[1,2,3-CD]PYRENE	8.3	10	20	UG_KG	FDSS12061301 OU09 SS210 0012 OU09 SS224 0001 OU09 SS225 0001 OU09 SS226 0001 OU09 SS227 0001 OU09 SS301 0001
WG136036-1RA	PYRENE	4.9	10	20	UG_KG	FDSS12061301 OU09 SS210 0012 OU09 SS224 0001 OU09 SS225 0001 OU09 SS226 0001 OU09 SS227 0001 OU09 SS301 0001

Table A-2b Field Blanks

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
RBSS12061302	INDENO[1,2,3-CD]PYRENE	0.094 (0.017)	0.094	0.19	UG_L (UG/KG)	FDSS12061301 OU09 SS210 0012 OU09 SS224 0001 OU09 SS225 0001 OU09 SS226 0001 OU09 SS227 0001 OU09 SS301 0001

Table A-3 Surrogates

Sample ID	Surrogate	% Recovery	Lower Limit	Upper Limit
SIM				
RBSB12061301	2-METHYLNAPHTHALENE-D10	92.7	43	92
RBSS12061302	2-METHYLNAPHTHALENE-D10	96.0	43	92

Table A-4 Lab Control Samples

LCS ID	Compound	LCS % Recovery	LCSD % Recovery	Lower Limit	Upper Limit	RPD	RPD Limit	Associated Samples
SVOC full-scan								
WG135792-2	2,4-DINITROPHENOL	170	183	15	140	7	30	RBSS12061302
WG135792-2	N-NITROSODIPHENYLAMINE	140	138	50	110	1	30	RBSS12061302
WG135792-2	BENZIDINE	90.6	106	10	100	15	30	RBSS12061302
WG136035-2	BIS(2-CHLOROETHOXY)METHANE	55.3	44.3	45	110	22	30	FDSS12061301 OU09 SS210 0012 OU09 SS225 0001 OU09 SS301 0001
WG136035-2	BENZIDINE	0	0	10	150	0	30	FDSS12061301 OU09 SS210 0012 OU09 SS225 0001 OU09 SS301 0001
WG136035-2	N-NITROSOPYRROLIDINE	0	0	30	150	0	30	FDSS12061301 OU09 SS210 0012 OU09 SS225 0001 OU09 SS301 0001
SIM								
WG135796-2	ANTHRACENE	60	85	70	95	34	30	RBSB12061301 RBSS12061302
WG135796-2	PYRENE	52	80	71	104	42	30	RBSB12061301 RBSS12061302
WG135796-2	BENZO[B]FLUORANTHENE	64.5	81.5	67	102	23	30	RBSB12061301 RBSS12061302
WG135796-2	FLUORANTHENE	63.5	87	81	109	31	30	RBSB12061301 RBSS12061302
WG135796-2	BENZO[K]FLUORANTHENE	75.5	106	68	103	34	30	RBSB12061301 RBSS12061302

LCS ID	Compound	LCS % Recovery	LCSD % Recovery	Lower Limit	Upper Limit	RPD	RPD Limit	Associated Samples
WG135796-2	ACENAPHTHYLENE	53	71	55	105	29	30	RBSB12061301 RBSS12061302
WG135796-2	CHRYSENE	66.5	102	70	95	42	30	RBSB12061301 RBSS12061302
WG135796-2	BENZO[A]ANTHRACENE	53	85	70	110	46	30	RBSB12061301 RBSS12061302
WG135796-2	PHENANTHRENE	59.5	86.5	73	100	37	30	RBSB12061301 RBSS12061302
WG135796-2	FLUORENE	55	76.5	53	95	33	30	RBSB12061301 RBSS12061302
WG136036-2RA	BENZO[G,H,I]PERYLENE	49.5	51	53	103	3	50	FDSS12061301 OU09 SS210 0012 OU09 SS224 0001 OU09 SS225 0001 OU09 SS226 0001 OU09 SS227 0001 OU09 SS301 0001

Table A-5 Field Duplicates

Sample ID	Duplicate ID	Compound	Sample Result	Qual	Duplicate Result	Qual	LOD	LOQ	Units	RPD
OU09 SS224 0001	FDSS12061301	ACENAPHTHENE	22	J	72		11	22	UG_KG	106%
OU09 SS224 0001	FDSS12061301	ACENAPHTHYLENE	11	U	9.8	U	11	22	UG_KG	NC
OU09 SS224 0001	FDSS12061301	ANTHRACENE	33		84		11	22	UG_KG	87%
OU09 SS224 0001	FDSS12061301	BENZO[A]ANTHRACENE	180		410		11	22	UG_KG	78%
OU09 SS224 0001	FDSS12061301	BENZO[A]PYRENE	230		480		11	22	UG_KG	70%
OU09 SS224 0001	FDSS12061301	BENZO[B]FLUORANTHENE	200		510		11	22	UG_KG	87%
OU09 SS224 0001	FDSS12061301	BENZO[G,H,I]PERYLENE	87		120		11	22	UG_KG	32%
OU09 SS224 0001	FDSS12061301	BENZO[K]FLUORANTHENE	180		450		11	22	UG_KG	86%
OU09 SS224 0001	FDSS12061301	CHRYSENE	240		560		11	22	UG_KG	80%
OU09 SS224 0001	FDSS12061301	DIBENZ[A,H]ANTHRACENE	49		81		11	22	UG_KG	49%
OU09 SS224 0001	FDSS12061301	FLUORANTHENE	210		580		11	22	UG_KG	94%
OU09 SS224 0001	FDSS12061301	FLUORENE	13	J	39		11	22	UG_KG	100%

Sample ID	Duplicate ID	Compound	Sample Result	Qual	Duplicate Result	Qual	LOD	LOQ	Units	RPD
OU09 SS224 0001	FDSS12061301	INDENO[1,2,3-CD]PYRENE	100		160		11	22	UG_KG	46%
OU09 SS224 0001	FDSS12061301	NAPHTHALENE	8.1	J	26		11	22	UG_KG	105%
OU09 SS224 0001	FDSS12061301	PHENANTHRENE	150		420		11	22	UG_KG	95%
OU09 SS224 0001	FDSS12061301	PYRENE	230		720		11	22	UG_KG	103%

Table A-6 Internal Standards

Sample ID	Internal Standard	IS AREA	Lower Limit (50%)	Lower Limit (20%)	Upper Limit
SVOC full scan					
OU09 SS225 0001	PERYLENE-D12	181249	258363.5	103345	1033454

SVOC

PERYLENE-D12 Associated PAH compounds

BENZO[B]FLUORANTHENE
BENZO[K]FLUORANTHENE
BENZO[A]PYRENE
INDENO[1,2,3-CD]PYRENE
DIBENZ[A,H]ANTHRACENE
BENZO[G,H,I]PERYLENE

Attachment B

Qualifier Codes and Explanations

Qualifier	Explanation
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
UJ	The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual quantitation limit necessary to accurately and precisely measure the analyte in the sample.
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

Attachment C

Reason Codes and Explanations

Reason Code	Explanation
be	Equipment blank contamination
bf	Field blank contamination
bl	Laboratory blank contamination
c	Calibration issue
d	Reporting limit raised due to chromatographic interference
fd	Field duplicate RPDs
h	Holding times
i	Internal standard areas
k	Estimated Maximum Possible Concentration (EMPC)
l	LCS or OPR recoveries
lc	Labeled compound recovery
ld	Laboratory duplicate RPDs
lp	Laboratory control sample/laboratory control sample duplicate RPDs
m	Matrix spike recovery
md	Matrix spike/matrix spike duplicate RPDs
nb	Negative laboratory blank contamination
p	Chemical preservation issue
r	Dual column RPD
q	Quantitation issue
s	Surrogate recovery
su	Ion suppression
t	Temperature preservation issue
x	Percent solids
y	Serial dilution results
z	ICS results

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Data Validation Report

Project:	MRP Site 1 (OU9) Remedial Investigation, NAVSTA Newport, Rhode Island CTO WE06
Laboratory:	Katahdin Analytical Services, Scarborough, Maine
Service Request:	CARR-8
Analyses/Method:	Polycyclic Aromatic Hydrocarbons (GC/MS) Full Scan and SIM / EPA SW-846 Method 8270D
Validation Level:	Limited
Resolution Consultants Project Number:	60250336 SA.DV
Prepared by:	Helen Jones Parry/Resolution Consultants — Completed on: 01/31/2014
Reviewed by:	Kristin Rutherford/Resolution Consultants — File Name: CARR-8_SO_8270_DVRpt.docx

SUMMARY

The samples listed below were collected by Resolution Consultants from the MRP Site 1 (OU9), NAVSTA Newport, Rhode Island on December 9, 2013.

Sample ID	Matrix/Sample Type
OU09 SB201 0305	Soil
OU09 SB201 1012	Soil
OU09 SB208 0305	Soil
OU09 SB208 0608	Soil
OU09 SB209 0102	Soil
OU09 SB209 0305	Soil
OU09 SB209 1012	Soil
OU09 SB211 0305	Soil
OU09 SB211 1012	Soil
OU09 SB212 0102	Soil
OU09 SB212 0305	Soil
OU09 SB212 0608	Soil
OU09 SB213 0102	Soil
OU09 SB213 0305	Soil
OU09 SB213 0608	Soil
OU09 SB228 0305	Soil
OU09 SB228 0608	Soil
OU09 SS201 0001	Soil

Sample ID	Matrix/Sample Type
OU09 SS208 0001	Soil
OU09 SS209 0001	Soil
OU09 SS211 0001	Soil
OU09 SS212 0001	Soil
OU09 SS213 0001	Soil
OU09 SS228 0001SL	Soil

The data have been validated in accordance with the project-specific Sampling and Analysis Plan, *Sampling and Analysis Plan, Former Carr Point Shooting Range (MRP Site 1, OU9), Naval Station (NAVSTA) Newport, Rhode Island, Final* (Naval Facilities Engineering Command, Mid-Atlantic, 2013) and the following references:

- *DoD Quality Systems Manual (QMS) for Environmental Laboratories, version 4.2* (DoD EDQW, 2010);
- *USEPA Region 1, EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses* (December 1996);
- *USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review* (June 2008);
- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW846, Method 8270D, Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)* (USEPA, 1996);
- laboratory quality control (QC) limits, as applicable.

The USEPA Region 1 and National Data Validation Functional Guidelines were modified to accommodate the non-CLP methodologies. In the absence of method-specific direction for validation, Resolution Consultants professional judgment was used as appropriate.

REVIEW ELEMENTS

The data were evaluated based on the following parameters (where applicable to the method):

✓	Data completeness (chain-of-custody (COC)/sample integrity
✗	Holding times and sample preservation
✓	Instrument tuning
✗	Initial calibration/continuing calibration verification
✗	Laboratory blanks/equipment blanks
✓	Surrogate spike recoveries
NA	Matrix spike (MS) and/or matrix spike duplicate (MSD) results
✗	Laboratory control sample (LCS)/laboratory control sample duplicate (LCSD) results
NA	Field duplicates
✗	Internal standards
✓	Sample results/reporting issues

The symbol (✓) indicates that no validation qualifiers were applied based on this parameter. NA indicates that the parameter was not included as part of this data set or was not applicable to this

validation and therefore not reviewed. The symbol (✗) indicates that a quality control (QC) nonconformance resulted in the qualification of data. Any QC nonconformance that resulted in the qualification of data is discussed below. In addition, nonconformances or other issues that were noted during validation, but did not result in qualification of data, may be discussed for informational purposes only.

The data appear valid as reported and may be used for decision making purposes. Selected data points were estimated, negated, and/or rejected due to nonconformances of certain QC criteria (see discussion below). Qualified sample results are presented in Table 1.

RESULTS

Data Completeness

The data package was reviewed and found to meet acceptance criteria for completeness:

- The COCs were reviewed for completeness of information relevant to the samples and requested analyses, and for signatures indicating transfer of sample custody.
- The laboratory sample login sheet(s) were reviewed for issues potentially affecting sample integrity, including the condition of sample containers upon receipt at the laboratory.
- Completeness of analyses was verified by comparing the reported results to the COC requests.

Holding Times/Sample Preservation

Sample preservation and preparation/analysis holding times were reviewed for conformance with the QC acceptance criteria.

Samples OU09 SS213 0001, OU09 SS228 0001SL, and OU09 SS228 0001SL were extracted more than 14 days but less than 28 days after sample collection in order to be reanalyzed. All reported reanalysis results for these samples are qualified "J/UJ", as estimates, due to exceedance of holding times.

Nonconformances are summarized in Attachment A in Table A-1. Qualified sample results are shown in Table 1.

Sample preservation and preparation/analysis holding times were reviewed for conformance to NFG 2008 criteria. SVOC samples should be properly cooled (4 degrees C $\pm$ 2 C). The aqueous sample extraction holding time is within 7 days from sample collection and the soil sample extraction holding time is within 14 days from sample collection. The analysis holding time for both aqueous and soil matrices is 40 days from sample extraction.

Actions: (Based on NFG 2008, except as noted)

Extraction from sampling (Days)		Analysis from Extraction (Days)	Action	
Water	**Soil/Sediment**		**Detected Results**	**Nondetected Results**
1-7	1-14	1-40	No qualification	No qualification
8-28	15-28	41-60	J	UJ
$\geq$ 28*	$\geq$ 28*	$\geq$ 61*	J	R
* NFG does not define grossly exceeded, thus Region 1 guidance was used.				

Cooler/Storage Temperature Criteria	Action	
	Detected Results	Nondetected Results
<2C	No qualification[1]	No qualification[1]
6-10°C	No qualification[1]	No qualification[1]
>10C[2]	J[2]	UJ[2]
[1]NFG 2008 recommends professional judgment, thus Resolution Consultants professional judgment was used. [2]Based on Region 2 guidance that states qualify data if cooler temperature>10C due to no ice/ice melted upon arrival.		

GC/MS Performance Checks

The data were reviewed to ensure that the decafluorotriphenylphosphine (DFTPP) tuning was performed at the correct frequency and that the method acceptance criteria were met. All samples were analyzed within 12 hours of the DFTPP tunes.

Initial Calibration/Continuing Calibration Verification

Calibration data were reviewed for conformance with the QC acceptance criteria to ensure that:

- the initial calibration (ICAL) percent relative standard deviation (%RSD), correlation coefficient (r)/coefficient of determination (r2), and/or response factor method acceptance criteria were met;
- the initial calibration verification standard (ICV) percent recovery acceptance criteria were met;
- the continuing calibration verification standard (CCV) method percent difference or percent drift (%Ds) and RF acceptance criteria were met; and
- the retention time method acceptance criteria were met.

Nonconformances are summarized in Attachment A in Table A-2a and A-2b. Data qualification to the analytes associated with the specific ICAL and/or CCV was as follows:

ICAL and CCV Response Factor Nonconformances

Criteria	Actions	
	Detected Results	Nondetected Results[4]
SPCCs		
RF<0.050 for N-nitroso-di-n-propylamine; hexachlorocyclopentadiene; 2,4-dinitrophenol; and 4-nitrophenol.	J[1]	UJ[1]
All compounds except SPCCs and Poor Performing Compounds[2]		
RF<0.050	J	R[3]
RF<0.05 but>0.010 (if low standard response is adequate)	J[1]	UJ[1]
Poor Performing Compounds[2]		
RF<0.010	J	R
[1]No guidance in NFG, thus Resolution Consultants professional judgment was used.		
[2]As defined in Table 28 of the NFG.		
[3]Resolution Consultants professional judgment may be used to either raise reporting level or to estimate reporting limit if low standard response is adequate.		
[4]Sample results qualified as not detected (U) due to blank contamination are not rejected, but estimated (UJ).		
SPCCs - System Performance Check Compounds as listed in SW-846 Method 8270C		

ICAL Linearity Nonconformances

Criteria	Actions	
	Detected Results	Nondetected
%RSD > 30% for CCCs (acenaphthene, 1,4-dichlorobenzene, hexachlorobutadiene, diphenylamine, di-n-octyl phthalate, fluoranthene, and benzo(a)pyrene; 4-chloro-3-methylphenol, 2,4-dichlorophenol, 2-nitrophenol, phenol, pentachlorophenol, and 2,4,6-trichlorophenol)	J*	UJ*
%RSD > 15% and quantitation based on mean RF	J	UJ
r or r^2 < 0.99 and quantitation based on linear regression	J*	UJ*
* No guidance in NFG, thus Resolution Consultants professional judgment was used		
CCCs - Calibration Check Compounds as listed in SW-846 Method 8270C		

ICV Recovery Nonconformances

Criteria	Actions*	
	Detected Results	Nondetected Results
Recovery > 120	J	UJ
Recovery < 80	J	UJ
* No guidance in NFG, thus Resolution Consultants professional judgment was used		

CCV Linearity Nonconformances

Criteria	Actions	
	Detected Results	Nondetected Results
%D > 20%	J	UJ
%Drift >20%	J*	UJ*
* No guidance in NFG, thus Resolution Consultants professional judgment was used		

Qualified sample results are shown in Table 1.

<u>Laboratory Blanks/Equipment Blanks</u>

Laboratory method blanks and equipment rinsate blanks were evaluated as to whether there were contaminants detected above the method detection limit (MDL).

Data validation qualifications for individual samples are based on the maximum contaminant concentration detected in all associated blanks.

Detected results in blanks are not discussed in this data validation report if the associated results were nondetect or if qualification of sample results was not required.

Rinsate blanks RBSB12111303 and RBSB12111304 (reported in SDG CARR-9) were associated with the samples in this SDG. No blank qualifications were required due to rinsate blanks.

Nonconformances are summarized in Attachment A in Table A-3. Sample results were qualified as follows:

Blank Actions**:**

Blank type	Blank result	Sample result	Action for samples
Method, Storage, Trip, Field, or Equipment	Detects	Not detected	No qualification
	≤ LOQ	< LOQ	Report sample LOQ value with a U
		≥ LOQ[2]	No qualification
	> LOQ	< LOQ	Report sample LOQ value with a U
		≥ LOQ and < blank contamination	Report the sample result with a U or reject the sample result as unusable R
		≥ LOQ and ≥ blank contamination	If the result is ≤5x blank result[2], report the sample result U[1] If the result is > 5x blank result[2], no qualification is required[1]
[1]Based on Resolution Consultants professional judgment			
[2]Use 10x blank result for all phthalates (common contaminants per Region I)			

LOD - Limit of Detection
LOQ - Limit of Quantitation (equivalent to lowest calibration standard)

Qualified sample results are shown in Table 1.

Surrogate Spike Recoveries

The surrogate recoveries (%Rs) were reviewed for conformance with the QC acceptance criteria.

Nonconformances are summarized in Attachment A in Table A-4. Data qualification on the basis of surrogate recovery nonconformances was as follows:

Actions: (Based on NFG 2008, except as noted)

Actions are only taken when one surrogate %R is <10% or when 2 or more surrogates in one fraction are outside limits.

Actions apply to only the compounds in the affected fraction. *i.e.* if 2 acid surrogate %Rs are below the LL, then all acid compounds will be qualified as indicated in the table

Criteria	Action	
	Detected Results	Nondetected Results
%R> upper limit (UL)	J	No qualification
10% ≤ %R < lower limit (LL)[1]	J	UJ
%R <10% (sample dilution is not a factor)[1]	J	R
%R <10% (sample dilution is a factor)[1,2]	No qualification	No qualification

[1] NFG 2008 does not list a minimum limit. Based on Region 1 and Resolution Consultants professional judgment, a minimum limit of 1 was used.

[2] If there is no surrogate information due to dilution then estimate (J/UJ) all results. However, in cases where there is surrogate information from multiple runs then base the surrogate actions on the least diluted run.

**NFG recommends professional judgment, thus Resolution Consultants professional judgment was used

Qualified sample results are shown in Table 1.

MS/MSD Results

MS/MSDs were not performed in this SDG.

LCS/LCSD Results

The LCS/LCSD %Rs and/or relative percent recoveries (RPDs) were reviewed for conformance with the QC acceptance criteria.

Nonconformances are summarized in Attachment A in Table A-5. Data qualification to the analytes associated with the specific LCS %Rs or RPDs was as follows:

Criteria[1,2]	Action[3]	
	Detected Compounds	Nondetected Compounds
%R or RPD > UL	J	No qualification
10%≥%R < LL	J	UJ
%R < 10%	J	R
[1] In the absence of NFG 2008 guidance for LCS results, NFG 2008 MS/MSD guidance was applied with Resolution Consultants professional judgment. [2] NFG 2008 MS/MSD does not list a minimum limit. Based on Region 1 and Resolution Consultants professional judgment, a minimum limit of 10% was used.		
[3]If the %R of more than half of the analytes are not within limits, then reject (R) nondetects for the analytes with <10% recovery and estimate (J/UJ) all other analyte(s) in the associated samples.		

Qualified sample results are shown in Table 1.

Field Duplicate Results

Field duplicates were not collected as a part of this SDG.

Internal Standard Results

The internal standard (IS) recoveries were reviewed for conformance with the QC acceptance criteria.

Nonconformances are summarized in Attachment A in Table A-6. Data qualification to the analytes associated with the specific IS on the basis of IS recoveries was as follows:

Sample IS area compared to CCV and CCV IS area compared to ICAL			
Qualify results	**≤ 20%**	**≥ 20% and <50%**	**> 200%**
Positive Results	J	J	J
Nondetected Results	R	UJ	A

Qualified sample results are shown in Table 1.

Sample Results/Reporting Issues

All compounds detected at concentrations less than the limit of quantitation (LOQ) but greater than the method detection limit (MDL) were qualified by the laboratory as estimated (J). This "J" qualifier was retained during data validation.

Any sample that was analyzed at a dilution due to high concentrations of target or non-targets was checked to ensure that the results and/or sample specific LODs and LOQs were adjusted accordingly by the laboratory.

The percent solids data were reviewed to ensure that NFG 2008 specified criteria were met.

All percent solids criteria were met.

QUALIFICATION ACTIONS

Sample results qualified as a result of validation actions are summarized in Table 1. All actions are described above.

ATTACHMENTS

Attachment A: Nonconformance Summary Tables

Attachment B: Qualifier Codes and Explanations

Attachment C: Reason Codes and Explanations

Table 1 - Data Validation Summary of Qualified Data

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SB201 0305	SO	BENZO[A]ANTHRACENE	23	23	23	UG_KG	U	bl
OU09 SB201 0305	SO	BENZO[G,H,I]PERYLENE	11	11	23	UG_KG	UJ	l
OU09 SB201 0305	SO	DIBENZ[A,H]ANTHRACENE	23	23	23	UG_KG	U	bl
OU09 SB201 0305	SO	INDENO[1,2,3-CD]PYRENE	23	23	23	UG_KG	U	bl
OU09 SB201 0305	SO	PYRENE	23	23	23	UG_KG	U	bl
OU09 SB201 1012	SO	BENZO[A]ANTHRACENE	22	22	22	UG_KG	U	bl
OU09 SB201 1012	SO	BENZO[G,H,I]PERYLENE	11	11	22	UG_KG	UJ	l
OU09 SB201 1012	SO	DIBENZ[A,H]ANTHRACENE	22	22	22	UG_KG	U	bl
OU09 SB201 1012	SO	INDENO[1,2,3-CD]PYRENE	22	22	22	UG_KG	U	bl
OU09 SB201 1012	SO	PYRENE	22	22	22	UG_KG	U	bl
OU09 SB208 0305	SO	BENZO[G,H,I]PERYLENE	22	11	21	UG_KG	J	l,c
OU09 SB208 0305	SO	BENZO[A]ANTHRACENE	73	11	21	UG_KG	J	c
OU09 SB208 0305	SO	BENZO[A]PYRENE	61	11	21	UG_KG	J	c
OU09 SB208 0305	SO	BENZO[B]FLUORANTHENE	110	11	21	UG_KG	J	c
OU09 SB208 0608	SO	BENZO[G,H,I]PERYLENE	6.0	12	23	UG_KG	J	l,c
OU09 SB208 0608	SO	BENZO[A]ANTHRACENE	15	12	23	UG_KG	J	c
OU09 SB208 0608	SO	BENZO[A]PYRENE	13	12	23	UG_KG	J	c
OU09 SB208 0608	SO	BENZO[B]FLUORANTHENE	24	12	23	UG_KG	J	c
OU09 SB209 0102	SO	BENZO[G,H,I]PERYLENE	34	11	22	UG_KG	J	l,c
OU09 SB209 0102	SO	BENZO[A]ANTHRACENE	57	11	22	UG_KG	J	c
OU09 SB209 0102	SO	BENZO[A]PYRENE	71	11	22	UG_KG	J	c
OU09 SB209 0102	SO	BENZO[B]FLUORANTHENE	98	11	22	UG_KG	J	c
OU09 SB209 0305	SO	BENZO[B]FLUORANTHENE	22	22	22	UG_KG	UJ	bl,c
OU09 SB209 0305	SO	BENZO[G,H,I]PERYLENE	2.4	11	22	UG_KG	J	l,c
OU09 SB209 0305	SO	FLUORANTHENE	22	22	22	UG_KG	U	bl
OU09 SB209 0305	SO	PYRENE	22	22	22	UG_KG	U	bl
OU09 SB209 0305	SO	BENZO[A]ANTHRACENE	4.8	11	22	UG_KG	J	c
OU09 SB209 0305	SO	BENZO[A]PYRENE	5.4	11	22	UG_KG	J	c
OU09 SB209 1012	SO	BENZO[G,H,I]PERYLENE	10	10	20	UG_KG	UJ	l,c
OU09 SB209 1012	SO	PYRENE	20	20	20	UG_KG	U	bl
OU09 SB209 1012	SO	BENZO[A]ANTHRACENE	2.6	10	20	UG_KG	J	c
OU09 SB209 1012	SO	BENZO[A]PYRENE	10	10	20	UG_KG	UJ	c
OU09 SB209 1012	SO	BENZO[B]FLUORANTHENE	10	10	20	UG_KG	UJ	c

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SB211 0305	SO	BENZO[G,H,I]PERYLENE	54	11	22	UG_KG	J	l,c
		BENZO[A]ANTHRACENE	210	11	22	UG_KG	J	c
		BENZO[A]PYRENE	160	11	22	UG_KG	J	c
		BENZO[B]FLUORANTHENE	140	11	22	UG_KG	J	c
OU09 SB211 1012	SO	BENZO[G,H,I]PERYLENE	25	11	22	UG_KG	J	l
OU09 SB212 0102	SO	BENZO[A]ANTHRACENE	550	290	390	UG_KG	J	h
OU09 SB212 0102	SO	BENZO[A]PYRENE	620	290	390	UG_KG	J	h
OU09 SB212 0102	SO	BENZO[B]FLUORANTHENE	660	290	390	UG_KG	J	h
OU09 SB212 0102	SO	BENZO[K]FLUORANTHENE	680	290	390	UG_KG	J	h
OU09 SB212 0102	SO	CHRYSENE	840	290	390	UG_KG	J	h
OU09 SB212 0102	SO	FLUORANTHENE	740	290	390	UG_KG	J	h
OU09 SB212 0102	SO	PHENANTHRENE	570	290	390	UG_KG	J	h
OU09 SB212 0102	SO	PYRENE	910	290	390	UG_KG	J	h
OU09 SB212 0102	SO	BENZO[G,H,I]PERYLENE	230	12	23	UG_KG	J	l
OU09 SB212 0305	SO	BENZO[A]ANTHRACENE	22	22	22	UG_KG	U	bl
OU09 SB212 0305	SO	BENZO[G,H,I]PERYLENE	22	22	22	UG_KG	U	bl,l
OU09 SB212 0305	SO	DIBENZ[A,H]ANTHRACENE	22	22	22	UG_KG	U	bl
OU09 SB212 0305	SO	INDENO[1,2,3-CD]PYRENE	22	22	22	UG_KG	U	bl
OU09 SB212 0608	SO	BENZO[A]ANTHRACENE	22	22	22	UG_KG	U	bl
OU09 SB212 0608	SO	BENZO[G,H,I]PERYLENE	22	22	22	UG_KG	UJ	bl,l
OU09 SB212 0608	SO	DIBENZ[A,H]ANTHRACENE	22	22	22	UG_KG	U	bl
OU09 SB212 0608	SO	INDENO[1,2,3-CD]PYRENE	22	22	22	UG_KG	U	bl
OU09 SB212 0608	SO	PYRENE	22	22	22	UG_KG	U	bl
OU09 SB213 0102	SO	BENZO[A]ANTHRACENE	23	23	23	UG_KG	U	bl
OU09 SB213 0102	SO	BENZO[A]PYRENE	23	23	23	UG_KG	U	bl
OU09 SB213 0102	SO	BENZO[G,H,I]PERYLENE	23	23	23	UG_KG	UJ	bl,l
OU09 SB213 0102	SO	DIBENZ[A,H]ANTHRACENE	23	23	23	UG_KG	U	bl
OU09 SB213 0102	SO	INDENO[1,2,3-CD]PYRENE	23	23	23	UG_KG	U	bl
OU09 SB213 0102	SO	PYRENE	23	23	23	UG_KG	U	bl
OU09 SB213 0305	SO	BENZO[A]ANTHRACENE	21	21	21	UG_KG	U	bl
OU09 SB213 0305	SO	BENZO[G,H,I]PERYLENE	10	10	21	UG_KG	UJ	l
OU09 SB213 0305	SO	DIBENZ[A,H]ANTHRACENE	21	21	21	UG_KG	U	bl

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SB213 0305	SO	INDENO[1,2,3-CD]PYRENE	21	21	21	UG_KG	U	bl
OU09 SB213 0305	SO	PYRENE	21	21	21	UG_KG	U	bl
OU09 SB213 0608	SO	BENZO[A]ANTHRACENE	20	20	20	UG_KG	U	bl
OU09 SB213 0608	SO	BENZO[G,H,I]PERYLENE	9.9	20	20	UG_KG	UJ	l
OU09 SB213 0608	SO	DIBENZ[A,H]ANTHRACENE	20	20	20	UG_KG	U	bl
OU09 SB213 0608	SO	INDENO[1,2,3-CD]PYRENE	20	20	20	UG_KG	U	bl
OU09 SB228 0305	SO	BENZO[A]ANTHRACENE	22	22	22	UG_KG	U	bl
OU09 SB228 0305	SO	BENZO[A]PYRENE	22	22	22	UG_KG	UJ	bl,l
OU09 SB228 0305	SO	BENZO[B]FLUORANTHENE	22	22	22	UG_KG	U	bl
OU09 SB228 0305	SO	BENZO[G,H,I]PERYLENE	3.5	11	22	UG_KG	J	l
OU09 SB228 0305	SO	BENZO[K]FLUORANTHENE	22	22	22	UG_KG	U	bl
OU09 SB228 0305	SO	CHRYSENE	22	22	22	UG_KG	U	bl
OU09 SB228 0305	SO	DIBENZ[A,H]ANTHRACENE	22	22	22	UG_KG	UJ	bl,l
OU09 SB228 0305	SO	FLUORANTHENE	22	22	22	UG_KG	U	bl
OU09 SB228 0305	SO	INDENO[1,2,3-CD]PYRENE	22	22	22	UG_KG	U	bl
OU09 SB228 0305	SO	PHENANTHRENE	22	22	22	UG_KG	U	bl
OU09 SB228 0305	SO	PYRENE	22	22	22	UG_KG	U	bl
OU09 SB228 0608	SO	BENZO[B]FLUORANTHENE	23	23	23	UG_KG	UJ	bl,c
OU09 SB228 0608	SO	BENZO[G,H,I]PERYLENE	2.8	11	23	UG_KG	J	l,c
OU09 SB228 0608	SO	FLUORANTHENE	23	23	23	UG_KG	U	bl
OU09 SB228 0608	SO	PYRENE	23	23	23	UG_KG	U	bl
OU09 SB228 0608	SO	BENZO[A]ANTHRACENE	4.7	11	23	UG_KG	J	c
OU09 SB228 0608	SO	BENZO[A]PYRENE	5.9	11	23	UG_KG	J	c
OU09 SS201 0001	SO	BENZO[A]ANTHRACENE	25	25	25	UG_KG	U	bl
OU09 SS201 0001	SO	BENZO[G,H,I]PERYLENE	25	25	25	UG_KG	U	bl,l
OU09 SS201 0001	SO	DIBENZ[A,H]ANTHRACENE	25	25	25	UG_KG	U	bl
OU09 SS201 0001	SO	INDENO[1,2,3-CD]PYRENE	25	25	25	UG_KG	U	bl
OU09 SS208 0001	SO	BENZO[A]ANTHRACENE	210	11	22	UG_KG	J	c
OU09 SS208 0001	SO	BENZO[A]PYRENE	210	11	22	UG_KG	J	c
OU09 SS208 0001	SO	BENZO[B]FLUORANTHENE	270	11	22	UG_KG	J	c
OU09 SS208 0001	SO	BENZO[G,H,I]PERYLENE	70	11	22	UG_KG	J	l,c
OU09 SS209 0001	SO	BENZO[A]PYRENE	22000	2700	3600	UG_KG	J	i
OU09 SS209 0001	SO	BENZO[B]FLUORANTHENE	17000	2700	3600	UG_KG	J	i

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SS209 0001	SO	BENZO[G,H,I]PERYLENE	11000	2700	3600	UG_KG	J	i
OU09 SS209 0001	SO	BENZO[K]FLUORANTHENE	18000	2700	3600	UG_KG	J	i
OU09 SS209 0001	SO	DIBENZ[A,H]ANTHRACENE	2800	2700	3600	UG_KG	J	i
OU09 SS209 0001	SO	INDENO[1,2,3-CD]PYRENE	12000	2700	3600	UG_KG	J	i
OU09 SS211 0001	SO	BENZO[A]PYRENE	19000	2800	3700	UG_KG	J	i
OU09 SS211 0001	SO	BENZO[B]FLUORANTHENE	18000	2800	3700	UG_KG	J	i
OU09 SS211 0001	SO	BENZO[G,H,I]PERYLENE	7900	2800	3700	UG_KG	J	i
OU09 SS211 0001	SO	BENZO[K]FLUORANTHENE	16000	2800	3700	UG_KG	J	i
OU09 SS211 0001	SO	INDENO[1,2,3-CD]PYRENE	10000	2800	3700	UG_KG	J	i
OU09 SS213 0001	SO	BENZO[A]ANTHRACENE	620	350	470	UG_KG	J	h
OU09 SS213 0001	SO	BENZO[A]PYRENE	800	350	470	UG_KG	J	h,i
OU09 SS213 0001	SO	BENZO[B]FLUORANTHENE	860	350	470	UG_KG	J	h,i
OU09 SS213 0001	SO	BENZO[K]FLUORANTHENE	830	350	470	UG_KG	J	h,i
OU09 SS213 0001	SO	CHRYSENE	1000	350	470	UG_KG	J	h
OU09 SS213 0001	SO	FLUORANTHENE	620	350	470	UG_KG	J	h
OU09 SS213 0001	SO	PHENANTHRENE	530	350	470	UG_KG	J	h
OU09 SS213 0001	SO	PYRENE	1600	350	470	UG_KG	J	h
OU09 SS213 0001	SO	BENZO[G,H,I]PERYLENE	290	14	28	UG_KG	J	i,l
OU09 SS213 0001	SO	DIBENZ[A,H]ANTHRACENE	130	14	28	UG_KG	J	i
OU09 SS213 0001	SO	INDENO[1,2,3-CD]PYRENE	270	14	28	UG_KG	J	i
OU09 SS228 0001SL	SO	NAPHTHALENE	3000	120	240	UG_KG	J	c
OU09 SS228 0001SL	SO	ACENAPHTHENE	18000	15000	20000	UG_KG	J	h
OU09 SS228 0001SL	SO	ANTHRACENE	21000	15000	20000	UG_KG	J	h
OU09 SS228 0001SL	SO	BENZO[A]ANTHRACENE	65000	15000	20000	UG_KG	J	h
OU09 SS228 0001SL	SO	BENZO[A]PYRENE	80000	15000	20000	UG_KG	J	h
OU09 SS228 0001SL	SO	BENZO[B]FLUORANTHENE	75000	15000	20000	UG_KG	J	h
OU09 SS228 0001SL	SO	BENZO[G,H,I]PERYLENE	32000	15000	20000	UG_KG	J	h
OU09 SS228 0001SL	SO	BENZO[K]FLUORANTHENE	74000	15000	20000	UG_KG	J	h
OU09 SS228 0001SL	SO	CHRYSENE	81000	15000	20000	UG_KG	J	h
OU09 SS228 0001SL	SO	DIBENZ[A,H]ANTHRACENE	15000	15000	20000	UG_KG	UJ	h
OU09 SS228 0001SL	SO	FLUORANTHENE	100000	15000	20000	UG_KG	J	h
OU09 SS228 0001SL	SO	FLUORENE	9200	15000	20000	UG_KG	J	h
OU09 SS228 0001SL	SO	INDENO[1,2,3-CD]PYRENE	44000	15000	20000	UG_KG	J	h
OU09 SS228 0001SL	SO	PHENANTHRENE	86000	15000	20000	UG_KG	J	h
OU09 SS228 0001SL	SO	PYRENE	100000	15000	20000	UG_KG	J	h

Attachment A

Non Conformance Summary Tables

Table A-1 Hold Times

Sample ID	Days from Sampling to Prep	Status	Days from Prep to Analysis	Status	Days from Sampling to Analysis	Status
OU09 SB212 0102	15	>14 days	0	OK @40 days	15	
OU09 SS213 0001	21	>14 days	0	OK @40 days	21	
OU09 SS228 0001SL	24	>14 days	0	OK @40 days	24	

Table A-2a - Initial Calibration - SVOC SIM

ICAL	Compound	% RSD	%RSD Limit	ICV %R	ICV %R Limits	Associated Samples
ICV WG136526-8	BENZO(A)ANTHRACENE			77.96	80-120	OU09 SB228 0608 OU09 SS208 0001 OU09 SB208 0305 OU09 SB208 0608 OU09 SB209 0102 OU09 SB209 0305 OU09 SB209 1012 OU09 SB211 0305
	BENZO(B)FLUORANTHENE			76.92	80-120	
	BENZO(A)PYRENE			78.97	80-120	
	BENZO(G,H,I)PERYLENE			78.72	80-120	
ICAL 01/06/14	NAPHTHALENE	15.42	<15			OU09 SS228 0001SL DL
	FLUORANTHENE	17.17	<15			
WG137068-8	BENZO(A)ANTHRACENE			77.25	80-120	OU09 SS228 0001SL DL
	CHRYSENE			75.72	80-120	
	BENZO(B)FLUORANTHENE			70.93	80-120	
	BENZO(A)PYRENE			78.48	80-120	

Table A-2b Continuing Calibration – SVOC SIM

CCAL	Compound	% D	%D Limit	Associated Samples
WG136788-2	BENZO(B)FLUORANTHENE	34.01	<20	OU09 SS212 0001 DL OU09 SS213 0001
	BENZO(A)PYRENE	20.20	<20	
WG137189-2	BENZO(A)ANTHRACENE	-31.98	<20	OU09 SS228 0001SL DL

Table A-3 Lab Blanks

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
SIM						
WG136118-1	BENZO[B]FLUORANTHENE	2.5	10	20	UG_KG	OU09 SB208 0305 OU09 SB208 0608 OU09 SB209 0102 OU09 SB209 0305 OU09 SB209 1012 OU09 SB211 0305 OU09 SB211 1012 OU09 SB228 0608 OU09 SS208 0001 OU09 SS209 0001 OU09 SS211 0001
WG136118-1	FLUORANTHENE	2.4	10	20	UG_KG	OU09 SB208 0305 OU09 SB208 0608 OU09 SB209 0102 OU09 SB209 0305 OU09 SB209 1012 OU09 SB211 0305 OU09 SB211 1012 OU09 SB228 0608 OU09 SS208 0001 OU09 SS209 0001 OU09 SS211 0001
WG136118-1	PYRENE	2.3	10	20	UG_KG	OU09 SB208 0305 OU09 SB208 0608 OU09 SB209 0102 OU09 SB209 0305 OU09 SB209 1012 OU09 SB211 0305 OU09 SB211 1012 OU09 SB228 0608 OU09 SS208 0001 OU09 SS209 0001 OU09 SS211 0001
WG136036-1RA	BENZO[G,H,I]PERYLENE	4.2	10	20	UG_KG	OU09 SB201 0305 OU09 SB201 1012 OU09 SB212 0102 OU09 SB212 0305 OU09 SB212 0608 OU09 SB213 0102 OU09 SB213 0305 OU09 SB213 0608 OU09 SS201 0001 OU09 SS212 0001 DL OU09 SS213 0001 OU09 SS228 0001SL DL

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
SIM						
WG136036-1RA	DIBENZ[A,H]ANTHRACENE	4.4	10	20	UG_KG	OU09 SB201 0305 OU09 SB201 1012 OU09 SB212 0102 OU09 SB212 0305 OU09 SB212 0608 OU09 SB213 0102 OU09 SB213 0305 OU09 SB213 0608 OU09 SS201 0001 OU09 SS212 0001 DL OU09 SS213 0001 OU09 SS228 0001SL DL
WG136036-1RA	INDENO[1,2,3-CD]PYRENE	8.3	10	20	UG_KG	OU09 SB201 0305 OU09 SB201 1012 OU09 SB212 0102 OU09 SB212 0305 OU09 SB212 0608 OU09 SB213 0102 OU09 SB213 0305 OU09 SB213 0608 OU09 SS201 0001 OU09 SS212 0001 DL OU09 SS213 0001 OU09 SS228 0001SL DL
WG136036-1RA	PYRENE	4.9	10	20	UG_KG	OU09 SB201 0305 OU09 SB201 1012 OU09 SB212 0102 OU09 SB212 0305 OU09 SB212 0608 OU09 SB213 0102 OU09 SB213 0305 OU09 SB213 0608 OU09 SS201 0001 OU09 SS212 0001 DL OU09 SS213 0001 OU09 SS228 0001SL DL
WG136036-1RA	BENZO[A]ANTHRACENE	4.8	10	20	UG_KG	OU09 SB201 0305 OU09 SB201 1012 OU09 SB212 0102 OU09 SB212 0305 OU09 SB212 0608 OU09 SB213 0102 OU09 SB213 0305 OU09 SB213 0608 OU09 SS201 0001 OU09 SS212 0001 DL OU09 SS213 0001 OU09 SS228 0001SL DL

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
SIM						
WG136036-1RA	BENZO[A]PYRENE	5.7	10	20	UG_KG	OU09 SB201 0305 OU09 SB201 1012 OU09 SB212 0102 OU09 SB212 0305 OU09 SB212 0608 OU09 SB213 0102 OU09 SB213 0305 OU09 SB213 0608 OU09 SS201 0001 OU09 SS212 0001 DL OU09 SS213 0001 OU09 SS228 0001SL DL
WG136232-1	BENZO[A]ANTHRACENE	8.0	10	20	UG_KG	OU09 SB228 0305
WG136232-1	BENZO[A]PYRENE	6.8	10	20	UG_KG	OU09 SB228 0305
WG136232-1	BENZO[B]FLUORANTHENE	8.7	10	20	UG_KG	OU09 SB228 0305
WG136232-1	BENZO[K]FLUORANTHENE	10	10	20	UG_KG	OU09 SB228 0305
WG136232-1	CHRYSENE	2.2	10	20	UG_KG	OU09 SB228 0305
WG136232-1	DIBENZ[A,H]ANTHRACENE	3.6	10	20	UG_KG	OU09 SB228 0305
WG136232-1	FLUORANTHENE	6.1	10	20	UG_KG	OU09 SB228 0305
WG136232-1	INDENO[1,2,3-CD]PYRENE	6.4	10	20	UG_KG	OU09 SB228 0305
WG136232-1	PHENANTHRENE	2.1	10	20	UG_KG	OU09 SB228 0305
WG136232-1	PYRENE	5.9	10	20	UG_KG	OU09 SB228 0305

Table A-4 Surrogates

Sample ID	Surrogate	% Recovery	Lower Limit	Upper Limit
SIM				
OU09 SS228 0001SL DL	2-METHYLNAPHTHALENE-D10	0	19	94
	FLUORENE-D10	0	20	96
	PYRENE-D10	0	31	128
OU09 SS211 0001	PYRENE-D10	236	31	128
OU09 SS209 0001	PYRENE-D10	162	31	128
OU09 SS212 0001 DL	PYRENE-D10	157	31	128
SVOC FULL SCAN				
OU09 SS228 0001SL DL	2-FLUOROPHENOL	0	45	105
	NITROBENZENE-D5	0	35	100
	TERPHENYL-D14	0	30	125
OU09 SS213 0001	TERPHENYL-D14	169	30	125

Table A-5 Lab Control Samples

LCS ID	Compound	LCS % Rec	LCSD % Rec	Lower Limit	Upper Limit	RPD	RPD Limit	Associated Samples
WG136036-2RA	BENZO[G,H,I]PERYLENE	49.5	51	53	103	3	50	OU09 SB201 0305 OU09 SB201 1012 OU09 SB212 0102 OU09 SB212 0305 OU09 SB212 0608 OU09 SB213 0102 OU09 SB213 0305 OU09 SB213 0608 OU09 SS201 0001 OU09 SS212 0001 DL OU09 SS213 0001 OU09 SS228 0001SL DL
WG136118-2	BENZO[G,H,I]PERYLENE	38.7	42.1	53	103	8	50	OU09 SB208 0305 OU09 SB208 0608 OU09 SB209 0102 OU09 SB209 0305 OU09 SB209 1012 OU09 SB211 0305 OU09 SB211 1012 OU09 SB228 0608 OU09 SS208 0001 OU09 SS209 0001 OU09 SS211 0001
WG136232-2	BENZO[G,H,I]PERYLENE	41.7	36.3	53	103	14	50	OU09 SB228 0305
WG136232-2	BENZO[A]PYRENE	59.1	51.4	61	101	14	50	OU09 SB228 0305
WG136232-2	DIBENZ[A,H]ANTHRACENE	63.7	54.7	55	105	15	50	OU09 SB228 0305

Table A-6 Internal Standards

Sample ID	Internal Standard	IS AREA	Lower Limit (50%)	Lower Limit (20%)	Upper Limit
SIM					
OU09 SS212 0001 DL	CHRYSENE-D12	23084	25219.5	10088	100878
OU09 SS212 0001 DL	PERYLENE-D12	14669	21662.5	8665	86650
OU09 SS213 0001	PERYLENE-D12	15428	21662.5	8665	86650
OU09 SS209 0001	CHRYSENE-D12	15436	15666.5	6267	62666
	PERYLENE-D12	61114	11943.5	4777	47774
OU09 SS211 0001	CHRYSENE-D12	8289	15666.5	6267	62666
SVOC full scan					
OU09 SS213 0001	PERYLENE-D12	114867	258363.5	103345	1033454
OU09 SS211 0001 DL	PERYLENE-D12	187902	258363.5	103345	1033454
OU09 SS209 0001 DL	PERYLENE-D12	183893	258363.5	103345	1033454

SIM
CHRYSENE-D12 Associated PAH compounds
PYRENE
BENZO[A]ANTHRACENE

PERYLENE-D12 Associated PAH compounds
BENZO[B]FLUORANTHENE
BENZO[K]FLUORANTHENE
BENZO[A]PYRENE
INDENO[1,2,3-CD]PYRENE
DIBENZ[A,H]ANTHRACENE
BENZO[G,H,I]PERYLENE

SVOC
PERYLENE-D12 Associated PAH compounds
BENZO[B]FLUORANTHENE
BENZO[K]FLUORANTHENE
BENZO[A]PYRENE
INDENO[1,2,3-CD]PYRENE
DIBENZ[A,H]ANTHRACENE
BENZO[G,H,I]PERYLENE

Attachment B

Qualifier Codes and Explanations

Qualifier	Explanation
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
UJ	The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual quantitation limit necessary to accurately and precisely measure the analyte in the sample.
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

Attachment C

Reason Codes and Explanations

Reason Code	Explanation
be	Equipment blank contamination
bf	Field blank contamination
bl	Laboratory blank contamination
c	Calibration issue
d	Reporting limit raised due to chromatographic interference
fd	Field duplicate RPDs
h	Holding times
i	Internal standard areas
k	Estimated Maximum Possible Concentration (EMPC)
l	LCS or OPR recoveries
lc	Labeled compound recovery
ld	Laboratory duplicate RPDs
lp	Laboratory control sample/laboratory control sample duplicate RPDs
m	Matrix spike recovery
md	Matrix spike/matrix spike duplicate RPDs
nb	Negative laboratory blank contamination
p	Chemical preservation issue
r	Dual column RPD
q	Quantitation issue
s	Surrogate recovery
su	Ion suppression
t	Temperature preservation issue
x	Percent solids
y	Serial dilution results
z	ICS results

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Data Validation Report

Project:	MRP Site 1 (OU9) Remedial Investigation, NAVSTA Newport, Rhode Island CTO WE06
Laboratory:	Katahdin Analytical Services, Scarborough, Maine
Service Request:	CARR-9
Analyses/Method:	Polycyclic Aromatic Hydrocarbons (GC/MS) Full Scan and SIM / EPA SW-846 Method 8270D
Validation Level:	Limited
Resolution Consultants Project Number:	60250336 SA.DV
Prepared by:	Helen Jones Parry/Resolution Consultants — Completed on: 02/25/2014
Reviewed by:	Kristin Rutherford/Resolution Consultants — File Name: CARR-9_SO_8270_DVRpt.docx

SUMMARY

The samples listed below were collected by Resolution Consultants from the MRP Site 1 (OU9), NAVSTA Newport, Rhode Island on December 10 and 11, 2013.

Sample ID	Matrix/Sample Type
RBSB121113 03	Equipment blank
RBSB121113 04	Equipment blank
FDSB12101302	Field Duplicate of OU09 SS302 0001
OU09 SS229 0001-02	Field Duplicate of OU09 SS229 0001-01
OU09 SB202 0305	Soil
OU09 SB202 0608	Soil
OU09 SB203 0305	Soil
OU09 SB203 0608	Soil
OU09 SB206 0305	Soil
OU09 SB206 0608	Soil
OU09 SB217 0102	Soil
OU09 SB217 0305	Soil
OU09 SB217 0608	Soil
OU09 SB221 0102	Soil
OU09 SB221 0305	Soil
OU09 SB221 0608	Soil
OU09 SB221 0810	Soil
OU09 SB229 0102	Soil
OU09 SB229 0305	Soil

Sample ID	Matrix/Sample Type
OU09 SB302 0305	Soil
OU09 SB302 0608	Soil
OU09 SB302 0810	Soil
OU09 SB303 0305	Soil
OU09 SB303 0608	Soil
OU09 SB303 0810	Soil
OU09 SS202 0001	Soil
OU09 SS203 0001	Soil
OU09 SS206 0001	Soil
OU09 SS217 0001	Soil
OU09 SS221 0001	Soil
OU09 SS229 0001-01	Soil
OU09 SS302 0001	Soil
OU09 SS303 0001	Soil

The data have been validated in accordance with the project-specific Sampling and Analysis Plan, *Sampling and Analysis Plan, Former Carr Point Shooting Range (MRP Site 1, OU9), Naval Station (NAVSTA) Newport, Rhode Island, Final* (Naval Facilities Engineering Command, Mid-Atlantic, 2013) and the following references:

- *DoD Quality Systems Manual (QMS) for Environmental Laboratories, version 4.2* (DoD EDQW, 2010);
- *USEPA Region 1, EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses* (December 1996);
- *USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review* (June 2008);
- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW846, Method 8270D, Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)* (USEPA, 1996);
- laboratory quality control (QC) limits, as applicable.

The USEPA Region 1 and National Data Validation Functional Guidelines were modified to accommodate the non-CLP methodologies. In the absence of method-specific direction for validation, Resolution Consultants professional judgment was used as appropriate.

REVIEW ELEMENTS

The data were evaluated based on the following parameters (where applicable to the method):

✓ Data completeness (chain-of-custody (COC)/sample integrity
✓ Holding times and sample preservation
✓ Instrument tuning
✗ Initial calibration/continuing calibration verification
✗ Laboratory blanks/equipment blanks
✓ Surrogate spike recoveries
NA Matrix spike (MS) and/or matrix spike duplicate (MSD) results

✗	Laboratory control sample (LCS)/laboratory control sample duplicate (LCSD) results
✗	Field duplicates
✗	Internal standards
✓	Sample results/reporting issues

The symbol (✓) indicates that no validation qualifiers were applied based on this parameter. NA indicates that the parameter was not included as part of this data set or was not applicable to this validation and therefore not reviewed. The symbol (✗) indicates that a quality control (QC) nonconformance resulted in the qualification of data. Any QC nonconformance that resulted in the qualification of data is discussed below. In addition, nonconformances or other issues that were noted during validation, but did not result in qualification of data, may be discussed for informational purposes only.

The data appear valid as reported and may be used for decision making purposes. Selected data points were estimated, negated, and/or rejected due to nonconformances of certain QC criteria (see discussion below). Qualified sample results are presented in Table 1.

RESULTS

Data Completeness

The data package was reviewed and found to meet acceptance criteria for completeness:

- The COCs were reviewed for completeness of information relevant to the samples and requested analyses, and for signatures indicating transfer of sample custody.
- The laboratory sample login sheet(s) were reviewed for issues potentially affecting sample integrity, including the condition of sample containers upon receipt at the laboratory.
- Completeness of analyses was verified by comparing the reported results to the COC requests.

Holding Times/Sample Preservation

Sample preservation and preparation/analysis holding times were reviewed for conformance with the QC acceptance criteria.

The QC acceptance criteria were met.

GC/MS Performance Checks

The data were reviewed to ensure that the decafluorotriphenylphosphine (DFTPP) tuning was performed at the correct frequency and that the method acceptance criteria were met. All samples were analyzed within 12 hours of the DFTPP tunes.

Initial Calibration/Continuing Calibration Verification

Calibration data were reviewed for conformance with the QC acceptance criteria to ensure that:

- the initial calibration (ICAL) percent relative standard deviation (%RSD), correlation coefficient (r)/coefficient of determination (r2), and/or response factor method acceptance criteria were met;

- the initial calibration verification standard (ICV) percent recovery acceptance criteria were met;
- the continuing calibration verification standard (CCV) method percent difference or percent drift (%Ds) and RF acceptance criteria were met; and
- the retention time method acceptance criteria were met.

Nonconformances are summarized in Attachment A in Table A-1a through A-1d. Data qualification to the analytes associated with the specific ICAL and/or CCV was as follows:

ICAL and CCV Response Factor Nonconformances

Criteria	Actions	
	Detected Results	**Nondetected Results[4]**
SPCCs		
RF<0.050 for N-nitroso-di-n-propylamine; hexachlorocyclopentadiene; 2,4-dinitrophenol; and 4-nitrophenol.	J[1]	UJ[1]
All compounds except SPCCs and Poor Performing Compounds[2]		
RF<0.050	J	R[3]
RF<0.05 but>0.010 (if low standard response is adequate)	J[1]	UJ[1]
Poor Performing Compounds[2]		
RF<0.010	J	R
[1]No guidance in NFG, thus Resolution Consultants professional judgment was used.		
[2]As defined in Table 28 of the NFG.		
[3]Resolution Consultants professional judgment may be used to either raise reporting level or to estimate reporting limit if low standard response is adequate.		
[4]Sample results qualified as not detected (U) due to blank contamination are not rejected, but estimated (UJ).		
SPCCs - System Performance Check Compounds as listed in SW-846 Method 8270C		

ICAL Linearity Nonconformances

Criteria	Actions	
	Detected Results	**Nondetected**
%RSD > 30% for CCCs (acenaphthene, 1,4-dichlorobenzene, hexachlorobutadiene, diphenylamine, di-n-octyl phthalate, fluoranthene, and benzo(a)pyrene; 4-chloro-3-methylphenol, 2,4-dichlorophenol, 2-nitrophenol, phenol, pentachlorophenol, and 2,4,6-trichlorophenol)	J*	UJ*
%RSD > 15% and quantitation based on mean RF	J	UJ
r or r^2 < 0.99 and quantitation based on linear regression	J*	UJ*
* No guidance in NFG, thus Resolution Consultants professional judgment was used		
CCCs - Calibration Check Compounds as listed in SW-846 Method 8270C		

ICV Recovery Nonconformances

Criteria	Actions*	
	Detected Results	Nondetected Results
Recovery > 120	J	UJ
Recovery < 80	J	UJ
* No guidance in NFG, thus Resolution Consultants professional judgment was used		

CCV Linearity Nonconformances

Criteria	Actions	
	Detected Results	Nondetected Results
%D > 20%	J	UJ
%Drift >20%	J*	UJ*
* No guidance in NFG, thus Resolution Consultants professional judgment was used		

Qualified sample results are shown in Table 1.

<u>Laboratory Blanks/Equipment Blanks</u>

Laboratory method blanks and equipment rinsate blanks were evaluated as to whether there were contaminants detected above the method detection limit (MDL).

Data validation qualifications for individual samples are based on the maximum contaminant concentration detected in all associated blanks.

Detected results in blanks are not discussed in this data validation report if the associated results were nondetect or if qualification of sample results was not required.

Rinsate blanks RBSB12111303 and RBSB12111304 were associated with the samples in this SDG. No blank qualifications were required due to rinsate blanks.

Nonconformances are summarized in Attachment A in Table A-2a and A-2b. Sample results were qualified as follows:

Blank Actions:

Blank type	Blank result	Sample result	Action for samples
Method, Storage, Trip, Field, or Equipment	Detects	Not detected	No qualification
	≤ LOQ	< LOQ	Report sample LOQ value with a U
		≥ LOQ and ≤ 5x the blank result[2]	Report the sample result with a U[1]
		≥ LOQ[2]	No qualifications[1]
	> LOQ	< LOQ	Report sample LOQ value with a U
		≥ LOQ and < blank contamination	Report the sample result with a U or reject the sample result as unusable R
		≥ LOQ and = blank	If the result is ≤5x blank result[2], report the sample result U[1]

		contamination	If the result is > 5x blank result[2], no qualification is required[1]
[1]Based on Resolution Consultants professional judgment			
[2]Use 10x blank result for all phthalates (common contaminants per Region I)			

LOD - Limit of Detection
LOQ - Limit of Quantitation (equivalent to lowest calibration standard)

Qualified sample results are shown in Table 1.

Surrogate Spike Recoveries

The surrogate recoveries (%Rs) were reviewed for conformance with the QC acceptance criteria.

All QC acceptance criteria were met.

MS/MSD Results

An MS/MSD was not included in this SDG.

LCS/LCSD Results

The LCS/LCSD %Rs and/or relative percent recoveries (RPDs) were reviewed for conformance with the QC acceptance criteria.

Nonconformances are summarized in Attachment A in Table A-3. Data qualification to the analytes associated with the specific LCS %Rs or RPDs was as follows:

Criteria[1,2]	**Action[3]**	
	Detected Compounds	**Nondetected Compounds**
%R or RPD > UL	J	No qualification
10%≥%R < LL	J	UJ
%R < 10%	J	R
[1] In the absence of NFG 2008 guidance for LCS results, NFG 2008 MS/MSD guidance was applied with Resolution Consultants professional judgment. [2] NFG 2008 MS/MSD does not list a minimum limit. Based on Region 1 and Resolution Consultants professional judgment, a minimum limit of 10% was used.		
[3]If the %R of more than half of the analytes are not within limits, then reject (R) nondetects for the analytes with <10% recovery and estimate (J/UJ) all other analyte(s) in the associated samples.		

Qualified sample results are shown in Table 1.

Field Duplicate Results

Field duplicate RPDs were reviewed for conformance with the Resolution Consultants QC criteria of ≤50% for solid matrices and ≤30% for aqueous matrices. These criteria apply if both results were greater than five times the limit of quantitation (LOQ).

Nonconformances are summarized in Attachment A in Table A-4. Data qualification to the analytes associated with the specific field duplicate RPDs was as follows:

Criteria	RPD	Action	
		Detected	Nondetected
Sample and duplicate are nondetect results	Not calculable (NC)	No qualification	No qualification
Sample and duplicate results ≥2xLOQ	>30 (aqueous) >50 (solids)	J	Not Applicable
Sample and duplicate results <2xLOQ	>60 (aqueous) >100 (solids)	J	Not Applicable
If sample or duplicate result is >2xLOQ and the other is not detected	NC	J	UJ
If sample or duplicate result is <2xLOQ and the other is not detected	NC	No qualification	No qualification

Actions: (Resolution Consultants professional judgment was used)

Qualified sample results are shown in Table 1.

Internal Standard Results

The internal standard (IS) recoveries were reviewed for conformance with the QC acceptance criteria.

Nonconformances are summarized in Attachment A in Table A-5. Data qualification to the analytes associated with the specific IS on the basis of IS recoveries was as follows:

Sample IS area compared to CCV and CCV IS area compared to ICAL			
Qualify results	**≤ 20%**	**≥ 20% and <50%**	**> 200%**
Positive Results	J	J	J
Nondetected Results	R	UJ	A

Qualified sample results are shown in Table 1.

Sample Results/Reporting Issues

All compounds detected at concentrations less than the limit of quantitation (LOQ) but greater than the method detection limit (MDL) were qualified by the laboratory as estimated (J). This "J" qualifier was retained during data validation.

Any sample that was analyzed at a dilution due to high concentrations of target or non-targets was checked to ensure that the results and/or sample specific LODs and LOQs were adjusted accordingly by the laboratory.

The percent solids data were reviewed to ensure that NFG 2008 specified criteria were met.

All percent solids criteria were met.

QUALIFICATION ACTIONS

Sample results qualified as a result of validation actions are summarized in Table 1. All actions are described above.

ATTACHMENTS

Attachment A: Nonconformance Summary Tables

Attachment B: Qualifier Codes and Explanations

Attachment C: Reason Codes and Explanations

Table 1 - Data Validation Summary of Qualified Data

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
FDSB12101302	SO	2-CHLORONAPHTHALENE	270	270	360	UG_KG	UJ	c
FDSB12101302	SO	BENZOIC ACID	670	670	900	UG_KG	UJ	c
FDSB12101302	SO	BENZIDINE	1200	1200	1600	UG_KG	R	l
FDSB12101302	SO	DIETHYLPHTHALATE	270	270	360	UG_KG	UJ	c
FDSB12101302	SO	BENZO[A]ANTHRACENE	160	11	22	UG_KG	J	fd,i
FDSB12101302	SO	BENZO[A]PYRENE	130	11	22	UG_KG	J	l,i
FDSB12101302	SO	BENZO[B]FLUORANTHENE	180	11	22	UG_KG	J	fd,l
FDSB12101302	SO	BENZO[G,H,I]PERYLENE	45	11	22	UG_KG	J	l,fd,i
FDSB12101302	SO	BENZO[K]FLUORANTHENE	80	11	22	UG_KG	J	l
FDSB12101302	SO	CHRYSENE	210	11	22	UG_KG	J	fd,i
FDSB12101302	SO	DIBENZ[A,H]ANTHRACENE	28	11	22	UG_KG	J	l,i
FDSB12101302	SO	INDENO[1,2,3-CD]PYRENE	52	11	22	UG_KG	J	l
OU09 SB202 0305	SO	BENZO[A]ANTHRACENE	8.2	11	22	UG_KG	U	bl
OU09 SB202 0305	SO	BENZO[A]PYRENE	11	11	22	UG_KG	UJ	c
OU09 SB202 0305	SO	BENZO[G,H,I]PERYLENE	11	11	22	UG_KG	UJ	l
OU09 SB202 0305	SO	FLUORANTHENE	2.6	11	22	UG_KG	U	bl
OU09 SB202 0305	SO	INDENO[1,2,3-CD]PYRENE	11	11	22	UG_KG	UJ	l
OU09 SB202 0608	SO	INDENO[1,2,3-CD]PYRENE	10	10	20	UG_KG	UJ	l
OU09 SB203 0305	SO	ANTHRACENE	13	13	26	UG_KG	UJ	c
OU09 SB203 0305	SO	BENZO[A]PYRENE	13	13	26	UG_KG	UJ	l
OU09 SB203 0305	SO	BENZO[G,H,I]PERYLENE	13	13	26	UG_KG	UJ	l
OU09 SB203 0305	SO	BENZO[K]FLUORANTHENE	13	13	26	UG_KG	UJ	c
OU09 SB203 0305	SO	DIBENZ[A,H]ANTHRACENE	13	13	26	UG_KG	UJ	c
OU09 SB203 0305	SO	INDENO[1,2,3-CD]PYRENE	13	13	26	UG_KG	UJ	c
OU09 SB203 0305	SO	PYRENE	13	13	26	UG_KG	UJ	c
OU09 SB203 0608	SO	BENZO[A]ANTHRACENE	11	11	22	UG_KG	UJ	c
OU09 SB203 0608	SO	BENZO[A]PYRENE	11	11	22	UG_KG	UJ	l
OU09 SB203 0608	SO	BENZO[G,H,I]PERYLENE	11	11	22	UG_KG	UJ	l
OU09 SB203 0608	SO	FLUORANTHENE	11	11	22	UG_KG	UJ	c
OU09 SB206 0305	SO	ANTHRACENE	11	11	23	UG_KG	UJ	c
OU09 SB206 0305	SO	BENZO[A]PYRENE	11	11	23	UG_KG	UJ	l
OU09 SB206 0305	SO	BENZO[G,H,I]PERYLENE	11	11	23	UG_KG	UJ	l
OU09 SB206 0305	SO	BENZO[K]FLUORANTHENE	4.4	11	23	UG_KG	J	c
OU09 SB206 0305	SO	DIBENZ[A,H]ANTHRACENE	11	11	23	UG_KG	UJ	c

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SB206 0305	SO	INDENO[1,2,3-CD]PYRENE	11	11	23	UG_KG	UJ	c
OU09 SB206 0305	SO	PYRENE	11	11	23	UG_KG	UJ	c
OU09 SB206 0608	SO	ANTHRACENE	11	11	22	UG_KG	UJ	c
OU09 SB206 0608	SO	BENZO[A]PYRENE	11	11	22	UG_KG	UJ	l
OU09 SB206 0608	SO	BENZO[G,H,I]PERYLENE	11	11	22	UG_KG	UJ	l
OU09 SB206 0608	SO	BENZO[K]FLUORANTHENE	11	11	22	UG_KG	UJ	c
OU09 SB206 0608	SO	DIBENZ[A,H]ANTHRACENE	11	11	22	UG_KG	UJ	c
OU09 SB206 0608	SO	INDENO[1,2,3-CD]PYRENE	11	11	22	UG_KG	UJ	c
OU09 SB206 0608	SO	PYRENE	11	11	22	UG_KG	UJ	c
OU09 SB217 0102	SO	ANTHRACENE	11	11	21	UG_KG	UJ	c
OU09 SB217 0102	SO	BENZO[G,H,I]PERYLENE	34	11	21	UG_KG	J	l
OU09 SB217 0102	SO	BENZO[K]FLUORANTHENE	31	11	21	UG_KG	J	c
OU09 SB217 0102	SO	DIBENZ[A,H]ANTHRACENE	29	11	21	UG_KG	J	c
OU09 SB217 0102	SO	INDENO[1,2,3-CD]PYRENE	45	11	21	UG_KG	J	c,l
OU09 SB217 0102	SO	PYRENE	110	11	21	UG_KG	J	c
OU09 SB217 0305	SO	BENZO[G,H,I]PERYLENE	160	12	24	UG_KG	J	l,i
OU09 SB217 0305	SO	INDENO[1,2,3-CD]PYRENE	350	12	24	UG_KG	J	l,i
OU09 SB217 0305	SO	BENZO[A]PYRENE	400	12	24	UG_KG	J	i
OU09 SB217 0305	SO	BENZO[B]FLUORANTHENE	240	12	24	UG_KG	J	i
OU09 SB217 0305	SO	BENZO[K]FLUORANTHENE	96	12	24	UG_KG	J	i
OU09 SB217 0305	SO	DIBENZ[A,H]ANTHRACENE	110	12	24	UG_KG	J	i
OU09 SB217 0608	SO	ANTHRACENE	11	11	22	UG_KG	UJ	c
OU09 SB217 0608	SO	BENZO[G,H,I]PERYLENE	11	11	22	UG_KG	UJ	l
OU09 SB217 0608	SO	BENZO[K]FLUORANTHENE	11	11	22	UG_KG	UJ	c
OU09 SB217 0608	SO	DIBENZ[A,H]ANTHRACENE	11	11	22	UG_KG	UJ	c
OU09 SB217 0608	SO	INDENO[1,2,3-CD]PYRENE	11	11	22	UG_KG	UJ	c,l
OU09 SB217 0608	SO	PYRENE	11	11	22	UG_KG	UJ	c
OU09 SB221 0102	SO	ANTHRACENE	11	11	22	UG_KG	UJ	c
OU09 SB221 0102	SO	BENZO[G,H,I]PERYLENE	11	11	22	UG_KG	UJ	l
OU09 SB221 0102	SO	BENZO[K]FLUORANTHENE	4.1	11	22	UG_KG	J	c
OU09 SB221 0102	SO	DIBENZ[A,H]ANTHRACENE	11	11	22	UG_KG	UJ	c
OU09 SB221 0102	SO	INDENO[1,2,3-CD]PYRENE	11	11	22	UG_KG	UJ	c,l
OU09 SB221 0102	SO	PYRENE	11	11	22	UG_KG	UJ	c

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SB221 0305	SO	2-CHLORONAPHTHALENE	260	260	340	UG_KG	UJ	c
OU09 SB221 0305	SO	BENZIDINE	1200	1200	1600	UG_KG	R	l
OU09 SB221 0305	SO	BENZOIC ACID	640	640	850	UG_KG	UJ	c
OU09 SB221 0305	SO	DIETHYLPHTHALATE	260	260	340	UG_KG	UJ	c
OU09 SB221 0305	SO	BENZO[A]ANTHRACENE	21	21	21	UG_KG	U	bl
OU09 SB221 0305	SO	BENZO[A]PYRENE	10	10	21	UG_KG	UJ	l
OU09 SB221 0305	SO	BENZO[B]FLUORANTHENE	21	21	21	UG_KG	UJ	c,bl
OU09 SB221 0305	SO	BENZO[G,H,I]PERYLENE	10	10	21	UG_KG	UJ	l
OU09 SB221 0305	SO	DIBENZ[A,H]ANTHRACENE	10	10	21	UG_KG	UJ	l
OU09 SB221 0305	SO	FLUORANTHENE	21	21	21	UG_KG	U	bl
OU09 SB221 0305	SO	INDENO[1,2,3-CD]PYRENE	21	21	21	UG_KG	U	bl
OU09 SB221 0305	SO	PYRENE	21	21	21	UG_KG	U	bl
OU09 SB221 0608	SO	2-CHLORONAPHTHALENE	250	250	330	UG_KG	UJ	c
OU09 SB221 0608	SO	BENZOIC ACID	620	620	820	UG_KG	UJ	c
OU09 SB221 0608	SO	DIETHYLPHTHALATE	250	250	330	UG_KG	UJ	c
OU09 SB221 0608	SO	BENZO[A]ANTHRACENE	20	20	20	UG_KG	U	bl
OU09 SB221 0608	SO	BENZO[A]PYRENE	10	10	20	UG_KG	UJ	l
OU09 SB221 0608	SO	BENZO[B]FLUORANTHENE	20	20	20	UG_KG	UJ	bl,c
OU09 SB221 0608	SO	BENZO[G,H,I]PERYLENE	10	10	20	UG_KG	UJ	l
OU09 SB221 0608	SO	DIBENZ[A,H]ANTHRACENE	20	20	20	UG_KG	UJ	bl,l
OU09 SB221 0608	SO	FLUORANTHENE	20	20	20	UG_KG	U	bl
OU09 SB221 0608	SO	INDENO[1,2,3-CD]PYRENE	20	20	20	UG_KG	U	bl
OU09 SB221 0608	SO	PHENANTHRENE	20	20	20	UG_KG	U	bl
OU09 SB221 0608	SO	PYRENE	20	20	20	UG_KG	U	bl
OU09 SB221 0608	SO	BENZIDINE	1100	1100	1500	UG_KG	R	l
OU09 SB221 0810	SO	2-CHLORONAPHTHALENE	270	270	360	UG_KG	UJ	c
OU09 SB221 0810	SO	BENZOIC ACID	680	680	900	UG_KG	UJ	c
OU09 SB221 0810	SO	DIETHYLPHTHALATE	270	270	360	UG_KG	UJ	c
OU09 SB221 0810	SO	BENZO[A]ANTHRACENE	22	22	22	UG_KG	U	bl
OU09 SB221 0810	SO	BENZO[A]PYRENE	11	11	22	UG_KG	UJ	l
OU09 SB221 0810	SO	BENZO[G,H,I]PERYLENE	11	11	22	UG_KG	UJ	l
OU09 SB221 0810	SO	DIBENZ[A,H]ANTHRACENE	11	11	22	UG_KG	UJ	l
OU09 SB221 0810	SO	FLUORANTHENE	22	22	22	UG_KG	U	bl
OU09 SB221 0810	SO	INDENO[1,2,3-CD]PYRENE	22	22	22	UG_KG	U	bl
OU09 SB221 0810	SO	PYRENE	22	22	22	UG_KG	U	bl
OU09 SB221 0810	SO	BENZIDINE	1200	1200	1600	UG_KG	R	l

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SB229 0102	SO	ANTHRACENE	13	12	24	UG_KG	J	c
OU09 SB229 0102	SO	BENZO[A]PYRENE	68	12	24	UG_KG	J	l
OU09 SB229 0102	SO	BENZO[G,H,I]PERYLENE	38	12	24	UG_KG	J	l
OU09 SB229 0102	SO	BENZO[K]FLUORANTHENE	43	12	24	UG_KG	J	c
OU09 SB229 0102	SO	DIBENZ[A,H]ANTHRACENE	27	12	24	UG_KG	J	c
OU09 SB229 0102	SO	INDENO[1,2,3-CD]PYRENE	53	12	24	UG_KG	J	c
OU09 SB229 0102	SO	PYRENE	98	12	24	UG_KG	J	c
OU09 SB229 0305	SO	BENZO[A]PYRENE	14	14	28	UG_KG	UJ	l
OU09 SB229 0305	SO	BENZO[G,H,I]PERYLENE	14	14	28	UG_KG	UJ	l
OU09 SB229 0305	SO	BENZO[A]ANTHRACENE	14	14	28	UG_KG	UJ	c
OU09 SB229 0305	SO	FLUORANTHENE	14	14	28	UG_KG	UJ	c
OU09 SB302 0305	SO	2-CHLORONAPHTHALENE	280	280	370	UG_KG	UJ	c
OU09 SB302 0305	SO	BENZOIC ACID	700	700	930	UG_KG	UJ	c
OU09 SB302 0305	SO	DIETHYLPHTHALATE	280	280	370	UG_KG	UJ	c
OU09 SB302 0305	SO	BENZO[A]ANTHRACENE	23	23	23	UG_KG	U	bl
OU09 SB302 0305	SO	BENZO[A]PYRENE	11	11	23	UG_KG	UJ	l
OU09 SB302 0305	SO	BENZO[B]FLUORANTHENE	23	23	23	UG_KG	UJ	c,bl
OU09 SB302 0305	SO	BENZO[G,H,I]PERYLENE	11	11	23	UG_KG	UJ	l
OU09 SB302 0305	SO	DIBENZ[A,H]ANTHRACENE	23	23	23	UG_KG	U	bl,l
OU09 SB302 0305	SO	FLUORANTHENE	23	23	23	UG_KG	U	bl
OU09 SB302 0305	SO	INDENO[1,2,3-CD]PYRENE	23	23	23	UG_KG	U	bl
OU09 SB302 0305	SO	PHENANTHRENE	23	23	23	UG_KG	U	bl
OU09 SB302 0305	SO	PYRENE	23	23	23	UG_KG	U	bl
OU09 SB302 0305	SO	BENZIDINE	1300	1300	1700	UG_KG	R	l
OU09 SB302 0608	SO	ANTHRACENE	10	10	20	UG_KG	UJ	c
OU09 SB302 0608	SO	BENZO[G,H,I]PERYLENE	10	10	20	UG_KG	UJ	l
OU09 SB302 0608	SO	BENZO[K]FLUORANTHENE	3.7	10	20	UG_KG	J	c
OU09 SB302 0608	SO	DIBENZ[A,H]ANTHRACENE	10	10	20	UG_KG	UJ	c
OU09 SB302 0608	SO	INDENO[1,2,3-CD]PYRENE	10	10	20	UG_KG	UJ	c,l
OU09 SB302 0608	SO	PYRENE	10	10	20	UG_KG	UJ	c
OU09 SB302 0810	SO	2-CHLORONAPHTHALENE	220	220	290	UG_KG	UJ	c
OU09 SB302 0810	SO	BENZIDINE	1000	1000	1300	UG_KG	R	l
OU09 SB302 0810	SO	BENZOIC ACID	550	550	730	UG_KG	UJ	c
OU09 SB302 0810	SO	DIETHYLPHTHALATE	220	220	290	UG_KG	UJ	c
OU09 SB302 0810	SO	BENZO[A]ANTHRACENE	18	18	18	UG_KG	U	bl

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SB302 0810	SO	BENZO[A]PYRENE	18	18	18	UG_KG	UJ	c,bl,l
OU09 SB302 0810	SO	BENZO[B]FLUORANTHENE	18	18	18	UG_KG	UJ	c,bl
OU09 SB302 0810	SO	BENZO[G,H,I]PERYLENE	8.9	8.9	18	UG_KG	UJ	l
OU09 SB302 0810	SO	BENZO[K]FLUORANTHENE	18	18	18	UG_KG	U	bl
OU09 SB302 0810	SO	DIBENZ[A,H]ANTHRACENE	18	18	18	UG_KG	UJ	bl,l
OU09 SB302 0810	SO	FLUORANTHENE	18	18	18	UG_KG	U	bl
OU09 SB302 0810	SO	INDENO[1,2,3-CD]PYRENE	18	18	18	UG_KG	U	bl
OU09 SB302 0810	SO	PHENANTHRENE	18	18	18	UG_KG	U	bl
OU09 SB302 0810	SO	PYRENE	18	18	18	UG_KG	U	bl
OU09 SB303 0305	SO	2-CHLORONAPHTHALENE	220	220	300	UG_KG	UJ	c
OU09 SB303 0305	SO	BENZOIC ACID	560	560	740	UG_KG	UJ	c
OU09 SB303 0305	SO	DIETHYLPHTHALATE	220	220	300	UG_KG	UJ	c
OU09 SB303 0305	SO	BENZO[A]ANTHRACENE	18	18	18	UG_KG	U	bl
OU09 SB303 0305	SO	BENZO[A]PYRENE	9.0	9.0	18	UG_KG	UJ	l
OU09 SB303 0305	SO	BENZO[B]FLUORANTHENE	18	18	18	UG_KG	UJ	c,bl
OU09 SB303 0305	SO	BENZO[G,H,I]PERYLENE	9.0	9.0	18	UG_KG	UJ	l
OU09 SB303 0305	SO	DIBENZ[A,H]ANTHRACENE	9.0	9.0	18	UG_KG	UJ	l
OU09 SB303 0305	SO	FLUORANTHENE	18	18	18	UG_KG	U	bl
OU09 SB303 0305	SO	INDENO[1,2,3-CD]PYRENE	18	18	18	UG_KG	U	bl
OU09 SB303 0305	SO	PHENANTHRENE	18	18	18	UG_KG	U	bl
OU09 SB303 0305	SO	PYRENE	18	18	18	UG_KG	U	bl
OU09 SB303 0305	SO	BENZIDINE	1000	1000	1400	UG_KG	R	l
OU09 SB303 0608	SO	ANTHRACENE	18	11	21	UG_KG	J	c
OU09 SB303 0608	SO	BENZO[A]PYRENE	78	11	21	UG_KG	J	l
OU09 SB303 0608	SO	BENZO[G,H,I]PERYLENE	61	11	21	UG_KG	J	l
OU09 SB303 0608	SO	BENZO[K]FLUORANTHENE	86	11	21	UG_KG	J	c
OU09 SB303 0608	SO	DIBENZ[A,H]ANTHRACENE	42	11	21	UG_KG	J	c
OU09 SB303 0608	SO	INDENO[1,2,3-CD]PYRENE	93	11	21	UG_KG	J	c
OU09 SB303 0608	SO	PYRENE	240	11	21	UG_KG	J	c
OU09 SB303 0810	SO	2-CHLORONAPHTHALENE	250	250	330	UG_KG	UJ	c
OU09 SB303 0810	SO	BENZOIC ACID	620	620	830	UG_KG	UJ	c
OU09 SB303 0810	SO	DIETHYLPHTHALATE	250	250	330	UG_KG	UJ	c
OU09 SB303 0810	SO	BENZO[A]ANTHRACENE	20	20	20	UG_KG	U	bl
OU09 SB303 0810	SO	BENZO[A]PYRENE	10	10	20	UG_KG	UJ	l
OU09 SB303 0810	SO	BENZO[G,H,I]PERYLENE	8.0	10	20	UG_KG	J	l
OU09 SB303 0810	SO	CHRYSENE	20	20	20	UG_KG	U	bl
OU09 SB303 0810	SO	DIBENZ[A,H]ANTHRACENE	10	10	20	UG_KG	UJ	l

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SB303 0810	SO	FLUORANTHENE	20	20	20	UG_KG	UJ	c,bl
OU09 SB303 0810	SO	INDENO[1,2,3-CD]PYRENE	20	20	20	UG_KG	U	bl
OU09 SB303 0810	SO	PHENANTHRENE	20	20	20	UG_KG	U	bl
OU09 SB303 0810	SO	BENZIDINE	1100	1100	1500	UG_KG	R	l
OU09 SS202 0001	SO	BENZO[A]PYRENE	710	310	410	UG_KG	J	i
OU09 SS202 0001	SO	BENZO[B]FLUORANTHENE	750	310	410	UG_KG	J	i
OU09 SS202 0001	SO	DIBENZ[A,H]ANTHRACENE	84	12	25	UG_KG	J	i
OU09 SS202 0001	SO	BENZO[G,H,I]PERYLENE	240	12	25	UG_KG	J	l,i
OU09 SS202 0001	SO	INDENO[1,2,3-CD]PYRENE	360	12	25	UG_KG	J	l,i
OU09 SS202 0001	SO	BENZO[K]FLUORANTHENE	290	12	25	UG_KG	J	i
OU09 SS203 0001	SO	BENZO[A]ANTHRACENE	55	9.6	19	UG_KG	J	c
OU09 SS203 0001	SO	BENZO[G,H,I]PERYLENE	25	9.6	19	UG_KG	J	l
OU09 SS203 0001	SO	FLUORANTHENE	27	9.6	19	UG_KG	J	c
OU09 SS203 0001	SO	INDENO[1,2,3-CD]PYRENE	20	9.6	19	UG_KG	J	l
OU09 SS206 0001	SO	BENZO[A]PYRENE	940	300	400	UG_KG	J	i
OU09 SS206 0001	SO	BENZO[B]FLUORANTHENE	960	300	400	UG_KG	J	c,i
OU09 SS206 0001	SO	BENZO[K]FLUORANTHENE	1100	300	400	UG_KG	J	i
OU09 SS206 0001	SO	INDENO[1,2,3-CD]PYRENE	610	300	400	UG_KG	J	i
OU09 SS206 0001	SO	DIBENZ[A,H]ANTHRACENE	230	12	24	UG_KG	J	i
OU09 SS206 0001	SO	BENZO[G,H,I]PERYLENE	350	12	24	UG_KG	J	l,i
OU09 SS217 0001	SO	BENZO[A]PYRENE	1100	290	390	UG_KG	J	i
OU09 SS217 0001	SO	BENZO[B]FLUORANTHENE	1000	290	390	UG_KG	J	c,i
OU09 SS217 0001	SO	BENZO[G,H,I]PERYLENE	250	12	23	UG_KG	J	l,i
OU09 SS217 0001	SO	BENZO[K]FLUORANTHENE	310	12	23	UG_KG	J	i
OU09 SS217 0001	SO	DIBENZ[A,H]ANTHRACENE	210	12	23	UG_KG	J	i
OU09 SS217 0001	SO	INDENO[1,2,3-CD]PYRENE	340	12	23	UG_KG	J	l,i
OU09 SS221 0001	SO	2-CHLORONAPHTHALENE	260	260	340	UG_KG	UJ	c
OU09 SS221 0001	SO	BENZOIC ACID	640	640	860	UG_KG	UJ	c
OU09 SS221 0001	SO	DIETHYLPHTHALATE	260	260	340	UG_KG	UJ	c
OU09 SS221 0001	SO	BENZO[A]PYRENE	84	10	21	UG_KG	J	l
OU09 SS221 0001	SO	BENZO[G,H,I]PERYLENE	28	10	21	UG_KG	J	l
OU09 SS221 0001	SO	DIBENZ[A,H]ANTHRACENE	25	10	21	UG_KG	J	l
OU09 SS221 0001	SO	FLUORANTHENE	140	10	21	UG_KG	J	c
OU09 SS221 0001	SO	BENZIDINE	1200	1200	1600	UG_KG	R	l

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SS229 0001-01	SO	BENZO[A]ANTHRACENE	860	280	370	UG_KG	J	fd,i
OU09 SS229 0001-01	SO	BENZO[A]PYRENE	1100	280	370	UG_KG	J	fd,i
OU09 SS229 0001-01	SO	BENZO[B]FLUORANTHENE	1100	280	370	UG_KG	J	c,fd,i
OU09 SS229 0001-01	SO	BENZO[G,H,I]PERYLENE	750	280	370	UG_KG	J	fd,l,i
OU09 SS229 0001-01	SO	BENZO[K]FLUORANTHENE	960	280	370	UG_KG	J	fd,i
OU09 SS229 0001-01	SO	CHRYSENE	1100	280	370	UG_KG	J	fd,i
OU09 SS229 0001-01	SO	FLUORANTHENE	1100	280	370	UG_KG	J	fd
OU09 SS229 0001-01	SO	INDENO[1,2,3-CD]PYRENE	820	280	370	UG_KG	J	fd,l,i
OU09 SS229 0001-01	SO	PHENANTHRENE	760	280	370	UG_KG	J	fd
OU09 SS229 0001-01	SO	PYRENE	2200	280	370	UG_KG	J	fd,i
OU09 SS229 0001-01	SO	ACENAPHTHENE	95	11	22	UG_KG	J	fd
OU09 SS229 0001-01	SO	ANTHRACENE	150	11	22	UG_KG	J	fd
OU09 SS229 0001-01	SO	DIBENZ[A,H]ANTHRACENE	340	11	22	UG_KG	J	fd
OU09 SS229 0001-01	SO	FLUORENE	58	11	22	UG_KG	J	fd
OU09 SS229 0001-02	SO	ACENAPHTHENE	5.0	10	21	UG_KG	J	fd,i
OU09 SS229 0001-02	SO	ANTHRACENE	10	10	21	UG_KG	UJ	fd
OU09 SS229 0001-02	SO	BENZO[A]ANTHRACENE	43	10	21	UG_KG	J	fd,i
OU09 SS229 0001-02	SO	BENZO[A]PYRENE	43	10	21	UG_KG	J	l,fd,i
OU09 SS229 0001-02	SO	BENZO[B]FLUORANTHENE	56	10	21	UG_KG	J	fd,i
OU09 SS229 0001-02	SO	BENZO[G,H,I]PERYLENE	41	10	21	UG_KG	J	l,fd,i
OU09 SS229 0001-02	SO	BENZO[K]FLUORANTHENE	21	21	21	UG_KG	UJ	bl,fd,i
OU09 SS229 0001-02	SO	CHRYSENE	80	10	21	UG_KG	J	fd,i
OU09 SS229 0001-02	SO	DIBENZ[A,H]ANTHRACENE	24	10	21	UG_KG	J	fd,l,i
OU09 SS229 0001-02	SO	FLUORANTHENE	21	21	21	UG_KG	UJ	bl,fd
OU09 SS229 0001-02	SO	FLUORENE	3.9	10	21	UG_KG	J	fd,i
OU09 SS229 0001-02	SO	INDENO[1,2,3-CD]PYRENE	27	10	21	UG_KG	J	fd,i
OU09 SS229 0001-02	SO	PHENANTHRENE	150	10	21	UG_KG	J	fd
OU09 SS229 0001-02	SO	PYRENE	250	10	21	UG_KG	J	fd,i
OU09 SS302 0001	SO	2-CHLORONAPHTHALENE	280	280	370	UG_KG	UJ	c
OU09 SS302 0001	SO	BENZOIC ACID	690	690	920	UG_KG	UJ	c
OU09 SS302 0001	SO	DIETHYLPHTHALATE	280	280	370	UG_KG	UJ	c
OU09 SS302 0001	SO	BENZO[A]PYRENE	81	11	22	UG_KG	J	l
OU09 SS302 0001	SO	BENZO[G,H,I]PERYLENE	26	11	22	UG_KG	J	l,fd
OU09 SS302 0001	SO	CHRYSENE	100	11	22	UG_KG	J	fd
OU09 SS302 0001	SO	DIBENZ[A,H]ANTHRACENE	22	22	22	UG_KG	UJ	bl,l
OU09 SS302 0001	SO	BENZIDINE	1300	1300	1700	UG_KG	R	l
OU09 SS302 0001	SO	BENZO[A]ANTHRACENE	92	11	22	UG_KG	J	fd

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SS302 0001	SO	BENZO[B]FLUORANTHENE	100	11	22	UG_KG	J	fd
OU09 SS303 0001	SO	2-CHLORONAPHTHALENE	300	300	400	UG_KG	UJ	c
OU09 SS303 0001	SO	BENZOIC ACID	750	750	1000	UG_KG	UJ	c
OU09 SS303 0001	SO	DIETHYLPHTHALATE	300	300	400	UG_KG	UJ	c
OU09 SS303 0001	SO	BENZO[A]PYRENE	98	12	24	UG_KG	J	l
OU09 SS303 0001	SO	BENZO[G,H,I]PERYLENE	37	12	24	UG_KG	J	l
OU09 SS303 0001	SO	DIBENZ[A,H]ANTHRACENE	27	12	24	UG_KG	J	l
OU09 SS303 0001	SO	BENZIDINE	1400	1400	1800	UG_KG	R	l

Attachment A

Non Conformance Summary Tables

Table A-1a - Initial Calibration - SVOC SIM

ICV	Compound	%RSD	%RSD Limit	Associated Samples
1/6/14	FLUORANTHENE	17.17	<15	OU09 SB303 0810 OU09 SS221 0001

Table A-1b Initial Calibration - SVOC full scan

ICAL	Compound	% RSD	%RSD Limit	ICV %R	ICV %R Limits	Associated Samples
12/11/13	BENZOIC ACID	42.12	<15			OU09 SS302 0001 OU09 SB302 0305 OU09 SB302 0810 FDSB12101302 OU09 SS221 0001 OU09 SB221 0305 OU09 SB221 0608 OU09 SB221 0810 OU09 SS303 0001 OU09 SB303 0305 OU09 SB303 0810 OU09 SS229 0001-02 OU09 SB217 0305 OU09 SS202 0001 OU09 SS206 0001 OU09 SS217 0001 OU09 SS229 0001-01
	2-CHLORONAPHTHALENE	20.70	<15			
	DIETHYLPHTHALATE	15.01	<15			

Table A-1c Continuing Calibration – SVOC SIM

CCAL	Compound	% D	%D Limit	Associated Samples
WG136687-2	PYRENE	29.27	<20	OU09 SB202 0305
	BENZO(A)PYRENE	-22.82	<20	
WG137119-2	FLUORANTHENE	21.32	<20	OU09 SB203 0608 OU09 SB229 0305 OU09 SS206 0001 OU09 SS203 0001 OU09 SS229 0001-01
	BENZO(A)ANTHRACENE	26.99	<20	
WG137155-2	ANTHRACENE	26.95	<20	OU09 SB302 0608 OU09 SB221 0102 OU09 SB202 0608 OU09 SB217 0608 OU09 SB203 0305 OU09 SB206 0608 OU09 SB206 0305 OU09 SB217 0102
	PYRENE	23.19	<20	
	BENZO(K)FLUORANTHENE	-24.83	<20	
	INDENO(1,2,3-CD)PYRENE	30.07	<20	
	DIBENZO(A,H)ANTHRACENE	44.94	<20	OU09 SB303 0608 OU09 SB229 0102

Table A-1d Continuing Calibration – SVOC full scan

CCAL	Compound	% D	%D Limit	Associated Samples
WG138348-2	BENZOIC ACID	35.16	<20	OU09 SS302 0001 OU09 SB302 0305 OU09 SB302 0810 FDSB12101302 OU09 SS221 0001 OU09 SB221 0305 OU09 SB221 0608
WG137144-2	BENZO(B)FLUORANTHENE	21.70	<20	OU09 SS206 0001 OU09 SS217 0001 OU09 SS229 0001-01

Table A-2a Lab Blanks

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
WG136232-1	BENZO[A]ANTHRACENE	8.0	10	20	UG_KG	FDSB12101302 OU09 SB221 0305 OU09 SB221 0608 OU09 SB221 0810 OU09 SB302 0305 OU09 SB302 0810 OU09 SB303 0305 OU09 SB303 0810 OU09 SS221 0001 OU09 SS229 0001-02 OU09 SS302 0001 OU09 SS303 0001
WG136232-1	BENZO[A]PYRENE	6.8	10	20	UG_KG	FDSB12101302 OU09 SB302 0810 OU09 SS221 0001 OU09 SS229 0001-02 OU09 SS302 0001 OU09 SS303 0001
WG136232-1	BENZO[B]FLUORANTHENE	8.7	10	20	UG_KG	FDSB12101302 OU09 SB221 0305 OU09 SB221 0608 OU09 SB302 0305 OU09 SB302 0810 OU09 SB303 0305 OU09 SS221 0001 OU09 SS229 0001-02 OU09 SS302 0001 OU09 SS303 0001
WG136232-1	BENZO[K]FLUORANTHENE	10	10	20	UG_KG	FDSB12101302 OU09 SB302 0810 OU09 SS221 0001 OU09 SS229 0001-02 OU09 SS302 0001 OU09 SS303 0001

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
WG136232-1	CHRYSENE	2.2	10	20	UG_KG	FDSB12101302 OU09 SB303 0810 OU09 SS221 0001 OU09 SS229 0001-02 OU09 SS302 0001 OU09 SS303 0001
WG136232-1	DIBENZ[A,H]ANTHRACENE	3.6	10	20	UG_KG	FDSB12101302 OU09 SB221 0608 OU09 SB302 0305 OU09 SB302 0810 OU09 SS221 0001 OU09 SS229 0001-02 OU09 SS302 0001 OU09 SS303 0001
WG136232-1	FLUORANTHENE	6.1	10	20	UG_KG	FDSB12101302 OU09 SB221 0305 OU09 SB221 0608 OU09 SB221 0810 OU09 SB302 0305 OU09 SB302 0810 OU09 SB303 0305 OU09 SB303 0810 OU09 SS221 0001 OU09 SS229 0001-02 OU09 SS302 0001 OU09 SS303 0001
WG136232-1	INDENO[1,2,3-CD]PYRENE	6.4	10	20	UG_KG	FDSB12101302 OU09 SB221 0305 OU09 SB221 0608 OU09 SB221 0810 OU09 SB302 0305 OU09 SB302 0810 OU09 SB303 0305 OU09 SB303 0810 OU09 SS221 0001 OU09 SS229 0001-02 OU09 SS302 0001 OU09 SS303 0001
WG136232-1	PHENANTHRENE	2.1	10	20	UG_KG	FDSB12101302 OU09 SB221 0608 OU09 SB302 0305 OU09 SB302 0810 OU09 SB303 0305 OU09 SB303 0810 OU09 SS221 0001 OU09 SS229 0001-02 OU09 SS302 0001 OU09 SS303 0001

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
WG136232-1	PYRENE	5.9	10	20	UG_KG	FDSB12101302 OU09 SB221 0305 OU09 SB221 0608 OU09 SB221 0810 OU09 SB302 0305 OU09 SB302 0810 OU09 SB303 0305 OU09 SS221 0001 OU09 SS229 0001-02 OU09 SS302 0001 OU09 SS303 0001
WG136233-1	BENZO[A]ANTHRACENE	7.5	10	20	UG_KG	OU09 SB202 0305 OU09 SB217 0102 OU09 SB217 0305 OU09 SS202 0001 OU09 SS203 0001 OU09 SS217 0001 OU09 SS229 0001-01
WG136233-1	FLUORANTHENE	2.3	10	20	UG_KG	OU09 SB202 0305 OU09 SB217 0102 OU09 SB217 0305 OU09 SS202 0001 OU09 SS203 0001 OU09 SS217 0001 OU09 SS229 0001-01

Table A-2b Field Blanks

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
RBSB121113 03	DIETHYLPHTHALATE	2.2	7.6	10	UG_L	FDSB12101302 OU09 SB221 0305 OU09 SB221 0608 OU09 SB221 0810 OU09 SB302 0305 OU09 SB302 0810 OU09 SB303 0305 OU09 SB303 0810 OU09 SS221 0001 OU09 SS229 0001-02 OU09 SS302 0001 OU09 SS303 0001
RBSB121113 04	BIS(2-ETHYLHEXYL)PHTHALATE	1.8	7.1	9.5	UG_L	FDSB12101302 OU09 SB302 0810 OU09 SS221 0001 OU09 SS229 0001-02 OU09 SS302 0001 OU09 SS303 0001

Table A-3 Lab Control Samples

LCS ID	Compound	LCS % Recovery	LCSD % Recovery	Lower Limit	Upper Limit	RPD	RPD Limit	Associated Samples
WG136232-2	BENZO[G,H,I]PERYLENE	41.7	36.3	53	103	14	50	BSBG SD302 0012 FDSB12101302 OU09 SB221 0305 OU09 SB221 0608 OU09 SB221 0810 OU09 SB223 0001 OU09 SB223 0304 OU09 SB228 0305 OU09 SB302 0305 OU09 SB302 0810 OU09 SB303 0305 OU09 SB303 0810 OU09 SB324 0305 OU09 SB324 0810 OU09 SS221 0001 OU09 SS229 0001-02 OU09 SS302 0001 OU09 SS303 0001 OU09 SS324 0001
WG136232-2	BENZO[A]PYRENE	59.1	51.4	61	101	14	50	BSBG SD302 0012 FDSB12101302 OU09 SB221 0305 OU09 SB221 0608 OU09 SB221 0810 OU09 SB223 0001 OU09 SB223 0304 OU09 SB228 0305 OU09 SB302 0305 OU09 SB302 0810 OU09 SB303 0305 OU09 SB303 0810 OU09 SB324 0305 OU09 SB324 0810 OU09 SS221 0001 OU09 SS229 0001-02 OU09 SS302 0001 OU09 SS303 0001 OU09 SS324 0001

LCS ID	Compound	LCS % Recovery	LCSD % Recovery	Lower Limit	Upper Limit	RPD	RPD Limit	Associated Samples
WG136232-2	DIBENZ[A,H]ANTHRACENE	63.7	54.7	55	105	15	50	BSBG SD302 0012 FDSB12101302 OU09 SB221 0305 OU09 SB221 0608 OU09 SB221 0810 OU09 SB223 0001 OU09 SB223 0304 OU09 SB228 0305 OU09 SB302 0305 OU09 SB302 0810 OU09 SB303 0305 OU09 SB303 0810 OU09 SB324 0305 OU09 SB324 0810 OU09 SS221 0001 OU09 SS229 0001-02 OU09 SS302 0001 OU09 SS303 0001 OU09 SS324 0001
WG136221-2	CHRYSENE no qual	102	104	70	95	1	30	RBSB121113 03 RBSB121113 04 RBSD12111301 RBSD12131301
WG136221-2	INDENO[1,2,3-CD]PYRENE no qual	118	114	61	112	2	30	RBSB121113 03 RBSB121113 04 RBSD12111301 RBSD12131301
WG136221-2	BENZO[B]FLUORANTHENE added quals	61	65.5	67	102	7	30	RBSB121113 03 RBSB121113 04 RBSD12111301 RBSD12131301
WG136221-2	FLUORANTHENE added quals	78.5	80	81	109	2	30	RBSB121113 03 RBSB121113 04 RBSD12111301 RBSD12131301
WG136221-2	BENZO[A]ANTHRACENE added quals	67	68	70	110	1	30	RBSB121113 03 RBSB121113 04 RBSD12111301 RBSD12131301

LCS ID	Compound	LCS % Recovery	LCSD % Recovery	Lower Limit	Upper Limit	RPD	RPD Limit	Associated Samples
WG136233-2	BENZO[G,H,I]PERYLENE added qual for OU09 SS229 0001-01	49	49.8	53	103	2	50	BSBG SD302 1224 BSBG SD302 2436 OU09 SB202 0305 OU09 SB202 0608 OU09 SB217 0102 OU09 SB217 0305 OU09 SB217 0608 OU09 SB221 0102 OU09 SB302 0608 OU09 SD107 0012 OU09 SD108 0012 OU09 SD117 0012 OU09 SD118 0012 OU09 SD118 1224 OU09 SD118 2436 OU09 SS202 0001 OU09 SS203 0001 OU09 SS217 0001 OU09 SS229 0001-01
WG136233-2	INDENO[1,2,3-CD]PYRENE added qual for OU09 SS229 0001-01	60.3	172	50	105	96	50	BSBG SD302 1224 BSBG SD302 2436 OU09 SB202 0305 OU09 SB202 0608 OU09 SB217 0102 OU09 SB217 0305 OU09 SB217 0608 OU09 SB221 0102 OU09 SB302 0608 OU09 SD107 0012 OU09 SD108 0012 OU09 SD117 0012 OU09 SD118 0012 OU09 SD118 1224 OU09 SD118 2436 OU09 SS202 0001 OU09 SS203 0001 OU09 SS217 0001 OU09 SS229 0001-01

LCS ID	Compound	LCS % Recovery	LCSD % Recovery	Lower Limit	Upper Limit	RPD	RPD Limit	Associated Samples
WG136350-2	BENZO[G,H,I]PERYLENE	48.7	52.9	53	103	8	50	OU09 SB203 0305 OU09 SB203 0608 OU09 SB206 0305 OU09 SB206 0608 OU09 SB229 0102 OU09 SB229 0305 OU09 SB303 0608 OU09 SD118 0012W OU09 SD122 0012 OU09 SD122 0012W OU09 SD123 0012 OU09 SD124 0012 OU09 SD125 0012 OU09 SD125 1224 OU09 SD125 2436 OU09 SD126 0012 OU09 SD126 1224 OU09 SD126 2436 OU09 SS206 0001
WG136350-2	BENZO[A]PYRENE	74.4	52.2	61	101	35	50	OU09 SB203 0305 OU09 SB203 0608 OU09 SB206 0305 OU09 SB206 0608 OU09 SB229 0102 OU09 SB229 0305 OU09 SB303 0608 OU09 SD118 0012W OU09 SD122 0012 OU09 SD122 0012W OU09 SD123 0012 OU09 SD124 0012 OU09 SD125 0012 OU09 SD125 1224 OU09 SD125 2436 OU09 SD126 0012 OU09 SD126 1224 OU09 SD126 2436 OU09 SS206 0001

LCS ID	Compound	LCS % Recovery	LCSD % Recovery	Lower Limit	Upper Limit	RPD	RPD Limit	Associated Samples
WG136350-2RA	BENZO[G,H,I]PERYLENE	41.8	56.8	53	103	30	50	OU09 SB203 0305RA OU09 SB203 0608 OU09 SB206 0305RA OU09 SB206 0608RA OU09 SB229 0102RA OU09 SB229 0305 OU09 SB303 0608 RA OU09 SD118 0012W OU09 SD122 0012 OU09 SD122 0012W OU09 SD123 0012 OU09 SD124 0012 OU09 SD125 0012 OU09 SD125 1224 OU09 SD125 2436 OU09 SD126 0012 OU09 SD126 1224 OU09 SD126 2436 OU09 SS206 0001
WG136350-2RA SIM	BENZO[A]PYRENE	58.6	68.8	61	101	16	50	OU09 SB203 0305 OU09 SB203 0608 OU09 SB206 0305 OU09 SB206 0608 OU09 SB229 0102 OU09 SB229 0305 OU09 SB303 0608 OU09 SD118 0012W OU09 SD122 0012 OU09 SD122 0012W OU09 SD123 0012 OU09 SD124 0012 OU09 SD125 0012 OU09 SD125 1224 OU09 SD125 2436 OU09 SD126 0012 OU09 SD126 1224 OU09 SD126 2436 OU09 SS206 0001
FULL SCAN								
WG136231-2 FULL SCAN	BENZIDINE	0	0	10	150	0	30	FDSB12101302 OU09 SB221 0608 OU09 SB221 0305 OU09 SB221 0810 OU09 SB302 0305 OU09 SB302 0810 OU09 SB303 0305 OU09 SB303 0810 OU09 SS221 0001 OU09 SS302 0001 OU09 SS303 0001

LCS ID	Compound	LCS % Recovery	LCSD % Recovery	Lower Limit	Upper Limit	RPD	RPD Limit	Associated Samples
WG136231-2	BENZOIC ACID	36.3	25.5	0	110	35	30	FDSB12101302 OU09 SB221 0608 OU09 SB221 0305 OU09 SB221 0810 OU09 SB302 0305 OU09 SB302 0810 OU09 SB303 0305 OU09 SB303 0810 OU09 SS221 0001 OU09 SS302 0001 OU09 SS303 0001

Table A-4 Field Duplicates

Sample ID	Duplicate ID	Compound	Sample Result	Qual	Duplicate Result	Qual	LOD	LOQ	Units	RPD
OU09 SS302 0001	FDSB12101302	ACENAPHTHENE	5.4	J	9.9	J	11	22	UG_KG	58.8
OU09 SS302 0001	FDSB12101302	ANTHRACENE	8.8	J	17	J	11	22	UG_KG	63.6
OU09 SS302 0001	FDSB12101302	BENZO[G,H,I]PERYLENE	26		45		11	22	UG_KG	53.5
OU09 SS302 0001	FDSB12101302	BENZO[B]FLUORANTHENE	100		180		11	22	UG_KG	57.1
OU09 SS302 0001	FDSB12101302	CHRYSENE	100		210		11	22	UG_KG	71.0
OU09 SS302 0001	FDSB12101302	BENZO[A]ANTHRACENE	92		160		11	22	UG_KG	54.0
OU09 SS2290001-01	OU09 SS2290001-02	ACENAPHTHENE	95		5.0	J	11	22	UG_KG	180
OU09 SS2290001-01	OU09 SS2290001-02	ACENAPHTHYLENE	17	J	10	U	11	22	UG_KG	NC
OU09 SS2290001-01	OU09 SS2290001-02	ANTHRACENE	150		10	U	11	22	UG_KG	NC
OU09 SS2290001-01	OU09 SS2290001-02	BENZO[A]ANTHRACENE	860		43		11	22	UG_KG	181
OU09 SS2290001-01	OU09 SS2290001-02	BENZO[A]PYRENE	1100		43	LL	11	22	UG_KG	185
OU09 SS2290001-01	OU09 SS2290001-02	BENZO[B]FLUORANTHENE	1100		56		11	22	UG_KG	181
OU09 SS2290001-01	OU09 SS2290001-02	BENZO[G,H,I]PERYLENE	750		41	LL	11	22	UG_KG	179
OU09 SS2290001-01	OU09 SS2290001-02	BENZO[K]FLUORANTHENE	960		16	JB	11	22	UG_KG	193
OU09 SS2290001-01	OU09 SS2290001-02	CHRYSENE	1100		80		11	22	UG_KG	173

Sample ID	Duplicate ID	Compound	Sample Result	Qual	Duplicate Result	Qual	LOD	LOQ	Units	RPD
OU09 SS229 0001-01	OU09 SS229 0001-02	DIBENZ[A,H]ANTHRACENE	340		24	L	11	22	UG_KG	174
OU09 SS229 0001-01	OU09 SS229 0001-02	FLUORANTHENE	1100		15	J	11	22	UG_KG	195
OU09 SS229 0001-01	OU09 SS229 0001-02	FLUORENE	58		3.9	J	11	22	UG_KG	175
OU09 SS229 0001-01	OU09 SS229 0001-02	INDENO[1,2,3-CD]PYRENE	820		27		11	22	UG_KG	187
OU09 SS229 0001-01	OU09 SS229 0001-02	NAPHTHALENE	20	J	10	U	11	22	UG_KG	NC
OU09 SS229 0001-01	OU09 SS229 0001-02	PHENANTHRENE	760		150		11	22	UG_KG	134
OU09 SS229 0001-01	OU09 SS229 0001-02	PYRENE	2200		250		11	22	UG_KG	159

Table A-5 Internal Standards

Sample ID	Internal Standard	IS AREA	Lower Limit (50%)	Lower Limit (20%)	Upper Limit
SVOC-SIM					
OU09 SB217 0305	CHRYSENE-D12	69517	15890.5	6356	63562
OU09 SB217 0305	PERYLENE-D12	46466	8428	3371	33712
OU09 SB217 0001	PERYLENE-D12	51073	8428	3371	33712
OU09 SS202 0001	PERYLENE-D12	42319	8428	3371	33712
OU09 SB203 0608	CHRYSENE-D12	92350	18584	7434	74336
OU09 SB203 0608	PERYLENE-D12	63192	9383	3753	37532
OU09 SS206 0001	PERYLENE-D12	41283	9383	3753	37532
FDSB12101302	PERYLENE-D12	28199	29300.5	11720	117202
OU09 SS229 0001-02	NAPHTHALENE-D8	153339	35592.5	14237	142370
OU09 SS229 0001-02	ACENAPHTHENE-D10	73885	16643	6657	66572
OU09 SS229 0001-02	CHRYSENE-D12	17750	30662	12265	122648
OU09 SS229 0001-02	PERYLENE-D12	11444	29300.5	11720	117202
SVOC-full scan					
OU09 SS229 0001-02	CHRYSENE-D12	233129	366376.5	146551	1465506
OU09 SS229 0001-02	PERYLENE-D12	111440	258363.5	103345	1033454
OU09 SB217 0305	PERYLENE-D12	187711	258363.5	103345	1033454
OU09 SS202 0001	PERYLENE-D12	143994	258363.5	103345	1033454
OU09 SS206 0001	PERYLENE-D12	180712	258363.5	103345	1033454
OU09 SS217 0001	PERYLENE-D12	155530	258363.5	103345	1033454
OU09 SS229 0001-01	CHRYSENE-D12	329731	366376.5	146551	1465506
OU09 SS229 0001-01	PERYLENE-D12	132558	258363.5	103345	1033454

SIM

CHRYSENE-D12 Associated PAH compounds
CHRYSENE
PYRENE
BENZO[A]ANTHRACENE

PERYLENE-D12 Associated PAH compounds
BENZO[B]FLUORANTHENE
BENZO[K]FLUORANTHENE
BENZO[A]PYRENE
INDENO[1,2,3-CD]PYRENE
DIBENZ[A,H]ANTHRACENE
BENZO[G,H,I]PERYLENE

NAPHTHALENE-D8
NAPHTHALENE

ACENAPHTHENE-D10
ACENAPHTHENE
FLUORENE

SVOC FULL SCAN

PERYLENE-D12 Associated PAH compounds
BENZO[B]FLUORANTHENE
BENZO[K]FLUORANTHENE
BENZO[A]PYRENE
INDENO[1,2,3-CD]PYRENE
DIBENZ[A,H]ANTHRACENE
BENZO[G,H,I]PERYLENE

CHRYSENE-D12 Associated PAH compounds
CHRYSENE
PYRENE
BENZO[A]ANTHRACENE

Attachment B

Qualifier Codes and Explanations

Qualifier	Explanation
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
UJ	The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual quantitation limit necessary to accurately and precisely measure the analyte in the sample.
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

Attachment C

Reason Codes and Explanations

Reason Code	Explanation
be	Equipment blank contamination
bf	Field blank contamination
bl	Laboratory blank contamination
c	Calibration issue
d	Reporting limit raised due to chromatographic interference
fd	Field duplicate RPDs
h	Holding times
i	Internal standard areas
k	Estimated Maximum Possible Concentration (EMPC)
l	LCS or OPR recoveries
lc	Labeled compound recovery
ld	Laboratory duplicate RPDs
lp	Laboratory control sample/laboratory control sample duplicate RPDs
m	Matrix spike recovery
md	Matrix spike/matrix spike duplicate RPDs
nb	Negative laboratory blank contamination
p	Chemical preservation issue
r	Dual column RPD
q	Quantitation issue
s	Surrogate recovery
su	Ion suppression
t	Temperature preservation issue
x	Percent solids
y	Serial dilution results
z	ICS results

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Data Validation Report

Project:	MRP Site 1 (OU9) Remedial Investigation, NAVSTA Newport, Rhode Island CTO WE06
Laboratory:	Katahdin Analytical Services, Scarborough, Maine
Service Request:	CARR-11
Analyses/Method:	Semivolatile Organic Compounds (GC/MS) Full Scan and SIM / EPA SW-846 Method 8270D Polycyclic Aromatic Hydrocarbons (GC/MS) Full Scan and SIM / EPA SW-846 Method 8270D
Validation Level:	Limited
Resolution Consultants Project Number:	60250336 SA.DV
Prepared by:	Helen Jones Parry/Resolution Consultants — Completed on: 03/28/2014
Reviewed by:	Kristin Rutherford/Resolution Consultants — File Name: CARR-11_SO_8270_DVRpt.docx

SUMMARY

The samples listed below were collected by Resolution Consultants from the MRP Site 1 (OU9), NAVSTA Newport, Rhode Island on December 11 and 12, 2013.

Sample ID	Matrix/Sample Type
FDSB12111303	Field Duplicate of OU09 SB205 0305
FDSB12111304	Field Duplicate of OU09 SB205 0608
FDSS12111312	Field Duplicate of OU09 SB220 0001
OU09 SB204 0001	Soil
OU09 SB204 0305	Soil
OU09 SB204 1012	Soil
OU09 SB205 0305	Soil
OU09 SB205 0608	Soil
OU09 SB214 0102	Soil
OU09 SB214 0305	Soil
OU09 SB214 0608	Soil
OU09 SB215 0102	Soil
OU09 SB215 0305	Soil
OU09 SB215 1012	Soil
OU09 SB216 0305	Soil
OU09 SB216 0608	Soil
OU09 SB218 0102	Soil

Sample ID	Matrix/Sample Type
OU09 SB218 0305	Soil
OU09 SB219 0305	Soil
OU09 SB220 0001	Soil
OU09 SB220 0305	Soil
OU09 SB222 0001	Soil
OU09 SB223 0001	Soil
OU09 SB223 0304	Soil
OU09 SB324 0102	Soil
OU09 SB324 0305	Soil
OU09 SB324 0608	Soil
OU09 SB324 0810	Soil
OU09 SS205 0001	Soil
OU09 SS218 0001	Soil
OU09 SS219 0001	Soil
OU09 SS324 0001	Soil

The data have been validated in accordance with the project-specific Sampling and Analysis Plan, Sampling and Analysis Plan, Former Carr Point Shooting Range (MRP Site 1, OU9), Naval Station (NAVSTA) Newport, Rhode Island, Final (Naval Facilities Engineering Command, Mid-Atlantic, 2013) and the following references:

- *DoD Quality Systems Manual (QMS) for Environmental Laboratories, version 4.2* (DoD EDQW, 2010);
- *USEPA Region 1, EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses* (December 1996);
- *USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review* (June 2008);
- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW846, Method 8270D, Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)* (USEPA, 1996);
- laboratory quality control (QC) limits, as applicable.

The USEPA Region 1 and National Data Validation Functional Guidelines were modified to accommodate the non-CLP methodologies. In the absence of method-specific direction for validation, Resolution Consultants professional judgment was used as appropriate.

REVIEW ELEMENTS

The data were evaluated based on the following parameters (where applicable to the method):

✓ Data completeness (chain-of-custody (COC)/sample integrity
✓ Holding times and sample preservation
✓ Instrument tuning
✗ Initial calibration/continuing calibration verification
✗ Laboratory blanks/equipment blanks

✓	Surrogate spike recoveries
✗	Matrix spike (MS) and/or matrix spike duplicate (MSD) results
✗	Laboratory control sample (LCS)/laboratory control sample duplicate (LCSD) results
✗	Field duplicates
✗	Internal standards
✓	Sample results/reporting issues

The symbol (✓) indicates that no validation qualifiers were applied based on this parameter. NA indicates that the parameter was not included as part of this data set or was not applicable to this validation and therefore not reviewed. The symbol (✗) indicates that a quality control (QC) nonconformance resulted in the qualification of data. Any QC nonconformance that resulted in the qualification of data is discussed below. In addition, nonconformances or other issues that were noted during validation, but did not result in qualification of data, may be discussed for informational purposes only.

The data appear valid as reported and may be used for decision making purposes. Selected data points were estimated, negated, and/or rejected due to nonconformances of certain QC criteria (see discussion below). Qualified sample results are presented in Table 1.

RESULTS

Data Completeness

The data package was reviewed and found to meet acceptance criteria for completeness:

- The COCs were reviewed for completeness of information relevant to the samples and requested analyses, and for signatures indicating transfer of sample custody.
- The laboratory sample login sheet(s) were reviewed for issues potentially affecting sample integrity, including the condition of sample containers upon receipt at the laboratory.
- Completeness of analyses was verified by comparing the reported results to the COC requests.

Holding Times/Sample Preservation

Sample preservation and preparation/analysis holding times were reviewed for conformance with the QC acceptance criteria.

The QC acceptance criteria were met.

GC/MS Performance Checks

The data were reviewed to ensure that the decafluorotriphenylphosphine (DFTPP) tuning was performed at the correct frequency and that the method acceptance criteria were met. All samples were analyzed within 12 hours of the DFTPP tunes.

Initial Calibration/Continuing Calibration Verification

Calibration data were reviewed for conformance with the QC acceptance criteria to ensure that:

- the initial calibration (ICAL) percent relative standard deviation (%RSD), correlation coefficient (r)/coefficient of determination (r2), and/or response factor method acceptance criteria were met;
- the initial calibration verification standard (ICV) percent recovery acceptance criteria were met;
- the continuing calibration verification standard (CCV) method percent difference or percent drift (%Ds) and RF acceptance criteria were met; and
- the retention time method acceptance criteria were met.

Nonconformances are summarized in Attachment A in Table A-1a through A-1d. Data qualification to the analytes associated with the specific ICAL and/or CCV was as follows:

ICAL and CCV Response Factor Nonconformances

Criteria	Actions	
	Detected Results	**Nondetected Results[4]**
SPCCs		
RF<0.050 for N-nitroso-di-n-propylamine; hexachlorocyclopentadiene; 2,4-dinitrophenol; and 4-nitrophenol.	J[1]	UJ[1]
All compounds except SPCCs and Poor Performing Compounds[2]		
RF<0.050	J	R[3]
RF<0.05 but>0.010 (if low standard response is adequate)	J[1]	UJ[1]
Poor Performing Compounds[2]		
RF<0.010	J	R
[1]No guidance in NFG, thus Resolution Consultants professional judgment was used.		
[2]As defined in Table 28 of the NFG.		
[3]Resolution Consultants professional judgment may be used to either raise reporting level or to estimate reporting limit if low standard response is adequate.		
[4]Sample results qualified as not detected (U) due to blank contamination are not rejected, but estimated (UJ).		
SPCCs - System Performance Check Compounds as listed in SW-846 Method 8270C		

ICAL Linearity Nonconformances

Criteria	Actions	
	Detected Results	**Nondetected**
%RSD > 30% for CCCs (acenaphthene, 1,4-dichlorobenzene, hexachlorobutadiene, diphenylamine, di-n-octyl phthalate, fluoranthene, and benzo(a)pyrene; 4-chloro-3-methylphenol, 2,4-dichlorophenol, 2-nitrophenol, phenol, pentachlorophenol, and 2,4,6-trichlorophenol)	J*	UJ*
%RSD > 15% and quantitation based on mean RF	J	UJ
r or r^2 < 0.99 and quantitation based on linear regression	J*	UJ*
* No guidance in NFG, thus Resolution Consultants professional judgment was used		
CCCs - Calibration Check Compounds as listed in SW-846 Method 8270C		

ICV Recovery Nonconformances

Criteria	Actions*	
	Detected Results	Nondetected Results
Recovery > 120	J	UJ
Recovery < 80	J	UJ
* No guidance in NFG, thus Resolution Consultants professional judgment was used		

CCV Linearity Nonconformances

Criteria	Actions	
	Detected Results	Nondetected Results
%D > 20%	J	UJ
%Drift >20%	J*	UJ*
* No guidance in NFG, thus Resolution Consultants professional judgment was used		

Qualified sample results are shown in Table 1.

<u>Laboratory Blanks/Equipment Blanks</u>

Laboratory method blanks and equipment rinsate blanks were evaluated as to whether there were contaminants detected above the method detection limit (MDL).

Data validation qualifications for individual samples are based on the maximum contaminant concentration detected in all associated blanks.

Detected results in blanks are not discussed in this data validation report if the associated results were nondetect or if qualification of sample results was not required.

Rinsate blanks RBSB12111303 and RBSB12111304 (reported in SDG CARR-9) were associated with the samples in this SDG. No blank qualifications were required due to rinsate blanks.

Nonconformances are summarized in Attachment A in Table A-2a and A-2b. Sample results were qualified as follows:

Blank Actions:

Blank type	Blank result	Sample result	Action for samples
Method, Storage, Trip, Field, or Equipment	Detects	Not detected	No qualification
	≤ LOQ	< LOQ	Report sample LOQ value with a U
		≥ LOQ and ≤ 5x the blank result[2]	Report the sample result with a U[1]
		≥ 5x the blank result[2]	No qualifications[1]
	> LOQ	< LOQ	Report sample LOQ value with a U
		≥ LOQ and < blank contamination	Report the sample result with a U or reject the sample result as unusable R
		≥ LOQ and ≥ blank contamination	If the result is ≤5x blank result[2], report the sample result U[1] If the result is > 5x blank result[2], no qualification is required[1]

[1]Based on Resolution Consultants professional judgment
[2]Use 10x blank result for all phthalates (common contaminants per Region I)

LOD - Limit of Detection
LOQ - Limit of Quantitation (equivalent to lowest calibration standard)

Qualified sample results are shown in Table 1.

Surrogate Spike Recoveries

The surrogate recoveries (%Rs) were reviewed for conformance with the QC acceptance criteria.

All QC acceptance criteria were met.

MS/MSD Results

The MS/MSD %Rs and relative percent differences (RPDs) were reviewed for conformance with the QC acceptance criteria.

Nonconformances are summarized in Attachment A in Table A-3. Data qualification to the analytes associated with the specific MS/MSD nonconformances was as follows:

Actions: (Based on NFG 2008, Region 1, and Resolution Consultants professional judgment)

Criteria	Action	
	Detected Compounds	**Nondetected Compounds**
%R> UL	J	No qualification
10% ≤ %R < LL*	J	UJ
%R <10%*	J	R
%RPD > UL	J	No qualification
* NFG 2008 does not list a minimum limit. Based on Region 1 and Resolution Consultants professional judgment, a minimum limit of 10% was used.		

Notes:

1. Based on NFG 2008 SVOC guidance, Resolution Consultants professional judgment is used to reject (R) non-detects in all associated samples for any analyte with < 10% recovery. Also, Resolution Consultants professional judgment is used to estimate (UJ) rather the reject (R) sample results previously negated (U) on the basis of blank contamination.

2. If a field duplicate sample was also collected for the native sample chosen for MS/MSD analysis, professional judgment is used to apply MS/MSD actions to the corresponding field duplicate sample as well as the native sample.

Qualified sample results are shown in Table 1.

LCS/LCSD Results

The LCS/LCSD %Rs and/or relative percent recoveries (RPDs) were reviewed for conformance with the QC acceptance criteria.

Nonconformances are summarized in Attachment A in Table A-4. Data qualification to the analytes associated with the specific LCS %Rs or RPDs was as follows:

Criteria[1,2]	Action[3]	
	Detected Compounds	Nondetected Compounds
%R or RPD > UL	J	No qualification
10%≥%R < LL	J	UJ
%R < 10%	J	R
[1] In the absence of NFG 2008 guidance for LCS results, NFG 2008 MS/MSD guidance was applied with Resolution Consultants professional judgment. [2] NFG 2008 MS/MSD does not list a minimum limit. Based on Region 1 and Resolution Consultants professional judgment, a minimum limit of 10% was used.		
[3]If the %R of more than half of the analytes are not within limits, then reject (R) nondetects for the analytes with <10% recovery and estimate (J/UJ) all other analyte(s) in the associated samples.		

Qualified sample results are shown in Table 1.

Field Duplicate Results

Field duplicate RPDs were reviewed for conformance with the Resolution Consultants QC criteria of ≤50% for solid matrices and ≤30% for aqueous matrices. These criteria apply if both results were greater than five times the limit of quantitation (LOQ).

Nonconformances are summarized in Attachment A in Table A-5. Data qualification to the analytes associated with the specific field duplicate RPDs was as follows:

Criteria	RPD	Action	
		Detected	Nondetected
Sample and duplicate are nondetect results	Not calculable (NC)	No qualification	No qualification
Sample and duplicate results ≥2xLOQ	>30 (aqueous) >50 (solids)	J	Not Applicable
Sample and duplicate results <2xLOQ	>60 (aqueous) >100 (solids)	J	Not Applicable
If sample or duplicate result is >2xLOQ and the other is not detected	NC	J	UJ
If sample or duplicate result is <2xLOQ and the other is not detected	NC	No qualification	No qualification

Actions: (Resolution Consultants professional judgment was used)

Qualified sample results are shown in Table 1.

Internal Standard Results

The internal standard (IS) recoveries were reviewed for conformance with the QC acceptance criteria.

Nonconformances are summarized in Attachment A in Table A-6. Data qualification to the analytes associated with the specific IS on the basis of IS recoveries was as follows:

Sample IS area compared to CCV and CCV IS area compared to ICAL*		
Qualify results	**<50%**	**> 200%**
Positive Results	J	J
Nondetected Results	R	A
* Per the DoD QSM v4.2, the laboratory may use the IS area of the CCV in place of the ICV. If an IS area fails with respect to the ICAL, but passes with respect to the CCV, then use professional judgment to evaluate the sensitivity and linearity of the analysis before applying validation actions. (Resolution Consultants professional judgment)		

Qualified sample results are shown in Table 1.

Sample Results/Reporting Issues

All compounds detected at concentrations less than the limit of quantitation (LOQ) but greater than the method detection limit (MDL) were qualified by the laboratory as estimated (J). This "J" qualifier was retained during data validation.

Any sample that was analyzed at a dilution due to high concentrations of target or non-targets was checked to ensure that the results and/or sample specific LODs and LOQs were adjusted accordingly by the laboratory.

The percent solids data were reviewed to ensure that NFG 2008 specified criteria were met.

All percent solids criteria were met.

QUALIFICATION ACTIONS

Sample results qualified as a result of validation actions are summarized in Table 1. All actions are described above.

ATTACHMENTS

Attachment A: Nonconformance Summary Tables

Attachment B: Qualifier Codes and Explanations

Attachment C: Reason Codes and Explanations

Table 1 - Data Validation Summary of Qualified Data

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
FDSB12111303	SO	BENZO[A]PYRENE	10	10	21	UG_KG	UJ	l
FDSB12111303	SO	BENZO[B]FLUORANTHENE	21	21	21	UG_KG	U	bl
FDSB12111303	SO	BENZO[G,H,I]PERYLENE	10	10	21	UG_KG	UJ	l
FDSB12111304	SO	BENZO[A]PYRENE	10	10	21	UG_KG	UJ	l
FDSB12111304	SO	BENZO[B]FLUORANTHENE	21	21	21	UG_KG	U	bl
FDSB12111304	SO	BENZO[G,H,I]PERYLENE	10	10	21	UG_KG	UJ	l
FDSS12111312	SO	BENZO[A]ANTHRACENE	1100	260	340	UG_KG	J	fd
FDSS12111312	SO	BENZO[A]PYRENE	1100	260	340	UG_KG	J	fd,i
FDSS12111312	SO	BENZO[B]FLUORANTHENE	810	260	340	UG_KG	J	fd,i
FDSS12111312	SO	CHRYSENE	1600	260	340	UG_KG	J	fd
FDSS12111312	SO	INDENO[1,2,3-CD]PYRENE	560	260	340	UG_KG	J	fd,i
FDSS12111312	SO	PHENANTHRENE	550	260	340	UG_KG	J	fd
FDSS12111312	SO	PYRENE	2300	260	340	UG_KG	J	fd
FDSS12111312	SO	ACENAPHTHENE	70	10	21	UG_KG	J	fd
FDSS12111312	SO	ANTHRACENE	100	10	21	UG_KG	J	fd
FDSS12111312	SO	BENZO[G,H,I]PERYLENE	290	10	21	UG_KG	J	fd,l
FDSS12111312	SO	BENZO[K]FLUORANTHENE	310	10	21	UG_KG	J	fd
FDSS12111312	SO	DIBENZ[A,H]ANTHRACENE	210	10	21	UG_KG	J	fd
FDSS12111312	SO	FLUORENE	35	10	21	UG_KG	J	fd
FDSS12111312	SO	NAPHTHALENE	31	10	21	UG_KG	J	fd
OU09 SB204 0001	SO	BENZO[A]ANTHRACENE	42	11	22	UG_KG	J	m
OU09 SB204 0001	SO	BENZO[A]PYRENE	50	11	22	UG_KG	J	m
OU09 SB204 0001	SO	BENZO[B]FLUORANTHENE	72	11	22	UG_KG	J	m
OU09 SB204 0001	SO	BENZO[G,H,I]PERYLENE	25	11	22	UG_KG	J	l,m
OU09 SB204 0001	SO	BENZO[K]FLUORANTHENE	25	11	22	UG_KG	J	c,m
OU09 SB204 0001	SO	CHRYSENE	59	11	22	UG_KG	J	m
OU09 SB204 0001	SO	DIBENZ[A,H]ANTHRACENE	12	11	22	UG_KG	J	m
OU09 SB204 0001	SO	FLUORANTHENE	68	11	22	UG_KG	J	m,md
OU09 SB204 0001	SO	INDENO[1,2,3-CD]PYRENE	32	11	22	UG_KG	J	c,m
OU09 SB204 0001	SO	PHENANTHRENE	38	11	22	UG_KG	J	m,md
OU09 SB204 0001	SO	PYRENE	67	11	22	UG_KG	J	m,md
OU09 SB204 0305	SO	BENZO[A]ANTHRACENE	21	21	21	UG_KG	U	bl
OU09 SB204 0305	SO	BENZO[A]PYRENE	21	21	21	UG_KG	UJ	bl,c,m
OU09 SB204 0305	SO	BENZO[B]FLUORANTHENE	21	21	21	UG_KG	UJ	bl,m
OU09 SB204 0305	SO	BENZO[G,H,I]PERYLENE	3.4	11	21	UG_KG	J	l,m
OU09 SB204 0305	SO	BENZO[K]FLUORANTHENE	11	11	21	UG_KG	UJ	c,m
OU09 SB204 0305	SO	DIBENZ[A,H]ANTHRACENE	4.9	11	21	UG_KG	J	m
OU09 SB204 0305	SO	FLUORANTHENE	21	21	21	UG_KG	U	bl
OU09 SB204 0305	SO	INDENO[1,2,3-CD]PYRENE	5.6	11	21	UG_KG	J	c,m

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SB204 1012	SO	BENZO[A]PYRENE	10	10	20	UG_KG	UJ	m
OU09 SB204 1012	SO	BENZO[B]FLUORANTHENE	3.4	10	20	UG_KG	J	m
OU09 SB204 1012	SO	BENZO[G,H,I]PERYLENE	10	10	20	UG_KG	UJ	l,m
OU09 SB204 1012	SO	BENZO[K]FLUORANTHENE	10	10	20	UG_KG	UJ	c,m
OU09 SB204 1012	SO	DIBENZ[A,H]ANTHRACENE	10	10	20	UG_KG	UJ	m
OU09 SB204 1012	SO	FLUORANTHENE	20	20	20	UG_KG	U	bl
OU09 SB204 1012	SO	INDENO[1,2,3-CD]PYRENE	10	10	20	UG_KG	UJ	c,m
OU09 SB205 0305	SO	BENZO[B]FLUORANTHENE	22	22	22	UG_KG	U	bl
OU09 SB205 0305	SO	BENZO[G,H,I]PERYLENE	11	11	22	UG_KG	UJ	l
OU09 SB205 0305	SO	BENZO[K]FLUORANTHENE	11	11	22	UG_KG	UJ	c
OU09 SB205 0305	SO	INDENO[1,2,3-CD]PYRENE	11	11	22	UG_KG	UJ	c
OU09 SB205 0608	SO	BENZO[A]ANTHRACENE	20	20	20	UG_KG	U	bl
OU09 SB205 0608	SO	BENZO[B]FLUORANTHENE	20	20	20	UG_KG	U	bl
OU09 SB205 0608	SO	BENZO[G,H,I]PERYLENE	9.9	9.9	20	UG_KG	UJ	l
OU09 SB205 0608	SO	BENZO[K]FLUORANTHENE	9.9	9.9	20	UG_KG	UJ	c
OU09 SB205 0608	SO	FLUORANTHENE	20	20	20	UG_KG	U	bl
OU09 SB205 0608	SO	INDENO[1,2,3-CD]PYRENE	9.9	9.9	20	UG_KG	UJ	c
OU09 SB214 0102	SO	BENZO[A]PYRENE	5.6	11	21	UG_KG	J	l
OU09 SB214 0102	SO	BENZO[G,H,I]PERYLENE	2.4	11	21	UG_KG	J	l
OU09 SB214 0102	SO	CHRYSENE	11	11	21	UG_KG	UJ	c
OU09 SB214 0305	SO	BENZO[A]PYRENE	11	11	23	UG_KG	UJ	l
OU09 SB214 0305	SO	BENZO[G,H,I]PERYLENE	11	11	23	UG_KG	UJ	l
OU09 SB214 0305	SO	CHRYSENE	11	11	23	UG_KG	UJ	c
OU09 SB214 0608	SO	BENZO[A]PYRENE	3.8	10	20	UG_KG	J	l
OU09 SB214 0608	SO	BENZO[B]FLUORANTHENE	20	20	20	UG_KG	U	bl
OU09 SB214 0608	SO	BENZO[G,H,I]PERYLENE	10	10	20	UG_KG	UJ	l
OU09 SB214 0608	SO	CHRYSENE	10	10	20	UG_KG	UJ	c
OU09 SB215 0102	SO	BENZO[A]PYRENE	7.3	9.0	18	UG_KG	J	l
OU09 SB215 0102	SO	BENZO[B]FLUORANTHENE	18	18	18	UG_KG	U	bl
OU09 SB215 0102	SO	BENZO[G,H,I]PERYLENE	2.7	9.0	18	UG_KG	J	l
OU09 SB215 0305	SO	BENZO[A]PYRENE	11	11	22	UG_KG	UJ	l
OU09 SB215 0305	SO	BENZO[B]FLUORANTHENE	22	22	22	UG_KG	U	bl
OU09 SB215 0305	SO	BENZO[G,H,I]PERYLENE	11	11	22	UG_KG	UJ	l
OU09 SB215 1012	SO	BENZO[A]PYRENE	10	10	21	UG_KG	UJ	l
OU09 SB215 1012	SO	BENZO[G,H,I]PERYLENE	10	10	21	UG_KG	UJ	l
OU09 SB215 1012	SO	CHRYSENE	10	10	21	UG_KG	UJ	c
OU09 SB216 0305	SO	BENZO[A]PYRENE	10	10	21	UG_KG	UJ	l
OU09 SB216 0305	SO	BENZO[G,H,I]PERYLENE	10	10	21	UG_KG	UJ	l
OU09 SB216 0608	SO	BENZO[A]ANTHRACENE	2.3	11	22	UG_KG	J	m

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SB216 0608	SO	BENZO[A]PYRENE	11	11	22	UG_KG	UJ	l,m
OU09 SB216 0608	SO	BENZO[B]FLUORANTHENE	11	11	22	UG_KG	UJ	m
OU09 SB216 0608	SO	BENZO[G,H,I]PERYLENE	11	11	22	UG_KG	UJ	l,m
OU09 SB216 0608	SO	BENZO[K]FLUORANTHENE	11	11	22	UG_KG	UJ	m
OU09 SB216 0608	SO	CHRYSENE	11	11	22	UG_KG	UJ	c
OU09 SB216 0608	SO	DIBENZ[A,H]ANTHRACENE	11	11	22	UG_KG	UJ	m
OU09 SB216 0608	SO	INDENO[1,2,3-CD]PYRENE	11	11	22	UG_KG	UJ	m
OU09 SB218 0102	SO	BENZO[A]PYRENE	4.6	10	20	UG_KG	J	l
OU09 SB218 0102	SO	BENZO[B]FLUORANTHENE	20	20	20	UG_KG	U	bl
OU09 SB218 0102	SO	BENZO[G,H,I]PERYLENE	10	10	20	UG_KG	UJ	l
OU09 SB218 0305	SO	BENZO[A]ANTHRACENE	21	21	21	UG_KG	U	bl
OU09 SB218 0305	SO	BENZO[G,H,I]PERYLENE	11	11	21	UG_KG	UJ	l
OU09 SB218 0305	SO	FLUORANTHENE	21	21	21	UG_KG	U	bl
OU09 SB218 0305	SO	PYRENE	11	11	21	UG_KG	UJ	c
OU09 SB219 0305	SO	BENZO[B]FLUORANTHENE	21	21	21	UG_KG	U	bl
OU09 SB219 0305	SO	BENZO[G,H,I]PERYLENE	10	10	21	UG_KG	UJ	l
OU09 SB219 0305	SO	BENZO[K]FLUORANTHENE	10	10	21	UG_KG	UJ	c
OU09 SB219 0305	SO	FLUORANTHENE	21	21	21	UG_KG	U	bl
OU09 SB219 0305	SO	INDENO[1,2,3-CD]PYRENE	10	10	21	UG_KG	UJ	c
OU09 SB220 0001	SO	BENZO[B]FLUORANTHENE	520	280	380	UG_KG	J	fd,i
OU09 SB220 0001	SO	CHRYSENE	500	280	380	UG_KG	J	fd
OU09 SB220 0001	SO	PYRENE	620	280	380	UG_KG	J	fd
OU09 SB220 0001	SO	ACENAPHTHENE	31	12	23	UG_KG	J	fd
OU09 SB220 0001	SO	ANTHRACENE	58	12	23	UG_KG	J	fd
OU09 SB220 0001	SO	BENZO[A]ANTHRACENE	360	12	23	UG_KG	J	fd
OU09 SB220 0001	SO	BENZO[A]PYRENE	350	12	23	UG_KG	J	fd,l
OU09 SB220 0001	SO	BENZO[G,H,I]PERYLENE	130	12	23	UG_KG	J	fd,l
OU09 SB220 0001	SO	BENZO[K]FLUORANTHENE	160	12	23	UG_KG	J	fd
OU09 SB220 0001	SO	DIBENZ[A,H]ANTHRACENE	85	12	23	UG_KG	J	fd
OU09 SB220 0001	SO	FLUORENE	19	12	23	UG_KG	J	fd
OU09 SB220 0001	SO	INDENO[1,2,3-CD]PYRENE	240	12	23	UG_KG	J	fd
OU09 SB220 0001	SO	NAPHTHALENE	6.6	12	23	UG_KG	J	fd
OU09 SB220 0001	SO	PHENANTHRENE	240	12	23	UG_KG	J	fd
OU09 SB220 0305	SO	BENZO[A]ANTHRACENE	28	11	22	UG_KG	J	m
OU09 SB220 0305	SO	BENZO[A]PYRENE	30	11	22	UG_KG	J	l,m
OU09 SB220 0305	SO	BENZO[B]FLUORANTHENE	46	11	22	UG_KG	J	m
OU09 SB220 0305	SO	BENZO[G,H,I]PERYLENE	12	11	22	UG_KG	J	l,m
OU09 SB220 0305	SO	CHRYSENE	34	11	22	UG_KG	J	c,m
OU09 SB220 0305	SO	DIBENZ[A,H]ANTHRACENE	4.5	11	22	UG_KG	J	m

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SB220 0305	SO	FLUORANTHENE	41	11	22	UG_KG	J	m
OU09 SB220 0305	SO	INDENO[1,2,3-CD]PYRENE	16	11	22	UG_KG	J	m
OU09 SB220 0305	SO	PHENANTHRENE	24	11	22	UG_KG	J	m
OU09 SB220 0305	SO	PYRENE	38	11	22	UG_KG	J	m
OU09 SB222 0001	SO	BENZO[A]PYRENE	73	9.6	19	UG_KG	J	l
OU09 SB222 0001	SO	BENZO[B]FLUORANTHENE	94	9.6	19	UG_KG	J	c
OU09 SB222 0001	SO	BENZO[G,H,I]PERYLENE	31	9.6	19	UG_KG	J	l
OU09 SB222 0001	SO	BENZO[K]FLUORANTHENE	28	9.6	19	UG_KG	J	c
OU09 SB222 0001	SO	CHRYSENE	97	9.6	19	UG_KG	J	c
OU09 SB223 0001	SO	2-CHLORONAPHTHALENE	280	280	370	UG_KG	UJ	c
OU09 SB223 0001	SO	BENZIDINE	1300	1300	1700	UG_KG	R	l
OU09 SB223 0001	SO	BENZO[A]ANTHRACENE	370	370	370	UG_KG	U	bl
OU09 SB223 0001	SO	BENZOIC ACID	700	700	930	UG_KG	UJ	c
OU09 SB223 0001	SO	BIS(2-CHLOROETHOXY)METHANE	280	280	370	UG_KG	UJ	l
OU09 SB223 0001	SO	DIETHYLPHTHALATE	280	280	370	UG_KG	UJ	c
OU09 SB223 0001	SO	N-NITROSOPYRROLIDINE	280	280	370	UG_KG	R	l
OU09 SB223 0001	SO	BENZO[A]PYRENE	92	11	23	UG_KG	J	l,i
OU09 SB223 0001	SO	BENZO[B]FLUORANTHENE	150	11	23	UG_KG	J	i
OU09 SB223 0001	SO	BENZO[G,H,I]PERYLENE	55	11	23	UG_KG	J	l,i
OU09 SB223 0001	SO	BENZO[K]FLUORANTHENE	110	11	23	UG_KG	J	i
OU09 SB223 0001	SO	DIBENZ[A,H]ANTHRACENE	32	11	23	UG_KG	J	l,i
OU09 SB223 0001	SO	INDENO[1,2,3-CD]PYRENE	60	11	23	UG_KG	J	i
OU09 SB223 0304	SO	1,2,4-TRICHLOROBENZENE	260	260	340	UG_KG	UJ	l
OU09 SB223 0304	SO	1,2-DICHLOROBENZENE	260	260	340	UG_KG	UJ	l
OU09 SB223 0304	SO	2-CHLORONAPHTHALENE	260	260	340	UG_KG	UJ	c
OU09 SB223 0304	SO	2-CHLOROPHENOL	260	260	340	UG_KG	UJ	l
OU09 SB223 0304	SO	2-METHYLPHENOL	260	260	340	UG_KG	UJ	l
OU09 SB223 0304	SO	2-NITROPHENOL	260	260	340	UG_KG	UJ	l
OU09 SB223 0304	SO	4,6-DINITRO-2-METHYLPHENOL	640	640	850	UG_KG	UJ	c
OU09 SB223 0304	SO	4-NITROANILINE	640	640	850	UG_KG	UJ	c
OU09 SB223 0304	SO	4-NITROPHENOL	640	640	850	UG_KG	UJ	c
OU09 SB223 0304	SO	BENZIDINE	1200	1200	1600	UG_KG	R	l
OU09 SB223 0304	SO	BENZOIC ACID	640	640	850	UG_KG	UJ	c
OU09 SB223 0304	SO	BIS(2-CHLOROETHOXY)METHANE	260	260	340	UG_KG	UJ	l
OU09 SB223 0304	SO	CAPROLACTAM	260	260	340	UG_KG	UJ	c,l
OU09 SB223 0304	SO	DIETHYLPHTHALATE	260	260	340	UG_KG	UJ	c
OU09 SB223 0304	SO	DI-N-OCTYLPHTHALATE	260	260	340	UG_KG	UJ	c
OU09 SB223 0304	SO	HEXACHLOROBUTADIENE	260	260	340	UG_KG	UJ	l
OU09 SB223 0304	SO	N-NITROSOPYRROLIDINE	260	260	340	UG_KG	R	l

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SB223 0304	SO	PENTACHLOROPHENOL	640	640	850	UG_KG	UJ	c
OU09 SB223 0304	SO	BENZO[A]ANTHRACENE	20	20	20	UG_KG	U	bl
OU09 SB223 0304	SO	BENZO[A]PYRENE	20	20	20	UG_KG	UJ	bl,l,i
OU09 SB223 0304	SO	BENZO[B]FLUORANTHENE	21	9.9	20	UG_KG	J	i
OU09 SB223 0304	SO	BENZO[G,H,I]PERYLENE	7.8	9.9	20	UG_KG	J	l,i
OU09 SB223 0304	SO	BENZO[K]FLUORANTHENE	20	20	20	UG_KG	UJ	bl,i
OU09 SB223 0304	SO	CHRYSENE	20	20	20	UG_KG	U	bl
OU09 SB223 0304	SO	DIBENZ[A,H]ANTHRACENE	20	20	20	UG_KG	UJ	bl,l,i
OU09 SB223 0304	SO	INDENO[1,2,3-CD]PYRENE	20	20	20	UG_KG	UJ	bl,i
OU09 SB223 0304	SO	PHENANTHRENE	20	20	20	UG_KG	U	bl
OU09 SB324 0102	SO	BENZO[A]PYRENE	19	9.9	20	UG_KG	J	l
OU09 SB324 0102	SO	BENZO[G,H,I]PERYLENE	7.9	9.9	20	UG_KG	J	l
OU09 SB324 0102	SO	CHRYSENE	37	9.9	20	UG_KG	J	c
OU09 SB324 0305	SO	2-CHLORONAPHTHALENE	230	230	300	UG_KG	UJ	c
OU09 SB324 0305	SO	BENZIDINE	1000	1000	1400	UG_KG	R	l
OU09 SB324 0305	SO	BENZOIC ACID	570	570	760	UG_KG	UJ	c
OU09 SB324 0305	SO	BIS(2-CHLOROETHOXY)METHANE	230	230	300	UG_KG	UJ	l
OU09 SB324 0305	SO	DIETHYLPHTHALATE	230	230	300	UG_KG	UJ	c
OU09 SB324 0305	SO	N-NITROSOPYRROLIDINE	230	230	300	UG_KG	R	l
OU09 SB324 0305	SO	BENZO[A]ANTHRACENE	18	18	18	UG_KG	U	bl
OU09 SB324 0305	SO	BENZO[A]PYRENE	9.3	9.3	18	UG_KG	UJ	l
OU09 SB324 0305	SO	BENZO[B]FLUORANTHENE	18	18	18	UG_KG	U	bl
OU09 SB324 0305	SO	BENZO[G,H,I]PERYLENE	7.1	9.3	18	UG_KG	J	l
OU09 SB324 0305	SO	CHRYSENE	18	18	18	UG_KG	U	bl
OU09 SB324 0305	SO	DIBENZ[A,H]ANTHRACENE	18	18	18	UG_KG	UJ	bl,l
OU09 SB324 0305	SO	FLUORANTHENE	18	18	18	UG_KG	UJ	c,bl
OU09 SB324 0305	SO	INDENO[1,2,3-CD]PYRENE	18	18	18	UG_KG	U	bl
OU09 SB324 0305	SO	NAPHTHALENE	9.3	9.3	18	UG_KG	UJ	c
OU09 SB324 0608	SO	BENZO[A]PYRENE	9.5	9.5	19	UG_KG	UJ	l
OU09 SB324 0608	SO	BENZO[G,H,I]PERYLENE	9.5	9.5	19	UG_KG	UJ	l
OU09 SB324 0608	SO	CHRYSENE	9.5	9.5	19	UG_KG	UJ	c
OU09 SB324 0810	SO	2-CHLORONAPHTHALENE	260	260	340	UG_KG	UJ	c
OU09 SB324 0810	SO	BENZIDINE	1200	1200	1600	UG_KG	R	l
OU09 SB324 0810	SO	BENZOIC ACID	640	640	850	UG_KG	UJ	c
OU09 SB324 0810	SO	BIS(2-CHLOROETHOXY)METHANE	260	260	340	UG_KG	UJ	l
OU09 SB324 0810	SO	DIETHYLPHTHALATE	260	260	340	UG_KG	UJ	c
OU09 SB324 0810	SO	N-NITROSOPYRROLIDINE	260	260	340	UG_KG	R	l
OU09 SB324 0810	SO	BENZO[A]ANTHRACENE	21	21	21	UG_KG	U	bl
OU09 SB324 0810	SO	BENZO[A]PYRENE	10	10	21	UG_KG	UJ	l

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SB324 0810	SO	BENZO[B]FLUORANTHENE	21	21	21	UG_KG	U	bl
OU09 SB324 0810	SO	BENZO[G,H,I]PERYLENE	8.5	10	21	UG_KG	J	l
OU09 SB324 0810	SO	CHRYSENE	21	21	21	UG_KG	U	bl
OU09 SB324 0810	SO	DIBENZ[A,H]ANTHRACENE	21	21	21	UG_KG	UJ	bl,l
OU09 SB324 0810	SO	FLUORANTHENE	21	21	21	UG_KG	UJ	c,bl
OU09 SB324 0810	SO	INDENO[1,2,3-CD]PYRENE	21	21	21	UG_KG	U	bl
OU09 SB324 0810	SO	NAPHTHALENE	10	10	21	UG_KG	UJ	c
OU09 SS205 0001	SO	BENZO[B]FLUORANTHENE	290	230	310	UG_KG	J	i
OU09 SS205 0001	SO	BENZO[A]PYRENE	180	9.3	19	UG_KG	J	l
OU09 SS205 0001	SO	BENZO[G,H,I]PERYLENE	63	9.3	19	UG_KG	J	l
OU09 SS205 0001	SO	CHRYSENE	260	9.3	19	UG_KG	J	c
OU09 SS218 0001	SO	BENZO[B]FLUORANTHENE	470	280	370	UG_KG	J	i
OU09 SS218 0001	SO	BENZO[A]PYRENE	260	11	22	UG_KG	J	l
OU09 SS218 0001	SO	BENZO[G,H,I]PERYLENE	120	11	22	UG_KG	J	l
OU09 SS219 0001	SO	BENZO[G,H,I]PERYLENE	67	10	21	UG_KG	J	l
OU09 SS219 0001	SO	BENZO[K]FLUORANTHENE	80	10	21	UG_KG	J	c
OU09 SS219 0001	SO	INDENO[1,2,3-CD]PYRENE	90	10	21	UG_KG	J	c
OU09 SS324 0001	SO	1,2,4-TRICHLOROBENZENE	270	270	360	UG_KG	UJ	m
OU09 SS324 0001	SO	1,2-DICHLOROBENZENE	270	270	360	UG_KG	UJ	m
OU09 SS324 0001	SO	1,3-DICHLOROBENZENE	270	270	360	UG_KG	UJ	m
OU09 SS324 0001	SO	2,4-DIMETHYLPHENOL	270	270	360	UG_KG	UJ	m
OU09 SS324 0001	SO	2-CHLORONAPHTHALENE	270	270	360	UG_KG	UJ	c
OU09 SS324 0001	SO	2-CHLOROPHENOL	270	270	360	UG_KG	UJ	m
OU09 SS324 0001	SO	2-METHYLPHENOL	270	270	360	UG_KG	UJ	m
OU09 SS324 0001	SO	3,3-DICHLOROBENZIDINE	270	270	360	UG_KG	UJ	m
OU09 SS324 0001	SO	BENZIDINE	1200	1200	1600	UG_KG	R	l
OU09 SS324 0001	SO	BENZO[A]ANTHRACENE	690	270	360	UG_KG	J	m
OU09 SS324 0001	SO	BENZO[A]PYRENE	630	270	360	UG_KG	J	l,m
OU09 SS324 0001	SO	BENZO[G,H,I]PERYLENE	380	270	360	UG_KG	J	l,m
OU09 SS324 0001	SO	BENZOIC ACID	660	660	880	UG_KG	UJ	c
OU09 SS324 0001	SO	BIS(2-CHLOROETHOXY)METHANE	270	270	360	UG_KG	UJ	l,m
OU09 SS324 0001	SO	BIS(2-ETHYLHEXYL)PHTHALATE	360	360	360	UG_KG	U	bl
OU09 SS324 0001	SO	CHRYSENE	960	270	360	UG_KG	J	m
OU09 SS324 0001	SO	DIETHYLPHTHALATE	270	270	360	UG_KG	UJ	c
OU09 SS324 0001	SO	FLUORANTHENE	1300	270	360	UG_KG	J	m
OU09 SS324 0001	SO	HEXACHLOROBUTADIENE	270	270	360	UG_KG	UJ	m
OU09 SS324 0001	SO	HEXACHLOROETHANE	270	270	360	UG_KG	UJ	m
OU09 SS324 0001	SO	N-NITROSOPYRROLIDINE	270	270	360	UG_KG	R	l,m
OU09 SS324 0001	SO	PHENANTHRENE	760	270	360	UG_KG	J	m

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SS324 0001	SO	PYRENE	1500	270	360	UG_KG	J	m
OU09 SS324 0001	SO	ACENAPHTHENE	56	11	22	UG_KG	J	m
OU09 SS324 0001	SO	ANTHRACENE	110	11	22	UG_KG	J	m
OU09 SS324 0001	SO	DIBENZ[A,H]ANTHRACENE	72	11	22	UG_KG	J	l,m
OU09 SS324 0001	SO	FLUORENE	61	11	22	UG_KG	J	m
OU09 SS324 0001	SO	NAPHTHALENE	7.0	11	22	UG_KG	J	c

Attachment A

Non Conformance Summary Tables

Table A-1a - Initial Calibration - SVOC SIM

ICV	Compound	%RSD	%RSD Limit	Associated Samples
1/6/14	NAPHTHALENE	15.42	<15	OU09 SB324 0305 OU09 SB324 0810 OU09 SS324 0001
	FLUORANTHENE	17.17	<15	

Table A-1b Initial Calibration - SVOC full scan

ICAL	Compound	% RSD	%RSD Limit	ICV %R	ICV %R Limits	Associated Samples
12/11/13	BENZOIC ACID	42.12	<15			OU09 SB324 0305 OU09 SB324 0810 OU09 SS324 0001 OU09 SB223 0001 OU09 SB223 0304 OU09 SS218 0001 OU09 SS205 0001 OU09 SB220 0001 FDSS12111312
	2-CHLORONAPHTHALENE	20.70	<15			
	DIETHYLPHTHALATE	15.01	<15			

Table A-1c Continuing Calibration – SVOC SIM

CCAL	Compound	% D	%D Limit	Associated Samples
WG136810-2	BENZO(K)FLUORANTHENE	-21.68	<20	OU09 SB205 0305 OU09 SB205 0608 OU09 SB204 0001 OU09 SB204 0305 OU09 SB204 1012 OU09 SS219 0001 OU09 SB219 0305
	INDENO(1,2,3-CD)PYRENE	-22.23	<20	
WG136926-2	PYRENE	-20.05	<20	OU09 SB218 0305
WG136987-2	CHRYSENE	26.40	<20	OU09 SB216 0608 OU09 SB215 1012 OU09 SB214 0102 OU09 SB214 0305 OU09 SB214 0608 OU09 SB220 0305 OU09 SB324 0102 OU09 SB324 0608 OU09 SS205 0001 OU09 SB220 0001 OU09 SS218 0001 FDSS12111312
WG137128-2	CHRYSENE	35.51	<20	OU09 SB222 0001
	BENZO(B)FLUORANTHENE	-22.19	<20	
	BENZO(K)FLUORANTHENE	26.70	<20	

Table A-1d Continuing Calibration – SVOC full scan

CCAL	Compound	% D	%D Limit	Associated Samples
WG138314-2	BENZOIC ACID	51.70	<20	OU09 SB223 0304
	CAPROLACTUM	21.15	<20	
	4-NITROPHENOL	28.27	<20	
	4-NITROANILINE	20.09	<20	
	4,6-DINITRO-2-METHYLPHENOL	27.78	<20	
	PENTACHLOROPHENOL	20.01	<20	
	DI-N-OCTYLPHTHALATE	20.01	<20	

Table A-2a Lab Blanks

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
WG136232-1	BENZO[A]ANTHRACENE	8.0	10	20	UG_KG	OU09 SB223 0001 OU09 SB223 0304 OU09 SB324 0305 OU09 SB324 0810 OU09 SS324 0001
WG136232-1	BENZO[A]PYRENE	6.8	10	20	UG_KG	OU09 SB223 0001 OU09 SB223 0304 OU09 SB324 0305 OU09 SB324 0810 OU09 SS324 0001
WG136232-1	BENZO[B]FLUORANTHENE	8.7	10	20	UG_KG	OU09 SB223 0001 OU09 SB223 0304 OU09 SB324 0305 OU09 SB324 0810 OU09 SS324 0001
WG136232-1	BENZO[K]FLUORANTHENE	10	10	20	UG_KG	OU09 SB223 0001 OU09 SB223 0304 OU09 SB324 0305 OU09 SB324 0810 OU09 SS324 0001
WG136232-1	CHRYSENE	2.2	10	20	UG_KG	OU09 SB223 0001 OU09 SB223 0304 OU09 SB324 0305 OU09 SB324 0810 OU09 SS324 0001
WG136232-1	DIBENZ[A,H]ANTHRACENE	3.6	10	20	UG_KG	OU09 SB223 0001 OU09 SB223 0304 OU09 SB324 0305 OU09 SB324 0810 OU09 SS324 0001
WG136232-1	FLUORANTHENE	6.1	10	20	UG_KG	OU09 SB223 0001 OU09 SB223 0304 OU09 SB324 0305 OU09 SB324 0810 OU09 SS324 0001

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
WG136232-1	INDENO[1,2,3-CD]PYRENE	6.4	10	20	UG_KG	OU09 SB223 0001 OU09 SB223 0304 OU09 SB324 0305 OU09 SB324 0810 OU09 SS324 0001
WG136232-1	PHENANTHRENE	2.1	10	20	UG_KG	OU09 SB223 0001 OU09 SB223 0304 OU09 SB324 0305 OU09 SB324 0810 OU09 SS324 0001
WG136232-1	PYRENE	5.9	10	20	UG_KG	OU09 SB223 0001 OU09 SB223 0304 OU09 SB324 0305 OU09 SB324 0810 OU09 SS324 0001
WG136440-1	BENZO[A]ANTHRACENE	3.7	10	20	UG_KG	OU09 SB204 0001 OU09 SB204 0305 OU09 SB204 1012 OU09 SB205 0305 OU09 SB205 0608 OU09 SB218 0305 OU09 SB219 0305 OU09 SS219 0001
WG136440-1	BENZO[A]PYRENE	4.7	10	20	UG_KG	OU09 SB204 0001 OU09 SB204 0305 OU09 SB204 1012 OU09 SB205 0305 OU09 SB205 0608 OU09 SB218 0305 OU09 SB219 0305 OU09 SS219 0001
WG136440-1	BENZO[B]FLUORANTHENE	7.3	10	20	UG_KG	OU09 SB204 0001 OU09 SB204 0305 OU09 SB204 1012 OU09 SB205 0305 OU09 SB205 0608 OU09 SB218 0305 OU09 SB219 0305 OU09 SS219 0001
WG136440-1	FLUORANTHENE	2.6	10	20	UG_KG	OU09 SB204 0001 OU09 SB204 0305 OU09 SB204 1012 OU09 SB205 0305 OU09 SB205 0608 OU09 SB218 0305 OU09 SB219 0305 OU09 SS219 0001

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
WG136444-1	BENZO[B]FLUORANTHENE	3.1	10	20	UG_KG	FDSB12111303 FDSB12111304 OU09 SB214 0102 OU09 SB214 0305 OU09 SB214 0608 OU09 SB215 0102 OU09 SB215 0305 OU09 SB215 1012 OU09 SB216 0305 OU09 SB216 0608 OU09 SB218 0102 OU09 SB220 0305 OU09 SB222 0001 OU09 SB324 0102 OU09 SB324 0608

Table A-2b Field Blanks

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
RBSB121113 03	DIETHYLPHTHALATE	2.2	7.6	10	UG_L	OU09 SB204 0305 OU09 SB204 1012 OU09 SB205 0305 OU09 SB205 0608 OU09 SB214 0102 OU09 SB214 0305 OU09 SB214 0608 OU09 SB215 0102 OU09 SB215 0305 OU09 SB215 1012 OU09 SB216 0305 OU09 SB216 0608 OU09 SB218 0102 OU09 SB218 0305 OU09 SB219 0305 OU09 SB220 0305 OU09 SB223 0304 OU09 SB324 0102 OU09 SB324 0305 OU09 SB324 0608 OU09 SB324 0810 FDSB12111303 FDSB12111304
RBSB121113 04	BIS(2-ETHYLHEXYL)PHTHALATE	1.8	7.1	9.5	UG_L	OU09 SB204 0001 OU09 SB220 0001 OU09 SB222 0001 OU09 SB223 0001 OU09 SS205 0001 OU09 SS218 0001 OU09 SS219 0001 OU09 SS324 0001 FDSS12111312

Table A-3 Matrix Spikes

Sample ID	Compound	MS % Recovery	MSD % Recovery	Lower Limit	Upper Limit	RPD	RPD Limit
SIM							
OU09 SB204 0001	PYRENE	21.9	94.9	35	111	51	50
OU09 SB204 0001	BENZO[G,H,I]PERYLENE	23.8	35.4	53	103	22	50
OU09 SB204 0001	INDENO[1,2,3-CD]PYRENE	28.5	48.9	50	105	28	50
OU09 SB204 0001	BENZO[B]FLUORANTHENE	47.5	107	53	100	37	50
OU09 SB204 0001	FLUORANTHENE	44.6	137	38	116	54	50
OU09 SB204 0001	BENZO[K]FLUORANTHENE	48.8	71.7	49	96	29	50
OU09 SB204 0001	CHRYSENE	40.1	91.7	46	101	38	50
OU09 SB204 0001	BENZO[A]PYRENE	32.8	74.8	61	101	37	50
OU09 SB204 0001	DIBENZ[A,H]ANTHRACENE	46.8	60	55	105	25	50
OU09 SB204 0001	BENZO[A]ANTHRACENE	44.1	89.8	48	100	41	50
OU09 SB204 0001	PHENANTHRENE	53.1	124	46	96	55	50
OU09 SB204 0305	BENZO[G,H,I]PERYLENE	10.7	11.9	53	103	14	50
OU09 SB204 0305	INDENO[1,2,3-CD]PYRENE	19.6	21.4	50	105	13	50
OU09 SB204 0305	BENZO[B]FLUORANTHENE	38.7	44	53	100	17	50
OU09 SB204 0305	BENZO[K]FLUORANTHENE	41.2	47.5	49	96	23	50
OU09 SB204 0305	BENZO[A]PYRENE	28.4	31.9	61	101	16	50
OU09 SB204 0305	DIBENZ[A,H]ANTHRACENE	26.3	29.5	55	105	16	50
OU09 SB204 1012	BENZO[G,H,I]PERYLENE	17.8	18.1	53	103	2	50
OU09 SB204 1012	INDENO[1,2,3-CD]PYRENE	32.7	30.4	50	105	12	50
OU09 SB204 1012	BENZO[B]FLUORANTHENE	51.1	54.5	53	100	2	50
OU09 SB204 1012	BENZO[K]FLUORANTHENE	49.8	35.9	49	96	36	50
OU09 SB204 1012	BENZO[A]PYRENE	41.3	39	61	101	10	50
OU09 SB204 1012	DIBENZ[A,H]ANTHRACENE	40.2	35.9	55	105	16	50
OU09 SB216 0608	BENZO[G,H,I]PERYLENE	7.54	10.9	53	103	39	50
OU09 SB216 0608	INDENO[1,2,3-CD]PYRENE	13.8	20.1	50	105	40	50
OU09 SB216 0608	BENZO[B]FLUORANTHENE	37.3	39.6	53	100	9	50
OU09 SB216 0608	BENZO[K]FLUORANTHENE	36.2	37.7	49	96	7	50
OU09 SB216 0608	DIBENZ[A,H]ANTHRACENE	18	24.2	55	105	32	50
OU09 SB216 0608	BENZO[A]ANTHRACENE	45.6	45	48	100	2	50
OU09 SB216 0608	BENZO[A]PYRENE	31.3	33.9	61	101	11	50
OU09 SB220 0305	PYRENE	36.6	15.6	35	111	27	50
OU09 SB220 0305	BENZO[G,H,I]PERYLENE	20.9	13.8	53	103	22	50
OU09 SB220 0305	INDENO[1,2,3-CD]PYRENE	45	36	50	105	14	50
OU09 SB220 0305	BENZO[B]FLUORANTHENE	43.9	20	53	100	25	50

Sample ID	Compound	MS % Recovery	MSD % Recovery	Lower Limit	Upper Limit	RPD	RPD Limit
OU09 SB220 0305	FLUORANTHENE	55.2	36.4	38	116	18	50
OU09 SB220 0305	CHRYSENE	55.8	31.1	46	101	28	50
OU09 SB220 0305	BENZO[A]PYRENE	37.1	21.4	61	101	22	50
OU09 SB220 0305	DIBENZ[A,H]ANTHRACENE	45.6	40.5	55	105	10	50
OU09 SB220 0305	BENZO[A]ANTHRACENE	48.3	36	48	100	15	50
OU09 SB220 0305	PHENANTHRENE	51	39.1	46	96	15	50
OU09 SS324 0001	ACENAPHTHENE	0	36.3	33	98	45	50
OU09 SS324 0001	ANTHRACENE	0	19.4	34	96	55	50
OU09 SS324 0001	DIBENZ[A,H]ANTHRACENE	118	13.4	55	105	63	50
OU09 SS324 0001	FLUORENE	0	46.6	40	92	51	50
SVOC Full Scan							
OU09 SS324 0001	FLUORENE	88.8	60.3	50	110	34	30
OU09 SS324 0001	HEXACHLOROBUTADIENE	45.7	39.1	40	115	11	30
OU09 SS324 0001	2,4-DIMETHYLPHENOL	17.1	15	30	105	8	30
OU09 SS324 0001	BIS(2-CHLOROETHOXY)METHANE	43.2	38	45	110	8	30
OU09 SS324 0001	ANTHRACENE	77.7	54.7	55	105	27	30
OU09 SS324 0001	1,2,4-TRICHLOROBENZENE	48.2	41.9	45	110	10	30
OU09 SS324 0001	PYRENE	136	35.7	45	125	57	30
OU09 SS324 0001	BENZO[G,H,I]PERYLENE	69	37.5	40	125	39	30
OU09 SS324 0001	BENZO[B]FLUORANTHENE	92.9	46.4	45	115	38	30
OU09 SS324 0001	FLUORANTHENE	123	24	55	115	66	30
OU09 SS324 0001	BENZO[K]FLUORANTHENE	86	47	45	125	32	30
OU09 SS324 0001	CHRYSENE	103	43	55	110	45	30
OU09 SS324 0001	BENZO[A]PYRENE	82.6	42.7	50	110	38	30
OU09 SS324 0001	1,3-DICHLOROBENZENE	40.8	34.6	40	100	12	30
OU09 SS324 0001	BENZO[A]ANTHRACENE	93.9	41.7	50	110	46	30
OU09 SS324 0001	HEXACHLOROETHANE	40.3	33.7	35	110	13	30
OU09 SS324 0001	PHENANTHRENE	160	40.5	50	110	80	30
OU09 SS324 0001	3,3-DICHLOROBENZIDINE	12.6	7.26	10	130	50	30
OU09 SS324 0001	N-NITROSOPYRROLIDINE	0	0	30	150	0	30
OU09 SS324 0001	2-METHYLPHENOL	43.8	38.5	40	105	8	30
OU09 SS324 0001	1,2-DICHLOROBENZENE	43.6	37	45	100	12	30
OU09 SS324 0001	2-CHLOROPHENOL	49.4	43.6	45	105	8	30

Table A-4 Lab Control Samples

LCS ID	Compound	LCS % Recovery	LCSD % Recovery	Lower Limit	Upper Limit	RPD	RPD Limit	Associated Samples
SIM								
WG136232-2	BENZO[G,H,I]PERYLENE	41.7	36.3	53	103	14	50	OU09 SB223 0001 OU09 SB223 0304 OU09 SB324 0305 OU09 SB324 0810 OU09 SS324 0001
WG136232-2	BENZO[A]PYRENE	59.1	51.4	61	101	14	50	OU09 SB223 0001 OU09 SB223 0304 OU09 SB324 0305 OU09 SB324 0810 OU09 SS324 0001
WG136232-2	DIBENZ[A,H]ANTHRACENE	63.7	54.7	55	105	15	50	OU09 SB223 0001 OU09 SB223 0304 OU09 SB324 0305 OU09 SB324 0810 OU09 SS324 0001
WG136440-2	BENZO[G,H,I]PERYLENE	62.4	50.2	53	103	22	50	OU09 SB204 0001 OU09 SB204 0305 OU09 SB204 1012 OU09 SB205 0305 OU09 SB205 0608 OU09 SB218 0305 OU09 SB219 0305 OU09 SS219 0001
WG136444-2	BENZO[G,H,I]PERYLENE	32.2	34.5	53	103	7	50	FDSB12111303 FDSB12111304 FDSS12111312 OU09 SB214 0102 OU09 SB214 0305 OU09 SB214 0608 OU09 SB215 0102 OU09 SB215 0305 OU09 SB215 1012 OU09 SB216 0305 OU09 SB216 0608 OU09 SB218 0102 OU09 SB220 0001 OU09 SB220 0305 OU09 SB222 0001 OU09 SB324 0102 OU09 SB324 0608 OU09 SS205 0001 OU09 SS218 0001

LCS ID	Compound	LCS % Recovery	LCSD % Recovery	Lower Limit	Upper Limit	RPD	RPD Limit	Associated Samples
WG136444-2	BENZO[A]PYRENE	47.2	47.5	61	101	1	50	FDSB12111303 FDSB12111304 FDSS12111312 OU09 SB214 0102 OU09 SB214 0305 OU09 SB214 0608 OU09 SB215 0102 OU09 SB215 0305 OU09 SB215 1012 OU09 SB216 0305 OU09 SB216 0608 OU09 SB218 0102 OU09 SB220 0001 OU09 SB220 0305 OU09 SB222 0001 OU09 SB324 0102 OU09 SB324 0608 OU09 SS205 0001 OU09 SS218 0001
SVOC full scan								
WG136632-2	BENZYL ALCOHOL	49.5	70	20	125	34	30	OU09 SB223 0304
WG136632-2	4-CHLOROANILINE	36.8	61.7	10	100	51	30	OU09 SB223 0304
WG136632-2	3- AND 4-METHYLPHENOL	45.9	62.8	40	105	31	30	OU09 SB223 0304
WG136632-2	2,2'-OXYBIS(1-CHLOROPROPANE)	33.4	45.6	20	115	31	30	OU09 SB223 0304
WG136632-2	PHENOL	46.2	63.1	40	100	31	30	OU09 SB223 0304
WG136632-2	BIS(2-CHLOROETHOXY)METHANE	39	54	45	110	32	30	OU09 SB223 0304
WG136632-2	PYRENE	66.5	91	45	125	31	30	OU09 SB223 0304
WG136632-2	BENZO[G,H,I]PERYLENE	29.8	33.7	40	125	12	30	OU09 SB223 0304
WG136632-2	INDENO[1,2,3-CD]PYRENE	42.3	60.5	40	120	35	30	OU09 SB223 0304
WG136632-2	2,4-DINITROPHENOL	40.2	55.6	15	130	32	30	OU09 SB223 0304
WG136632-2	1,3-DICHLOROBENZENE	40.5	55.4	40	100	31	30	OU09 SB223 0304
WG136632-2	N-NITROSODIMETHYLAMINE	32.6	45.4	20	115	33	30	OU09 SB223 0304
WG136632-2	BENZOIC ACID	31.2	49.8	0	110	46	30	OU09 SB223 0304
WG136632-2	HEXACHLOROETHANE	38.8	53.3	35	110	31	30	OU09 SB223 0304
WG136632-2	ISOPHORONE	47.8	65.3	45	110	31	30	OU09 SB223 0304
WG136632-2	3,3-DICHLOROBENZIDINE	39.9	62.5	10	130	44	30	OU09 SB223 0304
WG136632-2	BENZIDINE	0	6.65	10	150	200	30	OU09 SB223 0304
WG136632-2	N-NITROSOPYRROLIDINE	0	0	30	150	0	30	OU09 SB223 0304
WG136632-2	1,2-DICHLOROBENZENE	41.6	56.7	45	100	31	30	OU09 SB223 0304
WG136632-2	2-CHLOROPHENOL	44.1	60.1	45	105	30	30	OU09 SB223 0304
WG136632-2	3-NITROANILINE	48.4	70	25	110	37	30	OU09 SB223 0304
WG136632-2	2,4-DIMETHYLPHENOL	38.4	57.4	30	105	39	30	OU09 SB223 0304

LCS ID	Compound	LCS % Recovery	LCSD % Recovery	Lower Limit	Upper Limit	RPD	RPD Limit	Associated Samples
WG136231-2	BENZOIC ACID	36.3	25.5	0	110	35	30	OU09 SB223 0001 OU09 SB324 0305 OU09 SB324 0810 OU09 SS324 0001
WG136231-2	BENZIDINE	0	0	10	150	0	30	OU09 SB223 0001 OU09 SB324 0305 OU09 SB324 0810 OU09 SS324 0001
WG136231-2	N-NITROSOPYRROLIDINE	0	0	30	150	0	30	OU09 SB223 0001 OU09 SB324 0305 OU09 SB324 0810 OU09 SS324 0001

Table A-5 - Field Duplicates

Sample ID	Duplicate ID	Compound	Sample Result	Qual	Duplicate Result	Qual	LOD	LOQ	Units	RPD
OU09 SB220 0001	FDSS12111312	ACENAPHTHENE	31		70		12	23	UG_KG	77%
OU09 SB220 0001	FDSS12111312	ANTHRACENE	58		100		12	23	UG_KG	53%
OU09 SB220 0001	FDSS12111312	BENZO[A]ANTHRACENE	360		1100		12	23	UG_KG	101%
OU09 SB220 0001	FDSS12111312	BENZO[A]PYRENE	350		1100		12	23	UG_KG	103%
OU09 SB220 0001	FDSS12111312	BENZO[B]FLUORANTHENE	520		810		280	380	UG_KG	44%
OU09 SB220 0001	FDSS12111312	BENZO[G,H,I]PERYLENE	130		290		12	23	UG_KG	76%
OU09 SB220 0001	FDSS12111312	BENZO[K]FLUORANTHENE	160		310		12	23	UG_KG	64%
OU09 SB220 0001	FDSS12111312	CHRYSENE	500		1600		280	380	UG_KG	105%
OU09 SB220 0001	FDSS12111312	DIBENZ[A,H]ANTHRACENE	85		210		12	23	UG_KG	85%
OU09 SB220 0001	FDSS12111312	FLUORENE	19	J	35		12	23	UG_KG	59%
OU09 SB220 0001	FDSS12111312	INDENO[1,2,3-CD]PYRENE	240		560		12	23	UG_KG	80%
OU09 SB220 0001	FDSS12111312	NAPHTHALENE	6.6	J	31		12	23	UG_KG	130%
OU09 SB220 0001	FDSS12111312	PHENANTHRENE	240		550		12	23	UG_KG	78%
OU09 SB220 0001	FDSS12111312	PYRENE	620		2300		280	380	UG_KG	115%

Table A-6 Internal Standards

Sample ID	Internal Standards	Area	Lower Limit (50%)	Lower Limit (20%)	Upper Limit
SVOC-SIM					
OU09 SB223 0304	PERYLENE-D12	27689	29300.5	11720	117202
OU09 SB223 0001	PERYLENE-D12	16630	29300.5	11720	117202
SVOC-full scan					
OU09 SB223 0001	PERYLENE-D12	198798	258363.5	103345	1033454
OU09 SS218 0001	PERYLENE-D12	179505	258363.5	103345	1033454
OU09 SS205 0001	PERYLENE-D12	197712	258363.5	103345	1033454
OU09 SB220 0001	PERYLENE-D12	207622	258363.5	103345	1033454
FDSS12111312	PERYLENE-D12	161892	258363.5	103345	1033454

PERYLENE-D12 Associated PAH compounds

BENZO[B]FLUORANTHENE
BENZO[K]FLUORANTHENE
BENZO[A]PYRENE
INDENO[1,2,3-CD]PYRENE
DIBENZ[A,H]ANTHRACENE
BENZO[G,H,I]PERYLENE

Attachment B

Qualifier Codes and Explanations

Qualifier	Explanation
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
UJ	The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual quantitation limit necessary to accurately and precisely measure the analyte in the sample.
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

Attachment C

Reason Codes and Explanations

Reason Code	Explanation
be	Equipment blank contamination
bf	Field blank contamination
bl	Laboratory blank contamination
c	Calibration issue
d	Reporting limit raised due to chromatographic interference
fd	Field duplicate RPDs
h	Holding times
i	Internal standard areas
k	Estimated Maximum Possible Concentration (EMPC)
l	LCS or OPR recoveries
lc	Labeled compound recovery
ld	Laboratory duplicate RPDs
lp	Laboratory control sample/laboratory control sample duplicate RPDs
m	Matrix spike recovery
md	Matrix spike/matrix spike duplicate RPDs
nb	Negative laboratory blank contamination
p	Chemical preservation issue
r	Dual column RPD
q	Quantitation issue
s	Surrogate recovery
su	Ion suppression
t	Temperature preservation issue
x	Percent solids
y	Serial dilution results
z	ICS results

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Data Validation Report

Project:	MRP Site 1 (OU9) Remedial Investigation, NAVSTA Newport, Rhode Island CTO WE06
Laboratory:	Katahdin Analytical Services, Scarborough, Maine
Service Request:	CARR-6,CARR-9, and CARR-11
Analyses/Method:	Organochlorine Pesticides / EPA SW-846 Method 8081B PCB Aroclors / EPA SW-846 Method 8082A
Validation Level:	Limited
Resolution Consultants Project Number:	60250336 SA.DV
Prepared by:	Charlene Livingston Flint/Resolution Consultants — Completed on: 04/04/2014
Reviewed by:	Kristin Rutherford/Resolution Consultants — File Name: CARR-6,9,11_GW_8081_8082_DVRpt

SUMMARY

The samples listed below were collected by Resolution Consultants from MRP Site 1 (OU9), NAVSTA, Newport, Rhode Island, on December 6, 10, 11, and 12, 2013.

Sample ID	Matrix/Sample Type
RBSS12061302	Equipment blank
FDSB12101302	Field Duplicate of OU09 SB302 0001
OU09 SS229 0001-02	Field Duplicate of OU09 SS229 0001-01
RBSB121113 03	Ground water
RBSB121113 04	Ground water
OU09 SB221 0305	Soil
OU09 SB221 0608	Soil
OU09 SB221 0810	Soil
OU09 SB223 0001	Soil
OU09 SB223 0304	Soil
OU09 SB302 0305	Soil
OU09 SB302 0810	Soil
OU09 SB303 0305	Soil
OU09 SB303 0810	Soil
OU09 SB324 0305	Soil
OU09 SB324 0810	Soil
OU09 SS221 0001	Soil
OU09 SS301 0001	Soil
OU09 SS302 0001	Soil

Sample ID	Matrix/Sample Type
OU09 SS303 0001	Soil
OU09 SS324 0001	Soil

The data have been validated in accordance with the project-specific Sampling and Analysis Plans, *Sampling and Analysis Plan, Former Carr Point Shooting Range (MRP Site 1, OU9), Naval Station (NAVSTA) Newport, Rhode Island, Final* (Naval Facilities Engineering Command, Mid-Atlantic, 2013); *Sampling and Analysis Plan, Former Carr Point Storage Area (IR Site 22, OU10), Naval Station (NAVSTA) Newport, Rhode Island, Draft Final* (Naval Facilities Engineering Command, Mid-Atlantic, 2013); and the following references:

- *DoD Quality Systems Manual (QMS) for Environmental Laboratories, version 4.2* (DoD EDQW, 2010);
- *USEPA Region 1, EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses* (December 1996);
- *USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review* (June 2008);
- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW846, Method 8081B, Organochlorine Pesticides by Gas Chromatography* (USEPA, 1996);
- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW846, Method 8082A, Polychlorinated Biphenyls (PCBs) by Gas Chromatography* (USEPA, 1996);
- Laboratory quality control (QC) limits, as applicable.

The USEPA Region 1 and National Data Validation Functional Guidelines were modified to accommodate the non-CLP methodologies. In the absence of method-specific direction for validation, Resolution Consultants professional judgment was used as appropriate.

REVIEW ELEMENTS

The data were evaluated based on the following parameters (where applicable to the method):

✓ Data completeness (chain-of-custody (COC)/sample integrity
✓ Holding times and sample preservation
✗ Initial calibration/continuing calibration verification
✗ Laboratory blanks/equipment blanks
✗ Surrogate spike recoveries
✗ Matrix spike (MS) and/or matrix spike duplicate (MSD) results
✗ Laboratory control sample (LCS)/laboratory control sample duplicate (LCSD) results
✗ Field duplicates
✗ Sample results/reporting issues

The symbol (✓) indicates that no validation qualifiers were applied based on this parameter. NA indicates that the parameter was not included as part of this data set or was not applicable to this validation and therefore not reviewed. The symbol (✗) indicates that a QC nonconformance resulted in the qualification of data. Any QC nonconformance that resulted in the qualification of data is discussed below. In addition, nonconformances or other issues that were noted during validation, but did not result in qualification of data, may be discussed for informational purposes only.

The data appear valid as reported and may be used for decision making purposes. Selected data points were qualified as estimated, negated, and/or rejected due to nonconformances of certain QC criteria (see discussion below). Qualified sample results are presented in Table 1.

RESULTS

Data Completeness

The data package was reviewed and found to meet acceptance criteria for completeness:

- The COCs were reviewed for completeness of information relevant to the samples and requested analyses, and for signatures indicating transfer of sample custody.
- The laboratory sample login sheet(s) were reviewed for issues potentially affecting sample integrity, including the condition of sample containers.
- Completeness of analyses was verified by comparing the reported results to the COC requests.

Holding Times/Sample Preservation

Sample preservation and preparation/analysis holding times were reviewed for conformance with the QC acceptance criteria.

The QC acceptance criteria were met.

Initial Calibration/Continuing Calibration Verification

Calibration data were reviewed for conformance with the QC acceptance criteria to ensure that:

- The initial calibration (ICAL) percent relative standard deviation (%RSD), correlation coefficient (r)/coefficient of determination (r2), and method acceptance criteria were met;
- The second-source calibration verification (ICV) method acceptance criteria were met;
- The continuing calibration verification standard (CCV) method percent difference or percent drift (%Ds) acceptance criteria were met.

Nonconformances are summarized in Table A-1a and A-1b. Data qualification on the basis of the initial calibration was as follows:

PCBs Initial Calibration

Criteria	Actions[3]	
	Detected Results	Nondetected Results
%RSD > 20% for each peak	J	UJ
$r < 0.995$ or $r^2 < 0.99$ for each peak[1]	J[2]	UJ[2]

[1] 6 points required for second order; 7 points required for third order
[2] No guidance in NFG, thus Resolution Consultants professional judgment was used.
[3] In the absence of an ICAL for a particular Aroclor, Resolution Consultants professional judgment was used as follows: If the traditional model of a linear calibration was employed by the laboratory, validation actions were applied to Aroclors with similar retention time ranges. Actions were applied to Aroclors 1016, 1221, 1232, 1242, and 1248 when Aroclor 1016 exceeded ICAL criteria and actions were applied to Aroclors 1248, 1254, and 1260 when Aroclor 1260 exceeded ICAL criteria. If multipoint calibration was performed for the individual Aroclors, the calibration factors for those calibrations were used to evaluate linearity.

Pesticides Initial Calibration

Criteria	Actions	
	Detected Results	Nondetected Results
%RSD > 20%	J	UJ[1]
r < 0.995 or r^2 < 0.99 for each peak[2,3]	J[4]	UJ[4]

[1] NFG recommends professional judgment, thus Resolution Consultants professional judgment was used
[2] 6 points required for second order; 7 points required for third order
[3] For toxaphene and technical chlordane each peak, not the average must meet the criteria
[4] No guidance in NFG, thus Resolution Consultants professional judgment was used

Data qualification on the basis of the ICVs was as follows:

PCBs Second-Source Calibration

Criteria	Actions[1,2]	
	Detected	Nondetected
%D or %Drift[3] >20% for each peak	J	UJ

[1] Actions are applied to positive results reported from the nonconforming column. Do not qualify nondetect results unless both columns are noncompliant.
[2] In the absence of an ICV for a particular Aroclor, Resolution Consultants professional judgment was used to apply validation actions to Aroclors with similar retention time ranges. Actions were applied to Aroclors 1016, 1221, 1232, 1242, and 1248 when Aroclor 1016 exceeded ICV criteria and actions were applied to Aroclors 1248, 1254, and 1260 when Aroclor 1260 exceeded ICV criteria.
[3] No guidance for % drift in NFG, thus Resolution Consultants professional judgment was used.

Pesticides Second-Source Calibration

Criteria	Actions[1]	
	Detected	Nondetected
%D or %Drift >20%	J	UJ

[1] Actions are applied to positive results reported from the nonconforming column. Do not qualify nondetect results unless both columns are noncompliant.

Qualified results are shown in Table 1.

Data qualification on the basis of the CCVs was as follows:

PCBs Continuing Calibration

Criteria	Actions[1,2]	
	Detected	Nondetected
%D or %Drift[3] >20% for each peak	J	UJ

[1] Actions are applied to positive results reported from the nonconforming column. Do not qualify nondetect results unless both columns are noncompliant.
[2] In the absence of a CCV for a particular Aroclor, Resolution Consultants professional judgment was used to apply validation actions to Aroclors with similar retention time ranges. Actions were applied to Aroclors 1016, 1221, 1232, 1242, and 1248 when Aroclor 1016 exceeded CCV criteria and actions were applied to Aroclors 1248, 1254, and 1260 when Aroclor 1260 exceeded CCV criteria.
[3] No guidance for % drift in NFG, thus Resolution Consultants professional judgment was used.

Pesticides Continuing Calibration

Criteria	Actions[1]	
	Detected	Nondetected
%D or %Drift >20%	J	UJ

[1] Actions are applied to positive results reported from the nonconforming column. Do not qualify nondetect results unless both columns are noncompliant.

Qualified results are shown in Table 1.

Laboratory Blanks/Equipment Blanks

Laboratory method blanks and equipment rinsate blanks were evaluated as to whether there were contaminants detected above the method detection limit (MDL).

Data validation qualifications for individual samples are based on the maximum contaminant concentration detected in all associated blanks.

Detected results in blanks are not discussed in this data validation report if the associated results were nondetect or if qualification of sample results was not required.

Nonconformances are summarized in Attachment A in Table A-2a and A-2b. Sample results were qualified as follows:

Blank type	Blank result	Sample result	Action for samples
Method,	Detects	Not detected	No qualification

Field, Equipment, Instrument, or Clean-up	< LOQ	< LOQ	Report LOQ value with a U
		≥ LOQ	If the result is ≤ 5x blank result, report the sample result with a U* If the result is >5x blank result, no qualification is required*
	>LOQ	< LOQ	Report sample LOQ value with a U
		≥ LOQ and ≤ blank concentration	Report the sample result with a U*
		≥ LOQ and blank concentration	If the result is ≤ 5x blank result, report the sample result with a U* If the result is >5x blank result, no qualification is required*
	= LOQ	< LOQ	Report sample LOQ value with a U
		≥ LOQ	If the result is ≤ 5x blank result, report the sample result with a U* If the result is >5x blank result, no qualification is required*
*Based on Resolution Consultants professional judgment LOQ= limit of quantitation			

Qualified sample results are shown in Table 1.

Surrogate Spike Recoveries

The surrogate recoveries (%Rs) were reviewed for conformance.

Several samples had surrogate recoveries that did not meet QC limits on one channel. Since the recoveries were within QC limits on the other channel, no qualifications were required.

Several samples had low surrogate recoveries on both channels. Since the samples could not be reanalyzed due to holding time, the associated results were qualified as estimated.

Several samples had surrogates diluted out for pesticides as a result of elevated concentrations of target Aroclors present in the sample. No validation actions were taken on this basis.

Nonconformances are summarized in Attachment A in Tables A-3a and A-3b. Data qualification on the basis of surrogate recoveries was as follows:

Criteria[2]	**Action**	
	Detected Compounds	**Nondetected Compounds**
%R>upper limit (UL)	J	No qualification[1]
10% ≤ %R < lower limit (LL)	J	UJ
%R <10% (sample dilution is not a factor)	J	R
%R <10% (sample dilution is a factor)	No qualification[2]	No qualification[2]
[1] NFG recommends no NFG recommends no qualification if %R >UL, but <200%, and professional judgment if %R >200%, thus Resolution Consultants professional judgment was used. [2] Resolution Consultants professional judgment was used.		

Note: If there is no surrogate information due to dilution then estimate (J/UJ) all results. However, in cases where there is surrogate information from multiple runs then base the surrogate actions on the least diluted run.

Qualified sample results are shown in Table 1.

MS/MSD Results

The MS/MSD %Rs and relative percent differences (RPDs) were reviewed for conformance with the QC acceptance criteria.

Nonconformances are summarized in Attachment A in Table A-4. Data qualification to the analytes associated with the specific MS/MSD nonconformances was as follows:

Criteria	Action	
	Detected Compounds	**Nondetected Compounds**
%R> UL	J	No qualification
20% ≤ %R < LL	J	UJ
%R <20% (see note 1)	J	R*
%RPD > UL	J	No qualification
Note: Actions are applied to the native unspiked sample only (see note 2) *When the native sample concentration is >4X the concentration of the spike added (based on Region I criteria), evaluate the MS, MSD, and native sample with regards to %RSD rather than %R (Resolution Consultants professional judgment)		

Notes: *(applies to PCBs)*

1. If the native sample Aroclor does not qualitatively match the spiked Aroclor then consider the effect of overlapping in evaluating the spike recovery results. Apparently high recoveries may be due to Aroclor mismatch alone.
2. Based on Resolution Consultants professional judgment, apply actions to Aroclors with similar retention time ranges. Apply actions to Aroclors 1016, 1221, 1232, 1242 and 1248 if Aroclor 1016 exceeds MS/MSD %R or RPD criteria and apply actions to Aroclors 1248, 1254 and 1260 if Aroclor 1260 exceeds MS/MSD %R or RPD criteria.

Qualified sample results are shown in Table 1.

LCS/LCSD Results

The LCS and/or LCSD %Rs and/or RPDs were reviewed for conformance with the QC acceptance criteria.

Nonconformances are summarized in Attachment A in Table A-5. Data qualification on the basis of LCS/LCSD %Rs and/or RPDs was as follows:

Criteria	Action**	
	Detected Results	**Nondetected Results**
%R or RPD > upper limit (UL)	J	No qualification
20% < %R < lower limit (LL)	J	UJ[2]
%R <20%[1]	J	R[2]
[1]NFG recommends rejecting results below the LL; however, Resolution Consultants professional judgment used qualifications similar to the NFG guidance for MS/MSDs. [2] The 20% criterion is based on NFG MS/MSD criteria.		

Notes: *(applies to PCBs)*

1. Based on Resolution Consultants professional judgment, apply actions to Aroclors with similar retention time ranges. Apply actions to Aroclors 1016, 1221, 1232, 1242 and 1248 if Aroclor 1016 exceeds MS/MSD %R or RPD criteria and apply actions to Aroclors 1248, 1254 and 1260 if Aroclor 1260 exceeds MS/MSD %R or RPD criteria.

Qualified sample results are shown in Table 1.

Field Duplicate Results

Field duplicate RPDs were reviewed for conformance with the Resolution Consultants QC criteria of ≤50% for solid matrices and ≤30% for aqueous matrices. These criteria apply if both results were greater than two times the sample limit of quantitation (LOQ).

Nonconformances are summarized in Attachment A in Table A-6. Data qualification to the analytes associated with the specific field duplicate RPDs was as follows:

Criteria	RPD	Action	
		Detected	Nondetected
Sample and duplicate are nondetect results	Not calculable (NC)	No qualification	No qualification
Sample and duplicate results ≥2xLOQ	>30 (aqueous) >50 (solids)	J	Not Applicable
Sample and duplicate results <2xLOQ	>60 (aqueous) >100 (solids)	J	Not Applicable
If sample or duplicate result is >2xLOQ and the other is not detected	NC	J	UJ
If sample or duplicate result is <2xLOQ and the other is not detected	NC	No qualification	No qualification

Actions: (Resolution Consultants professional judgment was used)

Qualified sample results are shown in Table 1.

Sample Results/Reporting Issues

Consistent with the DoD QSM v4.2, positive results were reported from the primary column unless otherwise indicated.

All compounds detected at concentrations less than the LOQ but greater than the MDL were qualified by the laboratory as estimated (J). This "J" qualifier was retained during data validation.

Dual Column Precision

Sample results were reviewed to ensure that the dual column precision RPD criteria were met.

The laboratory noted that the identification and confirmation of many of the target pesticide analytes may be false positives due to the interference of peaks with similar retention times from Aroclor 1260. The

concentrations of the confirmed target analytes may differ substantially from one channel to the other. This scenario resulted in dual column precision that did not meet criteria; therefore, results were qualified as estimated.

Nonconformances are summarized in Attachment A in Table A-7. Data qualification on the basis of dual column RPDs was as follows:

Criteria	Action
RPD > 40% and no interference	J (report higher result)
RPD > 40% and interference on 1 column	J (report result from column without interference)
RPD > 40% and interference on both columns	J (report lower result)

Actions: (Based on Resolution Consultants professional judgment)

Qualified results are shown in Table 1.

Percent Solids

The percent solids data were reviewed to ensure that NFG specified criteria were met.

All percent solids criteria were met.

QUALIFICATION ACTIONS

Sample results qualified as a result of validation actions are summarized in Table 1. All actions are described above.

ATTACHMENTS

Attachment A: Nonconformance Summary Tables

Attachment B: Qualifier Codes and Explanations

Attachment C: Reason Codes and Explanations

Table 1 - Data Validation Summary of Qualified Data

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
FDSB12101302	SO	4,4-DDT	6.1	0.36	0.72	UG_KG	J	r,l
FDSB12101302	SO	ENDOSULFAN SULFATE	2.1	0.36	0.72	UG_KG	J	r,fd
FDSB12101302	SO	ENDRIN KETONE	1.6	0.36	0.72	UG_KG	J	fd
OU09 SB221 0305	SO	4,4-DDD	0.31	0.31	0.63	UG_KG	UJ	s
OU09 SB221 0305	SO	4,4-DDE	0.31	0.31	0.63	UG_KG	UJ	s
OU09 SB221 0305	SO	4,4-DDT	0.31	0.31	0.63	UG_KG	UJ	s

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SB221 0305	SO	ALDRIN	0.16	0.16	0.32	UG_KG	UJ	s
OU09 SB221 0305	SO	ALPHA-BHC	0.16	0.16	0.32	UG_KG	UJ	s
OU09 SB221 0305	SO	ALPHA-CHLORDANE	0.16	0.16	0.32	UG_KG	UJ	s
OU09 SB221 0305	SO	BETA-BHC	0.16	0.16	0.32	UG_KG	UJ	s
OU09 SB221 0305	SO	DELTA-BHC	0.16	0.16	0.32	UG_KG	UJ	s
OU09 SB221 0305	SO	DIELDRIN	0.31	0.31	0.63	UG_KG	UJ	s
OU09 SB221 0305	SO	ENDOSULFAN I	0.16	0.16	0.32	UG_KG	UJ	s
OU09 SB221 0305	SO	ENDOSULFAN II	0.31	0.31	0.63	UG_KG	UJ	s
OU09 SB221 0305	SO	ENDOSULFAN SULFATE	0.31	0.31	0.63	UG_KG	UJ	s
OU09 SB221 0305	SO	ENDRIN	0.31	0.31	0.63	UG_KG	UJ	s
OU09 SB221 0305	SO	ENDRIN ALDEHYDE	0.31	0.31	0.63	UG_KG	UJ	s
OU09 SB221 0305	SO	ENDRIN KETONE	0.31	0.31	0.63	UG_KG	UJ	s
OU09 SB221 0305	SO	GAMMA-CHLORDANE	0.16	0.16	0.32	UG_KG	UJ	s
OU09 SB221 0305	SO	HEPTACHLOR	0.16	0.16	0.32	UG_KG	UJ	s
OU09 SB221 0305	SO	HEPTACHLOR EPOXIDE	0.16	0.16	0.32	UG_KG	UJ	s
OU09 SB221 0305	SO	LINDANE	0.16	0.16	0.32	UG_KG	UJ	s
OU09 SB221 0305	SO	METHOXYCHLOR	1.6	1.6	3.2	UG_KG	UJ	s
OU09 SB221 0305	SO	TOXAPHENE	3.1	3.1	6.3	UG_KG	UJ	s
OU09 SB221 0608	SO	4,4-DDD	0.22	0.34	0.68	UG_KG	J	s,r,l
OU09 SB221 0608	SO	4,4-DDE	0.34	0.34	0.68	UG_KG	UJ	s
OU09 SB221 0608	SO	4,4-DDT	0.34	0.34	0.68	UG_KG	UJ	s
OU09 SB221 0608	SO	ALDRIN	0.17	0.17	0.35	UG_KG	UJ	s
OU09 SB221 0608	SO	ALPHA-BHC	0.17	0.17	0.35	UG_KG	UJ	s
OU09 SB221 0608	SO	ALPHA-CHLORDANE	0.17	0.17	0.35	UG_KG	UJ	s
OU09 SB221 0608	SO	BETA-BHC	0.17	0.17	0.35	UG_KG	UJ	s
OU09 SB221 0608	SO	DELTA-BHC	0.17	0.17	0.35	UG_KG	UJ	s
OU09 SB221 0608	SO	DIELDRIN	0.34	0.34	0.68	UG_KG	UJ	s
OU09 SB221 0608	SO	ENDOSULFAN I	0.17	0.17	0.35	UG_KG	UJ	s
OU09 SB221 0608	SO	ENDOSULFAN II	0.34	0.34	0.68	UG_KG	UJ	s
OU09 SB221 0608	SO	ENDOSULFAN SULFATE	0.34	0.34	0.68	UG_KG	UJ	s
OU09 SB221 0608	SO	ENDRIN	0.34	0.34	0.68	UG_KG	UJ	s
OU09 SB221 0608	SO	ENDRIN ALDEHYDE	0.34	0.34	0.68	UG_KG	UJ	s
OU09 SB221 0608	SO	ENDRIN KETONE	0.34	0.34	0.68	UG_KG	UJ	s
OU09 SB221 0608	SO	GAMMA-CHLORDANE	0.17	0.17	0.35	UG_KG	UJ	s
OU09 SB221 0608	SO	HEPTACHLOR	0.17	0.17	0.35	UG_KG	UJ	s
OU09 SB221 0608	SO	HEPTACHLOR EPOXIDE	0.17	0.17	0.35	UG_KG	UJ	s
OU09 SB221 0608	SO	LINDANE	0.17	0.17	0.35	UG_KG	UJ	s
OU09 SB221 0608	SO	METHOXYCHLOR	1.7	1.7	3.5	UG_KG	UJ	s
OU09 SB221 0608	SO	TOXAPHENE	3.4	3.4	6.8	UG_KG	UJ	s

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SB221 0608	SO	AROCLOR-1016	1.7	1.7	3.5	UG_KG	UJ	c
OU09 SB221 0608	SO	AROCLOR-1260	1.7	1.7	3.5	UG_KG	UJ	c
OU09 SB221 0810	SO	4,4-DDD	0.32	0.32	0.64	UG_KG	UJ	s
OU09 SB221 0810	SO	4,4-DDE	0.32	0.32	0.64	UG_KG	UJ	s
OU09 SB221 0810	SO	4,4-DDT	0.32	0.32	0.64	UG_KG	UJ	s
OU09 SB221 0810	SO	ALDRIN	0.16	0.16	0.33	UG_KG	UJ	s
OU09 SB221 0810	SO	ALPHA-BHC	0.16	0.16	0.33	UG_KG	UJ	s
OU09 SB221 0810	SO	ALPHA-CHLORDANE	0.16	0.16	0.33	UG_KG	UJ	s
OU09 SB221 0810	SO	BETA-BHC	0.16	0.16	0.33	UG_KG	UJ	s
OU09 SB221 0810	SO	DELTA-BHC	0.16	0.16	0.33	UG_KG	UJ	s
OU09 SB221 0810	SO	DIELDRIN	0.32	0.32	0.64	UG_KG	UJ	s
OU09 SB221 0810	SO	ENDOSULFAN I	0.16	0.16	0.33	UG_KG	UJ	s
OU09 SB221 0810	SO	ENDOSULFAN II	0.32	0.32	0.64	UG_KG	UJ	s
OU09 SB221 0810	SO	ENDOSULFAN SULFATE	0.32	0.32	0.64	UG_KG	UJ	s
OU09 SB221 0810	SO	ENDRIN	0.32	0.32	0.64	UG_KG	UJ	s
OU09 SB221 0810	SO	ENDRIN ALDEHYDE	0.32	0.32	0.64	UG_KG	UJ	s
OU09 SB221 0810	SO	ENDRIN KETONE	0.32	0.32	0.64	UG_KG	UJ	s
OU09 SB221 0810	SO	GAMMA-CHLORDANE	0.16	0.16	0.33	UG_KG	UJ	s
OU09 SB221 0810	SO	HEPTACHLOR	0.16	0.16	0.33	UG_KG	UJ	s
OU09 SB221 0810	SO	HEPTACHLOR EPOXIDE	0.16	0.16	0.33	UG_KG	UJ	s
OU09 SB221 0810	SO	LINDANE	0.16	0.16	0.33	UG_KG	UJ	s
OU09 SB221 0810	SO	METHOXYCHLOR	1.6	1.6	3.3	UG_KG	UJ	s
OU09 SB221 0810	SO	TOXAPHENE	3.2	3.2	6.4	UG_KG	UJ	s
OU09 SB221 0810	SO	AROCLOR-1016	1.6	1.6	3.3	UG_KG	UJ	c
OU09 SB221 0810	SO	AROCLOR-1260	1.6	1.6	3.3	UG_KG	UJ	c
OU09 SB223 0001	SO	4,4-DDT	19000	740	1500	UG_KG	J	c,r
OU09 SB223 0001	SO	AROCLOR-1260	270000	1900	3800	UG_KG	J	c
OU09 SB223 0001	SO	TOXAPHENE	370	370	740	UG_KG	UJ	c
OU09 SB223 0001	SO	ENDOSULFAN SULFATE	12000	740	1500	UG_KG	J	r
OU09 SB223 0304	SO	4,4-DDE	81	3.5	7.1	UG_KG	J	r
OU09 SB223 0304	SO	4,4-DDT	1400	35	71	UG_KG	J	r
OU09 SB223 0304	SO	TOXAPHENE	35	35	71	UG_KG	UJ	c
OU09 SB223 0304	SO	ENDOSULFAN SULFATE	850	35	71	UG_KG	J	r
OU09 SB223 0304	SO	AROCLOR-1260	18000	180	360	UG_KG	J	c
OU09 SB302 0810	SO	4,4-DDD	0.33	0.33	0.65	UG_KG	UJ	s
OU09 SB302 0810	SO	4,4-DDE	0.33	0.33	0.65	UG_KG	UJ	s

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SB302 0810	SO	4,4-DDT	0.33	0.33	0.65	UG_KG	UJ	s
OU09 SB302 0810	SO	ALDRIN	0.17	0.17	0.34	UG_KG	UJ	s
OU09 SB302 0810	SO	ALPHA-BHC	0.17	0.17	0.34	UG_KG	UJ	s
OU09 SB302 0810	SO	ALPHA-CHLORDANE	0.17	0.17	0.34	UG_KG	UJ	s
OU09 SB302 0810	SO	BETA-BHC	0.17	0.17	0.34	UG_KG	UJ	s
OU09 SB302 0810	SO	DELTA-BHC	0.17	0.17	0.34	UG_KG	UJ	s
OU09 SB302 0810	SO	DIELDRIN	0.33	0.33	0.65	UG_KG	UJ	s
OU09 SB302 0810	SO	ENDOSULFAN I	0.17	0.17	0.34	UG_KG	UJ	s
OU09 SB302 0810	SO	ENDOSULFAN II	0.33	0.33	0.65	UG_KG	UJ	s
OU09 SB302 0810	SO	ENDOSULFAN SULFATE	0.33	0.33	0.65	UG_KG	UJ	s
OU09 SB302 0810	SO	ENDRIN	0.33	0.33	0.65	UG_KG	UJ	s
OU09 SB302 0810	SO	ENDRIN ALDEHYDE	0.33	0.33	0.65	UG_KG	UJ	s
OU09 SB302 0810	SO	ENDRIN KETONE	0.33	0.33	0.65	UG_KG	UJ	s
OU09 SB302 0810	SO	GAMMA-CHLORDANE	0.17	0.17	0.34	UG_KG	UJ	s
OU09 SB302 0810	SO	HEPTACHLOR	0.17	0.17	0.34	UG_KG	UJ	s
OU09 SB302 0810	SO	HEPTACHLOR EPOXIDE	0.17	0.17	0.34	UG_KG	UJ	s
OU09 SB302 0810	SO	LINDANE	0.17	0.17	0.34	UG_KG	UJ	s
OU09 SB302 0810	SO	METHOXYCHLOR	1.7	1.7	3.4	UG_KG	UJ	s
OU09 SB302 0810	SO	TOXAPHENE	3.3	3.3	6.5	UG_KG	UJ	s
OU09 SB303 0305	SO	4,4-DDD	0.33	0.33	0.66	UG_KG	UJ	s
OU09 SB303 0305	SO	4,4-DDE	0.33	0.33	0.66	UG_KG	UJ	s
OU09 SB303 0305	SO	4,4-DDT	0.33	0.33	0.66	UG_KG	UJ	s
OU09 SB303 0305	SO	ALDRIN	0.17	0.17	0.34	UG_KG	UJ	s
OU09 SB303 0305	SO	ALPHA-BHC	0.17	0.17	0.34	UG_KG	UJ	s
OU09 SB303 0305	SO	ALPHA-CHLORDANE	0.17	0.17	0.34	UG_KG	UJ	s
OU09 SB303 0305	SO	BETA-BHC	0.17	0.17	0.34	UG_KG	UJ	s
OU09 SB303 0305	SO	DELTA-BHC	0.17	0.17	0.34	UG_KG	UJ	s
OU09 SB303 0305	SO	DIELDRIN	0.33	0.33	0.66	UG_KG	UJ	s
OU09 SB303 0305	SO	ENDOSULFAN I	0.17	0.17	0.34	UG_KG	UJ	s
OU09 SB303 0305	SO	ENDOSULFAN II	0.33	0.33	0.66	UG_KG	UJ	s
OU09 SB303 0305	SO	ENDOSULFAN SULFATE	0.33	0.33	0.66	UG_KG	UJ	s
OU09 SB303 0305	SO	ENDRIN	0.33	0.33	0.66	UG_KG	UJ	s
OU09 SB303 0305	SO	ENDRIN ALDEHYDE	0.33	0.33	0.66	UG_KG	UJ	s
OU09 SB303 0305	SO	ENDRIN KETONE	0.33	0.33	0.66	UG_KG	UJ	s
OU09 SB303 0305	SO	GAMMA-CHLORDANE	0.17	0.17	0.34	UG_KG	UJ	s
OU09 SB303 0305	SO	HEPTACHLOR	0.17	0.17	0.34	UG_KG	UJ	s
OU09 SB303 0305	SO	HEPTACHLOR EPOXIDE	0.17	0.17	0.34	UG_KG	UJ	s
OU09 SB303 0305	SO	LINDANE	0.17	0.17	0.34	UG_KG	UJ	s
OU09 SB303 0305	SO	METHOXYCHLOR	1.7	1.7	3.4	UG_KG	UJ	s

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SB303 0305	SO	TOXAPHENE	3.3	3.3	6.6	UG_KG	UJ	s
OU09 SB303 0305	SO	AROCLOR-1016	1.7	1.7	3.4	UG_KG	UJ	c
OU09 SB303 0305	SO	AROCLOR-1260	1.7	1.7	3.4	UG_KG	UJ	c
OU09 SB303 0810	SO	4,4-DDD	0.33	0.33	0.65	UG_KG	UJ	s
OU09 SB303 0810	SO	4,4-DDE	0.33	0.33	0.65	UG_KG	UJ	c,s
OU09 SB303 0810	SO	4,4-DDT	0.33	0.33	0.65	UG_KG	UJ	c,s
OU09 SB303 0810	SO	ALDRIN	0.17	0.17	0.34	UG_KG	UJ	c,s
OU09 SB303 0810	SO	ALPHA-BHC	0.17	0.17	0.34	UG_KG	UJ	s
OU09 SB303 0810	SO	ALPHA-CHLORDANE	0.17	0.17	0.34	UG_KG	UJ	c,s
OU09 SB303 0810	SO	BETA-BHC	0.17	0.17	0.34	UG_KG	UJ	s
OU09 SB303 0810	SO	DELTA-BHC	0.17	0.17	0.34	UG_KG	UJ	c,s
OU09 SB303 0810	SO	DIELDRIN	0.33	0.33	0.65	UG_KG	UJ	c,s
OU09 SB303 0810	SO	ENDOSULFAN I	0.17	0.17	0.34	UG_KG	UJ	c,s
OU09 SB303 0810	SO	ENDOSULFAN II	0.33	0.33	0.65	UG_KG	UJ	s
OU09 SB303 0810	SO	ENDOSULFAN SULFATE	0.33	0.33	0.65	UG_KG	UJ	c,s
OU09 SB303 0810	SO	ENDRIN	0.33	0.33	0.65	UG_KG	UJ	s
OU09 SB303 0810	SO	ENDRIN ALDEHYDE	0.33	0.33	0.65	UG_KG	UJ	s
OU09 SB303 0810	SO	ENDRIN KETONE	0.33	0.33	0.65	UG_KG	UJ	s
OU09 SB303 0810	SO	GAMMA-CHLORDANE	0.17	0.17	0.34	UG_KG	UJ	c,s
OU09 SB303 0810	SO	HEPTACHLOR	0.17	0.17	0.34	UG_KG	UJ	c,s
OU09 SB303 0810	SO	HEPTACHLOR EPOXIDE	0.17	0.17	0.34	UG_KG	UJ	s
OU09 SB303 0810	SO	LINDANE	0.17	0.17	0.34	UG_KG	UJ	s
OU09 SB303 0810	SO	METHOXYCHLOR	1.7	1.7	3.4	UG_KG	UJ	c,s
OU09 SB303 0810	SO	TOXAPHENE	3.3	3.3	6.5	UG_KG	UJ	s
OU09 SB303 0810	SO	AROCLOR-1016	1.7	1.7	3.4	UG_KG	UJ	c
OU09 SB303 0810	SO	AROCLOR-1260	1.7	1.7	3.4	UG_KG	UJ	c
OU09 SS221 0001	SO	4,4-DDD	0.35	0.35	0.70	UG_KG	UJ	s
OU09 SS221 0001	SO	4,4-DDE	1.0	0.35	0.70	UG_KG	J	s,r
OU09 SS221 0001	SO	4,4-DDT	18	0.35	0.70	UG_KG	J	s,r,l
OU09 SS221 0001	SO	ALDRIN	0.18	0.18	0.36	UG_KG	UJ	s
OU09 SS221 0001	SO	ALPHA-BHC	0.18	0.18	0.36	UG_KG	UJ	s
OU09 SS221 0001	SO	ALPHA-CHLORDANE	0.18	0.18	0.36	UG_KG	UJ	s
OU09 SS221 0001	SO	BETA-BHC	0.18	0.18	0.36	UG_KG	UJ	s
OU09 SS221 0001	SO	DELTA-BHC	0.18	0.18	0.36	UG_KG	UJ	s
OU09 SS221 0001	SO	DIELDRIN	0.35	0.35	0.70	UG_KG	UJ	s
OU09 SS221 0001	SO	ENDOSULFAN I	0.18	0.18	0.36	UG_KG	UJ	s
OU09 SS221 0001	SO	ENDOSULFAN II	1.5	0.35	0.70	UG_KG	J	s
OU09 SS221 0001	SO	ENDOSULFAN SULFATE	9.4	0.35	0.70	UG_KG	J	s,r

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SS221 0001	SO	ENDRIN	0.35	0.35	0.70	UG_KG	UJ	s
OU09 SS221 0001	SO	ENDRIN ALDEHYDE	0.35	0.35	0.70	UG_KG	UJ	s
OU09 SS221 0001	SO	ENDRIN KETONE	26	1.7	3.5	UG_KG	J	r
OU09 SS221 0001	SO	GAMMA-CHLORDANE	0.18	0.18	0.36	UG_KG	UJ	s
OU09 SS221 0001	SO	HEPTACHLOR	0.41	0.18	0.36	UG_KG	J	s
OU09 SS221 0001	SO	HEPTACHLOR EPOXIDE	0.18	0.18	0.36	UG_KG	UJ	s
OU09 SS221 0001	SO	LINDANE	0.18	0.18	0.36	UG_KG	UJ	s
OU09 SS221 0001	SO	METHOXYCHLOR	1.8	1.8	3.6	UG_KG	UJ	s
OU09 SS221 0001	SO	TOXAPHENE	3.5	3.5	7.0	UG_KG	UJ	s
OU09 SS229 0001-02	SO	4,4-DDT	9.4	0.32	0.64	UG_KG	J	c,l
OU09 SS229 0001-02	SO	ALDRIN	0.16	0.16	0.33	UG_KG	UJ	c,s
OU09 SS229 0001-02	SO	ALPHA-BHC	0.16	0.16	0.33	UG_KG	UJ	s
OU09 SS229 0001-02	SO	ALPHA-CHLORDANE	0.16	0.16	0.33	UG_KG	UJ	c,s
OU09 SS229 0001-02	SO	BETA-BHC	0.16	0.16	0.33	UG_KG	UJ	s
OU09 SS229 0001-02	SO	DELTA-BHC	0.16	0.16	0.33	UG_KG	UJ	c,s
OU09 SS229 0001-02	SO	DIELDRIN	0.32	0.32	0.64	UG_KG	UJ	c,s
OU09 SS229 0001-02	SO	ENDOSULFAN I	1.5	0.16	0.33	UG_KG	J	c,r
OU09 SS229 0001-02	SO	ENDOSULFAN SULFATE	0.32	0.32	0.64	UG_KG	UJ	c
OU09 SS229 0001-02	SO	GAMMA-CHLORDANE	0.16	0.16	0.33	UG_KG	UJ	c
OU09 SS229 0001-02	SO	HEPTACHLOR	1.5	0.16	0.33	UG_KG	J	r
OU09 SS229 0001-02	SO	METHOXYCHLOR	8.8	1.6	3.3	UG_KG	J	c,r
OU09 SS229 0001-02	SO	AROCLOR-1016	1.6	1.6	3.3	UG_KG	UJ	c
OU09 SS229 0001-02	SO	AROCLOR-1260	1.6	1.6	3.3	UG_KG	UJ	c
OU09 SS301 0001	SO	4,4-DDD	1.7	1.7	3.4	UG_KG	UJ	s
OU09 SS301 0001	SO	4,4-DDE	1.7	1.7	3.4	UG_KG	UJ	s
OU09 SS301 0001	SO	4,4-DDT	1.7	1.7	3.4	UG_KG	UJ	c,s
OU09 SS301 0001	SO	ALDRIN	0.89	0.89	1.8	UG_KG	UJ	s
OU09 SS301 0001	SO	ALPHA-BHC	0.89	0.89	1.8	UG_KG	UJ	s
OU09 SS301 0001	SO	ALPHA-CHLORDANE	0.89	0.89	1.8	UG_KG	UJ	s
OU09 SS301 0001	SO	BETA-BHC	0.89	0.89	1.8	UG_KG	UJ	s
OU09 SS301 0001	SO	DELTA-BHC	0.89	0.89	1.8	UG_KG	UJ	s
OU09 SS301 0001	SO	DIELDRIN	1.7	1.7	3.4	UG_KG	UJ	s
OU09 SS301 0001	SO	ENDOSULFAN I	0.89	0.89	1.8	UG_KG	UJ	s
OU09 SS301 0001	SO	ENDOSULFAN II	1.7	1.7	3.4	UG_KG	UJ	s
OU09 SS301 0001	SO	ENDOSULFAN SULFATE	1.7	1.7	3.4	UG_KG	UJ	s
OU09 SS301 0001	SO	ENDRIN	1.7	1.7	3.4	UG_KG	UJ	s
OU09 SS301 0001	SO	ENDRIN ALDEHYDE	1.7	1.7	3.4	UG_KG	UJ	s
OU09 SS301 0001	SO	ENDRIN KETONE	1.7	1.7	3.4	UG_KG	UJ	c,s

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SS301 0001	SO	GAMMA-CHLORDANE	0.89	0.89	1.8	UG_KG	UJ	s
OU09 SS301 0001	SO	HEPTACHLOR	0.89	0.89	1.8	UG_KG	UJ	s
OU09 SS301 0001	SO	HEPTACHLOR EPOXIDE	0.89	0.89	1.8	UG_KG	UJ	s
OU09 SS301 0001	SO	LINDANE	0.89	0.89	1.8	UG_KG	UJ	s
OU09 SS301 0001	SO	METHOXYCHLOR	8.9	8.9	18	UG_KG	UJ	s
OU09 SS301 0001	SO	TOXAPHENE	17	17	34	UG_KG	UJ	s
OU09 SS301 0001	SO	AROCLOR-1016	8.9	8.9	18	UG_KG	UJ	c,s
OU09 SS301 0001	SO	AROCLOR-1221	8.9	8.9	18	UG_KG	UJ	c,s
OU09 SS301 0001	SO	AROCLOR-1232	10	10	18	UG_KG	UJ	c,s
OU09 SS301 0001	SO	AROCLOR-1242	8.9	8.9	18	UG_KG	UJ	c,s
OU09 SS301 0001	SO	AROCLOR-1248	8.9	8.9	18	UG_KG	UJ	c,s
OU09 SS301 0001	SO	AROCLOR-1254	43	8.9	18	UG_KG	J	c,s
OU09 SS301 0001	SO	AROCLOR-1260	8.9	8.9	18	UG_KG	UJ	c,s
OU09 SS301 0001	SO	AROCLOR-1262	8.9	8.9	18	UG_KG	UJ	c,s
OU09 SS301 0001	SO	AROCLOR-1268	8.9	8.9	18	UG_KG	UJ	c,s
OU09 SS302 0001	SO	4,4-DDT	4.2	0.38	0.75	UG_KG	J	r.l
OU09 SS302 0001	SO	ENDOSULFAN II	0.28	0.38	0.75	UG_KG	J	r
OU09 SS302 0001	SO	ENDOSULFAN SULFATE	0.38	0.38	0.75	UG_KG	UJ	fd
OU09 SS302 0001	SO	ENDRIN KETONE	0.38	0.38	0.75	UG_KG	UJ	fd
OU09 SS303 0001	SO	4,4-DDT	6.5	0.40	0.79	UG_KG	J	r,l
OU09 SS303 0001	SO	ENDOSULFAN II	1.4	0.40	0.79	UG_KG	J	r
OU09 SS303 0001	SO	ENDOSULFAN SULFATE	2.6	0.40	0.79	UG_KG	J	r
OU09 SS303 0001	SO	ENDRIN KETONE	4.7	0.40	0.79	UG_KG	J	r
OU09 SS303 0001	SO	HEPTACHLOR	1.3	0.20	0.41	UG_KG	J	r
OU09 SS303 0001	SO	AROCLOR-1016	2.0	2.0	4.1	UG_KG	UJ	c
OU09 SS303 0001	SO	AROCLOR-1260	49	2.0	4.1	UG_KG	J	c
OU09 SS324 0001	SO	4,4-DDE	110	3.6	7.2	UG_KG	J	r
OU09 SS324 0001	SO	4,4-DDT	1700	36	72	UG_KG	J	r
OU09 SS324 0001	SO	ENDRIN	150	3.6	7.2	UG_KG	J	m,r
OU09 SS324 0001	SO	ENDRIN ALDEHYDE	470	36	72	UG_KG	J	r
OU09 SS324 0001	SO	TOXAPHENE	36	36	72	UG_KG	UJ	c
RBSB121113 03	WG	4,4-DDD		0.0047	0.0094	UG_L	U	bl
RBSB121113 03	WG	4,4-DDE	0.0047	0.0047	0.0094	UG_L	UJ	c
RBSB121113 03	WG	4,4-DDT	0.0028	0.0047	0.0094	UG_L	J	c,l
RBSB121113 03	WG	ALDRIN	0.0024	0.0024	0.0047	UG_L	UJ	c
RBSB121113 03	WG	ALPHA-CHLORDANE	0.0024	0.0024	0.0047	UG_L	UJ	c

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
RBSB121113 03	WG	DELTA-BHC	0.0024	0.0024	0.0047	UG_L	UJ	c
RBSB121113 03	WG	DIELDRIN	0.0047	0.0047	0.0094	UG_L	UJ	c
RBSB121113 03	WG	ENDOSULFAN I	0.0024	0.0024	0.0047	UG_L	UJ	c
RBSB121113 03	WG	ENDOSULFAN SULFATE	0.0047	0.0047	0.0094	UG_L	UJ	c
RBSB121113 03	WG	GAMMA-CHLORDANE	0.0024	0.0024	0.0047	UG_L	UJ	c
RBSB121113 03	WG	METHOXYCHLOR	0.024	0.024	0.047	UG_L	UJ	c
RBSB121113 04	WG	4,4-DDE	0.0047	0.0047	0.0094	UG_L	UJ	c
RBSB121113 04	WG	4,4-DDT	0.0047	0.0047	0.0094	UG_L	UJ	c
RBSB121113 04	WG	ALDRIN	0.0024	0.0024	0.0047	UG_L	UJ	c
RBSB121113 04	WG	ALPHA-CHLORDANE	0.0024	0.0024	0.0047	UG_L	UJ	c
RBSB121113 04	WG	DELTA-BHC	0.0024	0.0024	0.0047	UG_L	UJ	c
RBSB121113 04	WG	DIELDRIN	0.0047	0.0047	0.0094	UG_L	UJ	c
RBSB121113 04	WG	ENDOSULFAN I	0.0024	0.0024	0.0047	UG_L	UJ	c
RBSB121113 04	WG	ENDOSULFAN SULFATE	0.0047	0.0047	0.0094	UG_L	UJ	c
RBSB121113 04	WG	GAMMA-CHLORDANE	0.0024	0.0024	0.0047	UG_L	UJ	c
RBSB121113 04	WG	METHOXYCHLOR	0.024	0.024	0.047	UG_L	UJ	c
RBSS12061302	WQ	DELTA-BHC	0.0026	0.0026	0.0052	UG_L	UJ	c
RBSS12061302	WQ	ENDOSULFAN SULFATE	0.0052	0.0052	0.010	UG_L	UJ	c
RBSS12061302	WQ	ENDRIN KETONE	0.0052	0.0052	0.010	UG_L	UJ	c
RBSS12061302	WQ	AROCLOR-1016	0.026	0.026	0.052	UG_L	UJ	c
RBSS12061302	WQ	AROCLOR-1221	0.026	0.026	0.052	UG_L	UJ	c
RBSS12061302	WQ	AROCLOR-1232	0.026	0.026	0.052	UG_L	UJ	c
RBSS12061302	WQ	AROCLOR-1242	0.026	0.026	0.052	UG_L	UJ	c
RBSS12061302	WQ	AROCLOR-1248	0.026	0.026	0.052	UG_L	UJ	c
RBSS12061302	WQ	AROCLOR-1254	0.026	0.026	0.052	UG_L	UJ	c
RBSS12061302	WQ	AROCLOR-1260	0.026	0.026	0.052	UG_L	UJ	c
RBSS12061302	WQ	AROCLOR-1262	0.026	0.026	0.052	UG_L	UJ	c
RBSS12061302	WQ	AROCLOR-1268	0.026	0.026	0.052	UG_L	UJ	c

Attachment A

Non Conformance Summary Tables

Table A-1a Initial Calibration (Pesticides)

Lab ID(s)	Compound	%Recovery ICV	Column	Associated samples
WG136796-15	alpha-BHC	127.67	A only	all samples

Table A-1b Continuing Calibrations (Aroclors)

Lab ID(s)	Aroclor	%D/%Drift	Column	Associated samples
CARR-6				
WG136804-7	Ar-1254 (4)	29.94	A only	OU09 SS301 0001 DLRA
WG136804-5	Ar-1016 (3)	23.14	A only	OU09 SS301 0001 DLRA
	Ar-1016 (5)	20.55		
	Ar-1016 (2)	22.55		
	Ar-1016 (1)	20.02		
	Ar-1016 (4)	22.93		
CARR-9				
WG137027-9	Ar-1016(3)	-29.35	A	OU09 SB221 0608 RA OU09 SB221 0810 RA OU09 SS303 0001 RA OU09 SB303 0305 RA OU09 SB303 0810 RA OU09 SS229 0001-02 RA
	Ar-1016 (5)	-38.88		
	Ar-1016 (2)	-27.79		
	Ar-1016 (1)	-24.29		
	Ar-1016 (4)	-30.20		
	Ar-1260 (4)	-43.89		
	Ar-1260 (1)	-45.00		
	Ar-1260 (5)	-40.99		
	Ar-1260 (3)	-47.03		
	Ar-1260 (2)	-43.57		
WG137027-10	Ar-1016 (4)	-23.30	B	OU09 SB221 0608 RA OU09 SB221 0810 RA OU09 SS303 0001 RA OU09 SB303 0305 RA OU09 SB303 0810 RA OU09 SS229 0001-02 RA
	Ar-1016 (1)	-20.93		
	Ar-1016 (3)	-21.65		
	Ar-1016 (5)	-27.89		
	Ar-1016 (2)	-21.11		
	Ar-1260 (4)	-35.96		
	Ar-1260 (1)	-34.22		
	Ar-1260 (5)	-30.64		
	Ar-1260 (3)	-30.19		
	Ar-1260 (2)	-33.37		
WG137027-6	Ar-1260 (3)	-21.98	B only	OU09 SS302 0001 RA OU09 SB302 0810 RA FDSB12101302 RA OU09 SS221 0001 RA OU09 SB221 0305 RA
CARR-11				
WG137027-3	Ar-1260 (4)	-21.85	A only	OU09 SS324 0001 DLRA OU09 SB324 0305 RA OU09 SB324 0810 RA OU09 SB223 0001 DLRA OU09 SB223 0304 DLRA
	Ar-1260 (1)	-22.65		
	Ar-1260 (5)	-25.54		
	Ar-1260 (3)	-22.24		
WG137027-6	Ar-1260 (3)	-21.98	B only	OU09 SS324 0001 DLRA OU09 SB324 0305 RA OU09 SB324 0810 RA OU09 SB223 0001 DLRA OU09 SB223 0304 DLRA

Table A-1b Continuing Calibration (Pesticides)

Lab ID(s)	Compound	%D/%Drift	Column	Associated samples
1GL00152 WG136279-3	alpha-BHC	21.16	A only	RBSS12061302
	delta-BHC	22.74		
	Endrin ketone	24.19		
1GL00165 WG136279-9	alpha-BHC	23.36	A	RBSS12061302
	gamma-BHC	21.79		
	delta-BHC	21.19		
	alpha Chlordane	20.87		
	Endosulfan sulfate	23.49		
	Endrin ketone	35.93		
	delta-BHC	20.97	B	
	Aldrin	20.87		
	Dieldrin	20.34		
	Endosulfan sulfate	21.64		
	Endrin ketone	30.18		
1GL00278 WG136796-16	4,4'-DDT	24.00	A	OU09 SS301 0001 DL
	Endrin ketone	23.32		
	4,4'-DDT	25.83	B	
	Methoxychlor	21.38		
	Endrin ketone	20.22		
1HA00029 WG136965-7	Delta-BHC	-26.82	A	RBSB12111303 RA RBSB12111304 RA OU09 SB303 0810 RA OU09 SS229 0001-02 RA
	Heptachlor	-22.42		
	Aldrin	-24.54		
	Heptachlor Epoxide	-21.22		
	gamma-Chlordane	-21.52		
	alpha-Chlordane	-21.08		
	4,4'-DDE	-25.77		
	Endosulfan I	-23.10		
	Dieldrin	-22.59		
	Endrin	-23.15		
	4,4'-DDD	-20.56		
	Endosulfan II	-25.50		
	4,4'-DDT	-33.97		
	Endrin aldehyde	-20.08		
	Methoxychlor	-32.12		
	Endosulfan sulfate	-31.00		
	Delta-BHC	-27.10	B	RBSB12111303 RA RBSB12111304 RA OU09 SB303 0810 RA OU09 SS229 0001-02 RA
	Aldrin	-22.48		
	gamma-Chlordane	-20.78		
	alpha-Chlordane	-20.50		
	4,4'-DDE	-22.10		
	Endosulfan I	-20.33		
	Dieldrin	-21.04		
	4,4'-DDT	-31.48		
	Methoxychlor	-29.17		
	Endosulfan sulfate	-21.64		

Lab ID(s)	Compound	%D/%Drift	Column	Associated samples
1HA00139 WG137188-5	alpha-BHC	22.00	A only	OU09 SS324 0001 DL2 OU09 SB223 0304 DL2 OU09 SB223 0001 DL3 OU09 SS221 0001 DL
1HA00045 WG137028-5	Toxaphene (2)	-24.91	A	OU09 SB324 0305 RA OU09 SB324 0810 RA OU09 SS324 0001 DL OU09 SB223 0304 DL OU09 SB223 0001 DL
	Toxaphene (3)	-23.71		
	Toxaphene (8)	-23.36		
	Toxaphene (7)	-23.29		
	Toxaphene (5)	-22.76		
	Toxaphene (4)	-22.54		
	Toxaphene (1)	-22.05		
	Toxaphene (6)	-20.75		
	Toxaphene (1)	-33.76	B	
	Toxaphene (3)	-27.36		
	Toxaphene (5)	-24.64		
	Toxaphene (4)	-24.12		
1HA00143 WG137188-7	Dieldrin	20.25	A	OU09 SB223 0001 DL3
	4,4'-DDT	27.17		
	alpha-BHC	24.12		
	Endrin aldehyde	20.77		
	Methoxychlor	25.11		
	Endrin ketone	31.26		
	4,4'-DDT	21.60	B	
	Endrin ketone	24.60		

Table A-2a Lab Blanks

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
WG136295-1RA	4,4-DDD	0.0012	0.0050	0.010	UG_L	RBSB121113 03

Table A-2b Rinsate Blanks

Blank ID	Compound	Results	LOD	LOQ	Units	Associated Samples
RBSB12111303	4,4'-DDE	0.0074	0.0047	0.0094	ug/L	FDSB12101302 OU09 SB223 0304 OU09 SB324 0305 OU09 SB324 0810 OU09 SB302 0810 OU09 SB303 0305 OU09 SB303 0810 OU09 SB221 0305 OU09 SB221 0608 OU09 SB221 0810 OU09 SB302 0305
RBSB12111303	4,4'-DDT	0.0028	0.0047	0.0094	ug/L	FDSB12101302 OU09 SB223 0304 OU09 SB324 0305 OU09 SB324 0810 OU09 SB302 0810 OU09 SB303 0305 OU09 SB303 0810 OU09 SB221 0305 OU09 SB221 0608 OU09 SB221 0810 OU09 SB302 0305

Table A-3a Pesticide Surrogates

Sample ID	Surrogate	% Recovery	Lower Limit	Upper Limit
CARR-6				
OU09 SS301 0001	TETRACHLORO-M-XYLENE (A)	67.5	70	125
OU09 SS301 0001	TETRACHLORO-M-XYLENE (B)	68.8	70	125
OU09 SS301 0001	PCB-209 (B)	27.2	70	125
CARR-9				
OU09 SB221 0810	TETRACHLORO-M-XYLENE (A)	60.6	70	125
OU09 SB221 0810	TETRACHLORO-M-XYLENE (B)	65.7	70	125
OU09 SS303 0001	TETRACHLORO-M-XYLENE (A)	61.5	70	125
OU09 SB303 0305	TETRACHLORO-M-XYLENE (A)	53.5	70	125
OU09 SB303 0305	TETRACHLORO-M-XYLENE (B)	58.1	70	125
OU09 SB303 0810	TETRACHLORO-M-XYLENE (A)	60.0	70	125
OU09 SB303 0810	TETRACHLORO-M-XYLENE (B)	60.2	70	125
OU09 SS302 0001	TETRACHLORO-M-XYLENE (A)	63.8	70	125
OU09 SS229 0001-02 DL	PCB-209 (A)	0	55	130
OU09 SS229 0001-02 DL	PCB-209 (B)	0	55	130
OU09 SS229 0001-02 DL	TETRACHLORO-M-XYLENE (A)	0	70	125

Sample ID	Surrogate	% Recovery	Lower Limit	Upper Limit
OU09 SS229 0001-02 DL	TETRACHLORO-M-XYLENE (B)	0	70	125
OU09 SS229 0001-02 RA	TETRACHLORO-M-XYLENE (A)	68.3	70	125
OU09 SB302 0305	TETRACHLORO-M-XYLENE (A)	65.7	70	125
OU09 SB302 0810	TETRACHLORO-M-XYLENE (A)	63.1	70	125
OU09 SB302 0810	TETRACHLORO-M-XYLENE (B)	68.5	70	125
OU09 SS221 0001 RA	TETRACHLORO-M-XYLENE (A)	59.1	70	125
OU09 SS221 0001 RA	TETRACHLORO-M-XYLENE (B)	66.9	70	125
OU09 SB221 0305 RA	TETRACHLORO-M-XYLENE (A)	58.1	70	125
OU09 SB221 0305 RA	TETRACHLORO-M-XYLENE (B)	64.7	70	125
OU09 SB221 0608 RA	TETRACHLORO-M-XYLENE (A)	55.4	70	125
OU09 SB221 0608 RA	TETRACHLORO-M-XYLENE (B)	62.6	70	125
CARR-11				
OU09 SS324 0001 DL	PCB-209 (A)	0	55	130
OU09 SS324 0001 DL	TETRACHLORO-M-XYLENE (A)	0	70	125
OU09 SS324 0001 DL	PCB-209 (B)	0	55	130
OU09 SS324 0001 DL	TETRACHLORO-M-XYLENE (B)	0	70	125
OU09 SS324 0001 DL2	PCB-209 (A)	0	55	130
OU09 SS324 0001 DL2	TETRACHLORO-M-XYLENE (A)	0	70	125
OU09 SS324 0001 DL2	PCB-209 (B)	0	55	130
OU09 SS324 0001 DL2	TETRACHLORO-M-XYLENE (B)	0	70	125
OU09 SB223 0001 DL	PCB-209 (A)	0	55	130
OU09 SB223 0001 DL	TETRACHLORO-M-XYLENE (A)	0	70	125
OU09 SB223 0001 DL	PCB-209 (B)	0	55	130
OU09 SB223 0001 DL	TETRACHLORO-M-XYLENE (B)	0	70	125
OU09 SB223 0001 DL3	PCB-209 (A)	0	55	130
OU09 SB223 0001 DL3	TETRACHLORO-M-XYLENE (A)	0	70	125
OU09 SB223 0001 DL3	PCB-209 (B)	0	55	130
OU09 SB223 0001 DL3	TETRACHLORO-M-XYLENE (B)	0	70	125
OU09 SB223 0304 DL	PCB-209 (A)	0	55	130
OU09 SB223 0304 DL	TETRACHLORO-M-XYLENE (A)	0	70	125
OU09 SB223 0304 DL	PCB-209 (B)	0	55	130
OU09 SB223 0304 DL	TETRACHLORO-M-XYLENE (B)	0	70	125
OU09 SB223 0304 DL2	PCB-209 (A)	0	55	130
OU09 SB223 0304 DL2	TETRACHLORO-M-XYLENE (A)	0	70	125
OU09 SB223 0304 DL2	PCB-209 (B)	0	55	130
OU09 SB223 0304 DL2	TETRACHLORO-M-XYLENE (B)	0	70	125

Table A-3b PCB Surrogates

Sample ID	Surrogate	% Recovery	Lower Limit	Upper Limit
CARR-6				
OU09 SS301 0001	PCB-209 (A)	181	60	125
OU09 SS301 0001	PCB-209 (B)	198	60	125
CARR-9				
OU09 SS221 0001	PCB-209 (A)	155	60	125
CARR-11				
OU09 SS324 0001 DLRA	PCB-209 (A)	0	60	125
OU09 SS324 0001 DLRA	TETRACHLORO-M-XYLENE (B)	0	56	115
OU09 SS324 0001 DLRA	PCB-209 (A)	0	60	125
OU09 SS324 0001 DLRA	TETRACHLORO-M-XYLENE (B)	0	56	115
OU09 SB223 0001 DLRA	PCB-209 (A)	0	60	125
OU09 SB223 0001 DLRA	TETRACHLORO-M-XYLENE (B)	0	56	115
OU09 SB223 0001 DLRA	PCB-209 (A)	0	60	125
OU09 SB223 0001 DLRA	TETRACHLORO-M-XYLENE (B)	0	56	115
OU09 SB223 0304 DLRA	PCB-209 (A)	0	60	125
OU09 SB223 0304 DLRA	TETRACHLORO-M-XYLENE (B)	0	56	115
OU09 SB223 0304 DLRA	PCB-209 (A)	0	60	125
OU09 SB223 0304 DLRA	TETRACHLORO-M-XYLENE (B)	0	56	115

Table A-4 Matrix Spikes

Sample ID	Compound	MS % Recovery	MSD % Recovery	Lower Limit	Upper Limit	RPD	RPD Limit
Pesticides							
OU09 SS324 0001	HEPTACHLOR EPOXIDE	3330	2790	65	130	19	30
OU09 SS324 0001	DELTA-BHC	150	138	55	130	9	30
OU09 SS324 0001	GAMMA-BHC (LINDANE)	248	98.1	60	125	88	30
OU09 SS324 0001	4,4-DDT	0	0	45	140	15	30
OU09 SS324 0001	ENDRIN KETONE	38800	34000	65	135	14	30
OU09 SS324 0001	DIELDRIN	7180	6080	65	125	18	30
OU09 SS324 0001	ENDRIN	4320	3650	60	135	18	30
OU09 SS324 0001	4,4-DDD	26300	22500	30	135	17	30
OU09 SS324 0001	4,4-DDE	0	0	70	125	20	30
OU09 SS324 0001	ENDRIN ALDEHYDE	0	0	35	145	18	30
OU09 SS324 0001	ENDOSULFAN SULFATE	0	0	60	135	14	30
OU09 SS324 0001	ENDOSULFAN II	4840	3900	35	140	23	30
OU09 SS324 0001	ALPHA-CHLORDANE	910	1150	65	120	147	30
OU09 SS324 0001	GAMMA-CHLORDANE	6050	5070	65	125	19	30
OU09 SS324 0001	METHOXYCHLOR	17200	14100	55	145	21	30

Sample ID	Compound	MS % Recovery	MSD % Recovery	Lower Limit	Upper Limit	RPD	RPD Limit
PCBs							
OU09 SS324 0001	AROCLOR-1016	193	200	40	140	3	30
OU09 SS324 0001	AROCLOR-1260	0	0	60	130	4	30

Table A-5 Lab Control Samples

LCS ID	Compound	LCS % Recovery	LCSD % Recovery	Lower Limit	Upper Limit	RPD	RPD Limit	Associated Samples
WG135845-2RA	ENDRIN ALDEHYDE	73.4	102	55	135	32	30	RBSS12061302
WG136242-2	4,4-DDT	112	147	45	140	26	30	FDSB12101302 OU09 SB221 0305 OU09 SB221 0608 OU09 SB221 0810 OU09 SB302 0305 OU09 SB302 0810 OU09 SB303 0305 OU09 SB303 0810 OU09 SS221 0001 OU09 SS229 0001-02 OU09 SS301 0001 OU09 SS302 0001 OU09 SS303 0001
WG136295-2RA	4,4-DDT	113	142	45	140	28	30	RBSB121113 03 RBSB121113 04
WG136295-2RA	4,4-DDD	100	173	25	150	53	30	RBSB121113 03 RBSB121113 04

Table A-6 Field Duplicates

Sample ID	Duplicate ID	Compound	Sample Result	Qual	Duplicate Result	Qual	LOD	LOQ	Units	RPD
OU09 SS302 0001	FDSB12101302	Endosulfan Sulfate	0.38	U	2.1		0.38	0.75	UG_KG	NC
OU09 SS302 0001	FDSB12101302	Endrin Ketone	0.38	U	1.6		0.38	0.75	UG_KG	NC

Table A-7 Dual Column Non-Conformance

Lab Sample ID	Client ID	Analyte	Column	RT	Concentration	RPD
SG9759-48DL	OU09SS3240001	4,4'-DDE	A	6.98	112	
			B	7.07	15.4	151.6
		Endrin	A	7.45	11.7	
			B	7.69	154	171.8
		4,4'-DDT	A	8.19	268	
			B	8.28	1250	129.4
		Endrin Aldehyde	A	8	31.6	
			B	8.42	439	173.1
SG9759-48DL2	OU09SS3240001	4,4'-DDE	A	6.92	120	
			B	6.98	13.8	158.7
		4,4'-DDT	A	8.12	283	
			B	8.2	1660	141.7
		Endrin Aldehyde	A	7.93	31.9	
			B	8.34	468	174.5
SG9759-55DL	OU09SB2230001	4,4'-DDT	A	8.18	2670	
			B	8.28	14200	136.7
SG9759-55DL3	OU09SB2230001	4,4'-DDT	A	8.12	2790	
			B	8.2	18800	148.3
		Endosulfan Sulfate	A	8.28	7500	
			B	8.65	11500	42.1
SG9759-56DL	OU09SB2230304	4,4'-DDE	A	6.99	80.8	
			B	7.07	.956	195.3
		4,4'-DDT	A	8.18	172	
			B	8.28	1000	141.3
		Endosulfan Sulfate	A	8.34	451	
			B	8.73	687	41.5
SG9759-56DL2	OU09SB2230304	4,4'-DDE	A	6.93	89.2	
			B	7.05	31.7	95.1
		4,4'-DDT	A	8.12	190	
			B	8.2	1360	151
		Endosulfan Sulfate	A	8.28	506	
			B	8.65	853	51.1
SG9708-2RA	OU09SS3020001	Endosulfan II	A	7.86	.278	
			B	8.13	.154	57.4
		4,4'-DDT	A	8.23	.738	
			B	8.29	4.15	139.6
SG9708-6RA	FDSB12101302	4,4'-DDT	A	8.23	.866	
			B	8.29	6.11	150.3
		Endosulfan Sulfate	A	8.38	1.22	
			B	8.74	2.06	51.2
SG9708-7DL	OU09SS2210001	4,4'-DDE	A	6.92	1.31	
			B	6.98	.33	119.5
		4,4'-DDT	A	8.12	2.73	
			B	8.2	18	147.3
		Endrin Ketone	A	8.99	26.4	
			B	9.45	3.03	158.8
SG9708-7RA	OU09SS2210001	4,4'-DDE	A	7.03	1.01	
			B	7.07	.349	97.3
		4,4'-DDT	A	8.23	.71	

Lab Sample ID	Client ID	Analyte	Column	RT	Concentration	RPD
			B	8.29	17.6	184.5
		Endosulfan Sulfate	A	8.39	5.56	
			B	8.74	9.42	51.5
		Endrin Ketone	A	9.09	23.1	
			B	9.54	3.62	145.8
SG9708-9RA	OU09SB2210608	4,4'-DDD	A	7.79	.145	
			B	7.92	.223	42.4
SG9708-26RA	OU09SS3030001	Heptachlor	A	5.17	.845	
			B	5.15	1.33	44.6
		Endosulfan II	A	7.87	.468	
			B	8.13	1.39	99.2
		4,4'-DDT	A	8.23	.562	
			B	8.29	6.54	168.3
		Endrin Ketone	A	9.09	4.73	
			B	9.54	1.13	122.9
SG9708-33DL	OU09SS2290001-02	Heptachlor	A	5.13	.822	
			B	5.14	1.39	51.4
SG9708-33RA	OU09SS2290001-02	Heptachlor	A	5.15	.908	
			B	5.13	1.49	48.5
		Endosulfan I	A	6.78	.549	
			B	6.87	1.46	90.7
		Methoxychlor	A	8.95	8.83	
			B	9.17	2.02	125.5

Attachment B

Qualifier Codes and Explanations

Qualifier	Explanation
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
JN	The analyte was tentatively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
UJ	The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual quantitation limit necessary to accurately and precisely measure the analyte in the sample.
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

Attachment C

Reason Codes and Explanations

Reason Code	Explanation
be	Equipment blank contamination
bf	Field blank contamination
bl	Laboratory blank contamination
c	Calibration issue
d	Reporting limit raised due to chromatographic interference
fd	Field duplicate RPDs
h	Holding times
i	Internal standard areas
k	Estimated Maximum Possible Concentration (EMPC)
l	LCS recoveries
lc	Labeled compound recovery
ld	Laboratory duplicate RPDs
lp	Laboratory control sample/laboratory control sample duplicate RPDs
m	Matrix spike recovery
md	Matrix spike/matrix spike duplicate RPDs
nb	Negative laboratory blank contamination
p	Chemical preservation issue
r	Dual column RPD
q	Quantitation issue
s	Surrogate recovery
su	Ion suppression
t	Temperature preservation issue
x	Percent solids
y	Serial dilution results
z	ICS results

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Data Validation Report

Project:	MRP Site 1 (OU9) Remedial Investigation, NAVSTA Newport, Rhode Island CTO WE06
Laboratory:	Katahdin Analytical Services, Scarborough, Maine
Service Request:	CARR-2, CARR-6, CARR-8, CARR-9, and CARR-11
Analyses/Method:	Nitroaromatics and Nitramines by High Performance Liquid Chromatography (HPLC) / EPA SW-846 Method 8330A Modified
Validation Level:	Limited
Resolution Consultants Project Number:	60250336 SA.DV
Prepared by:	Charlene Livingston Flint/Resolution Consultants — Completed on: 02/03/2014
Reviewed by:	Kristin Rutherford/Resolution Consultants — File Name: CARR-2,6,8,9,11_SO_8330_DVRpt

SUMMARY

The samples listed below were collected by Resolution Consultants from MRP Site 1 (OU9), NAVSTA Newport, Rhode Island, on December 3, 4, 6, 9, 10, 11, and 12, 2013.

Sample ID	Matrix/Sample Type
RBSB12061301	Equipment blank
FDSB12111306	Field Duplicate of OU09 SB218 0102
FDSB12111305	Field Duplicate of OU09 SS218 0001
OU09 SS229 0001-02	Field Duplicate of OU09 SS229 0001-01
RBSB121113 03	Equipment blank
RBSB121113 04	Equipment blank
OU09 SB206 0305	Soil
OU09 SB207 0102	Soil
OU09 SB209 0102	Soil
OU09 SB209 0305	Soil
OU09 SB211 0305	Soil
OU09 SB212 0102	Soil
OU09 SB212 0305	Soil
OU09 SB213 0102	Soil
OU09 SB213 0305	Soil
OU09 SB214 0102	Soil
OU09 SB214 0305	Soil
OU09 SB215 0102	Soil
OU09 SB215 0305	Soil

Sample ID	Matrix/Sample Type
OU09 SB216 0305	Soil
OU09 SB217 0102	Soil
OU09 SB217 0305	Soil
OU09 SB218 0102	Soil
OU09 SB218 0305	Soil
OU09 SB219 0305	Soil
OU09 SB220 0001	Soil
OU09 SB220 0305	Soil
OU09 SB221 0102	Soil
OU09 SB228 0305	Soil
OU09 SB229 0102	Soil
OU09 SB229 0305	Soil
OU09 SB324 0102	Soil
OU09 SBMW11 0406	Soil
OU09 SS205 0001	Soil
OU09 SS206 0001	Soil
OU09 SS209 0001	Soil
OU09 SS211 0001	Soil
OU09 SS212 0001	Soil
OU09 SS213 0001	Soil
OU09 SS217 0001	Soil
OU09 SS218 0001	Soil
OU09 SS219 0001	Soil
OU09 SS228 0001	Soil
OU09 SS229 0001-01	Soil

The data have been validated in accordance with the project-specific Sampling and Analysis Plan, *Sampling and Analysis Plan, Former Carr Point Shooting Range (MRP Site 1, OU9), Naval Station (NAVSTA) Newport, Rhode Island, Final* (Naval Facilities Engineering Command, Mid-Atlantic, 2013) and the following references:

- *DoD Quality Systems Manual (QMS) for Environmental Laboratories, version 4.2* (DoD EDQW, 2010);
- *USEPA Region 1, EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses* (December 1996);
- "Standard and Full Data Validation Procedure for Explosives by SW-8330, Procedure Number: II-O," NAVFAC Pacific ER Program(February 2007);
- *USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review* (June 2008);
- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW846, Method 8330A, Nitroaromatics and Nitramines by High Performance Liquid Chromatography (HPLC)* (USEPA, 1996);
- Laboratory quality control (QC) limits, as applicable.

The USEPA Region 1 and National Data Validation Functional Guidelines were modified to accommodate the non-CLP methodologies. In the absence of method-specific direction for validation, Resolution Consultants professional judgment was used as appropriate.

The data appear valid as reported and may be used for decision making purposes. Selected data points were estimated, negated, and/or rejected due to nonconformances of certain QC criteria (see discussion below). Qualified sample results are presented in Table 1.

REVIEW ELEMENTS

The data were evaluated based on the following parameters (where applicable to the method):

✓ Data completeness (chain-of-custody (COC)/sample integrity
✓ Holding times and sample preservation
✓ Initial calibration/continuing calibration verification
✓ Laboratory blanks/equipment blanks
✗ Surrogate spike recoveries
✓ Matrix spike (MS) and/or matrix spike duplicate (MSD) results
✓ Laboratory control sample (LCS)/laboratory control sample duplicate (LCSD) results
✓ Field duplicates
✗ Sample results/reporting issues

The symbol (✓) indicates that no validation qualifiers were applied based on this parameter. NA indicates that the parameter was not included as part of this data set or was not applicable to this validation and therefore not reviewed. The symbol (✗) indicates that a QC nonconformance resulted in the qualification of data. Any QC nonconformance that resulted in the qualification of data is discussed below. In addition, nonconformances or other issues that were noted during validation, but did not result in qualification of data, may be discussed for informational purposes only.

The data appear valid as reported and may be used for decision making purposes. Selected data points were qualified as estimated, negated, and/or rejected due to nonconformances of certain QC criteria (see discussion below). Qualified sample results are presented in Table 1.

RESULTS

<u>Data Completeness</u>

The data package was reviewed and found to meet acceptance criteria for completeness:

- The COCs were reviewed for completeness of information relevant to the samples and requested analyses, and for signatures indicating transfer of sample custody.
- The laboratory sample login sheet(s) were reviewed for issues potentially affecting sample integrity, including the condition of sample containers.
- Completeness of analyses was verified by comparing the reported results to the COC requests.

Holding Times/Sample Preservation

Sample preservation and preparation/analysis holding times were reviewed for conformance with the QC acceptance criteria

The QC acceptance criteria were met.

Initial Calibration/Continuing Calibration Verification

Calibration data were reviewed for conformance with the QC acceptance criteria to ensure that:

- The initial calibration (ICAL) percent relative standard deviation (%RSD), correlation coefficient (r)/coefficient of determination (r^2), and method acceptance criteria were met;
- The initial calibration verification standard (ICV) percent recovery acceptance criteria were met;
- The continuing calibration verification standard (CCV) method percent difference or percent drift (%Ds) acceptance criteria were met.

All criteria were met.

Laboratory Blanks/Equipment Blanks

Laboratory method blanks and equipment rinsate blanks were evaluated as to whether there were contaminants detected above the method detection limit (MDL).

Data validation qualifications for individual samples are based on the maximum contaminant concentration detected in all associated blanks.

Detected results in blanks are not discussed in this data validation report if the associated results were nondetect or if qualification of sample results was not required.

The QC acceptance criteria were met and/or qualification of the sample results was not required. There were no detected target analytes reported in equipment blank sample RBSB12061301 (SG9597-2).

Surrogate Spike Recoveries

The surrogate recoveries (%Rs) were reviewed for conformance.

Nonconformances are summarized in Attachment A in Table A-1. Data qualification on the basis of surrogate recoveries was as follows:

Actions: (Based on NFG 2008 for Pesticide/PCBs, except as noted)

Criteria*	Action	
	Detected Compounds	Nondetected Compounds
%R>upper limit (UL)	J	No qualification
10% ≤ %R < lower limit (LL)	J	UJ
%R <10% (sample dilution is not a factor)	J	R
%R <10% (sample dilution is a factor)	No qualification	No qualification
* Resolution Consultants professional judgment was used.		

Note: If there is no surrogate information due to dilution then estimate (J/UJ) all results. However, in cases where there is surrogate information from multiple runs then base the surrogate actions on the least diluted run.

Qualified sample results are shown in Table 1.

MS/MSD Results

The MS/MSD %Rs and relative percent differences (RPDs) were reviewed for conformance with the QC acceptance criteria.

Nonconformances are summarized in Attachment A in Table A-2. Data qualification to the analytes associated with the specific MS/MSD nonconformances was as follows:

Actions: (Based on NFG 2008 for SVOCs and NAVFAC PACDIV DV SOP, except as noted)

Criteria	Action	
	Detected Compounds	**Nondetected Compounds**
%R> UL	J	No qualification
0%[1] < %R < LL	J	UJ
%R = 0%[1]	J	R[2]
%RPD > UL	J	No qualification

Note: Actions are applied to the native unspiked sample only
[1]Based on NAVFAC PACDIV DV SOP.
[2]When the native sample concentration is >4X the concentration of the spike added (based on Region I criteria), evaluate the MS, MSD, and native sample with regards to %RSD rather than %R (Resolution Consultants professional judgment)

Qualified sample results are shown in Table 1.

LCS/LCSD Results

The LCS and/or LCSD %Rs and/or RPDs were reviewed for conformance with the QC acceptance criteria.

Nonconformances are summarized in Attachment A in Table A-3. Data qualification on the basis of LCS/LCSD %Rs and/or RPDs was as follows:

Actions: (Based on NFG 2008 for SVOCs and NAVFAC PACDIV DV SOP, except as noted)

Criteria	Action**	
	Detected Results	**Nondetected Results**
%R or RPD > upper limit (UL)	J	No qualification
0%[1] < %R < lower limit (LL)	J	UJ[2]
%R = 0%[1]	J	R[2]

[1]NFG recommends rejecting results below the LL; however, Resolution Consultants professional judgment used qualifications similar to the NFG guidance for MS/MSDs.
[2] The 0% criterion is based on NAVFAC PACDIV DV SOP.

Qualified sample results are shown in Table 1.

Field Duplicate Results

Field duplicate RPDs were reviewed for conformance with the Resolution Consultants QC criteria of ≤50% for solid matrices and ≤30% for aqueous matrices. These criteria apply if both results were greater than two times the sample limit of quantitation (LOQ).

All QC acceptance criteria were met.

Sample Results/Reporting Issues

Consistent with the DoD QSM v4.2, positive results were reported from the primary column unless otherwise indicated.

All compounds detected at concentrations less than the LOQ but greater than the MDL were qualified by the laboratory as estimated (J). This "J" qualifier was retained during data validation

Dual Column Precision

Sample results were reviewed to ensure that the dual column precision RPD criteria were met.

Nonconformances are summarized in Attachment A in Table A-4. Data qualification on the basis of dual column RPDs was as follows:

Criteria	Action
RPD > 40 and no interference	J (report higher result)
RPD > 40 and interference on 1 column	J (report result from column without interference)
RPD > 40 and interference on both columns	J (report lower result)

Actions: (Based on Resolution Consultants professional judgment)

Qualified results are shown in Table 1.

Percent Solids

The percent solids data were reviewed to ensure that NFG-specified criteria were met.

All percent solids criteria were met.

QUALIFICATION ACTIONS

No sample results were qualified as a result of this data review.

ATTACHMENTS

Attachment A: Nonconformance Summary Tables

Attachment B: Qualifier Codes and Explanations

Attachment C: Reason Codes and Explanations

Table 1 - Data Validation Summary of Qualified Data

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SS229 0001-02	SO	NITROGLYCERIN	580	340	680	UG_KG	J	s,l,r
OU09 SB220 0001	SO	NITROGLYCERIN	550	390	790	UG_KG	J	r
OU09 SS211 0001	SO	NITROGLYCERIN	440	400	800	UG_KG	J	r

Attachment A

Non Conformance Summary Tables

Table A-1 Surrogates

Sample ID	Surrogate	% Recovery	Lower Limit	Upper Limit
OU09 SS229 0001-02	1,2-DINITROBENZENE	131	51	115

Table A-2 Matrix Spikes

Sample ID	Compound	MS % Recovery	MSD % Recovery	Lower Limit	Upper Limit	RPD	RPD Limit
OU09 SB218 0305	NITROGLYCERIN	234	120	67	138	62	30

Table A-3 Lab Control Samples

LCS ID	Compound	LCS % Recovery	LCSD % Recovery	Lower Limit	Upper Limit	RPD	RPD Limit	Associated Samples
WG137206-2	NITROGLYCERIN	141	121	67	138	15	30	OU09 SS229 0001-02

Table A-4 Dual Column RPD

Lab Sample ID	Client ID	Analyte	Column	RT	Concentration	RPD
SG9759-42	OU09 SB220 0001	Nitroglycerin	A	20.22	549	
			B	20.37	323	51.8
SG9759-47	OU09 SS211 0001	Nitroglycerin	A	20.21	444	
			B	20.61	228	64.3
SG9708-46	OU09 SS229 0001-02	Nitroglycerin	A	20.53	585	
			B	20.23	368	45.5

Attachment B

Qualifier Codes and Explanations

Qualifier	Explanation
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
JN	The analyte was tentatively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
UJ	The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual quantitation limit necessary to accurately and precisely measure the analyte in the sample.
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

Attachment C

Reason Codes and Explanations

Reason Code	Explanation
be	Equipment blank contamination
bf	Field blank contamination
bl	Laboratory blank contamination
c	Calibration issue
d	Reporting limit raised due to chromatographic interference
fd	Field duplicate RPDs
h	Holding times
i	Internal standard areas
k	Estimated Maximum Possible Concentration (EMPC)
l	LCS recoveries
lc	Labeled compound recovery
ld	Laboratory duplicate RPDs
lp	Laboratory control sample/laboratory control sample duplicate RPDs
m	Matrix spike recovery
md	Matrix spike/matrix spike duplicate RPDs
nb	Negative laboratory blank contamination
p	Chemical preservation issue
r	Dual column RPD
q	Quantitation issue
s	Surrogate recovery
su	Ion suppression
t	Temperature preservation issue
x	Percent solids
y	Serial dilution results
z	ICS results

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Data Validation Report

Project:	MRP Site 1 (OU9) Remedial Investigation, NAVSTA Newport, Rhode Island CTO WE06
Laboratory:	Katahdin Analytical Services, Scarborough, Maine
Service Request:	CARR-2
Analyses/Method:	EPA SW-846 Methods 6010C, 6020A, 7471B for TAL Metals
Validation Level:	Limited
Resolution Consultants Project Number:	60250336 SA.DV

Prepared by:	Kristin Rutherford/Resolution Consultants	Completed on: 02/04/2014
Reviewed by:	Waverly Braunstein/Resolution Consultants	File Name: CARR-2_SO_Metals_DVRpt

SUMMARY

The samples listed below were collected by Resolution Consultants from MRP Site 1 (OU9), NAVSTA Newport, Rhode Island. on December 3 and 4, 2013.

Sample ID	Matrix/Sample Type
OU09 SB207 0001	Soil
OU09 SB207 0102	Soil
OU09 SB207 0305	Soil
OU09 SB207 0709	Soil
OU09 SBMW11 0406	Soil

The data have been validated in accordance with the project-specific Sampling and Analysis Plan, *Sampling and Analysis Plan, Former Carr Point Shooting Range (MRP Site 1, OU9), Naval Station (NAVSTA) Newport, Rhode Island, Final* (Naval Facilities Engineering Command, Mid-Atlantic, 2013) and the following references:

- *DoD Quality Systems Manual (QMS) for Environmental Laboratories, version 4.2* (DoD EDQW, 2010);
- *USEPA Region 1, EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses* (December 1996);
- *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review* (January 2010);
- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW846, Method 6010C, Inductively Coupled Plasma-Atomic Emission Spectrometry* (USEPA, 1996);
- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW846, Method 6020A, Inductively Coupled Plasma-Mass Spectrometry* (USEPA, 1996);
- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW846, Method 7471B, Mercury in Solid or Semisolid Waste (Manual Cold-Vapor Technique)* (USEPA, 1996);
- laboratory quality control (QC) limits, as applicable.

The USEPA Region 1 and National Data Validation Functional Guidelines were modified to accommodate the non-CLP methodologies. In the absence of method-specific direction for validation, Resolution Consultants professional judgment was used as appropriate.

REVIEW ELEMENTS

The data were evaluated based on the following parameters (where applicable to the method):

✓	Data completeness (chain-of-custody (COC)/sample integrity
✓	Holding times and sample preservation
✓	ICP/MS Instrument tuning
✗	Initial calibration/continuing calibration verification
✗	Laboratory blanks/equipment blanks
✓	ICP interference check standards
NA	Matrix spike (MS) and/or matrix spike duplicate (MSD) results
NA	Laboratory duplicate results
✓	Laboratory control sample (LCS)/laboratory control sample duplicate (LCSD) results
✗	Field duplicates
NA	ICP/ICPMS serial dilution results
✓	ICP/MS internal standard performance
✓	Sample results/reporting issues

The symbol (✓) indicates that no validation qualifiers were applied based on this parameter. NA indicates that the parameter was not included as part of this data set or was not applicable to this validation and therefore not reviewed. The symbol (✗) indicates that a quality control (QC) nonconformance resulted in the qualification of data. Any QC nonconformance that resulted in the qualification of data is discussed below. In addition, nonconformances or other issues that were noted during validation, but did not result in qualification of data, may be discussed for informational purposes only.

The data appear valid as reported and may be used for decision making purposes. Selected data points were estimated, negated, and/or rejected due to nonconformances of certain QC criteria (see discussion below). Qualified sample results are presented in Table 1.

RESULTS

<u>Data Completeness</u>

The data package was reviewed and found to meet acceptance criteria for completeness:

- The COCs were reviewed for completeness of information relevant to the samples and requested analyses, and for signatures indicating transfer of sample custody.
- The laboratory sample login sheet(s) were reviewed for issues potentially affecting sample integrity, including the condition of sample containers upon receipt at the laboratory.
- Completeness of analyses was verified by comparing the reported results to the COC requests.

Initial Calibration/Continuing Calibration Verification

Calibration data were reviewed for conformance with the QC acceptance criteria to ensure that:

- all criteria were met for the calibration curves
- the initial calibration verification (ICV) percent recovery (%R) criteria were met;
- the continuing calibration verification standard (CCV) method percent difference (%Ds) were met; and
- the low level check standards (CRI or CRA) %R criteria were met.

Nonconformances are summarized in Attachment A in Table A-1. Data qualification to the analytes associated with the specific ICV, CCV and/or CRI/CRA was as follows:

ICV/CCV Nonconformances:

Qualification based on ICV/CCV	**%R of Analyte in the ICV/CCV and Recommended Actions**				
ICP-AES and ICP-MS Metals (ICV/CCV) and Mercury (ICV)	**< 75%**	**75 to 89%**	**111 to 125%**	**126 to 160%**	**> 160%**
Mercury (CCV)	**< 65%**	**65 to 79%**	**121 to 135%**	**136 to 170%**	**> 170%**
Detected Results	J- or R	J-	J+ **[1]**	J+ or R	R
Nondetects	R	UJ	Accept	Accept	Accept

Qualified sample results are shown in Table 1.

CRI/CRA Nonconformances:

Qualification based on CRI/CRA	**%R of Analyte in the CRI/CRA and Recommended Actions**			
All Analytes	**< 50%**	**50 to 79%**	**121 to 180%**	**> 180%**
Detected Results > 2x the CRI/CRA	J- **[1]**	Accept	Accept	R
Detected Results < 2x the CRI/CRA	R	J-	J+	R
Nondetects	R	UJ	Accept	Accept

[1] A "J" is the recommended qualifier in the NFGs; however, Resolution Consultants will indicate bias in these instances.

Qualified sample results are shown in Table 1.

Laboratory Blanks/Equipment Blanks

Laboratory method blanks and equipment rinsate blanks were evaluated as to whether there were contaminants detected above the method detection limit (MDL). Data validation qualifications for individual samples are based on the maximum contaminant concentration detected in all associated blanks.

Method and equipment rinsate results were reviewed for conformance with the QC acceptance criteria. Detected results in blanks are not discussed in this data validation report if the associated results were nondetect or if qualification of sample results was not required.

Nonconformances are summarized in Attachment A in Tables A-2a and A-2b. Sample results were qualified as follows:

Blank Type	Blank Result	Sample Result	Action for Samples
PB / EB/ FB (Positive)	> LOQ	≥IDL/MDL but ≤ LOQ	Qualify as nondetect (U) at the LOQ
		>LOQ but < 10x Blank Result	Qualify results as unusable
		≥10x Blank Result	No action
	≥IDL/MDL but ≤LOQ	Nondetect	No action
		≥IDL/MDL but ≤LOQ	Qualify as nondetect (U) at the LOQ
		> LOQ	Use Resolution Consultants professional judgment (see below [1])
PB (Negative)	< (-LOQ)	< 10x LOQ	Qualify positive results <10x LOQ as estimated (J) and nondetects as estimated (UJ)
		≥10x LOQ	No action

[1] Establish an action level (AL) at 5x the blank contamination. If sample result is <AL, qualify the reported result with a U.

Qualified sample results are shown in Table 1.

Field Duplicate Results

Field duplicate RPDs were reviewed for conformance with the Resolution Consultants QC acceptance criterion of ≤50% for solid matrices and ≤30% for aqueous matrices. This criterion applies if both results were greater than 5 times the limit of quantitation (LOQ).

There were no field duplicates reported in this SDG. Field duplicate pair OU09 SS224 0001 and FDSS12061301 (collected 12/6/13 and reported in SDG CARR-6) were associated with the soil samples in this SDG.

Nonconformances are summarized in Attachment A in Table A-3. Data qualification on the basis of field duplicate RPDs was as follows:

Actions: (Based on Resolution Consultants professional judgment)

Criteria	RPD	Action	
		Detected	**Nondetected**
Sample and duplicate are nondetect results	Not calculable (NC)	No qualification	No qualification
Sample and duplicate results <SLOQ	Not applicable	No qualification	No qualification
Sample and duplicate results ≥5xSLOQ	>30% Aqueous >50% All other sample types	J	Not Applicable
Sample and duplicate results are >SLOQ and <5xSLOQ	>60% Aqueous >100% All other sample types	J	Not Applicable
If sample or duplicate result is =SLOQ and the other is not detected	NC	J	UJ
If sample or duplicate result is <SLOQ and the other is not detected	NC	No qualification	No qualification

Qualified sample results are summarized in Table 1.

Sample Results/Reporting Issues

All analytes detected at concentrations less than the limit of quantitation (LOQ) but greater than the method detection limit (MDL) were qualified by the laboratory as estimated (J). This "J" qualifier was retained during data validation.

Resolution Consultants professional judgment was used to qualify sample results with percent solids that were <30%. All criteria were met.

QUALIFICATION ACTIONS

Sample results qualified as a result of validation actions are summarized in Table 1. All actions are described above.

ATTACHMENTS

Attachment A: Nonconformance Summary Tables

Attachment B: Qualifier Codes and Explanations

Attachment C: Reason Codes and Explanations

Table 1 - Data Validation Summary of Qualified Data

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SB207 0001	SO	IRON	48300	44	54	MG_KG	J-	c
OU09 SB207 0001	SO	SODIUM	110	110	110	MG_KG	U	be
OU09 SB207 0001	SO	ANTIMONY	0.36	0.054	0.11	MG_KG	J	fd
OU09 SB207 0001	SO	ARSENIC	19.8	0.44	0.54	MG_KG	J	fd
OU09 SB207 0001	SO	COPPER	34.7	0.22	0.33	MG_KG	J	fd
OU09 SB207 0001	SO	LEAD	25.9	0.054	0.11	MG_KG	J	fd
OU09 SB207 0001	SO	SILVER	0.06	0.044	0.11	MG_KG	J	fd
OU09 SB207 0102	SO	IRON	30900	31	39	MG_KG	J-	c
OU09 SB207 0102	SO	SODIUM	78	78	78	MG_KG	U	be
OU09 SB207 0102	SO	ANTIMONY	0.15	0.039	0.078	MG_KG	J	fd
OU09 SB207 0102	SO	ARSENIC	13.4	0.31	0.39	MG_KG	J	fd
OU09 SB207 0102	SO	COPPER	36.1	0.16	0.23	MG_KG	J	fd
OU09 SB207 0102	SO	LEAD	14.2	0.039	0.078	MG_KG	J	fd
OU09 SB207 0102	SO	SILVER	0.04	0.031	0.078	MG_KG	J	fd
OU09 SB207 0102	SO	MERCURY	0.033	0.033	0.033	MG_KG	U	bl
OU09 SB207 0305	SO	IRON	49000	42	53	MG_KG	J-	c
OU09 SB207 0305	SO	SODIUM	110	110	110	MG_KG	U	be
OU09 SB207 0305	SO	ANTIMONY	0.16	0.053	0.11	MG_KG	J	fd
OU09 SB207 0305	SO	ARSENIC	13.1	0.42	0.53	MG_KG	J	fd
OU09 SB207 0305	SO	COPPER	30.3	0.21	0.32	MG_KG	J	fd
OU09 SB207 0305	SO	LEAD	14.6	0.053	0.11	MG_KG	J	fd
OU09 SB207 0305	SO	SILVER	0.04	0.042	0.11	MG_KG	J	fd
OU09 SB207 0709	SO	IRON	17900	5.8	7.2	MG_KG	J-	c
OU09 SB207 0709	SO	SODIUM	72	72	72	MG_KG	U	be
OU09 SB207 0709	SO	ANTIMONY	0.06	0.036	0.072	MG_KG	J	fd
OU09 SB207 0709	SO	ARSENIC	2.9	0.29	0.36	MG_KG	J	fd
OU09 SB207 0709	SO	CADMIUM	0.072	0.072	0.072	MG_KG	U	be
OU09 SB207 0709	SO	COPPER	13.8	0.14	0.22	MG_KG	J	fd
OU09 SB207 0709	SO	LEAD	7.1	0.036	0.072	MG_KG	J	fd
OU09 SB207 0709	SO	SELENIUM	0.36	0.36	0.36	MG_KG	U	be
OU09 SB207 0709	SO	SILVER	0.02	0.029	0.072	MG_KG	J	fd
OU09 SBMW11 0406	SO	IRON	15500	5.9	7.4	MG_KG	J-	c
OU09 SBMW11 0406	SO	SODIUM	74	74	74	MG_KG	U	be
OU09 SBMW11 0406	SO	ANTIMONY	0.08	0.037	0.074	MG_KG	J	fd
OU09 SBMW11 0406	SO	ARSENIC	4.8	0.29	0.37	MG_KG	J	fd
OU09 SBMW11 0406	SO	CADMIUM	0.074	0.074	0.074	MG_KG	U	be
OU09 SBMW11 0406	SO	COPPER	9.7	0.15	0.22	MG_KG	J	fd
OU09 SBMW11 0406	SO	LEAD	7.1	0.037	0.074	MG_KG	J	fd
OU09 SBMW11 0406	SO	SILVER	0.07	0.029	0.074	MG_KG	J	fd

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SBMW11 0406	SO	MERCURY	0.036	0.036	0.036	MG_KG	U	bl

Attachment A

Non Conformance Summary Tables

Table A-1 Initial Calibration/Continuing Calibration Verification

ICV/CCV/CRI ID	Compound	% Recovery	Lower Limit	Upper Limit	Associated Samples
CCV IGL23A	IRON	89.1	90	110	SG9489-007
CRI JGL27A	IRON	75.8	80	120	SG9542-001, -002, -003, -004

Table A-2a Lab Blanks

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
PBSGL18IMS1	BARIUM	0.072	0.10	0.20	MG_KG	OU09 SBMW11 0406
PBSGL30HGS3	MERCURY	0.005	0.017	0.033	MG_KG	OU09 SB207 0102 OU09 SBMW11 0406
PBSGL18ICS1	ALUMINUM	4.839	10	30	MG_KG	OU09 SBMW11 0406
PBSGL18ICS1	CALCIUM	5.695	8.0	10	MG_KG	OU09 SBMW11 0406
PBSGL18ICS1	IRON	3.438	8.0	10	MG_KG	OU09 SBMW11 0406
PBSGL18ICS1	MAGNESIUM	1.806	8.0	10	MG_KG	OU09 SBMW11 0406
PBSGL18ICS1	SODIUM	6.912	50	100	MG_KG	OU09 SBMW11 0406
PBSGL18IMS1	CHROMIUM, TOTAL	0.105	0.40	0.50	MG_KG	OU09 SBMW11 0406
PBSGL18IMS1	COPPER	0.357	0.20	0.30	MG_KG	OU09 SBMW11 0406
PBSGL18IMS1	LEAD	0.076	0.050	0.10	MG_KG	OU09 SBMW11 0406
PBSGL18IMS1	MANGANESE	0.049	0.10	0.20	MG_KG	OU09 SBMW11 0406
PBSGL18IMS1	NICKEL	0.156	0.12	0.20	MG_KG	OU09 SBMW11 0406
PBSGL18IMS1	ZINC	1.515	0.80	1.0	MG_KG	OU09 SBMW11 0406
PBSGL19ICS1	CALCIUM	2.592	8.0	10	MG_KG	OU09 SB207 0001 OU09 SB207 0102 OU09 SB207 0305 OU09 SB207 0709
PBSGL19ICS1	IRON	2.627	8.0	10	MG_KG	OU09 SB207 0001 OU09 SB207 0102 OU09 SB207 0305 OU09 SB207 0709
PBSGL19ICS1	MAGNESIUM	1.251	8.0	10	MG_KG	OU09 SB207 0001 OU09 SB207 0102 OU09 SB207 0305 OU09 SB207 0709
PBSGL19ICS1	POTASSIUM	7.061	50	100	MG_KG	OU09 SB207 0001 OU09 SB207 0102 OU09 SB207 0305 OU09 SB207 0709
PBSGL19ICS1	SODIUM	6.098	50	100	MG_KG	OU09 SB207 0001 OU09 SB207 0102 OU09 SB207 0305 OU09 SB207 0709

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
PBSGL19IMS1	BARIUM	0.098	0.10	0.20	MG_KG	OU09 SB207 0001 OU09 SB207 0102 OU09 SB207 0305 OU09 SB207 0709
PBSGL19IMS1	COPPER	0.276	0.20	0.30	MG_KG	OU09 SB207 0001 OU09 SB207 0102 OU09 SB207 0305 OU09 SB207 0709
PBSGL19IMS1	LEAD	0.044	0.050	0.10	MG_KG	OU09 SB207 0001 OU09 SB207 0102 OU09 SB207 0305 OU09 SB207 0709
PBSGL19IMS1	MANGANESE	0.098	0.10	0.20	MG_KG	OU09 SB207 0001 OU09 SB207 0102 OU09 SB207 0305 OU09 SB207 0709
PBSGL19IMS1	NICKEL	0.054	0.12	0.20	MG_KG	OU09 SB207 0001 OU09 SB207 0102 OU09 SB207 0305 OU09 SB207 0709
PBSGL19IMS1	ZINC	1.018	0.80	1.0	MG_KG	OU09 SB207 0001 OU09 SB207 0102 OU09 SB207 0305 OU09 SB207 0709
PBSGL19IMS1	CHROMIUM, TOTAL	0.126	0.40	0.50	MG_KG	OU09 SB207 0001 OU09 SB207 0102 OU09 SB207 0305 OU09 SB207 0709

Table A-2b - Field Blanks

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
RBSB12061301	ALUMINUM	71.9	100	300	UG_L	SG9542-004, SG9489-007
RBSB12061301	CALCIUM	190	80	100	UG_L	SG9542-004, SG9489-007
RBSB12061301	IRON	686	80	100	UG_L	SG9542-004, SG9489-007
RBSB12061301	MAGNESIUM	67.8	80	20	UG_L	SG9542-004, SG9489-007
RBSB12061301	POTASSIUM	99.2	500	1000	UG_L	SG9542-004, SG9489-007
RBSB12061301	SODIUM	352	500	1000	UG_L	SG9542-004, SG9489-007
RBSB12061301	ANTIMONY	0.11	0.50	1.0	UG_L	SG9542-004, SG9489-007
RBSB12061301	BARIUM	1.2	1.0	2.0	UG_L	SG9542-004, SG9489-007
RBSB12061301	CADMIUM	0.45	0.20	1.0	UG_L	SG9542-004, SG9489-007
RBSB12061301	CHROMIUM, TOTAL	3.6	4.0	5.0	UG_L	SG9542-004, SG9489-007
RBSB12061301	COPPER	7.1	2.0	3.0	UG_L	SG9542-004, SG9489-007
RBSB12061301	LEAD	0.60	0.50	1.0	UG_L	SG9542-004, SG9489-007
RBSB12061301	MANGANESE	6.3	1.0	25	UG_L	SG9542-004, SG9489-007
RBSB12061301	NICKEL	1.5	1.2	2.0	UG_L	SG9542-004, SG9489-007
RBSB12061301	SELENIUM	0.62	3.0	5.0	UG_L	SG9542-004, SG9489-007

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
RBSB12061301	VANADIUM	1.1	4.0	5.0	UG_L	SG9542-004, SG9489-007
RBSB12061301	ZINC	7.7	8.0	10	UG_L	SG9542-004, SG9489-007
RBSB121113 04	CALCIUM	200	80	100	UG_L	SG9542-001, SG9542-002, SG9542-003
RBSB121113 04	IRON	16.0	80	100	UG_L	SG9542-001, SG9542-002, SG9542-003
RBSB121113 04	MAGNESIUM	45.2	80	100	UG_L	SG9542-001, SG9542-002, SG9542-003
RBSB121113 04	SODIUM	542	500	1000	UG_L	SG9542-001, SG9542-002, SG9542-003
RBSB121113 04	ANTIMONY	0.05	0.50	1.0	UG_L	SG9542-001, SG9542-002, SG9542-003
RBSB121113 04	BARIUM	0.94	1.0	2.0	UG_L	SG9542-001, SG9542-002, SG9542-003
RBSB121113 04	CADMIUM	0.07	0.20	1.0	UG_L	SG9542-001, SG9542-002, SG9542-003
RBSB121113 04	CHROMIUM, TOTAL	0.74	4.0	5.0	UG_L	SG9542-001, SG9542-002, SG9542-003
RBSB121113 04	COBALT	0.11	0.30	1.0	UG_L	SG9542-001, SG9542-002, SG9542-003
RBSB121113 04	COPPER	1.7	2.0	3.0	UG_L	SG9542-001, SG9542-002, SG9542-003
RBSB121113 04	LEAD	0.52	0.50	1.0	UG_L	SG9542-001, SG9542-002, SG9542-003
RBSB121113 04	MANGANESE	1.6	1.0	2.0	UG_L	SG9542-001, SG9542-002, SG9542-003
RBSB121113 04	NICKEL	2.5	1.2	2.0	UG_L	SG9542-001, SG9542-002, SG9542-003
RBSB121113 04	VANADIUM	1.4	4.0	5.0	UG_L	SG9542-001, SG9542-002, SG9542-003
RBSB121113 04	ZINC	6.1	8.0	10	UG_L	SG9542-001, SG9542-002, SG9542-003

Table A-3 Field Duplicates

Sample ID	Duplicate ID	Compound	Sample Result	Qual	Duplicate Result	Qual	LOD	LOQ	Units	%RPD
OU09 SS224 0001	FDSS12061301	ANTIMONY	2.4		189		0.042	0.085	MG_KG	195
OU09 SS224 0001	FDSS12061301	ARSENIC	8.3		48.9		0.34	0.42	MG_KG	142
OU09 SS224 0001	FDSS12061301	COPPER	58.5		159		0.17	0.26	MG_KG	92.4
OU09 SS224 0001	FDSS12061301	LEAD	417		10900		0.042	0.085	MG_KG	185
OU09 SS224 0001	FDSS12061301	SILVER	0.04	J	0.62		0.034	0.085	MG_KG	176

Attachment B

Qualifier Codes and Explanations

Qualifier	Explanation
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
UJ	The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual quantitation limit necessary to accurately and precisely measure the analyte in the sample.
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

Attachment C

Reason Codes and Explanations

Reason Code	Explanation
be	Equipment blank contamination
bf	Field blank contamination
bl	Laboratory blank contamination
c	Calibration issue
d	Reporting limit raised due to chromatographic interference
fd	Field duplicate RPDs
h	Holding times
i	Internal standard areas
k	Estimated Maximum Possible Concentration (EMPC)
l	LCS recoveries
lc	Labeled compound recovery
ld	Laboratory duplicate RPDs
lp	Laboratory control sample/laboratory control sample duplicate RPDs
m	Matrix spike recovery
md	Matrix spike/matrix spike duplicate RPDs
nb	Negative laboratory blank contamination
p	Chemical preservation issue
r	Dual column RPD
q	Quantitation issue
s	Surrogate recovery
su	Ion suppression
t	Temperature preservation issue
x	Percent solids
y	Serial dilution results
z	ICS results

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Data Validation Report

Project:	MRP Site 1 (OU9) Remedial Investigation, NAVSTA Newport, Rhode Island CTO WE06	
Laboratory:	Katahdin Analytical Services, Scarborough, Maine	
Service Request:	CARR-6	
Analyses/Method:	EPA SW-846 Methods 6010C, 6020A, 7471B for TAL Metals	
Validation Level:	Limited	
Resolution Consultants Project Number:	60250336 SA.DV	
Prepared by:	Kristin Rutherford/Resolution Consultants	Completed on: 02/05/2014
Reviewed by:	Constance Lapite/Resolution Consultants	File Name: CARR-6_SO_Metals

SUMMARY

The samples listed below were collected by Resolution Consultants from MRP Site 1 (OU9), NAVSTA Newport, Rhode Island on December 5 and 6, 2013.

Sample ID	Matrix/Sample Type
RBSB12061301	Equipment blank
RBSS12061302	Equipment blank
FDSS12061301	Field Duplicate of OU09 SS224 0001
OU09 SS210 0012	Soil
OU09 SS224 0001	Soil
OU09 SS225 0001	Soil
OU09 SS226 0001	Soil
OU09 SS227 0001	Soil
OU09 SS301 0001	Soil

The data have been validated in accordance with the project-specific Sampling and Analysis Plan, *Sampling and Analysis Plan, Former Carr Point Shooting Range (MRP Site 1, OU9), Naval Station (NAVSTA) Newport, Rhode Island, Final* (Naval Facilities Engineering Command, Mid-Atlantic, 2013) and the following references:

- *DoD Quality Systems Manual (QMS) for Environmental Laboratories, version 4.2* (DoD EDQW, 2010);
- *USEPA Region 1, EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses* (December 1996);
- *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review* (January 2010);
- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW846, Method 6010C, Inductively Coupled Plasma-Atomic Emission Spectrometry* (USEPA, 1996);
- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW846, Method 6020A, Inductively Coupled Plasma-Mass Spectrometry* (USEPA, 1996);

- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW846, Method 7471B, Mercury in Solid or Semisolid Waste (Manual Cold-Vapor Technique)* (USEPA, 1996);
- laboratory quality control (QC) limits, as applicable.

The USEPA Region 1 and National Data Validation Functional Guidelines were modified to accommodate the non-CLP methodologies. In the absence of method-specific direction for validation, Resolution Consultants professional judgment was used as appropriate.

REVIEW ELEMENTS

The data were evaluated based on the following parameters (where applicable to the method):

✓	Data completeness (chain-of-custody (COC)/sample integrity
✓	Holding times and sample preservation
✓	ICP/MS Instrument tuning
✗	Initial calibration/continuing calibration verification
✗	Laboratory blanks/equipment blanks
✓	ICP interference check standards
✗	Matrix spike (MS) and/or matrix spike duplicate (MSD) results
NA	Laboratory duplicate results
✓	Laboratory control sample (LCS)/laboratory control sample duplicate (LCSD) results
✗	Field duplicates
✓	ICP/ICPMS serial dilution results
✓	ICP/MS internal standard performance
✓	Sample results/reporting issues

The symbol (✓) indicates that no validation qualifiers were applied based on this parameter. NA indicates that the parameter was not included as part of this data set or was not applicable to this validation and therefore not reviewed. The symbol (✗) indicates that a quality control (QC) nonconformance resulted in the qualification of data. Any QC nonconformance that resulted in the qualification of data is discussed below. In addition, nonconformances or other issues that were noted during validation, but did not result in qualification of data, may be discussed for informational purposes only.

The data appear valid as reported and may be used for decision making purposes. Selected data points were estimated, negated, and/or rejected due to nonconformances of certain QC criteria (see discussion below). Qualified sample results are presented in Table 1.

RESULTS

<u>Data Completeness</u>

The data package was reviewed and found to meet acceptance criteria for completeness:

- The COCs were reviewed for completeness of information relevant to the samples and requested analyses, and for signatures indicating transfer of sample custody.
- The laboratory sample login sheet(s) were reviewed for issues potentially affecting sample integrity, including the condition of sample containers upon receipt at the laboratory.

- Completeness of analyses was verified by comparing the reported results to the COC requests.

Holding Times/Sample Preservation

Sample preservation and preparation/analysis holding times were reviewed for conformance with the QC acceptance criteria.

The QC acceptance criteria were met.

ICP/MS Instrument Tuning

ICP/MS tuning results were reviewed for conformance with the QC acceptance criteria to ensure that:

- the proper tuning solution was used with elements representing all of the mass regions of interest;
- the tunings were performed at the beginning of each analysis and prior to calibration;
- the tuning solution was analyzed at least 4 times as required by the method;
- the mass calibration was within 0.1 amu of the true value for all masses within the region of interest;
- the resolution was verified to be <0.9 amu full width at 10% peak height; and
- the %RSD was ≤ 5% for the analytes contained in the tuning solution.

The QC acceptance criteria were met.

Initial Calibration/Continuing Calibration Verification

Calibration data were reviewed for conformance with the QC acceptance criteria to ensure that:

- all criteria were met for the calibration curves
- the initial calibration verification (ICV) percent recovery (%R) criteria were met;
- the continuing calibration verification standard (CCV) method percent difference (%Ds) were met; and
- the low level check standards (CRI or CRA) %R criteria were met.

Nonconformances are summarized in Attachment A in Table A-1. Data qualification to the analytes associated with the specific ICV, CCV and/or CRI/CRA was as follows:

ICV/CCV Nonconformances:

Qualification based on ICV/CCV	**%R of Analyte in the ICV/CCV and Recommended Actions**				
ICP-AES and ICP-MS Metals (ICV/CCV) and Mercury (ICV)	**< 75%**	**75 to 89%**	**111 to 125%**	**126 to 160%**	**> 160%**
Mercury (CCV)	**< 65%**	**65 to 79%**	**121 to 135%**	**136 to 170%**	**> 170%**
Detected Results	J- or R	J-	J+ **[1]**	J+ or R	R
Nondetects	R	UJ	Accept	Accept	Accept

Qualified sample results are shown in Table 1.

CRI/CRA Nonconformances:

Qualification based on CRI/CRA	%R of Analyte in the CRI/CRA and Recommended Actions			
All Analytes	**< 50%**	**50 to 79%**	**121 to 180%**	**> 180%**
Detected Results > 2x the CRI/CRA	J- **[1]**	Accept	Accept	R
Detected Results < 2x the CRI/CRA	R	J-	J+	R
Nondetects	R	UJ	Accept	Accept

[1] A "J" is the recommended qualifier in the NFGs; however, Resolution Consultants will indicate bias in these instances.

Qualified sample results are shown in Table 1.

Laboratory Blanks/Equipment Blanks

Laboratory method blanks and equipment rinsate blanks were evaluated as to whether there were contaminants detected above the method detection limit (MDL). Data validation qualifications for individual samples are based on the maximum contaminant concentration detected in all associated blanks.

Method and equipment rinsate results were reviewed for conformance with the QC acceptance criteria. Detected results in blanks are not discussed in this data validation report if the associated results were nondetect or if qualification of sample results was not required.

Nonconformances are summarized in Attachment A in Tables A-2a and A-2b. Sample results were qualified as follows:

Blank Type	Blank Result	Sample Result	Action for Samples
PB / EB/ FB (Positive)	> LOQ	≥IDL/MDL but ≤ LOQ	Qualify as nondetect (U) at the LOQ
		>LOQ but < 10x Blank Result	Qualify results as unusable
		≥10x Blank Result	No action
	≥IDL/MDL but ≤LOQ	Nondetect	No action
		≥IDL/MDL but ≤LOQ	Qualify as nondetect (U) at the LOQ
		> LOQ	Use Resolution Consultants professional judgment (see below [1])
PB (Negative)	< (-LOQ)	< 10x LOQ	Qualify positive results <10x LOQ as estimated (J) and nondetects as estimated (UJ)
		≥10x LOQ	No action

[1] Establish an action level (AL) at 5x the blank contamination. If sample result is <AL, qualify the reported result with a U.

Qualified sample results are shown in Table 1.

ICP Interference Check Standards

The ICP interference check standards (ICSA, ICSAB) were reviewed for conformance.

All criteria were met for the ICSA and ICSAB.

MS Results

The MS and/or MSD %Rs and/or RPDs were reviewed for conformance with the QC acceptance criteria.

Nonconformances are summarized in Attachment A in Table A-3. Data qualification on the basis of MS and/or MSD nonconformances was as follows:

Qualify Results	%R < 30	80 > %R ≥ 30	%R >120	RPD>20
Detected results	J	J	J	J
Nondetects	R	UJ	Accept	UJ

Notes: MS actions apply to all samples of the same matrix. This qualification will also be applied to the results of all samples within a given area of the site, if deemed appropriate.

1. If the sample result (SR) > 4x the spike concentration (S), no action is taken.
2. If any analyte does not meet the %R criteria and a post digestion spike (PDS) analysis was performed, use professional judgment to assess the results. Refer to the National Functional Guidelines (NFG) 2010 for recommended actions.
3. If either the MS or MSD does not meet %R criteria, qualify all associated samples.

No qualifications were required for antimony, arsenic, calcium, copper, iron, lead, manganese, and zinc since the sample results were greater than 4X the spike concentration.

Qualified sample results are shown in Table 1.

LCS

The LCS %Rs were reviewed for conformance with the QC acceptance criteria.

The LCS %Rs were within the QC acceptance criteria.

Field Duplicate Results

Field duplicate RPDs were reviewed for conformance with the Resolution Consultants QC acceptance criterion of ≤50% for solid matrices and ≤30% for aqueous matrices. This criterion applies if both results were greater than 5 times the limit of quantitation (LOQ).

Nonconformances are summarized in Attachment A in Table A-4. Data qualification on the basis of field duplicate RPDs was as follows:

Actions: (Based on Resolution Consultants professional judgment)

Criteria	RPD	Action	
		Detected	Nondetected
Sample and duplicate are nondetect results	Not calculable (NC)	No qualification	No qualification
Sample and duplicate results <SLOQ	Not applicable	No qualification	No qualification
Sample and duplicate results ≥5xSLOQ	>30% Aqueous >50% All other sample types	J	Not Applicable
Sample and duplicate results are	>60% Aqueous	J	Not Applicable

Criteria	RPD	Action	
		Detected	Nondetected
>SLOQ and <5xSLOQ	>100% All other sample types		
If sample or duplicate result is =SLOQ and the other is not detected	NC	J	UJ
If sample or duplicate result is <SLOQ and the other is not detected	NC	No qualification	No qualification

Qualified sample results are summarized in Table 1.

ICP/ICPMS Serial Dilution Results

The serial dilution percent differences (%Ds) were reviewed for conformance with the QC acceptance criteria.

The serial dilution %Ds were within the QC acceptance criteria.

ICP/MS Internal Standard Performance

ICP/MS Internal standard performance was reviewed for conformance and was within the QC acceptance criteria.

Sample Results/Reporting Issues

All analytes detected at concentrations less than the limit of quantitation (LOQ) but greater than the method detection limit (MDL) were qualified by the laboratory as estimated (J). This "J" qualifier was retained during data validation.

Resolution Consultants professional judgment was used to qualify sample results with percent solids that were <30%. All criteria were met.

QUALIFICATION ACTIONS

Sample results qualified as a result of validation actions are summarized in Table 1. All actions are described above.

ATTACHMENTS

Attachment A: Nonconformance Summary Tables

Attachment B: Qualifier Codes and Explanations

Attachment C: Reason Codes and Explanations

Table 1 - Data Validation Summary of Qualified Data

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
FDSS12061301	SO	POTASSIUM	340	40	79	MG_KG	J-	m
FDSS12061301	SO	SODIUM	612	40	79	MG_KG	J-	m
FDSS12061301	SO	ANTIMONY	189	0.040	0.079	MG_KG	J	fd
FDSS12061301	SO	ARSENIC	48.9	0.32	0.40	MG_KG	J	fd
FDSS12061301	SO	BARIUM	9.5	0.079	0.16	MG_KG	J-	m
FDSS12061301	SO	BERYLLIUM	0.24	0.016	0.079	MG_KG	J-	m
FDSS12061301	SO	CADMIUM	0.14	0.14	0.079	MG_KG	U	be
FDSS12061301	SO	CHROMIUM, TOTAL	18.0	0.32	0.40	MG_KG	J-	m,md
FDSS12061301	SO	COBALT	12.3	0.024	0.079	MG_KG	J-	m
FDSS12061301	SO	COPPER	159	0.16	0.24	MG_KG	J	fd
FDSS12061301	SO	LEAD	10900	1.6	3.2	MG_KG	J	fd
FDSS12061301	SO	NICKEL	27.2	0.095	0.16	MG_KG	J-	m
FDSS12061301	SO	SELENIUM	0.40	0.40	0.40	MG_KG	UJ	bl,m
FDSS12061301	SO	SILVER	0.62	0.032	0.079	MG_KG	J	m,fd
FDSS12061301	SO	VANADIUM	15.3	0.32	0.40	MG_KG	J-	m
OU09 SS210 0012	SO	POTASSIUM	650	50	100	MG_KG	J-	m
OU09 SS210 0012	SO	SODIUM	143	143	100	MG_KG	UJ	be,m
OU09 SS210 0012	SO	ANTIMONY	0.70	0.050	0.10	MG_KG	J	fd
OU09 SS210 0012	SO	ARSENIC	10	0.40	0.50	MG_KG	J	fd
OU09 SS210 0012	SO	BARIUM	15.0	0.10	0.20	MG_KG	J-	m
OU09 SS210 0012	SO	BERYLLIUM	0.38	0.020	0.10	MG_KG	J-	m
OU09 SS210 0012	SO	CADMIUM	0.11	0.020	0.10	MG_KG		
OU09 SS210 0012	SO	CHROMIUM, TOTAL	12.8	0.40	0.50	MG_KG	J-	m,md
OU09 SS210 0012	SO	COBALT	15.0	0.030	0.10	MG_KG	J-	m
OU09 SS210 0012	SO	COPPER	25.3	0.20	0.30	MG_KG	J	fd
OU09 SS210 0012	SO	LEAD	99.2	0.050	0.10	MG_KG	J	fd
OU09 SS210 0012	SO	NICKEL	26.9	0.12	0.20	MG_KG	J-	m
OU09 SS210 0012	SO	SELENIUM	0.50	0.50	0.50	MG_KG	UJ	bl,m
OU09 SS210 0012	SO	SILVER	0.04	0.040	0.10	MG_KG	J	m,fd
OU09 SS210 0012	SO	VANADIUM	17.3	0.40	0.50	MG_KG	J-	m
OU09 SS224 0001	SO	POTASSIUM	376	42	85	MG_KG	J-	m
OU09 SS224 0001	SO	SODIUM	585	42	85	MG_KG	J-	m
OU09 SS224 0001	SO	ANTIMONY	2.4	0.042	0.085	MG_KG	J	fd
OU09 SS224 0001	SO	ARSENIC	8.3	0.34	0.42	MG_KG	J	fd
OU09 SS224 0001	SO	BARIUM	13.6	0.085	0.17	MG_KG	J-	m
OU09 SS224 0001	SO	BERYLLIUM	0.27	0.017	0.085	MG_KG	J-	m
OU09 SS224 0001	SO	CADMIUM	0.12	0.12	0.085	MG_KG	U	be
OU09 SS224 0001	SO	CHROMIUM, TOTAL	12.4	0.34	0.42	MG_KG	J-	m,md
OU09 SS224 0001	SO	COBALT	11.2	0.026	0.085	MG_KG	J-	m

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SS224 0001	SO	COPPER	58.5	0.17	0.26	MG_KG	J	fd
OU09 SS224 0001	SO	LEAD	417	0.042	0.085	MG_KG	J	fd
OU09 SS224 0001	SO	NICKEL	26.1	0.10	0.17	MG_KG	J-	m
OU09 SS224 0001	SO	SELENIUM	0.42	0.42	0.42	MG_KG	UJ	bl,m
OU09 SS224 0001	SO	SILVER	0.04	0.034	0.085	MG_KG	J	m,fd
OU09 SS224 0001	SO	VANADIUM	15.1	0.34	0.42	MG_KG	J-	m
OU09 SS225 0001	SO	POTASSIUM	379	41	82	MG_KG	J-	m
OU09 SS225 0001	SO	SODIUM	1860	41	82	MG_KG	J-	m
OU09 SS225 0001	SO	ANTIMONY	0.63	0.041	0.082	MG_KG	J	fd
OU09 SS225 0001	SO	ARSENIC	7.6	0.33	0.41	MG_KG	J	fd
OU09 SS225 0001	SO	BARIUM	8.5	0.082	0.16	MG_KG	J-	m
OU09 SS225 0001	SO	BERYLLIUM	0.24	0.016	0.082	MG_KG	J-	m
OU09 SS225 0001	SO	CADMIUM	0.13	0.13	0.082	MG_KG	U	be
OU09 SS225 0001	SO	CHROMIUM, TOTAL	12.7	0.33	0.41	MG_KG	J-	m,md
OU09 SS225 0001	SO	COBALT	9.3	0.025	0.082	MG_KG	J-	m
OU09 SS225 0001	SO	COPPER	51.1	0.16	0.25	MG_KG	J	fd
OU09 SS225 0001	SO	LEAD	177	0.041	0.082	MG_KG	J	fd
OU09 SS225 0001	SO	NICKEL	24.9	0.099	0.16	MG_KG	J-	m
OU09 SS225 0001	SO	SELENIUM	0.41	0.41	0.41	MG_KG	UJ	bl,m
OU09 SS225 0001	SO	SILVER	0.03	0.033	0.082	MG_KG	J	m,fd
OU09 SS225 0001	SO	VANADIUM	15.2	0.33	0.41	MG_KG	J-	m
OU09 SS226 0001	SO	POTASSIUM	258	42	84	MG_KG	J-	m
OU09 SS226 0001	SO	SODIUM	316	42	84	MG_KG	J-	m
OU09 SS226 0001	SO	ANTIMONY	0.33	0.042	0.084	MG_KG	J	fd
OU09 SS226 0001	SO	ARSENIC	3.9	0.34	0.42	MG_KG	J	fd
OU09 SS226 0001	SO	BARIUM	6.7	0.084	0.17	MG_KG	J-	m
OU09 SS226 0001	SO	BERYLLIUM	0.23	0.017	0.084	MG_KG	J-	m
OU09 SS226 0001	SO	CADMIUM	0.084	0.084	0.084	MG_KG	U	be
OU09 SS226 0001	SO	CHROMIUM, TOTAL	9.0	0.34	0.42	MG_KG	J-	m,md
OU09 SS226 0001	SO	COBALT	6.6	0.025	0.084	MG_KG	J-	m
OU09 SS226 0001	SO	COPPER	9.9	0.17	0.25	MG_KG	J	fd
OU09 SS226 0001	SO	LEAD	8.2	0.042	0.084	MG_KG	J	fd
OU09 SS226 0001	SO	NICKEL	14.0	0.10	0.17	MG_KG	J-	m
OU09 SS226 0001	SO	SELENIUM	0.42	0.42	0.42	MG_KG	UJ	bl,m
OU09 SS226 0001	SO	SILVER	0.02	0.034	0.084	MG_KG	J	m,fd
OU09 SS226 0001	SO	VANADIUM	12.0	0.34	0.42	MG_KG	J-	m
OU09 SS227 0001	SO	POTASSIUM	302	38	76	MG_KG	J-	m
OU09 SS227 0001	SO	SODIUM	598	38	76	MG_KG	J-	m
OU09 SS227 0001	SO	ANTIMONY	0.26	0.038	0.076	MG_KG	J	fd

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SS227 0001	SO	ARSENIC	5.2	0.31	0.38	MG_KG	J	fd
OU09 SS227 0001	SO	BARIUM	7.4	0.076	0.15	MG_KG	J-	m
OU09 SS227 0001	SO	BERYLLIUM	0.36	0.015	0.076	MG_KG	J-	m
OU09 SS227 0001	SO	CADMIUM	0.076	0.076	0.076	MG_KG	U	be
OU09 SS227 0001	SO	CHROMIUM, TOTAL	8.7	0.31	0.38	MG_KG	J-	m,md
OU09 SS227 0001	SO	COBALT	7.5	0.023	0.076	MG_KG	J-	m
OU09 SS227 0001	SO	COPPER	21.6	0.15	0.23	MG_KG	J	fd
OU09 SS227 0001	SO	LEAD	32.3	0.038	0.076	MG_KG	J	fd
OU09 SS227 0001	SO	NICKEL	16.9	0.092	0.15	MG_KG	J-	m
OU09 SS227 0001	SO	SELENIUM	0.38	0.38	0.38	MG_KG	UJ	bl,m
OU09 SS227 0001	SO	SILVER	0.03	0.031	0.076	MG_KG	J	m,fd
OU09 SS227 0001	SO	VANADIUM	15.6	0.31	0.38	MG_KG	J-	m
OU09 SS301 0001	SO	POTASSIUM	484	44	87	MG_KG	J-	m
OU09 SS301 0001	SO	SODIUM	87	87	87	MG_KG	UJ	be,m
OU09 SS301 0001	SO	ANTIMONY	0.79	0.044	0.087	MG_KG	J	fd
OU09 SS301 0001	SO	ARSENIC	8.3	0.35	0.44	MG_KG	J	fd
OU09 SS301 0001	SO	BARIUM	11.5	0.087	0.17	MG_KG	J-	m
OU09 SS301 0001	SO	BERYLLIUM	0.33	0.017	0.087	MG_KG	J-	m
OU09 SS301 0001	SO	CADMIUM	0.44	0.017	0.087	MG_KG		
OU09 SS301 0001	SO	CHROMIUM, TOTAL	11.5	0.35	0.44	MG_KG	J-	m,md
OU09 SS301 0001	SO	COBALT	13.2	0.026	0.087	MG_KG	J-	m
OU09 SS301 0001	SO	COPPER	32.1	0.17	0.26	MG_KG	J	fd
OU09 SS301 0001	SO	LEAD	48.2	0.044	0.087	MG_KG	J	fd
OU09 SS301 0001	SO	NICKEL	29.0	0.10	0.17	MG_KG	J-	m
OU09 SS301 0001	SO	SELENIUM	0.44	0.44	0.44	MG_KG	UJ	bl,m
OU09 SS301 0001	SO	SILVER	0.04	0.035	0.087	MG_KG	J	m,fd
OU09 SS301 0001	SO	VANADIUM	14.4	0.35	0.44	MG_KG	J-	m
RBSB12061301	WQ	CALCIUM	190	80	100	UG_L	J+	c
RBSB12061301	WQ	IRON	686	80	100	UG_L	J-	c
RBSB12061301	WQ	POTASSIUM	1000	1000	1000	UG_L	U	bl
RBSB12061301	WQ	ANTIMONY	1.0	1.0	1.0	UG_L	U	bl
RBSB12061301	WQ	BARIUM	2.0	2.0	2.0	UG_L	U	bl
RBSB12061301	WQ	CHROMIUM, TOTAL	5.0	5.0	5.0	UG_L	U	bl
RBSB12061301	WQ	COPPER	7.1	7.1	3.0	UG_L	U	bl
RBSB12061301	WQ	LEAD	1.0	1.0	1.0	UG_L	U	bl
RBSB12061301	WQ	MANGANESE	25	25	25	UG_L	U	bl
RBSS12061302	WQ	CALCIUM	106	106	100	UG_L	U	bl
RBSS12061302	WQ	IRON	337	80	100	UG_L	J-	c
RBSS12061302	WQ	POTASSIUM	1000	1000	1000	UG_L	U	bl

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
RBSS12061302	WQ	ANTIMONY	1.0	1.0	1.0	UG_L	U	bl
RBSS12061302	WQ	BARIUM	2.0	2.0	2.0	UG_L	U	bl
RBSS12061302	WQ	CHROMIUM, TOTAL	5.0	5.0	5.0	UG_L	U	bl
RBSS12061302	WQ	COBALT	1.0	1.0	1.0	UG_L	U	bl
RBSS12061302	WQ	COPPER	3.0	3.0	3.0	UG_L	U	bl
RBSS12061302	WQ	LEAD	1.1	1.1	1.0	UG_L	U	bl
RBSS12061302	WQ	MANGANESE	25	25	25	UG_L	U	bl

Attachment A

Non Conformance Summary Tables

Table A-1 Initial Calibration/Continuing Calibration Verification

ICV/CCV/CRI ID	Compound	% Recovery	Lower Limit	Upper Limit	Associated Samples
CCV IGL23A	IRON	89.1	90	110	SG9597-002, -003
CRI IGL19A	CALCIUM	125.1	80	120	SG9597-002, -003

Table A-2a Lab Blanks

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
PBSGL30ICS1	CALCIUM	5.253	8.0	10	MG_KG	FDSS12061301 OU09
PBSGL30ICS1	MAGNESIUM	1.444	8.0	10	MG_KG	SS210 0012 OU09
PBSGL30ICS1	POTASSIUM	-10.030	50	100	MG_KG	SS224 0001 OU09
PBSGL30ICS1	SODIUM	10.000	50	100	MG_KG	SS225 0001 OU09 SS226 0001 OU09 SS227 0001 OU09 SS301 0001
PBSGL30IMS1	BARIUM	0.076	0.10	0.20	MG_KG	FDSS12061301 OU09 SS210 0012 OU09 SS224 0001 OU09 SS225 0001 OU09 SS226 0001 OU09 SS227 0001 OU09 SS301 0001
PBSGL30IMS1	CHROMIUM, TOTAL	0.130	0.40	0.50	MG_KG	
PBSGL30IMS1	COPPER	0.114	0.20	0.30	MG_KG	
PBSGL30IMS1	LEAD	0.016	0.050	0.10	MG_KG	
PBSGL30IMS1	MANGANESE	0.063	0.10	0.20	MG_KG	
PBSGL30IMS1	NICKEL	0.031	0.12	0.20	MG_KG	
PBSGL30IMS1	SELENIUM	0.076	0.30	0.50	MG_KG	
PBSGL30IMS1	ZINC	0.440	0.80	1.0	MG_KG	
PBWGL18ICW2	CALCIUM	22.740	80	100	UG_L	RBSB12061301 RBSS12061302
PBWGL18ICW2	POTASSIUM	78.280	500	1000	UG_L	
PBWGL18IMW2	ANTIMONY	0.054	0.50	1.0	UG_L	
PBWGL18IMW2	BARIUM	0.498	1.0	2.0	UG_L	
PBWGL18IMW2	CHROMIUM, TOTAL	0.542	4.0	5.0	UG_L	
PBWGL18IMW2	COBALT	0.304	0.30	1.0	UG_L	
PBWGL18IMW2	MANGANESE	0.481	1.0	2.0	UG_L	
PBWGL31IMW2	COPPER	2.657	2.0	3.0	UG_L	
PBWGL31IMW2	LEAD	0.500	0.50	1.0	UG_L	
PBWGL18ICW2	CALCIUM	22.740	80	100	UG_L	
PBWGL18ICW2	POTASSIUM	78.280	500	1000	UG_L	
PBWGL18IMW2	ANTIMONY	0.054	0.50	1.0	UG_L	
PBWGL18IMW2	BARIUM	0.498	1.0	2.0	UG_L	
PBWGL18IMW2	CHROMIUM, TOTAL	0.542	4.0	5.0	UG_L	
PBWGL18IMW2	COBALT	0.304	0.30	1.0	UG_L	
PBWGL18IMW2	MANGANESE	0.481	1.0	2.0	UG_L	
PBWGL28HGW2	MERCURY	0.010	0.10	0.20	UG_L	

Table A-2b Field Blanks

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
RBSB12061301	ALUMINUM	71.9	100	300	UG_L	OU09 SS224 0001 OU09 SS225 0001 OU09 SS226 0001 OU09 SS227 0001 OU09 SS301 0001 FDSS12061301
RBSB12061301	CALCIUM	190	80	100	UG_L	
RBSB12061301	IRON	686	80	100	UG_L	
RBSB12061301	MAGNESIUM	67.8	80	20	UG_L	
RBSB12061301	POTASSIUM	99.2	500	1000	UG_L	
RBSB12061301	SODIUM	352	500	1000	UG_L	
RBSB12061301	ANTIMONY	0.11	0.50	1.0	UG_L	
RBSB12061301	BARIUM	1.2	1.0	2.0	UG_L	
RBSB12061301	CADMIUM	0.45	0.20	1.0	UG_L	
RBSB12061301	CHROMIUM, TOTAL	3.6	4.0	5.0	UG_L	
RBSB12061301	COPPER	7.1	2.0	3.0	UG_L	
RBSB12061301	LEAD	0.60	0.50	1.0	UG_L	
RBSB12061301	MANGANESE	6.3	1.0	25	UG_L	
RBSB12061301	NICKEL	1.5	1.2	2.0	UG_L	
RBSB12061301	SELENIUM	0.62	3.0	5.0	UG_L	
RBSB12061301	VANADIUM	1.1	4.0	5.0	UG_L	
RBSB12061301	ZINC	7.7	8.0	10	UG_L	
RBSS12061302	ALUMINUM	124	100	300	UG_L	OU09 SS210 0012
RBSS12061302	CALCIUM	106	80	100	UG_L	
RBSS12061302	IRON	337	80	100	UG_L	
RBSS12061302	MAGNESIUM	41.5	80	20	UG_L	
RBSS12061302	POTASSIUM	119	500	1000	UG_L	
RBSS12061302	SODIUM	314	500	1000	UG_L	
RBSS12061302	ANTIMONY	0.08	0.50	1.0	UG_L	
RBSS12061302	BARIUM	0.80	1.0	2.0	UG_L	
RBSS12061302	CADMIUM	0.06	0.20	1.0	UG_L	
RBSS12061302	CHROMIUM, TOTAL	0.87	4.0	5.0	UG_L	
RBSS12061302	COBALT	0.08	0.30	1.0	UG_L	
RBSS12061302	COPPER	1.4	2.0	3.0	UG_L	
RBSS12061302	LEAD	1.1	0.50	1.0	UG_L	
RBSS12061302	MANGANESE	4.7	1.0	25	UG_L	
RBSS12061302	NICKEL	0.45	1.2	2.0	UG_L	
RBSS12061302	SELENIUM	0.21	3.0	5.0	UG_L	
RBSS12061302	VANADIUM	0.55	4.0	5.0	UG_L	

Table A-3 Matrix Spikes

Sample ID	Compound	MS % Recovery	MSD % Recovery	Lower Limit	Upper Limit	RPD	RPD Limit
FDSS12061301	VANADIUM	97.6	73.4	80	120	16.9	<20
FDSS12061301	ZINC	244.4	-74.3	80	120	66.3	<20
FDSS12061301	CALCIUM	-95.1	277.2	80	120	9.3	<20
FDSS12061301	POTASSIUM	100.0	75.6	80	120	16.2	<20
FDSS12061301	NICKEL	92.8	67.5	80	120	14.9	<20
FDSS12061301	ANTIMONY	-2353.6	-2313.5	80	120	44.2	<20
FDSS12061301	ARSENIC	-391.6	-442	80	120	31.1	<20
FDSS12061301	COBALT	89.8	72.7	80	120	12.6	<20
FDSS12061301	SELENIUM	87.2	74.2	80	120	11.9	<20
FDSS12061301	IRON	6403.3	1550.1	80	120	8.6	<20
FDSS12061301	LEAD	-132584.2	-134781.2	80	120	23.3	<20
FDSS12061301	MANGANESE	98.1	-87.2	80	120	12.6	<20
FDSS12061301	SILVER	74.4	63.4	80	120	10.1	<20
FDSS12061301	SODIUM	105.5	69.7	80	120	17.0	<20
FDSS12061301	BARIUM	89.8	76	80	120	12.3	<20
FDSS12061301	BERYLLIUM	87.7	75.6	80	120	10.5	<20
FDSS12061301	CHROMIUM, TOTAL	66.0	30.2	80	120	20.8	<20
FDSS12061301	COPPER	-353.3	-457.3	80	120	29.0	<20

Table A-4 Field Duplicates

Sample ID	Duplicate ID	Compound	Sample Result	Qual	Duplicate Result	Qual	LOD	LOQ	Units	RPD
OU09 SS224 0001	FDSS12061301	LEAD	417		10900		0.042	0.085	MG_KG	185.3
OU09 SS224 0001	FDSS12061301	SILVER	0.04	J	0.62		0.034	0.085	MG_KG	175.8
OU09 SS224 0001	FDSS12061301	ANTIMONY	2.4		189		0.042	0.085	MG_KG	195
OU09 SS224 0001	FDSS12061301	ARSENIC	8.3		48.9		0.34	0.42	MG_KG	142
OU09 SS224 0001	FDSS12061301	COPPER	58.5		159		0.17	0.26	MG_KG	92.4

Attachment B

Qualifier Codes and Explanations

Qualifier	Explanation
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
UJ	The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual quantitation limit necessary to accurately and precisely measure the analyte in the sample.
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

Attachment C

Reason Codes and Explanations

Reason Code	Explanation
be	Equipment blank contamination
bf	Field blank contamination
bl	Laboratory blank contamination
c	Calibration issue
d	Reporting limit raised due to chromatographic interference
fd	Field duplicate RPDs
h	Holding times
i	Internal standard
k	Estimated Maximum Possible Concentration (EMPC)
l	LCS recoveries
lc	Labeled compound recovery
ld	Laboratory duplicate RPDs
lp	Laboratory control sample/laboratory control sample duplicate RPDs
m	Matrix spike recovery
md	Matrix spike/matrix spike duplicate RPDs
nb	Negative laboratory blank contamination
p	Chemical preservation issue
r	Dual column RPD
q	Quantitation issue
s	Surrogate recovery
su	Ion suppression
t	Temperature preservation issue
x	Percent solids
y	Serial dilution results
z	ICS results

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Data Validation Report

Project:	MRP Site 1 (OU9) Remedial Investigation, NAVSTA Newport, Rhode Island CTO WE06
Laboratory:	Katahdin Analytical Services, Scarborough, Maine
Service Request:	CARR-8
Analyses/Method:	EPA SW-846 Methods 6010C, 6020A, 7471B for TAL Metals
Validation Level:	Limited
Resolution Consultants Project Number:	60250336 SA.DV
Prepared by:	Kristin Rutherford/Resolution Consultants Completed on: 02/06/2014
Reviewed by:	Waverly Braunstein/Resolution Consultants File Name: CARR-8_SO_Metals

SUMMARY

The samples listed below were collected by Resolution Consultants from MRP Site 1 (OU9), NAVSTA Newport, Rhode Island on December 9, 2013.

Sample ID	Matrix/Sample Type
OU09 SB201 0305	Soil
OU09 SB201 1012	Soil
OU09 SB208 0305	Soil
OU09 SB208 0608	Soil
OU09 SB209 0102	Soil
OU09 SB209 0305	Soil
OU09 SB209 1012	Soil
OU09 SB211 0305	Soil
OU09 SB211 1012	Soil
OU09 SB212 0102	Soil
OU09 SB212 0305	Soil
OU09 SB212 0608	Soil
OU09 SB213 0102	Soil
OU09 SB213 0305	Soil
OU09 SB213 0608	Soil
OU09 SB228 0305	Soil
OU09 SB228 0608	Soil
OU09 SS201 0001	Soil
OU09 SS208 0001	Soil
OU09 SS209 0001	Soil

Sample ID	Matrix/Sample Type
OU09 SS211 0001	Soil
OU09 SS212 0001	Soil
OU09 SS213 0001	Soil
OU09 SS228 0001	Soil

The data have been validated in accordance with the project-specific Sampling and Analysis Plan, *Sampling and Analysis Plan, Former Carr Point Shooting Range (MRP Site 1, OU9), Naval Station (NAVSTA) Newport, Rhode Island, Final* (Naval Facilities Engineering Command, Mid-Atlantic, 2013) and the following references:

- *DoD Quality Systems Manual (QMS) for Environmental Laboratories, version 4.2* (DoD EDQW, 2010);
- *USEPA Region 1, EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses* (December 1996);
- *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review* (January 2010);
- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW846, Method 6010C, Inductively Coupled Plasma-Atomic Emission Spectrometry* (USEPA, 1996);
- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW846, Method 6020A, Inductively Coupled Plasma-Mass Spectrometry* (USEPA, 1996);
- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW846, Method 7471B, Mercury in Solid or Semisolid Waste (Manual Cold-Vapor Technique)* (USEPA, 1996);
- laboratory quality control (QC) limits, as applicable.

The USEPA Region 1 and National Data Validation Functional Guidelines were modified to accommodate the non-CLP methodologies. In the absence of method-specific direction for validation, Resolution Consultants professional judgment was used as appropriate.

REVIEW ELEMENTS

The data were evaluated based on the following parameters (where applicable to the method):

✓ Data completeness (chain-of-custody (COC)/sample integrity
✓ Holding times and sample preservation
✓ ICP/MS Instrument tuning
✓ Initial calibration/continuing calibration verification
✗ Laboratory blanks/equipment blanks
✓ ICP interference check standards
✗ Matrix spike (MS) and/or matrix spike duplicate (MSD) results
NA Laboratory duplicate results
✓ Laboratory control sample (LCS)/laboratory control sample duplicate (LCSD) results
✗ Field duplicates
✓ ICP/ICPMS serial dilution results
✓ ICP/MS internal standard performance
✓ Sample results/reporting issues

The symbol (✓) indicates that no validation qualifiers were applied based on this parameter. NA indicates that the parameter was not included as part of this data set or was not applicable to this validation and therefore not reviewed. The symbol (✗) indicates that a quality control (QC) nonconformance resulted in the qualification of data. Any QC nonconformance that resulted in the qualification of data is discussed below. In addition, nonconformances or other issues that were noted during validation, but did not result in qualification of data, may be discussed for informational purposes only.

The data appear valid as reported and may be used for decision making purposes. Selected data points were estimated, negated, and/or rejected due to nonconformances of certain QC criteria (see discussion below). Qualified sample results are presented in Table 1.

RESULTS

Data Completeness

The data package was reviewed and found to meet acceptance criteria for completeness:

- The COCs were reviewed for completeness of information relevant to the samples and requested analyses, and for signatures indicating transfer of sample custody.
- The laboratory sample login sheet(s) were reviewed for issues potentially affecting sample integrity, including the condition of sample containers upon receipt at the laboratory.
- Completeness of analyses was verified by comparing the reported results to the COC requests.

Holding Times/Sample Preservation

Sample preservation and preparation/analysis holding times were reviewed for conformance with the QC acceptance criteria.

The QC acceptance criteria were met.

ICP/MS Instrument Tuning

ICP/MS tuning results were reviewed for conformance with the QC acceptance criteria to ensure that:

- the proper tuning solution was used with elements representing all of the mass regions of interest;
- the tunings were performed at the begining of each analysis and prior to calibration;
- the tuning solution was analyzed at least 4 times as required by the method;
- the mass calibration was within 0.1 amu of the true value for all masses within the region of interest;
- the resolution was verified to be <0.9 amu full width at 10% peak height; and
- the %RSD was $\leq$ 5% for the analytes contained in the tuning solution.

The QC acceptance criteria were met.

Initial Calibration/Continuing Calibration Verification

Calibration data were reviewed for conformance with the QC acceptance criteria to ensure that:

- all criteria were met for the calibration curves
- the initial calibration verification (ICV) percent recovery (%R) criteria were met;
- the continuing calibration verification standard (CCV) method percent difference (%Ds) were met; and
- the low level check standards (CRI or CRA) %R criteria were met.

The QC acceptance criteria were met.

Laboratory Blanks/Equipment Blanks

Laboratory method blanks and equipment rinsate blanks were evaluated as to whether there were contaminants detected above the method detection limit (MDL). Data validation qualifications for individual samples are based on the maximum contaminant concentration detected in all associated blanks.

Method and equipment rinsate results were reviewed for conformance with the QC acceptance criteria. Detected results in blanks are not discussed in this data validation report if the associated results were nondetect or if qualification of sample results was not required.

Rinsate blanks RBSB12111303 and RBSB12111304 (reported in SDG CARR-9) are associated with the samples in this SDG (see Table A-1b).

Nonconformances are summarized in Attachment A in Tables A-1a and A-1b. Sample results were qualified as follows:

Blank Type	Blank Result	Sample Result	Action for Samples
PB / EB/ FB (Positive)	> LOQ	≥IDL/MDL but ≤ LOQ	Qualify as nondetect (U) at the LOQ
		>LOQ but < 10x Blank Result	Qualify results as unusable
		≥10x Blank Result	No action
	≥IDL/MDL but ≤LOQ	Nondetect	No action
		≥IDL/MDL but ≤LOQ	Qualify as nondetect (U) at the LOQ
		> LOQ	Use Resolution Consultants professional judgment (see below [1])
PB (Negative)	< (-LOQ)	< 10x LOQ	Qualify positive results <10x LOQ as estimated (J) and nondetects as estimated (UJ)
		≥10x LOQ	No action

[1] Establish an action level (AL) at 5x the blank contamination. If sample result is <AL, qualify the reported result with a U.

Qualified sample results are shown in Table 1.

ICP Interference Check Standards

The ICP interference check standards (ICSA, ICSAB) were reviewed for conformance.

All criteria were met for the ICSA and ICSAB.

MS Results

The MS and/or MSD %Rs and/or RPDs were reviewed for conformance with the QC acceptance criteria.

Nonconformances are summarized in Attachment A in Table A-2. Data qualification on the basis of MS and/or MSD nonconformances was as follows:

Qualify Results	%R < 30	80 > %R ≥ 30	%R >120	RPD>20
Detected results	J	J	J	J
Nondetects	R	UJ	Accept	UJ

Notes: MS actions apply to all samples of the same matrix. This qualification will also be applied to the results of all samples within a given area of the site, if deemed appropriate.

1. If the sample result (SR) > 4x the spike concentration (S), no action is taken.
2. If any analyte does not meet the %R criteria and a post digestion spike (PDS) analysis was performed, use professional judgment to assess the results. Refer to the National Functional Guidelines (NFG) 2010 for recommended actions.
3. If either the MS or MSD does not meet %R criteria, qualify all associated samples. Qualified sample results are shown in Table 1.

LCS/LCSD Results

The LCS/LCSD %Rs and/or RPDs were reviewed for conformance with the QC acceptance criteria.

The LCS and LCSD %Rs and RPDs were within the QC acceptance criteria.

Field Duplicate Results

Field duplicate RPDs were reviewed for conformance with the Resolution Consultants QC acceptance criterion of ≤50% for solid matrices and ≤30% for aqueous matrices. This criterion applies if both results were greater than 5 times the limit of quantitation (LOQ).

There were no field duplicates reported in this SDG. Field duplicate pair OU09 SB302 0810 and FDSB12101302 (collected 12/10/13 and reported in CARR-9) were associate with soil samples in this SDG.

Nonconformances are summarized in Attachment A in Table A-3. Data qualification on the basis of field duplicate RPDs was as follows:

Actions: (Based on Resolution Consultants professional judgment)

Criteria	RPD	Action	
		Detected	Nondetected
Sample and duplicate are nondetect results	Not calculable (NC)	No qualification	No qualification
Sample and duplicate results <SLOQ	Not applicable	No qualification	No qualification
Sample and duplicate results ≥5xSLOQ	>30% Aqueous >50% All other sample types	J	Not Applicable
Sample and duplicate results are >SLOQ and <5xSLOQ	>60% Aqueous >100% All other sample types	J	Not Applicable
If sample or duplicate result is =SLOQ and the other is not detected	NC	J	UJ
If sample or duplicate result is <SLOQ and the other is not detected	NC	No qualification	No qualification

Qualified sample results are summarized in Table 1.

ICP/ICPMS Serial Dilution Results

The serial dilution percent differences (%Ds) were reviewed for conformance with the QC acceptance criteria.

The serial dilution %Ds were within the QC acceptance criteria.

ICP/MS Internal Standard Performance

ICP/MS Internal standard performance was reviewed for conformance and was within the QC acceptance criteria.

Sample Results/Reporting Issues

All analytes detected at concentrations less than the limit of quantitation (LOQ) but greater than the method detection limit (MDL) were qualified by the laboratory as estimated (J). This "J" qualifier was retained during data validation.

Resolution Consultants professional judgment was used to qualify sample results with percent solids that were <30%. All criteria were met.

QUALIFICATION ACTIONS

Sample results qualified as a result of validation actions are summarized in Table 1. All actions are described above.

ATTACHMENTS

Attachment A: Nonconformance Summary Tables

Attachment B: Qualifier Codes and Explanations

Attachment C: Reason Codes and Explanations

Table 1 - Data Validation Summary of Qualified Data

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SB201 0305	SO	IRON	42400	34	43	MG_KG	J	fd
OU09 SB201 0305	SO	MAGNESIUM	1200	34	43	MG_KG	J	fd
OU09 SB201 0305	SO	POTASSIUM	433	43	85	MG_KG	J	fd
OU09 SB201 0305	SO	SODIUM	85	85	85	MG_KG	U	bl
OU09 SB201 0305	SO	ANTIMONY	0.22	0.043	0.085	MG_KG	J	m,fd
OU09 SB201 0305	SO	ARSENIC	12.4	0.34	0.43	MG_KG	J	fd
OU09 SB201 0305	SO	CADMIUM	0.085	0.085	0.085	MG_KG	U	be
OU09 SB201 0305	SO	CHROMIUM, TOTAL	12.4	0.34	0.43	MG_KG	J	fd
OU09 SB201 0305	SO	COBALT	15.9	0.026	0.085	MG_KG	J	fd
OU09 SB201 0305	SO	LEAD	10	0.043	0.085	MG_KG	J	fd
OU09 SB201 0305	SO	MANGANESE	516	0.17	0.34	MG_KG	J	fd
OU09 SB201 0305	SO	NICKEL	26.0	0.10	0.17	MG_KG	J	fd
OU09 SB201 0305	SO	SELENIUM	0.43	0.43	0.43	MG_KG	U	bl
OU09 SB201 0305	SO	SILVER	0.02	0.034	0.085	MG_KG	J	fd
OU09 SB201 0305	SO	MERCURY	0.017	0.017	0.034	MG_KG	UJ	m
OU09 SB201 1012	SO	IRON	35800	14	18	MG_KG	J	fd
OU09 SB201 1012	SO	MAGNESIUM	2950	14	18	MG_KG	J	fd
OU09 SB201 1012	SO	POTASSIUM	571	46	91	MG_KG	J	fd
OU09 SB201 1012	SO	SODIUM	91	91	91	MG_KG	U	bl
OU09 SB201 1012	SO	ANTIMONY	0.18	0.046	0.091	MG_KG	J	m,fd
OU09 SB201 1012	SO	ARSENIC	13.5	0.36	0.46	MG_KG	J	fd
OU09 SB201 1012	SO	CADMIUM	0.091	0.091	0.091	MG_KG	U	be
OU09 SB201 1012	SO	CHROMIUM, TOTAL	14.1	0.36	0.46	MG_KG	J	fd
OU09 SB201 1012	SO	COBALT	12.5	0.027	0.091	MG_KG	J	fd
OU09 SB201 1012	SO	LEAD	10	0.046	0.091	MG_KG	J	fd
OU09 SB201 1012	SO	MANGANESE	938	0.18	0.36	MG_KG	J	fd
OU09 SB201 1012	SO	NICKEL	24.8	0.11	0.18	MG_KG	J	fd
OU09 SB201 1012	SO	SELENIUM	0.46	0.46	0.46	MG_KG	U	bl
OU09 SB201 1012	SO	SILVER	0.03	0.036	0.091	MG_KG	J	fd
OU09 SB201 1012	SO	MERCURY	0.016	0.016	0.032	MG_KG	UJ	m
OU09 SB208 0305	SO	IRON	43100	34	42	MG_KG	J	fd
OU09 SB208 0305	SO	MAGNESIUM	5480	34	42	MG_KG	J	fd
OU09 SB208 0305	SO	POTASSIUM	258	42	84	MG_KG	J	fd
OU09 SB208 0305	SO	SODIUM	84	84	84	MG_KG	U	bl
OU09 SB208 0305	SO	ANTIMONY	0.23	0.042	0.084	MG_KG	J	m,fd
OU09 SB208 0305	SO	ARSENIC	13.0	0.34	0.42	MG_KG	J	fd
OU09 SB208 0305	SO	CHROMIUM, TOTAL	21.5	0.34	0.42	MG_KG	J	fd
OU09 SB208 0305	SO	COBALT	17.4	0.025	0.084	MG_KG	J	fd
OU09 SB208 0305	SO	LEAD	42.2	0.042	0.084	MG_KG	J	fd

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SB208 0305	SO	MANGANESE	564	0.17	0.34	MG_KG	J	fd
OU09 SB208 0305	SO	NICKEL	38.2	0.10	0.17	MG_KG	J	fd
OU09 SB208 0305	SO	SELENIUM	0.42	0.42	0.42	MG_KG	U	bl
OU09 SB208 0305	SO	SILVER	0.04	0.034	0.084	MG_KG	J	fd
OU09 SB208 0305	SO	MERCURY	0.028	0.028	0.028	MG_KG	UJ	bl,m
OU09 SB208 0608	SO	IRON	28800	14	18	MG_KG	J	fd
OU09 SB208 0608	SO	MAGNESIUM	1720	14	18	MG_KG	J	fd
OU09 SB208 0608	SO	POTASSIUM	284	46	91	MG_KG	J	fd
OU09 SB208 0608	SO	SODIUM	91	91	91	MG_KG	U	bl
OU09 SB208 0608	SO	ANTIMONY	0.24	0.046	0.091	MG_KG	J	m,fd
OU09 SB208 0608	SO	ARSENIC	6.8	0.36	0.46	MG_KG	J	fd
OU09 SB208 0608	SO	CADMIUM	0.091	0.091	0.091	MG_KG	U	be
OU09 SB208 0608	SO	CHROMIUM, TOTAL	13.5	0.36	0.46	MG_KG	J	fd
OU09 SB208 0608	SO	COBALT	13.7	0.027	0.091	MG_KG	J	fd
OU09 SB208 0608	SO	LEAD	31.9	0.046	0.091	MG_KG	J	fd
OU09 SB208 0608	SO	MANGANESE	898	0.18	0.36	MG_KG	J	fd
OU09 SB208 0608	SO	NICKEL	14.7	0.11	0.18	MG_KG	J	fd
OU09 SB208 0608	SO	SELENIUM	0.46	0.46	0.46	MG_KG	U	bl
OU09 SB208 0608	SO	SILVER	0.07	0.036	0.091	MG_KG	J	fd
OU09 SB208 0608	SO	MERCURY	0.14	0.021	0.040	MG_KG	J-	m
OU09 SB209 0102	SO	IRON	21700	7.8	9.7	MG_KG	J	fd
OU09 SB209 0102	SO	MAGNESIUM	2020	7.8	9.7	MG_KG	J	fd
OU09 SB209 0102	SO	POTASSIUM	353	48	97	MG_KG	J	fd
OU09 SB209 0102	SO	SODIUM	97	97	97	MG_KG	U	bl
OU09 SB209 0102	SO	ANTIMONY	0.18	0.048	0.097	MG_KG	J	m,fd
OU09 SB209 0102	SO	ARSENIC	6.4	0.39	0.48	MG_KG	J	fd
OU09 SB209 0102	SO	CADMIUM	0.097	0.097	0.097	MG_KG	U	be
OU09 SB209 0102	SO	CHROMIUM, TOTAL	12.6	0.39	0.48	MG_KG	J	fd
OU09 SB209 0102	SO	COBALT	9.5	0.029	0.097	MG_KG	J	fd
OU09 SB209 0102	SO	LEAD	19.6	0.048	0.097	MG_KG	J	fd
OU09 SB209 0102	SO	MANGANESE	373	0.097	0.19	MG_KG	J	fd
OU09 SB209 0102	SO	NICKEL	17.8	0.12	0.19	MG_KG	J	fd
OU09 SB209 0102	SO	SELENIUM	0.48	0.48	0.48	MG_KG	U	bl
OU09 SB209 0102	SO	SILVER	0.06	0.039	0.097	MG_KG	J	fd
OU09 SB209 0102	SO	MERCURY	0.05	0.013	0.025	MG_KG	J-	m
OU09 SB209 0305	SO	IRON	20600	8.5	11	MG_KG	J	fd
OU09 SB209 0305	SO	MAGNESIUM	1390	8.5	11	MG_KG	J	fd
OU09 SB209 0305	SO	POTASSIUM	394	53	110	MG_KG	J	fd
OU09 SB209 0305	SO	SODIUM	110	110	110	MG_KG	U	bl

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SB209 0305	SO	ANTIMONY	0.12	0.053	0.11	MG_KG	J	m,fd
OU09 SB209 0305	SO	ARSENIC	6.4	0.43	0.53	MG_KG	J	fd
OU09 SB209 0305	SO	CADMIUM	0.11	0.11	0.11	MG_KG	U	be
OU09 SB209 0305	SO	CHROMIUM, TOTAL	10.6	0.43	0.53	MG_KG	J	fd
OU09 SB209 0305	SO	COBALT	11.0	0.032	0.11	MG_KG	J	fd
OU09 SB209 0305	SO	LEAD	23.2	0.053	0.11	MG_KG	J	fd
OU09 SB209 0305	SO	MANGANESE	423	0.11	0.21	MG_KG	J	fd
OU09 SB209 0305	SO	NICKEL	16.0	0.13	0.21	MG_KG	J	fd
OU09 SB209 0305	SO	SELENIUM	0.53	0.53	0.53	MG_KG	U	bl
OU09 SB209 0305	SO	SILVER	0.04	0.043	0.11	MG_KG	J	fd
OU09 SB209 0305	SO	MERCURY	0.030	0.030	0.030	MG_KG	UJ	bl,m
OU09 SB209 1012	SO	IRON	46000	35	43	MG_KG	J	fd
OU09 SB209 1012	SO	MAGNESIUM	2290	35	43	MG_KG	J	fd
OU09 SB209 1012	SO	POTASSIUM	416	43	87	MG_KG	J	fd
OU09 SB209 1012	SO	SODIUM	87	87	87	MG_KG	U	bl
OU09 SB209 1012	SO	ANTIMONY	0.30	0.043	0.087	MG_KG	J	m,fd
OU09 SB209 1012	SO	ARSENIC	9.4	0.35	0.43	MG_KG	J	fd
OU09 SB209 1012	SO	CHROMIUM, TOTAL	9.3	0.35	0.43	MG_KG	J	fd
OU09 SB209 1012	SO	COBALT	33.4	0.026	0.087	MG_KG	J	fd
OU09 SB209 1012	SO	LEAD	9.1	0.043	0.087	MG_KG	J	fd
OU09 SB209 1012	SO	MANGANESE	3810	0.87	1.7	MG_KG	J	fd
OU09 SB209 1012	SO	NICKEL	51.0	0.10	0.17	MG_KG	J	fd
OU09 SB209 1012	SO	SELENIUM	0.43	0.43	0.43	MG_KG	U	bl
OU09 SB209 1012	SO	SILVER	0.03	0.035	0.087	MG_KG	J	fd
OU09 SB209 1012	SO	MERCURY	0.015	0.015	0.030	MG_KG	UJ	m
OU09 SB211 0305	SO	IRON	36700	37	46	MG_KG	J	fd
OU09 SB211 0305	SO	MAGNESIUM	3360	37	46	MG_KG	J	fd
OU09 SB211 0305	SO	POTASSIUM	351	46	92	MG_KG	J	fd
OU09 SB211 0305	SO	SODIUM	92	92	92	MG_KG	U	bl
OU09 SB211 0305	SO	ANTIMONY	0.58	0.046	0.092	MG_KG	J	m,fd
OU09 SB211 0305	SO	ARSENIC	14.5	0.37	0.46	MG_KG	J	fd
OU09 SB211 0305	SO	CHROMIUM, TOTAL	34.2	0.37	0.46	MG_KG	J	fd
OU09 SB211 0305	SO	COBALT	12.0	0.028	0.092	MG_KG	J	fd
OU09 SB211 0305	SO	LEAD	50.3	0.046	0.092	MG_KG	J	fd
OU09 SB211 0305	SO	MANGANESE	418	0.092	0.18	MG_KG	J	fd
OU09 SB211 0305	SO	NICKEL	27.8	0.11	0.18	MG_KG	J	fd
OU09 SB211 0305	SO	SELENIUM	0.46	0.46	0.46	MG_KG	U	bl
OU09 SB211 0305	SO	SILVER	0.08	0.037	0.092	MG_KG	J	fd
OU09 SB211 0305	SO	MERCURY	0.033	0.033	0.033	MG_KG	UJ	bl,m

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SB211 1012	SO	IRON	29600	34	42	MG_KG	J	fd
OU09 SB211 1012	SO	MAGNESIUM	2090	34	42	MG_KG	J	fd
OU09 SB211 1012	SO	POTASSIUM	577	42	84	MG_KG	J	fd
OU09 SB211 1012	SO	SODIUM	84	84	84	MG_KG	U	bl
OU09 SB211 1012	SO	ANTIMONY	0.12	0.042	0.084	MG_KG	J	m,fd
OU09 SB211 1012	SO	ARSENIC	7.1	0.34	0.42	MG_KG	J	fd
OU09 SB211 1012	SO	CADMIUM	0.084	0.084	0.084	MG_KG	U	be
OU09 SB211 1012	SO	CHROMIUM, TOTAL	11.5	0.34	0.42	MG_KG	J	fd
OU09 SB211 1012	SO	COBALT	14.4	0.025	0.084	MG_KG	J	fd
OU09 SB211 1012	SO	LEAD	8.3	0.042	0.084	MG_KG	J	fd
OU09 SB211 1012	SO	MANGANESE	693	0.17	0.34	MG_KG	J	fd
OU09 SB211 1012	SO	NICKEL	24.2	0.10	0.17	MG_KG	J	fd
OU09 SB211 1012	SO	SELENIUM	0.42	0.42	0.42	MG_KG	U	bl
OU09 SB211 1012	SO	SILVER	0.03	0.034	0.084	MG_KG	J	fd
OU09 SB211 1012	SO	MERCURY	0.016	0.016	0.032	MG_KG	UJ	m
OU09 SB212 0102	SO	IRON	25700	15	18	MG_KG	J	fd
OU09 SB212 0102	SO	MAGNESIUM	1780	15	18	MG_KG	J	fd
OU09 SB212 0102	SO	POTASSIUM	384	46	92	MG_KG	J	fd
OU09 SB212 0102	SO	SODIUM	92	92	92	MG_KG	U	bl
OU09 SB212 0102	SO	ANTIMONY	0.26	0.046	0.092	MG_KG	J	m,fd
OU09 SB212 0102	SO	ARSENIC	6.9	0.37	0.46	MG_KG	J	fd
OU09 SB212 0102	SO	CADMIUM	0.092	0.092	0.092	MG_KG	U	be
OU09 SB212 0102	SO	CHROMIUM, TOTAL	12.8	0.37	0.46	MG_KG	J	fd
OU09 SB212 0102	SO	COBALT	10.7	0.027	0.092	MG_KG	J	fd
OU09 SB212 0102	SO	LEAD	16.9	0.046	0.092	MG_KG	J	fd
OU09 SB212 0102	SO	MANGANESE	413	0.092	0.18	MG_KG	J	fd
OU09 SB212 0102	SO	NICKEL	18.0	0.11	0.18	MG_KG	J	fd
OU09 SB212 0102	SO	SILVER	0.15	0.037	0.092	MG_KG	J	fd
OU09 SB212 0102	SO	MERCURY	0.036	0.036	0.036	MG_KG	UJ	bl,m
OU09 SB212 0305	SO	IRON	23000	7.4	9.3	MG_KG	J	fd
OU09 SB212 0305	SO	MAGNESIUM	1680	7.4	9.3	MG_KG	J	fd
OU09 SB212 0305	SO	POTASSIUM	342	46	93	MG_KG	J	fd
OU09 SB212 0305	SO	SODIUM	93	93	93	MG_KG	U	bl
OU09 SB212 0305	SO	ANTIMONY	0.19	0.046	0.093	MG_KG	J	m,fd
OU09 SB212 0305	SO	ARSENIC	6.8	0.37	0.46	MG_KG	J	fd
OU09 SB212 0305	SO	CADMIUM	0.093	0.093	0.093	MG_KG	U	be
OU09 SB212 0305	SO	CHROMIUM, TOTAL	11.3	0.37	0.46	MG_KG	J	fd
OU09 SB212 0305	SO	COBALT	9.7	0.028	0.093	MG_KG	J	fd
OU09 SB212 0305	SO	LEAD	15.8	0.046	0.093	MG_KG	J	fd

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SB212 0305	SO	MANGANESE	363	0.093	0.19	MG_KG	J	fd
OU09 SB212 0305	SO	NICKEL	15.8	0.11	0.19	MG_KG	J	fd
OU09 SB212 0305	SO	SILVER	0.05	0.037	0.093	MG_KG	J	fd
OU09 SB212 0305	SO	MERCURY	0.030	0.030	0.030	MG_KG	UJ	bl,m
OU09 SB212 0608	SO	IRON	40200	28	35	MG_KG	J	fd
OU09 SB212 0608	SO	MAGNESIUM	1240	28	35	MG_KG	J	fd
OU09 SB212 0608	SO	POTASSIUM	483	35	71	MG_KG	J	fd
OU09 SB212 0608	SO	SODIUM	71	71	71	MG_KG	U	bl
OU09 SB212 0608	SO	ANTIMONY	0.21	0.035	0.071	MG_KG	J	m,fd
OU09 SB212 0608	SO	ARSENIC	6.2	0.28	0.35	MG_KG	J	fd
OU09 SB212 0608	SO	CADMIUM	0.071	0.071	0.071	MG_KG	U	be
OU09 SB212 0608	SO	CHROMIUM, TOTAL	13.4	0.28	0.35	MG_KG	J	fd
OU09 SB212 0608	SO	COBALT	18.8	0.021	0.071	MG_KG	J	fd
OU09 SB212 0608	SO	LEAD	10	0.035	0.071	MG_KG	J	fd
OU09 SB212 0608	SO	MANGANESE	701	0.14	0.28	MG_KG	J	fd
OU09 SB212 0608	SO	NICKEL	23.6	0.085	0.14	MG_KG	J	fd
OU09 SB212 0608	SO	SELENIUM	0.35	0.35	0.35	MG_KG	U	bl
OU09 SB212 0608	SO	SILVER	0.02	0.028	0.071	MG_KG	J	fd
OU09 SB212 0608	SO	MERCURY	0.033	0.033	0.033	MG_KG	UJ	bl,m
OU09 SB213 0102	SO	IRON	38200	14	18	MG_KG	J	fd
OU09 SB213 0102	SO	MAGNESIUM	1830	14	18	MG_KG	J	fd
OU09 SB213 0102	SO	POTASSIUM	364	45	91	MG_KG	J	fd
OU09 SB213 0102	SO	SODIUM	91	91	91	MG_KG	U	bl
OU09 SB213 0102	SO	ANTIMONY	0.23	0.045	0.091	MG_KG	J	m,fd
OU09 SB213 0102	SO	ARSENIC	9.6	0.36	0.45	MG_KG	J	fd
OU09 SB213 0102	SO	CHROMIUM, TOTAL	15.1	0.36	0.45	MG_KG	J	fd
OU09 SB213 0102	SO	COBALT	12.7	0.027	0.091	MG_KG	J	fd
OU09 SB213 0102	SO	LEAD	12.8	0.045	0.091	MG_KG	J	fd
OU09 SB213 0102	SO	MANGANESE	710	0.18	0.36	MG_KG	J	fd
OU09 SB213 0102	SO	NICKEL	23.9	0.11	0.18	MG_KG	J	fd
OU09 SB213 0102	SO	SILVER	0.06	0.036	0.091	MG_KG	J	fd
OU09 SB213 0102	SO	MERCURY	0.038	0.038	0.038	MG_KG	UJ	bl,m
OU09 SB213 0305	SO	IRON	24600	14	18	MG_KG	J	fd
OU09 SB213 0305	SO	MAGNESIUM	2000	14	18	MG_KG	J	fd
OU09 SB213 0305	SO	POTASSIUM	398	45	90	MG_KG	J	fd
OU09 SB213 0305	SO	SODIUM	90	90	90	MG_KG	U	bl
OU09 SB213 0305	SO	ANTIMONY	0.11	0.045	0.090	MG_KG	J	m,fd
OU09 SB213 0305	SO	ARSENIC	6.8	0.36	0.45	MG_KG	J	fd
OU09 SB213 0305	SO	CADMIUM	0.090	0.090	0.090	MG_KG	U	be

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SB213 0305	SO	CHROMIUM, TOTAL	11.1	0.36	0.45	MG_KG	J	fd
OU09 SB213 0305	SO	COBALT	9.3	0.027	0.090	MG_KG	J	fd
OU09 SB213 0305	SO	LEAD	7.3	0.045	0.090	MG_KG	J	fd
OU09 SB213 0305	SO	MANGANESE	307	0.090	0.18	MG_KG	J	fd
OU09 SB213 0305	SO	NICKEL	17.8	0.11	0.18	MG_KG	J	fd
OU09 SB213 0305	SO	SELENIUM	0.45	0.45	0.45	MG_KG	U	bl
OU09 SB213 0305	SO	SILVER	0.03	0.036	0.090	MG_KG	J	fd
OU09 SB213 0305	SO	MERCURY	0.03	0.014	0.027	MG_KG	J-	m
OU09 SB213 0608	SO	IRON	40200	33	41	MG_KG	J	fd
OU09 SB213 0608	SO	MAGNESIUM	5280	33	41	MG_KG	J	fd
OU09 SB213 0608	SO	POTASSIUM	426	41	82	MG_KG	J	fd
OU09 SB213 0608	SO	SODIUM	82	82	82	MG_KG	U	bl
OU09 SB213 0608	SO	ANTIMONY	0.16	0.041	0.082	MG_KG	J	m,fd
OU09 SB213 0608	SO	ARSENIC	11.8	0.33	0.41	MG_KG	J	fd
OU09 SB213 0608	SO	CHROMIUM, TOTAL	16.3	0.33	0.41	MG_KG	J	fd
OU09 SB213 0608	SO	COBALT	14.3	0.025	0.082	MG_KG	J	fd
OU09 SB213 0608	SO	LEAD	8.4	0.041	0.082	MG_KG	J	fd
OU09 SB213 0608	SO	MANGANESE	5750	1.6	3.3	MG_KG	J	fd
OU09 SB213 0608	SO	NICKEL	45.0	0.098	0.16	MG_KG	J	fd
OU09 SB213 0608	SO	SELENIUM	0.41	0.41	0.41	MG_KG	U	bl
OU09 SB213 0608	SO	SILVER	0.03	0.033	0.082	MG_KG	J	fd
OU09 SB213 0608	SO	MERCURY	0.017	0.017	0.033	MG_KG	UJ	m
OU09 SB228 0305	SO	IRON	25100	14	18	MG_KG	J	fd
OU09 SB228 0305	SO	MAGNESIUM	1670	14	18	MG_KG	J	fd
OU09 SB228 0305	SO	POTASSIUM	376	45	90	MG_KG	J	fd
OU09 SB228 0305	SO	SODIUM	90	90	90	MG_KG	U	bl
OU09 SB228 0305	SO	ANTIMONY	0.30	0.045	0.090	MG_KG	J	m,fd
OU09 SB228 0305	SO	ARSENIC	6.4	0.36	0.45	MG_KG	J	fd
OU09 SB228 0305	SO	CADMIUM	0.090	0.090	0.090	MG_KG	U	be
OU09 SB228 0305	SO	CHROMIUM, TOTAL	11.1	0.36	0.45	MG_KG	J	fd
OU09 SB228 0305	SO	COBALT	10.4	0.027	0.090	MG_KG	J	fd
OU09 SB228 0305	SO	LEAD	16.6	0.045	0.090	MG_KG	J	fd
OU09 SB228 0305	SO	MANGANESE	383	0.090	0.18	MG_KG	J	fd
OU09 SB228 0305	SO	NICKEL	16.3	0.11	0.18	MG_KG	J	fd
OU09 SB228 0305	SO	SELENIUM	0.45	0.45	0.45	MG_KG	U	bl
OU09 SB228 0305	SO	SILVER	0.05	0.036	0.090	MG_KG	J	fd
OU09 SB228 0305	SO	MERCURY	0.029	0.029	0.029	MG_KG	UJ	bl,m
OU09 SB228 0608	SO	IRON	18500	6.2	7.7	MG_KG	J	fd
OU09 SB228 0608	SO	MAGNESIUM	1740	6.2	7.7	MG_KG	J	fd

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SB228 0608	SO	POTASSIUM	342	38	77	MG_KG	J	fd
OU09 SB228 0608	SO	SODIUM	77	77	77	MG_KG	U	bl
OU09 SB228 0608	SO	ANTIMONY	0.077	0.077	0.077	MG_KG	UJ	m,be,fd
OU09 SB228 0608	SO	ARSENIC	4.6	0.31	0.38	MG_KG	J	fd
OU09 SB228 0608	SO	CADMIUM	0.077	0.077	0.077	MG_KG	U	be
OU09 SB228 0608	SO	CHROMIUM, TOTAL	12.1	0.31	0.38	MG_KG	J	fd
OU09 SB228 0608	SO	COBALT	7.6	0.023	0.077	MG_KG	J	fd
OU09 SB228 0608	SO	LEAD	7.7	0.038	0.077	MG_KG	J	fd
OU09 SB228 0608	SO	MANGANESE	242	0.077	0.15	MG_KG	J	fd
OU09 SB228 0608	SO	NICKEL	11.8	0.093	0.15	MG_KG	J	fd
OU09 SB228 0608	SO	SILVER	0.02	0.031	0.077	MG_KG	J	fd
OU09 SB228 0608	SO	MERCURY	0.036	0.036	0.036	MG_KG	UJ	bl,m
OU09 SS201 0001	SO	IRON	20800	7.4	9.2	MG_KG	J	fd
OU09 SS201 0001	SO	MAGNESIUM	1500	7.4	9.2	MG_KG	J	fd
OU09 SS201 0001	SO	POTASSIUM	355	46	92	MG_KG	J	fd
OU09 SS201 0001	SO	SODIUM	92	92	92	MG_KG	U	bl
OU09 SS201 0001	SO	ANTIMONY	0.18	0.046	0.092	MG_KG	J	m,fd
OU09 SS201 0001	SO	ARSENIC	7.5	0.37	0.46	MG_KG	J	fd
OU09 SS201 0001	SO	CHROMIUM, TOTAL	11.9	0.37	0.46	MG_KG	J	fd
OU09 SS201 0001	SO	COBALT	9.4	0.028	0.092	MG_KG	J	fd
OU09 SS201 0001	SO	LEAD	19.8	0.046	0.092	MG_KG	J	fd
OU09 SS201 0001	SO	MANGANESE	606	0.18	0.37	MG_KG	J	fd
OU09 SS201 0001	SO	NICKEL	15.1	0.11	0.18	MG_KG	J	fd
OU09 SS201 0001	SO	SILVER	0.10	0.037	0.092	MG_KG	J	fd
OU09 SS201 0001	SO	MERCURY	0.06	0.020	0.039	MG_KG	J-	m
OU09 SS208 0001	SO	IRON	33500	15	19	MG_KG	J	fd
OU09 SS208 0001	SO	MAGNESIUM	4420	15	19	MG_KG	J	fd
OU09 SS208 0001	SO	POTASSIUM	294	48	96	MG_KG	J	fd
OU09 SS208 0001	SO	SODIUM	96	96	96	MG_KG	U	bl
OU09 SS208 0001	SO	ANTIMONY	0.79	0.048	0.096	MG_KG	J	m,fd
OU09 SS208 0001	SO	ARSENIC	13.1	0.38	0.48	MG_KG	J	fd
OU09 SS208 0001	SO	CHROMIUM, TOTAL	18.3	0.38	0.48	MG_KG	J	fd
OU09 SS208 0001	SO	COBALT	19.4	0.029	0.096	MG_KG	J	fd
OU09 SS208 0001	SO	LEAD	259	0.048	0.096	MG_KG	J	fd
OU09 SS208 0001	SO	MANGANESE	594	0.19	0.38	MG_KG	J	fd
OU09 SS208 0001	SO	NICKEL	36.0	0.11	0.19	MG_KG	J	fd
OU09 SS208 0001	SO	SELENIUM	0.48	0.48	0.48	MG_KG	U	bl
OU09 SS208 0001	SO	SILVER	0.06	0.038	0.096	MG_KG	J	fd
OU09 SS208 0001	SO	MERCURY	0.029	0.029	0.029	MG_KG	UJ	bl,m

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SS209 0001	SO	IRON	31100	15	19	MG_KG	J	fd
OU09 SS209 0001	SO	MAGNESIUM	4430	15	19	MG_KG	J	fd
OU09 SS209 0001	SO	POTASSIUM	288	48	95	MG_KG	J	fd
OU09 SS209 0001	SO	SODIUM	95	95	95	MG_KG	U	bl
OU09 SS209 0001	SO	ANTIMONY	10.8	0.048	0.095	MG_KG	J	m,fd
OU09 SS209 0001	SO	ARSENIC	10.8	0.38	0.48	MG_KG	J	fd
OU09 SS209 0001	SO	CHROMIUM, TOTAL	18.1	0.38	0.48	MG_KG	J	fd
OU09 SS209 0001	SO	COBALT	13.3	0.028	0.095	MG_KG	J	fd
OU09 SS209 0001	SO	LEAD	153	0.048	0.095	MG_KG	J	fd
OU09 SS209 0001	SO	MANGANESE	410	0.095	0.19	MG_KG	J	fd
OU09 SS209 0001	SO	NICKEL	28.9	0.11	0.19	MG_KG	J	fd
OU09 SS209 0001	SO	SELENIUM	0.48	0.48	0.48	MG_KG	U	bl
OU09 SS209 0001	SO	SILVER	0.14	0.038	0.095	MG_KG	J	fd
OU09 SS209 0001	SO	MERCURY	0.05	0.014	0.028	MG_KG	J-	m
OU09 SS211 0001	SO	IRON	31400	17	21	MG_KG	J	fd
OU09 SS211 0001	SO	MAGNESIUM	4350	17	21	MG_KG	J	fd
OU09 SS211 0001	SO	POTASSIUM	406	54	110	MG_KG	J	fd
OU09 SS211 0001	SO	SODIUM	110	110	110	MG_KG	U	bl
OU09 SS211 0001	SO	ANTIMONY	0.62	0.054	0.11	MG_KG	J	m,fd
OU09 SS211 0001	SO	ARSENIC	12.7	0.43	0.54	MG_KG	J	fd
OU09 SS211 0001	SO	CHROMIUM, TOTAL	17.1	0.43	0.54	MG_KG	J	fd
OU09 SS211 0001	SO	COBALT	13.7	0.032	0.11	MG_KG	J	fd
OU09 SS211 0001	SO	LEAD	88.6	0.054	0.11	MG_KG	J	fd
OU09 SS211 0001	SO	MANGANESE	438	0.11	0.21	MG_KG	J	fd
OU09 SS211 0001	SO	NICKEL	28.3	0.13	0.21	MG_KG	J	fd
OU09 SS211 0001	SO	SELENIUM	0.54	0.54	0.54	MG_KG	U	bl
OU09 SS211 0001	SO	SILVER	0.23	0.043	0.11	MG_KG	J	fd
OU09 SS211 0001	SO	MERCURY	0.04	0.017	0.034	MG_KG	J-	m
OU09 SS212 0001	SO	IRON	30400	13	17	MG_KG	J	fd
OU09 SS212 0001	SO	MAGNESIUM	5810	13	17	MG_KG	J	fd
OU09 SS212 0001	SO	POTASSIUM	390	42	84	MG_KG	J	fd
OU09 SS212 0001	SO	SODIUM	84	84	84	MG_KG	U	bl
OU09 SS212 0001	SO	ANTIMONY	1.5	0.042	0.084	MG_KG	J	m,fd
OU09 SS212 0001	SO	ARSENIC	13.5	0.33	0.42	MG_KG	J	fd
OU09 SS212 0001	SO	CHROMIUM, TOTAL	15.6	0.33	0.42	MG_KG	J	fd
OU09 SS212 0001	SO	COBALT	9.7	0.025	0.084	MG_KG	J	fd
OU09 SS212 0001	SO	LEAD	99.5	0.042	0.084	MG_KG	J	fd
OU09 SS212 0001	SO	MANGANESE	305	0.084	0.17	MG_KG	J	fd
OU09 SS212 0001	SO	NICKEL	21.5	0.10	0.17	MG_KG	J	fd

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SS212 0001	SO	SILVER	0.90	0.033	0.084	MG_KG	J	fd
OU09 SS212 0001	SO	MERCURY	0.21	0.017	0.033	MG_KG	J-	m
OU09 SS213 0001	SO	IRON	50000	18	22	MG_KG	J	fd
OU09 SS213 0001	SO	MAGNESIUM	2040	18	22	MG_KG	J	fd
OU09 SS213 0001	SO	POTASSIUM	502	56	110	MG_KG	J	fd
OU09 SS213 0001	SO	SODIUM	110	110	110	MG_KG	U	bl
OU09 SS213 0001	SO	ANTIMONY	0.81	0.056	0.11	MG_KG	J	m,fd
OU09 SS213 0001	SO	ARSENIC	8.5	0.45	0.56	MG_KG	J	fd
OU09 SS213 0001	SO	CHROMIUM, TOTAL	12.8	0.45	0.56	MG_KG	J	fd
OU09 SS213 0001	SO	COBALT	10.1	0.034	0.11	MG_KG	J	fd
OU09 SS213 0001	SO	LEAD	114	0.056	0.11	MG_KG	J	fd
OU09 SS213 0001	SO	MANGANESE	627	0.22	0.45	MG_KG	J	fd
OU09 SS213 0001	SO	NICKEL	17.3	0.14	0.22	MG_KG	J	fd
OU09 SS213 0001	SO	SELENIUM	0.56	0.56	0.56	MG_KG	U	bl
OU09 SS213 0001	SO	SILVER	0.23	0.045	0.11	MG_KG	J	fd
OU09 SS213 0001	SO	MERCURY	0.07	0.020	0.038	MG_KG	J-	m
OU09 SS228 0001	SO	MERCURY	0.04	0.016	0.032	MG_KG	J-	m
OU09 SS228 0001SL	SO	IRON	24900	13	16	MG_KG	J	fd
OU09 SS228 0001SL	SO	MAGNESIUM	25200	13	16	MG_KG	J	fd
OU09 SS228 0001SL	SO	POTASSIUM	328	39	79	MG_KG	J	fd
OU09 SS228 0001SL	SO	SODIUM	79	79	79	MG_KG	U	bl
OU09 SS228 0001SL	SO	ANTIMONY	2.3	0.039	0.079	MG_KG	J	m,fd
OU09 SS228 0001SL	SO	ARSENIC	10.3	0.32	0.39	MG_KG	J	fd
OU09 SS228 0001SL	SO	CHROMIUM, TOTAL	14.1	0.32	0.39	MG_KG	J	fd
OU09 SS228 0001SL	SO	COBALT	10.8	0.024	0.079	MG_KG	J	fd
OU09 SS228 0001SL	SO	LEAD	216	0.039	0.079	MG_KG	J	fd
OU09 SS228 0001SL	SO	MANGANESE	438	0.16	0.32	MG_KG	J	fd
OU09 SS228 0001SL	SO	NICKEL	20.6	0.094	0.16	MG_KG	J	fd
OU09 SS228 0001SL	SO	SELENIUM	0.39	0.39	0.39	MG_KG	U	bl
OU09 SS228 0001SL	SO	SILVER	0.07	0.032	0.079	MG_KG	J	fd

Attachment A

Non Conformance Summary Tables

Table A-1a Lab Blanks

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
PBSGL30ICS1	CALCIUM	5.253	8.0	10	MG_KG	OU09 SB209 0305 OU09 SB209 1012 OU09 SB211 0305 OU09 SB211 1012
PBSGL30ICS1	MAGNESIUM	1.444	8.0	10	MG_KG	OU09 SB209 0305 OU09 SB209 1012 OU09 SB211 0305 OU09 SB211 1012
PBSGL30ICS1	POTASSIUM	-10.030	50	100	MG_KG	OU09 SB209 0305 OU09 SB209 1012 OU09 SB211 0305 OU09 SB211 1012
PBSGL30ICS1	SODIUM	10.000	50	100	MG_KG	OU09 SB209 0305 OU09 SB209 1012 OU09 SB211 0305 OU09 SB211 1012
PBSGL30IMS1	BARIUM	0.076	0.10	0.20	MG_KG	OU09 SB209 0305 OU09 SB209 1012 OU09 SB211 0305 OU09 SB211 1012
PBSGL30IMS1	CHROMIUM, TOTAL	0.130	0.40	0.50	MG_KG	OU09 SB209 0305 OU09 SB209 1012 OU09 SB211 0305 OU09 SB211 1012
PBSGL30IMS1	COPPER	0.114	0.20	0.30	MG_KG	OU09 SB209 0305 OU09 SB209 1012 OU09 SB211 0305 OU09 SB211 1012
PBSGL30IMS1	LEAD	0.016	0.050	0.10	MG_KG	OU09 SB209 0305 OU09 SB209 1012 OU09 SB211 0305 OU09 SB211 1012
PBSGL30IMS1	MANGANESE	0.063	0.10	0.20	MG_KG	OU09 SB209 0305 OU09 SB209 1012 OU09 SB211 0305 OU09 SB211 1012
PBSGL30IMS1	NICKEL	0.031	0.12	0.20	MG_KG	OU09 SB209 0305 OU09 SB209 1012 OU09 SB211 0305 OU09 SB211 1012
PBSGL30IMS1	SELENIUM	0.076	0.30	0.50	MG_KG	OU09 SB209 0305 OU09 SB209 1012 OU09 SB211 0305 OU09 SB211 1012

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
PBSGL30IMS1	ZINC	0.440	0.80	1.0	MG_KG	OU09 SB209 0305 OU09 SB209 1012 OU09 SB211 0305 OU09 SB211 1012
PBSHA03ICS1	ALUMINUM	2.777	10	30	MG_KG	OU09 SB201 0305 OU09 SB201 1012 OU09 SB208 0305 OU09 SB208 0608 OU09 SB209 0102 OU09 SB212 0102 OU09 SB212 0305 OU09 SB212 0608 OU09 SB213 0102 OU09 SB213 0305 OU09 SB213 0608 OU09 SB228 0305 OU09 SB228 0608 OU09 SS201 0001 OU09 SS208 0001 OU09 SS209 0001 OU09 SS211 0001 OU09 SS212 0001 OU09 SS213 0001 OU09 SS228 0001SL
PBSHA03ICS1	IRON	1.514	8.0	10	MG_KG	OU09 SB201 0305 OU09 SB201 1012 OU09 SB208 0305 OU09 SB208 0608 OU09 SB209 0102 OU09 SB212 0102 OU09 SB212 0305 OU09 SB212 0608 OU09 SB213 0102 OU09 SB213 0305 OU09 SB213 0608 OU09 SB228 0305 OU09 SB228 0608 OU09 SS201 0001 OU09 SS208 0001 OU09 SS209 0001 OU09 SS211 0001 OU09 SS212 0001 OU09 SS213 0001 OU09 SS228 0001SL

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
PBSHA03ICS1	POTASSIUM	2.900	50	100	MG_KG	OU09 SB201 0305 OU09 SB201 1012 OU09 SB208 0305 OU09 SB208 0608 OU09 SB209 0102 OU09 SB212 0102 OU09 SB212 0305 OU09 SB212 0608 OU09 SB213 0102 OU09 SB213 0305 OU09 SB213 0608 OU09 SB228 0305 OU09 SB228 0608 OU09 SS201 0001 OU09 SS208 0001 OU09 SS209 0001 OU09 SS211 0001 OU09 SS212 0001 OU09 SS213 0001 OU09 SS228 0001SL
PBSHA03ICS1	SODIUM	3.729	50	100	MG_KG	OU09 SB201 0305 OU09 SB201 1012 OU09 SB208 0305 OU09 SB208 0608 OU09 SB209 0102 OU09 SB212 0102 OU09 SB212 0305 OU09 SB212 0608 OU09 SB213 0102 OU09 SB213 0305 OU09 SB213 0608 OU09 SB228 0305 OU09 SB228 0608 OU09 SS201 0001 OU09 SS208 0001 OU09 SS209 0001 OU09 SS211 0001 OU09 SS212 0001 OU09 SS213 0001 OU09 SS228 0001SL

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
PBSHA03IMS1	BARIUM	0.053	0.10	0.20	MG_KG	OU09 SB201 0305 OU09 SB201 1012 OU09 SB208 0305 OU09 SB208 0608 OU09 SB209 0102 OU09 SB212 0102 OU09 SB212 0305 OU09 SB212 0608 OU09 SB213 0102 OU09 SB213 0305 OU09 SB213 0608 OU09 SB228 0305 OU09 SB228 0608 OU09 SS201 0001 OU09 SS208 0001 OU09 SS209 0001 OU09 SS211 0001 OU09 SS212 0001 OU09 SS213 0001 OU09 SS228 0001SL
PBSHA03IMS1	CHROMIUM, TOTAL	0.082	0.40	0.50	MG_KG	OU09 SB201 0305 OU09 SB201 1012 OU09 SB208 0305 OU09 SB208 0608 OU09 SB209 0102 OU09 SB212 0102 OU09 SB212 0305 OU09 SB212 0608 OU09 SB213 0102 OU09 SB213 0305 OU09 SB213 0608 OU09 SB228 0305 OU09 SB228 0608 OU09 SS201 0001 OU09 SS208 0001 OU09 SS209 0001 OU09 SS211 0001 OU09 SS212 0001 OU09 SS213 0001 OU09 SS228 0001SL

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
PBSHA03IMS1	LEAD	0.098	0.050	0.10	MG_KG	OU09 SB201 0305 OU09 SB201 1012 OU09 SB208 0305 OU09 SB208 0608 OU09 SB209 0102 OU09 SB212 0102 OU09 SB212 0305 OU09 SB212 0608 OU09 SB213 0102 OU09 SB213 0305 OU09 SB213 0608 OU09 SB228 0305 OU09 SB228 0608 OU09 SS201 0001 OU09 SS208 0001 OU09 SS209 0001 OU09 SS211 0001 OU09 SS212 0001 OU09 SS213 0001 OU09 SS228 0001SL
PBSHA03IMS1	MANGANESE	0.091	0.10	0.20	MG_KG	OU09 SB201 0305 OU09 SB201 1012 OU09 SB208 0305 OU09 SB208 0608 OU09 SB209 0102 OU09 SB212 0102 OU09 SB212 0305 OU09 SB212 0608 OU09 SB213 0102 OU09 SB213 0305 OU09 SB213 0608 OU09 SB228 0305 OU09 SB228 0608 OU09 SS201 0001 OU09 SS208 0001 OU09 SS209 0001 OU09 SS211 0001 OU09 SS212 0001 OU09 SS213 0001 OU09 SS228 0001SL

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
PBSHA03IMS1	NICKEL	0.032	0.12	0.20	MG_KG	OU09 SB201 0305 OU09 SB201 1012 OU09 SB208 0305 OU09 SB208 0608 OU09 SB209 0102 OU09 SB212 0102 OU09 SB212 0305 OU09 SB212 0608 OU09 SB213 0102 OU09 SB213 0305 OU09 SB213 0608 OU09 SB228 0305 OU09 SB228 0608 OU09 SS201 0001 OU09 SS208 0001 OU09 SS209 0001 OU09 SS211 0001 OU09 SS212 0001 OU09 SS213 0001 OU09 SS228 0001SL
PBSHA03IMS1	SELENIUM	0.060	0.30	0.50	MG_KG	OU09 SB201 0305 OU09 SB201 1012 OU09 SB208 0305 OU09 SB208 0608 OU09 SB209 0102 OU09 SB212 0102 OU09 SB212 0305 OU09 SB212 0608 OU09 SB213 0102 OU09 SB213 0305 OU09 SB213 0608 OU09 SB228 0305 OU09 SB228 0608 OU09 SS201 0001 OU09 SS208 0001 OU09 SS209 0001 OU09 SS211 0001 OU09 SS212 0001 OU09 SS213 0001 OU09 SS228 0001SL

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
PBSHA03IMS1	ZINC	0.332	0.80	1.0	MG_KG	OU09 SB201 0305 OU09 SB201 1012 OU09 SB208 0305 OU09 SB208 0608 OU09 SB209 0102 OU09 SB212 0102 OU09 SB212 0305 OU09 SB212 0608 OU09 SB213 0102 OU09 SB213 0305 OU09 SB213 0608 OU09 SB228 0305 OU09 SB228 0608 OU09 SS201 0001 OU09 SS208 0001 OU09 SS209 0001 OU09 SS211 0001 OU09 SS212 0001 OU09 SS213 0001 OU09 SS228 0001SL
PBSGL31HGS2	MERCURY	0.005	0.017	0.033	MG_KG	OU09 SB208 0305 OU09 SB208 0608 OU09 SB209 0102 OU09 SB212 0102 OU09 SB212 0305 OU09 SB212 0608 OU09 SB213 0102 OU09 SB213 0305 OU09 SB228 0305 OU09 SB228 0608 OU09 SS201 0001 OU09 SS208 0001 OU09 SS209 0001 OU09 SS211 0001 OU09 SS212 0001 OU09 SS228 0001
PBSHA04HGS1	MERCURY	0.005	0.017	0.033	MG_KG	OU09 SB209 0305 OU09 SB211 0305 OU09 SS213 0001

Table A-1b Field Blanks

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
RBSB121113 03	SODIUM	100	500	1000	UG_L	OU09 SB201 0305 OU09 SB201 1012 OU09 SB208 0305 OU09 SB208 0608 OU09 SB209 0102 OU09 SB209 0305 OU09 SB209 1012 OU09 SB211 0305 OU09 SB211 1012 OU09 SB212 0102 OU09 SB212 0305 OU09 SB212 0608 OU09 SB213 0102 OU09 SB213 0305 OU09 SB213 0608 OU09 SB228 0305 OU09 SB228 0608
RBSB121113 03	ANTIMONY	0.11	0.50	1.0	UG_L	
RBSB121113 03	BARIUM	1.2	1.0	2.0	UG_L	
RBSB121113 03	CADMIUM	0.04	0.20	1.0	UG_L	
RBSB121113 03	CHROMIUM, TOTAL	1.4	4.0	5.0	UG_L	
RBSB121113 03	COBALT	0.20	0.30	1.0	UG_L	
RBSB121113 03	COPPER	0.56	2.0	3.0	UG_L	
RBSB121113 03	ALUMINUM	71.6	100	300	UG_L	
RBSB121113 03	CALCIUM	83.0	80	100	UG_L	
RBSB121113 03	IRON	146	80	100	UG_L	
RBSB121113 03	MAGNESIUM	23.4	80	100	UG_L	
RBSB121113 03	LEAD	0.44	0.50	1.0	UG_L	
RBSB121113 03	MANGANESE	3.1	1.0	2.0	UG_L	
RBSB121113 03	NICKEL	0.44	1.2	2.0	UG_L	
RBSB121113 03	SELENIUM	0.48	3.0	5.0	UG_L	
RBSB121113 03	VANADIUM	1.2	4.0	5.0	UG_L	
RBSB121113 03	ZINC	4.4	8.0	10	UG_L	
RBSB121113 04	CALCIUM	200	80	100	UG_L	OU09 SS212 0001 OU09 SS213 0001 OU09 SS201 0001 OU09 SS228 0001SL OU09 SS208 0001 OU09 SS211 0001 OU09 SS209 0001
RBSB121113 04	IRON	16.0	80	100	UG_L	
RBSB121113 04	MAGNESIUM	45.2	80	100	UG_L	
RBSB121113 04	SODIUM	542	500	1000	UG_L	
RBSB121113 04	ANTIMONY	0.05	0.50	1.0	UG_L	
RBSB121113 04	BARIUM	0.94	1.0	2.0	UG_L	
RBSB121113 04	CADMIUM	0.07	0.20	1.0	UG_L	
RBSB121113 04	CHROMIUM, TOTAL	0.74	4.0	5.0	UG_L	
RBSB121113 04	COBALT	0.11	0.30	1.0	UG_L	
RBSB121113 04	COPPER	1.7	2.0	3.0	UG_L	
RBSB121113 04	LEAD	0.52	0.50	1.0	UG_L	
RBSB121113 04	MANGANESE	1.6	1.0	2.0	UG_L	
RBSB121113 04	NICKEL	2.5	1.2	2.0	UG_L	
RBSB121113 04	VANADIUM	1.4	4.0	5.0	UG_L	
RBSB121113 04	ZINC	6.1	8.0	10	UG_L	

Table A-2 Matrix Spikes

Sample ID	Compound	MS % Recovery	MSD % Recovery	Lower Limit	Upper Limit	RPD	RPD Limit
OU09 SS212 0001	MERCURY	20	25.6	80	120	3.6	<20
OU09 SS212 0001	ALUMINUM	1381.5	1582.6	80	120	1.6	<20
OU09 SS212 0001	IRON	5747.8	4420.4	80	120	4.0	<20
OU09 SS212 0001	LEAD	401.7	233.3	80	120	12.7	<20
OU09 SS212 0001	MAGNESIUM	0.5	106.3	80	120	7.4	<20
OU09 SS212 0001	MANGANESE	164.3	140.2	80	120	3.8	<20
OU09 SS212 0001	ZINC	259.4	126.0	80	120	23.1	<20
OU09 SS212 0001	CALCIUM	-9214.1	-5073.3	80	120	70.9	<20
OU09 SS212 0001	ANTIMONY	62.5	55.6	80	120	13.1	<20

Table A-3 Field Duplicates

Sample ID	Duplicate ID	Compound	Sample Result	Qual	Duplicate Result	Qual	LOD	LOQ	Units	RPD
OU09 SB302 0810	FDSB12101302	NICKEL	22.3		11.8		0.081	0.14	MG_KG	61.6
OU09 SB302 0810	FDSB12101302	SILVER	0.02	J	0.86		0.027	0.068	MG_KG	190.9
OU09 SB302 0810	FDSB12101302	ANTIMONY	0.12		396		0.034	0.068	MG_KG	199.9
OU09 SB302 0810	FDSB12101302	ARSENIC	9.1		130		0.27	0.34	MG_KG	173.8
OU09 SB302 0810	FDSB12101302	CHROMIUM, TOTAL	16.4		7.8		0.27	0.34	MG_KG	71.1
OU09 SB302 0810	FDSB12101302	COBALT	13.3		5.4		0.02	0.068	MG_KG	84.5
OU09 SB302 0810	FDSB12101302	LEAD	10.2		29900		0.034	0.068	MG_KG	199.9
OU09 SB302 0810	FDSB12101302	MANGANESE	685		391		0.34	0.68	MG_KG	54.6
OU09 SB302 0810	FDSB12101302	MAGNESIUM	4090		1500		27	34	MG_KG	92.7
OU09 SB302 0810	FDSB12101302	POTASSIUM	772		256		34	68	MG_KG	100.4
OU09 SB302 0810	FDSB12101302	IRON	32700		14600		27	34	MG_KG	76.5

Attachment B

Qualifier Codes and Explanations

Qualifier	Explanation
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
UJ	The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual quantitation limit necessary to accurately and precisely measure the analyte in the sample.
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

Attachment C

Reason Codes and Explanations

Reason Code	Explanation
be	Equipment blank contamination
bf	Field blank contamination
bl	Laboratory blank contamination
c	Calibration issue
d	Reporting limit raised due to chromatographic interference
fd	Field duplicate RPDs
h	Holding times
i	Internal standard areas
k	Estimated Maximum Possible Concentration (EMPC)
l	LCS recoveries
lc	Labeled compound recovery
ld	Laboratory duplicate RPDs
lp	Laboratory control sample/laboratory control sample duplicate RPDs
m	Matrix spike recovery
md	Matrix spike/matrix spike duplicate RPDs
nb	Negative laboratory blank contamination
p	Chemical preservation issue
r	Dual column RPD
q	Quantitation issue
s	Surrogate recovery
su	Ion suppression
t	Temperature preservation issue
x	Percent solids
y	Serial dilution results
z	ICS results

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Data Validation Report

Project:	MRP Site 1 (OU9) Remedial Investigation, NAVSTA Newport, Rhode Island CTO WE06
Laboratory:	Katahdin Analytical Services, Scarborough, Maine
Service Request:	CARR-9
Analyses/Method:	EPA SW-846 Methods 6010C, 6020A, 7470A, 7471B for TAL Metals
Validation Level:	Limited
Resolution Consultants Project Number:	60250336 SA.DV
Prepared by:	Kristin Rutherford/Resolution Consultants Completed on: 02/12/2014
Reviewed by:	Waverly Braunstein/Resolution Consultants File Name: CARR-9_SO_Metals_DVRpt

SUMMARY

The samples listed below were collected by Resolution Consultants from MRP Site 1 (OU9), NAVSTA Newport, Rhode Island on December 10 and 11, 2013.

Sample ID	Matrix/Sample Type
RBSB121113 03	Equipment blank
RBSB121113 04	Equipment blank
FDSB12101302	Field Duplicate of OU09 SB302 0810
OU09 SS229 0001-02	Field Duplicate of OU09 SS229 0001-01
OU09 SB202 0305	Soil
OU09 SB202 0608	Soil
OU09 SB203 0305	Soil
OU09 SB203 0608	Soil
OU09 SB206 0305	Soil
OU09 SB206 0608	Soil
OU09 SB217 0102	Soil
OU09 SB217 0305	Soil
OU09 SB217 0608	Soil
OU09 SB221 0102	Soil
OU09 SB221 0305	Soil
OU09 SB221 0608	Soil
OU09 SB221 0810	Soil
OU09 SB229 0102	Soil
OU09 SB229 0305	Soil
OU09 SB302 0305	Soil

Sample ID	Matrix/Sample Type
OU09 SB302 0608	Soil
OU09 SB302 0810	Soil
OU09 SB303 0305	Soil
OU09 SB303 0608	Soil
OU09 SB303 0810	Soil
OU09 SS202 0001	Soil
OU09 SS203 0001	Soil
OU09 SS206 0001	Soil
OU09 SS217 0001	Soil
OU09 SS221 0001	Soil
OU09 SS229 0001-01	Soil
OU09 SS302 0001	Soil
OU09 SS303 0001	Soil

The data have been validated in accordance with the project-specific Sampling and Analysis Plan, *Sampling and Analysis Plan, Former Carr Point Shooting Range (MRP Site 1, OU9), Naval Station (NAVSTA) Newport, Rhode Island, Final* (Naval Facilities Engineering Command, Mid-Atlantic, 2013) and the following references:

- *DoD Quality Systems Manual (QMS) for Environmental Laboratories, version 4.2* (DoD EDQW, 2010);
- *USEPA Region 1, EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses* (December 1996);
- *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review* (January 2010);
- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW846, Method 6010C, Inductively Coupled Plasma-Atomic Emission Spectrometry* (USEPA, 1996);
- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW846, Method 6020A, Inductively Coupled Plasma-Mass Spectrometry* (USEPA, 1996);
- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW846, Method 7471B, Mercury in Solid or Semisolid Waste (Manual Cold-Vapor Technique)* (USEPA, 1996);
- laboratory quality control (QC) limits, as applicable.

The USEPA Region 1 and National Data Validation Functional Guidelines were modified to accommodate the non-CLP methodologies. In the absence of method-specific direction for validation, Resolution Consultants professional judgment was used as appropriate.

REVIEW ELEMENTS

The data were evaluated based on the following parameters (where applicable to the method):

✓ Data completeness (chain-of-custody (COC)/sample integrity
✓ Holding times and sample preservation
✓ ICP/MS Instrument tuning
✓ Initial calibration/continuing calibration verification
✗ Laboratory blanks/equipment blanks
✓ ICP interference check standards

✗	Matrix spike (MS) and/or matrix spike duplicate (MSD) results
✓	Laboratory duplicate results
✓	Laboratory control sample (LCS)/laboratory control sample duplicate (LCSD) results
✗	Field duplicates
✓	ICP/ICPMS serial dilution results
✓	ICP/MS internal standard performance
✓	Sample results/reporting issues

The symbol (✓) indicates that no validation qualifiers were applied based on this parameter. NA indicates that the parameter was not included as part of this data set or was not applicable to this validation and therefore not reviewed. The symbol (✗) indicates that a quality control (QC) nonconformance resulted in the qualification of data. Any QC nonconformance that resulted in the qualification of data is discussed below. In addition, nonconformances or other issues that were noted during validation, but did not result in qualification of data, may be discussed for informational purposes only.

The data appear valid as reported and may be used for decision making purposes. Selected data points were estimated, negated, and/or rejected due to nonconformances of certain QC criteria (see discussion below). Qualified sample results are presented in Table 1.

RESULTS

Data Completeness

The data package was reviewed and found to meet acceptance criteria for completeness:

- The COCs were reviewed for completeness of information relevant to the samples and requested analyses, and for signatures indicating transfer of sample custody.
- The laboratory sample login sheet(s) were reviewed for issues potentially affecting sample integrity, including the condition of sample containers upon receipt at the laboratory.
- Completeness of analyses was verified by comparing the reported results to the COC requests.

The COC for rinsate blank RBSB12111304 was not signed as relinquished or received. Sample was not received by the lab for metals analysis; therefore, an aliquot was poured off from the (unpreserved) explosives bottle and preserved with HNO3 by the lab. Sample receipt condition report indicates sample was received 12/11/13 and sample date is within sample ID. No qualifications were made except to note this discrepancy.

Holding Times/Sample Preservation

Sample preservation and preparation/analysis holding times were reviewed for conformance with the QC acceptance criteria.

Some samples received at 1.1°C which was below the criteria of 4±2°C. Since samples were received in good condition on ice, no qualifications were required.

ICP/MS Instrument Tuning

ICP/MS tuning results were reviewed for conformance with the QC acceptance criteria to ensure that:

- the proper tuning solution was used with elements representing all of the mass regions of interest;
- the tunings were performed at the beginning of each analysis and prior to calibration;
- the tuning solution was analyzed at least 4 times as required by the method;
- the mass calibration was within 0.1 amu of the true value for all masses within the region of interest;
- the resolution was verified to be <0.9 amu full width at 10% peak height; and
- the %RSD was ≤ 5% for the analytes contained in the tuning solution.

The QC acceptance criteria were met.

Initial Calibration/Continuing Calibration Verification

Calibration data were reviewed for conformance with the QC acceptance criteria to ensure that:

- all criteria were met for the calibration curves
- the initial calibration verification (ICV) percent recovery (%R) criteria were met;
- the continuing calibration verification standard (CCV) method percent difference (%Ds) were met; and
- the low level check standards (CRI or CRA) %R criteria were met.

The QC acceptance criteria were met.

Laboratory Blanks/Equipment Blanks

Laboratory method blanks and equipment rinsate blanks were evaluated as to whether there were contaminants detected above the method detection limit (MDL). Data validation qualifications for individual samples are based on the maximum contaminant concentration detected in all associated blanks.

Method and equipment rinsate results were reviewed for conformance with the QC acceptance criteria. Detected results in blanks are not discussed in this data validation report if the associated results were nondetect or if qualification of sample results was not required.

Nonconformances are summarized in Attachment A in Table A-1a and A-1b. Sample results were qualified as follows:

Blank Type	Blank Result	Sample Result	Action for Samples
PB / EB/ FB (Positive)	> LOQ	≥IDL/MDL but ≤ LOQ	Qualify as nondetect (U) at the LOQ
		>LOQ but < 10x Blank Result	Qualify results as unusable
		≥10x Blank Result	No action
	≥IDL/MDL but ≤LOQ	Nondetect	No action
		≥IDL/MDL but ≤LOQ	Qualify as nondetect (U) at the LOQ
		> LOQ	Use Resolution Consultants professional judgment (see below [1])
PB (Negative)	< (-LOQ)	< 10x LOQ	Qualify positive results <10x LOQ as estimated (J) and nondetects as estimated (UJ)
		≥10x LOQ	No action

[1] Establish an action level (AL) at 5x the blank contamination. If sample result is <AL, qualify the reported result with a U.

Qualified sample results are shown in Table 1.

ICP Interference Check Standards

The ICP interference check standards (ICSA, ICSAB) were reviewed for conformance.

All criteria were met for the ICSA and ICSAB.

MS/MSD Results

The MS and/or MSD %Rs and/or RPDs were reviewed for conformance with the QC acceptance criteria.

Nonconformances are summarized in Attachment A in Table A-2. Data qualification on the basis of MS and/or MSD nonconformances was as follows:

Qualify Results	%R < 30	80 > %R ≥ 30	%R >120	RPD>20
Detected results	J	J	J	J
Nondetects	R	UJ	Accept	UJ

Notes: MS actions apply to all samples of the same matrix. This qualification will also be applied to the results of all samples within a given area of the site, if deemed appropriate.

1. If the sample result (SR) > 4x the spike concentration (S), no action is taken.
2. If any analyte does not meet the %R criteria and a post digestion spike (PDS) analysis was performed, use professional judgment to assess the results. Refer to the National Functional Guidelines (NFG) 2010 for recommended actions.
3. If either the MS or MSD does not meet %R criteria, qualify all associated samples.

No qualifications were required for aluminum, iron, lead, and manganese since the sample results were greater than 4X the spike concentration.

Qualified sample results are shown in Table 1.

Laboratory Duplicate Results

Since a laboratory duplicate was not analyzed, matrix spike and matrix spiked duplicates were used to assess precision and the relative percent differences (RPDs) were reviewed for conformance.

The RPDs were within the QC acceptance criteria.

LCS/LCSD Results

The LCS/LCSD %Rs and/or RPDs were reviewed for conformance with the QC acceptance criteria.

The LCS and LCSD %Rs and RPDs were within the QC acceptance criteria.

Field Duplicate Results

Field duplicate RPDs were reviewed for conformance with the Resolution Consultants QC acceptance criterion of ≤50% for solid matrices and ≤30% for aqueous matrices. This criterion applies if both results were greater than 5 times the limit of quantitation (LOQ).

Nonconformances are summarized in Attachment A in Table A-3. Data qualification on the basis of field duplicate RPDs was as follows:

Actions: (Based on Resolution Consultants professional judgment)

Criteria	RPD	Action	
		Detected	Nondetected
Sample and duplicate are nondetect results	Not calculable (NC)	No qualification	No qualification
Sample and duplicate results <SLOQ	Not applicable	No qualification	No qualification
Sample and duplicate results ≥5xSLOQ	>30% Aqueous >50% All other sample types	J	Not Applicable
Sample and duplicate results are >SLOQ and <5xSLOQ	>60% Aqueous >100% All other sample types	J	Not Applicable
If sample or duplicate result is =SLOQ and the other is not detected	NC	J	UJ
If sample or duplicate result is <SLOQ and the other is not detected	NC	No qualification	No qualification

Qualified sample results are summarized in Table 1.

ICP/ICPMS Serial Dilution Results

The serial dilution percent differences (%Ds) were reviewed for conformance with the QC acceptance criteria.

The serial dilution %Ds were within the QC acceptance criteria.

ICP/MS Internal Standard Performance

ICP/MS Internal standard performance was reviewed for conformance and was within the QC acceptance criteria.

Sample Results/Reporting Issues

All analytes detected at concentrations less than the limit of quantitation (LOQ) but greater than the method detection limit (MDL) were qualified by the laboratory as estimated (J). This "J" qualifier was retained during data validation.

Resolution Consultants professional judgment was used to qualify sample results with percent solids that were <30%. All criteria were met.

QUALIFICATION ACTIONS

Sample results qualified as a result of validation actions are summarized in Table 1. All actions are described above.

ATTACHMENTS

Attachment A: Nonconformance Summary Tables

Attachment B: Qualifier Codes and Explanations

Attachment C: Reason Codes and Explanations

Table 1 - Data Validation Summary of Qualified Data

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
FDSB12101302	SO	CALCIUM	578	29	36	MG_KG	J+	m
FDSB12101302	SO	IRON	14600	29	36	MG_KG	J	fd
FDSB12101302	SO	MAGNESIUM	1500	29	36	MG_KG	J	fd
FDSB12101302	SO	POTASSIUM	256	36	73	MG_KG	J	fd
FDSB12101302	SO	SODIUM	73	73	73	MG_KG	U	be
FDSB12101302	SO	ANTIMONY	396	0.18	0.36	MG_KG	J	m,fd
FDSB12101302	SO	ARSENIC	130	0.29	0.36	MG_KG	J	fd
FDSB12101302	SO	CHROMIUM, TOTAL	7.8	0.29	0.36	MG_KG	J	fd
FDSB12101302	SO	COBALT	5.4	0.022	0.073	MG_KG	J	fd
FDSB12101302	SO	LEAD	29900	3.6	7.3	MG_KG	J	fd
FDSB12101302	SO	MANGANESE	391	0.36	0.73	MG_KG	J	fd
FDSB12101302	SO	NICKEL	11.8	0.087	0.14	MG_KG	J	fd
FDSB12101302	SO	SILVER	0.86	0.029	0.073	MG_KG	J	fd
FDSB12101302	SO	ZINC	54.4	0.58	0.73	MG_KG	J+	m
OU09 SB202 0305	SO	CALCIUM	422	27	33	MG_KG	J+	m
OU09 SB202 0305	SO	IRON	34600	27	33	MG_KG	J	fd
OU09 SB202 0305	SO	MAGNESIUM	2170	27	33	MG_KG	J	fd
OU09 SB202 0305	SO	POTASSIUM	659	33	67	MG_KG	J	fd
OU09 SB202 0305	SO	SODIUM	67	67	67	MG_KG	U	be
OU09 SB202 0305	SO	ANTIMONY	0.1	0.033	0.067	MG_KG	J	m,fd
OU09 SB202 0305	SO	ARSENIC	9.2	0.27	0.33	MG_KG	J	fd
OU09 SB202 0305	SO	CHROMIUM, TOTAL	11.0	0.27	0.33	MG_KG	J	fd
OU09 SB202 0305	SO	COBALT	12.8	0.020	0.067	MG_KG	J	fd
OU09 SB202 0305	SO	LEAD	8.8	0.033	0.067	MG_KG	J	fd
OU09 SB202 0305	SO	MANGANESE	441	0.33	0.67	MG_KG	J	fd
OU09 SB202 0305	SO	NICKEL	20.6	0.080	0.13	MG_KG	J	fd
OU09 SB202 0305	SO	SILVER	0.02	0.027	0.067	MG_KG	J	fd
OU09 SB202 0305	SO	ZINC	47.3	0.53	0.67	MG_KG	J+	m
OU09 SB202 0608	SO	CALCIUM	482	26	32	MG_KG	J+	m
OU09 SB202 0608	SO	IRON	41900	26	32	MG_KG	J	fd
OU09 SB202 0608	SO	MAGNESIUM	1970	26	32	MG_KG	J	fd
OU09 SB202 0608	SO	POTASSIUM	454	32	65	MG_KG	J	fd
OU09 SB202 0608	SO	SODIUM	65	65	65	MG_KG	U	be
OU09 SB202 0608	SO	ANTIMONY	0.08	0.032	0.065	MG_KG	J	m,fd
OU09 SB202 0608	SO	ARSENIC	4.4	0.26	0.32	MG_KG	J	fd
OU09 SB202 0608	SO	CHROMIUM, TOTAL	11.1	0.26	0.32	MG_KG	J	fd
OU09 SB202 0608	SO	COBALT	18.6	0.019	0.065	MG_KG	J	fd
OU09 SB202 0608	SO	LEAD	6.7	0.032	0.065	MG_KG	J	fd
OU09 SB202 0608	SO	MANGANESE	548	0.32	0.65	MG_KG	J	fd

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SB202 0608	SO	NICKEL	25.0	0.078	0.13	MG_KG	J	fd
OU09 SB202 0608	SO	SILVER	0.03	0.026	0.065	MG_KG	J	fd
OU09 SB202 0608	SO	ZINC	56.0	0.52	0.65	MG_KG	J+	m
OU09 SB203 0305	SO	CALCIUM	206	16	20	MG_KG	J+	m
OU09 SB203 0305	SO	IRON	21600	16	20	MG_KG	J	fd
OU09 SB203 0305	SO	MAGNESIUM	788	16	20	MG_KG	J	fd
OU09 SB203 0305	SO	POTASSIUM	725	50	100	MG_KG	J	fd
OU09 SB203 0305	SO	SODIUM	100	100	100	MG_KG	U	be
OU09 SB203 0305	SO	ANTIMONY	0.16	0.050	0.10	MG_KG	J	m,fd
OU09 SB203 0305	SO	ARSENIC	17.6	0.40	0.50	MG_KG	J	fd
OU09 SB203 0305	SO	CHROMIUM, TOTAL	13.8	0.40	0.50	MG_KG	J	fd
OU09 SB203 0305	SO	COBALT	24.7	0.030	0.10	MG_KG	J	fd
OU09 SB203 0305	SO	LEAD	14.6	0.050	0.10	MG_KG	J	fd
OU09 SB203 0305	SO	MANGANESE	796	0.20	0.40	MG_KG	J	fd
OU09 SB203 0305	SO	NICKEL	42.6	0.12	0.20	MG_KG	J	fd
OU09 SB203 0305	SO	SELENIUM	0.50	0.50	0.50	MG_KG	U	bl
OU09 SB203 0305	SO	SILVER	0.03	0.040	0.10	MG_KG	J	fd
OU09 SB203 0305	SO	ZINC	87.5	0.80	1.0	MG_KG	J+	m
OU09 SB203 0608	SO	CALCIUM	107	11	14	MG_KG	J+	m
OU09 SB203 0608	SO	IRON	8480	11	14	MG_KG	J	fd
OU09 SB203 0608	SO	MAGNESIUM	807	11	14	MG_KG	J	fd
OU09 SB203 0608	SO	POTASSIUM	610	34	68	MG_KG	J	fd
OU09 SB203 0608	SO	SODIUM	68	68	68	MG_KG	U	be
OU09 SB203 0608	SO	ANTIMONY	0.08	0.034	0.068	MG_KG	J	m,fd
OU09 SB203 0608	SO	ARSENIC	3.0	0.27	0.34	MG_KG	J	fd
OU09 SB203 0608	SO	CHROMIUM, TOTAL	9.6	0.31	0.39	MG_KG	J	fd
OU09 SB203 0608	SO	COBALT	10.0	0.020	0.068	MG_KG	J	fd
OU09 SB203 0608	SO	LEAD	6.2	0.034	0.068	MG_KG	J	fd
OU09 SB203 0608	SO	MANGANESE	319	0.068	0.14	MG_KG	J	fd
OU09 SB203 0608	SO	NICKEL	17.4	0.081	0.14	MG_KG	J	fd
OU09 SB203 0608	SO	SELENIUM	0.34	0.34	0.34	MG_KG	U	bl
OU09 SB203 0608	SO	SILVER	0.02	0.027	0.068	MG_KG	J	fd
OU09 SB203 0608	SO	ZINC	36.6	0.54	0.68	MG_KG	J+	m
OU09 SB206 0305	SO	CALCIUM	1340	31	39	MG_KG	J+	m
OU09 SB206 0305	SO	IRON	27200	31	39	MG_KG	J	fd
OU09 SB206 0305	SO	MAGNESIUM	1670	31	39	MG_KG	J	fd
OU09 SB206 0305	SO	POTASSIUM	354	39	79	MG_KG	J	fd
OU09 SB206 0305	SO	SODIUM	79	79	79	MG_KG	U	be
OU09 SB206 0305	SO	ANTIMONY	0.1	0.039	0.079	MG_KG	J	m,fd

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SB206 0305	SO	ARSENIC	8.2	0.31	0.39	MG_KG	J	fd
OU09 SB206 0305	SO	CHROMIUM, TOTAL	12.3	0.31	0.39	MG_KG	J	fd
OU09 SB206 0305	SO	COBALT	9.4	0.024	0.079	MG_KG	J	fd
OU09 SB206 0305	SO	LEAD	14.9	0.039	0.079	MG_KG	J	fd
OU09 SB206 0305	SO	MANGANESE	618	0.16	0.31	MG_KG	J	fd
OU09 SB206 0305	SO	NICKEL	23.8	0.094	0.16	MG_KG	J	fd
OU09 SB206 0305	SO	SILVER	0.05	0.031	0.079	MG_KG	J	fd
OU09 SB206 0305	SO	ZINC	41.5	0.63	0.79	MG_KG	J+	m
OU09 SB206 0608	SO	CALCIUM	457	29	37	MG_KG	J+	m
OU09 SB206 0608	SO	IRON	45000	29	37	MG_KG	J	fd
OU09 SB206 0608	SO	MAGNESIUM	2480	29	37	MG_KG	J	fd
OU09 SB206 0608	SO	POTASSIUM	665	37	74	MG_KG	J	fd
OU09 SB206 0608	SO	SODIUM	74	74	74	MG_KG	U	be
OU09 SB206 0608	SO	ANTIMONY	0.14	0.037	0.074	MG_KG	J	m,fd
OU09 SB206 0608	SO	ARSENIC	11.2	0.29	0.37	MG_KG	J	fd
OU09 SB206 0608	SO	CHROMIUM, TOTAL	12.2	0.29	0.37	MG_KG	J	fd
OU09 SB206 0608	SO	COBALT	18.5	0.022	0.074	MG_KG	J	fd
OU09 SB206 0608	SO	LEAD	9.7	0.037	0.074	MG_KG	J	fd
OU09 SB206 0608	SO	MANGANESE	612	0.15	0.29	MG_KG	J	fd
OU09 SB206 0608	SO	NICKEL	34.1	0.088	0.15	MG_KG	J	fd
OU09 SB206 0608	SO	SELENIUM	0.37	0.37	0.37	MG_KG	U	bl
OU09 SB206 0608	SO	SILVER	0.02	0.029	0.074	MG_KG	J	fd
OU09 SB206 0608	SO	ZINC	74.0	0.59	0.74	MG_KG	J+	m
OU09 SB217 0102	SO	CALCIUM	828	6.8	8.5	MG_KG	J+	m
OU09 SB217 0102	SO	IRON	21300	6.8	8.5	MG_KG	J	fd
OU09 SB217 0102	SO	MAGNESIUM	1790	6.8	8.5	MG_KG	J	fd
OU09 SB217 0102	SO	POTASSIUM	448	43	85	MG_KG	J	fd
OU09 SB217 0102	SO	SODIUM	85	85	85	MG_KG	U	be
OU09 SB217 0102	SO	ANTIMONY	0.44	0.043	0.085	MG_KG	J	m,fd
OU09 SB217 0102	SO	ARSENIC	6.6	0.34	0.43	MG_KG	J	fd
OU09 SB217 0102	SO	CHROMIUM, TOTAL	10.8	0.34	0.43	MG_KG	J	fd
OU09 SB217 0102	SO	COBALT	7.5	0.026	0.085	MG_KG	J	fd
OU09 SB217 0102	SO	LEAD	83.7	0.043	0.085	MG_KG	J	fd
OU09 SB217 0102	SO	MANGANESE	337	0.085	0.17	MG_KG	J	fd
OU09 SB217 0102	SO	NICKEL	15.4	0.10	0.17	MG_KG	J	fd
OU09 SB217 0102	SO	SILVER	0.07	0.034	0.085	MG_KG	J	fd
OU09 SB217 0102	SO	ZINC	48.2	0.68	0.85	MG_KG	J+	m
OU09 SB217 0305	SO	CALCIUM	756	33	41	MG_KG	J+	m
OU09 SB217 0305	SO	IRON	27700	33	41	MG_KG	J	fd

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SB217 0305	SO	MAGNESIUM	1910	33	41	MG_KG	J	fd
OU09 SB217 0305	SO	POTASSIUM	402	41	82	MG_KG	J	fd
OU09 SB217 0305	SO	SODIUM	82	82	82	MG_KG	U	be
OU09 SB217 0305	SO	ANTIMONY	0.26	0.041	0.082	MG_KG	J	m,fd
OU09 SB217 0305	SO	ARSENIC	13.8	0.33	0.41	MG_KG	J	fd
OU09 SB217 0305	SO	CHROMIUM, TOTAL	12.0	0.33	0.41	MG_KG	J	fd
OU09 SB217 0305	SO	COBALT	9.8	0.024	0.082	MG_KG	J	fd
OU09 SB217 0305	SO	LEAD	50.9	0.041	0.082	MG_KG	J	fd
OU09 SB217 0305	SO	MANGANESE	551	0.41	0.82	MG_KG	J	fd
OU09 SB217 0305	SO	NICKEL	18.8	0.098	0.16	MG_KG	J	fd
OU09 SB217 0305	SO	SILVER	0.07	0.033	0.082	MG_KG	J	fd
OU09 SB217 0305	SO	ZINC	79.4	0.65	0.82	MG_KG	J+	m
OU09 SB217 0608	SO	CALCIUM	401	35	44	MG_KG	J+	m
OU09 SB217 0608	SO	IRON	47600	35	44	MG_KG	J	fd
OU09 SB217 0608	SO	MAGNESIUM	1590	35	44	MG_KG	J	fd
OU09 SB217 0608	SO	POTASSIUM	539	44	88	MG_KG	J	fd
OU09 SB217 0608	SO	SODIUM	88	88	88	MG_KG	U	be
OU09 SB217 0608	SO	ANTIMONY	0.10	0.044	0.088	MG_KG	J	m,fd
OU09 SB217 0608	SO	ARSENIC	10.6	0.35	0.44	MG_KG	J	fd
OU09 SB217 0608	SO	CHROMIUM, TOTAL	12.2	0.35	0.44	MG_KG	J	fd
OU09 SB217 0608	SO	COBALT	20.7	0.026	0.088	MG_KG	J	fd
OU09 SB217 0608	SO	LEAD	9.8	0.044	0.088	MG_KG	J	fd
OU09 SB217 0608	SO	MANGANESE	847	0.44	0.88	MG_KG	J	fd
OU09 SB217 0608	SO	NICKEL	33.4	0.10	0.18	MG_KG	J	fd
OU09 SB217 0608	SO	SILVER	0.04	0.035	0.088	MG_KG	J	fd
OU09 SB217 0608	SO	ZINC	102	0.70	0.88	MG_KG	J+	m
OU09 SB221 0102	SO	CALCIUM	700	29	36	MG_KG	J+	m
OU09 SB221 0102	SO	IRON	29500	29	36	MG_KG	J	fd
OU09 SB221 0102	SO	MAGNESIUM	2810	29	36	MG_KG	J	fd
OU09 SB221 0102	SO	POTASSIUM	463	36	73	MG_KG	J	fd
OU09 SB221 0102	SO	SODIUM	73	73	73	MG_KG	U	be
OU09 SB221 0102	SO	ANTIMONY	0.08	0.036	0.073	MG_KG	J	m,fd
OU09 SB221 0102	SO	ARSENIC	8.9	0.29	0.36	MG_KG	J	fd
OU09 SB221 0102	SO	CHROMIUM, TOTAL	13.6	0.29	0.36	MG_KG	J	fd
OU09 SB221 0102	SO	COBALT	12.2	0.022	0.073	MG_KG	J	fd
OU09 SB221 0102	SO	LEAD	14.5	0.036	0.073	MG_KG	J	fd
OU09 SB221 0102	SO	MANGANESE	437	0.36	0.73	MG_KG	J	fd
OU09 SB221 0102	SO	NICKEL	23.8	0.088	0.14	MG_KG	J	fd
OU09 SB221 0102	SO	SILVER	0.08	0.029	0.073	MG_KG	J	fd

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SB221 0102	SO	ZINC	52.2	0.58	0.73	MG_KG	J+	m
OU09 SB221 0305	SO	CALCIUM	451	26	33	MG_KG	J+	m
OU09 SB221 0305	SO	IRON	25500	26	33	MG_KG	J	fd
OU09 SB221 0305	SO	MAGNESIUM	1630	26	33	MG_KG	J	fd
OU09 SB221 0305	SO	POTASSIUM	419	33	66	MG_KG	J	fd
OU09 SB221 0305	SO	SODIUM	66	66	66	MG_KG	U	be
OU09 SB221 0305	SO	ANTIMONY	0.13	0.033	0.066	MG_KG	J	m,fd
OU09 SB221 0305	SO	ARSENIC	7.1	0.26	0.33	MG_KG	J	fd
OU09 SB221 0305	SO	CHROMIUM, TOTAL	10.1	0.26	0.33	MG_KG	J	fd
OU09 SB221 0305	SO	COBALT	7.7	0.020	0.066	MG_KG	J	fd
OU09 SB221 0305	SO	LEAD	7.0	0.033	0.066	MG_KG	J	fd
OU09 SB221 0305	SO	MANGANESE	607	0.33	0.66	MG_KG	J	fd
OU09 SB221 0305	SO	NICKEL	13.8	0.079	0.13	MG_KG	J	fd
OU09 SB221 0305	SO	SILVER	0.03	0.026	0.066	MG_KG	J	fd
OU09 SB221 0305	SO	ZINC	28.3	0.53	0.66	MG_KG	J+	m
OU09 SB221 0608	SO	CALCIUM	331	32	40	MG_KG	J+	m
OU09 SB221 0608	SO	IRON	29400	32	40	MG_KG	J	fd
OU09 SB221 0608	SO	MAGNESIUM	2440	32	40	MG_KG	J	fd
OU09 SB221 0608	SO	POTASSIUM	603	40	80	MG_KG	J	fd
OU09 SB221 0608	SO	SODIUM	80	80	80	MG_KG	U	be
OU09 SB221 0608	SO	ANTIMONY	0.12	0.040	0.080	MG_KG	J	m,fd
OU09 SB221 0608	SO	ARSENIC	7.2	0.32	0.40	MG_KG	J	fd
OU09 SB221 0608	SO	CHROMIUM, TOTAL	10.3	0.32	0.40	MG_KG	J	fd
OU09 SB221 0608	SO	COBALT	13.6	0.024	0.080	MG_KG	J	fd
OU09 SB221 0608	SO	LEAD	8.6	0.040	0.080	MG_KG	J	fd
OU09 SB221 0608	SO	MANGANESE	559	0.40	0.80	MG_KG	J	fd
OU09 SB221 0608	SO	NICKEL	20.3	0.096	0.16	MG_KG	J	fd
OU09 SB221 0608	SO	SILVER	0.02	0.032	0.080	MG_KG	J	fd
OU09 SB221 0608	SO	ZINC	72.2	0.64	0.80	MG_KG	J+	m
OU09 SB221 0810	SO	CALCIUM	370	28	35	MG_KG	J+	m
OU09 SB221 0810	SO	IRON	48300	28	35	MG_KG	J	fd
OU09 SB221 0810	SO	MAGNESIUM	3060	28	35	MG_KG	J	fd
OU09 SB221 0810	SO	POTASSIUM	566	35	71	MG_KG	J	fd
OU09 SB221 0810	SO	SODIUM	71	71	71	MG_KG	U	be
OU09 SB221 0810	SO	ANTIMONY	0.13	0.035	0.071	MG_KG	J	m,fd
OU09 SB221 0810	SO	ARSENIC	12.2	0.28	0.35	MG_KG	J	fd
OU09 SB221 0810	SO	CHROMIUM, TOTAL	13.9	0.28	0.35	MG_KG	J	fd
OU09 SB221 0810	SO	COBALT	18.0	0.021	0.071	MG_KG	J	fd
OU09 SB221 0810	SO	LEAD	10.3	0.035	0.071	MG_KG	J	fd

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SB221 0810	SO	MANGANESE	693	0.35	0.71	MG_KG	J	fd
OU09 SB221 0810	SO	NICKEL	30.5	0.085	0.14	MG_KG	J	fd
OU09 SB221 0810	SO	SILVER	0.03	0.028	0.071	MG_KG	J	fd
OU09 SB221 0810	SO	ZINC	76.8	0.57	0.71	MG_KG	J+	m
OU09 SB229 0102	SO	CALCIUM	1300	6.9	8.7	MG_KG	J+	m
OU09 SB229 0102	SO	IRON	17900	6.9	8.7	MG_KG	J	fd
OU09 SB229 0102	SO	MAGNESIUM	1750	6.9	8.7	MG_KG	J	fd
OU09 SB229 0102	SO	POTASSIUM	395	43	87	MG_KG	J	fd
OU09 SB229 0102	SO	SODIUM	87	87	87	MG_KG	U	be
OU09 SB229 0102	SO	ANTIMONY	0.28	0.043	0.087	MG_KG	J	m,fd
OU09 SB229 0102	SO	ARSENIC	4.9	0.35	0.43	MG_KG	J	fd
OU09 SB229 0102	SO	CHROMIUM, TOTAL	11.2	0.35	0.43	MG_KG	J	fd
OU09 SB229 0102	SO	COBALT	7.0	0.026	0.087	MG_KG	J	fd
OU09 SB229 0102	SO	LEAD	24.5	0.043	0.087	MG_KG	J	fd
OU09 SB229 0102	SO	MANGANESE	327	0.087	0.17	MG_KG	J	fd
OU09 SB229 0102	SO	NICKEL	14.3	0.10	0.17	MG_KG	J	fd
OU09 SB229 0102	SO	SILVER	0.10	0.035	0.087	MG_KG	J	fd
OU09 SB229 0102	SO	ZINC	43.3	0.69	0.87	MG_KG	J+	m
OU09 SB229 0305	SO	CALCIUM	215	18	22	MG_KG	J+	m
OU09 SB229 0305	SO	IRON	13000	18	22	MG_KG	J	fd
OU09 SB229 0305	SO	MAGNESIUM	962	18	22	MG_KG	J	fd
OU09 SB229 0305	SO	POTASSIUM	658	56	110	MG_KG	J	fd
OU09 SB229 0305	SO	SODIUM	110	110	110	MG_KG	U	be
OU09 SB229 0305	SO	ANTIMONY	0.12	0.056	0.11	MG_KG	J	m,fd
OU09 SB229 0305	SO	ARSENIC	10.8	0.45	0.56	MG_KG	J	fd
OU09 SB229 0305	SO	CHROMIUM, TOTAL	11.3	0.45	0.56	MG_KG	J	fd
OU09 SB229 0305	SO	COBALT	16.5	0.034	0.11	MG_KG	J	fd
OU09 SB229 0305	SO	LEAD	10.3	0.056	0.11	MG_KG	J	fd
OU09 SB229 0305	SO	MANGANESE	597	0.22	0.45	MG_KG	J	fd
OU09 SB229 0305	SO	NICKEL	24.8	0.13	0.22	MG_KG	J	fd
OU09 SB229 0305	SO	SELENIUM	0.56	0.56	0.56	MG_KG	U	bl
OU09 SB229 0305	SO	SILVER	0.02	0.045	0.11	MG_KG	J	fd
OU09 SB229 0305	SO	ZINC	59.2	0.90	1.1	MG_KG	J+	m
OU09 SB302 0305	SO	CALCIUM	350	12	15	MG_KG	J+	m
OU09 SB302 0305	SO	IRON	29200	12	15	MG_KG	J	fd
OU09 SB302 0305	SO	MAGNESIUM	1880	12	15	MG_KG	J	fd
OU09 SB302 0305	SO	POTASSIUM	448	37	74	MG_KG	J	fd
OU09 SB302 0305	SO	SODIUM	74	74	74	MG_KG	U	be
OU09 SB302 0305	SO	ANTIMONY	0.08	0.037	0.074	MG_KG	J	m,fd

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SB302 0305	SO	ARSENIC	8.4	0.30	0.37	MG_KG	J	fd
OU09 SB302 0305	SO	CHROMIUM, TOTAL	12.0	0.30	0.37	MG_KG	J	fd
OU09 SB302 0305	SO	COBALT	16.2	0.022	0.074	MG_KG	J	fd
OU09 SB302 0305	SO	LEAD	8.3	0.037	0.074	MG_KG	J	fd
OU09 SB302 0305	SO	MANGANESE	894	0.37	0.74	MG_KG	J	fd
OU09 SB302 0305	SO	NICKEL	17.3	0.089	0.15	MG_KG	J	fd
OU09 SB302 0305	SO	SILVER	0.07	0.030	0.074	MG_KG	J	fd
OU09 SB302 0305	SO	ZINC	43.5	0.60	0.74	MG_KG	J+	m
OU09 SB302 0608	SO	CALCIUM	405	32	41	MG_KG	J+	m
OU09 SB302 0608	SO	IRON	44700	32	41	MG_KG	J	fd
OU09 SB302 0608	SO	MAGNESIUM	1410	32	41	MG_KG	J	fd
OU09 SB302 0608	SO	POTASSIUM	594	41	81	MG_KG	J	fd
OU09 SB302 0608	SO	SODIUM	81	81	81	MG_KG	U	be
OU09 SB302 0608	SO	ANTIMONY	0.12	0.041	0.081	MG_KG	J	m,fd
OU09 SB302 0608	SO	ARSENIC	12.5	0.32	0.41	MG_KG	J	fd
OU09 SB302 0608	SO	CHROMIUM, TOTAL	12.3	0.32	0.41	MG_KG	J	fd
OU09 SB302 0608	SO	COBALT	19.2	0.024	0.081	MG_KG	J	fd
OU09 SB302 0608	SO	LEAD	12.4	0.041	0.081	MG_KG	J	fd
OU09 SB302 0608	SO	MANGANESE	649	0.41	0.81	MG_KG	J	fd
OU09 SB302 0608	SO	NICKEL	26.8	0.098	0.16	MG_KG	J	fd
OU09 SB302 0608	SO	SILVER	0.02	0.032	0.081	MG_KG	J	fd
OU09 SB302 0608	SO	ZINC	69.8	0.65	0.81	MG_KG	J+	m
OU09 SB302 0810	SO	CALCIUM	479	27	34	MG_KG	J+	m
OU09 SB302 0810	SO	IRON	32700	27	34	MG_KG	J	fd
OU09 SB302 0810	SO	MAGNESIUM	4090	27	34	MG_KG	J	fd
OU09 SB302 0810	SO	POTASSIUM	772	34	68	MG_KG	J	fd
OU09 SB302 0810	SO	SODIUM	68	68	68	MG_KG	U	be
OU09 SB302 0810	SO	ANTIMONY	0.12	0.034	0.068	MG_KG	J	m,fd
OU09 SB302 0810	SO	ARSENIC	9.1	0.27	0.34	MG_KG	J	fd
OU09 SB302 0810	SO	CHROMIUM, TOTAL	16.4	0.27	0.34	MG_KG	J	fd
OU09 SB302 0810	SO	COBALT	13.3	0.020	0.068	MG_KG	J	fd
OU09 SB302 0810	SO	LEAD	10.2	0.034	0.068	MG_KG	J	fd
OU09 SB302 0810	SO	MANGANESE	685	0.34	0.68	MG_KG	J	fd
OU09 SB302 0810	SO	NICKEL	22.3	0.081	0.14	MG_KG	J	fd
OU09 SB302 0810	SO	SILVER	0.02	0.027	0.068	MG_KG	J	fd
OU09 SB302 0810	SO	ZINC	47.2	0.54	0.68	MG_KG	J+	m
OU09 SB303 0305	SO	CALCIUM	286	23	29	MG_KG	J+	m
OU09 SB303 0305	SO	IRON	44500	23	29	MG_KG	J	fd
OU09 SB303 0305	SO	MAGNESIUM	2890	23	29	MG_KG	J	fd

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SB303 0305	SO	POTASSIUM	528	29	59	MG_KG	J	fd
OU09 SB303 0305	SO	SODIUM	59	59	59	MG_KG	U	be
OU09 SB303 0305	SO	ANTIMONY	0.14	0.029	0.059	MG_KG	J	m,fd
OU09 SB303 0305	SO	ARSENIC	9.6	0.23	0.29	MG_KG	J	fd
OU09 SB303 0305	SO	CHROMIUM, TOTAL	13.3	0.23	0.29	MG_KG	J	fd
OU09 SB303 0305	SO	COBALT	19.1	0.018	0.059	MG_KG	J	fd
OU09 SB303 0305	SO	LEAD	10.4	0.029	0.059	MG_KG	J	fd
OU09 SB303 0305	SO	MANGANESE	680	0.29	0.59	MG_KG	J	fd
OU09 SB303 0305	SO	NICKEL	28.0	0.070	0.12	MG_KG	J	fd
OU09 SB303 0305	SO	SILVER	0.02	0.023	0.059	MG_KG	J	fd
OU09 SB303 0305	SO	ZINC	81.6	0.47	0.59	MG_KG	J+	m
OU09 SB303 0608	SO	CALCIUM	1330	28	35	MG_KG	J+	m
OU09 SB303 0608	SO	IRON	38200	28	35	MG_KG	J	fd
OU09 SB303 0608	SO	MAGNESIUM	4020	28	35	MG_KG	J	fd
OU09 SB303 0608	SO	POTASSIUM	242	35	70	MG_KG	J	fd
OU09 SB303 0608	SO	SODIUM	70	70	70	MG_KG	U	be
OU09 SB303 0608	SO	ANTIMONY	1.3	0.035	0.070	MG_KG	J	m,fd
OU09 SB303 0608	SO	ARSENIC	18.1	0.28	0.35	MG_KG	J	fd
OU09 SB303 0608	SO	CHROMIUM, TOTAL	15.7	0.28	0.35	MG_KG	J	fd
OU09 SB303 0608	SO	COBALT	16.7	0.021	0.070	MG_KG	J	fd
OU09 SB303 0608	SO	LEAD	80.5	0.035	0.070	MG_KG	J	fd
OU09 SB303 0608	SO	MANGANESE	482	0.14	0.28	MG_KG	J	fd
OU09 SB303 0608	SO	NICKEL	32.3	0.085	0.14	MG_KG	J	fd
OU09 SB303 0608	SO	SELENIUM	0.35	0.35	0.35	MG_KG	U	bl
OU09 SB303 0608	SO	SILVER	0.06	0.028	0.070	MG_KG	J	fd
OU09 SB303 0608	SO	ZINC	146	0.56	0.70	MG_KG	J+	m
OU09 SB303 0810	SO	CALCIUM	315	28	35	MG_KG	J+	m
OU09 SB303 0810	SO	IRON	43200	28	35	MG_KG	J	fd
OU09 SB303 0810	SO	MAGNESIUM	2020	28	35	MG_KG	J	fd
OU09 SB303 0810	SO	POTASSIUM	533	35	70	MG_KG	J	fd
OU09 SB303 0810	SO	SODIUM	70	70	70	MG_KG	U	be
OU09 SB303 0810	SO	ANTIMONY	0.15	0.035	0.070	MG_KG	J	m,fd
OU09 SB303 0810	SO	ARSENIC	12.2	0.28	0.35	MG_KG	J	fd
OU09 SB303 0810	SO	CHROMIUM, TOTAL	11.8	0.28	0.35	MG_KG	J	fd
OU09 SB303 0810	SO	COBALT	20.0	0.021	0.070	MG_KG	J	fd
OU09 SB303 0810	SO	LEAD	10.5	0.035	0.070	MG_KG	J	fd
OU09 SB303 0810	SO	MANGANESE	864	0.35	0.70	MG_KG	J	fd
OU09 SB303 0810	SO	NICKEL	29.8	0.084	0.14	MG_KG	J	fd
OU09 SB303 0810	SO	SELENIUM	0.35	0.35	0.35	MG_KG	U	bl

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SB303 0810	SO	SILVER	0.02	0.028	0.070	MG_KG	J	fd
OU09 SB303 0810	SO	ZINC	73.4	0.56	0.70	MG_KG	J+	m
OU09 SS202 0001	SO	CALCIUM	1970	13	16	MG_KG	J+	m
OU09 SS202 0001	SO	IRON	23600	13	16	MG_KG	J	fd
OU09 SS202 0001	SO	MAGNESIUM	2720	13	16	MG_KG	J	fd
OU09 SS202 0001	SO	POTASSIUM	442	40	80	MG_KG	J	fd
OU09 SS202 0001	SO	SODIUM	80	80	80	MG_KG	U	be
OU09 SS202 0001	SO	ANTIMONY	0.99	0.040	0.080	MG_KG	J	m,fd
OU09 SS202 0001	SO	ARSENIC	8.5	0.32	0.40	MG_KG	J	fd
OU09 SS202 0001	SO	CHROMIUM, TOTAL	14.5	0.32	0.40	MG_KG	J	fd
OU09 SS202 0001	SO	COBALT	8.7	0.024	0.080	MG_KG	J	fd
OU09 SS202 0001	SO	LEAD	132	0.040	0.080	MG_KG	J	fd
OU09 SS202 0001	SO	MANGANESE	340	0.080	0.16	MG_KG	J	fd
OU09 SS202 0001	SO	NICKEL	19.6	0.096	0.16	MG_KG	J	fd
OU09 SS202 0001	SO	SILVER	0.42	0.032	0.080	MG_KG	J	fd
OU09 SS202 0001	SO	ZINC	123	0.64	0.80	MG_KG	J+	m
OU09 SS203 0001	SO	CALCIUM	851	8.7	11	MG_KG	J+	m
OU09 SS203 0001	SO	IRON	16700	8.7	11	MG_KG	J	fd
OU09 SS203 0001	SO	MAGNESIUM	2980	8.7	11	MG_KG	J	fd
OU09 SS203 0001	SO	POTASSIUM	454	27	54	MG_KG	J	fd
OU09 SS203 0001	SO	SODIUM	54	54	54	MG_KG	U	be
OU09 SS203 0001	SO	ANTIMONY	0.05	0.027	0.054	MG_KG	J	m,fd
OU09 SS203 0001	SO	ARSENIC	7.2	0.22	0.27	MG_KG	J	fd
OU09 SS203 0001	SO	CHROMIUM, TOTAL	10.0	0.22	0.27	MG_KG	J	fd
OU09 SS203 0001	SO	COBALT	8.5	0.016	0.054	MG_KG	J	fd
OU09 SS203 0001	SO	LEAD	7.5	0.027	0.054	MG_KG	J	fd
OU09 SS203 0001	SO	MANGANESE	242	0.054	0.11	MG_KG	J	fd
OU09 SS203 0001	SO	NICKEL	14.5	0.065	0.11	MG_KG	J	fd
OU09 SS203 0001	SO	SILVER	0.02	0.022	0.054	MG_KG	J	fd
OU09 SS203 0001	SO	ZINC	33.6	0.44	0.54	MG_KG	J+	m
OU09 SS206 0001	SO	CALCIUM	1420	30	37	MG_KG	J+	m
OU09 SS206 0001	SO	IRON	25000	30	37	MG_KG	J	fd
OU09 SS206 0001	SO	MAGNESIUM	3100	30	37	MG_KG	J	fd
OU09 SS206 0001	SO	POTASSIUM	393	37	74	MG_KG	J	fd
OU09 SS206 0001	SO	SODIUM	74	74	74	MG_KG	U	be
OU09 SS206 0001	SO	ANTIMONY	0.54	0.037	0.074	MG_KG	J	m,fd
OU09 SS206 0001	SO	ARSENIC	8.9	0.30	0.37	MG_KG	J	fd
OU09 SS206 0001	SO	CHROMIUM, TOTAL	11.2	0.30	0.37	MG_KG	J	fd
OU09 SS206 0001	SO	COBALT	9.1	0.022	0.074	MG_KG	J	fd

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SS206 0001	SO	LEAD	170	0.037	0.074	MG_KG	J	fd
OU09 SS206 0001	SO	MANGANESE	394	0.15	0.30	MG_KG	J	fd
OU09 SS206 0001	SO	NICKEL	18.7	0.089	0.15	MG_KG	J	fd
OU09 SS206 0001	SO	SELENIUM	0.37	0.37	0.37	MG_KG	U	bl
OU09 SS206 0001	SO	SILVER	0.08	0.030	0.074	MG_KG	J	fd
OU09 SS206 0001	SO	ZINC	64.8	0.59	0.74	MG_KG	J+	m
OU09 SS217 0001	SO	CALCIUM	1370	30	38	MG_KG	J+	m
OU09 SS217 0001	SO	IRON	26500	30	38	MG_KG	J	fd
OU09 SS217 0001	SO	MAGNESIUM	2870	30	38	MG_KG	J	fd
OU09 SS217 0001	SO	POTASSIUM	484	38	76	MG_KG	J	fd
OU09 SS217 0001	SO	SODIUM	76	76	76	MG_KG	U	be
OU09 SS217 0001	SO	ANTIMONY	0.36	0.038	0.076	MG_KG	J	m,fd
OU09 SS217 0001	SO	ARSENIC	9.2	0.30	0.38	MG_KG	J	fd
OU09 SS217 0001	SO	CHROMIUM, TOTAL	13.0	0.30	0.38	MG_KG	J	fd
OU09 SS217 0001	SO	COBALT	10.4	0.023	0.076	MG_KG	J	fd
OU09 SS217 0001	SO	LEAD	133	0.038	0.076	MG_KG	J	fd
OU09 SS217 0001	SO	MANGANESE	473	0.38	0.76	MG_KG	J	fd
OU09 SS217 0001	SO	NICKEL	20.2	0.091	0.15	MG_KG	J	fd
OU09 SS217 0001	SO	SILVER	0.06	0.030	0.076	MG_KG	J	fd
OU09 SS217 0001	SO	ZINC	72.4	0.61	0.76	MG_KG	J+	m
OU09 SS221 0001	SO	CALCIUM	664	30	38	MG_KG	J+	m
OU09 SS221 0001	SO	IRON	30300	30	38	MG_KG	J	fd
OU09 SS221 0001	SO	MAGNESIUM	3420	30	38	MG_KG	J	fd
OU09 SS221 0001	SO	POTASSIUM	331	38	75	MG_KG	J	fd
OU09 SS221 0001	SO	SODIUM	75	75	75	MG_KG	U	be
OU09 SS221 0001	SO	ANTIMONY	0.95	0.038	0.075	MG_KG	J	m,fd
OU09 SS221 0001	SO	ARSENIC	18.0	0.30	0.38	MG_KG	J	fd
OU09 SS221 0001	SO	CHROMIUM, TOTAL	14.3	0.30	0.38	MG_KG	J	fd
OU09 SS221 0001	SO	COBALT	15.1	0.023	0.075	MG_KG	J	fd
OU09 SS221 0001	SO	LEAD	126	0.038	0.075	MG_KG	J	fd
OU09 SS221 0001	SO	MANGANESE	364	0.075	0.15	MG_KG	J	fd
OU09 SS221 0001	SO	NICKEL	30.8	0.090	0.15	MG_KG	J	fd
OU09 SS221 0001	SO	SILVER	0.05	0.030	0.075	MG_KG	J	fd
OU09 SS221 0001	SO	ZINC	88.2	0.60	0.75	MG_KG	J+	m
OU09 SS229 0001-01	SO	CALCIUM	1510	5.8	7.3	MG_KG	J+	m
OU09 SS229 0001-01	SO	SODIUM	73	73	73	MG_KG	U	be
OU09 SS229 0001-01	SO	ANTIMONY	1.1	0.036	0.073	MG_KG	J-	m
OU09 SS229 0001-01	SO	ZINC	113	0.58	0.73	MG_KG	J+	m
OU09 SS229 0001-02	SO	CALCIUM	1400	6.3	7.9	MG_KG	J+	m

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SS229 0001-02	SO	SODIUM	79	79	79	MG_KG	U	be
OU09 SS229 0001-02	SO	ANTIMONY	0.98	0.039	0.079	MG_KG	J-	m
OU09 SS229 0001-02	SO	SELENIUM	0.39	0.39	0.39	MG_KG	U	bl
OU09 SS229 0001-02	SO	ZINC	106	0.63	0.79	MG_KG	J+	m
OU09 SS302 0001	SO	CALCIUM	590	7.7	9.6	MG_KG	J+	m
OU09 SS302 0001	SO	IRON	16100	7.7	9.6	MG_KG	J	fd
OU09 SS302 0001	SO	MAGNESIUM	1750	7.7	9.6	MG_KG	J	fd
OU09 SS302 0001	SO	POTASSIUM	363	48	96	MG_KG	J	fd
OU09 SS302 0001	SO	SODIUM	96	96	96	MG_KG	U	be
OU09 SS302 0001	SO	ANTIMONY	0.34	0.048	0.096	MG_KG	J	m,fd
OU09 SS302 0001	SO	ARSENIC	5.1	0.38	0.48	MG_KG	J	fd
OU09 SS302 0001	SO	CHROMIUM, TOTAL	9.2	0.38	0.48	MG_KG	J	fd
OU09 SS302 0001	SO	COBALT	6.4	0.029	0.096	MG_KG	J	fd
OU09 SS302 0001	SO	LEAD	295	0.048	0.096	MG_KG	J	fd
OU09 SS302 0001	SO	MANGANESE	502	0.19	0.38	MG_KG	J	fd
OU09 SS302 0001	SO	NICKEL	13.2	0.12	0.19	MG_KG	J	fd
OU09 SS302 0001	SO	SILVER	0.09	0.038	0.096	MG_KG	J	fd
OU09 SS302 0001	SO	ZINC	55.5	0.77	0.96	MG_KG	J+	m
OU09 SS303 0001	SO	CALCIUM	742	5.6	7.0	MG_KG	J+	m
OU09 SS303 0001	SO	IRON	17000	5.6	7.0	MG_KG	J	fd
OU09 SS303 0001	SO	MAGNESIUM	2010	5.6	7.0	MG_KG	J	fd
OU09 SS303 0001	SO	POTASSIUM	199	35	70	MG_KG	J	fd
OU09 SS303 0001	SO	SODIUM	70	70	70	MG_KG	U	be
OU09 SS303 0001	SO	ANTIMONY	0.83	0.035	0.070	MG_KG	J	m,fd
OU09 SS303 0001	SO	ARSENIC	22.7	0.28	0.35	MG_KG	J	fd
OU09 SS303 0001	SO	CHROMIUM, TOTAL	13.6	0.38	0.48	MG_KG	J	fd
OU09 SS303 0001	SO	COBALT	13.2	0.021	0.070	MG_KG	J	fd
OU09 SS303 0001	SO	LEAD	67.3	0.035	0.070	MG_KG	J	fd
OU09 SS303 0001	SO	MANGANESE	307	0.070	0.14	MG_KG	J	fd
OU09 SS303 0001	SO	NICKEL	26.0	0.084	0.14	MG_KG	J	fd
OU09 SS303 0001	SO	SILVER	0.06	0.028	0.070	MG_KG	J	fd
OU09 SS303 0001	SO	ZINC	102	0.56	0.70	MG_KG	J+	m
RBSB121113 03	WQ	ALUMINUM	300	300	300	UG_L	U	bl
RBSB121113 03	WQ	SODIUM	1000	1000	1000	UG_L	U	bl
RBSB121113 03	WQ	BARIUM	2.0	2.0	2.0	UG_L	U	bl
RBSB121113 03	WQ	CHROMIUM, TOTAL	5.0	5.0	5.0	UG_L	U	bl
RBSB121113 03	WQ	COBALT	1.0	1.0	1.0	UG_L	U	bl
RBSB121113 03	WQ	COPPER	3.0	3.0	3.0	UG_L	U	bl
RBSB121113 03	WQ	LEAD	1.0	1.0	1.0	UG_L	U	bl

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
RBSB121113 03	WQ	MANGANESE	3.1	3.1	2.0	UG_L	U	bl
RBSB121113 03	WQ	NICKEL	2.0	2.0	2.0	UG_L	U	bl
RBSB121113 03	WQ	ZINC	10	10	10	UG_L	U	bl
RBSB121113 04	WQ	SODIUM	1000	1000	1000	UG_L	U	bl
RBSB121113 04	WQ	BARIUM	2.0	2.0	2.0	UG_L	U	bl
RBSB121113 04	WQ	CHROMIUM, TOTAL	5.0	5.0	5.0	UG_L	U	bl
RBSB121113 04	WQ	COBALT	1.0	1.0	1.0	UG_L	U	bl
RBSB121113 04	WQ	COPPER	3.0	3.0	3.0	UG_L	U	bl
RBSB121113 04	WQ	LEAD	1.0	1.0	1.0	UG_L	U	bl
RBSB121113 04	WQ	MANGANESE	2.0	2.0	2.0	UG_L	U	bl
RBSB121113 04	WQ	ZINC	10	10	10	UG_L	U	bl

Attachment A

Non Conformance Summary Tables

Table A-1a Lab Blanks

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
PBWGL23ICW3	ALUMINUM	18.630	100	300	UG_L	RBSB121113 03 RBSB121113 04
PBWGL23ICW3	SODIUM	36.910	500	1000	UG_L	RBSB121113 03 RBSB121113 04
PBWHA03IMW2	CHROMIUM, TOTAL	0.729	4.0	5.0	UG_L	RBSB121113 03 RBSB121113 04
PBWHA03IMW2	COBALT	0.079	0.30	1.0	UG_L	RBSB121113 03 RBSB121113 04
PBWHA03IMW2	BARIUM	0.453	1.0	2.0	UG_L	RBSB121113 03 RBSB121113 04
PBWHA03IMW2	COPPER	1.108	2.0	3.0	UG_L	RBSB121113 03 RBSB121113 04
PBWHA03IMW2	LEAD	0.442	0.50	1.0	UG_L	RBSB121113 03 RBSB121113 04
PBWHA03IMW2	MANGANESE	0.671	1.0	2.0	UG_L	RBSB121113 03 RBSB121113 04
PBWHA03IMW2	NICKEL	0.168	1.2	2.0	UG_L	RBSB121113 03 RBSB121113 04
PBWHA03IMW2	ZINC	5.515	8.0	10	UG_L	RBSB121113 03 RBSB121113 04
PBSHA06ICS1	CALCIUM	9.805	8.0	10	MG_KG	FDSB12101302 OU09 SB202 0305 OU09 SB202 0608 OU09 SB217 0102 OU09 SB217 0305 OU09 SB217 0608 OU09 SB221 0102 OU09 SB221 0305 OU09 SB221 0608 OU09 SB221 0810 OU09 SB229 0102 OU09 SB302 0305 OU09 SB302 0608 OU09 SB302 0810 OU09 SS202 0001 OU09 SS203 0001 OU09 SS217 0001 OU09 SS221 0001 OU09 SS229 0001-01 OU09 SS302 0001

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
PBSHA06ICS1	IRON	2.318	8.0	10	MG_KG	FDSB12101302 OU09 SB202 0305 OU09 SB202 0608 OU09 SB217 0102 OU09 SB217 0305 OU09 SB217 0608 OU09 SB221 0102 OU09 SB221 0305 OU09 SB221 0608 OU09 SB221 0810 OU09 SB229 0102 OU09 SB302 0305 OU09 SB302 0608 OU09 SB302 0810 OU09 SS202 0001 OU09 SS203 0001 OU09 SS217 0001 OU09 SS221 0001 OU09 SS229 0001-01 OU09 SS302 0001
PBSHA06ICS1	MAGNESIUM	2.898	8.0	10	MG_KG	FDSB12101302 OU09 SB202 0305 OU09 SB202 0608 OU09 SB217 0102 OU09 SB217 0305 OU09 SB217 0608 OU09 SB221 0102 OU09 SB221 0305 OU09 SB221 0608 OU09 SB221 0810 OU09 SB229 0102 OU09 SB302 0305 OU09 SB302 0608 OU09 SB302 0810 OU09 SS202 0001 OU09 SS203 0001 OU09 SS217 0001 OU09 SS221 0001 OU09 SS229 0001-01 OU09 SS302 0001

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
PBSHA06ICS1	POTASSIUM	4.282	50	100	MG_KG	FDSB12101302 OU09 SB202 0305 OU09 SB202 0608 OU09 SB217 0102 OU09 SB217 0305 OU09 SB217 0608 OU09 SB221 0102 OU09 SB221 0305 OU09 SB221 0608 OU09 SB221 0810 OU09 SB229 0102 OU09 SB302 0305 OU09 SB302 0608 OU09 SB302 0810 OU09 SS202 0001 OU09 SS203 0001 OU09 SS217 0001 OU09 SS221 0001 OU09 SS229 0001-01 OU09 SS302 0001
PBSHA06ICS1	SODIUM	7.079	50	100	MG_KG	FDSB12101302 OU09 SB202 0305 OU09 SB202 0608 OU09 SB217 0102 OU09 SB217 0305 OU09 SB217 0608 OU09 SB221 0102 OU09 SB221 0305 OU09 SB221 0608 OU09 SB221 0810 OU09 SB229 0102 OU09 SB302 0305 OU09 SB302 0608 OU09 SB302 0810 OU09 SS202 0001 OU09 SS203 0001 OU09 SS217 0001 OU09 SS221 0001 OU09 SS229 0001-01 OU09 SS302 0001
PBSHA06ICS2	IRON	2.364	8.0	10	MG_KG	OU09 SB203 0305 OU09 SB203 0608 OU09 SB206 0305 OU09 SB206 0608 OU09 SB229 0305 OU09 SB303 0305 OU09 SB303 0608 OU09 SB303 0810 OU09 SS206 0001 OU09 SS229 0001-02 OU09 SS303 0001

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
PBSHA06ICS2	MAGNESIUM	2.432	8.0	10	MG_KG	OU09 SB203 0305 OU09 SB203 0608 OU09 SB206 0305 OU09 SB206 0608 OU09 SB229 0305 OU09 SB303 0305 OU09 SB303 0608 OU09 SB303 0810 OU09 SS206 0001 OU09 SS229 0001-02 OU09 SS303 0001
PBSHA06ICS2	SODIUM	3.450	50	100	MG_KG	OU09 SB203 0305 OU09 SB203 0608 OU09 SB206 0305 OU09 SB206 0608 OU09 SB229 0305 OU09 SB303 0305 OU09 SB303 0608 OU09 SB303 0810 OU09 SS206 0001 OU09 SS229 0001-02 OU09 SS303 0001
PBSHA06ICS2	CALCIUM	7.453	8.0	10	MG_KG	OU09 SB203 0305 OU09 SB203 0608 OU09 SB206 0305 OU09 SB206 0608 OU09 SB229 0305 OU09 SB303 0305 OU09 SB303 0608 OU09 SB303 0810 OU09 SS206 0001 OU09 SS229 0001-02 OU09 SS303 0001

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
PBSHA06IMS1	BARIUM	0.080	0.10	0.20	MG_KG	FDSB12101302 OU09 SB202 0305 OU09 SB202 0608 OU09 SB217 0102 OU09 SB217 0305 OU09 SB217 0608 OU09 SB221 0102 OU09 SB221 0305 OU09 SB221 0608 OU09 SB221 0810 OU09 SB229 0102 OU09 SB302 0305 OU09 SB302 0608 OU09 SB302 0810 OU09 SS202 0001 OU09 SS203 0001 OU09 SS217 0001 OU09 SS221 0001 OU09 SS229 0001-01 OU09 SS302 0001
PBSHA06IMS1	CHROMIUM, TOTAL	0.106	0.40	0.50	MG_KG	FDSB12101302 OU09 SB202 0305 OU09 SB202 0608 OU09 SB217 0102 OU09 SB217 0305 OU09 SB217 0608 OU09 SB221 0102 OU09 SB221 0305 OU09 SB221 0608 OU09 SB221 0810 OU09 SB229 0102 OU09 SB302 0305 OU09 SB302 0608 OU09 SB302 0810 OU09 SS202 0001 OU09 SS203 0001 OU09 SS217 0001 OU09 SS221 0001 OU09 SS229 0001-01 OU09 SS302 0001

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
PBSHA06IMS1	COPPER	0.428	0.20	0.30	MG_KG	FDSB12101302 OU09 SB202 0305 OU09 SB202 0608 OU09 SB217 0102 OU09 SB217 0305 OU09 SB217 0608 OU09 SB221 0102 OU09 SB221 0305 OU09 SB221 0608 OU09 SB221 0810 OU09 SB229 0102 OU09 SB302 0305 OU09 SB302 0608 OU09 SB302 0810 OU09 SS202 0001 OU09 SS203 0001 OU09 SS217 0001 OU09 SS221 0001 OU09 SS229 0001-01 OU09 SS302 0001
PBSHA06IMS1	LEAD	0.078	0.050	0.10	MG_KG	FDSB12101302 OU09 SB202 0305 OU09 SB202 0608 OU09 SB217 0102 OU09 SB217 0305 OU09 SB217 0608 OU09 SB221 0102 OU09 SB221 0305 OU09 SB221 0608 OU09 SB221 0810 OU09 SB229 0102 OU09 SB302 0305 OU09 SB302 0608 OU09 SB302 0810 OU09 SS202 0001 OU09 SS203 0001 OU09 SS217 0001 OU09 SS221 0001 OU09 SS229 0001-01 OU09 SS302 0001

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
PBSHA06IMS1	MANGANESE	0.087	0.10	0.20	MG_KG	FDSB12101302 OU09 SB202 0305 OU09 SB202 0608 OU09 SB217 0102 OU09 SB217 0305 OU09 SB217 0608 OU09 SB221 0102 OU09 SB221 0305 OU09 SB221 0608 OU09 SB221 0810 OU09 SB229 0102 OU09 SB302 0305 OU09 SB302 0608 OU09 SB302 0810 OU09 SS202 0001 OU09 SS203 0001 OU09 SS217 0001 OU09 SS221 0001 OU09 SS229 0001-01 OU09 SS302 0001
PBSHA06IMS1	NICKEL	0.102	0.12	0.20	MG_KG	FDSB12101302 OU09 SB202 0305 OU09 SB202 0608 OU09 SB217 0102 OU09 SB217 0305 OU09 SB217 0608 OU09 SB221 0102 OU09 SB221 0305 OU09 SB221 0608 OU09 SB221 0810 OU09 SB229 0102 OU09 SB302 0305 OU09 SB302 0608 OU09 SB302 0810 OU09 SS202 0001 OU09 SS203 0001 OU09 SS217 0001 OU09 SS221 0001 OU09 SS229 0001-01 OU09 SS302 0001

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
PBSHA06IMS1	ZINC	1.679	0.80	1.0	MG_KG	FDSB12101302 OU09 SB202 0305 OU09 SB202 0608 OU09 SB217 0102 OU09 SB217 0305 OU09 SB217 0608 OU09 SB221 0102 OU09 SB221 0305 OU09 SB221 0608 OU09 SB221 0810 OU09 SB229 0102 OU09 SB302 0305 OU09 SB302 0608 OU09 SB302 0810 OU09 SS202 0001 OU09 SS203 0001 OU09 SS217 0001 OU09 SS221 0001 OU09 SS229 0001-01 OU09 SS302 0001
PBSHA06IMS2	ARSENIC	0.242	0.40	0.50	MG_KG	OU09 SB203 0305 OU09 SB203 0608 OU09 SB206 0305 OU09 SB206 0608 OU09 SB229 0305 OU09 SB303 0305 OU09 SB303 0608 OU09 SB303 0810 OU09 SS206 0001 OU09 SS229 0001-02 OU09 SS303 0001
PBSHA06IMS2	BARIUM	0.077	0.10	0.20	MG_KG	OU09 SB203 0305 OU09 SB203 0608 OU09 SB206 0305 OU09 SB206 0608 OU09 SB229 0305 OU09 SB303 0305 OU09 SB303 0608 OU09 SB303 0810 OU09 SS206 0001 OU09 SS229 0001-02 OU09 SS303 0001

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
PBSHA06IMS2	CHROMIUM, TOTAL	0.089	0.40	0.50	MG_KG	OU09 SB203 0305 OU09 SB203 0608 OU09 SB206 0305 OU09 SB206 0608 OU09 SB229 0305 OU09 SB303 0305 OU09 SB303 0608 OU09 SB303 0810 OU09 SS206 0001 OU09 SS229 0001-02 OU09 SS303 0001
PBSHA06IMS2	COPPER	0.075	0.20	0.30	MG_KG	OU09 SB203 0305 OU09 SB203 0608 OU09 SB206 0305 OU09 SB206 0608 OU09 SB229 0305 OU09 SB303 0305 OU09 SB303 0608 OU09 SB303 0810 OU09 SS206 0001 OU09 SS229 0001-02 OU09 SS303 0001
PBSHA06IMS2	LEAD	0.086	0.050	0.10	MG_KG	OU09 SB203 0305 OU09 SB203 0608 OU09 SB206 0305 OU09 SB206 0608 OU09 SB229 0305 OU09 SB303 0305 OU09 SB303 0608 OU09 SB303 0810 OU09 SS206 0001 OU09 SS229 0001-02 OU09 SS303 0001
PBSHA06IMS2	MANGANESE	0.117	0.10	0.20	MG_KG	OU09 SB203 0305 OU09 SB203 0608 OU09 SB206 0305 OU09 SB206 0608 OU09 SB229 0305 OU09 SB303 0305 OU09 SB303 0608 OU09 SB303 0810 OU09 SS206 0001 OU09 SS229 0001-02 OU09 SS303 0001

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
PBSHA06IMS2	NICKEL	0.048	0.12	0.20	MG_KG	OU09 SB203 0305 OU09 SB203 0608 OU09 SB206 0305 OU09 SB206 0608 OU09 SB229 0305 OU09 SB303 0305 OU09 SB303 0608 OU09 SB303 0810 OU09 SS206 0001 OU09 SS229 0001-02 OU09 SS303 0001
PBSHA06IMS2	SELENIUM	0.048	0.30	0.50	MG_KG	OU09 SB203 0305 OU09 SB203 0608 OU09 SB206 0305 OU09 SB206 0608 OU09 SB229 0305 OU09 SB303 0305 OU09 SB303 0608 OU09 SB303 0810 OU09 SS206 0001 OU09 SS229 0001-02 OU09 SS303 0001
PBSHA06IMS2	VANADIUM	0.173	0.40	0.50	MG_KG	OU09 SB203 0305 OU09 SB203 0608 OU09 SB206 0305 OU09 SB206 0608 OU09 SB229 0305 OU09 SB303 0305 OU09 SB303 0608 OU09 SB303 0810 OU09 SS206 0001 OU09 SS229 0001-02 OU09 SS303 0001
PBSHA06IMS2	ZINC	0.494	0.80	1.0	MG_KG	OU09 SB203 0305 OU09 SB203 0608 OU09 SB206 0305 OU09 SB206 0608 OU09 SB229 0305 OU09 SB303 0305 OU09 SB303 0608 OU09 SB303 0810 OU09 SS206 0001 OU09 SS229 0001-02 OU09 SS303 0001

Table A-1b Field Blanks

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
RBSB121113 03	SODIUM	100	500	1000	UG_L	FDSB12101302
RBSB121113 03	ANTIMONY	0.11	0.50	1.0	UG_L	OU09 SB202 0305
RBSB121113 03	BARIUM	1.2	1.0	2.0	UG_L	OU09 SB202 0608
RBSB121113 03	CADMIUM	0.04	0.20	1.0	UG_L	OU09 SB203 0305
RBSB121113 03	CHROMIUM, TOTAL	1.4	4.0	5.0	UG_L	OU09 SB203 0608
RBSB121113 03	COBALT	0.20	0.30	1.0	UG_L	OU09 SB206 0305
RBSB121113 03	COPPER	0.56	2.0	3.0	UG_L	OU09 SB206 0608
RBSB121113 03	ALUMINUM	71.6	100	300	UG_L	OU09 SB217 0102
RBSB121113 03	CALCIUM	83.0	80	100	UG_L	OU09 SB217 0305
RBSB121113 03	IRON	146	80	100	UG_L	OU09 SB217 0608
RBSB121113 03	MAGNESIUM	23.4	80	100	UG_L	OU09 SB221 0102
RBSB121113 03	LEAD	0.44	0.50	1.0	UG_L	OU09 SB221 0305
RBSB121113 03	MANGANESE	3.1	1.0	2.0	UG_L	OU09 SB221 0608
RBSB121113 03	NICKEL	0.44	1.2	2.0	UG_L	OU09 SB221 0810
RBSB121113 03	SELENIUM	0.48	3.0	5.0	UG_L	OU09 SB229 0102
RBSB121113 03	VANADIUM	1.2	4.0	5.0	UG_L	OU09 SB229 0305
RBSB121113 03	ZINC	4.4	8.0	10	UG_L	OU09 SB302 0305
						OU09 SB302 0608
						OU09 SB302 0810
						OU09 SB303 0305
						OU09 SB303 0608
						OU09 SB303 0810
RBSB121113 04	CALCIUM	200	80	100	UG_L	
RBSB121113 04	IRON	16.0	80	100	UG_L	
RBSB121113 04	MAGNESIUM	45.2	80	100	UG_L	
RBSB121113 04	SODIUM	542	500	1000	UG_L	
RBSB121113 04	ANTIMONY	0.05	0.50	1.0	UG_L	OU09 SS202 0001
RBSB121113 04	BARIUM	0.94	1.0	2.0	UG_L	OU09 SS203 0001
RBSB121113 04	CADMIUM	0.07	0.20	1.0	UG_L	OU09 SS206 0001
RBSB121113 04	CHROMIUM, TOTAL	0.74	4.0	5.0	UG_L	OU09 SS217 0001
RBSB121113 04	COBALT	0.11	0.30	1.0	UG_L	OU09 SS221 0001
RBSB121113 04	COPPER	1.7	2.0	3.0	UG_L	OU09 SS229 0001-01
RBSB121113 04	LEAD	0.52	0.50	1.0	UG_L	OU09 SS302 0001
RBSB121113 04	MANGANESE	1.6	1.0	2.0	UG_L	OU09 SS303 0001
RBSB121113 04	NICKEL	2.5	1.2	2.0	UG_L	OU09 SS229 0001-02
RBSB121113 04	VANADIUM	1.4	4.0	5.0	UG_L	
RBSB121113 04	ZINC	6.1	8.0	10	UG_L	

Table A-2 Matrix Spikes

Sample ID	Compound	MS % Recovery	MSD % Recovery	Lower Limit	Upper Limit	RPD	RPD Limit
OU09 SS302 0001	ALUMINUM	725.5	520.1	80	120	2.8	≤20
OU09 SS302 0001	IRON	1394.7	1401.1	80	120	0.2	≤20
OU09 SS302 0001	LEAD	424.2	-97.4	80	120	15.7	≤20
OU09 SS302 0001	MANGANESE	-95.7	-79.5	80	120	1.4	≤20
OU09 SS302 0001	CALCIUM	141.3	125.6	80	120	3.2	≤20
OU09 SS302 0001	ANTIMONY	40.9	41.1	80	120	2.7	≤20
OU09 SS302 0001	ZINC	129.9	99.6	80	120	11.8	≤20

Table A-3 Field Duplicates

Sample ID	Duplicate ID	Compound	Sample Result	Qual	Duplicate Result	Qual	LOD	LOQ	Units	RPD
OU09 SB302 0810	FDSB12101302	NICKEL	22.3		11.8		0.081	0.14	MG_KG	61.6
OU09 SB302 0810	FDSB12101302	SILVER	0.02	J	0.86		0.027	0.068	MG_KG	190.9
OU09 SB302 0810	FDSB12101302	ANTIMONY	0.12		396		0.034	0.068	MG_KG	199.9
OU09 SB302 0810	FDSB12101302	ARSENIC	9.1		130		0.27	0.34	MG_KG	173.8
OU09 SB302 0810	FDSB12101302	CHROMIUM, TOTAL	16.4		7.8		0.27	0.34	MG_KG	71.1
OU09 SB302 0810	FDSB12101302	COBALT	13.3		5.4		0.02	0.068	MG_KG	84.5
OU09 SB302 0810	FDSB12101302	LEAD	10.2		29900		0.034	0.068	MG_KG	199.9
OU09 SB302 0810	FDSB12101302	MANGANESE	685		391		0.34	0.68	MG_KG	54.6
OU09 SB302 0810	FDSB12101302	MAGNESIUM	4090		1500		27	34	MG_KG	92.7
OU09 SB302 0810	FDSB12101302	POTASSIUM	772		256		34	68	MG_KG	100.4
OU09 SB302 0810	FDSB12101302	IRON	32700		14600		27	34	MG_KG	76.5

Attachment B

Qualifier Codes and Explanations

Qualifier	Explanation
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
UJ	The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual quantitation limit necessary to accurately and precisely measure the analyte in the sample.
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

Attachment C

Reason Codes and Explanations

Reason Code	Explanation
be	Equipment blank contamination
bf	Field blank contamination
bl	Laboratory blank contamination
c	Calibration issue
d	Reporting limit raised due to chromatographic interference
fd	Field duplicate RPDs
h	Holding times
i	Internal standard areas
k	Estimated Maximum Possible Concentration (EMPC)
l	LCS recoveries
lc	Labeled compound recovery
ld	Laboratory duplicate RPDs
lp	Laboratory control sample/laboratory control sample duplicate RPDs
m	Matrix spike recovery
md	Matrix spike/matrix spike duplicate RPDs
nb	Negative laboratory blank contamination
p	Chemical preservation issue
r	Dual column RPD
q	Quantitation issue
s	Surrogate recovery
su	Ion suppression
t	Temperature preservation issue
x	Percent solids
y	Serial dilution results
z	ICS results

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Data Validation Report

Project:	MRP Site 1 (OU9) Remedial Investigation, NAVSTA Newport, Rhode Island CTO WE06
Laboratory:	Katahdin Analytical Services, Scarborough, Maine
Service Request:	CARR-11
Analyses/Method:	EPA SW-846 Methods 6010C, 6020A, 7471B for TAL Metals
Validation Level:	Limited
Resolution Consultants Project Number:	60250336 SA.DV
Prepared by:	Kristin Rutherford/Resolution Consultants Completed on: 02/17/2014
Reviewed by:	Waverly Braunstein/Resolution Consultants File Name: CARR-11_SO_Metals_DVRpt

SUMMARY

The samples listed below were collected by Resolution Consultants from MRP Site 1 (OU9), NAVSTA Newport, Rhode Island on December 11 and 12, 2013.

Sample ID	Matrix/Sample Type
FDSB12111303	Field Duplicate of OU09 SB205 0305
FDSB12111304	Field Duplicate of OU09 SB205 0608
FDSS12111312	Field Duplicate of OU09 SB220 0001
OU09 SB204 0001	Soil
OU09 SB204 0305	Soil
OU09 SB204 1012	Soil
OU09 SB205 0305	Soil
OU09 SB205 0608	Soil
OU09 SB214 0305	Soil
OU09 SB214 0608	Soil
OU09 SB215 0102	Soil
OU09 SB215 0305	Soil
OU09 SB215 1012	Soil
OU09 SB216 0305	Soil
OU09 SB216 0608	Soil
OU09 SB218 0102	Soil
OU09 SB218 0305	Soil
OU09 SB219 0305	Soil
OU09 SB220 0001	Soil
OU09 SB220 0305	Soil

Sample ID	Matrix/Sample Type
OU09 SB222 0001	Soil
OU09 SB223 0001	Soil
OU09 SB223 0304	Soil
OU09 SB324 0102	Soil
OU09 SB324 0305	Soil
OU09 SB324 0608	Soil
OU09 SB324 0810	Soil
OU09 SS205 0001	Soil
OU09 SS218 0001	Soil
OU09 SS219 0001	Soil
OU09 SS324 0001	Soil

The data have been validated in accordance with the project-specific Sampling and Analysis Plan, *Sampling and Analysis Plan, Former Carr Point Shooting Range (MRP Site 1, OU9), Naval Station (NAVSTA) Newport, Rhode Island, Final* (Naval Facilities Engineering Command, Mid-Atlantic, 2013) and the following references:

- *DoD Quality Systems Manual (QMS) for Environmental Laboratories, version 4.2* (DoD EDQW, 2010);
- *USEPA Region 1, EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses* (December 1996);
- *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review* (January 2010);
- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW846, Method 6010C, Inductively Coupled Plasma-Atomic Emission Spectrometry* (USEPA, 1996);
- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW846, Method 6020A, Inductively Coupled Plasma-Mass Spectrometry* (USEPA, 1996);
- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW846, Method 7471B, Mercury in Solid or Semisolid Waste (Manual Cold-Vapor Technique)* (USEPA, 1996);
- laboratory quality control (QC) limits, as applicable.

The USEPA Region 1 and National Data Validation Functional Guidelines were modified to accommodate the non-CLP methodologies. In the absence of method-specific direction for validation, Resolution Consultants professional judgment was used as appropriate.

REVIEW ELEMENTS

The data were evaluated based on the following parameters (where applicable to the method):

✓ Data completeness (chain-of-custody (COC)/sample integrity
✓ Holding times and sample preservation
✓ ICP/MS Instrument tuning
✓ Initial calibration/continuing calibration verification
✗ Laboratory blanks/equipment blanks
✓ ICP interference check standards
✗ Matrix spike (MS) and/or matrix spike duplicate (MSD) results
✗ Laboratory duplicate results

✓	Laboratory control sample (LCS)/laboratory control sample duplicate (LCSD) results
✗	Field duplicates
✗	ICP/ICPMS serial dilution results
✓	ICP/MS internal standard performance
✓	Sample results/reporting issues

The symbol (✓) indicates that no validation qualifiers were applied based on this parameter. NA indicates that the parameter was not included as part of this data set or was not applicable to this validation and therefore not reviewed. The symbol (✗) indicates that a quality control (QC) nonconformance resulted in the qualification of data. Any QC nonconformance that resulted in the qualification of data is discussed below. In addition, nonconformances or other issues that were noted during validation, but did not result in qualification of data, may be discussed for informational purposes only.

The data appear valid as reported and may be used for decision making purposes. Selected data points were estimated, negated, and/or rejected due to nonconformances of certain QC criteria (see discussion below). Qualified sample results are presented in Table 1.

RESULTS

Data Completeness

The data package was reviewed and found to meet acceptance criteria for completeness:

- The COCs were reviewed for completeness of information relevant to the samples and requested analyses, and for signatures indicating transfer of sample custody.
- The laboratory sample login sheet(s) were reviewed for issues potentially affecting sample integrity, including the condition of sample containers upon receipt at the laboratory.
- Completeness of analyses was verified by comparing the reported results to the COC requests.

Holding Times/Sample Preservation

Sample preservation and preparation/analysis holding times were reviewed for conformance with the QC acceptance criteria.

Some samples received at 1.4°C which was below the criteria of 4°±2°C. Since samples were received in good condition on ice, no qualifications were required.

ICP/MS Instrument Tuning

ICP/MS tuning results were reviewed for conformance with the QC acceptance criteria to ensure that:

- the proper tuning solution was used with elements representing all of the mass regions of interest;
- the tunings were performed at the beginning of each analysis and prior to calibration;
- the tuning solution was analyzed at least 4 times as required by the method;
- the mass calibration was within 0.1 amu of the true value for all masses within the region of interest;
- the resolution was verified to be <0.9 amu full width at 10% peak height; and

- the %RSD was ≤ 5% for the analytes contained in the tuning solution.

The QC acceptance criteria were met.

Initial Calibration/Continuing Calibration Verification

Calibration data were reviewed for conformance with the QC acceptance criteria to ensure that:

- all criteria were met for the calibration curves
- the initial calibration verification (ICV) percent recovery (%R) criteria were met;
- the continuing calibration verification standard (CCV) method percent difference (%Ds) were met; and
- the low level check standards (CRI or CRA) %R criteria were met.

The QC acceptance criteria were met.

Laboratory Blanks/Equipment Blanks

Laboratory method blanks and equipment rinsate blanks were evaluated as to whether there were contaminants detected above the method detection limit (MDL). Data validation qualifications for individual samples are based on the maximum contaminant concentration detected in all associated blanks.

Method and equipment rinsate results were reviewed for conformance with the QC acceptance criteria. Detected results in blanks are not discussed in this data validation report if the associated results were nondetect or if qualification of sample results was not required.

Rinsate blanks RBSB12111303 and RBSB12111304 (reported in SDG CARR-9) are associated with the samples in this SDG (see Table A-1b). Qualifications were based on the amount of contamination in the rinsate blanks adjusted for sample weight, final sample volume, and percent solids.

Nonconformances are summarized in Attachment A in Table A-1a and A-1b. Sample results were qualified as follows:

Blank Type	Blank Result	Sample Result	Action for Samples
PB / EB/ FB (Positive)	> LOQ	≥IDL/MDL but ≤ LOQ	Qualify as nondetect (U) at the LOQ
		>LOQ but < 10x Blank Result	Qualify results as unusable
		≥10x Blank Result	No action
	≥IDL/MDL but ≤LOQ	Nondetect	No action
		≥IDL/MDL but ≤LOQ	Qualify as nondetect (U) at the LOQ
		> LOQ	Use Resolution Consultants professional judgment (see below [1])
PB (Negative)	< (-LOQ)	< 10x LOQ	Qualify positive results <10x LOQ as estimated (J) and nondetects as estimated (UJ)
		≥10x LOQ	No action

[1] Establish an action level (AL) at 5x the blank contamination. If sample result is <AL, qualify the reported result with a U.

Qualified sample results are shown in Table 1.

ICP Interference Check Standards

The ICP interference check standards (ICSA, ICSAB) were reviewed for conformance.

All criteria were met for the ICSA and ICSAB.

MS Results

The MS and/or MSD %Rs and/or RPDs were reviewed for conformance with the QC acceptance criteria.

There were six samples analyzed as matrix spike/matrix spike duplicates in this SDG. Each spiked sample was qualified based on the recoveries and relative percent difference (RPD) of the analytes in that sample. All other samples in this SDG were qualified based on the overall qualifications from the spiked samples. No qualifications were made for MS/MSD RPDs if the sample result was >4X the spiked concentration.

Nonconformances are summarized in Attachment A in Table A-2. Data qualification on the basis of MS and/or MSD nonconformances was as follows:

Qualify Results	%R < 30	80 > %R ≥ 30	%R >120	RPD>20
Detected results	J	J	J	J
Nondetects	R	UJ	Accept	UJ

Notes: MS actions apply to all samples of the same matrix. This qualification will also be applied to the results of all samples within a given area of the site, if deemed appropriate.

1. If the sample result (SR) > 4x the spike concentration (S), no action is taken.
2. If any analyte does not meet the %R criteria and a post digestion spike (PDS) analysis was performed, use professional judgment to assess the results. Refer to the National Functional Guidelines (NFG) 2010 for recommended actions.
3. If either the MS or MSD does not meet %R criteria, qualify all associated samples.

Qualified sample results are shown in Table 1.

Laboratory Duplicate Results

A laboratory duplicate was not analyzed in this SDG. The relative percent differences (RPDs) of the MS/MSD were reviewed for conformance.

There were six samples analyzed as matrix spike/matrix spike duplicates in this SDG. Each spiked sample was qualified based on the RPD of the analytes in that sample. All other samples in this SDG were qualified based on the overall qualifications from the spiked samples.

Nonconformances are summarized in Attachment A in Table A-3. Data qualification on the basis of matrix spike duplicate RPDs was as follows:

Sample Results	RPD	Action (Detect/Nondetect)
≥5x LOQ (both sample and duplicate)	RPD>20%	Estimate (J/UJ)

<5x LOQ (either sample and/or duplicate)	if absolute difference is > the LOQ, estimate (J) positive results <5x the LOQ and nondetects (UJ).

Notes:

1. Duplicate actions were applied to all samples of the same matrix and/or prepared in the same batch. This qualification will also be applied to the results of all samples within a given area of the site, if deemed appropriate.
2. If the RPD is >20% and sample result (SR) > 4x the spike concentration (S) in the MS, no action is taken based on precision.

Qualified sample results are shown in Table 1.

LCS/LCSD Results

The LCS/LCSD %Rs and/or RPDs were reviewed for conformance with the QC acceptance criteria.

The LCS and LCSD %Rs and RPDs were within the QC acceptance criteria.

Field Duplicate Results

Field duplicate RPDs were reviewed for conformance with the Resolution Consultants QC acceptance criterion of ≤50% for solid matrices and ≤30% for aqueous matrices. This criterion applies if both results were greater than 5 times the limit of quantitation (LOQ).

Sample FDSB12111303 was collected as a field duplicate of sample OU09 SB205 0305 in this SDG. Qualifications were applied to all samples in this SDG.

Nonconformances are summarized in Attachment A in Table A-4. Data qualification on the basis of field duplicate RPDs was as follows:

Actions: (Based on Resolution Consultants professional judgment)

Criteria	RPD	Action	
		Detected	Nondetected
Sample and duplicate are nondetect results	Not calculable (NC)	No qualification	No qualification
Sample and duplicate results <SLOQ	Not applicable	No qualification	No qualification
Sample and duplicate results ≥5xSLOQ	>30% Aqueous >50% All other sample types	J	Not Applicable
Sample and duplicate results are >SLOQ and <5xSLOQ	>60% Aqueous >100% All other sample types	J	Not Applicable
If sample or duplicate result is =SLOQ and the other is not detected	NC	J	UJ
If sample or duplicate result is <SLOQ and the other is not detected	NC	No qualification	No qualification

Qualified sample results are summarized in Table 1.

ICP/ICPMS Serial Dilution Results

The serial dilution percent differences (%Ds) were reviewed for conformance with the QC acceptance criteria.

Nonconformances are summarized in Attachment A in Table A-5. Data qualification on the basis of serial dilution %Ds was as follows:

%D	Qualify Results
>10%	Estimate (J) detected results

Apply actions to all samples in the same preparation batch.

Qualified sample results are shown in Table 1.

ICP/MS Internal Standard Performance

ICP/MS Internal standard performance was reviewed for conformance and was within the QC acceptance criteria.

Sample Results/Reporting Issues

All analytes detected at concentrations less than the limit of quantitation (LOQ) but greater than the method detection limit (MDL) were qualified by the laboratory as estimated (J). This "J" qualifier was retained during data validation.

Resolution Consultants professional judgment was used to qualify sample results with percent solids that were <30%.

All criteria were met.

QUALIFICATION ACTIONS

Sample results qualified as a result of validation actions are summarized in Table 1. All actions are described above.

ATTACHMENTS

Attachment A: Nonconformance Summary Tables

Attachment B: Qualifier Codes and Explanations

Attachment C: Reason Codes and Explanations

Table 1 - Data Validation Summary of Qualified Data

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
FDSB12111303	SO	CALCIUM	570	5.9	7.4	MG_KG	J	fd,md,m
FDSB12111303	SO	POTASSIUM	531	37	74	MG_KG	J+	m
FDSB12111303	SO	SODIUM	74	74	74	MG_KG	U	bl
FDSB12111303	SO	ANTIMONY	0.1	0.037	0.074	MG_KG	J-	m
FDSB12111303	SO	ARSENIC	8.6	0.30	0.37	MG_KG	J	m,md
FDSB12111303	SO	BERYLLIUM	0.39	0.015	0.074	MG_KG	J-	m
FDSB12111303	SO	CADMIUM	0.08	0.015	0.074	MG_KG	J	fd
FDSB12111303	SO	CHROMIUM, TOTAL	9.9	0.30	0.37	MG_KG	J	m,md
FDSB12111303	SO	COBALT	13.0	0.022	0.074	MG_KG	J-	m
FDSB12111303	SO	COPPER	20.7	0.15	0.22	MG_KG	J	m,md
FDSB12111303	SO	LEAD	14.7	0.037	0.074	MG_KG	J	m
FDSB12111303	SO	NICKEL	21.6	0.089	0.15	MG_KG	J-	m
FDSB12111303	SO	SELENIUM	0.37	0.37	0.37	MG_KG	UJ	bl,m
FDSB12111303	SO	VANADIUM	14.2	0.30	0.37	MG_KG	J	m
FDSB12111303	SO	ZINC	48.9	0.59	0.74	MG_KG	J	m,md
FDSB12111303	SO	MERCURY	0.015	0.015	0.029	MG_KG	UJ	md
FDSB12111304	SO	CALCIUM	535	4.2	5.2	MG_KG	J	fd,md,m
FDSB12111304	SO	POTASSIUM	458	26	52	MG_KG	J+	m
FDSB12111304	SO	SODIUM	52	52	52	MG_KG	U	bl
FDSB12111304	SO	ANTIMONY	0.11	0.026	0.052	MG_KG	J-	m
FDSB12111304	SO	ARSENIC	13.1	0.21	0.26	MG_KG	J	m,md
FDSB12111304	SO	BERYLLIUM	0.44	0.010	0.052	MG_KG	J-	m
FDSB12111304	SO	CADMIUM	0.08	0.010	0.052	MG_KG	J	fd
FDSB12111304	SO	CHROMIUM, TOTAL	10.9	0.21	0.26	MG_KG	J	m,md
FDSB12111304	SO	COBALT	23.0	0.016	0.052	MG_KG	J-	m
FDSB12111304	SO	COPPER	23.4	0.10	0.16	MG_KG	J	m,md
FDSB12111304	SO	LEAD	14.2	0.026	0.052	MG_KG	J	m
FDSB12111304	SO	NICKEL	34.9	0.063	0.10	MG_KG	J-	m
FDSB12111304	SO	SELENIUM	0.26	0.16	0.26	MG_KG	J-	m
FDSB12111304	SO	VANADIUM	15.7	0.21	0.26	MG_KG	J	m
FDSB12111304	SO	ZINC	65.0	0.42	0.52	MG_KG	J	m,md
FDSB12111304	SO	MERCURY	0.015	0.015	0.030	MG_KG	UJ	md
FDSS12111312	SO	CALCIUM	1980	5.7	7.1	MG_KG	J	m,fd,md
FDSS12111312	SO	MAGNESIUM	2540	11	14	MG_KG	J	y
FDSS12111312	SO	POTASSIUM	372	36	71	MG_KG	J+	m
FDSS12111312	SO	SODIUM	71	71	71	MG_KG	U	bl
FDSS12111312	SO	ANTIMONY	0.33	0.036	0.071	MG_KG	J-	m

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
FDSS12111312	SO	ARSENIC	23.6	0.57	0.71	MG_KG	J	m,md
FDSS12111312	SO	BERYLLIUM	0.40	0.014	0.071	MG_KG	J-	m
FDSS12111312	SO	CADMIUM	0.17	0.014	0.071	MG_KG	J	fd
FDSS12111312	SO	CHROMIUM, TOTAL	12.0	0.28	0.36	MG_KG	J	m,md
FDSS12111312	SO	COBALT	11.5	0.021	0.071	MG_KG	J-	m
FDSS12111312	SO	COPPER	20.4	0.14	0.21	MG_KG	J	m,md
FDSS12111312	SO	LEAD	51.0	0.036	0.071	MG_KG	J	m
FDSS12111312	SO	NICKEL	21.4	0.086	0.14	MG_KG	J-	m
FDSS12111312	SO	SELENIUM	0.39	0.21	0.36	MG_KG	J-	m
FDSS12111312	SO	VANADIUM	17.7	0.28	0.36	MG_KG	J	m
FDSS12111312	SO	ZINC	90.4	0.57	0.71	MG_KG	J	m,md
FDSS12111312	SO	MERCURY	0.04	0.016	0.031	MG_KG	J	md
OU09 SB204 0001	SO	CALCIUM	2540	31	39	MG_KG	J	fd
OU09 SB204 0001	SO	POTASSIUM	279	39	78	MG_KG	J+	m
OU09 SB204 0001	SO	SODIUM	78	78	78	MG_KG	U	be
OU09 SB204 0001	SO	ANTIMONY	0.22	0.039	0.078	MG_KG	J-	m
OU09 SB204 0001	SO	ARSENIC	22.5	0.31	0.39	MG_KG	J	m,md
OU09 SB204 0001	SO	CADMIUM	0.11	0.016	0.078	MG_KG	J	fd
OU09 SB204 0001	SO	CHROMIUM, TOTAL	17.6	0.31	0.39	MG_KG	J-	m
OU09 SB204 0001	SO	COPPER	24.4	0.16	0.24	MG_KG	J+	m
OU09 SB204 0001	SO	LEAD	21.3	0.039	0.078	MG_KG	J+	m
OU09 SB204 0001	SO	NICKEL	39.4	0.094	0.16	MG_KG	J-	m
OU09 SB204 0001	SO	SELENIUM	0.39	0.39	0.39	MG_KG	U	bl
OU09 SB204 0001	SO	ZINC	80.9	0.63	0.78	MG_KG	J-	m
OU09 SB204 0305	SO	CALCIUM	401	14	18	MG_KG	J	m,md,fd
OU09 SB204 0305	SO	SODIUM	88	88	88	MG_KG	U	be
OU09 SB204 0305	SO	ANTIMONY	0.13	0.044	0.088	MG_KG	J-	m
OU09 SB204 0305	SO	CADMIUM	0.088	0.088	0.088	MG_KG	UJ	be,fd
OU09 SB204 0305	SO	COPPER	20.6	0.18	0.26	MG_KG	J	m,md
OU09 SB204 0305	SO	SELENIUM	0.44	0.44	0.44	MG_KG	U	bl
OU09 SB204 0305	SO	ZINC	52.0	0.70	0.88	MG_KG	J	m,md
OU09 SB204 0305	SO	MERCURY	0.014	0.014	0.027	MG_KG	UJ	md
OU09 SB204 1012	SO	CALCIUM	836	7.0	8.8	MG_KG	J	fd
OU09 SB204 1012	SO	POTASSIUM	785	44	88	MG_KG	J+	m
OU09 SB204 1012	SO	SODIUM	88	88	88	MG_KG	U	bl
OU09 SB204 1012	SO	ANTIMONY	0.088	0.088	0.088	MG_KG	UJ	m,be

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SB204 1012	SO	CADMIUM	0.088	0.088	0.088	MG_KG	UJ	be,fd
OU09 SB204 1012	SO	SELENIUM	0.44	0.44	0.44	MG_KG	U	bl
OU09 SB204 1012	SO	ZINC	34.3	0.70	0.88	MG_KG	J-	m
OU09 SB205 0305	SO	CALCIUM	336	14	17	MG_KG	J	m,md,fd
OU09 SB205 0305	SO	POTASSIUM	519	42	85	MG_KG	J+	m
OU09 SB205 0305	SO	SODIUM	85	85	85	MG_KG	U	be
OU09 SB205 0305	SO	ANTIMONY	0.12	0.042	0.085	MG_KG	J-	m
OU09 SB205 0305	SO	ARSENIC	10.0	0.34	0.42	MG_KG	J	m,md
OU09 SB205 0305	SO	BERYLLIUM	0.35	0.017	0.085	MG_KG	J-	m
OU09 SB205 0305	SO	CADMIUM	0.085	0.085	0.085	MG_KG	UJ	be,fd
OU09 SB205 0305	SO	CHROMIUM, TOTAL	10.2	0.34	0.42	MG_KG	J	m,md
OU09 SB205 0305	SO	COBALT	10.9	0.025	0.085	MG_KG	J-	m
OU09 SB205 0305	SO	COPPER	19.6	0.17	0.25	MG_KG	J	m,md
OU09 SB205 0305	SO	LEAD	9.4	0.042	0.085	MG_KG	J	m
OU09 SB205 0305	SO	NICKEL	22.6	0.10	0.17	MG_KG	J-	m
OU09 SB205 0305	SO	SELENIUM	0.42	0.42	0.42	MG_KG	UJ	bl,m
OU09 SB205 0305	SO	VANADIUM	15.8	0.34	0.42	MG_KG	J	m
OU09 SB205 0305	SO	ZINC	55.3	0.68	0.85	MG_KG	J	m,md
OU09 SB205 0305	SO	MERCURY	0.016	0.016	0.031	MG_KG	UJ	md
OU09 SB205 0608	SO	CALCIUM	334	30	38	MG_KG	J	m,md,fd
OU09 SB205 0608	SO	POTASSIUM	446	38	75	MG_KG	J+	m
OU09 SB205 0608	SO	SODIUM	75	75	75	MG_KG	U	be
OU09 SB205 0608	SO	ANTIMONY	0.11	0.038	0.075	MG_KG	J-	m
OU09 SB205 0608	SO	ARSENIC	13.1	0.30	0.38	MG_KG	J	m,md
OU09 SB205 0608	SO	BERYLLIUM	0.33	0.015	0.075	MG_KG	J-	m
OU09 SB205 0608	SO	CADMIUM	0.08	0.015	0.075	MG_KG	J	fd
OU09 SB205 0608	SO	CHROMIUM, TOTAL	8.6	0.30	0.38	MG_KG	J	m,md
OU09 SB205 0608	SO	COBALT	24.8	0.023	0.075	MG_KG	J-	m
OU09 SB205 0608	SO	COPPER	23.1	0.15	0.23	MG_KG	J	m,md
OU09 SB205 0608	SO	LEAD	9.7	0.038	0.075	MG_KG	J	m
OU09 SB205 0608	SO	NICKEL	33.9	0.090	0.15	MG_KG	J-	m
OU09 SB205 0608	SO	SELENIUM	0.38	0.38	0.38	MG_KG	UJ	bl,m
OU09 SB205 0608	SO	VANADIUM	14.5	0.30	0.38	MG_KG	J	m
OU09 SB205 0608	SO	ZINC	57.5	0.60	0.75	MG_KG	J	m,md
OU09 SB205 0608	SO	MERCURY	0.015	0.015	0.030	MG_KG	UJ	md
OU09 SB214 0305	SO	CALCIUM	726	7.2	9.0	MG_KG	J	m,fd,md

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SB214 0305	SO	MAGNESIUM	1480	7.2	9.0	MG_KG	J	y
OU09 SB214 0305	SO	POTASSIUM	390	45	90	MG_KG	J+	m
OU09 SB214 0305	SO	SODIUM	90	90	90	MG_KG	U	bl
OU09 SB214 0305	SO	ANTIMONY	0.090	0.090	0.090	MG_KG	UJ	m,be
OU09 SB214 0305	SO	ARSENIC	4.5	0.36	0.45	MG_KG	J	m,md
OU09 SB214 0305	SO	BERYLLIUM	0.46	0.018	0.090	MG_KG	J-	m
OU09 SB214 0305	SO	CADMIUM	0.090	0.090	0.090	MG_KG	UJ	be,fd
OU09 SB214 0305	SO	CHROMIUM, TOTAL	10.1	0.36	0.45	MG_KG	J	m,md
OU09 SB214 0305	SO	COBALT	7.0	0.027	0.090	MG_KG	J-	m
OU09 SB214 0305	SO	COPPER	10.2	0.18	0.27	MG_KG	J	m,md
OU09 SB214 0305	SO	LEAD	10.2	0.045	0.090	MG_KG	J	m
OU09 SB214 0305	SO	NICKEL	13.5	0.11	0.18	MG_KG	J-	m
OU09 SB214 0305	SO	SELENIUM	0.50	0.27	0.45	MG_KG	J-	m
OU09 SB214 0305	SO	VANADIUM	17.0	0.36	0.45	MG_KG	J	m
OU09 SB214 0305	SO	ZINC	30.5	0.72	0.90	MG_KG	J	m,md
OU09 SB214 0305	SO	MERCURY	0.034	0.034	0.034	MG_KG	UJ	bl,md
OU09 SB214 0608	SO	CALCIUM	330	5.1	6.4	MG_KG	J	m,fd,md
OU09 SB214 0608	SO	MAGNESIUM	1830	10	13	MG_KG	J	y
OU09 SB214 0608	SO	POTASSIUM	618	32	64	MG_KG	J+	m
OU09 SB214 0608	SO	SODIUM	64	64	64	MG_KG	U	bl
OU09 SB214 0608	SO	ANTIMONY	0.08	0.032	0.064	MG_KG	J-	m
OU09 SB214 0608	SO	ARSENIC	8.1	0.51	0.64	MG_KG	J	m,md
OU09 SB214 0608	SO	BERYLLIUM	0.38	0.013	0.064	MG_KG	J-	m
OU09 SB214 0608	SO	CADMIUM	0.09	0.013	0.064	MG_KG	J	fd
OU09 SB214 0608	SO	CHROMIUM, TOTAL	12.1	0.26	0.32	MG_KG	J	m,md
OU09 SB214 0608	SO	COBALT	12.6	0.019	0.064	MG_KG	J-	m
OU09 SB214 0608	SO	COPPER	16.9	0.13	0.19	MG_KG	J	m,md
OU09 SB214 0608	SO	LEAD	7.6	0.032	0.064	MG_KG	J	m
OU09 SB214 0608	SO	NICKEL	19.6	0.077	0.13	MG_KG	J-	m
OU09 SB214 0608	SO	SELENIUM	0.32	0.32	0.32	MG_KG	UJ	bl,m
OU09 SB214 0608	SO	VANADIUM	15.3	0.26	0.32	MG_KG	J	m
OU09 SB214 0608	SO	ZINC	69.3	0.51	0.64	MG_KG	J	m,md
OU09 SB214 0608	SO	MERCURY	0.012	0.012	0.024	MG_KG	UJ	md
OU09 SB215 0102	SO	CALCIUM	1080	5.7	7.1	MG_KG	J	fd,md,m
OU09 SB215 0102	SO	POTASSIUM	216	35	71	MG_KG	J+	m
OU09 SB215 0102	SO	SODIUM	71	71	71	MG_KG	U	bl
OU09 SB215 0102	SO	ANTIMONY	0.57	0.035	0.071	MG_KG	J-	m

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SB215 0102	SO	ARSENIC	6.6	0.28	0.35	MG_KG	J	m,md
OU09 SB215 0102	SO	BERYLLIUM	0.25	0.014	0.071	MG_KG	J-	m
OU09 SB215 0102	SO	CADMIUM	0.14	0.014	0.071	MG_KG	J	fd
OU09 SB215 0102	SO	CHROMIUM, TOTAL	12.7	0.28	0.35	MG_KG	J	m,md
OU09 SB215 0102	SO	COBALT	21.9	0.021	0.071	MG_KG	J-	m
OU09 SB215 0102	SO	COPPER	20.6	0.14	0.21	MG_KG	J	m,md
OU09 SB215 0102	SO	LEAD	18.6	0.035	0.071	MG_KG	J	m
OU09 SB215 0102	SO	NICKEL	42.2	0.085	0.14	MG_KG	J-	m
OU09 SB215 0102	SO	SELENIUM	0.35	0.35	0.35	MG_KG	UJ	bl,m
OU09 SB215 0102	SO	VANADIUM	13.9	0.28	0.35	MG_KG	J	m
OU09 SB215 0102	SO	ZINC	113	0.57	0.71	MG_KG	J	m,md
OU09 SB215 0102	SO	MERCURY	0.014	0.014	0.028	MG_KG	UJ	md
OU09 SB215 0305	SO	CALCIUM	583	6.6	8.2	MG_KG	J	m,fd,md
OU09 SB215 0305	SO	MAGNESIUM	1960	6.6	8.2	MG_KG	J	y
OU09 SB215 0305	SO	POTASSIUM	489	41	82	MG_KG	J+	m
OU09 SB215 0305	SO	SODIUM	82	82	82	MG_KG	U	bl
OU09 SB215 0305	SO	ANTIMONY	0.082	0.082	0.082	MG_KG	UJ	m,be
OU09 SB215 0305	SO	ARSENIC	5.1	0.33	0.41	MG_KG	J	m,md
OU09 SB215 0305	SO	BERYLLIUM	0.42	0.016	0.082	MG_KG	J-	m
OU09 SB215 0305	SO	CADMIUM	0.082	0.082	0.082	MG_KG	UJ	be,fd
OU09 SB215 0305	SO	CHROMIUM, TOTAL	11.0	0.33	0.41	MG_KG	J	m,md
OU09 SB215 0305	SO	COBALT	8.5	0.025	0.082	MG_KG	J-	m
OU09 SB215 0305	SO	COPPER	12.1	0.16	0.25	MG_KG	J	m,md
OU09 SB215 0305	SO	LEAD	8.7	0.041	0.082	MG_KG	J	m
OU09 SB215 0305	SO	NICKEL	14.0	0.099	0.16	MG_KG	J-	m
OU09 SB215 0305	SO	SELENIUM	0.48	0.25	0.41	MG_KG	J-	m
OU09 SB215 0305	SO	VANADIUM	16.4	0.33	0.41	MG_KG	J	m
OU09 SB215 0305	SO	ZINC	33.9	0.66	0.82	MG_KG	J	m,md
OU09 SB215 0305	SO	MERCURY	0.030	0.030	0.030	MG_KG	UJ	bl,md
OU09 SB215 1012	SO	CALCIUM	496	4.9	6.2	MG_KG	J	m,fd,md
OU09 SB215 1012	SO	MAGNESIUM	2580	9.8	12	MG_KG	J	y
OU09 SB215 1012	SO	POTASSIUM	845	31	62	MG_KG	J+	m
OU09 SB215 1012	SO	SODIUM	62	62	62	MG_KG	U	bl
OU09 SB215 1012	SO	ANTIMONY	0.08	0.031	0.062	MG_KG	J-	m
OU09 SB215 1012	SO	ARSENIC	3.8	0.49	0.62	MG_KG	J	m,md
OU09 SB215 1012	SO	BERYLLIUM	0.30	0.012	0.062	MG_KG	J-	m
OU09 SB215 1012	SO	CADMIUM	0.062	0.062	0.062	MG_KG	UJ	be,fd

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SB215 1012	SO	CHROMIUM, TOTAL	11.3	0.25	0.31	MG_KG	J	m,md
OU09 SB215 1012	SO	COBALT	12.3	0.018	0.062	MG_KG	J-	m
OU09 SB215 1012	SO	COPPER	18.0	0.12	0.18	MG_KG	J	m,md
OU09 SB215 1012	SO	LEAD	6.1	0.031	0.062	MG_KG	J	m
OU09 SB215 1012	SO	NICKEL	18.0	0.074	0.12	MG_KG	J-	m
OU09 SB215 1012	SO	SELENIUM	0.31	0.31	0.31	MG_KG	UJ	bl,m
OU09 SB215 1012	SO	VANADIUM	15.8	0.25	0.31	MG_KG	J	m
OU09 SB215 1012	SO	ZINC	40.3	0.49	0.62	MG_KG	J	m,md
OU09 SB215 1012	SO	MERCURY	0.017	0.017	0.033	MG_KG	UJ	md
OU09 SB216 0305	SO	CALCIUM	480	5.8	7.3	MG_KG	J	fd,md,m
OU09 SB216 0305	SO	POTASSIUM	389	36	73	MG_KG	J+	m
OU09 SB216 0305	SO	SODIUM	73	73	73	MG_KG	U	bl
OU09 SB216 0305	SO	ANTIMONY	0.073	0.073	0.073	MG_KG	UJ	m,be
OU09 SB216 0305	SO	ARSENIC	5.4	0.29	0.36	MG_KG	J	m,md
OU09 SB216 0305	SO	BERYLLIUM	0.31	0.015	0.073	MG_KG	J-	m
OU09 SB216 0305	SO	CADMIUM	0.073	0.073	0.073	MG_KG	UJ	be,fd
OU09 SB216 0305	SO	CHROMIUM, TOTAL	8.8	0.29	0.36	MG_KG	J	m,md
OU09 SB216 0305	SO	COBALT	8.0	0.022	0.073	MG_KG	J-	m
OU09 SB216 0305	SO	COPPER	9.8	0.15	0.22	MG_KG	J	m,md
OU09 SB216 0305	SO	LEAD	5.3	0.036	0.073	MG_KG	J	m
OU09 SB216 0305	SO	NICKEL	11.9	0.088	0.15	MG_KG	J-	m
OU09 SB216 0305	SO	SELENIUM	0.36	0.36	0.36	MG_KG	UJ	bl,m
OU09 SB216 0305	SO	VANADIUM	12.9	0.29	0.36	MG_KG	J	m
OU09 SB216 0305	SO	ZINC	28.5	0.58	0.73	MG_KG	J	m,md
OU09 SB216 0305	SO	MERCURY	0.031	0.031	0.031	MG_KG	UJ	bl,md
OU09 SB216 0608	SO	CALCIUM	372	4.7	5.9	MG_KG	J	m,fd
OU09 SB216 0608	SO	MAGNESIUM	1390	24	29	MG_KG	J	y
OU09 SB216 0608	SO	POTASSIUM	562	29	59	MG_KG	J+	m
OU09 SB216 0608	SO	SODIUM	59	59	59	MG_KG	U	bl
OU09 SB216 0608	SO	ANTIMONY	0.15	0.029	0.059	MG_KG	J-	m
OU09 SB216 0608	SO	ARSENIC	12.5	0.47	0.59	MG_KG	J-	m
OU09 SB216 0608	SO	BERYLLIUM	0.42	0.012	0.059	MG_KG	J-	m
OU09 SB216 0608	SO	CADMIUM	0.059	0.059	0.059	MG_KG	UJ	be,fd
OU09 SB216 0608	SO	CHROMIUM, TOTAL	10.2	0.24	0.29	MG_KG	J-	m
OU09 SB216 0608	SO	COBALT	14.4	0.018	0.059	MG_KG	J-	m
OU09 SB216 0608	SO	COPPER	21.7	0.12	0.18	MG_KG	J-	m
OU09 SB216 0608	SO	LEAD	9.3	0.029	0.059	MG_KG	J-	m

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SB216 0608	SO	NICKEL	21.2	0.071	0.12	MG_KG	J-	m
OU09 SB216 0608	SO	SELENIUM	0.41	0.18	0.29	MG_KG	J-	m
OU09 SB216 0608	SO	VANADIUM	16.5	0.24	0.29	MG_KG	J-	m
OU09 SB216 0608	SO	ZINC	50.3	0.47	0.59	MG_KG	J-	m
OU09 SB218 0102	SO	CALCIUM	793	7.5	9.4	MG_KG	J	fd,md,m
OU09 SB218 0102	SO	POTASSIUM	295	47	94	MG_KG	J+	m
OU09 SB218 0102	SO	SODIUM	94	94	94	MG_KG	U	bl
OU09 SB218 0102	SO	ANTIMONY	0.094	0.094	0.094	MG_KG	UJ	m,be
OU09 SB218 0102	SO	ARSENIC	6.4	0.38	0.47	MG_KG	J	m,md
OU09 SB218 0102	SO	BERYLLIUM	0.34	0.019	0.094	MG_KG	J-	m
OU09 SB218 0102	SO	CADMIUM	0.094	0.094	0.094	MG_KG	UJ	be,fd
OU09 SB218 0102	SO	CHROMIUM, TOTAL	11.2	0.38	0.47	MG_KG	J	m,md
OU09 SB218 0102	SO	COBALT	8.2	0.028	0.094	MG_KG	J-	m
OU09 SB218 0102	SO	COPPER	12.3	0.19	0.28	MG_KG	J	m,md
OU09 SB218 0102	SO	LEAD	10.6	0.047	0.094	MG_KG	J	m
OU09 SB218 0102	SO	NICKEL	18.7	0.11	0.19	MG_KG	J-	m
OU09 SB218 0102	SO	SELENIUM	0.47	0.47	0.47	MG_KG	UJ	bl,m
OU09 SB218 0102	SO	VANADIUM	16.1	0.38	0.47	MG_KG	J	m
OU09 SB218 0102	SO	ZINC	44.8	0.75	0.94	MG_KG	J	m,md
OU09 SB218 0102	SO	MERCURY	0.029	0.029	0.029	MG_KG	UJ	bl,md
OU09 SB218 0305	SO	CALCIUM	374	5.4	6.8	MG_KG	J	fd,md,m
OU09 SB218 0305	SO	POTASSIUM	523	34	68	MG_KG	J+	m
OU09 SB218 0305	SO	SODIUM	68	68	68	MG_KG	U	bl
OU09 SB218 0305	SO	ANTIMONY	0.09	0.034	0.068	MG_KG	J-	m
OU09 SB218 0305	SO	ARSENIC	7.9	0.27	0.34	MG_KG	J	m,md
OU09 SB218 0305	SO	BERYLLIUM	0.39	0.014	0.068	MG_KG	J-	m
OU09 SB218 0305	SO	CADMIUM	0.068	0.068	0.068	MG_KG	UJ	be,fd
OU09 SB218 0305	SO	CHROMIUM, TOTAL	10.3	0.27	0.34	MG_KG	J	m,md
OU09 SB218 0305	SO	COBALT	14.2	0.020	0.068	MG_KG	J-	m
OU09 SB218 0305	SO	COPPER	19.8	0.14	0.20	MG_KG	J	m,md
OU09 SB218 0305	SO	LEAD	8.7	0.034	0.068	MG_KG	J	m
OU09 SB218 0305	SO	NICKEL	22.3	0.081	0.14	MG_KG	J-	m
OU09 SB218 0305	SO	SELENIUM	0.34	0.34	0.34	MG_KG	UJ	bl,m
OU09 SB218 0305	SO	VANADIUM	15.0	0.27	0.34	MG_KG	J	m
OU09 SB218 0305	SO	ZINC	52.7	0.54	0.68	MG_KG	J	m,md
OU09 SB218 0305	SO	MERCURY	0.015	0.015	0.029	MG_KG	UJ	md

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SB219 0305	SO	CALCIUM	447	5.7	7.1	MG_KG	J	fd,md,m
OU09 SB219 0305	SO	POTASSIUM	454	36	71	MG_KG	J+	m
OU09 SB219 0305	SO	SODIUM	71	71	71	MG_KG	U	bl
OU09 SB219 0305	SO	ANTIMONY	0.11	0.036	0.071	MG_KG	J-	m
OU09 SB219 0305	SO	ARSENIC	10	0.28	0.36	MG_KG	J	m,md
OU09 SB219 0305	SO	BERYLLIUM	0.44	0.014	0.071	MG_KG	J-	m
OU09 SB219 0305	SO	CADMIUM	0.071	0.071	0.071	MG_KG	UJ	be,fd
OU09 SB219 0305	SO	CHROMIUM, TOTAL	13.4	0.28	0.36	MG_KG	J	m,md
OU09 SB219 0305	SO	COBALT	12.5	0.021	0.071	MG_KG	J-	m
OU09 SB219 0305	SO	COPPER	17.5	0.14	0.21	MG_KG	J	m,md
OU09 SB219 0305	SO	LEAD	9.2	0.036	0.071	MG_KG	J	m
OU09 SB219 0305	SO	NICKEL	19.1	0.085	0.14	MG_KG	J-	m
OU09 SB219 0305	SO	SELENIUM	0.38	0.21	0.36	MG_KG	J-	m
OU09 SB219 0305	SO	VANADIUM	19.3	0.28	0.36	MG_KG	J	m
OU09 SB219 0305	SO	ZINC	45.8	0.57	0.71	MG_KG	J	m,md
OU09 SB219 0305	SO	MERCURY	0.033	0.033	0.033	MG_KG	UJ	bl,md
OU09 SB220 0001	SO	CALCIUM	2330	5.1	6.4	MG_KG	J	m,fd,md
OU09 SB220 0001	SO	MAGNESIUM	2230	10	13	MG_KG	J	y
OU09 SB220 0001	SO	POTASSIUM	343	32	64	MG_KG	J+	m
OU09 SB220 0001	SO	SODIUM	64	64	64	MG_KG	U	bl
OU09 SB220 0001	SO	ANTIMONY	0.32	0.032	0.064	MG_KG	J-	m
OU09 SB220 0001	SO	ARSENIC	19.3	0.51	0.64	MG_KG	J	m,md
OU09 SB220 0001	SO	BERYLLIUM	0.39	0.013	0.064	MG_KG	J-	m
OU09 SB220 0001	SO	CADMIUM	0.15	0.013	0.064	MG_KG	J	fd
OU09 SB220 0001	SO	CHROMIUM, TOTAL	11.6	0.25	0.32	MG_KG	J	m,md
OU09 SB220 0001	SO	COBALT	10.3	0.019	0.064	MG_KG	J-	m
OU09 SB220 0001	SO	COPPER	17.4	0.13	0.19	MG_KG	J	m,md
OU09 SB220 0001	SO	LEAD	43.4	0.032	0.064	MG_KG	J	m
OU09 SB220 0001	SO	NICKEL	20.5	0.076	0.13	MG_KG	J-	m
OU09 SB220 0001	SO	SELENIUM	0.37	0.19	0.32	MG_KG	J-	m
OU09 SB220 0001	SO	VANADIUM	16.4	0.25	0.32	MG_KG	J	m
OU09 SB220 0001	SO	ZINC	86.5	0.51	0.64	MG_KG	J	m,md
OU09 SB220 0001	SO	MERCURY	0.03	0.016	0.032	MG_KG	J	md
OU09 SB220 0305	SO	CALCIUM	1080	5.6	7.0	MG_KG	J	fd
OU09 SB220 0305	SO	MAGNESIUM	1450	11	14	MG_KG	J	y
OU09 SB220 0305	SO	SODIUM	70	70	70	MG_KG	U	bl
OU09 SB220 0305	SO	ANTIMONY	0.10	0.035	0.070	MG_KG	J-	m

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SB220 0305	SO	CADMIUM	0.070	0.070	0.070	MG_KG	UJ	be,fd
OU09 SB220 0305	SO	COPPER	14.6	0.14	0.21	MG_KG	J-	m
OU09 SB220 0305	SO	LEAD	12.6	0.035	0.070	MG_KG	J+	m
OU09 SB220 0305	SO	SELENIUM	0.35	0.35	0.35	MG_KG	U	bl
OU09 SB222 0001	SO	CALCIUM	1350	4.7	5.9	MG_KG	J	m,fd,md
OU09 SB222 0001	SO	MAGNESIUM	3660	23	29	MG_KG	J	y
OU09 SB222 0001	SO	POTASSIUM	494	29	59	MG_KG	J+	m
OU09 SB222 0001	SO	ANTIMONY	4.1	0.029	0.059	MG_KG	J-	m
OU09 SB222 0001	SO	ARSENIC	15.9	1.2	1.5	MG_KG	J	m,md
OU09 SB222 0001	SO	BERYLLIUM	0.32	0.012	0.059	MG_KG	J-	m
OU09 SB222 0001	SO	CADMIUM	0.19	0.012	0.059	MG_KG	J	fd
OU09 SB222 0001	SO	CHROMIUM, TOTAL	12.4	0.23	0.29	MG_KG	J	m,md
OU09 SB222 0001	SO	COBALT	21.2	0.018	0.059	MG_KG	J-	m
OU09 SB222 0001	SO	COPPER	30.8	0.12	0.18	MG_KG	J	m,md
OU09 SB222 0001	SO	LEAD	496	0.15	0.29	MG_KG	J	m
OU09 SB222 0001	SO	NICKEL	33.7	0.070	0.12	MG_KG	J-	m
OU09 SB222 0001	SO	SELENIUM	0.30	0.18	0.29	MG_KG	J-	m
OU09 SB222 0001	SO	VANADIUM	13.4	0.23	0.29	MG_KG	J	m
OU09 SB222 0001	SO	ZINC	71.3	0.47	0.59	MG_KG	J	m,md
OU09 SB222 0001	SO	MERCURY	0.012	0.012	0.023	MG_KG	UJ	md
OU09 SB223 0001	SO	CALCIUM	2280	6.8	8.6	MG_KG	J	m,fd,md
OU09 SB223 0001	SO	MAGNESIUM	7180	14	17	MG_KG	J	y
OU09 SB223 0001	SO	POTASSIUM	459	43	86	MG_KG	J+	m
OU09 SB223 0001	SO	SODIUM	86.2	86.2	86	MG_KG	U	be
OU09 SB223 0001	SO	ANTIMONY	6.5	0.043	0.086	MG_KG	J-	m
OU09 SB223 0001	SO	ARSENIC	5.9	0.34	0.43	MG_KG	J	m,md
OU09 SB223 0001	SO	BERYLLIUM	0.35	0.017	0.086	MG_KG	J-	m
OU09 SB223 0001	SO	CADMIUM	0.84	0.017	0.086	MG_KG	JJ	fd
OU09 SB223 0001	SO	CHROMIUM, TOTAL	30.1	0.34	0.43	MG_KG	J	m,md
OU09 SB223 0001	SO	COBALT	10.8	0.026	0.086	MG_KG	J-	m
OU09 SB223 0001	SO	COPPER	22.8	0.17	0.26	MG_KG	J	m,md
OU09 SB223 0001	SO	LEAD	1830	0.21	0.43	MG_KG	J	m
OU09 SB223 0001	SO	NICKEL	56.6	0.10	0.17	MG_KG	J-	m
OU09 SB223 0001	SO	SELENIUM	0.43	0.43	0.43	MG_KG	UJ	bl,m
OU09 SB223 0001	SO	VANADIUM	19.7	0.34	0.43	MG_KG	J	m
OU09 SB223 0001	SO	ZINC	433	3.4	4.3	MG_KG	J	m,md
OU09 SB223 0001	SO	MERCURY	0.19	0.015	0.030	MG_KG	J	md

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SB223 0304	SO	CALCIUM	1390	5.6	7.0	MG_KG	J	m,fd,md
OU09 SB223 0304	SO	MAGNESIUM	2430	5.6	7.0	MG_KG	J	y
OU09 SB223 0304	SO	POTASSIUM	353	35	70	MG_KG	J+	m
OU09 SB223 0304	SO	ANTIMONY	2.5	0.035	0.070	MG_KG	J-	m
OU09 SB223 0304	SO	ARSENIC	4.9	0.28	0.35	MG_KG	J	m,md
OU09 SB223 0304	SO	BERYLLIUM	0.36	0.014	0.070	MG_KG	J-	m
OU09 SB223 0304	SO	CADMIUM	0.14	0.014	0.070	MG_KG	J	fd
OU09 SB223 0304	SO	CHROMIUM, TOTAL	11.0	0.28	0.35	MG_KG	J	m,md
OU09 SB223 0304	SO	COBALT	6.9	0.021	0.070	MG_KG	J-	m
OU09 SB223 0304	SO	COPPER	10.9	0.14	0.21	MG_KG	J	m,md
OU09 SB223 0304	SO	LEAD	144	0.035	0.070	MG_KG	J	m
OU09 SB223 0304	SO	NICKEL	13.0	0.084	0.14	MG_KG	J-	m
OU09 SB223 0304	SO	SELENIUM	0.35	0.35	0.35	MG_KG	UJ	bl,m
OU09 SB223 0304	SO	VANADIUM	15.4	0.28	0.35	MG_KG	J	m
OU09 SB223 0304	SO	ZINC	58.5	0.56	0.70	MG_KG	J	m,md
OU09 SB223 0304	SO	MERCURY	0.05	0.013	0.025	MG_KG	J	md
OU09 SB324 0102	SO	CALCIUM	1020	6.3	7.9	MG_KG	J	m,fd,md
OU09 SB324 0102	SO	MAGNESIUM	3030	12	16	MG_KG	J	y
OU09 SB324 0102	SO	POTASSIUM	343	39	79	MG_KG	J+	m
OU09 SB324 0102	SO	SODIUM	79	79	79	MG_KG	U	bl
OU09 SB324 0102	SO	ANTIMONY	1.0	0.039	0.079	MG_KG	J-	m
OU09 SB324 0102	SO	ARSENIC	31.2	0.31	0.39	MG_KG	J	m,md
OU09 SB324 0102	SO	BERYLLIUM	0.30	0.016	0.079	MG_KG	J-	m
OU09 SB324 0102	SO	CADMIUM	1.0	0.016	0.079	MG_KG	J	fd
OU09 SB324 0102	SO	CHROMIUM, TOTAL	12.7	0.31	0.39	MG_KG	J	m,md
OU09 SB324 0102	SO	COBALT	11.4	0.024	0.079	MG_KG	J-	m
OU09 SB324 0102	SO	COPPER	27.6	0.16	0.24	MG_KG	J	m,md
OU09 SB324 0102	SO	LEAD	26.5	0.039	0.079	MG_KG	J	m
OU09 SB324 0102	SO	NICKEL	36.0	0.094	0.16	MG_KG	J-	m
OU09 SB324 0102	SO	SELENIUM	0.39	0.39	0.39	MG_KG	UJ	bl,m
OU09 SB324 0102	SO	VANADIUM	18.1	0.31	0.39	MG_KG	J	m
OU09 SB324 0102	SO	ZINC	158	0.63	0.79	MG_KG	J	m,md
OU09 SB324 0102	SO	MERCURY	0.04	0.015	0.030	MG_KG	J	md
OU09 SB324 0305	SO	CALCIUM	295	4.2	5.3	MG_KG	J	m,fd,md
OU09 SB324 0305	SO	MAGNESIUM	1750	8.5	11	MG_KG	J	y
OU09 SB324 0305	SO	POTASSIUM	393	26	53	MG_KG	J+	m

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SB324 0305	SO	SODIUM	53	53	53	MG_KG	U	bl
OU09 SB324 0305	SO	ANTIMONY	0.15	0.026	0.053	MG_KG	J-	m
OU09 SB324 0305	SO	ARSENIC	6.4	0.21	0.26	MG_KG	J	m,md
OU09 SB324 0305	SO	BERYLLIUM	0.35	0.011	0.053	MG_KG	J-	m
OU09 SB324 0305	SO	CADMIUM	0.09	0.011	0.053	MG_KG	J	fd
OU09 SB324 0305	SO	CHROMIUM, TOTAL	9.1	0.21	0.26	MG_KG	J	m,md
OU09 SB324 0305	SO	COBALT	14.0	0.016	0.053	MG_KG	J-	m
OU09 SB324 0305	SO	COPPER	14.5	0.11	0.16	MG_KG	J	m,md
OU09 SB324 0305	SO	LEAD	7.7	0.026	0.053	MG_KG	J	m
OU09 SB324 0305	SO	NICKEL	17.6	0.064	0.11	MG_KG	J-	m
OU09 SB324 0305	SO	SELENIUM	0.26	0.26	0.26	MG_KG	UJ	bl,m
OU09 SB324 0305	SO	VANADIUM	13.4	0.21	0.26	MG_KG	J	m
OU09 SB324 0305	SO	ZINC	97.0	0.42	0.53	MG_KG	J	m,md
OU09 SB324 0305	SO	MERCURY	0.032	0.032	0.032	MG_KG	UJ	bl,md
OU09 SB324 0608	SO	CALCIUM	301	5.8	7.2	MG_KG	J	m,fd,md
OU09 SB324 0608	SO	MAGNESIUM	2260	12	14	MG_KG	J	y
OU09 SB324 0608	SO	POTASSIUM	338	36	72	MG_KG	J+	m
OU09 SB324 0608	SO	SODIUM	72	72	72	MG_KG	U	bl
OU09 SB324 0608	SO	ANTIMONY	0.11	0.036	0.072	MG_KG	J-	m
OU09 SB324 0608	SO	ARSENIC	5.8	0.58	0.72	MG_KG	J	m,md
OU09 SB324 0608	SO	BERYLLIUM	0.38	0.014	0.072	MG_KG	J-	m
OU09 SB324 0608	SO	CADMIUM	0.07	0.014	0.072	MG_KG	J	fd
OU09 SB324 0608	SO	CHROMIUM, TOTAL	10	0.29	0.36	MG_KG	J	m,md
OU09 SB324 0608	SO	COBALT	10.7	0.022	0.072	MG_KG	J-	m
OU09 SB324 0608	SO	COPPER	17.0	0.14	0.22	MG_KG	J	m,md
OU09 SB324 0608	SO	LEAD	7.8	0.036	0.072	MG_KG	J	m
OU09 SB324 0608	SO	NICKEL	19.3	0.087	0.14	MG_KG	J-	m
OU09 SB324 0608	SO	SELENIUM	0.36	0.36	0.36	MG_KG	UJ	bl,m
OU09 SB324 0608	SO	VANADIUM	13.6	0.29	0.36	MG_KG	J	m
OU09 SB324 0608	SO	ZINC	47.8	0.58	0.72	MG_KG	J	m,md
OU09 SB324 0608	SO	MERCURY	0.014	0.014	0.028	MG_KG	UJ	md
OU09 SB324 0810	SO	CALCIUM	234	4.9	6.2	MG_KG	J	m,fd,md
OU09 SB324 0810	SO	MAGNESIUM	2970	25	31	MG_KG	J	y
OU09 SB324 0810	SO	POTASSIUM	342	31	62	MG_KG	J+	m
OU09 SB324 0810	SO	SODIUM	62	62	62	MG_KG	U	bl
OU09 SB324 0810	SO	ANTIMONY	0.13	0.031	0.062	MG_KG	J-	m
OU09 SB324 0810	SO	ARSENIC	8.4	0.25	0.31	MG_KG	J	m,md

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SB324 0810	SO	BERYLLIUM	0.40	0.012	0.062	MG_KG	J-	m
OU09 SB324 0810	SO	CADMIUM	0.12	0.012	0.062	MG_KG	J	fd
OU09 SB324 0810	SO	CHROMIUM, TOTAL	12.8	0.25	0.31	MG_KG	J	m,md
OU09 SB324 0810	SO	COBALT	15.9	0.018	0.062	MG_KG	J-	m
OU09 SB324 0810	SO	COPPER	25.7	0.12	0.18	MG_KG	J	m,md
OU09 SB324 0810	SO	LEAD	10.3	0.031	0.062	MG_KG	J	m
OU09 SB324 0810	SO	NICKEL	32.2	0.074	0.12	MG_KG	J-	m
OU09 SB324 0810	SO	SELENIUM	0.31	0.31	0.31	MG_KG	UJ	bl,m
OU09 SB324 0810	SO	VANADIUM	14.4	0.25	0.31	MG_KG	J	m
OU09 SB324 0810	SO	ZINC	65.9	0.49	0.62	MG_KG	J	m,md
OU09 SB324 0810	SO	MERCURY	0.012	0.012	0.024	MG_KG	UJ	md
OU09 SS205 0001	SO	CALCIUM	1420	3.9	4.8	MG_KG	J	fd,md,m
OU09 SS205 0001	SO	POTASSIUM	311	24	48	MG_KG	J+	m
OU09 SS205 0001	SO	SODIUM	48	48	48	MG_KG	U	bl
OU09 SS205 0001	SO	ANTIMONY	0.62	0.024	0.048	MG_KG	J-	m
OU09 SS205 0001	SO	ARSENIC	13.3	0.19	0.24	MG_KG	J	m,md
OU09 SS205 0001	SO	BERYLLIUM	0.56	0.0097	0.048	MG_KG	J-	m
OU09 SS205 0001	SO	CADMIUM	0.20	0.0097	0.048	MG_KG	J	fd
OU09 SS205 0001	SO	CHROMIUM, TOTAL	13.2	0.19	0.24	MG_KG	J	m,md
OU09 SS205 0001	SO	COBALT	17.0	0.014	0.048	MG_KG	J-	m
OU09 SS205 0001	SO	COPPER	256	0.48	0.72	MG_KG	J	m,md
OU09 SS205 0001	SO	LEAD	39.3	0.024	0.048	MG_KG	J	m
OU09 SS205 0001	SO	NICKEL	30.3	0.058	0.097	MG_KG	J-	m
OU09 SS205 0001	SO	SELENIUM	0.62	0.14	0.24	MG_KG	J-	m
OU09 SS205 0001	SO	VANADIUM	21.8	0.19	0.24	MG_KG	J	m
OU09 SS205 0001	SO	ZINC	75.2	0.39	0.48	MG_KG	J	m,md
OU09 SS205 0001	SO	MERCURY	0.032	0.032	0.032	MG_KG	UJ	bl,md
OU09 SS218 0001	SO	CALCIUM	2910	6.8	8.4	MG_KG	J	fd,md,m
OU09 SS218 0001	SO	POTASSIUM	379	42	84	MG_KG	J+	m
OU09 SS218 0001	SO	SODIUM	84	84	84	MG_KG	U	bl
OU09 SS218 0001	SO	ANTIMONY	0.34	0.042	0.084	MG_KG	J-	m
OU09 SS218 0001	SO	ARSENIC	9.7	0.34	0.42	MG_KG	J	m,md
OU09 SS218 0001	SO	BERYLLIUM	0.27	0.017	0.084	MG_KG	J-	m
OU09 SS218 0001	SO	CADMIUM	0.16	0.017	0.084	MG_KG	J	fd
OU09 SS218 0001	SO	CHROMIUM, TOTAL	12.8	0.34	0.42	MG_KG	J	m,md
OU09 SS218 0001	SO	COBALT	10.7	0.025	0.084	MG_KG	J-	m
OU09 SS218 0001	SO	COPPER	16.9	0.17	0.25	MG_KG	J	m,md

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09 SS218 0001	SO	LEAD	114	0.042	0.084	MG_KG	J	m
OU09 SS218 0001	SO	NICKEL	20.0	0.10	0.17	MG_KG	J-	m
OU09 SS218 0001	SO	SELENIUM	0.42	0.42	0.42	MG_KG	UJ	bl,m
OU09 SS218 0001	SO	VANADIUM	19.4	0.34	0.42	MG_KG	J	m
OU09 SS218 0001	SO	ZINC	67.2	0.68	0.84	MG_KG	J	m,md
OU09 SS218 0001	SO	MERCURY	0.032	0.032	0.032	MG_KG	UJ	bl,md
OU09 SS219 0001	SO	CALCIUM	4520	32	40	MG_KG	J	m,md,fd
OU09 SS219 0001	SO	POTASSIUM	296	40	81	MG_KG	J+	m
OU09 SS219 0001	SO	SODIUM	81	81	81	MG_KG	U	be
OU09 SS219 0001	SO	ANTIMONY	0.43	0.040	0.081	MG_KG	J-	m
OU09 SS219 0001	SO	ARSENIC	13.3	0.32	0.40	MG_KG	J	m,md
OU09 SS219 0001	SO	BERYLLIUM	0.27	0.016	0.081	MG_KG	J-	m
OU09 SS219 0001	SO	CADMIUM	0.18	0.016	0.081	MG_KG	J	fd
OU09 SS219 0001	SO	CHROMIUM, TOTAL	15.6	0.32	0.40	MG_KG	J	m,md
OU09 SS219 0001	SO	COBALT	13.9	0.024	0.081	MG_KG	J-	m
OU09 SS219 0001	SO	COPPER	42.6	0.16	0.24	MG_KG	J	m,md
OU09 SS219 0001	SO	LEAD	63.3	0.040	0.081	MG_KG	J	m
OU09 SS219 0001	SO	NICKEL	27.5	0.097	0.16	MG_KG	J-	m
OU09 SS219 0001	SO	SELENIUM	0.40	0.40	0.40	MG_KG	UJ	bl,m
OU09 SS219 0001	SO	VANADIUM	21.2	0.32	0.40	MG_KG	J	m
OU09 SS219 0001	SO	ZINC	82.6	0.65	0.81	MG_KG	J	m,md
OU09 SS219 0001	SO	MERCURY	0.02	0.014	0.028	MG_KG	J	md
OU09 SS324 0001	SO	CALCIUM	1140	5.3	6.6	MG_KG	J	fd
OU09 SS324 0001	SO	MAGNESIUM	2820	10	13	MG_KG	J	y
OU09 SS324 0001	SO	SODIUM	66	66	66	MG_KG	U	bl
OU09 SS324 0001	SO	ARSENIC	20.8	0.26	0.33	MG_KG	J-	m
OU09 SS324 0001	SO	CADMIUM	1.8	0.013	0.066	MG_KG	J	fd
OU09 SS324 0001	SO	CHROMIUM, TOTAL	18.9	0.26	0.33	MG_KG	J	m,md
OU09 SS324 0001	SO	SELENIUM	0.33	0.33	0.33	MG_KG	U	bl
OU09 SS324 0001	SO	VANADIUM	42.8	0.26	0.33	MG_KG	J+	m

Attachment A

Non Conformance Summary Tables

Table A-1a Lab Blanks

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
PBSHA06HGS1	MERCURY	-0.006	0.017	0.033	MG_KG	OU09 SB204 0001 OU09 SS219 0001
PBSHA06HGS2	MERCURY	0.005	0.017	0.033	MG_KG	OU09 SB214 0305 OU09 SB215 0305 OU09 SB216 0305 OU09 SB218 0102 OU09 SB219 0305 OU09 SS205 0001 OU09 SS218 0001
PBSHA07HGS3	MERCURY	0.005	0.017	0.033	MG_KG	FDSS12111312 OU09 SB220 0001 OU09 SB220 0305 OU09 SB223 0001 OU09 SB324 0102 OU09 SB324 0305 OU09 SS324 0001
PBSHA06ICS2	CALCIUM	7.453	8.0	10	MG_KG	OU09 SB204 0001 OU09 SB204 0305 OU09 SB205 0305 OU09 SB205 0608 OU09 SS219 0001
PBSHA06ICS2	IRON	2.364	8.0	10	MG_KG	OU09 SB204 0001 OU09 SB204 0305 OU09 SB205 0305 OU09 SB205 0608 OU09 SS219 0001
PBSHA06ICS2	MAGNESIUM	2.432	8.0	10	MG_KG	OU09 SB204 0001 OU09 SB204 0305 OU09 SB205 0305 OU09 SB205 0608 OU09 SS219 0001
PBSHA06ICS2	SODIUM	3.450	50	100	MG_KG	OU09 SB204 0001 OU09 SB204 0305 OU09 SB205 0305 OU09 SB205 0608 OU09 SS219 0001
PBSHA06IMS2	ARSENIC	0.242	0.40	0.50	MG_KG	OU09 SB204 0001 OU09 SB204 0305 OU09 SB205 0305 OU09 SB205 0608 OU09 SS219 0001

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
PBSHA06IMS2	BARIUM	0.077	0.10	0.20	MG_KG	OU09 SB204 0001 OU09 SB204 0305 OU09 SB205 0305 OU09 SB205 0608 OU09 SS219 0001
PBSHA06IMS2	CHROMIUM, TOTAL	0.089	0.40	0.50	MG_KG	OU09 SB204 0001 OU09 SB204 0305 OU09 SB205 0305 OU09 SB205 0608 OU09 SS219 0001
PBSHA06IMS2	COPPER	0.075	0.20	0.30	MG_KG	OU09 SB204 0001 OU09 SB204 0305 OU09 SB205 0305 OU09 SB205 0608 OU09 SS219 0001
PBSHA06IMS2	LEAD	0.086	0.050	0.10	MG_KG	OU09 SB204 0001 OU09 SB204 0305 OU09 SB205 0305 OU09 SB205 0608 OU09 SS219 0001
PBSHA06IMS2	MANGANESE	0.117	0.10	0.20	MG_KG	OU09 SB204 0001 OU09 SB204 0305 OU09 SB205 0305 OU09 SB205 0608 OU09 SS219 0001
PBSHA06IMS2	NICKEL	0.048	0.12	0.20	MG_KG	OU09 SB204 0001 OU09 SB204 0305 OU09 SB205 0305 OU09 SB205 0608 OU09 SS219 0001
PBSHA06IMS2	SELENIUM	0.048	0.30	0.50	MG_KG	OU09 SB204 0001 OU09 SB204 0305 OU09 SB205 0305 OU09 SB205 0608 OU09 SS219 0001
PBSHA06IMS2	VANADIUM	0.173	0.40	0.50	MG_KG	OU09 SB204 0001 OU09 SB204 0305 OU09 SB205 0305 OU09 SB205 0608 OU09 SS219 0001
PBSHA06IMS2	ZINC	0.494	0.80	1.0	MG_KG	OU09 SB204 0001 OU09 SB204 0305 OU09 SB205 0305 OU09 SB205 0608 OU09 SS219 0001

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
PBSHA08ICS1	ALUMINUM	4.107	10	30	MG_KG	FDSB12111303 FDSB12111304 OU09 SB204 1012 OU09 SB215 0102 OU09 SB216 0305 OU09 SB218 0102 OU09 SB218 0305 OU09 SB219 0305 OU09 SS205 0001 OU09 SS218 0001
PBSHA08ICS1	CALCIUM	2.441	8.0	10	MG_KG	FDSB12111303 FDSB12111304 OU09 SB204 1012 OU09 SB215 0102 OU09 SB216 0305 OU09 SB218 0102 OU09 SB218 0305 OU09 SB219 0305 OU09 SS205 0001 OU09 SS218 0001
PBSHA08ICS1	IRON	1.576	8.0	10	MG_KG	FDSB12111303 FDSB12111304 OU09 SB204 1012 OU09 SB215 0102 OU09 SB216 0305 OU09 SB218 0102 OU09 SB218 0305 OU09 SB219 0305 OU09 SS205 0001 OU09 SS218 0001
PBSHA08ICS1	POTASSIUM	4.388	50	100	MG_KG	FDSB12111303 FDSB12111304 OU09 SB204 1012 OU09 SB215 0102 OU09 SB216 0305 OU09 SB218 0102 OU09 SB218 0305 OU09 SB219 0305 OU09 SS205 0001 OU09 SS218 0001
PBSHA08ICS1	SODIUM	1.599	50	100	MG_KG	FDSB12111303 FDSB12111304 OU09 SB204 1012 OU09 SB215 0102 OU09 SB216 0305 OU09 SB218 0102 OU09 SB218 0305 OU09 SB219 0305 OU09 SS205 0001 OU09 SS218 0001

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
PBSHA08ICS2	ALUMINUM	2.227	10	30	MG_KG	FDSS12111312 OU09 SB214 0305 OU09 SB214 0608 OU09 SB215 0305 OU09 SB215 1012 OU09 SB216 0608 OU09 SB220 0001 OU09 SB220 0305 OU09 SB222 0001 OU09 SB223 0001 OU09 SB223 0304 OU09 SB324 0102 OU09 SB324 0305 OU09 SB324 0608 OU09 SB324 0810 OU09 SS324 0001
PBSHA08ICS2	CALCIUM	3.076	8.0	10	MG_KG	FDSS12111312 OU09 SB214 0305 OU09 SB214 0608 OU09 SB215 0305 OU09 SB215 1012 OU09 SB216 0608 OU09 SB220 0001 OU09 SB220 0305 OU09 SB222 0001 OU09 SB223 0001 OU09 SB223 0304 OU09 SB324 0102 OU09 SB324 0305 OU09 SB324 0608 OU09 SB324 0810 OU09 SS324 0001
PBSHA08ICS2	IRON	1.708	8.0	10	MG_KG	FDSS12111312 OU09 SB214 0305 OU09 SB214 0608 OU09 SB215 0305 OU09 SB215 1012 OU09 SB216 0608 OU09 SB220 0001 OU09 SB220 0305 OU09 SB222 0001 OU09 SB223 0001 OU09 SB223 0304 OU09 SB324 0102 OU09 SB324 0305 OU09 SB324 0608 OU09 SB324 0810 OU09 SS324 0001

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
PBSHA08ICS2	MAGNESIUM	1.168	8.0	10	MG_KG	FDSS12111312 OU09 SB214 0305 OU09 SB214 0608 OU09 SB215 0305 OU09 SB215 1012 OU09 SB216 0608 OU09 SB220 0001 OU09 SB220 0305 OU09 SB222 0001 OU09 SB223 0001 OU09 SB223 0304 OU09 SB324 0102 OU09 SB324 0305 OU09 SB324 0608 OU09 SB324 0810 OU09 SS324 0001
PBSHA08ICS2	SODIUM	2.958	50	100	MG_KG	FDSS12111312 OU09 SB214 0305 OU09 SB214 0608 OU09 SB215 0305 OU09 SB215 1012 OU09 SB216 0608 OU09 SB220 0001 OU09 SB220 0305 OU09 SB222 0001 OU09 SB223 0001 OU09 SB223 0304 OU09 SB324 0102 OU09 SB324 0305 OU09 SB324 0608 OU09 SB324 0810 OU09 SS324 0001
PBSHA08IMS1	BARIUM	0.060	0.10	0.20	MG_KG	FDSB12111303 FDSB12111304 OU09 SB204 1012 OU09 SB215 0102 OU09 SB216 0305 OU09 SB218 0102 OU09 SB218 0305 OU09 SB219 0305 OU09 SS205 0001 OU09 SS218 0001
PBSHA08IMS1	CHROMIUM, TOTAL	0.098	0.40	0.50	MG_KG	FDSB12111303 FDSB12111304 OU09 SB204 1012 OU09 SB215 0102 OU09 SB216 0305 OU09 SB218 0102 OU09 SB218 0305 OU09 SB219 0305 OU09 SS205 0001 OU09 SS218 0001

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
PBSHA08IMS1	COBALT	0.007	0.030	0.10	MG_KG	FDSB12111303 FDSB12111304 OU09 SB204 1012 OU09 SB215 0102 OU09 SB216 0305 OU09 SB218 0102 OU09 SB218 0305 OU09 SB219 0305 OU09 SS205 0001 OU09 SS218 0001
PBSHA08IMS1	COPPER	0.086	0.20	0.30	MG_KG	FDSB12111303 FDSB12111304 OU09 SB204 1012 OU09 SB215 0102 OU09 SB216 0305 OU09 SB218 0102 OU09 SB218 0305 OU09 SB219 0305 OU09 SS205 0001 OU09 SS218 0001
PBSHA08IMS1	LEAD	0.020	0.050	0.10	MG_KG	FDSB12111303 FDSB12111304 OU09 SB204 1012 OU09 SB215 0102 OU09 SB216 0305 OU09 SB218 0102 OU09 SB218 0305 OU09 SB219 0305 OU09 SS205 0001 OU09 SS218 0001
PBSHA08IMS1	MANGANESE	0.134	0.10	0.20	MG_KG	FDSB12111303 FDSB12111304 OU09 SB204 1012 OU09 SB215 0102 OU09 SB216 0305 OU09 SB218 0102 OU09 SB218 0305 OU09 SB219 0305 OU09 SS205 0001 OU09 SS218 0001
PBSHA08IMS1	NICKEL	0.040	0.12	0.20	MG_KG	FDSB12111303 FDSB12111304 OU09 SB204 1012 OU09 SB215 0102 OU09 SB216 0305 OU09 SB218 0102 OU09 SB218 0305 OU09 SB219 0305 OU09 SS205 0001 OU09 SS218 0001

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
PBSHA08IMS1	SELENIUM	0.040	0.30	0.50	MG_KG	FDSB12111303 FDSB12111304 OU09 SB204 1012 OU09 SB215 0102 OU09 SB216 0305 OU09 SB218 0102 OU09 SB218 0305 OU09 SB219 0305 OU09 SS205 0001 OU09 SS218 0001
PBSHA08IMS1	ZINC	0.833	0.80	1.0	MG_KG	FDSB12111303 FDSB12111304 OU09 SB204 1012 OU09 SB215 0102 OU09 SB216 0305 OU09 SB218 0102 OU09 SB218 0305 OU09 SB219 0305 OU09 SS205 0001 OU09 SS218 0001
PBSHA08IMS2	BARIUM	0.057	0.10	0.20	MG_KG	FDSS12111312 OU09 SB214 0305 OU09 SB214 0608 OU09 SB215 0305 OU09 SB215 1012 OU09 SB216 0608 OU09 SB220 0001 OU09 SB220 0305 OU09 SB222 0001 OU09 SB223 0001 OU09 SB223 0304 OU09 SB324 0102 OU09 SB324 0305 OU09 SB324 0608 OU09 SB324 0810 OU09 SS324 0001
PBSHA08IMS2	CHROMIUM, TOTAL	0.092	0.40	0.50	MG_KG	FDSS12111312 OU09 SB214 0305 OU09 SB214 0608 OU09 SB215 0305 OU09 SB215 1012 OU09 SB216 0608 OU09 SB220 0001 OU09 SB220 0305 OU09 SB222 0001 OU09 SB223 0001 OU09 SB223 0304 OU09 SB324 0102 OU09 SB324 0305 OU09 SB324 0608 OU09 SB324 0810 OU09 SS324 0001

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
PBSHA08IMS2	COBALT	0.005	0.030	0.10	MG_KG	FDSS12111312 OU09 SB214 0305 OU09 SB214 0608 OU09 SB215 0305 OU09 SB215 1012 OU09 SB216 0608 OU09 SB220 0001 OU09 SB220 0305 OU09 SB222 0001 OU09 SB223 0001 OU09 SB223 0304 OU09 SB324 0102 OU09 SB324 0305 OU09 SB324 0608 OU09 SB324 0810 OU09 SS324 0001
PBSHA08IMS2	COPPER	0.071	0.20	0.30	MG_KG	FDSS12111312 OU09 SB214 0305 OU09 SB214 0608 OU09 SB215 0305 OU09 SB215 1012 OU09 SB216 0608 OU09 SB220 0001 OU09 SB220 0305 OU09 SB222 0001 OU09 SB223 0001 OU09 SB223 0304 OU09 SB324 0102 OU09 SB324 0305 OU09 SB324 0608 OU09 SB324 0810 OU09 SS324 0001
PBSHA08IMS2	LEAD	0.093	0.050	0.10	MG_KG	FDSS12111312 OU09 SB214 0305 OU09 SB214 0608 OU09 SB215 0305 OU09 SB215 1012 OU09 SB216 0608 OU09 SB220 0001 OU09 SB220 0305 OU09 SB222 0001 OU09 SB223 0001 OU09 SB223 0304 OU09 SB324 0102 OU09 SB324 0305 OU09 SB324 0608 OU09 SB324 0810 OU09 SS324 0001

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
PBSHA08IMS2	MANGANESE	0.173	0.10	0.20	MG_KG	FDSS12111312 OU09 SB214 0305 OU09 SB214 0608 OU09 SB215 0305 OU09 SB215 1012 OU09 SB216 0608 OU09 SB220 0001 OU09 SB220 0305 OU09 SB222 0001 OU09 SB223 0001 OU09 SB223 0304 OU09 SB324 0102 OU09 SB324 0305 OU09 SB324 0608 OU09 SB324 0810 OU09 SS324 0001
PBSHA08IMS2	NICKEL	0.064	0.12	0.20	MG_KG	FDSS12111312 OU09 SB214 0305 OU09 SB214 0608 OU09 SB215 0305 OU09 SB215 1012 OU09 SB216 0608 OU09 SB220 0001 OU09 SB220 0305 OU09 SB222 0001 OU09 SB223 0001 OU09 SB223 0304 OU09 SB324 0102 OU09 SB324 0305 OU09 SB324 0608 OU09 SB324 0810 OU09 SS324 0001
PBSHA08IMS2	SELENIUM	0.040	0.30	0.50	MG_KG	FDSS12111312 OU09 SB214 0305 OU09 SB214 0608 OU09 SB215 0305 OU09 SB215 1012 OU09 SB216 0608 OU09 SB220 0001 OU09 SB220 0305 OU09 SB222 0001 OU09 SB223 0001 OU09 SB223 0304 OU09 SB324 0102 OU09 SB324 0305 OU09 SB324 0608 OU09 SB324 0810 OU09 SS324 0001

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
PBSHA08IMS2	ZINC	0.283	0.80	1.0	MG_KG	FDSS12111312 OU09 SB214 0305 OU09 SB214 0608 OU09 SB215 0305 OU09 SB215 1012 OU09 SB216 0608 OU09 SB220 0001 OU09 SB220 0305 OU09 SB222 0001 OU09 SB223 0001 OU09 SB223 0304 OU09 SB324 0102 OU09 SB324 0305 OU09 SB324 0608 OU09 SB324 0810 OU09 SS324 0001

Table A-1b Field Blanks

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
RBSB121113 03	SODIUM	100	500	1000	UG_L	FDSB12111303
RBSB121113 03	ANTIMONY	0.11	0.50	1.0	UG_L	FDSB12111304
RBSB121113 03	BARIUM	1.2	1.0	2.0	UG_L	OU09 SB204 0305
RBSB121113 03	CADMIUM	0.04	0.20	1.0	UG_L	OU09 SB204 1012
RBSB121113 03	CHROMIUM, TOTAL	1.4	4.0	5.0	UG_L	OU09 SB205 0305
RBSB121113 03	COBALT	0.20	0.30	1.0	UG_L	OU09 SB205 0608
RBSB121113 03	COPPER	0.56	2.0	3.0	UG_L	OU09 SB214 0305
RBSB121113 03	ALUMINUM	71.6	100	300	UG_L	OU09 SB214 0608
RBSB121113 03	CALCIUM	83.0	80	100	UG_L	OU09 SB215 0102
RBSB121113 03	IRON	146	80	100	UG_L	OU09 SB215 0305
RBSB121113 03	MAGNESIUM	23.4	80	100	UG_L	OU09 SB215 1012
RBSB121113 03	LEAD	0.44	0.50	1.0	UG_L	OU09 SB216 0305
RBSB121113 03	MANGANESE	3.1	1.0	2.0	UG_L	OU09 SB216 0608
RBSB121113 03	NICKEL	0.44	1.2	2.0	UG_L	OU09 SB218 0102
RBSB121113 03	SELENIUM	0.48	3.0	5.0	UG_L	OU09 SB218 0305
RBSB121113 03	VANADIUM	1.2	4.0	5.0	UG_L	OU09 SB219 0305
RBSB121113 03	ZINC	4.4	8.0	10	UG_L	OU09 SB220 0305
						OU09 SB223 0304
						OU09 SB324 0102
						OU09 SB324 0305
						OU09 SB324 0608
						OU09 SB324 0810

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
RBSB121113 04	CALCIUM	200	80	100	UG_L	FDSS12111312 OU09 SB204 0001 OU09 SB220 0001 OU09 SB222 0001 OU09 SB223 0001 OU09 SS205 0001 OU09 SS218 0001 OU09 SS219 0001 OU09 SS324 0001
RBSB121113 04	IRON	16.0	80	100	UG_L	
RBSB121113 04	MAGNESIUM	45.2	80	100	UG_L	
RBSB121113 04	SODIUM	542	500	1000	UG_L	
RBSB121113 04	ANTIMONY	0.05	0.50	1.0	UG_L	
RBSB121113 04	BARIUM	0.94	1.0	2.0	UG_L	
RBSB121113 04	CADMIUM	0.07	0.20	1.0	UG_L	
RBSB121113 04	CHROMIUM, TOTAL	0.74	4.0	5.0	UG_L	
RBSB121113 04	COBALT	0.11	0.30	1.0	UG_L	
RBSB121113 04	COPPER	1.7	2.0	3.0	UG_L	
RBSB121113 04	LEAD	0.52	0.50	1.0	UG_L	
RBSB121113 04	MANGANESE	1.6	1.0	2.0	UG_L	
RBSB121113 04	NICKEL	2.5	1.2	2.0	UG_L	
RBSB121113 04	VANADIUM	1.4	4.0	5.0	UG_L	
RBSB121113 04	ZINC	6.1	8.0	10	UG_L	

Table A-2 Matrix Spikes

Sample ID	Compound	MS % Recovery	MSD % Recovery	Lower Limit	Upper Limit	RPD	RPD Limit
OU09 SS324 0001	MERCURY	161	21.9	80	120	17.5	20
OU09 SB204 0305	MERCURY	107.8	107.9	80	120	26.8	20
OU09 SB204 0305	ALUMINUM	893.8	753.3	80	120	1.1	20
OU09 SB204 1012	ALUMINUM	1169.3	34.3	80	120	19.4	20
OU09 SB216 0608	ALUMINUM	990.8	1705.6	80	120	11	20
OU09 SB220 0305	ALUMINUM	2008.2	1727.9	80	120	3.3	20
OU09 SS324 0001	ALUMINUM	1519	890.1	80	120	8.8	20
OU09 SB204 0001	ALUMINUM	-520.5	1459.1	80	120	21.6	20
OU09 SB204 0001	IRON	-136.5	5000.1	80	120	9	20
OU09 SB204 0305	IRON	-4415.4	15018.7	80	120	36.9	20
OU09 SB204 1012	IRON	3061.1	-1874.8	80	120	20.1	20
OU09 SB216 0608	IRON	-4399.9	-5632.2	80	120	2.5	20
OU09 SB220 0305	IRON	7421.1	-4601.1	80	120	29.4	20
OU09 SS324 0001	IRON	-512.7	-196.6	80	120	0.8	20
OU09 SB216 0608	LEAD	68.3	108.7	80	120	17.6	20
OU09 SB220 0305	LEAD	138.5	169.1	80	120	9.2	20
OU09 SS324 0001	LEAD	-2904.4	1806.5	80	120	23.8	20
OU09 SB204 0001	LEAD	107.7	133.6	80	120	9.5	20
OU09 SB204 0305	MAGNESIUM	115.2	163	80	120	8.8	20
OU09 SB204 1012	MAGNESIUM	149.7	-84.6	80	120	24.1	20
OU09 SB216 0608	MAGNESIUM	142.5	179.1	80	120	6.4	20
OU09 SB220 0305	MAGNESIUM	81	124.6	80	120	7.5	20
OU09 SS324 0001	MAGNESIUM	198.2	117.6	80	120	8.3	20
OU09 SB204 0001	MAGNESIUM	-80.1	194.4	80	120	20.2	20
OU09 SB204 0305	MANGANESE	-55.8	308.7	80	120	26.2	20
OU09 SB204 1012	MANGANESE	271.1	-26.7	80	120	29.4	20
OU09 SB216 0608	MANGANESE	-6.3	259.9	80	120	18.5	20
OU09 SB220 0305	MANGANESE	92.6	39.9	80	120	3.6	20
OU09 SS324 0001	MANGANESE	31.2	35.4	80	120	0.4	20
OU09 SB204 0001	MANGANESE	13.6	166.3	80	120	10.7	20
OU09 SB216 0608	BERYLLIUM	78.8	95.4	80	120	16.7	20
OU09 SS324 0001	CHROMIUM, TOTAL	126.4	203.6	80	120	29.1	20
OU09 SB204 0001	CHROMIUM, TOTAL	73.4	98.6	80	120	16.8	20
OU09 SB216 0608	CHROMIUM, TOTAL	73.4	95.8	80	120	14	20
OU09 SB220 0305	COPPER	76.6	58.6	80	120	9.4	20
OU09 SS324 0001	COPPER	-365.3	207.3	80	120	19.6	20
OU09 SB204 0001	COPPER	120.3	140.8	80	120	12.9	20
OU09 SB204 0305	COPPER	172.5	95.1	80	120	27.7	20
OU09 SB216 0608	COPPER	63	80.4	80	120	8.6	20

Sample ID	Compound	MS % Recovery	MSD % Recovery	Lower Limit	Upper Limit	RPD	RPD Limit
OU09 SB216 0608	VANADIUM	79.2	94.8	80	120	11.6	20
OU09 SS324 0001	VANADIUM	107.5	146.6	80	120	18.6	20
OU09 SB204 1012	ZINC	99.4	76.8	80	120	12.8	20
OU09 SB216 0608	ZINC	58.3	86.5	80	120	12.5	20
OU09 SS324 0001	ZINC	105	726.8	80	120	51.8	20
OU09 SB204 0001	ZINC	66.4	98.1	80	120	13.7	20
OU09 SB204 0305	ZINC	91.5	141	80	120	24.3	20
OU09 SB204 0305	CALCIUM	78.5	187.6	80	120	36.1	20
OU09 SB204 1012	CALCIUM	254.3	258.8	80	120	0.4	20
OU09 SB216 0608	CALCIUM	106.3	149.5	80	120	12.3	20
OU09 SB220 0305	CALCIUM	61.3	721.9	80	120	57.3	20
OU09 SS324 0001	CALCIUM	177.4	-38	80	120	32.2	20
OU09 SB204 0001	CALCIUM	-143.3	189.9	80	120	25.2	20
OU09 SB204 0001	POTASSIUM	121	117.4	80	120	5.1	20
OU09 SB204 0001	NICKEL	74.2	84.9	80	120	10.1	20
OU09 SB204 0001	ANTIMONY	44.5	44.6	80	120	9.2	20
OU09 SB204 0001	ARSENIC	89.7	1.7	80	120	25.2	20
OU09 SB204 0305	ANTIMONY	47.1	52.5	80	120	19.2	20
OU09 SB204 1012	POTASSIUM	141.4	106.8	80	120	15.4	20
OU09 SB204 1012	ANTIMONY	31.1	37.4	80	120	15.4	20
OU09 SB216 0608	POTASSIUM	128.5	141.9	80	120	6.4	20
OU09 SB216 0608	NICKEL	74	94.9	80	120	14.2	20
OU09 SB216 0608	ANTIMONY	35.3	41.1	80	120	14.9	20
OU09 SB216 0608	COBALT	76.2	97.7	80	120	16.8	20
OU09 SB216 0608	SELENIUM	75.8	89.5	80	120	16	20
OU09 SB216 0608	ARSENIC	34.2	40.8	80	120	3	20
OU09 SB220 0305	ANTIMONY	37	34.6	80	120	3.7	20
OU09 SS324 0001	ANTIMONY	-410	-354.2	80	120	8.1	20
OU09 SS324 0001	ARSENIC	25.9	36.8	80	120	4.1	20

Table A-2 Matrix Spikes

Sample ID	Compound	MS % Recovery	MSD % Recovery	Lower Limit	Upper Limit	RPD	RPD Limit
OU09 SB204 0001 (SG9759-003)							
OU09 SB204 0001	ALUMINUM	-520.5	1459.1	80	120	21.6	20
OU09 SB204 0001	IRON	-136.5	5000.1	80	120	9	20
OU09 SB204 0001	LEAD	107.7	133.6	80	120	9.5	20
OU09 SB204 0001	MANGANESE	13.6	166.3	80	120	10.7	20
OU09 SB204 0001	MAGNESIUM	-80.1	194.4	80	120	20.2	20
OU09 SB204 0001	CHROMIUM, TOTAL	73.4	98.6	80	120	16.8	20
OU09 SB204 0001	COPPER	120.3	140.8	80	120	12.9	20
OU09 SB204 0001	ZINC	66.4	98.1	80	120	13.7	20
OU09 SB204 0001	CALCIUM	-143.3	189.9	80	120	25.2	20
OU09 SB204 0001	POTASSIUM	121	117.4	80	120	5.1	20
OU09 SB204 0001	NICKEL	74.2	84.9	80	120	10.1	20
OU09 SB204 0001	ANTIMONY	44.5	44.6	80	120	9.2	20
OU09 SB204 0001	ARSENIC	89.7	1.7	80	120	25.2	20
OU09 SB204 0305 (SG9759-004)							
OU09 SB204 0305	MERCURY	107.8	107.9	80	120	26.8	20
OU09 SB204 0305	ALUMINUM	893.8	753.3	80	120	1.1	20
OU09 SB204 0305	IRON	-4415.4	15018.7	80	120	36.9	20
OU09 SB204 0305	MAGNESIUM	115.2	163	80	120	8.8	20
OU09 SB204 0305	MANGANESE	-55.8	308.7	80	120	26.2	20
OU09 SB204 0305	COPPER	172.5	95.1	80	120	27.7	20
OU09 SB204 0305	ZINC	91.5	141	80	120	24.3	20
OU09 SB204 0305	CALCIUM	78.5	187.6	80	120	36.1	20
OU09 SB204 0305	ANTIMONY	47.1	52.5	80	120	19.2	20
OU09 SB204 1012 (SG9759-005)							
OU09 SB204 1012	ALUMINUM	1169.3	34.3	80	120	19.4	20
OU09 SB204 1012	IRON	3061.1	-1874.8	80	120	20.1	20
OU09 SB204 1012	MAGNESIUM	149.7	-84.6	80	120	24.1	20
OU09 SB204 1012	MANGANESE	271.1	-26.7	80	120	29.4	20
OU09 SB204 1012	ZINC	99.4	76.8	80	120	12.8	20
OU09 SB204 1012	CALCIUM	254.3	258.8	80	120	0.4	20
OU09 SB204 1012	POTASSIUM	141.4	106.8	80	120	15.4	20
OU09 SB204 1012	ANTIMONY	31.1	37.4	80	120	15.4	20
OU09 SB216 0608 (SG9759-028)							
OU09 SB216 0608	ALUMINUM	990.8	1705.6	80	120	11	20
OU09 SB216 0608	IRON	-4399.9	-5632.2	80	120	2.5	20
OU09 SB216 0608	LEAD	68.3	108.7	80	120	17.6	20
OU09 SB216 0608	MAGNESIUM	142.5	179.1	80	120	6.4	20
OU09 SB216 0608	MANGANESE	-6.3	259.9	80	120	18.5	20

Sample ID	Compound	MS % Recovery	MSD % Recovery	Lower Limit	Upper Limit	RPD	RPD Limit
OU09 SB216 0608	BERYLLIUM	78.8	95.4	80	120	16.7	20
OU09 SB216 0608	CHROMIUM, TOTAL	73.4	95.8	80	120	14	20
OU09 SB216 0608	COPPER	63	80.4	80	120	8.6	20
OU09 SB216 0608	VANADIUM	79.2	94.8	80	120	11.6	20
OU09 SB216 0608	ZINC	58.3	86.5	80	120	12.5	20
OU09 SB216 0608	CALCIUM	106.3	149.5	80	120	12.3	20
OU09 SB216 0608	POTASSIUM	128.5	141.9	80	120	6.4	20
OU09 SB216 0608	NICKEL	74	94.9	80	120	14.2	20
OU09 SB216 0608	ANTIMONY	35.3	41.1	80	120	14.9	20
OU09 SB216 0608	COBALT	76.2	97.7	80	120	16.8	20
OU09 SB216 0608	SELENIUM	75.8	89.5	80	120	16	20
OU09 SB216 0608	ARSENIC	34.2	40.8	80	120	3	20
OU09 SB220 0305 (SG9759-043)							
OU09 SB220 0305	ALUMINUM	2008.2	1727.9	80	120	3.3	20
OU09 SB220 0305	IRON	7421.1	-4601.1	80	120	29.4	20
OU09 SB220 0305	LEAD	138.5	169.1	80	120	9.2	20
OU09 SB220 0305	MAGNESIUM	81	124.6	80	120	7.5	20
OU09 SB220 0305	COPPER	76.6	58.6	80	120	9.4	20
OU09 SB220 0305	MANGANESE	92.6	39.9	80	120	3.6	20
OU09 SB220 0305	CALCIUM	61.3	721.9	80	120	57.3	20
OU09 SB220 0305	ANTIMONY	37	34.6	80	120	3.7	20
OU09 SS324 0001 (SG9759-048)							
OU09 SS324 0001	MERCURY	161	21.9	80	120	17.5	20
OU09 SS324 0001	ALUMINUM	1519	890.1	80	120	8.8	20
OU09 SS324 0001	IRON	-512.7	-196.6	80	120	0.8	20
OU09 SS324 0001	LEAD	-2904.4	1806.5	80	120	23.8	20
OU09 SS324 0001	MAGNESIUM	198.2	117.6	80	120	8.3	20
OU09 SS324 0001	MANGANESE	31.2	35.4	80	120	0.4	20
OU09 SS324 0001	CHROMIUM, TOTAL	126.4	203.6	80	120	29.1	20
OU09 SS324 0001	COPPER	-365.3	207.3	80	120	19.6	20
OU09 SS324 0001	VANADIUM	107.5	146.6	80	120	18.6	20
OU09 SS324 0001	ZINC	105	726.8	80	120	51.8	20
OU09 SS324 0001	CALCIUM	177.4	-38	80	120	32.2	20
OU09 SS324 0001	ANTIMONY	-410	-354.2	80	120	8.1	20
OU09 SS324 0001	ARSENIC	25.9	36.8	80	120	4.1	20

Table A-3 Matrix Spike Duplicates

Sample ID	Compound	Sample Result	Qual	Duplicate Result	Qual	LOQ	Units	RPD
OU09 SB204 0001	ALUMINUM	13050.3		16216.7		24	MG_KG	21.6
SG9759-003	ARSENIC	29.21		22.67		0.39	MG_KG	25.2
	CALCIUM	2270.6		2926.2		39	MG_KG	25.2
	MAGNESIUM	4865.8		5960.6		39	MG_KG	20.2
OU09 SB204 0305	CALCIUM	551.05		793.47		18	MG_KG	36.1
SG9759-004	COPPER	53.57		40.54		0.26	MG_KG	27.7
	IRON	35166.1		51102.3		18	MG_KG	36.9
	MANGANESE	499.12		649.57		0.35	MG_KG	26.2
	MERCURY	0.1401		0.1834		0.027	MG_KG	26.8
	ZINC	86.94		110.98		0.88	MG_KG	24.3
OU09 SB204 1012	IRON	17341.6		14171.9		8.8	MG_KG	20.1
SG9759-005	MAGNESIUM	3501.4		2748.6		8.8	MG_KG	24.1
	MANGANESE	376.2		279.8		0.18	MG_KG	29.4
OU09 SB324 0001	CHROMIUM	37.96		50.91		0.33	MG_KG	29.1
SG9759-048								

Table A-4 Field Duplicates

Sample ID	Duplicate ID	Compound	Sample Result	Qual	Duplicate Result	Qual	LOD	LOQ	Units	RPD
OU09 SB205 0305	FDSB12111303	CALCIUM	336		570		14	17	MG_KG	51.7
OU09 SB205 0305	FDSB12111303	CADMIUM	0.085	U	0.08		0.015	0.074	MG_KG	NC

Table A-5 Serial Dilutions

Sample ID	Compound	Sample Result	Qual	Dilution Result	Qual	LOQ	50X LOQ	Units	%D
OU09 SS324 0001	MAGNESIUM	21325		23645		100	500	UG_L	10.9

Attachment B

Qualifier Codes and Explanations

Qualifier	Explanation
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
UJ	The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual quantitation limit necessary to accurately and precisely measure the analyte in the sample.
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

Attachment C

Reason Codes and Explanations

Reason Code	Explanation
be	Equipment blank contamination
bf	Field blank contamination
bl	Laboratory blank contamination
c	Calibration issue
d	Reporting limit raised due to chromatographic interference
fd	Field duplicate RPDs
h	Holding times
i	Internal standard areas
k	Estimated Maximum Possible Concentration (EMPC)
l	LCS recoveries
lc	Labeled compound recovery
ld	Laboratory duplicate RPDs
lp	Laboratory control sample/laboratory control sample duplicate RPDs
m	Matrix spike recovery
md	Matrix spike/matrix spike duplicate RPDs
nb	Negative laboratory blank contamination
p	Chemical preservation issue
r	Dual column RPD
q	Quantitation issue
s	Surrogate recovery
su	Ion suppression
t	Temperature preservation issue
x	Percent solids
y	Serial dilution results
z	ICS results

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Data Validation Report

Project:	MRP Site 1 (OU9) Remedial Investigation, NAVSTA Newport, Rhode Island CTO WE06
Laboratory:	Katahdin Analytical Services, Scarborough, Maine
Service Request:	CARR-11
Analyses/Method:	Hexavalent Chromium by EPA SW-846 Methods 7196A and 7199
Validation Level:	Limited
Resolution Consultants Project Number:	60250336 SA.DV
Prepared by:	Kristin Rutherford/Resolution Consultants Completed on: 02/17/2014
Reviewed by:	Waverly Braunstein/Resolution Consultants File Name: CARR-2,6,9,11_HexChrom _DVRpt

SUMMARY

The samples listed below were collected by Resolution Consultants from MRP Site 1 (OU9), NAVSTA Newport, Rhode Island on December 2, 3, and 4, 2013.

SDG CARR-2	
Sample ID	**Matrix/Sample Type**
OU09 SB207 1113	Soil
OU09 SBMW01D 0810	Soil
OU09 SBMW01D 2628	Soil
OU09 SBMW11 0810	Soil
OU09 SBMW12 1014	Soil
OU09 SBMW12D 3638	Soil

The samples listed below were collected by Resolution Consultants from MRP Site 1 (OU9), NAVSTA Newport, Rhode Island site on December 6, 2013.

SDG CARR-6	
Sample ID	**Matrix/Sample Type**
RBSB12061301	Equipment blank

The samples listed below were collected by Resolution Consultants from MRP Site 1 (OU9), NAVSTA Newport, Rhode Island on December 10 and 11, 2013.

SDG CARR-9	
Sample ID	**Matrix/Sample Type**
RBSB121113 03	Equipment blank
RBSB121113 04	Equipment blank
OU09 SS229 0001-02	Field Duplicate of OU09 SS229 0001-01
OU09 SB217 0305	Soil
OU09 SB302 0608	Soil

The samples listed below were collected by Resolution Consultants from the MRP Site 1 (OU9), NAVSTA Newport, Rhode Island on December 11, 2013.

CARR-11	
Sample ID	**Matrix/Sample Type**
FDSS12111307	Field Duplicate of OU09 SS211 0001
OU09 SB214 0608	Soil
OU09 SB219 0305	Soil
OU09 SS205 0001	Soil
OU09 SS211 0001	Soil

The data have been validated in accordance with the project-specific Sampling and Analysis Plan, *Sampling and Analysis Plan, Former Carr Point Shooting Range (MRP Site 1, OU9), Naval Station (NAVSTA) Newport, Rhode Island, Final* (Naval Facilities Engineering Command, Mid-Atlantic, 2013) and the following references:

- *DoD Quality Systems Manual (QMS) for Environmental Laboratories, version 4.2* (DoD EDQW, 2010);
- *USEPA Region 1, EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses* (December 1996);
- *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review* (January 2010);
- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW846, Method 3060A,Alkaline Digestion for Hexavalent Chromium* (USEPA, 1996);
- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW846, Method 7196A, Chromium, Hexavalent (Colorimetric)* (USEPA, 1996);
- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW846, Method 7199, Determination of Hexavalent Chromium in Drinking Water, Groundwater and Industrial Wastewater Effluents by Ion Chromatography* (USEPA, 1996);
- laboratory quality control (QC) limits, as applicable.

The USEPA Region 1 and National Data Validation Functional Guidelines were modified to accommodate the non-CLP methodologies. In the absence of method-specific direction for validation, Resolution Consultants professional judgment was used as appropriate.

REVIEW ELEMENTS

The data were evaluated based on the following parameters (where applicable to the method):

✓ Data completeness (chain-of-custody (COC)/sample integrity
✓ Holding times and sample preservation
✓ Initial calibration/continuing calibration verification
✓ Laboratory blanks/equipment blanks
✗ Matrix spike (MS) results
✓ Post Digestion Spike
✓ Laboratory duplicate results
✓ Laboratory control sample (LCS) results
✓ Field duplicates
✓ Sample results/reporting issues

The symbol (✓) indicates that no validation qualifiers were applied based on this parameter. NA indicates that the parameter was not included as part of this data set or was not applicable to this validation and therefore not reviewed. The symbol (✗) indicates that a quality control (QC) nonconformance resulted in the qualification of data. Any QC nonconformance that resulted in the qualification of data is discussed below. In addition, nonconformances or other issues that were noted during validation, but did not result in qualification of data, may be discussed for informational purposes only.

The data appear valid as reported and may be used for decision making purposes. Selected data points were estimated, negated, and/or rejected due to nonconformances of certain QC criteria (see discussion below). Qualified sample results are presented in Table 1.

RESULTS

Data Completeness

The data package was reviewed and found to meet acceptance criteria for completeness:

- The COCs were reviewed for completeness of information relevant to the samples and requested analyses, and for signatures indicating transfer of sample custody.
- The laboratory sample login sheet(s) were reviewed for issues potentially affecting sample integrity, including the condition of sample containers upon receipt at the laboratory.
- Completeness of analyses was verified by comparing the reported results to the COC requests.

Collection date for sample OU09 SS211 0001 was not on COC (matrix was entered in sampling date column). The collection date was confirmed as 12/11/13; no qualifications were made except to note this discrepancy.

The COC with sample RBSB12111304 was not signed as relinquished or received. The sample receipt date was noted on login chain of custody report as 12/11/13. No qualifications were required except to note this discrepancy.

Holding Times/Sample Preservation

Sample preservation and preparation/analysis holding times were reviewed for conformance with the QC acceptance criteria.

Samples were received by the laboratory at 1.1°C on December 11, 2013 (SDG CARR-9). Since the samples were received in good condition on ice, no qualifications were required.

Samples were received by the laboratory at 1.4°C on December 12, 2013 (SDG CARR-11). Since the samples were received in good condition on ice, no qualifications were required.

Reanalysis of sample OU09 SS211 0001 was performed past holding time by Method 7199. Since the result was reported from the initial analysis within holding time, no qualifications were required.

Initial Calibration/Continuing Calibration Verification

Calibration data were reviewed for conformance with the QC acceptance criteria to ensure that:

- all criteria were met for the calibration curves
- the initial calibration verification (ICV) percent recovery (%R) criteria were met; and
- the continuing calibration verification standard (CCV) method percent difference (%Ds) were met.

The QC acceptance criteria were met.

Laboratory Blanks/Equipment Blanks

Laboratory method blanks and equipment rinsate blanks were evaluated as to whether there were contaminants detected above the method detection limit (MDL). Data validation qualifications for individual samples are based on the maximum contaminant concentration detected in all associated blanks.

Method and equipment rinsate results were reviewed for conformance with the QC acceptance criteria. Detected results in blanks are not discussed in this data validation report if the associated results were nondetect or if qualification of sample results was not required.

The QC acceptance criteria were met and/or qualification of the sample results was not required.

MS Results

Matrix spike analyses were performed on two samples from this site: OU09 SS205 0001 and OU09 SS211 0001.

The soluble and insoluble matrix spike (MS) recoveries for sample OU09 SS211 0001 (SG9759-46 reported in CARR-11) from the initial batch were 4% and 54%, respectively. The soluble and insoluble MS recoveries did not meet quality control (QC) criteria of 75-125%R and the soluble recovery was less than 50%. The post digestion spike (PDS) recovery was 99.7%, which met the PDS criteria of 85-115%.

Based on poor MS recoveries, less than 75%R, the MS and associated samples were reanalyzed using Method 7196. The soluble and insoluble matrix spike recoveries from the re-analysis were -0.7% and 43.1%, respectively. The soluble and insoluble MS recoveries did not meet the QC

criteria of 75-125%R and were less than 50%. The post spike result for the re-analysis batch was recovered at 95.6%, which met the PDS criteria of 85-115%.

Since the soluble and/or insoluble MS recoveries were outside the acceptable QC limit of 75-125%, additional parameters were analyzed to determine if possible matrix interferences could be the cause for the poor matrix spike recoveries. All the soil samples were tested for pH and oxidation reduction potential (ORP) and plotted on an Eh/pH phase diagram chart. From this chart, the source sample for the matrix spike analysis was plotted below the phase change line, indicating reducing potential within the sample matrix, incapable of supporting hexavalent chromium. Analyses for ferrous iron, sulfide screen, and total organic carbon (TOC) were performed on the MS source sample to confirm the oxidizing/reducing potential within the sample matrix. The sulfide (18 mg/kg), ferrous iron (0.88 mg/kg), and the TOC results (26,000 mg/Kg) were positive, indicating potential reducing agents within the sample matrix.

Since the MS recoveries from both the initial and reanalysis did not meet the MS QC requirements, but at least one MS recovery was greater than 50%, the highest detected hexavalent chromium result or the nondetect hexavalent chromium result with the lowest limit of detection (LOD) was reported for each soil sample. The reported hexavalent chromium results in all the soil samples in this SDG were qualified as estimated (J/UJ) due to the poor MS recoveries.

Sample OU09 SS205 0001 (SG9759-24 reported in CARR-11) was selected for the soil matrix spike analysis and used for supporting data quality recommendations. The soluble and insoluble MS recoveries for sample OU09 SS205 0001 (SG9759-24) from the initial batch were 23% and 84%, respectively. The soluble MS recovery did not meet QC criteria of 75-125%R and the soluble recovery was less than 50%. The PDS recovery was 87.9%, which met the PDS criteria of 85-115%.

Based on poor MS recoveries, less than 75%R, the MS and associated samples were reanalyzed using Method 7196. The soluble and insoluble matrix spike recoveries from the re-analysis were 73.4% and 76.9%, respectively. The soluble MS recovery did not meet the QC criteria of 75-125%R. The post spike result for the re-analysis batch was recovered at 95.6%, which met the PDS criteria of 85-115%.

Since the soluble and/or insoluble MS recoveries were outside the acceptable QC limit of 75-125%, additional parameters were analyzed to determine if possible matrix interferences could be the cause for the poor matrix spike recoveries. All the soil samples were tested for pH and ORP and plotted on an Eh/pH phase diagram chart. From this chart, the source sample for the matrix spike analysis was plotted below the phase change line, indicating reducing potential within the sample matrix, incapable of supporting hexavalent chromium. Analyses for ferrous iron, sulfide screen, and TOC were performed on the MS source sample to confirm the oxidizing/reducing potential within the sample matrix. The sulfide (18 mg/kg), ferrous iron (3.7 mg/kg), and the TOC results (28,000 mg/Kg) were positive, indicating potential reducing agents within the sample matrix.

Since the MS recoveries from both the initial and reanalysis did not meet the MS QC requirements, but at least one MS recovery was greater than 50%, the highest detected hexavalent chromium result or the nondetect hexavalent chromium result with the lowest LOD was reported for each soil sample. The reported hexavalent chromium results in all the soil samples in this SDG were qualified as estimated (J/UJ) due to the poor MS recoveries.

Nonconformances are summarized in Attachment A in Table A-1 and qualified sample results are shown in Table 1.

Laboratory Duplicate Results

The laboratory duplicate relative percent differences (RPDs) were reviewed for conformance.

The laboratory duplicate RPDs were within the QC acceptance criteria.

LCS Results

The LCS %Rs were reviewed for conformance with the QC acceptance criteria.

The LCS %Rs were within the QC acceptance criteria.

Field Duplicate Results

Field duplicate RPDs were reviewed for conformance with the Resolution Consultants QC acceptance criterion of ≤50% for solid matrices and ≤30% for aqueous matrices. This criterion applies if both results were greater than 5 times the limit of quantitation (LOQ).

All field duplicate precision criteria were met.

Sample Results/Reporting Issues

The percent solids data were reviewed to ensure that NFG specified criteria were met.

All percent solids criteria were met.

QUALIFICATION ACTIONS

Sample results qualified as a result of validation actions are summarized in Table 1. All actions are described above.

ATTACHMENTS

Attachment A: Nonconformance Summary Tables

Attachment B: Qualifier Codes and Explanations

Attachment C: Reason Codes and Explanations

Table 1 - Data Validation Summary of Qualified Data

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
FDSS12111307	SO	CHROMIUM VI	1.8	1.8	2.9	MG_KG	UJ	m
OU09 SB214 0608	SO	CHROMIUM VI	0.38	0.38	0.64	MG_KG	UJ	m
OU09 SB219 0305	SO	CHROMIUM VI	0.63	0.42	0.70	MG_KG	J	m
OU09 SS205 0001	SO	CHROMIUM VI	0.86	0.86	1.4	MG_KG	UJ	m
OU09 SS211 0001	SO	CHROMIUM VI	1.5	1.5	2.5	MG_KG	UJ	m

Attachment A

Non Conformance Summary Tables

Table A-1 Matrix Spikes

Sample ID	Compound	Soluble MS % Recovery	Insoluble MS % Recovery	Lower Limit	Upper Limit
OU09 SS205 0001	CHROMIUM VI	23	84	75	125
OU09 SS205 0001 (RE)	CHROMIUM VI	73.4	76.9	75	125
OU09 SS211 0001	CHROMIUM VI	4	54	75	125
OU09 SS211 0001 (RE)	CHROMIUM VI	-0.7	43.1	75	125

Attachment B

Qualifier Codes and Explanations

Qualifier	Explanation
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
UJ	The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual quantitation limit necessary to accurately and precisely measure the analyte in the sample.
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

Attachment C

Reason Codes and Explanations

Reason Code	Explanation
be	Equipment blank contamination
bf	Field blank contamination
bl	Laboratory blank contamination
c	Calibration issue
d	Reporting limit raised due to chromatographic interference
fd	Field duplicate RPDs
h	Holding times
i	Internal standard areas
k	Estimated Maximum Possible Concentration (EMPC)
l	LCS recoveries
lc	Labeled compound recovery
ld	Laboratory duplicate RPDs
lp	Laboratory control sample/laboratory control sample duplicate RPDs
m	Matrix spike recovery
md	Matrix spike/matrix spike duplicate RPDs
nb	Negative laboratory blank contamination
p	Chemical preservation issue
r	Dual column RPD
q	Quantitation issue
s	Surrogate recovery
su	Ion suppression
t	Temperature preservation issue
x	Percent solids
y	Serial dilution results
z	ICS results

Data Validation Memos

Tissue

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Data Validation Report

Project:	MRP Site 1 (OU9) Remedial Investigation, NAVSTA Newport, Rhode Island CTO WE06
Laboratory:	ALS KELSO ENVIRONMENTAL LABORATORY
Service Request:	K1312082
Analyses/Method:	EPA SW-846 Method 8270D (GC/MS) for PAHs
Validation Level:	Limited
Resolution Consultants Project Number:	60250336 SA.DV
Prepared by:	Kristin Rutherford/Resolution Consultants — Completed on: 01/28/2014
Reviewed by:	Constance Lapite/Resolution Consultants — File Name: K1312082_TA_8270_DVRpt

SUMMARY

The samples listed below were collected by Resolution Consultants from the MRP Site 1 (OU9) Remedial Investigation, NAVSTA Newport, Rhode Island, on November 5, 6, and 19, 2013.

Sample ID	Matrix/Sample Type
BSBGTS301	shellfish tissue
BSBGTS302	shellfish tissue
BSBGTS303	shellfish tissue
BSBGTS304	shellfish tissue
OU09TS101	shellfish tissue
OU09TS102	shellfish tissue
OU09TS104	shellfish tissue
OU09TS106	shellfish tissue
OU09-TS-109	shellfish tissue
OU09-TS-110	shellfish tissue
OU09-TS-112	shellfish tissue
OU09TS115	shellfish tissue
OU09TS118	shellfish tissue
OU09TS121	shellfish tissue
OU09TS122	shellfish tissue
OU09TS123	shellfish tissue
OU09TS124	shellfish tissue
OU09-TS-201	Field Duplicate of OU09-TS-112

The data have been validated in accordance with the project-specific Sampling and Analysis Plan, *Sampling and Analysis Plan, Former Carr Point Shooting Range (MRP Site 1, OU9), Naval Station (NAVSTA) Newport, Rhode Island, Final* (Naval Facilities Engineering Command, Mid-Atlantic, 2013) and the following references:

- *DoD Quality Systems Manual (QMS) for Environmental Laboratories, version 4.2* (DoD EDQW, 2010);
- *USEPA Region 1, EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses* (December 1996);
- *USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review* (June 2008);
- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW846, Method 8270D, Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)* (USEPA, 1996);
- laboratory quality control (QC) limits, as applicable.

The USEPA Region 1 and National Data Validation Functional Guidelines were modified to accommodate the non-CLP methodologies. In the absence of method-specific direction for validation, Resolution Consultants professional judgment was used as appropriate.

REVIEW ELEMENTS

The data were evaluated based on the following parameters (where applicable to the method):

✓ Data completeness (chain-of-custody (COC)/sample integrity
✓ Holding times and sample preservation
✓ Instrument tuning
✓ Initial calibration/continuing calibration verification
✗ Laboratory blanks/equipment blanks
✓ Surrogate spike recoveries
✗ Matrix spike (MS) and/or matrix spike duplicate (MSD) results
✗ Laboratory control sample (LCS)/laboratory control sample duplicate (LCSD) results
✓ Field duplicates
✓ Internal standards
✗ Sample results/reporting issues

The symbol (✓) indicates that no validation qualifiers were applied based on this parameter. NA indicates that the parameter was not included as part of this data set or was not applicable to this validation and therefore not reviewed. The symbol (✗) indicates that a quality control (QC) nonconformance resulted in the qualification of data. Any QC nonconformance that resulted in the qualification of data is discussed below. In addition, nonconformances or other issues that were noted during validation, but did not result in qualification of data, may be discussed for informational purposes only.

The data appear valid as reported and may be used for decision making purposes. Selected data points were estimated, negated, and/or rejected due to nonconformances of certain QC criteria (see discussion below). Qualified sample results are presented in Table 1.

RESULTS

Data Completeness

The data package was reviewed and found to meet acceptance criteria for completeness:

- The COCs were reviewed for completeness of information relevant to the samples and requested analyses, and for signatures indicating transfer of sample custody.
- The laboratory sample login sheet(s) were reviewed for issues potentially affecting sample integrity, including the condition of sample containers upon receipt at the laboratory.
- Completeness of analyses was verified by comparing the reported results to the COC requests.

The sample identifications for samples OU09-TS-109, OU09-TS-110, and OU09-TS-112 as presented on the chains of custody included dashes. The sample identifications for the remaining samples did not include dashes. The laboratory added dashes to sample identifications BSBGTS301 (reported as BSBG-TS-301), BSBGTS302 (reported as BSBG-TS-302), OU09TS104 (reported as OU09-TS-104), OU09TS106 (reported as OU09-TS-106), OU09TS115 (reported as OU09-TS-115), OU09-TS-118 (reported as OU09-TS-118), and OU09TS121 (reported as OU09-TS-121). Sample identifications have been corrected in this memorandum and in the Resolution Consultants database to reflect the sample identifications on the chain of custody.

Holding Times/Sample Preservation

Sample preservation and preparation/analysis holding times were reviewed for conformance with the QC acceptance criteria.

The QC acceptance criteria were met.

GC/MS Performance Checks

The data were reviewed to ensure that the decafluorotriphenylphosphine (DFTPP) tuning was performed at the correct frequency and that the method acceptance criteria were met. All samples were analyzed within 12 hours of the DFTPP tunes.

Initial Calibration/Continuing Calibration Verification

Calibration data were reviewed for conformance with the QC acceptance criteria to ensure that:

- the initial calibration (ICAL) percent relative standard deviation (%RSD), correlation coefficient (r)/coefficient of determination (r^2), and/or response factor method acceptance criteria were met;
- the initial calibration verification standard (ICV) percent recovery acceptance criteria were met;
- the continuing calibration verification standard (CCV) method percent difference or percent drift (%Ds) and RF acceptance criteria were met; and
- the retention time method acceptance criteria were met.

The QC acceptance criteria were met.

Laboratory Blanks/Equipment Blanks

Laboratory method blanks and equipment rinsate blanks were evaluated as to whether there were contaminants detected above the method detection limit (MDL).

Data validation qualifications for individual samples are based on the maximum contaminant concentration detected in all associated blanks.

Detected results in blanks are not discussed in this data validation report if the associated results were nondetect or if qualification of sample results was not required.

Nonconformances are summarized in Attachment A in Table A-1. Sample results were qualified as follows:

Blank Actions:

Blank type	Blank result	Sample result	Action for samples
Method, Storage, Trip, Field, or Equipment	Detects	Not detected	No qualification
	≤ LOQ	< LOQ	Report sample LOQ value with a U
		≥ LOQ and ≤5x the blank result[2]	Report the sample result with a U[1]
		≥5x the blank result[2]	No qualifications[1]
	> LOQ	< LOQ	Report sample LOQ value with a U
		≥ LOQ and < blank contamination	Report the sample result with a U or reject the sample result as unusable R
		≥LOQ and ≥blank contamination	If the result is ≤5x blank result[2], report the sample result U[1] If the result is > 5x blank result[2], no qualification is required[1]
[1]Based on Resolution Consultants professional judgment			
[2]Use 10x blank result for all phthalates (common contaminants per Region I)			

LOD - Limit of Detection
LOQ - Limit of Quantitation (equivalent to lowest calibration standard)

Qualified sample results are shown in Table 1.

Surrogate Spike Recoveries

The surrogate recoveries (%Rs) were reviewed for conformance with the QC acceptance criteria.

All QC acceptance criteria were met.

MS/MSD Results

The MS/MSD %Rs and relative percent differences (RPDs) were reviewed for conformance with the QC acceptance criteria.

Nonconformances are summarized in Attachment A in Table A-2. Data qualification to the analytes associated with the specific MS/MSD nonconformances was as follows:

Criteria	Action[1]	
	Detected Compounds	**Nondetected Compounds**
%R> UL	J	No qualification
10% ≤ %R < LL	J	UJ
%R <10%	J	R[2]
%RPD > UL	J	No qualification

Notes:

1. If a field duplicate sample was also collected for the native sample chosen for MS/MSD analysis, professional judgment is used to apply MS/MSD actions to the corresponding field duplicate sample as well as the native sample.

2. Resolution Consultants professional judgment is used to estimate (UJ) rather the reject (R) sample results previously negated (U) on the basis of blank contamination.

Qualified sample results are shown in Table 1.

LCS/LCSD Results

The LCS/LCSD %Rs and/or relative percent recoveries (RPDs) were reviewed for conformance with the QC acceptance criteria.

Nonconformances are summarized in Attachment A in Table A-3. Data qualification to the analytes associated with the specific LCS %Rs or RPDs was as follows:

Criteria[1,2]	Action[3]	
	Detected Compounds	**Nondetected Compounds**
%R or RPD > UL	J	No qualification
10%≥%R < LL	J	UJ
%R < 10%	J	R
[1] In the absence of NFG 2008 guidance for LCS results, NFG 2008 MS/MSD guidance was applied with Resolution Consultants professional judgment. [2] NFG 2008 MS/MSD does not list a minimum limit. Based on Region 1 and Resolution Consultants professional judgment, a minimum limit of 10% was used.		
[3]If the %R of more than half of the analytes are not within limits, then reject (R) nondetects for the analytes with <10% recovery and estimate (J/UJ) all other analyte(s) in the associated samples.		

Qualified sample results are shown in Table 1.

Field Duplicate Results

Field duplicate RPDs were reviewed for conformance with the Resolution Consultants QC criteria of ≤50% for solid matrices and ≤30% for aqueous matrices. These criteria apply if both results were greater than twice the limit of quantitation (LOQ).

All QC acceptance criteria were met and/or qualification of the data was not required.

Internal Standard Results

The internal standard (IS) recoveries were reviewed for conformance with the QC acceptance criteria.

All QC acceptance criteria were met.

Sample Results/Reporting Issues

All compounds detected at concentrations less than the limit of quantitation (LOQ) but greater than the method detection limit (MDL) were qualified by the laboratory as estimated (J). This "J" qualifier was retained during data validation.

Any sample that was analyzed at a dilution due to high concentrations of target or non-targets was checked to confirm that the results and/or sample specific LODs and LOQs were adjusted accordingly by the laboratory.

The results for chrysene in samples OU09TS106, OU09TS115, OU09TS118, and OU09TS121 were qualified as estimated (J) based on chromatographic interference; the results may be biased high. The reporting limits for some compounds were elevated based on the chromatographic interference. The nondetect results were qualified as estimated (UJ). Nonconformances are summarized in Attachment A in Table A-4.

Sample OU09TS12 was re-extracted and reanalyzed because the associated method blank had low surrogate recoveries. Only the re-extracted and reanalyzed results were reported. The mass that was available for the re-extraction was less than the nominal mass required; therefore the LOD and LOQ are elevated relative to the nominal reporting limits. The LOQs for the re-extracted sample are below the Project Action Limits, so no action or qualification was required.

QUALIFICATION ACTIONS

Sample results qualified as a result of validation actions are summarized in Table 1. All actions are described above.

ATTACHMENTS

Attachment A: Nonconformance Summary Tables

Attachment B: Qualifier Codes and Explanations

Attachment C: Reason Codes and Explanations

Table 1 - Data Validation Summary of Qualified Data

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
BSBGTS301	TA	BENZO[A]ANTHRACENE		0.50	0.31	UG_KG	UJ	d
BSBGTS301	TA	NAPHTHALENE		0.99	0.99	UG_KG	U	bl
BSBGTS302	TA	ACENAPHTHENE		0.74	0.74	UG_KG	UJ	d
BSBGTS302	TA	NAPHTHALENE		0.97	0.97	UG_KG	U	bl
BSBGTS303	TA	ACENAPHTHENE		2.8	2.8	UG_KG	UJ	d
BSBGTS304	TA	ACENAPHTHENE		2.4	2.4	UG_KG	UJ	d
OU09TS101	TA	ACENAPHTHENE		1.4	1.4	UG_KG	UJ	d
OU09TS102	TA	ACENAPHTHENE		1.3	1.3	UG_KG	UJ	d
OU09TS104	TA	NAPHTHALENE		0.98	0.98	UG_KG	U	bl
OU09TS104	TA	CHRYSENE	0.76	0.49	0.10	UG_KG	J	q
OU09TS106	TA	CHRYSENE	0.65	0.50	0.10	UG_KG	J	q
OU09TS106	TA	NAPHTHALENE		1.0	1.0	UG_KG	U	bl
OU09-TS-109	TA	BENZO[A]ANTHRACENE		0.50	0.24	UG_KG	UJ	d
OU09-TS-109	TA	BENZO[A]PYRENE	0.19	0.50	0.10	UG_KG	J	m
OU09-TS-109	TA	NAPHTHALENE		0.99	0.99	UG_KG	U	bl
OU09-TS-110	TA	BENZO[A]ANTHRACENE		0.50	0.21	UG_KG	UJ	d
OU09-TS-110	TA	NAPHTHALENE		1.0	1.0	UG_KG	U	bl
OU09-TS-110	TA	PHENANTHRENE		0.50	0.50	UG_KG	U	bl
OU09-TS-112	TA	BENZO[A]ANTHRACENE		0.50	0.20	UG_KG	UJ	d
OU09-TS-112	TA	NAPHTHALENE		0.99	0.99	UG_KG	U	bl
OU09TS115	TA	CHRYSENE	0.79	0.50	0.10	UG_KG	J	q
OU09TS115	TA	NAPHTHALENE		1.0	1.0	UG_KG	U	bl
OU09TS118	TA	BENZO[A]ANTHRACENE		0.50	0.48	UG_KG	UJ	d
OU09TS118	TA	CHRYSENE	0.83	0.50	0.10	UG_KG	J	q
OU09TS118	TA	NAPHTHALENE		0.99	0.99	UG_KG	U	bl
OU09TS121	TA	BENZO[A]ANTHRACENE		0.49	0.25	UG_KG	UJ	d
OU09TS121	TA	CHRYSENE	0.42	0.49	0.10	UG_KG	J	q
OU09TS121	TA	NAPHTHALENE		0.97	0.97	UG_KG	U	bl
OU09TS121	TA	PHENANTHRENE		0.49	0.49	UG_KG	U	bl
OU09TS122	TA	ACENAPHTHENE		3.4	3.4	UG_KG	UJ	d
OU09TS123	TA	ACENAPHTHENE		4.0	4.0	UG_KG	UJ	d
OU09-TS-201	TA	BENZO[A]ANTHRACENE		0.50	0.16	UG_KG	UJ	d
OU09-TS-201	TA	NAPHTHALENE		0.99	0.99	UG_KG	U	bl
OU09-TS-201	TA	PHENANTHRENE		0.50	0.50	UG_KG	U	bl

Non Conformance Tables

Attachment A

Non Conformance Summary Tables

Table A-1 Lab Blanks

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
KWG1313346-LB	NAPHTHALENE	0.18	0.15	0.97	UG_KG	BSBGTS301 OU09TS104 OU09TS106 OU09-TS-109 OU09-TS-110 OU09-TS-112 OU09TS115 OU09TS118 OU09TS121 OU09-TS-201
KWG1313346-LB	PHENANTHRENE	0.093	0.10	0.49	UG_KG	BSBGTS301 OU09TS104 OU09TS106 OU09-TS-109 OU09-TS-110 OU09-TS-112 OU09TS115 OU09TS118 OU09TS121 OU09-TS-201

Table A-2 Matrix Spikes

Sample ID	Compound	MS % Recovery	MSD % Recovery	Lower Limit	Upper Limit	RPD	RPD Limit
OU09-TS-109	BENZO[A]PYRENE	114	98	56	110	14	30
OU09-TS-109	BENZO[A]ANTHRACENE	110	94	55	105	15	30

Table A-3 Laboratory Control Samples

LCS ID	Compound	LCS % Recovery	LCSD % Recovery	Lower Limit	Upper Limit	RPD	RPD Limit	Associated Samples
KWG1313346-3 KWG1313346-4	Naphthalene	78	56	43	102	32	30	BSBGTS301 BSBGTS302 BSBGTS303 BSBGTS304 OU09TS104 OU09TS106 OU09-TS-109 OU09-TS-110 OU09-TS-112 OU09TS115 OU09TS118 OU09TS121 OU09TS123 OU09TS102 OU09TS101 OU09TS124 OU09TS122 OU09-TS-201

Table A-4 Sample Results/Reporting Issues

Sample ID	Compound	Qualifier Reason
OU09TS118	BENZO[A]ANTHRACENE	elevated detection limit due to chromatographic interference
BSBGTS302	ACENAPHTHENE	elevated detection limit due to chromatographic interference
BSBGTS303	ACENAPHTHENE	elevated detection limit due to chromatographic interference
BSBGTS304	ACENAPHTHENE	elevated detection limit due to chromatographic interference
OU09-TS-109	BENZO[A]ANTHRACENE	elevated detection limit due to chromatographic interference
OU09-TS-110	BENZO[A]ANTHRACENE	elevated detection limit due to chromatographic interference
BSBGTS301	BENZO[A]ANTHRACENE	elevated detection limit due to chromatographic interference
OU09-TS-112	BENZO[A]ANTHRACENE	elevated detection limit due to chromatographic interference
OU09TS123	ACENAPHTHENE	elevated detection limit due to chromatographic interference
OU09TS121	BENZO[A]ANTHRACENE	elevated detection limit due to chromatographic interference
OU09-TS-201	BENZO[A]ANTHRACENE	elevated detection limit due to chromatographic interference
OU09TS101	ACENAPHTHENE	elevated detection limit due to chromatographic interference
OU09TS102	ACENAPHTHENE	elevated detection limit due to chromatographic interference
OU09TS122	ACENAPHTHENE	elevated detection limit due to chromatographic interference
OU09TS118	CHRYSENE	qualified as estimated due to chromatographic interference
OU09TS106	CHRYSENE	qualified as estimated due to chromatographic interference
OU09TS104	CHRYSENE	qualified as estimated due to chromatographic interference
OU09TS115	CHRYSENE	qualified as estimated due to chromatographic interference
OU09TS121	CHRYSENE	qualified as estimated due to chromatographic interference

Attachment B

Qualifier Codes and Explanations

Qualifier	Explanation
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
UJ	The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual quantitation limit necessary to accurately and precisely measure the analyte in the sample.
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

Attachment C

Reason Codes and Explanations

Reason Code	Explanation
be	Equipment blank contamination
bf	Field blank contamination
bl	Laboratory blank contamination
c	Calibration issue
d	Reporting limit raised due to chromatographic interference
fd	Field duplicate RPDs
h	Holding times
i	Internal standard areas
k	Estimated Maximum Possible Concentration (EMPC)
l	LCS or OPR recoveries
lc	Labeled compound recovery
ld	Laboratory duplicate RPDs
lp	Laboratory control sample/laboratory control sample duplicate RPDs
m	Matrix spike recovery
md	Matrix spike/matrix spike duplicate RPDs
nb	Negative laboratory blank contamination
p	Chemical preservation issue
r	Dual column RPD
q	Quantitation issue
s	Surrogate recovery
su	Ion suppression
t	Temperature preservation issue
x	Percent solids
y	Serial dilution results
z	ICS results

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Data Validation Report

Project:	MRP Site 1 (OU9) Remedial Investigation, NAVSTA Newport, Rhode Island CTO WE06
Laboratory:	ALS Environmental, Kelso, Washington
Service Request:	K1312082
Analyses/Method:	EPA Method 1631E for Mercury, EPA SW-846 Method 6010C (ICP-AES) and EPA SW-846 Method 6020A (ICP-MS) for Trace Elements and Metals
Validation Level:	Limited
Resolution Consultants Project Number:	60250336 SA.DV

Prepared by:	Kristin Rutherford/Resolution Consultants	Completed on: 01/27/2014
Reviewed by:	Constance Lapite/Resolution Consultants	File Name: K1312082_TA_1663_6010_6020_Metals_DVRpt

SUMMARY

The samples listed below were collected by Resolution Consultants from the MRP Site 1 (OU9) Remedial Investigation, NAVSTA Newport, Rhode Island, on November 5, 6, and 19, 2013.

Sample ID	Matrix/Sample Type
BSBGTS301	shellfish tissue
BSBGTS302	shellfish tissue
BSBGTS303	shellfish tissue
BSBGTS304	shellfish tissue
OU09TS101	shellfish tissue
OU09TS102	shellfish tissue
OU09TS104	shellfish tissue
OU09TS106	shellfish tissue
OU09-TS-109	shellfish tissue
OU09-TS-110	shellfish tissue
OU09-TS-112	shellfish tissue
OU09TS115	shellfish tissue
OU09TS118	shellfish tissue
OU09TS121	shellfish tissue
OU09TS122	shellfish tissue
OU09TS123	shellfish tissue
OU09TS124	shellfish tissue

Sample ID	Matrix/Sample Type
OU09-TS-201	Field Duplicate of OU09-TS-112

The data have been validated in accordance with the project-specific Sampling and Analysis Plan, *Sampling and Analysis Plan, Former Carr Point Shooting Range (MRP Site 1, OU9), Naval Station (NAVSTA) Newport, Rhode Island, Final* (Naval Facilities Engineering Command, Mid-Atlantic, 2013) and the following references:

- *DoD Quality Systems Manual (QMS) for Environmental Laboratories, version 4.2* (DoD EDQW, 2010);
- *USEPA Region 1, EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses* (December 1996);
- *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review* (January 2010);
- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW846, Method 6010C, Inductively Coupled Plasma-Atomic Emission Spectrometry* (USEPA, 1996);
- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW846, Method 6020A, Inductively Coupled Plasma-Mass Spectrometry* (USEPA, 1996);
- *Method 1631, Revision E:Mercury in Water by Oxidation, Purge and Trap, and Cold Vapor Atomic Fluorescence Spectrometry* (USEPA, 2002); and
- laboratory quality control (QC) limits, as applicable.

The USEPA Region 1 and National Data Validation Functional Guidelines were modified to accommodate the non-CLP methodologies. In the absence of method-specific direction for validation, Resolution Consultants professional judgment was used as appropriate.

REVIEW ELEMENTS

The data were evaluated based on the following parameters (where applicable to the method):

✓ Data completeness (chain-of-custody (COC)/sample integrity
✓ Holding times and sample preservation
✓ ICP/MS Instrument tuning
✓ Initial calibration/continuing calibration verification
✗ Laboratory blanks/equipment blanks
✗ ICP interference check standards
✗ Matrix spike (MS) and/or matrix spike duplicate (MSD) results
✗ Laboratory duplicate results
✗ Laboratory control sample (LCS)/laboratory control sample duplicate (LCSD) results
✗ Field duplicates
✓ ICP/ICPMS serial dilution results
✓ ICP/MS internal standard performance
✓ Sample results/reporting issues

The symbol (✓) indicates that no validation qualifiers were applied based on this parameter. NA indicates that the parameter was not included as part of this data set or was not applicable to this validation and therefore not reviewed. The symbol (✗) indicates that a quality control (QC) nonconformance resulted in the qualification of data. Any QC nonconformance that resulted in the qualification of data is discussed below. In addition, nonconformances or other issues that were noted during validation, but did not result in qualification of data, may be discussed for informational purposes only.

The data appear valid as reported and may be used for decision making purposes. Selected data points were estimated, negated, and/or rejected due to nonconformances of certain QC criteria (see discussion below). Qualified sample results are presented in Table 1.

RESULTS

Data Completeness

The data package was reviewed and found to meet acceptance criteria for completeness:

- The COCs were reviewed for completeness of information relevant to the samples and requested analyses, and for signatures indicating transfer of sample custody.
- The laboratory sample login sheet(s) were reviewed for issues potentially affecting sample integrity, including the condition of sample containers upon receipt at the laboratory.
- Completeness of analyses was verified by comparing the reported results to the COC requests.

The sample identifications for samples OU09-TS-109, OU09-TS-110, and OU09-TS-112 as presented on the chains of custody included dashes. The sample identifications for the remaining samples did not include dashes. The laboratory added dashes to sample identifications BSBGTS301 (reported as BSBG-TS-301), BSBGTS302 (reported as BSBG-TS-302), OU09TS104 (reported as OU09-TS-104), OU09TS106 (reported as OU09-TS-106), OU09TS115 (reported as OU09-TS-115), OU09-TS-118 (reported as OU09-TS-118), and OU09TS121 (reported as OU09-TS-121). Sample identifications have been corrected in this memorandum and in the Resolution Consultants database to reflect the sample identifications on the chain of custody.

Holding Times/Sample Preservation

Sample preservation and preparation/analysis holding times were reviewed for conformance with the QC acceptance criteria.

Some samples were received at 0.8C. Since the samples were received in good condition, no qualifications were required. Note that packing material (i.e., ice) was not noted on Cooler Receipt and Preservation Form.

ICP/MS Instrument Tuning

ICP/MS tuning results were reviewed for conformance with the QC acceptance criteria to confirm that:

- the proper tuning solution was used with elements representing all of the mass regions of interest;

- the tunings were performed at the beginning of each analysis and prior to calibration;
- the tuning solution was analyzed at least 4 times as required by the method;
- the mass calibration was within 0.1 amu of the true value for all masses within the region of interest;
- the resolution was verified to be <0.9 amu full width at 10% peak height; and
- the %RSD was ≤ 5% for the analytes contained in the tuning solution.

The QC acceptance criteria were met.

Initial Calibration/Continuing Calibration Verification

Calibration data were reviewed for conformance with the QC acceptance criteria to confirm that:

- all criteria were met for the calibration curves;
- the initial calibration verification (ICV) percent recovery (%R) criteria were met;
- the continuing calibration verification standard (CCV) method percent difference (%Ds) were met; and
- the low level check standards (CRI or CRA) %R criteria were met.

No qualifications were required based on initial or continuing calibrations.

Laboratory Blanks/Equipment Blanks

Laboratory method blanks and equipment rinsate blanks were evaluated as to whether there were contaminants detected above the method detection limit (MDL). Data validation qualifications for individual samples are based on the maximum contaminant concentration detected in all associated blanks.

Method and equipment rinsate results were reviewed for conformance with the QC acceptance criteria. Detected results in blanks are not discussed in this data validation report if the associated results were nondetect or if qualification of sample results was not required.

Nonconformances are summarized in Attachment A in Table A-1a and A-1b. Sample results were qualified as follows:

Blank Type	Blank Result	Sample Result	Action for Samples
ICB/CCB (Positive)	≥IDL/MDL but ≤ LOQ	Nondetect	No action
		≥IDL/MDL but ≤LOQ	Qualify as nondetect (U) at the LOQ
		> LOQ	Use Resolution Consultants professional judgment (see below [1])
	>LOQ	≥IDL/MDL but ≤LOQ	Qualify as nondetect (U) at the LOQ
		> LOQ but < ICB/CCB Result	Qualify at level of Blank Result with a "U" or Qualify result as unusable
		>ICB/CCB but <10x the ICB/CCB result	Qualify as estimated (J)
		≥10x ICB/CCB	No action is taken based on Resolution Consultants professional judgment
ICB/CCB (Negative)	< (-LOQ)	Nondetect	Use Resolution Consultants professional judgment and qualify as estimated (UJ)
		≥IDL/MDL but < LOQ	Use Resolution Consultants professional judgment and qualify results < LOQ as estimated (J)
		< 10x LOQ	Qualify results >LOQ but <10x LOQ as estimated (J)

Blank Type	Blank Result	Sample Result	Action for Samples
		≥10x LOQ	No action is taken based on Resolution Consultants professional judgment
	≤ -IDL/MDL and ≥ -LOQ	Nondetect	Use Resolution Consultants professional judgment, qualify as estimated (UJ)
		≥IDL/MDL and <5x |neg. blank|	Use Resolution Consultants professional judgment, qualify results as estimated (J)
PB / EB/ FB (Positive)	> LOQ	≥IDL/MDL but ≤ LOQ	Qualify as nondetect (U) at the LOQ
		>LOQ but < 10x Blank Result	Qualify results as unusable
		≥10x Blank Result	No action
	≥IDL/MDL but ≤LOQ	Nondetect	No action
		≥IDL/MDL but ≤LOQ	Qualify as nondetect (U) at the LOQ
		> LOQ	Use Resolution Consultants professional judgment (see below [1])
PB (Negative)	< (-LOQ)	< 10x LOQ	Qualify positive results <10x LOQ as estimated (J) and nondetects as estimated (UJ)
		≥10x LOQ	No action

[1] Establish an action level (AL) at 5x the blank contamination. If sample result is <AL, qualify the reported result with a U.

If positive and negative blanks are reported for an analyte in the calibration blanks, pick the highest blank (absolute value) and use the table above with the following modifications:

Blank Type	Blank Results	Actions in Table to Use	Modifications
ICB/CCB	Positive > Negative	ICB/CCB (Positive)	Estimate nondetects (UJ)
	Negative > Positive	ICB/CCB (Negative)	Estimate J

Qualified sample results are shown in Table 1.

ICP Interference Check Standards

The ICP interference check standards (ICSA, ICSAB) were reviewed for conformance.

Nonconformances are summarized in Attachment A in Table A-2. Data qualification on the basis of the ICS A and ICS AB solutions was as follows:

ICS A and ICS AB Nonconformances:

Qualify Results	% R of Analyte in the ICS A and AB Solutions		
	%R < 50	**%R = 50 - 79 or < true value - LOD**	**%R > 120 or > true value + LOD**
Detected Results	J- / R (6010B/6020)	J-	J+
Nondetects	R	UJ	Accept

Full Validation: Apply action to samples analyzed between the previous in-control ICS and the subsequent in-control ICS (if the ICS was analyzed more frequently than the method requirement).

Limited Validation: Apply actions to all samples in the analytical sequence.

MS Results

The MS and/or MSD %Rs and/or RPDs were reviewed for conformance with the QC acceptance criteria.

Nonconformances are summarized in Attachment A in Table A-3. Data qualification on the basis of MS and/or MSD nonconformances was as follows:

Qualify Results	%R < 30	80 > %R ≥ 30	%R >120	RPD>20
Detected results	J	J	J	J
Nondetects	R	UJ	Accept	UJ

Notes: MS actions apply to all samples of the same matrix. This qualification will also be applied to the results of all samples within a given area of the site, if deemed appropriate.

1. If the sample result (SR) > 4x the spike concentration (S), no action is taken.
2. If any analyte does not meet the %R criteria and a post digestion spike (PDS) analysis was performed, use professional judgment to assess the results. Refer to the National Functional Guidelines (NFG) 2010 for recommended actions.
3. If either the MS or MSD does not meet %R criteria, qualify all associated samples.

Qualified sample results are shown in Table 1.

Laboratory Duplicate Results

The laboratory duplicate relative percent differences (RPDs) were reviewed for conformance.

Nonconformances are summarized in Attachment A in Table A-4. Data qualification on the basis of laboratory duplicate RPDs was as follows:

Sample Results	RPD	Action (Detect/Nondetect)
≥5x LOQ (both sample and duplicate)	RPD>20%	Estimate (J/UJ)
<5x LOQ (either sample and/or duplicate)	if absolute difference is > the LOQ, estimate (J) positive results <5x the LOQ and nondetects (UJ).	

Qualified sample results are shown in Table 1.

LCS/LCSD Results

The LCS/LCSD %Rs and/or RPDs were reviewed for conformance with the QC acceptance criteria.

Nonconformances are summarized in Attachment A in Table A-5. Data qualification on the basis of LCS and/or LCSD %Rs or RPDs was as follows:

LCS	%R < 50	80 > %R = 50	%R > 120%	%R >150%
Positive Sample Results	J-	J-	J+	R
Nondetects	R	UJ	Accept	R

Apply actions to all samples in the same preparation batch.

Qualified sample results are shown in Table 1.

Field Duplicate Results

Field duplicate RPDs were reviewed for conformance with the Resolution Consultants QC acceptance criterion of ≤50% for solid matrices and ≤30% for aqueous matrices. This criterion applies if both results were greater than 5 times the limit of quantitation (LOQ).

Nonconformances are summarized in Attachment A in Table A-6. Data qualification on the basis of field duplicate RPDs was as follows:

Criteria	RPD	Action	
		Detected	Nondetected
Sample and duplicate are nondetect results	Not calculable (NC)	No qualification	No qualification
Sample and duplicate results <SLOQ	Not applicable	No qualification	No qualification
Sample and duplicate results ≥5xSLOQ	>30% Aqueous >50% All other sample types	J	Not Applicable
Sample and duplicate results are >SLOQ and <5xSLOQ	>60% Aqueous >100% All other sample types	J	Not Applicable
If sample or duplicate result is =SLOQ and the other is not detected	NC	J	UJ
If sample or duplicate result is <SLOQ and the other is not detected	NC	No qualification	No qualification

Qualified sample results are summarized in Table 1.

ICP/ICPMS Serial Dilution Results

The serial dilution percent differences (%Ds) were reviewed for conformance with the QC acceptance criteria.

The serial dilution %Ds were within the QC acceptance criteria. ICP/MS Internal Standard Performance

ICP/MS Internal standard performance was reviewed for conformance and was within the QC acceptance criteria.

Sample Results/Reporting Issues

All analytes detected at concentrations less than the limit of quantitation (LOQ) but greater than the method detection limit (MDL) were qualified by the laboratory as estimated (J). This "J" qualifier was retained during data validation.

All criteria were met.

QUALIFICATION ACTIONS

Sample results qualified as a result of validation actions are summarized in Table 1. All actions are described above.

ATTACHMENTS

Attachment A: Nonconformance Summary Tables

Attachment B: Qualifier Codes and Explanations

Attachment C: Reason Codes and Explanations

Table 1 - Data Validation Summary of Qualified Data

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
BSBGTS301	TA	CALCIUM	358	0.5	0.5	MG_KG	J+	m
BSBGTS301	TA	IRON	19.7	0.11	0.23	MG_KG	J+	m
BSBGTS301	TA	POTASSIUM	1370	1.1	2.3	MG_KG	J+	z
BSBGTS301	TA	ANTIMONY	0.0056	0.0056	0.0056	MG_KG	U	bl
BSBGTS301	TA	ARSENIC	3.60	0.006	0.056	MG_KG	J+	m,z
BSBGTS301	TA	BARIUM	0.280	0.0022	0.0056	MG_KG	J+	z
BSBGTS301	TA	CADMIUM	0.0724	0.0009	0.0022	MG_KG	J+	z
BSBGTS301	TA	CHROMIUM, TOTAL	0.155	0.009	0.022	MG_KG	J+	z
BSBGTS301	TA	COBALT	0.202	0.009	0.0022	MG_KG	J+	z
BSBGTS301	TA	COPPER	1.26	0.004	0.011	MG_KG	J+	z
BSBGTS301	TA	LEAD	0.148	0.00022	0.0023	MG_KG	J	l,z
BSBGTS301	TA	MANGANESE	7.72	0.002	0.006	MG_KG	J+	m,z
BSBGTS301	TA	NICKEL	0.707	0.009	0.022	MG_KG	J+	z
BSBGTS301	TA	SILVER	0.306	0.0009	0.0022	MG_KG	J-	m
BSBGTS301	TA	THALLIUM	0.0023	0.0023	0.0023	MG_KG	U	bl
BSBGTS301	TA	VANADIUM	0.123	0.002	0.022	MG_KG	J+	z
BSBGTS301	TA	ZINC	15.6	0.022	0.056	MG_KG	J+	m,z
BSBGTS302	TA	CALCIUM	920	0.4	0.4	MG_KG	J+	m
BSBGTS302	TA	IRON	57.6	0.11	0.21	MG_KG	J+	m
BSBGTS302	TA	POTASSIUM	1270	1.1	2.1	MG_KG	J+	z
BSBGTS302	TA	ANTIMONY	0.0053	0.0053	0.0053	MG_KG	U	bl
BSBGTS302	TA	ARSENIC	2.50	0.005	0.053	MG_KG	J+	m,z
BSBGTS302	TA	BARIUM	0.259	0.0021	0.0053	MG_KG	J+	z
BSBGTS302	TA	CADMIUM	0.0805	0.0008	0.0021	MG_KG	J+	z
BSBGTS302	TA	CHROMIUM, TOTAL	0.207	0.008	0.021	MG_KG	J+	z
BSBGTS302	TA	COBALT	0.0646	0.0084	0.0021	MG_KG	J+	z
BSBGTS302	TA	COPPER	1.02	0.004	0.011	MG_KG	J+	z
BSBGTS302	TA	LEAD	0.260	0.00021	0.0021	MG_KG	J	l,z
BSBGTS302	TA	MANGANESE	5.97	0.002	0.005	MG_KG	J+	m,z
BSBGTS302	TA	NICKEL	0.171	0.008	0.021	MG_KG	J+	z
BSBGTS302	TA	SILVER	0.0141	0.0008	0.0021	MG_KG	J-	m
BSBGTS302	TA	THALLIUM	0.0021	0.0021	0.0021	MG_KG	U	bl
BSBGTS302	TA	VANADIUM	0.179	0.002	0.021	MG_KG	J+	z
BSBGTS302	TA	ZINC	8.69	0.021	0.053	MG_KG	J+	m,z
BSBGTS303	TA	CALCIUM	665	0.5	0.5	MG_KG	J	ld
BSBGTS303	TA	POTASSIUM	1620	1.3	2.6	MG_KG	J+	z
BSBGTS303	TA	ANTIMONY	0.0066	0.0007	0.0066	MG_KG	U	bl
BSBGTS303	TA	ARSENIC	3.46	0.007	0.066	MG_KG	J+	z

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
BSBGTS303	TA	BARIUM	0.0974	0.0026	0.0066	MG_KG	J+	z
BSBGTS303	TA	CADMIUM	0.138	0.0011	0.0026	MG_KG	J+	z
BSBGTS303	TA	CHROMIUM, TOTAL	0.543	0.011	0.026	MG_KG	J+	z
BSBGTS303	TA	COBALT	0.0819	0.0105	0.0026	MG_KG	J+	z
BSBGTS303	TA	COPPER	0.920	0.005	0.013	MG_KG	J+	z
BSBGTS303	TA	LEAD	0.426	0.00026	0.0026	MG_KG	J	l,z
BSBGTS303	TA	MANGANESE	2.71	0.003	0.007	MG_KG	J+	z
BSBGTS303	TA	NICKEL	0.332	0.011	0.026	MG_KG	J+	z
BSBGTS303	TA	THALLIUM	0.0026	0.0026	0.0026	MG_KG	U	bl
BSBGTS303	TA	VANADIUM	0.149	0.003	0.026	MG_KG	J+	z
BSBGTS303	TA	ZINC	11.1	0.026	0.066	MG_KG	J+	z
BSBGTS304	TA	CALCIUM	649	0.5	0.5	MG_KG	J	ld
BSBGTS304	TA	POTASSIUM	1740	1.3	2.6	MG_KG	J+	z
BSBGTS304	TA	ANTIMONY	0.0064	0.0006	0.0064	MG_KG	U	bl
BSBGTS304	TA	ARSENIC	3.58	0.006	0.064	MG_KG	J+	z
BSBGTS304	TA	BARIUM	0.106	0.0026	0.0064	MG_KG	J+	z
BSBGTS304	TA	CADMIUM	0.152	0.001	0.0026	MG_KG	J+	z
BSBGTS304	TA	CHROMIUM, TOTAL	0.634	0.01	0.026	MG_KG	J+	z
BSBGTS304	TA	COBALT	0.111	0.0103	0.0026	MG_KG	J+	z
BSBGTS304	TA	COPPER	0.960	0.005	0.013	MG_KG	J+	z
BSBGTS304	TA	LEAD	0.255	0.00026	0.0026	MG_KG	J	l,z
BSBGTS304	TA	MANGANESE	2.60	0.003	0.006	MG_KG	J+	z
BSBGTS304	TA	NICKEL	0.406	0.01	0.026	MG_KG	J+	z
BSBGTS304	TA	THALLIUM	0.0026	0.0026	0.0026	MG_KG	U	bl
BSBGTS304	TA	VANADIUM	0.162	0.003	0.026	MG_KG	J+	z
BSBGTS304	TA	ZINC	12.8	0.026	0.064	MG_KG	J+	z
OU09TS101	TA	CALCIUM	651	0.5	0.5	MG_KG	J	ld
OU09TS101	TA	POTASSIUM	1560	1.1	2.3	MG_KG	J+	z
OU09TS101	TA	ANTIMONY	0.0190	0.0006	0.0056	MG_KG	J+	z
OU09TS101	TA	ARSENIC	3.58	0.006	0.056	MG_KG	J+	z
OU09TS101	TA	BARIUM	0.219	0.0022	0.0056	MG_KG	J+	z
OU09TS101	TA	CADMIUM	0.149	0.0009	0.0022	MG_KG	J+	z
OU09TS101	TA	CHROMIUM, TOTAL	0.550	0.009	0.022	MG_KG	J+	z
OU09TS101	TA	COBALT	0.129	0.009	0.0022	MG_KG	J+	z
OU09TS101	TA	COPPER	1.50	0.004	0.011	MG_KG	J+	z
OU09TS101	TA	LEAD	4.13	0.00022	0.0023	MG_KG	J	l,z
OU09TS101	TA	MANGANESE	4.76	0.002	0.006	MG_KG	J+	z
OU09TS101	TA	NICKEL	0.465	0.009	0.022	MG_KG	J+	z
OU09TS101	TA	THALLIUM	0.0023	0.0023	0.0023	MG_KG	U	bl

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09TS101	TA	VANADIUM	0.178	0.002	0.022	MG_KG	J+	z
OU09TS101	TA	ZINC	12.8	0.022	0.056	MG_KG	J+	z
OU09TS102	TA	CALCIUM	1180	0.5	0.5	MG_KG	J	ld
OU09TS102	TA	POTASSIUM	1580	1.2	2.3	MG_KG	J+	z
OU09TS102	TA	ANTIMONY	0.0287	0.0006	0.0057	MG_KG	J+	z
OU09TS102	TA	ARSENIC	3.38	0.006	0.057	MG_KG	J+	z
OU09TS102	TA	BARIUM	0.172	0.0023	0.0057	MG_KG	J+	z
OU09TS102	TA	CADMIUM	0.145	0.0009	0.0023	MG_KG	J+	z
OU09TS102	TA	CHROMIUM, TOTAL	0.232	0.009	0.023	MG_KG	J+	z
OU09TS102	TA	COBALT	0.120	0.0092	0.0023	MG_KG	J+	z
OU09TS102	TA	COPPER	1.60	0.005	0.011	MG_KG	J+	z
OU09TS102	TA	LEAD	7.26	0.00023	0.0023	MG_KG	J	l,z
OU09TS102	TA	MANGANESE	3.62	0.002	0.006	MG_KG	J+	z
OU09TS102	TA	NICKEL	0.294	0.009	0.023	MG_KG	J+	z
OU09TS102	TA	THALLIUM	0.0023	0.0023	0.0023	MG_KG	U	bl
OU09TS102	TA	VANADIUM	0.169	0.002	0.023	MG_KG	J+	z
OU09TS102	TA	ZINC	14.4	0.023	0.057	MG_KG	J+	z
OU09TS104	TA	IRON	11.3	0.09	0.17	MG_KG	J+	m
OU09TS104	TA	POTASSIUM	998	0.9	1.7	MG_KG	J+	z
OU09TS104	TA	ANTIMONY	0.0043	0.0043	0.0043	MG_KG	U	bl
OU09TS104	TA	ARSENIC	2.53	0.004	0.043	MG_KG	J+	m,z
OU09TS104	TA	BARIUM	0.205	0.0017	0.0043	MG_KG	J+	z
OU09TS104	TA	CADMIUM	0.0727	0.0007	0.0017	MG_KG	J+	z
OU09TS104	TA	CHROMIUM, TOTAL	0.081	0.007	0.017	MG_KG	J+	z
OU09TS104	TA	COBALT	0.108	0.0068	0.0017	MG_KG	J+	z
OU09TS104	TA	COPPER	0.580	0.003	0.009	MG_KG	J+	z
OU09TS104	TA	LEAD	0.132	0.00017	0.0017	MG_KG	J	l,z
OU09TS104	TA	MANGANESE	4.14	0.002	0.004	MG_KG	J+	m,z
OU09TS104	TA	NICKEL	0.472	0.007	0.017	MG_KG	J+	z
OU09TS104	TA	SILVER	0.0891	0.0007	0.0017	MG_KG	J-	m
OU09TS104	TA	VANADIUM	0.087	0.002	0.017	MG_KG	J+	z
OU09TS104	TA	ZINC	8.77	0.017	0.043	MG_KG	J+	m,z
OU09TS106	TA	CALCIUM	327	0.5	0.5	MG_KG	J+	m
OU09TS106	TA	IRON	12.2	0.11	0.23	MG_KG	J+	m
OU09TS106	TA	POTASSIUM	1330	1.1	2.3	MG_KG	J+	z
OU09TS106	TA	ANTIMONY	0.0057	0.0057	0.0057	MG_KG	U	bl
OU09TS106	TA	ARSENIC	2.91	0.006	0.057	MG_KG	J+	m,z
OU09TS106	TA	BARIUM	0.263	0.0023	0.0057	MG_KG	J+	z
OU09TS106	TA	CADMIUM	0.0588	0.0009	0.0023	MG_KG	J+	z

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09TS106	TA	CHROMIUM, TOTAL	0.074	0.009	0.023	MG_KG	J+	z
OU09TS106	TA	COBALT	0.175	0.0091	0.0023	MG_KG	J+	z
OU09TS106	TA	COPPER	0.976	0.005	0.011	MG_KG	J+	z
OU09TS106	TA	LEAD	0.0692	0.00023	0.0023	MG_KG	J	l,z
OU09TS106	TA	MANGANESE	3.03	0.002	0.006	MG_KG	J+	m,z
OU09TS106	TA	NICKEL	0.546	0.009	0.023	MG_KG	J+	z
OU09TS106	TA	SILVER	0.106	0.0009	0.0023	MG_KG	J-	m
OU09TS106	TA	VANADIUM	0.057	0.002	0.023	MG_KG	J+	z
OU09TS106	TA	ZINC	15.2	0.023	0.057	MG_KG	J+	m,z
OU09-TS-109	TA	CALCIUM	377	0.4	0.4	MG_KG	J+	m
OU09-TS-109	TA	IRON	7.84	0.09	0.18	MG_KG	J+	m
OU09-TS-109	TA	POTASSIUM	1050	0.9	1.8	MG_KG	J+	z
OU09-TS-109	TA	ANTIMONY	0.0044	0.0044	0.0044	MG_KG	U	bl
OU09-TS-109	TA	ARSENIC	3.81	0.004	0.044	MG_KG	J+	m,z
OU09-TS-109	TA	BARIUM	0.277	0.0018	0.0044	MG_KG	J+	z
OU09-TS-109	TA	CADMIUM	0.0707	0.0007	0.0018	MG_KG	J+	z
OU09-TS-109	TA	CHROMIUM, TOTAL	0.247	0.007	0.018	MG_KG	J+	z
OU09-TS-109	TA	COBALT	0.279	0.007	0.0018	MG_KG	J+	z
OU09-TS-109	TA	COPPER	0.931	0.004	0.009	MG_KG	J+	z
OU09-TS-109	TA	LEAD	0.0670	0.00018	0.0018	MG_KG	J	l,z
OU09-TS-109	TA	MANGANESE	2.42	0.002	0.004	MG_KG	J+	m,z
OU09-TS-109	TA	NICKEL	0.810	0.007	0.018	MG_KG	J+	z
OU09-TS-109	TA	SILVER	0.217	0.0007	0.0018	MG_KG	J-	m
OU09-TS-109	TA	THALLIUM	0.0018	0.0018	0.0018	MG_KG	U	bl
OU09-TS-109	TA	VANADIUM	0.223	0.002	0.018	MG_KG	J+	z
OU09-TS-109	TA	ZINC	12.0	0.018	0.044	MG_KG	J+	m,z
OU09-TS-110	TA	CALCIUM	379	0.4	0.4	MG_KG	J+	m
OU09-TS-110	TA	IRON	13.7	0.09	0.18	MG_KG	J+	m
OU09-TS-110	TA	POTASSIUM	1170	0.9	1.8	MG_KG	J+	z
OU09-TS-110	TA	ANTIMONY	0.0046	0.0046	0.0046	MG_KG	U	bl
OU09-TS-110	TA	ARSENIC	4.38	0.005	0.046	MG_KG	J+	m,z
OU09-TS-110	TA	BARIUM	0.303	0.0018	0.0046	MG_KG	J+	z
OU09-TS-110	TA	CADMIUM	0.116	0.0007	0.0018	MG_KG	J+	z
OU09-TS-110	TA	CHROMIUM, TOTAL	0.267	0.007	0.018	MG_KG	J+	z
OU09-TS-110	TA	COBALT	0.146	0.0073	0.0018	MG_KG	J+	z
OU09-TS-110	TA	COPPER	1.31	0.004	0.009	MG_KG	J+	z
OU09-TS-110	TA	LEAD	0.293	0.00018	0.0018	MG_KG	J	l,z
OU09-TS-110	TA	MANGANESE	7.42	0.002	0.005	MG_KG	J+	m,z
OU09-TS-110	TA	NICKEL	0.455	0.007	0.018	MG_KG	J+	z

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09-TS-110	TA	SILVER	0.274	0.0007	0.0018	MG_KG	J-	m
OU09-TS-110	TA	THALLIUM	0.0018	0.0018	0.0018	MG_KG	U	bl
OU09-TS-110	TA	VANADIUM	0.223	0.002	0.018	MG_KG	J+	z
OU09-TS-110	TA	ZINC	13.4	0.018	0.046	MG_KG	J+	m,z
OU09-TS-112	TA	CALCIUM	468	0.4	0.4	MG_KG	J+	m
OU09-TS-112	TA	IRON	6.33	0.09	0.18	MG_KG	J+	m
OU09-TS-112	TA	POTASSIUM	1040	0.9	1.8	MG_KG	J+	z
OU09-TS-112	TA	ANTIMONY	0.0045	0.0045	0.0045	MG_KG	U	bl
OU09-TS-112	TA	ARSENIC	3.00	0.004	0.045	MG_KG	J+	m,z
OU09-TS-112	TA	BARIUM	0.153	0.0018	0.0045	MG_KG	J	fd,z
OU09-TS-112	TA	CADMIUM	0.0983	0.0007	0.0018	MG_KG	J+	z
OU09-TS-112	TA	CHROMIUM, TOTAL	0.330	0.007	0.018	MG_KG	J+	z
OU09-TS-112	TA	COBALT	0.107	0.0072	0.0018	MG_KG	J+	z
OU09-TS-112	TA	COPPER	0.866	0.004	0.009	MG_KG	J+	z
OU09-TS-112	TA	LEAD	0.0841	0.00018	0.0018	MG_KG	J	l,z
OU09-TS-112	TA	MANGANESE	4.48	0.002	0.004	MG_KG	J	fd,m,z
OU09-TS-112	TA	NICKEL	0.585	0.007	0.018	MG_KG	J+	z
OU09-TS-112	TA	SILVER	0.250	0.0007	0.0018	MG_KG	J-	m
OU09-TS-112	TA	THALLIUM	0.0018	0.0018	0.0018	MG_KG	U	bl
OU09-TS-112	TA	VANADIUM	0.299	0.002	0.018	MG_KG	J+	z
OU09-TS-112	TA	ZINC	7.91	0.018	0.045	MG_KG	J+	m,z
OU09TS115	TA	CALCIUM	340	0.4	0.4	MG_KG	J+	m
OU09TS115	TA	IRON	11.5	0.1	0.20	MG_KG	J+	m
OU09TS115	TA	POTASSIUM	1170	1	2.0	MG_KG	J+	z
OU09TS115	TA	ANTIMONY	0.0050	0.0050	0.0050	MG_KG	U	bl
OU09TS115	TA	ARSENIC	2.18	0.005	0.050	MG_KG	J+	m,z
OU09TS115	TA	BARIUM	0.284	0.002	0.0050	MG_KG	J+	z
OU09TS115	TA	CADMIUM	0.0737	0.0008	0.0020	MG_KG	J+	z
OU09TS115	TA	CHROMIUM, TOTAL	0.090	0.008	0.020	MG_KG	J+	z
OU09TS115	TA	COBALT	0.144	0.0079	0.0020	MG_KG	J+	z
OU09TS115	TA	COPPER	0.787	0.004	0.010	MG_KG	J+	z
OU09TS115	TA	LEAD	0.274	0.0002	0.0020	MG_KG	J	l,z
OU09TS115	TA	MANGANESE	4.04	0.002	0.005	MG_KG	J+	m,z
OU09TS115	TA	NICKEL	0.685	0.008	0.020	MG_KG	J+	z
OU09TS115	TA	SILVER	0.184	0.0008	0.0020	MG_KG	J-	m
OU09TS115	TA	VANADIUM	0.078	0.002	0.020	MG_KG	J+	z
OU09TS115	TA	ZINC	9.87	0.02	0.050	MG_KG	J+	m,z
OU09TS118	TA	CALCIUM	344	0.3	0.3	MG_KG	J+	m
OU09TS118	TA	IRON	16.7	0.08	0.16	MG_KG	J+	m

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09TS118	TA	POTASSIUM	940	0.8	1.6	MG_KG	J+	z
OU09TS118	TA	ANTIMONY	0.0041	0.0041	0.0041	MG_KG	U	bl
OU09TS118	TA	ARSENIC	2.55	0.004	0.041	MG_KG	J+	m,z
OU09TS118	TA	BARIUM	0.194	0.0016	0.0041	MG_KG	J+	z
OU09TS118	TA	CADMIUM	0.0982	0.0007	0.0016	MG_KG	J+	z
OU09TS118	TA	CHROMIUM, TOTAL	0.123	0.007	0.016	MG_KG	J+	z
OU09TS118	TA	COBALT	0.136	0.0065	0.0016	MG_KG	J+	z
OU09TS118	TA	COPPER	0.646	0.003	0.008	MG_KG	J+	z
OU09TS118	TA	LEAD	0.494	0.00016	0.0016	MG_KG	J	l,z
OU09TS118	TA	MANGANESE	4.40	0.002	0.004	MG_KG	J+	m,z
OU09TS118	TA	NICKEL	0.530	0.007	0.016	MG_KG	J+	z
OU09TS118	TA	SILVER	0.122	0.0007	0.0016	MG_KG	J-	m
OU09TS118	TA	VANADIUM	0.104	0.002	0.016	MG_KG	J+	z
OU09TS118	TA	ZINC	8.92	0.016	0.041	MG_KG	J+	m,z
OU09TS121	TA	CALCIUM	336	0.4	0.4	MG_KG	J+	m
OU09TS121	TA	IRON	7.88	0.09	0.18	MG_KG	J+	m
OU09TS121	TA	POTASSIUM	1060	0.9	1.8	MG_KG	J+	z
OU09TS121	TA	ANTIMONY	0.0044	0.0044	0.0044	MG_KG	U	bl
OU09TS121	TA	ARSENIC	3.48	0.004	0.044	MG_KG	J+	m,z
OU09TS121	TA	BARIUM	0.150	0.0018	0.0044	MG_KG	J+	z
OU09TS121	TA	CADMIUM	0.0772	0.0007	0.0018	MG_KG	J+	z
OU09TS121	TA	CHROMIUM, TOTAL	0.276	0.007	0.018	MG_KG	J+	z
OU09TS121	TA	COBALT	0.0632	0.0071	0.0018	MG_KG	J+	z
OU09TS121	TA	COPPER	0.707	0.004	0.009	MG_KG	J+	z
OU09TS121	TA	LEAD	0.0600	0.00018	0.0018	MG_KG	J	l,z
OU09TS121	TA	MANGANESE	1.37	0.002	0.004	MG_KG	J+	m,z
OU09TS121	TA	NICKEL	0.322	0.007	0.018	MG_KG	J+	z
OU09TS121	TA	SILVER	0.245	0.0007	0.0018	MG_KG	J-	m
OU09TS121	TA	VANADIUM	0.348	0.002	0.018	MG_KG	J+	z
OU09TS121	TA	ZINC	5.40	0.018	0.044	MG_KG	J+	m,z
OU09TS122	TA	CALCIUM	558	0.4	0.4	MG_KG	J	ld
OU09TS122	TA	POTASSIUM	1460	1	2.1	MG_KG	J+	z
OU09TS122	TA	ANTIMONY	0.0111	0.0005	0.0052	MG_KG	J+	z
OU09TS122	TA	ARSENIC	2.79	0.005	0.052	MG_KG	J+	z
OU09TS122	TA	BARIUM	0.119	0.0021	0.0052	MG_KG	J+	z
OU09TS122	TA	CADMIUM	0.116	0.0008	0.0021	MG_KG	J+	z
OU09TS122	TA	CHROMIUM, TOTAL	0.509	0.008	0.021	MG_KG	J+	z
OU09TS122	TA	COBALT	0.121	0.0083	0.0021	MG_KG	J+	z
OU09TS122	TA	COPPER	1.02	0.004	0.010	MG_KG	J+	z

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09TS122	TA	LEAD	1.44	0.00021	0.0021	MG_KG	J	l,z
OU09TS122	TA	MANGANESE	3.77	0.002	0.005	MG_KG	J+	z
OU09TS122	TA	NICKEL	0.384	0.008	0.021	MG_KG	J+	z
OU09TS122	TA	THALLIUM	0.0021	0.0021	0.0021	MG_KG	U	bl
OU09TS122	TA	VANADIUM	0.149	0.002	0.021	MG_KG	J+	z
OU09TS122	TA	ZINC	10.8	0.021	0.052	MG_KG	J+	z
OU09TS123	TA	CALCIUM	3980	0.6	0.6	MG_KG	J	ld
OU09TS123	TA	POTASSIUM	1700	1.4	2.8	MG_KG	J+	z
OU09TS123	TA	ANTIMONY	0.0123	0.0007	0.0069	MG_KG	J+	z
OU09TS123	TA	ARSENIC	3.63	0.007	0.069	MG_KG	J+	z
OU09TS123	TA	BARIUM	0.155	0.0028	0.0069	MG_KG	J+	z
OU09TS123	TA	CADMIUM	0.132	0.0011	0.0028	MG_KG	J+	z
OU09TS123	TA	CHROMIUM, TOTAL	0.771	0.011	0.028	MG_KG	J+	z
OU09TS123	TA	COBALT	0.146	0.011	0.0028	MG_KG	J+	z
OU09TS123	TA	COPPER	1.35	0.006	0.014	MG_KG	J+	z
OU09TS123	TA	LEAD	1.86	0.00028	0.0028	MG_KG	J	l,z
OU09TS123	TA	MANGANESE	4.96	0.003	0.007	MG_KG	J+	z
OU09TS123	TA	NICKEL	0.551	0.011	0.028	MG_KG	J+	z
OU09TS123	TA	THALLIUM	0.0028	0.0028	0.0028	MG_KG	U	bl
OU09TS123	TA	VANADIUM	0.202	0.003	0.028	MG_KG	J+	z
OU09TS123	TA	ZINC	12.5	0.028	0.069	MG_KG	J+	z
OU09TS124	TA	CALCIUM	697	0.5	0.5	MG_KG	J	ld
OU09TS124	TA	POTASSIUM	1670	1.3	2.5	MG_KG	J+	z
OU09TS124	TA	ANTIMONY	0.0131	0.0006	0.0062	MG_KG	J+	z
OU09TS124	TA	ARSENIC	3.55	0.006	0.062	MG_KG	J+	z
OU09TS124	TA	BARIUM	0.147	0.0025	0.0062	MG_KG	J+	z
OU09TS124	TA	CADMIUM	0.144	0.001	0.0025	MG_KG	J+	z
OU09TS124	TA	CHROMIUM, TOTAL	0.603	0.01	0.025	MG_KG	J+	z
OU09TS124	TA	COBALT	0.145	0.01	0.0025	MG_KG	J+	z
OU09TS124	TA	COPPER	1.34	0.005	0.012	MG_KG	J+	z
OU09TS124	TA	LEAD	2.29	0.00025	0.0025	MG_KG	J	l,z
OU09TS124	TA	MANGANESE	4.95	0.002	0.006	MG_KG	J+	z
OU09TS124	TA	NICKEL	0.462	0.01	0.025	MG_KG	J+	z
OU09TS124	TA	THALLIUM	0.0025	0.0025	0.0025	MG_KG	U	bl
OU09TS124	TA	VANADIUM	0.203	0.002	0.025	MG_KG	J+	z
OU09TS124	TA	ZINC	12.1	0.025	0.062	MG_KG	J+	z
OU09-TS-201	TA	CALCIUM	397	0.4	0.4	MG_KG	J+	m
OU09-TS-201	TA	IRON	8.00	0.09	0.18	MG_KG	J+	m
OU09-TS-201	TA	POTASSIUM	1070	0.9	1.8	MG_KG	J+	z

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
OU09-TS-201	TA	ANTIMONY	0.0045	0.0045	0.0045	MG_KG	U	bl
OU09-TS-201	TA	ARSENIC	3.14	0.004	0.045	MG_KG	J+	m,z
OU09-TS-201	TA	BARIUM	0.282	0.0018	0.0045	MG_KG	J	fd,z
OU09-TS-201	TA	CADMIUM	0.0771	0.0007	0.0018	MG_KG	J+	z
OU09-TS-201	TA	CHROMIUM, TOTAL	0.325	0.007	0.018	MG_KG	J+	z
OU09-TS-201	TA	COBALT	0.149	0.0072	0.0018	MG_KG	J+	z
OU09-TS-201	TA	COPPER	0.834	0.004	0.009	MG_KG	J+	z
OU09-TS-201	TA	LEAD	0.0589	0.00018	0.0018	MG_KG	J	l,z
OU09-TS-201	TA	MANGANESE	2.47	0.002	0.004	MG_KG	J	fd,m,z
OU09-TS-201	TA	NICKEL	0.891	0.007	0.018	MG_KG	J+	z
OU09-TS-201	TA	SILVER	0.260	0.0007	0.0018	MG_KG	J-	m
OU09-TS-201	TA	THALLIUM	0.0018	0.0018	0.0018	MG_KG	U	bl
OU09-TS-201	TA	VANADIUM	0.354	0.002	0.018	MG_KG	J+	z
OU09-TS-201	TA	ZINC	7.67	0.018	0.045	MG_KG	J+	m,z

Attachment A

Non Conformance Summary Tables

Table A-1a Lab Blanks

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
197126-LB	ANTIMONY	0.0009	0.0006	0.0060	MG_KG	BSBGTS301, BSBGTS302, BSBGTS303, BSBGTS304, OU09TS104, OU09TS106, OU09-TS-109, OU09-TS-110, OU09-TS-112, OU09TS115, OU09TS118, OU09TS121, OU09-TS-201, OU09TS101, OU09TS102, OU09TS122, OU09TS123, OU09TS124
197126-LB	LEAD	0.00015	0.00024	0.0024	MG_KG	BSBGTS301, BSBGTS302, OU09TS104, OU09TS106, OU09-TS-109, OU09-TS-110, OU09-TS-112, OU09TS115, OU09TS118, OU09TS121, OU09-TS-201
197126-LB	THALLIUM	0.00028	0.00048	0.0024	MG_KG	BSBGTS301, BSBGTS302, OU09-TS-109, OU09-TS-110, OU09-TS-112, OU09-TS-201

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
197620-LB1	MERCURY	0.01	0.02	0.1	NG_G	BSBGTS301, BSBGTS302, OU09TS104, OU09TS106, OU09-TS-109, OU09-TS-110, OU09-TS-112, OU09TS115, OU09TS118, OU09TS121, OU09-TS-201
197620-LB2	MERCURY	0.02	0.02	0.1	NG_G	BSBGTS301, BSBGTS302, OU09TS104, OU09TS106, OU09-TS-109, OU09-TS-110, OU09-TS-112, OU09TS115, OU09TS118, OU09TS121, OU09-TS-201
197620-LB3	MERCURY	0.03	0.02	0.1	NG_G	BSBGTS301, BSBGTS302, OU09TS104, OU09TS106, OU09-TS-109, OU09-TS-110, OU09-TS-112, OU09TS115, OU09TS118, OU09TS121, OU09-TS-201
197844-LB	COPPER	0.016	0.005	0.012	MG_KG	BSBGTS301, BSBGTS302, BSBGTS303, BSBGTS304, OU09TS104, OU09TS106, OU09-TS-109, OU09-TS-110, OU09-TS-112, OU09TS115, OU09TS118, OU09TS121, OU09-TS-201, OU09TS101, OU09TS102, OU09TS122, OU09TS123, OU09TS124

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
197844-LB	LEAD	0.00043	0.0002	0.0024	MG_KG	BSBGTS303, BSBGTS304, OU09TS102, OU09TS122, OU09TS124
197976-LB	ALUMINUM	0.050	0.24	0.24	MG_KG	BSBGTS301, BSBGTS302, BSBGTS303, BSBGTS304, OU09TS104, OU09TS106, OU09-TS-109, OU09-TS-110, OU09-TS-112, OU09TS115, OU09TS118, OU09TS121, OU09-TS-201, OU09TS101, OU09TS102, OU09TS122, OU09TS123, OU09TS124
197976-LB	POTASSIUM	1.1	1.2	2.4	MG_KG	BSBGTS301, BSBGTS302, BSBGTS303, BSBGTS304, OU09TS104, OU09TS106, OU09-TS-109, OU09-TS-110, OU09-TS-112, OU09TS115, OU09TS118, OU09TS121, OU09-TS-201, OU09TS101, OU09TS102, OU09TS122, OU09TS123, OU09TS124

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
197976-LB	SODIUM	0.9	0.6	2.4	MG_KG	BSBGTS301, BSBGTS302, BSBGTS303, BSBGTS304, OU09TS104, OU09TS106, OU09-TS-109, OU09-TS-110, OU09-TS-112, OU09TS115, OU09TS118, OU09TS121, OU09-TS-201, OU09TS101, OU09TS102, OU09TS122, OU09TS123, OU09TS124
197977-LB	ALUMINUM	0.012	0.24	0.24	MG_KG	BSBGTS301, BSBGTS302, BSBGTS303, BSBGTS304, OU09TS104, OU09TS106, OU09-TS-109, OU09-TS-110, OU09-TS-112, OU09TS115, OU09TS118, OU09TS121, OU09-TS-201, OU09TS101, OU09TS102, OU09TS122, OU09TS123, OU09TS124

Table A-1b Calibration Blanks

Blank ID	Compound	Result	LOD	LOQ	Units	Associated Samples
ICB 12/2/13	ANTIMONY	0.009	0.004	0.100	µg/L	all samples
CCB 12/2/13	COBALT	0.014	0.006	0.040	µg/L	all samples
CCB 12/2/13	LEAD	0.0013	0.0010	0.040	µg/L	all samples
CCB 12/2/13	NICKEL	-0.05	0.04	0.40	µg/L	all samples
CCB 12/2/13	POTASSIUM	178.0	60.0	200	µg/L	all samples
CCB 12/2/13	SODIUM	183.0	40.0	200	µg/L	all samples
CCB 12/2/13	THALLIUM	0.0034	0.0018	0.0400	µg/L	all samples
CCB 12/4/13	LEAD	0.0014	0.0010	0.040	µg/L	K1312082-12, -14, -16, -17, -18
CCB 12/4/13	THALLIUM	0.0034	0.0018	0.0400	µg/L	K1312082-12, -14, -16, -17, -18
CCB 12/5/13	LEAD	0.0033	0.0010	0.040	µg/L	K1312082-13, -15
CCB 12/5/13	THALLIUM	0.0030	0.0018	0.0400	µg/L	K1312082-13, -15
CCB 12/5/13	THALLIUM	-0.0021	0.0018	0.0400	µg/L	K1312082-13, -15

Table A-2 Interference Check Sample

ICS ID	Compound	Result	LOD	Units	Associated Samples
K-ICP-AES-03	POTASSIUM	158	0.0006	µg/L	all samples
K-ICP-MS-04 12/2/13	ANTIMONY	0.4	0.010	µg/L	all samples
K-ICP-MS-04 12/2/13	ARSENIC	0.2	0.10	µg/L	all samples
K-ICP-MS-04 12/2/13	BARIUM	3.3	0.04	µg/L	all samples
K-ICP-MS-04 12/2/13	CADMIUM	0.2	0.016	µg/L	all samples
K-ICP-MS-04 12/2/13	CHROMIUM	0.4	0.160	µg/L	all samples
K-ICP-MS-04 12/2/13	COBALT	0.9	0.160	µg/L	all samples
K-ICP-MS-04 12/2/13	COPPER	0.2	0.08	µg/L	all samples
K-ICP-MS-04 12/2/13	LEAD	0.1	0.004	µg/L	all samples except K1312082-12, -13, -14, -15, -16, -17, -18
K-ICP-MS-04 12/2/13	MANGANESE	1.5	0.04	µg/L	all samples except K1312082-12, -14, -16, -17, 18
K-ICP-MS-04 12/2/13	NICKEL	0.9	0.16	µg/L	all samples
K-ICP-MS-04 12/2/13	VANADIUM	0.1	0.040	µg/L	all samples
K-ICP-MS-04 12/2/13	ZINC	0.9	0.40	µg/L	all samples
K-ICP-MS-04 12/4/13	LEAD	0.1	0.004	µg/L	K1312082-12, -14, -16, -17, 18
K-ICP-MS-04 12/4/13	MANGANESE	1.4	0.04	µg/L	K1312082-12, -14, -16, -17, 18
K-ICP-MS-04 12/5/13	LEAD	0.1	0.004	µg/L	K1312082-13, -15

Table A-3 Matrix Spikes

Sample ID	Compound	MS % Recovery	MSD % Recovery	Lower Limit	Upper Limit	RPD	RPD Limit
OU09-TS-109	MANGANESE	152.2	159.4	80	120	4.2	20
OU09-TS-109	SILVER	19	19.1	80	120	0.4	20
OU09-TS-109	ARSENIC	131.1	126.9	80	120	0.8	20

Sample ID	Compound	MS % Recovery	MSD % Recovery	Lower Limit	Upper Limit	RPD	RPD Limit
OU09-TS-109	ZINC	121.4	128.3	80	120	10.1	20
OU09-TS-109	IRON	123.2	113	80	120	4.6	20
OU09-TS-109	MAGNESIUM	201.2	217.5	80	120	1.8	20
OU09-TS-109	POTASSIUM	224.7	192.2	80	120	2.4	20
OU09-TS-109	CALCIUM	140.9	140.6	80	120	0.2	20
OU09-TS-109	SODIUM	1011	870.2	80	120	1.8	20
OU09TS102	IRON	71.3	99.6	80	120	3.4	20
OU09TS102	MAGNESIUM	120.2	74	80	120	6.2	20
OU09TS102	POTASSIUM	137.4	52.9	80	120	5.9	20
OU09TS102	CALCIUM	-242.2	-70.5	80	120	20	20
OU09TS102	SODIUM	541	273.2	80	120	4.6	20

Table A-4 Lab Duplicates

Sample ID	Compound	Sample Result	Qual	Duplicate Result	Qual	LOD	LOQ	Units	RPD
OU09TS102SD	CALCIUM	898		1100		0.5	0.5	MG_KG	20.2

Table A-5 Lab Control Samples

LCS ID	Compound	LCS % Recovery	Lower Limit	Upper Limit	Associated Samples
K1312082-SRMl	LEAD	63	70	135	K1312082-001 through -011
K1312082-SRM3	LEAD	69	70	135	K1312082-012 through -018

Table A-6 Field Duplicates

Sample ID	Compound	Sample Result	Qual	Duplicate Result	Qual	LOD	LOQ	Units	RPD
OU09-TS-112	MANGANESE	4.48	J	2.47	J	0.002	0.004	MG_KG	57.8
OU09-TS-112	BARIUM	0.153		0.282		0.0018	0.0045	MG_KG	59.3

Attachment B

Qualifier Codes and Explanations

Qualifier	Explanation
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
UJ	The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

Attachment C

Reason Codes and Explanations

Reason Code	Explanation
be	Equipment blank contamination
bf	Field blank contamination
bl	Laboratory blank contamination
c	Calibration issue
d	Reporting limit raised due to chromatographic interference
fd	Field duplicate RPDs
h	Holding times
i	Internal standard areas
k	Estimated Maximum Possible Concentration (EMPC)
l	LCS recoveries
lc	Labeled compound recovery
ld	Laboratory duplicate RPDs
lp	Laboratory control sample/laboratory control sample duplicate RPDs
m	Matrix spike recovery
md	Matrix spike/matrix spike duplicate RPDs
nb	Negative laboratory blank contamination
p	Chemical preservation issue
r	Dual column RPD
q	Quantitation issue
s	Surrogate recovery
su	Ion suppression
t	Temperature preservation issue
x	Percent solids
y	Serial dilution results
z	ICS results

Appendix G

Draft Construction Completion Report for NTCRA

Draft

Construction Completion Report
Revision 0

Non-Time Critical Removal Action of MRP Site 1
Carr Point Shooting Range Soils
Naval Station, Newport, Rhode Island

Contract No. N40085-12-D-1754

Delivery Order No. 0001

Prepared for:

Department of the Navy
Naval Facilities Engineering Command
Mid-Atlantic Division

Prepared by:

July 2013

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LIST OF ACRONYMS

BAP	Benzo(a)pyrene
CCR	Construction Completion Report
CFR	Code of Federal Regulations
CESHM	Corporate Environmental, Safety, and Health Manager
CLP	Contract Laboratory Program
CMEG	Clean Management Environmental Group
CY	Cubic Yards
DOT	Department of Transportation
DQOs	Data Quality Objectives
EDD	Electronic Data Deliverable
EE/CA	Engineering Evaluation/Cost Analysis
E&S	Erosion and Sedimentation
ft	feet
GPR	Ground Penetrating Radar
ID	Identification
IDW	Investigation-Derived Waste
IR	Installation Restoration
LUC	Land Use Control
MRP	Munitions Response Program
MWR	Morale, Welfare and Recreation
NAVFAC	Naval Facilities Engineering Command
NAVSTA	Naval Station
NELAP	National Environmental Laboratory Accreditation Program
NETC	Naval Education and Training Center
NTCRA	Non-Time Critical Removal Action
OTR	Over-the-Road
OU	Operable Unit
PAH	Polycyclic Aromatic Hydrocarbon
PAL	Programmatic Action Level
PCB	Polychlorinated Biphenyl
PM	Project Manager
PPE	Personal Protective Equipment
QA/QC	Quality Assurance/Quality Control
QC	Quality Control
RBSL	Risk Based Screening Level
RCRA	Resource Conservation and Recovery Act
RIRRC	Rhode Island Resource Recovery Corporation
RIDEM	Rhode Island Department of Environmental Management
RPM	(NAVFAC) Regional Project Manager
ROE	Right-of-Entry
RVCP	Recreational Vehicle Camping
SER	Shore Establishment Realignment Program
SSHO	Site Safety and Health Officer
SSHP	Site Safety and Health Plan
SVOC	Semi-Volatile Organic Compound
SW	Sidewall
SWPPP	Stormwater Pollution Prevention Plan
TCLP	Toxicity Characteristic leaching Procedure
TPH	Total Petroleum Hydrocarbons

TABLE OF CONTENTS (CONTINUED)

LIST OF ACRONYMS (CONTINUED)

TPMC	TerranearPMC, LLC
USEPA	U.S. Environmental Protection Agency
VOC	Volatile Organic Compound
WP	Work Plan
WW	World War

1.0 INTRODUCTION

This Construction Completion Report (CCR) describes completed actions to perform a non-time critical removal action (NTCRA) of the Munitions Response Program (MRP) Site 1 at Naval Station (NAVSTA), Newport, Rhode Island (Figure 1). The MRP Site 1 is the former Carr Point Shooting Range (hereinafter "the MRP site"), it is located about four miles north of the main portion of the NAVSTA Newport (Figure 2).

This document was prepared by TerranearPMC, LLC (TPMC) of Exton, Pennsylvania, in partial fulfillment of the requirements of Contract No. N40085-12-D-1754, Delivery Order No. 0001. Contracting Officer's Representative and technical oversight responsibilities for the tasks described in this document were provided by the Department of the Navy (Navy), Naval Facilities Engineering Command Mid-Atlantic (NAVFAC MIDLANT), Norfolk, Virginia.

Several supporting documents, including: Accident Prevention Plan and Site Safety and Health Plan (TPMC, 2013a); Sampling and Analysis Plan (TPMC, 2013b); Storm Water Pollution Prevention Plan (TPMC, 2013c); and Quality Assurance and Control Plan (TPMC, 2013d) were generated to support the Work Plan (WP) (TPMC, 2013e).

1.1 OBJECTIVES

The objective of the NTCRA was to prevent exposure to polycyclic aromatic hydrocarbons (PAHs) in soil, and to a lesser extent, metals. The concentration of PAHs was potentially posing unacceptable risks to human health. The soil contamination is related to the skeet range activities conducted at the MRP site from 1967 to 1989.

A fence was erected circa 2010 to prevent access (and therefore exposure) to the PAH-contaminated soils. Since the site continues to have public use, the Navy determined a soil removal and/or soil cap would be more appropriate than the fence.

The action levels established in the August 2012 Final Engineering Evaluation/Cost Analysis (EE/CA) for MRP Site 01, Carr Point were used for this NTCRA (Tetra Tech, 2012). These action levels were presented in the UFP-QAPP, Worksheet #15, which is included as Volume 2 of the WP (TPMC, 2013e) and are presented later in this CCR.

1.2 PROJECT TASKS

The tasks established for this project were as follows:

- Completion of project plans.
- Utility locate: a geophysical utility locate was completed prior to the start of intrusive activities.
- Fence removal: the site fence was removed.
- Pre-construction survey: a topographic survey of the site was completed.
- Soil excavation: PAH contaminated soils were excavated to a maximum of 2 feet (ft) and replaced with clean soil.
- Soil disposal: PAH contaminated soils were transported and disposed at an off-site landfill.

- Post-excavation confirmation sampling: soil samples were collected from the excavation floor and sidewalls prior to backfilling.
- Restoration: the site was restored to a grassy open area.
- Signage/Land Use Controls (LUCs): an outer fence was erected along the beach bank to prevent unauthorized persons from entering that portion of the MRP site area, and a sign was relocated from the previous fence to the newly installed fence.
- Post-construction survey: a topographic survey of the site was completed.
- Preparation and submission of this CCR to NAVFAC MIDLANT, and subsequently to the Rhode Island Department of Environmental Management (RIDEM) and United States Environmental Protection Agency (USEPA).

2.0 BACKGROUND

The following background information, compiled from previous reports, was provided for inclusion in this CCR. The referenced reports include the *Site Investigation for MRP Site 1 – Carr Point* (Tetra Tech, 2010), *Action Memorandum for Non-Time Critical Removal Action, MRP Site 1 Former Carr Point Shooting Range* (Navy, 2012) and the *Engineering Evaluation/Cost Analysis for MRP Site 1, Carr Point* (Tetra Tech, 2012).

2.1 HISTORY AND LAND USE

The NAVSTA Newport facility has been in use by the Navy since the Civil War. During World War (WW) I and WWII, military activities at the facility increased significantly and the base provided housing and support for servicemen. Use of on-site facilities was slowly phased out in subsequent peacetime years until Newport became the headquarters of the Commander Cruiser-Destroyer Force Atlantic in 1962. In April 1973, the Shore Establishment Realignment Program (SER) resulted in the reorganization of naval forces, and activity at the Facility again declined. Research and development and training have been the primary missions at Newport from 1974 to the present time. The base was renamed from the Naval Education and Training Center (NETC) to NAVSTA Newport in 1998. The major commands currently located at NAVSTA Newport include the NETC, Surface Warfare Officers School Command, Naval Undersea Warfare Center, and the Naval War College.

NAVSTA Newport occupies approximately 1,063 acres and is located along a 6-mile stretch of the western shoreline of Aquidneck Island, facing the east passage of Narragansett Bay. Portions of the facility are located in the City of Newport and the Towns of Middletown, Portsmouth, and Jamestown, Rhode Island. The MRP site is located at Carr Point in Portsmouth (Figure 1) and is designated by EPA as Operable Unit (OU) 9 of the NETC site (CERCUS ID RI6170085470).

2.2 SITE DESCRIPTION

Initially, the MRP site and the adjacent Installation Restoration (IR) Site 22 were considered a single unit. Together the two sites consist of approximately seven acres of land and an area of water spanning approximately 17 acres. As shown in Figure 2, the MRP site is bounded to the west by Narragansett Bay and to the east by railroad tracks and Defense Highway. Recreational fields are located north of MRP Site 1 and to the south is IR Site 22. The MRP site is currently used as a Recreational Vehicle Camping Park (RVCP) for Navy and Department of Defense (DOD) personnel. Later, the MRP site was considered a standalone unit, and IR Site 22 was addressed separately.

The MRP site was formerly occupied by the Carr Point Shooting Range, a recreational skeet-shooting range where small arms (i.e. shotguns) were discharged at moving targets (i.e. clay target pigeons) launched over the water. No structures are located on the MRP site. Building 233, which was an administrative office for the Navy's Morale Welfare and Recreation (MWR) Division, was recently decommissioned and demolished.

3.0 SITE ACTIVITIES

3.1 MOBILIZATION

The TPMC Team mobilized to Carr Point on 14 April 2013, and began site activities 15 April 2013. At the time of site mobilization, an initial site walk documenting existing site conditions was completed with Mr. Robert Krivinskas (NAVSTA Newport representative).

3.2 SITE ACCESS

The TPMC Team did not encounter site access issues. The site was accessed from Burma Road (also known as Defense Highway) via a public driveway.

Caution tape, temporary fencing, rope, and barricades were used during operations to secure work areas while personnel were present and working as needed. The existing fence was left largely undisturbed until near to the end of the site activities as it served as a beneficial deterrent. These barriers were left in place for the duration of work activities to prevent unintentional access by unauthorized persons. A single rope barricade was left at the end of the site activities to prevent intrusion into the freshly graded/seeded area.

3.3 UTILITY LOCATING, CLEARANCES, AND PERMITS

The TPMC Team subcontracted Underground Surveying, LLC of Danbury, Connecticut, to complete a geophysical survey to determine presence/absence of utilities at the site. A geophysical utility locate of the entire work area was completed 15 April 2013, prior to starting the intrusive activities.

The TPMC Team (including Underground Surveying, LLC) met with Mr. Francis Furtado (NAVSTA Newport) to coordinate the geophysical utility locate on 15 April 2013. The extents of the work area were identified, and suspected utilities identified during the geophysical utility locate were marked using utility-specific color-coded paint. Industry standard magnetic cable locators and ground penetrating radar (GPR) was utilized to identify suspected buried utilities at the site that could potentially be disturbed by planned site activities. Mr. Furtado was to be notified if any suspected utilities were identified.

Mr. Furtado was notified regarding several suspected utilities identified by the geophysical utility locate, and he identified those that would need to be excavated by hand to ensure they were beyond the anticipated excavation depth. Of those utilities identified, four were noteworthy: a de-energized submarine power cable [lead-covered, polychlorinated biphenyl (PCB)-treated interior insulation), active water and electric supporting the campsites, and a concrete stormwater conveyance.

Spot excavation by hand (i.e. “pot-holing”) of selected utilities was completed by the TPMC Team, with several suspected electrical/communications cables being identified. These excavated locations were verified by Mr. Furtado, and Mr. Furtado had the suspected abandoned utilities inspected by the NAVSTA electricians to verify they were de-energized and that they could be removed. The NAVSTA electrician confirmed the identified utilities were both de-energized and abandoned, and that they could be removed by the TPMC Team during excavation activities as they were encountered. In addition, the active water and electric utilities supporting the campsites that were impacted by the excavation activities were de-energized, secured following lock out/tag out procedures, and spot excavated by hand because they were at the 2 ft excavation limit.

The TPMC Team received its completed Dig Safe Permit on 16 April 2013, and proceeded with site activities to begin the excavation.

3.4 PRE- AND POST CONSTRUCTION SURVEY

A pre-construction survey of the entire work area was completed 15 April 2013, prior to starting the intrusive activities. The TPMC Team subcontracted Crossman Engineering to complete a topographic survey, and to survey significant site features (Appendix A).

A post-construction survey of the entire work area was completed 6 May 2013, upon completion of site restoration activities. The TPMC Team again subcontracted Crossman Engineering to complete a topographic survey, and to survey significant site features (Appendix A).

3.5 FENCE REMOVAL AND EROSION CONTROL INSTALLATION

3.5.1 Fence Removal

The existing MRP site fence was removed. As previously noted, because the existing fence served a beneficial use as a barricade, it was removed in sections as the excavation was completed to prevent unauthorized access. Leaving the fence in place during excavation was discussed with the NAVSTA representative, and concurrence was obtained. The remaining fence was removed at the end of excavation activities, during backfilling.

The fence was placed into a roll off container provided by Mid City Scrap Iron & Salvage Co., Inc. (Mid City). roll off container was removed 2 May 2013 by Mid City, and included a total of 7,620 pounds of steel debris (Appendix B).

3.5.2 Erosion Control Installation

Once the fence was removed along the beach bank, installation of erosion and sedimentation (E&S) controls (i.e. silt fence, etc.) were installed as described in the Storm Water Pollution Prevention Plan (SWPPP) (TPMC, 2013c). Several layers of silt fence and fabric waddles were placed into the erosion feature found in the northwest corner of the excavation area because this was identified as a potential problem area.

During some extended rainfalls after the completion of site activities, NAVSTA personnel identified some failures in the E&S controls. The TPMC Team remobilized 21 May 2013 to address these issues. Additional steps were taken to bolster the effectiveness of the existing silt fence, and hay bales were added to areas identified as potential problems.

The erosion control was left in place until 20 June 2013 to ensure vegetation was established to minimize runoff.

3.6 SOIL EXCAVATION

3.6.1 Pre-Excavation Sampling

Waste characterization samples from in situ soils were collected 26 March 2013 from a total of twenty locations. These soil samples were combined into four composite samples that were submitted for laboratory analyses to provide current and representative data to the landfill. These samples were analyzed for Toxicity Characteristics Leaching Procedure (TCLP) volatile organic compounds (VOCs), TCLP semi-volatile organic compounds (SVOCs), TCLP Resource Conservation and Recovery Act (RCRA) metals, total metals, TCLP pesticides, TCLP PCBs, TCLP herbicides, and reactivity (reactive sulfates and cyanide), corrosivity, and ignitability

(RCI). The analytical results (Appendix C) indicated the soils proposed for excavation were non-hazardous.

The Rhode Island Resource Recovery Corporation (RIRRC) of Johnston, Rhode Island (RIDEM Permit #65) was identified by Clean Management Environmental Group (CMEG) as being able to accept the PAH and metals impacted soils from the Carr Point NTCRA excavation. A profile was generated based upon the waste characterization samples, and submitted to NAVSTA for approval signature. The signed profile was forwarded to the receiving landfill for approval. Upon RIRRC approval of the profile, a letter indicating the waste was accepted was issued to the TPMC Team (Appendix D). Manifests were generated by CMEG and provided to the TPMC Team to ship and document the excavated soil to the receiving landfill (Appendix D). It should be noted that RIRRC did not require shipping manifests to receive the excavated material from Carr Point.

3.6.2 Impacted Soil Excavation

The TPMC Team mobilized a tracked-excavator and small tracked loader to remove contaminated soils and transfer it into over-the-road (OTR) trucks/trailers. Excavation activities started in the southern portion of the site, and progressed north. In areas that 1 ft bgs samples indicated contamination remained, an additional 1 ft of material was removed.

Several excavation areas encountered significant amounts of fissile rock, concrete debris, demolition debris, and abandoned utilities. The concrete walkways, pads, and debris were removed from the former skeet range stations, with the exception of a single large pad that was retained for beneficial reuse. Concrete was generally segregated, cleaned of loose soils, loaded into OTR trucks/trailers, and disposed at a concrete recycling facility. A total of 56.6 tons of concrete debris were removed from the site (Appendix B) and received by J.R. Vinagro Corporation of Johnston, Rhode Island.

In total, approximately 1,230 cubic yards (CY) of contaminated soils were excavated from the 1 ft interval and approximately 550 CY of contaminated soils were excavated from the 2 ft interval by the TPMC Team, totaling 3,090.55 tons of material manifested, transported offsite, and disposed by RIRRC. Figure 3 presents the area excavated to 1 ft below ground surface (bgs), and includes approximately 33,200 square feet (ft^2). Figure 4 presents the area excavated to 2 ft bgs, and includes approximately 14,850 ft^2.

In areas excavated to 2 ft bgs, an identifying barrier (orange snow fence) was placed prior to backfilling to demarcate the clean backfill from the bottom of the excavation in those areas.

3.6.3 Post-Excavation Sampling

Confirmation sampling was completed to provide analytical data to show soils remaining at the site are below the programmatic action levels (PALs) presented in the UFP-QAPP (TPMC, 2013). Confirmatory samples were analyzed for PAHs, lead, arsenic, and chromium. Sampling locations are presented in Figure 3 and Figure 4, and analytical results are provided in Table 1. Benzo(a)pyrene (BAP) and arsenic were the constituents most often found at concentrations exceeding the PALs.

As presented in Table 1, BAP and arsenic exceeded the PALs at several 1 ft bgs locations. These locations were further excavated to 2 ft bgs. As presented in Table 2, there were no detections exceeding the PAL in the 2 ft bgs locations. No locations within the excavation foot print were left in place that exceeded the PALs, however; (as presented in Table 3) several sidewall (SW) samples exceeded the PALs at the excavation extents. These SW sample

locations at the excavation extents were at the designated excavation limits, and therefore; removal of this contaminated material was beyond the current scope of work.

3.6.4 Excavation Backfill

All offsite backfill material was obtained from Dry Bridge Sand & Stone Inc. (Dry Bridge) of North Kingstown, Rhode Island. The material consisted of bank run sand and gravel with a minor amount of large rounded boulders and loam topsoil. Load sheets are presented in Appendix B.

A sample of the backfill material was collected and analyzed for Target Compound List (TCL) VOCs, total petroleum hydrocarbons (TPH), TCL SVOCs, TCL pesticides, TCL PCBs, and TAL metals. Analytical results were compared to USEPA Regional Screening Levels (RSLs). There were no exceedances of RSL criteria from the backfill sample (Appendix C).

Because a pre-existing erosional feature was present at the northwest corner of the excavation area, the TPMC Team placed large rocks in an arc around this area to act as a retaining wall to prevent further erosion at this location. These rocks were buried with topsoil to cover them.

3.6.5 Equipment Decontamination

Equipment used in the excavation was cleaned excess soils and debris prior to leaving site.

3.7 RESTORATION

The site was restored as a grassy open area for use as by the RV campground.

A single camp site driveway was removed to facilitate the excavation of contaminated soil. This location was replaced in kind, using crushed bank material obtained from Dry Bridge. The remaining camp site driveways used during the excavation activities were top coated with crushed bank material to remove any tracks or holes.

The entire excavation area, including areas worn down by truck traffic, was hydroseeded by Shalvey Brothers Landscape, Inc. of Warwick, Rhode Island. The hydroseed blend consisted of a natural Rhode Island seed blend mix, mulch, and fertilizer. For pre-emergence control of weeds in the newly seeded area, Tupersan was added to the hydroseed mix to minimize the potential for weed germination.

3.8 REPLACE SIGN/LAND USE CONTROLS

At the completion of the excavation and restoration, a single linear fence was installed by a commercial fence installer. The fence was positioned just inside the excavation footprint, at the top of the beach bank, to prevent access and damage to the bank. Figure 5 shows the location of the fence. The fence consisted of a green vinyl, 4 ft high, chain link fence, with a single, 8 ft wide, double-hung gate installed at a location determined by NAVSTA personnel.

A single sign was removed from the previous fence and reused. This sign was placed on the replacement fence, adjacent to the fence gate.

4.0 REFERENCES

Malcolm Pirnie, Inc., Water Area Munitions Study, NAVSTA Newport Carr Point Shooting Range, 2005.

Tetra Tech, Inc., Site Investigation for MRP Site 1, Carr Point, NAVSTA Newport, 2005.

Tetra Tech, Inc., Engineering Evaluation/Cost Analysis for MRP Site 1, Carr Point Recreational Vehicle Camping Park Area, August 2012.

TPMC, 2013a. Accident Prevention Plan and Site Safety and Health Plan, Non-Time Critical Removal Action of MRP Site 1, Naval Station, Newport, Rhode Island.

TPMC, 2013b. Sampling and Analysis Plan, Non-Time Critical Removal Action of MRP Site 1, Naval Station, Newport, Rhode Island.

TPMC, 2013c. Storm Water Pollution Prevention Plan, Non-Time Critical Removal Action of MRP Site 1, Naval Station, Newport, Rhode Island.

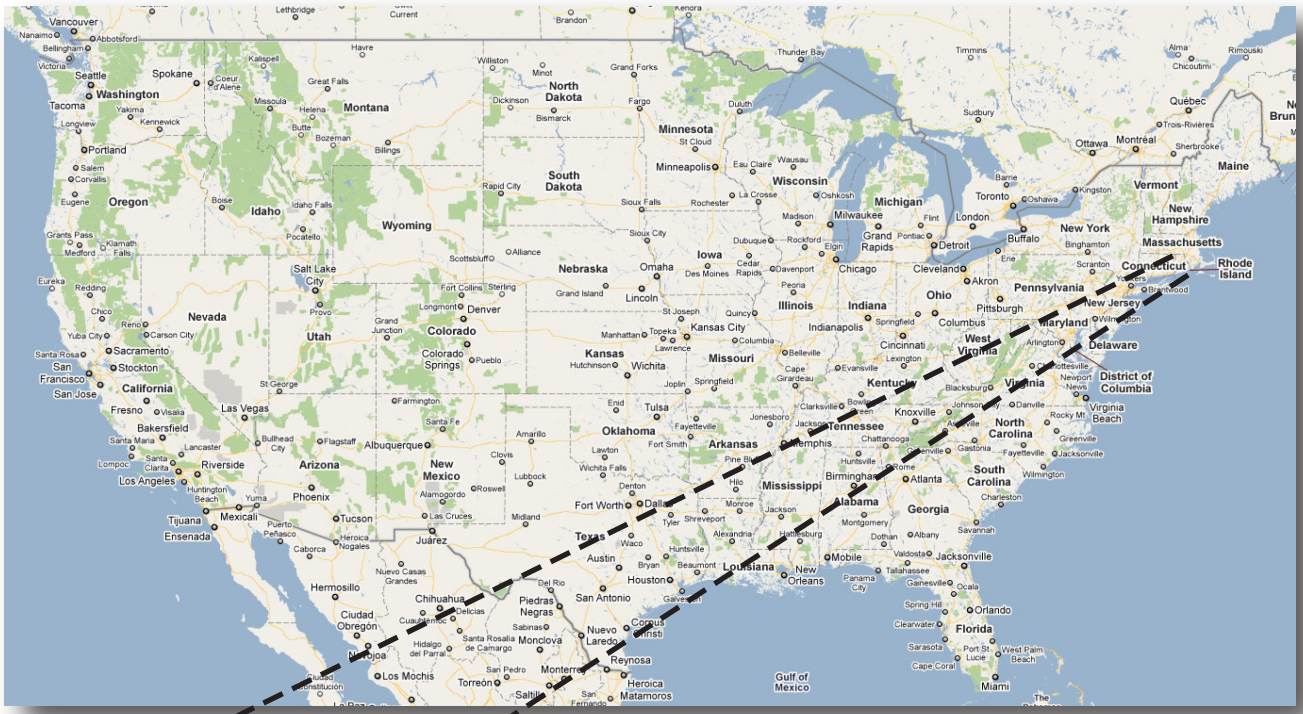
TPMC, 2013d. Quality Assurance and Control Plan Non-Time Critical Removal Action of MRP Site 1, Naval Station, Newport, Rhode Island.

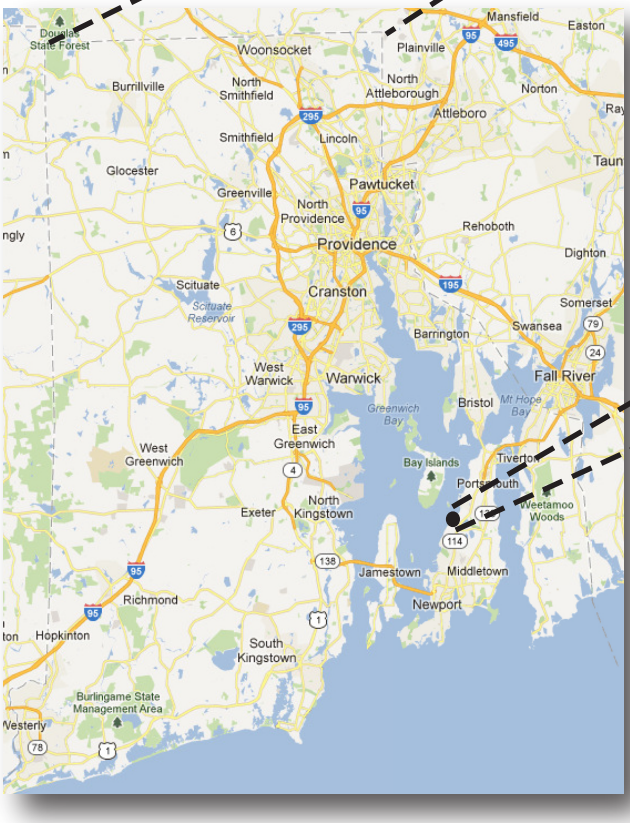
TPMC, 2013e. Work Plan, Non-Time Critical Removal Action of MRP Site 1, Naval Station, Newport, Rhode Island.

U.S. Navy, Action Memorandum for Non-Time Critical Removal Action, MRP Site 1 Former Carr Point Shooting Range, 2012.

FIGURES

Figure 1
Site Location Map
Carr Point Shooting Range
Naval Station Newport
Portsmouth, Rhode Island





N

NOT TO SCALE

SOURCE: GOOGLE MAPS, 2012

Figure 2
Site Map
Carr Point Shooting Range
Naval Station Newport
Portsmouth, Rhode Island

40 20 0 40
SCALE IN FEET

N

TerraneanPMC, LLC

38601.REPORT/07.02.13/1201-1A

Figure 3
Extent of Excavation at 1 Foot Depth
Carr Point Shooting Range
Naval Station Newport
Portsmouth, Rhode Island

TerraneanPMC, LLC

38601.REPORT/07.02.13/I201-2A

Figure 4
Extent of Excavation at 2 Foot Depth
Carr Point Shooting Range
Naval Station Newport
Portsmouth, Rhode Island

TerranearPMC, LLC

38601.REPORT/07.02.13/I201-3A

Figure 5
Fence Installation Location
Carr Point Shooting Range
Naval Station Newport
Portsmouth, Rhode Island

TerranearPMC, LLC

38601.REPORT/07.02.13/1201-4A

TABLES

Table 1. Comparison of Confirmatory 1 Foot Below Ground Surface (bgs) Sample Results to Project Remediation Goals

Sample #	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Chrysene	Dibenzo(a,h)anthracene	Ideno(1,2,3-cd)pyrene	Arsenic	Chromium	Lead
EE/CA Goal	7.8	0.8	7.8	78	780	0.8	7.8	7 - 15	10,000	500
1A	0.024	0.031	0.02	0.0061 J	0.036	0.0048 J	0.01	5.2	9.6	22
1B	0.067	0.082	0.093	0.036	0.09	0.018	0.05	13	12	42
1B (Dup)	0.068	0.079	0.092	0.037	0.09	0.017	0.05	14	12	34 J3
1C	0.0055 J	0.0082	0.0079	0.0029 J	0.0072	0.0018 J	0.0047 J	32	22	49
1D	0.55	0.88	0.85	0.32	0.64	0.19	0.54	18	18	26
1E	0.022	0.032	0.032	0.0088	0.034	0.0077	0.017	16	18	27
2A	0.57	0.82	0.94	0.21	0.68	0.17	0.49	8.8	14	69
2B	0.15	0.19	0.19	0.066	0.21	0.042	0.098	21	16	46
2C	0.18	0.24	0.26	0.099	0.17	0.038	0.14	8.5	14	78
2D	0.15	0.17	0.21	0.062	0.16	0.035	0.11	25	19	120
2E	3.3	4.4	4.3	1.1	4.4	0.76	2.3	5.5	12	30 B
3A	2.3	2.6	2.7	1.2	2.3	0.46	1.5	11	16	120 B
3B	0.005 J	0.0052 J	0.0062 J	0.0035 J	0.0051 J	0.00076 J	0.0029 J	5.7	10	34
3C	0.011	0.014	0.014	0.0068 J	0.011	0.0018 J	0.0088	2.2	9.2	29
3D	0.013	0.014	0.017	0.0072 J	0.013 J	0.0021	0.0083	3.2	8.4	20
3E	1.3	1.2	3.8	1.4	4.9	0.28	0.94	5.5	12	23
4A	0.5	0.69	0.77	0.26	0.92	0.14	0.37	4.9	9.3	14
4B	0.034 J	0.025 J	0.029 J	<0.012	0.13 J	<0.012	<0.012	3.6	8.7	11
4C	0.0049 J	0.0049 J	0.0059 J	0.0022 J	0.0054 J	0.00073 J	0.0026 J	2.9	8.3	16
4D	0.00089 J	0.00077 J	0.00077 J	<0.0006	<0.0006	<0.0006	<0.00060	1.2	12 J3	29
4E	0.0034 J	0.0047 J	0.0053 J	0.0019 J	0.0049 J	0.00086 J	0.0029 J	6	8.9	6.4
4E (Dup)	0.002 J	0.0022 J	0.0047 J	0.0026 J	0.0054 J	<0.0006	0.0017 J	5.5	10	6.5
5A	0.0046 J	0.0054 J	0.0083	0.0034 J	0.0073	0.0011 J	0.0035 J	7.2	9.9	12
5B	0.0041 J	0.0041 J	0.0060 J	0.0028 J	0.0052 J	0.00090 J	0.0028 J	6.2	12	26
5C	0.0088	0.013	0.013	0.0044	0.01	0.0024	0.0074	32	14	9.2

Notes:

1. All values mg/kg (ppm).
2. Exceedances are shaded yellow.
3. Arsenic standard of 7 ppm is set at statistical 95% UCL of background data across State. For Remedial project, an average source arsenic level between 7 and 15 ppm may be addressed by encapsulation with four inches of clean soil and recording of an appropriate ELUR (RIDEM Rules and Regulations, Section 12.04, November 2011).
4. B = The indicated compound was found in the associated method blank as well as the laboratory sample.
5. J = (EPA) - Estimated value below the lowest calibration point. Confidence correlates with concentration.
6. J3 = The associated batch QC was outside the established quality control range for precision.

Table 2. Comparison of 2 Feet Below Ground Surface (bgs) Sample Results to Project Remediation Goals

Sample #	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Chrysene	Dibenzo(a,h)anthracene	Ideno(1,2,3-cd)pyrene	Arsenic	Chromium	Lead
EE/CA Goal	7.8	0.8	7.8	78	780	0.8	7.8	7 - 15	10,000	500
1C	0.0012 J	0.00098 J	0.0012 J	< 0.00060	0.0010 J	< 0.00060	< 0.00060	4.8	12	36
1D	0.00099 J	0.00079 J	0.00099 J	< 0.00060	0.0013 J	< 0.00060	< 0.00060	4.6	11	18
1D (Dup)	0.0012 J	0.0010 J	0.0013 J	< 0.00060	0.0019 J	< 0.00060	< 0.00060	4.3	10	17
1E	0.0011 J	0.0010 J	0.0013 J	< 0.00060	0.0015 J	< 0.00060	< 0.00060	4.7	10	13
2A	0.0024 J	0.0029 J	0.0028 J	0.00099 J	0.0029 J	< 0.00060	0.0016 J	4.5	11	11
2B	0.0039 J	0.0042 J	0.0044 J	0.0019 J	0.0060 J	0.0010 J	0.0022 J	9.3	10	8.8
2B (Dup)	0.0058 J	0.0079	0.01	0.0028 J	0.012	0.0033 J	0.0074	10	10	8.8
2D	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	7.2	10	8.4
2E	0.11 J5	0.16 J5	0.16 J5	0.0058 J5	0.13 J3	0.038 J5	0.10 J5	7.3	11	12
3A	0.076	0.07	0.1	0.035	0.1	0.017	0.04	7.6	10	15
3E	0.00074 J	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	7.6	12	12
5C	0.0042 J	0.0037 J	0.0053 J	0.0023 J	0.0042 J	< 0.00060	0.0020 J	10	7.8	18

Notes:

1. All values mg/kg (ppm).
2. Exceedances are shaded yellow.
3. Arsenic standard of 7 ppm is set at statistical 95% UCL of background data across State. For Remedial project, an average source arsenic level between 7 and 15 ppm may be addressed by encapsulation with four inches of clean soil and recording of an appropriate ELUR (RIDEM Rules and Regulations, Section 12.04, November 2011).
4. J = (EPA) - Estimated value below the lowest calibration point. Confidence correlates with concentration.
5. J3 = The associated batch QC was outside the established quality control range for precision.
6. J5 = The sample matrix interfered with the ability to make any accurate determination; spike value is high.

Table 3. Comparison of Sidewall Sample Results to Project Remediation Goals

Sample #	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Chrysene	Dibenzo(a,h)anthracene	Ideno(1,2,3-cd)pyrene	Arsenic	Chromium	Lead
EE/CA Goal	7.8	0.8	7.8	78	780	0.8	7.8	7 - 15	10,000	500
One foot bgs										
SW1-01	0.27	0.29	0.29	0.12	0.26	0.061 J	0.16	4	5.1	350
SW4-01	0.79 VJ3	1.0 VJ3	1.1 VJ3	0.30 J3J6	0.72 VJ3	0.17 J3J6	0.56 VJ3	7.6	9.8	120
SW5-01	0.27	0.35	0.36	0.12	0.3	0.054	0.18	6.8	9.5	300
SW6-01	0.24	0.28	0.38	0.12	0.25	0.045	0.17	2.4	5	30
SW12-01	0.0018 J	0.0022 J	0.0024 J	0.0011 J	0.0023 J	< 0.00060	0.0013 J	8.7	11	14
SW13-01	7.2	7.3	3.5	0.059	14	1.4	0.94	14	14	55
SW13-01 (Dup)	0.28	0.36	0.34	0.12	0.32	0.062	0.18	15	14	69
Two feet bgs										
SW2-02	< 0.00060	< 0.00060	< 0.00060	< 0.00060	< 0.00060	< 0.00060	< 0.00060	0.48	5.2	6
SW3-02	0.89	0.77	0.97	0.33	0.87	0.17	0.45	12	6.9	17
SW7-02	0.052	0.071	0.12	0.036	0.079	0.016	0.061	8	8.1	37
SW8-02	0.01	0.012	0.015	0.0051	0.011	0.0021	0.0071	1.6	5.6	12
SW9-02	0.022	0.024	0.033	0.012	0.035	0.0052 J	0.014	10	12	22
SW10-02	0.0052 J	0.0073	0.0076	0.0034 J	0.0052 J	0.0012 J	0.0044 J	88	13	12
SW11-02	0.0013 J	0.0015 J	0.0016 J	0.0011 J	0.0018 J	< 0.00060	0.00089 J	5.1	9.9	29

Notes:

1. All values mg/kg (ppm).
2. Exceedances are shaded yellow.
3. Arsenic standard of 7 ppm is set at statistical 95% UCL of background data across State. For Remedial project, an average source arsenic level between 7 and 15 ppm may be addressed by encapsulation with four inches of clean soil and recording of an appropriate ELUR (RIDEM Rules and Regulations, Section 12.04, November 2011).
4. J = (EPA) - Estimated value below the lowest calibration point. Confidence correlates with concentration.
5. J3 = The associated batch QC was outside the established quality control range for precision.
6. J5 = The sample matrix interfered with the ability to make any accurate determination; spike value is high.
7. J6 = The sample matrix interfered with the ability to make any accurate determination; spike value is low.
8. V = The sample concentration is too high to evaluate accurate spike recoveries.

APPENDIX A
TOPOGRAPHIC SURVEY PLOTS

LOCUS MAP
NOT TO SCALE

GENERAL NOTE

THIS PLAN DEPICTS FIELD CONDITIONS ON APRIL 15, 2013 PRIOR TO EXCAVATION.

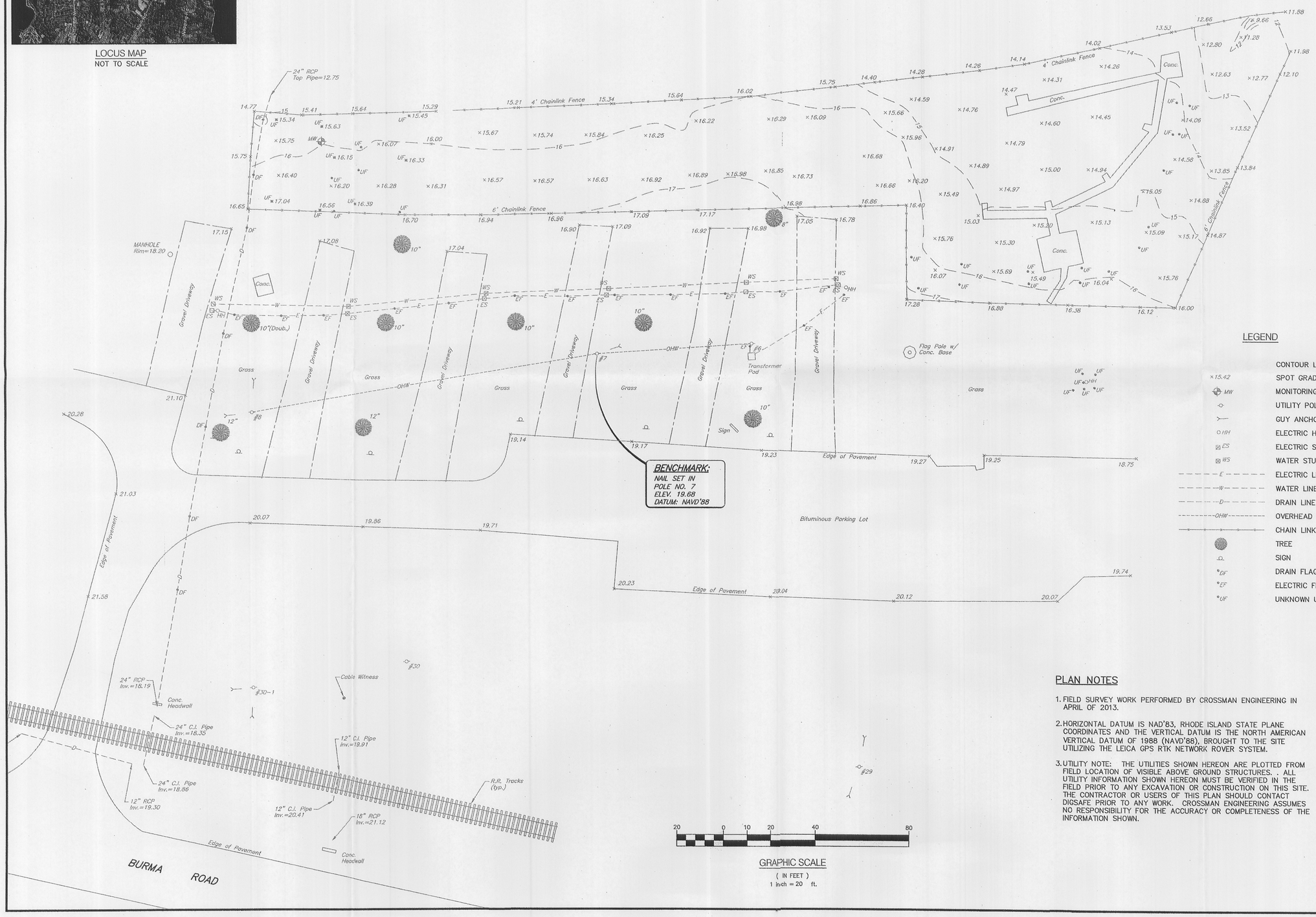
CERTIFICATION:

THIS SURVEY AND PLAN SUBSTANTIALLY CONFORM TO A CLASS 3 STANDARD AS ADOPTED BY THE RHODE ISLAND BOARD OF REGISTRATION FOR PROFESSIONAL LAND SURVEYORS, EFFECTIVE APRIL 1, 1994.

PROFESSIONAL LAND SURVEYOR	REG. NO.	DATE
Matthew P. Sullivan	1816	6-23-13

MATTHEW P. SULLIVAN
No. 1816
PROFESSIONAL LAND SURVEYOR
6-23-13

NAD83



LEGEND

	CONTOUR LINE
×15.42	SPOT GRADE
MW	MONITORING WELL
	UTILITY POLE
	GUY ANCHOR
HH	ELECTRIC HANDHOLE
ES	ELECTRIC STUB
WS	WATER STUB
E	ELECTRIC LINE
W	WATER LINE
D	DRAIN LINE
OHW	OVERHEAD WIRE
	CHAIN LINK FENCE
	TREE
	SIGN
°DF	DRAIN FLAG/MARKER
°EF	ELECTRIC FLAG/MARKER
°UF	UNKNOWN UTILITY FLAG/MARKER

PLAN NOTES

1. FIELD SURVEY WORK PERFORMED BY CROSSMAN ENGINEERING IN APRIL OF 2013.
2. HORIZONTAL DATUM IS NAD'83, RHODE ISLAND STATE PLANE COORDINATES AND THE VERTICAL DATUM IS THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD'88), BROUGHT TO THE SITE UTILIZING THE LEICA GPS RTK NETWORK ROVER SYSTEM.
3. UTILITY NOTE: THE UTILITIES SHOWN HEREON ARE PLOTTED FROM FIELD LOCATION OF VISIBLE ABOVE GROUND STRUCTURES. . ALL UTILITY INFORMATION SHOWN HEREON MUST BE VERIFIED IN THE FIELD PRIOR TO ANY EXCAVATION OR CONSTRUCTION ON THIS SITE. THE CONTRACTOR OR USERS OF THIS PLAN SHOULD CONTACT DIGSAFE PRIOR TO ANY WORK. CROSSMAN ENGINEERING ASSUMES NO RESPONSIBILITY FOR THE ACCURACY OR COMPLETENESS OF THE INFORMATION SHOWN.

• Civil
• Transportation
• Environmental
• Site Planning
• Land Surveying

CROSSMAN ENGINEERING
151 Centerville Road | Warwick, Rhode Island 02886
Phone: (401) 738-5660 | Fax: (401) 738-8157
Email: cei@crossmaneng.com

PROJECT TITLE:

MRP SITE 1
CARR POINT
NAVAL STATION NEWPORT

BURMA ROAD
PORTSMOUTH, RHODE ISLAND

PREPARED FOR:

TERRANEAR PMC, LLC

222 VALLEY CREEK BOULEVARD
SUITE 210
EXTON, PA 19341

DRAWING TITLE:

EXISTING CONDITIONS PLAN
(PRE- EXCAVATION)

DATE:	SCALE:
MAY 2013	1" = 20'

DWG. NAME: 1899-EXCN4-15-13.dwg

NO.	DATE	REVISION

DRAWING NUMBER

C-1

SHEET: 1 OF: 2

NOT FOR CONSTRUCTION

LOCUS MAP
NOT TO SCALE

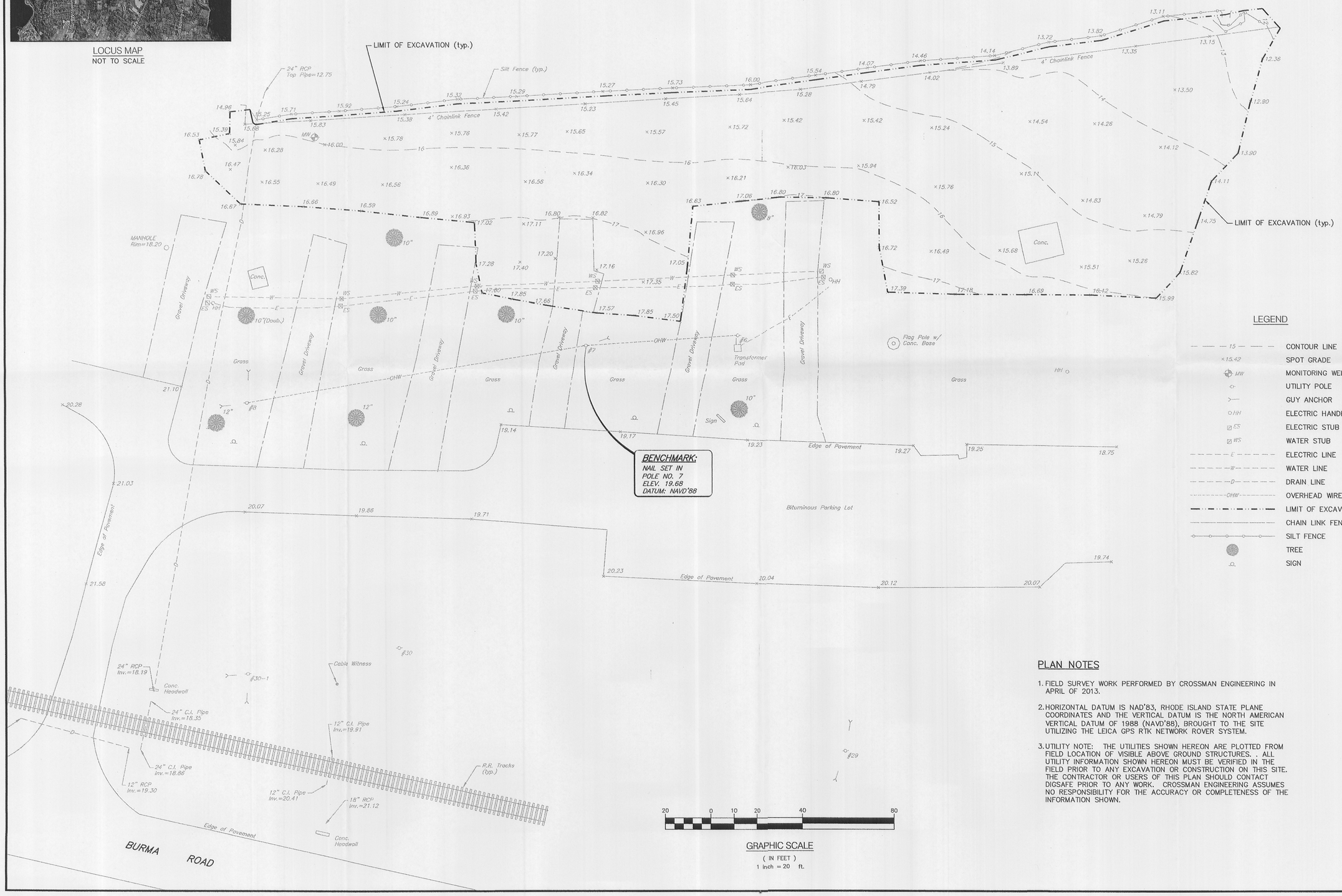
CERTIFICATION:

THIS SURVEY AND PLAN SUBSTANTIALLY CONFORM TO A CLASS 3 STANDARD AS ADOPTED BY THE RHODE ISLAND BOARD OF REGISTRATION FOR PROFESSIONAL LAND SURVEYORS, EFFECTIVE APRIL 1, 1994.

PROFESSIONAL LAND SURVEYOR	REG. NO.	DATE
Matthew P. Sullivan	1816	6-28-13

MATTHEW P. SULLIVAN
No. 1816
PROFESSIONAL LAND SURVEYOR
6-28-13

NAD83



LEGEND

— — — 15 — — —	CONTOUR LINE
×15.42	SPOT GRADE
MW	MONITORING WELL
	UTILITY POLE
	GUY ANCHOR
HH	ELECTRIC HANDHOLE
ES	ELECTRIC STUB
WS	WATER STUB
E	ELECTRIC LINE
W	WATER LINE
D	DRAIN LINE
OHW	OVERHEAD WIRE
	LIMIT OF EXCAVATION
	CHAIN LINK FENCE
	SILT FENCE
	TREE
	SIGN

GRAPHIC SCALE
(IN FEET)
1 inch = 20 ft.

20 0 10 20 40 80

PLAN NOTES

1. FIELD SURVEY WORK PERFORMED BY CROSSMAN ENGINEERING IN APRIL OF 2013.
2. HORIZONTAL DATUM IS NAD'83, RHODE ISLAND STATE PLANE COORDINATES AND THE VERTICAL DATUM IS THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD'88), BROUGHT TO THE SITE UTILIZING THE LEICA GPS RTK NETWORK ROVER SYSTEM.
3. UTILITY NOTE: THE UTILITIES SHOWN HEREON ARE PLOTTED FROM FIELD LOCATION OF VISIBLE ABOVE GROUND STRUCTURES. . ALL UTILITY INFORMATION SHOWN HEREON MUST BE VERIFIED IN THE FIELD PRIOR TO ANY EXCAVATION OR CONSTRUCTION ON THIS SITE. THE CONTRACTOR OR USERS OF THIS PLAN SHOULD CONTACT DIGSAFE PRIOR TO ANY WORK. CROSSMAN ENGINEERING ASSUMES NO RESPONSIBILITY FOR THE ACCURACY OR COMPLETENESS OF THE INFORMATION SHOWN.

• Civil
• Transportation
• Environmental
• Site Planning
• Land Surveying

CROSSMAN ENGINEERING
151 Centerville Road | Warwick, Rhode Island 02886
Phone: (401) 738-5660 | Fax: (401) 738-8157
Email: cei@crossmaneng.com

PROJECT TITLE:

MRP SITE 1
CARR POINT
NAVAL STATION NEWPORT

BURMA ROAD
PORTSMOUTH, RHODE ISLAND

PREPARED FOR:

TERRANEAR PMC, LLC

222 VALLEY CREEK BOULEVARD
SUITE 210
EXTON, PA 19341

DRAWING TITLE:

EXISTING CONDITIONS PLAN
(POST- EXCAVATION)

DATE:	SCALE:
MAY 2013	1" = 20'

DWG. NAME: 1899-EXCN-POST-EXCAV.dwg

NO.	DATE	REVISION
1	6-27-13	TERRANEAR PMC, LLC COMMENTS

DRAWING NUMBER

C-2

SHEET: 2 OF: 2

NOT FOR CONSTRUCTION

APPENDIX B
LOAD SHEETS

DRY BRIDGE SAND & STONE, INC.

SLOCUM PLANT: 471 DRY BRIDGE RD
NO. KINGSTOWN, RI

MAIN OFFICE: 1080 KINGSTOWN ROAD
P.O. BOX 37
PEACE DALE, RI 02883-0037

PLANT PHONE: 401-295-2147
PLANT FAX: 401-294-8135

OFFICE PHONE: 401-789-9000
OFFICE FAX: 401-789-7501

The undersigned agrees that DRY BRIDGE SAND & STONE, INC. has no responsibility whatsoever for any damage on roads, curbs or lots while delivering, dumping, entering or leaving the premises.

TICKET NO.

DATE / TIME	PRODUCT	HAULER / TRUCK	LOCATION

CUSTOMER	QTY.	UNIT	PRODUCT	PRICE	AMOUNT
			FREIGHT		
			TAX		
			TOTAL DUE		

GROSS:

TARE:

NET:

WEIGHMASTER DRIVER CUSTOMER

DRY BRIDGE SAND & STONE, INC.

SLOCUM PLANT: 471 DRY BRIDGE RD
NO. KINGSTOWN, RI

MAIN OFFICE: 1080 KINGSTOWN ROAD
P.O. BOX 37
PEACE DALE, RI 02883-0037

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TICKET NO.

DATE / TIME	PRODUCT	HAULER / TRUCK	LOCATION

CUSTOMER	QTY.	UNIT	PRODUCT	PRICE	AMOUNT
			FREIGHT		
			TAX		
			TOTAL DUE		

GROSS:

TARE:

NET:

WEIGHMASTER DRIVER CUSTOMER

DRY BRIDGE SAND & STONE, INC.

SLOCUM PLANT: 471 DRY BRIDGE RD
NO. KINGSTOWN, RI

MAIN OFFICE: 1080 KINGSTOWN ROAD
P.O. BOX 37
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The undersigned agrees that DRY BRIDGE SAND & STONE, INC. has no responsibility whatsoever for any damage on roads, curbs or lots while delivering, dumping, entering or leaving the premises.

TICKET NO.

DATE / TIME	PRODUCT	HAULER / TRUCK	LOCATION

CUSTOMER	QTY.	UNIT	PRODUCT	PRICE	AMOUNT
			FREIGHT		
			TAX		
			TOTAL DUE		

GROSS:

TARE:

NET:

WEIGHMASTER DRIVER CUSTOMER

DRY BRIDGE SAND & STONE, INC.

SLOCUM PLANT: 471 DRY BRIDGE RD
NO. KINGSTOWN, RI

MAIN OFFICE: 1080 KINGSTOWN ROAD
P.O. BOX 37
PEACE DALE, RI 02883-0037

PLANT PHONE: 401-295-2147
PLANT FAX: 401-294-8135

OFFICE PHONE: 401-789-9000
OFFICE FAX: 401-789-7501

The undersigned agrees that DRY BRIDGE SAND & STONE, INC. has no responsibility whatsoever for any damage on roads, curbs or lots while delivering, dumping, entering or leaving the premises.

TICKET NO. 1

DATE / TIME	PRODUCT	HAULER / TRUCK	LOCATION
01/19/20 AM	BANK RUN GRAVEL	DB18	LOCATION 1

18196 33.17 Ton , BANK RUN GRAVEL
Terranear PMC, LLC
Carr Point Shooting Range, Newport

CUSTOMER	QTY.	UNIT	PRODUCT	PRICE	AMOUNT
Loads Today: 3					
Qty. Today: 103.13					
	1				
GROSS					
TARE					
P.O. # N40085-12-D-175			FREIGHT		
Carr Point Shooting Range, Newport					
METRIC POUNDS TONS			TAX		
Carr Point Shooting Range					
45.26m 99780m 49.89m			TOTAL DUE		
TPMC Project #30581					
15.17x 33440x 16.72x					
Newport Naval Base, Newport, RI					
30.09 66340 33.17					
GROSS: # Manual Weight, * P.T.					
Lauren					
TARE:					
NET:					
LOCATION 1					

WEIGHMASTER DRIVER CUSTOMER

DRY BRIDGE SAND & STONE, INC.

SLOCUM PLANT: 471 DRY BRIDGE RD
NO. KINGSTOWN, RI

MAIN OFFICE: 1080 KINGSTOWN ROAD
P.O. BOX 37
PEACE DALE, RI 02883-0037

PLANT PHONE: 401-295-2147
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OFFICE PHONE: 401-789-9000
OFFICE FAX: 401-789-7501

The undersigned agrees that DRY BRIDGE SAND & STONE, INC. has no responsibility whatsoever for any damage on roads, curbs or lots while delivering, dumping, entering or leaving the premises.

TICKET NO. 1

DATE / TIME	PRODUCT	HAULER / TRUCK	LOCATION
8:33:57 AM	BANK RUN GRAVEL	DB14 Dry Bri 4	LOCATION 1

18196 34.68 Ton BANK RUN GRAVEL
Terranear PMC, LLC

CUSTOMER	QTY.	UNIT	PRODUCT	PRICE	AMOUNT
Loads Today: 4 Qty. Today: 137.81 P.O. # N40085-12-D-175 METRIC POUNDS TONS 45.74m 100840m 50.42m	1		GROSS TARE FREIGHT TAX TOTAL DUE		
14.28% 31480# 15.74%			TPMC Project #38601 Newport Naval Base, Newport, RI		
GROSS: 31.46 69360 34.68 * Manual Weight, * P.T. TARE: NET:			Lauren		

WEIGHMASTER LOCATION 1 DRIVER CUSTOMER

DRY BRIDGE SAND & STONE, INC.

SLOCUM PLANT: 471 DRY BRIDGE RD
NO. KINGSTOWN, RI

MAIN OFFICE: 1080 KINGSTOWN ROAD
P.O. BOX 37
PEACE DALE, RI 02883-0037

PLANT PHONE: 401-295-2147
PLANT FAX: 401-294-8135

OFFICE PHONE: 401-789-9000
OFFICE FAX: 401-789-7501

The undersigned agrees that DRY BRIDGE SAND & STONE, INC. has no responsibility whatsoever for any damage on roads, curbs or lots while delivering, dumping, entering or leaving the premises.

TICKET NO.

DATE / TIME	PRODUCT	HAULER / TRUCK	LOCATION

CUSTOMER	QTY.	UNIT	PRODUCT	PRICE	AMOUNT

FREIGHT

TAX

TOTAL DUE

GROSS:

TARE:

NET:

WEIGHMASTER DRIVER CUSTOMER

DRY BRIDGE SAND & STONE, INC.

SLOCUM PLANT: 471 DRY BRIDGE RD
NO. KINGSTOWN, RI

MAIN OFFICE: 1080 KINGSTOWN ROAD
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TICKET NO. 2037043

DATE / TIME	PRODUCT	HAULER / TRUCK	LOCATION
11:03:24	AMBANK RUN GRAVEL	DB14 Dry Bridge #14	LOCATION 1

CUSTOMER	QTY.	UNIT	PRODUCT	PRICE	AMOUNT
Terranean PMC, LLC Cary Point Shooting Range, Newport Order No: 100 Loads Today: 6 Qty. Today: 207.56 P.O. # W40085-12-D-175	35.70	Ton	AMAC RUN GRAVEL		
			FREIGHT		
			TAX		
			TOTAL DUE		

	METRIC	POUNDS	TONS
GROSS:	46.67m	102880m	51.44m
TARE:	14.28*	31480*	15.74*
NET:	32.39	71400	35.70

* Manual Weight, * P.T.

Cary Point Shooting Range, Newport
Cary Point Shooting Range

TPMC Project #38601
Newport Naval Base, Newport, RI

Lauren

WEIGHMASTER DRIVER CUSTOMER

DRY BRIDGE SAND & STONE, INC.

SLOCUM PLANT: 471 DRY BRIDGE RD
NO. KINGSTOWN, RI

MAIN OFFICE: 1080 KINGSTOWN ROAD
P.O. BOX 37
PEACE DALE, RI 02883-0037

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TICKET NO.

DATE / TIME	PRODUCT	HAULER / TRUCK	LOCATION

CUSTOMER	QTY.	UNIT	PRODUCT	PRICE	AMOUNT
			FREIGHT		
			TAX		
			TOTAL DUE		

GROSS:

TARE:

NET:

WEIGHMASTER DRIVER CUSTOMER

DRY BRIDGE SAND & STONE, INC.

SLOCUM PLANT: 471 DRY BRIDGE RD
NO. KINGSTOWN, RI

MAIN OFFICE: 1080 KINGSTOWN ROAD
P.O. BOX 37
PEACE DALE, RI 02883-0037

PLANT PHONE: 401-295-2147
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TICKET NO.

DATE / TIME	PRODUCT	HAULER / TRUCK	LOCATION

CUSTOMER	QTY.	UNIT	PRODUCT	PRICE	AMOUNT
Carr Point Shooting Range, Newport Order No: 100 Loads Today: 8 Qty. Today: 278.12 P.O. # N40085-12-D-175			FREIGHT TAX TOTAL DUE		

	METRIC	POUNDS	TONS
	45.92m	101240m	50.62m
GROSS:	15.17*	33440*	16.72*
TARE:	30.75	67800	33.90
NET:	m Manual Weight, * D.T.		

Carr Point Shooting Range, Newport
Carr Point Shooting Range

TPMC Project #38601
Newport Naval Base, Newport, RI

Lauren

WEIGHMASTER DRIVER CUSTOMER

DRY BRIDGE SAND & STONE, INC.

LOCATION 1

SLOCUM PLANT: 471 DRY BRIDGE RD
NO. KINGSTOWN, RI

MAIN OFFICE: 1080 KINGSTOWN ROAD
P.O. BOX 37
PEACE DALE, RI 02883-0037

PLANT PHONE: 401-295-2147
PLANT FAX: 401-294-8135

OFFICE PHONE: 401-789-9000
OFFICE FAX: 401-789-7501

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TICKET NO. 2037051

DATE / TIME	PRODUCT	HAULER / TRUCK	LOCATION
2/23/29	MM BANK RUN GRAVEL	DB18 DB18	LOCATION 1

CUSTOMER	QTY.	UNIT	PRODUCT	PRICE	AMOUNT
Terranean RMC, LLC Carr Point Shooting Range, Newport Order No: 100 Loads Today: 9 Qty. Today: 314.53 P.O. # N00385 12-0-175					
			FREIGHT		
			TAX		
			TOTAL DUE		
			Carr Point Shooting Range, Newport Carr Point Shooting Range		

	METRIC	POUNDS	TONS
	48.20m	106200m	53.12m
GROSS:	15.17*	33440*	16.72*
TARE:	33.03	72820	36.41
NET:	m Manual Weight, * P.T.		

TPMC Project #39001
Newport Naval Base, Newport, RI

Lauren

WEIGHMASTER DRIVER CUSTOMER

DRY BRIDGE SAND & STONE, INC.

SLOCUM PLANT: 471 DRY BRIDGE RD
NO. KINGSTOWN, RI

MAIN OFFICE: 1080 KINGSTOWN ROAD
P.O. BOX 37
PEACE DALE, RI 02883-0037

PLANT PHONE: 401-295-2147
PLANT FAX: 401-294-8135

OFFICE PHONE: 401-789-9000
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TICKET NO.

DATE / TIME	PRODUCT	HAULER / TRUCK	LOCATION

CUSTOMER	QTY.	UNIT	PRODUCT	PRICE	AMOUNT
			FREIGHT		
			TAX		
			TOTAL DUE		

GROSS:

TARE:

NET:

WEIGHMASTER DRIVER CUSTOMER

DRY BRIDGE SAND & STONE, INC.

SLOCUM PLANT: 471 DRY BRIDGE RD
NO. KINGSTOWN, RI

MAIN OFFICE: 1080 KINGSTOWN ROAD
P.O. BOX 37
PEACE DALE, RI 02883-0037

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TICKET NO.

DATE / TIME	PRODUCT	HAULER / TRUCK	LOCATION

CUSTOMER	QTY.	UNIT	PRODUCT	PRICE	AMOUNT
			FREIGHT		
			TAX		
			TOTAL DUE		

GROSS:

TARE:

NET:

WEIGHMASTER DRIVER CUSTOMER

DRY BRIDGE SAND & STONE, INC.

SLOCUM PLANT: 471 DRY BRIDGE RD
NO. KINGSTOWN, RI

MAIN OFFICE: 1080 KINGSTOWN ROAD
P.O. BOX 37
PEACE DALE, RI 02883-0037

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TICKET NO.

DATE / TIME	PRODUCT	HAULER / TRUCK	LOCATION

CUSTOMER	QTY.	UNIT	PRODUCT	PRICE	AMOUNT
			FREIGHT		
			TAX		
			TOTAL DUE		

GROSS:

TARE:

NET:

WEIGHMASTER DRIVER CUSTOMER

DRY BRIDGE SAND & STONE, INC.

SLOCUM PLANT: 471 DRY BRIDGE RD
NO. KINGSTOWN, RI

MAIN OFFICE: 1080 KINGSTOWN ROAD
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TICKET NO.

DATE / TIME	PRODUCT	HAULER / TRUCK	LOCATION

CUSTOMER	QTY.	UNIT	PRODUCT	PRICE	AMOUNT
			FREIGHT		
			TAX		
			TOTAL DUE		

GROSS:

TARE:

NET:

WEIGHMASTER DRIVER CUSTOMER

DRY BRIDGE SAND & STONE, INC.

SLOCUM PLANT: 471 DRY BRIDGE RD
NO. KINGSTOWN, RI

MAIN OFFICE: 1080 KINGSTOWN ROAD
P.O. BOX 37
PEACE DALE, RI 02883-0037

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TICKET NO.

DATE / TIME	PRODUCT	HAULER / TRUCK	LOCATION

CUSTOMER	QTY.	UNIT	PRODUCT	PRICE	AMOUNT
			FREIGHT		
			TAX		
			TOTAL DUE		

WEIGHMASTER DRIVER CUSTO

DRY BRIDGE SAND & STONE, INC.

SLOCUM PLANT: 471 DRY BRIDGE RD
NO. KINGSTOWN, RI

MAIN OFFICE: 1080 KINGSTOWN ROAD
P.O. BOX 37
PEACE DALE, RI 02883-0037

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TICKET NO.

DATE / TIME	PRODUCT	HAULER / TRUCK	LOCATION
04/26/2012 7:02			
18196	34.12 Ton BANK RUN GRAVEL		

CUSTOMER	QTY.	UNIT	PRODUCT	PRICE	AMOUNT
Carr Point Shooting Range, Newport Order No: 100 Loads Today: 3 Qty. Today: 106.95 P.O. # N40085-12-D-175 METRIC POUNDS TONS 46.12m 101600m 50.8T			FREIGHT TAX TOTAL DUE		
GROSS: 15.17* 33440* 16.72* TARE: 30.95 68240 34.12 M Manual Weight, * P.T. NET:			TPMC Project #38601 Newport Naval Base, Newport, RI Lauren		

WEIGHMASTER DRIVER CUSTOMER

LOCATION 1

DRY BRIDGE SAND & STONE, INC.

SLOCUM PLANT: 471 DRY BRIDGE RD
NO. KINGSTOWN, RI

MAIN OFFICE: 1080 KINGSTOWN ROAD
P.O. BOX 37
PEACE DALE, RI 02883-0037

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TICKET NO. 1

04/26/2013 702

DATE / TIME	PRODUCT	HAULER / TRUCK	LOCATION
18196	35.42 Ton BANK RUN GRAVEL		

CUSTOMER	QTY.	UNIT	PRODUCT	PRICE	AMOUNT
Carr Point Shooting Range, Newport Order No: 100 Loads Today: 4 Qty. Today: 142.37 P.O. # N40085-12-D-175 METRIC POUNDS TONS 46.41# 102320# 51.16#			FREIGHT TAX TOTAL DUE		
GROSS: 14.28# 31480# 15.74# TARE: 22.13 70840 35.42 * Manual Weight, # P.T. NET:			Carr Point Shooting Range, Newport Carr Point Shooting Range TPMC Project #38001 Newport Naval Base, Newport, RI Lauren		

WEIGHMASTER DRIVER CUSTOMER

DRY BRIDGE SAND & STONE, INC.

SLOCUM PLANT: 471 DRY BRIDGE RD
NO. KINGSTOWN, RI

MAIN OFFICE: 1080 KINGSTOWN ROAD
P.O. BOX 37
PEACE DALE, RI 02883-0037

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OFFICE FAX: 401-789-7501

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TICKET NO. 2037070

DATE / TIME	PRODUCT	HAULER / TRUCK	LOCATION
10:21:30	AMBANK RUN GRAVEL	DB18 DB18	LOCATION 1

CUSTOMER	QTY.	UNIT	PRODUCT	PRICE	AMOUNT
Terranear PMC, LLC Cary Point Shooting Range, Newport Order No: 100 Loads Today: 5 Qty. Today: 176.87 P.O. # N40085-12-D-175			FREIGHT GROSS TARE TAX TOTAL DUE		
			Cary Point Shooting Range, Newport Cary Point Shooting Range		

	METRIC	POUNDS	TONS
	46.47m	102440m	51.22m
GROSS:	15.17*	33440*	16.72*
TARE:	31.30	69000	34.50
NET:	* Manual Weight, * P.T.		

TPHC Project #38601
Newport Naval Base, Newport, RI

Lauren

WEIGHMASTER DRIVER CUSTOMER

DRY BRIDGE SAND & STONE, INC.

SLOCUM PLANT: 471 DRY BRIDGE RD
NO. KINGSTOWN, RI

MAIN OFFICE: 1080 KINGSTOWN ROAD
P.O. BOX 37
PEACE DALE, RI 02883-0037

PLANT PHONE: 401-295-2147
PLANT FAX: 401-294-8135

OFFICE PHONE: 401-789-9000
OFFICE FAX: 401-789-7501

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TICKET NO.

DATE / TIME	PRODUCT	HAULER / TRUCK	LOCATION

CUSTOMER	QTY.	UNIT	PRODUCT	PRICE	AMOUNT
			FREIGHT		
			TAX		
			TOTAL DUE		

GROSS:

TARE:

NET:

WEIGHMASTER DRIVER CUSTOMER

DRY BRIDGE SAND & STONE, INC.

SLOCUM PLANT: 471 DRY BRIDGE RD
NO. KINGSTOWN, RI

MAIN OFFICE: 1080 KINGSTOWN ROAD
P.O. BOX 37
PEACE DALE, RI 02883-0037

PLANT PHONE: 401-295-2147
PLANT FAX: 401-294-8135

OFFICE PHONE: 401-789-9000
OFFICE FAX: 401-789-7501

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TICKET NO. 20368870

DATE / TIME	PRODUCT	HAULER / TRUCK		LOCATION
12:07:48	UNPROCESSED GRAVEL	DB18	DB18	LOCATION

CUSTOMER	QTY.	UNIT	PRODUCT	PRICE	AMOUNT
Tetrahedron PMC, LLC Carr Point Shooting Range, Newport Order No: 100 Loads Today: 1 Hrs. Today: 33.45 P.O. # N00085-12-D-175			(CRUSHER RUN)		
			FREIGHT		
	GROSS TARE		TAX		
			TOTAL DUE		
NETRIC POUNDS TONS 45.70m 100760m 50.38m GROSS: 15.36# 33860# 16.93# TARE: 20.35 66900 33.45 NET: m Manual Weight, # D.T.			Carr Point Shooting Range, Newport Carr Point Shooting Range TPMC Project #38601 Newport Naval Base, Newport, RI Lauren		

WEIGHMASTER DRIVER CUSTOMER

DRY BRIDGE SAND & STONE, INC.

SLOCUM PLANT: 471 DRY BRIDGE RD
NO. KINGSTOWN, RI

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TICKET NO.

04/22/2013 700

DATE / TIME	PRODUCT	HAULER / TRUCK	LOCATION
10196	34.42 Ton PROCESSED GRAVEL		

CUSTOMER	QTY.	UNIT	PRODUCT	PRICE	AMOUNT
Cape Point Shooting Range, Newport Order No: 100 Loads Today: 1 Qty. Today: 34.42 P.O. # N40085-12-0-175 METRIC POUNDS TONS 46.58m 102700m 51.35m			GROSS TARE FREIGHT TAX TOTAL DUE		
13.36m 33060m 16.53m GROSS: 31.23 68840 34.42 TARE: Manual Weight, * P.T. NET:			TRMC Project #38601 Newport Naval Base, Newport, RI Lauren		

Cape Point Shooting Range

WEIGHMASTER DRIVER CUSTOMER

DRY BRIDGE SAND & STONE, INC.

SLOCUM PLANT: 471 DRY BRIDGE RD
NO. KINGSTOWN, RI

MAIN OFFICE: 1080 KINGSTOWN ROAD
P.O. BOX 37
PEACE DALE, RI 02883-0037

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TICKET NO.

DATE / TIME	PRODUCT	HAULER / TRUCK	LOCATION
18136	34.92 Ton BANK RUN GRAVEL		

CUSTOMER	QTY.	UNIT	PRODUCT	PRICE	AMOUNT
Order No: 100 Loads Today: 7 Qty. Today: 246.92 P.O. # N40085-12-D-175 METRIC POUNDS TONS 46.85m 103280m 51.64m 15.17m 33440m 16.72m 31.68 69840 34.92 Manual Weight, # P.T. Lauren	1 GROSS TARE		FREIGHT TAX TOTAL DUE		
GROSS: TARE: NET:			Carr Point Shooting Range, Newport Carr Point Shooting Range TPMC Project #38601 Newport Naval Base, Newport, RI		

WEIGHMASTER DRIVER CUSTOMER

DRY BRIDGE SAND & STONE, INC.

SLOCUM PLANT: 471 DRY BRIDGE RD
NO. KINGSTOWN, RI

MAIN OFFICE: 1080 KINGSTOWN ROAD
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PEACE DALE, RI 02883-0037

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TICKET NO. 1

DATE / TIME	PRODUCT	HAULER / TRUCK	LOCATION
1:02:00 PM	BANK RUN GRAVEL	DB14 Dry Bri	LOCATION 1

18196 35.47 Ton BANK RUN GRAVEL
Terranear PMC, LLC

CUSTOMER	QTY.	UNIT	PRODUCT	PRICE	AMOUNT
Order No: 100 Loads Today: 8 Qty. Today: 282.39	1				
	GROSS TARE		FREIGHT		
P.O. # N40085-12-D-175			TAX		
METRIC POUNDS TONS			Carr Point Shooting Range, Newport Carr Point Shooting Range		
46.46m 102420m 51.21m			TOTAL DUE		
14.28* 31480* 15.74*			TPMC Project #38601 Newport Naval Base, Newport, RI		
GROSS: 32.18 70940 35.47					
TARE: * Manual Weight, * P.T.			Lauren		
NET:					

WEIGHMASTER LOCATION 1 DRIVER CUSTOMER

DRY BRIDGE SAND & STONE, INC.

SLOCUM PLANT: 471 DRY BRIDGE RD
NO. KINGSTOWN, RI

MAIN OFFICE: 1080 KINGSTOWN ROAD
P.O. BOX 37
PEACE DALE, RI 02883-0037

PLANT PHONE: 401-295-2147
PLANT FAX: 401-294-8135

OFFICE PHONE: 401-789-9000
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TICKET NO.

04/06/2013 702

DATE / TIME	PRODUCT	HAULER / TRUCK	LOCATION
18196	34.84 Ton BANK RUN GRAVEL		

CUSTOMER	QTY.	UNIT	PRODUCT	PRICE	AMOUNT
Carr Point Shooting Range, Newport Order No: 100 Loads Today: 9 Qty. Today: 317.23 P.O. # N40085-12-D-175			FREIGHT TAX TOTAL DUE		

METRIC	POUNDS	TONS
15.17# 33440#		16.72
31.61	69600	34.80

GROSS:

TARE:

NET:

* Manual Weight, * P.T.

TPMC Project #30601
Newport Naval Base, Newport, RI

Lauren

WEIGHMASTER DRIVER CUSTOMER

DRY BRIDGE SAND & STONE, INC.

SLOCUM PLANT: 471 DRY BRIDGE RD
NO. KINGSTOWN, RI

MAIN OFFICE: 1080 KINGSTOWN ROAD
P.O. BOX 37
PEACE DALE, RI 02883-0037

PLANT PHONE: 401-295-2147
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TICKET NO.

DATE / TIME	PRODUCT	HAULER / TRUCK	LOCATION
04/16/2013 7:00 2:32:02 PM	BANK RUN GRAVEL	DB14 Dry Bri 4	LOCATION 2

18196 35.08 Ton BANK RUN GRAVEL
Tenyanean PMC, LLC

CUSTOMER	QTY.	UNIT	PRODUCT	PRICE	AMOUNT
Order No: 100 Loads Today: 10 Qty. Today: 352.31 P.O. # N40085-12-D-175 METRIC POUNDS TONS 46.10m 101640m 50.82m					
14.00* 31400* 15.7* GROSS: 31.02 70160 35.08 TARE: Manual Weight, + P.T. NET:			FREIGHT TAX TOTAL DUE		

GROSS TARE 1

Carr Point Shooting Range, Newport
Carr Point Shooting Range.

TPMC Project #38601
Newport Naval Base, Newport, RI

Laupen

WEIGHMASTER DRIVER CUSTOMER

DRY BRIDGE SAND & STONE, INC.

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NO. KINGSTOWN, RI

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TICKET NO.

DATE / TIME	PRODUCT	HAULER / TRUCK	LOCATION
04/26/2013 702			

16196 33.83 Ton BANK RUN GRAVEL

CUSTOMER	QTY.	UNIT	PRODUCT	PRICE	AMOUNT
Cape Point Shooting Range, Newport					
Order No: 100					
Loads Today: 11					
Qty. Today: 386.14					
			FREIGHT		
GROSS					
TARE					
P.O. # N40085-12-D-175			TAX		
METRIC POUNDS TONS			TOTAL DUE		
Cape Point Shooting Range, Newport					
Cape Point Shooting Range					
45.86m 101100m 50.55m					
TRMC Project #38601					
Newport Naval Base, Newport, RI					
GROSS: 15.17m 33440m 16.72m					
TARE: 30.59 67600 33.85					
m Manual Weight, * P.T.					
NET:					

Lauren

WEIGHMASTER DRIVER CUSTOMER

DRY BRIDGE SAND & STONE, INC.

SLOCUM PLANT: 471 DRY BRIDGE RD
NO. KINGSTOWN, RI

MAIN OFFICE: 1080 KINGSTOWN ROAD
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PEACE DALE, RI 02883-0037

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TICKET NO.

DATE / TIME	PRODUCT	HAULER / TRUCK	LOCATION

CUSTOMER	QTY.	UNIT	PRODUCT	PRICE	AMOUNT
			FREIGHT		
			TAX		
			TOTAL DUE		

GROSS:

TARE:

NET:

WEIGHMASTER DRIVER CUSTOMER

DRY BRIDGE SAND & STONE, INC.

LOCATION 1

SLOCUM PLANT: 471 DRY BRIDGE RD
NO. KINGSTOWN, RI

MAIN OFFICE: 1080 KINGSTOWN ROAD
P.O. BOX 37
PEACE DALE, RI 02883-0037

PLANT PHONE: 401-295-2147
PLANT FAX: 401-294-8135

OFFICE PHONE: 401-789-9000
OFFICE FAX: 401-789-7501

The undersigned agrees that DRY BRIDGE SAND & STONE, INC. has no responsibility whatsoever for any damage on roads, curbs or lots while delivering, dumping, entering or leaving the premises.

TICKET NO. 2037093

DATE / TIME	PRODUCT	HAULER / TRUCK		LOCATION
04/29/2013 702 8:25:41 AM	BANK RUN GRAVEL	DB18	DB18	1 LOCATION 1

CUSTOMER	QTY.	UNIT	PRODUCT	PRICE	AMOUNT
TAYPE Tennessee PMC, LLC Carr Point Shooting Range, Newport Order No: 100 Loads Today: 1 Qty. Today: 33.69 P.O. # N00083-12-D-175	33.69	Ton	BANK RUN GRAVEL		
			FREIGHT		
			TAX		
	GROSS TARE		TOTAL DUE		

	METRIC	POUNDS	TONS
GROSS:	45.73m	100820#	50.41#
TARE:	15.17m	33440#	16.72#
NET:	30.56	67380	33.69

* Manual Weight, # P.O.

Carr Point Shooting Range, Newport
Carr Point Shooting Range

PMC Project #30601
Newport Naval Base, Newport, RI

Lauren

WEIGHMASTER DRIVER CUSTOMER

DRY BRIDGE SAND & STONE, INC.

SLOCUM PLANT: 471 DRY BRIDGE RD
NO. KINGSTOWN, RI

MAIN OFFICE: 1080 KINGSTOWN ROAD
P.O. BOX 37
PEACE DALE, RI 02883-0037

PLANT PHONE: 401-295-2147
PLANT FAX: 401-294-8135

OFFICE PHONE: 401-789-9000
OFFICE FAX: 401-789-7501

The undersigned agrees that DRY BRIDGE SAND & STONE, INC. has no responsibility whatsoever for any damage on roads, curbs or lots while delivering, dumping, entering or leaving the premises.

TICKET NO.

DATE / TIME	PRODUCT	HAULER / TRUCK	LOCATION

CUSTOMER	QTY.	UNIT	PRODUCT	PRICE	AMOUNT
			FREIGHT		
			TAX		
			TOTAL DUE		

GROSS:

TARE:

NET:

WEIGHMASTER DRIVER CUSTOMER

DRY BRIDGE SAND & STONE, INC.

SLOCUM PLANT: 471 DRY BRIDGE RD
NO. KINGSTOWN, RI

MAIN OFFICE: 1080 KINGSTOWN ROAD
P.O. BOX 37
PEACE DALE, RI 02883-0037

PLANT PHONE: 401-295-2147
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OFFICE FAX: 401-789-7501

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TICKET NO.

DATE / TIME	PRODUCT	HAULER / TRUCK	LOCATION

CUSTOMER	QTY.	UNIT	PRODUCT	PRICE	AMOUNT
			FREIGHT		
			TAX		
			TOTAL DUE		

GROSS:

TARE:

NET:

WEIGHMASTER DRIVER CUSTOMER

DRY BRIDGE SAND & STONE, INC.

SLOCUM PLANT: 471 DRY BRIDGE RD
NO. KINGSTOWN, RI

MAIN OFFICE: 1080 KINGSTOWN ROAD
P.O. BOX 37
PEACE DALE, RI 02883-0037

PLANT PHONE: 401-295-2147
PLANT FAX: 401-294-8135

OFFICE PHONE: 401-789-9000
OFFICE FAX: 401-789-7501

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TICKET NO. 2037135

DATE / TIME	PRODUCT	HAULER / TRUCK	LOCATION
04/30/2013 Tue 6:43:09 AM	BANK RUN GRAVEL	DB17 DryBridge #17 (	LOCATION 1

CUSTOMER	QTY.	UNIT	PRODUCT	PRICE	AMOUNT
18196 Tarcanear PMC, LLC Carr Point Shooting Range, Newport Order No: 100 Loads Todays: 1 Qty. Todays: 35.90 P.O. # N40085-12-D-175	35.90	Ton	BANK RUN GRAVEL		
			FREIGHT		
			1		
GROSS:			TAX		
TARE					
			TOTAL DUE		
Carr Point Shooting Range, Newport Carr Point Shooting Range TPMC Project #38601 Newport Naval Base, Newport, RI					

	METRIC	POUNDS	TONS
GROSS:	46.05m	101520#	50.76m
TARE:	13.48m	29720#	14.86m
NET:	32.57	71800	35.90

m Manual Weight, # D.T.

Lauren

WEIGHMASTER DRIVER CUSTOMER

DRY BRIDGE SAND & STONE, INC.

LOCATION 1

SLOCUM PLANT: 471 DRY BRIDGE RD
NO. KINGSTOWN, RI

MAIN OFFICE: 1080 KINGSTOWN ROAD
P.O. BOX 37
PEACE DALE, RI 02883-0037

PLANT PHONE: 401-295-2147
PLANT FAX: 401-294-8135

OFFICE PHONE: 401-789-9000
OFFICE FAX: 401-789-7501

The undersigned agrees that DRY BRIDGE SAND & STONE, INC. has no responsibility whatsoever for any damage on roads, curbs or lots while delivering, dumping, entering or leaving the premises.

TICKET NO.

DATE / TIME	PRODUCT	HAULER / TRUCK	LOCATION
08/30/2013 7:02			

18196 37.18 Ton BANK RUN GRAVEL

CUSTOMER	QTY.	UNIT	PRODUCT	PRICE	AMOUNT
Carr Point Shooting Range, Newport Order No: 100 Loads Today: 2 Qty. Today: 73.08 P.O. # N40085-12-D-175			FREIGHT TAX TOTAL DUE		

METRIC	POUNDS	TONS
48.21m	105840#	52.92#
GROSS: 14.28	31480#	15.74
TARE: 33.73	74360	37.18
NET:		

* Manual Weight, * P.T.

Carr Point Shooting Range, Newport
Carr Point Shooting Range

TPMC Project #30601
Newport Naval Base, Newport, RI

Lauren

WEIGHMASTER DRIVER CUSTOMER

DRY BRIDGE SAND & STONE, INC.

SLOCUM PLANT: 471 DRY BRIDGE RD
NO. KINGSTOWN, RI

MAIN OFFICE: 1080 KINGSTOWN ROAD
P.O. BOX 37
PEACE DALE, RI 02883-0037

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TICKET NO. 1

DATE / TIME	PRODUCT	HAULER / TRUCK	LOCATION
8:00:17 AM	BANK RUN GRAVEL	DB18 DB18	LOCATION 1

CUSTOMER	QTY.	UNIT	PRODUCT	PRICE	AMOUNT
18196 Terranear PMC, LLC	35.24	Ton	BANK RUN GRAVEL		
Order No: 100 Loads Today: 3 Qty. Today: 100.32 P.O. # N40085-12-D-175	1				
METRIC POUNDS TONS 47.14m 103920m 51.96m	GROSS TARE		FREIGHT		
			TAX		
Cart Point Shooting Range, Newport Cart Point Shooting Range			TOTAL DUE		
15.17* 33440* 16.72*	TPMC Project #38601 Newport Naval Base, Newport, RI				
GROSS: 31.97 70480 35.24 TARE: * Manual Weight, * P.T. NET:	Lauren				

WEIGHMASTER DRIVER CUSTOMER

DRY BRIDGE SAND & STONE, INC.

SLOCUM PLANT: 471 DRY BRIDGE RD
NO. KINGSTOWN, RI

MAIN OFFICE: 1080 KINGSTOWN ROAD
P.O. BOX 37
PEACE DALE, RI 02883-0037

PLANT PHONE: 401-295-2147
PLANT FAX: 401-294-8135

OFFICE PHONE: 401-789-9000
OFFICE FAX: 401-789-7501

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TICKET NO. 1

DATE / TIME	PRODUCT	HAULER / TRUCK	LOCATION
04/30/2013 702			

10196 38.14 Ton BANK RUN GRAVEL

CUSTOMER	QTY.	UNIT	PRODUCT	PRICE	AMOUNT
Carr Point Shooting Range, Newport Order No: 100 Loads Today: 4 Qty. Today: 146.45 P.O. # N40085-12-D-175 METRIC POUNDS TONS 48.00# 106000# 53.00#			FREIGHT TAX TOTAL DUE Carr Point Shooting Range, Newport Carr Point Shooting Range		
GROSS: 13.48# 29720# 14.86# TARE: 34.50 76280 38.14 * Manual Weight, # R.T. NET:			TRMC Project #38601 Newport Naval Base, Newport, RI Lawren		

WEIGHMASTER DRIVER CUSTOMER

DRY BRIDGE SAND & STONE, INC.

SLOCUM PLANT: 471 DRY BRIDGE RD
NO. KINGSTOWN, RI

MAIN OFFICE: 1080 KINGSTOWN ROAD
P.O. BOX 37
PEACE DALE, RI 02883-0037

PLANT PHONE: 401-295-2147
PLANT FAX: 401-294-8135

OFFICE PHONE: 401-789-9000
OFFICE FAX: 401-789-7501

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TICKET NO.

DATE / TIME	PRODUCT	HAULER / TRUCK	LOCATION

CUSTOMER	QTY.	UNIT	PRODUCT	PRICE	AMOUNT
			FREIGHT		
			TAX		
			TOTAL DUE		

	METRIC	POUNDS	TONS
	46.20m	101860m	50.93m
GROSS:	14.28*	31480*	15.74*
TARE:	31.92	70380	35.19
NET:			

* Manual Weight, * P.T.

Lauren

WEIGHMASTER DRIVER CUSTOMER

DRY BRIDGE SAND & STONE, INC.

SLOCUM PLANT: 471 DRY BRIDGE RD
NO. KINGSTOWN, RI

MAIN OFFICE: 1080 KINGSTOWN ROAD
P.O. BOX 37
PEACE DALE, RI 02883-0037

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TICKET NO.

DATE / TIME	PRODUCT	HAULER / TRUCK	LOCATION

CUSTOMER	QTY.	UNIT	PRODUCT	PRICE	AMOUNT
			FREIGHT		
			TAX		
			TOTAL DUE		

GROSS:

TARE:

NET:

WEIGHMASTER DRIVER CUSTOMER

DRY BRIDGE SAND & STONE, INC.

SLOCUM PLANT: 471 DRY BRIDGE RD
NO. KINGSTOWN, RI

MAIN OFFICE: 1080 KINGSTOWN ROAD
P.O. BOX 37
PEACE DALE, RI 02883-0037

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TICKET NO. 2037145

DATE / TIME	PRODUCT	HAULER / TRUCK	LOCATION
04/11/11 HP	BRK RUN GRAVEL	DBT7 Dry Bridge #17	LOCATION 1

CUSTOMER	QTY.	UNIT	PRODUCT	PRICE	AMOUNT
Turnstone PML, LLC Cape Point Shooting Range, Newport Order No: 100 Loads Today: 7 Qty. Today: 251.55 P.O. # N40085-12-D-175			FREIGHT GROSS TARE TAX TOTAL DUE		
METRIC POUNDS TONS 36.01@ 101440@ 50.72@ GROSS: 13.48* 29720* 14.86* TARE: 32.53 71720 35.86 @ Manual Weight, * P.T. NET:			Cape Point Shooting Range, Newport Cape Point Shooting Range TRMC Project #38601 Newport Naval Base, Newport, RI Lauren		

WEIGHMASTER DRIVER CUSTOMER

DRY BRIDGE SAND & STONE, INC.

SLOCUM PLANT: 471 DRY BRIDGE RD
NO. KINGSTOWN, RI

MAIN OFFICE: 1080 KINGSTOWN ROAD
P.O. BOX 37
PEACE DALE, RI 02883-0037

PLANT PHONE: 401-295-2147
PLANT FAX: 401-294-8135

OFFICE PHONE: 401-789-9000
OFFICE FAX: 401-789-7501

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TICKET NO.

DATE / TIME	PRODUCT	HAULER / TRUCK	LOCATION

CUSTOMER	QTY.	UNIT	PRODUCT	PRICE	AMOUNT
Tenrahear TPMC, LLC Cape Point Shooting Range, Newport Order No: 100 Loads Today: 8 Qty. Today: 208.15 P.O. # N40085-12-D-175 METRIC POUNDS TONS 47.48m 104600m 52.30m GROSS: 14.20m 31400m 15.70m TARE: 33.20 73200 36.60 NET:			FREIGHT GROSS TARE TAX TOTAL DUE Cape Point Shooting Range, Newport Cape Point Shooting Range TPMC Project #38001 Newport Naval Base, Newport, RI Lauren		

WEIGHMASTER DRIVER CUSTOMER

DRY BRIDGE SAND & STONE, INC.

SLOCUM PLANT: 471 DRY BRIDGE RD
NO. KINGSTOWN, RI

MAIN OFFICE: 1080 KINGSTOWN ROAD
P.O. BOX 37
PEACE DALE, RI 02883-0037

PLANT PHONE: 401-295-2147
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TICKET NO.

DATE / TIME	PRODUCT	HAULER / TRUCK	LOCATION

CUSTOMER	QTY.	UNIT	PRODUCT	PRICE	AMOUNT
			FREIGHT		
			TAX		
			TOTAL DUE		

GROSS:

TARE:

NET:

WEIGHMASTER DRIVER CUSTOMER

DRY BRIDGE SAND & STONE, INC.

LOCATION 1

SLOCUM PLANT: 471 DRY BRIDGE RD
NO. KINGSTOWN, RI

PLANT PHONE: 401-295-2147
PLANT FAX: 401-294-8135

MAIN OFFICE: 1080 KINGSTOWN ROAD
P.O. BOX 37
PEACE DALE, RI 02883-0037

OFFICE PHONE: 401-789-9000
OFFICE FAX: 401-789-7501

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TICKET NO. 1

DATE / TIME	PRODUCT	HAULER / TRUCK	LOCATION
10196	34.57 Ton BANK RUN GRAVEL		

CUSTOMER	QTY.	UNIT	PRODUCT	PRICE	AMOUNT
Cape Point Shooting Range, Newport Order No: 100 Loads Today: 10 Qty. Today: 350.84 P.O. # N40085-12-D-175 METRIC POUNDS TONS 46.53m 106500m 51.29m	1		FREIGHT GROSS TARE TAX Cape Point Shooting Range, Newport Cape Point Shooting Range TOTAL DUE		
GROSS: 15.17m 33440# 16.72m TARE: 31.36 69140 34.57 NET: Manual Weight, * P.T.			TPMC Project #38601 Newport Naval Base, Newport, RI Lauren		

WEIGHMASTER DRIVER CUSTOMER

DRY BRIDGE SAND & STONE, INC.

SLOCUM PLANT: 471 DRY BRIDGE RD
NO. KINGSTOWN, RI

MAIN OFFICE: 1080 KINGSTOWN ROAD
P.O. BOX 37
PEACE DALE, RI 02883-0037

PLANT PHONE: 401-295-2147
PLANT FAX: 401-294-8135

OFFICE PHONE: 401-789-9000
OFFICE FAX: 401-789-7501

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TICKET NO.

DATE / TIME	PRODUCT	HAULER / TRUCK	LOCATION

CUSTOMER	QTY.	UNIT	PRODUCT	PRICE	AMOUNT
			FREIGHT		
			TAX		
			TOTAL DUE		

GROSS:

TARE:

NET:

WEIGHMASTER | DRIVER | CUSTOMER

DRY BRIDGE SAND & STONE, INC.

SLOCUM PLANT: 471 DRY BRIDGE RD
NO. KINGSTOWN, RI

MAIN OFFICE: 1080 KINGSTOWN ROAD
P.O. BOX 37
PEACE DALE, RI 02883-0037

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TICKET NO.

DATE / TIME	PRODUCT	HAULER / TRUCK	LOCATION

CUSTOMER	QTY.	UNIT	PRODUCT	PRICE	AMOUNT
			FREIGHT		
			TAX		
			TOTAL DUE		

	METRIC	POUNDS	TONS
GROSS:	13.48*	29700*	14.85*
TARE:	32.32	71260	35.63
NET:			

m Manual Weight, * P.T.

WEIGHMASTER DRIVER CUSTOMER

DRY BRIDGE SAND & STONE, INC.

SLOCUM PLANT: 471 DRY BRIDGE RD
NO. KINGSTOWN, RI

MAIN OFFICE: 1080 KINGSTOWN ROAD
P.O. BOX 37
PEACE DALE, RI 02883-0037

PLANT PHONE: 401-295-2147
PLANT FAX: 401-294-8135

OFFICE PHONE: 401-789-9000
OFFICE FAX: 401-789-7501

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TICKET NO. 2037161

DATE / TIME	PRODUCT	HAULER / TRUCK	LOCATION
1:44:05 PM	BANK RUN GRAVEL	DB14 Dry Bridge #14	LOCATION 1

CUSTOMER	QTY.	UNIT	PRODUCT	PRICE	AMOUNT
Terranear PMC, LLC Carr Point Shooting Range, Newport Order No: 100 Loads Today: 13 Qty. Today: 469.47 P.O. # N40085 12-D-173			FREIGHT TAX TOTAL DUE		
Carr Point Shooting Range, Newport Carr Point Shooting Range TPMC Project #38601 Newport Naval Base, Newport, RI					

	METRIC	POUNDS	TONS
GROSS:	46.67m	102900m	51.45m
TARE:	14.23m	31400m	15.7m
NET:	32.40	71480	35.71

* Manual Weight, * P.T. Lauren

WEIGHMASTER DRIVER CUSTOMER

DRY BRIDGE SAND & STONE, INC.

SLOCUM PLANT: 471 DRY BRIDGE RD
NO. KINGSTOWN, RI

MAIN OFFICE: 1080 KINGSTOWN ROAD
P.O. BOX 37
PEACE DALE, RI 02883-0037

PLANT PHONE: 401-295-2147
PLANT FAX: 401-294-8135

OFFICE PHONE: 401-789-9000
OFFICE FAX: 401-789-7501

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TICKET NO. 2037165

DATE / TIME	PRODUCT	HAULER / TRUCK	LOCATION
2/23/23 PM	BANK RUN GRAVEL	DB18 DB18	LOCATION 1

CUSTOMER	QTY.	UNIT	PRODUCT	PRICE	AMOUNT
Terranear PMC, LLC Carr Point Shooting Range, Newport Order No: 100 Loads Today: 14 Qty. Today: 428.42 P.O. # N40085-12-D-175			FREIGHT TAX TOTAL DUE		
			Carr Point Shooting Range, Newport Carr Point Shooting Range		
			TPMC Project #30601 Newport Naval Base, Newport, RI		

	METRIC	POUNDS	TONS
GROSS:	45.97m	101340m	50.67m
TARE:	15.17*	33440*	16.72*
NET:	30.80	67900	33.95

m Manual Weight, * P.T.

Lauren

WEIGHMASTER DRIVER CUSTOMER

DRY BRIDGE SAND & STONE, INC.

SLOCUM PLANT: 471 DRY BRIDGE RD
NO. KINGSTOWN, RI

MAIN OFFICE: 1080 KINGSTOWN ROAD
P.O. BOX 37
PEACE DALE, RI 02883-0037

PLANT PHONE: 401-295-2147
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TICKET NO.

DATE / TIME	PRODUCT	HAULER / TRUCK	LOCATION
04/30/2013 7:06			
10196	34.60 Ton BANK RUN GRAVEL		

CUSTOMER	QTY.	UNIT	PRODUCT	PRICE	AMOUNT
Carr Point Shooting Range, Newport					
Order No: 100					
Loads Today: 15					
Qty. Today: 533.10					
	1		FREIGHT		
GROSS					
TARE			TAX		
P.O. # N40083-12-D-175					
METRIC POUNDS TONS			TOTAL DUE		
45.74m 100840m 50.42m					
14.29m 31480m 15.74m					
31.46 69360 34.68					
Manual Weight, * P.T.					

GROSS:

TARE:

NET:

TPMC Project #30601
Newport Naval Base, Newport, RI

Lauren

WEIGHMASTER DRIVER CUSTOMER

DRY BRIDGE SAND & STONE, INC.

LOCATION 1

SLOCUM PLANT: 471 DRY BRIDGE RD
NO. KINGSTOWN, RI

MAIN OFFICE: 1080 KINGSTOWN ROAD
P.O. BOX 37
PEACE DALE, RI 02883-0037

PLANT PHONE: 401-295-2147
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The undersigned agrees that DRY BRIDGE SAND & STONE, INC. has no responsibility whatsoever for any damage on roads, curbs or lots while delivering, dumping, entering or leaving the premises.

TICKET NO.

04/30/2013 702

DATE / TIME	PRODUCT	HAULER / TRUCK	LOCATION
18196	35.69 Ton BANK RUN GRAVEL		

CUSTOMER	QTY.	UNIT	PRODUCT	PRICE	AMOUNT
Carr Point Shooting Range, Newport Order No: 100 Loads Today: 16 Qty. Today: 568.79 P.O. # N40085-12-D-175 METRIC POUNDS TONS 45.06M 101100# 50.55#			FREIGHT TAX TOTAL DUE Carr Point Shooting Range, Newport Carr Point Shooting Range TPMC Project #306001 Newport Naval Base, Newport, RI		

GROSS: 12.48M 29720# 14.86T

TARE: 32.38 71380 35.69

* Manual Weight, ** P.T.

NET:

Lauren

WEIGHMASTER DRIVER CUSTOMER

DRY BRIDGE SAND & STONE, INC.

SLOCUM PLANT: 471 DRY BRIDGE RD
NO. KINGSTOWN, RI

MAIN OFFICE: 1080 KINGSTOWN ROAD
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TICKET NO.

DATE / TIME	PRODUCT	HAULER / TRUCK	LOCATION

CUSTOMER	QTY.	UNIT	PRODUCT	PRICE	AMOUNT
			FREIGHT		
			TAX		
			TOTAL DUE		

	METRIC	POUNDS	TONS
GROSS:	15.17*	33440*	16.72*
TARE:	31.02	68380	34.19
NET:			

* Manual Weight, * P.T.

TPMC Project #38601
Newport Naval Base, Newport, RI

Lauren

WEIGHMASTER DRIVER CUSTOMER

DRY BRIDGE SAND & STONE, INC.

LOCATION 1

SLOCUM PLANT: 471 DRY BRIDGE RD
NO. KINGSTOWN, RI

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TICKET NO. 2037171

DATE / TIME	PRODUCT	HAULER / TRUCK	LOCATION
4:36:52 PM	BANK RUN GRAVEL	DB14 Dry Bridge #14	LOCATION 1

CUSTOMER	QTY.	UNIT	PRODUCT	PRICE	AMOUNT
Terranear PMC, LLC Carr Point Shooting Range, Newport Order No: 100 Loads Today: 16 Qty. Today: 629.93 P.O. # N40085 12-D-175			FREIGHT TAX TOTAL DUE		

	METRIC	POUNDS	TONS
GROSS:	16.83m	103380m	51.69m
TARE:	14.28*	31480*	15.74*
NET:	32.61	71900	35.95

m Manual Weight, * P.T.

Carr Point Shooting Range, Newport
Carr Point Shooting Range

TPMC Project #38601
Newport Naval Base, Newport, RI

Lauren

WEIGHMASTER DRIVER CUSTOMER

DRY BRIDGE SAND & STONE, INC.

SLOCUM PLANT: 471 DRY BRIDGE RD
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CUSTOMER	QTY.	UNIT	PRODUCT	PRICE	AMOUNT
			FREIGHT		
			TAX		
			TOTAL DUE		

GROSS:

TARE:

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WEIGHMASTER DRIVER CUSTOMER

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SLOCUM PLANT: 471 DRY BRIDGE RD
NO. KINGSTOWN, RI

MAIN OFFICE: 1080 KINGSTOWN ROAD
P.O. BOX 37
PEACE DALE, RI 02883-0037

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CUSTOMER	QTY.	UNIT	PRODUCT	PRICE	AMOUNT
			FREIGHT		
			TAX		
			TOTAL DUE		

GROSS:

TARE:

NET:

WEIGHMASTER DRIVER CUSTOMER

DRY BRIDGE SAND & STONE, INC.

SLOCUM PLANT: 471 DRY BRIDGE RD
NO. KINGSTOWN, RI

MAIN OFFICE: 1080 KINGSTOWN ROAD
P.O. BOX 37
PEACE DALE, RI 02883-0037

PLANT PHONE: 401-295-2147
PLANT FAX: 401-294-8135

OFFICE PHONE: 401-789-9000
OFFICE FAX: 401-789-7501

The undersigned agrees that DRY BRIDGE SAND & STONE, INC. has no responsibility whatsoever for any damage on roads, curbs or lots while delivering, dumping, entering or leaving the premises.

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APPENDIX C
LABORATORY ANALYTICAL DELIVERABLES

DATA VALIDATION REPORT

Soil Samples Collected
April 18 – May 1, 2013

Non-Time Critical Removal Action of MRP Site 1
Carr Point Shooting Range Soils
Naval Station, Newport, Rhode Island

Prepared for:

TerranearPMC

222 Valley Creek Boulevard
Suite 210
Exton, PA 19341
(610) 862-5000

Prepared by:

HSW Engineering, Inc.

3820 Northdale Blvd, Suite 210-B
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July 2013

1.0 INTRODUCTION AND SUMMARY OF FINDINGS

Forty-six investigative soil samples and five field duplicates were collected April 18 through May 1, 2013, in association with soil removal actions conducted by TerranearPMC (TPMC) at Munitions Response Program (MRP) Site 1 at the Carr Point Shooting Range in Newport, Rhode Island. These 51 samples were analyzed for parameters of interest identified in the November 2012 Quality Assurance Project Plan (QAPP) prepared by TPMC for the Naval Facilities Engineering Command (NAVFAC); namely, polynuclear aromatic hydrocarbons (PAHs) and metals (Table 1). The analyses were performed by ESC Lab Sciences (ESC) in Mt. Juliet, Tennessee.

The samples were received and reported by ESC under ten sample delivery groups (SDGs). ESC provided three types of deliverables for each SDG: (1) read-only electronic data packages comprising what is commonly recognized as Level 4 deliverables (i.e., the most complete level of laboratory reporting), (2) Level 2a staged electronic data deliverables (SEDDs) processable through ADR automated data review software, and (3) and Navy electronic data deliverables (NEDDs). The Level 2a deliverables were processed through ADR, with information contained in the read-only data packages used to revise or supplement the qualifiers applied to individual results by the ADR software as needed. Data for backfill and waste profile samples were not included in the data review and validation.

Of 1,122 discrete results reported for this project, 65 results, or 5.8% of the entire dataset, were qualified due to one or more quality issues, all of which are concluded to be of a fairly routine nature (Appendix A). No results were rejected, and completeness in terms of usable data is 100% (Table 1).

Table 1. Summary of Sample Analyses, Qualifications, and Percent Completeness

Parameter Group:	**SVOCs**	**Metals**	**Total**
Analytical Method:	**8270C SIM [1]**	**6010B [2]**	**--**
Number of Analytes:	**19**	**3**	**22**
Soil Sampling:			
Primary Samples	46	46	**46**
Field Duplicates	5	5	**5**
TOTAL NUMBER OF SAMPLES	**51**	**51**	**51**
TOTAL NUMBER OF DISCRETE ANALYTES	**969**	**153**	**1122**
QUALIFIED DATA: [3]			
Number	**63**	**2**	**65**
Percent	**6.5%**	**1.3%**	**5.8%**
REJECTED DATA:			
Number	**0**	**0**	**0**
Percent	**0%**	**0%**	**0%**
PERCENT COMPLETENESS	**100%**	**100%**	**100%**

1 Includes 16 polynuclear aromatic hydrocarbons (PAHs) plus 1- methylnaphthalene, 2-methylnaphthalene, and 2-chloronaphthalene.

2 arsenic, chromium, and lead

3 Does not include detections that were less than the quantitation limit and coded with "J" qualifiers by the laboratory.

2.0 SAMPLE DELIVERY AND CONDITION UPON RECEIPT

All samples were received in good condition and at acceptable temperatures (≤ 4.2 °C). The chain-of-custody (COC) forms were properly executed, with no errors or omissions noted.

3.0 EVALUATION OF FIELD QUALITY CONTROL SAMPLES

Field duplicates were collected at sampling locations MRP1-PES-1B-01, -4E-01, -1D-02, -2B-02, and –SW13-01. All sample-field duplicate paired results for metals met the requirement of ≤30% relative percent difference (RPD) given the in QAPP. Paired results for PAHs exhibited more variability; however, this was largely the result of detections that were less than the quantitation limits, with the RPDs not always meaningful. Results for PAHs that yielded elevated RPDs are listed in Appendix A, with "J" qualifiers applied; however, these results were not included in the total number of qualified data as the variability is believed largely attributable to field sampling uncertainty rather than analytical measurement uncertainty and, as such, is more reflective of sample representativeness than analytical precision.

4.0 DATA REVIEW AND VALIDATION

4.1 Polynuclear Aromatic Hydrocarbons (PAHs)

4.1.1 Initial Calibration Verification (ICV)

All initial calibration verifications were within method-specified limits in terms of relative response factors (RRFs) and percent differences (%Ds) in all instances. Instrument tuning data and initial calibration data were not provided in the read-only expanded data packages but were noted in the laboratory case narratives as being acceptable as being acceptable in all instances.

4.1.2 Continuing Calibration Verification (CCV)

All continuing calibration verifications were acceptable in terms of RRFs and %Ds in all instances.

4.1.3 Internal Standards

All internal standards area counts and retention times were acceptable in all instances. No qualification of any sample data was necessary.

4.1.4 Surrogates

With two exceptions, all surrogate recoveries met data review acceptance criteria. Low surrogate recoveries were reported for two of three surrogates in the analysis of sample MRP1-PES-2A-02 and for one of three surrogates in the analysis of sample MRP1-PES-2B-02-Dup (all were above 60% versus lower acceptance limits of 70%). This resulted in the results for detected PAHs reported for these two samples being coded with "J-" qualifiers ("J" when the result was less than the quantitation limit and direction of bias could not be assumed) and for non-detected PAHs being coded with "UJ" qualifiers (Appendix A). Surrogate recoveries were not considered meaningful when samples required dilutions by factors of five or greater and were not evaluated in such circumstances.

4.1.5 Method Blanks

No target PAHs were detected in any of the laboratory method blanks.

4.1.6 Laboratory Control Samples (LCSs)

Recoveries of all target PAHs in the analysis of laboratory control samples (LCSs) were acceptable in all instances.

4.1.7 Matrix Spike / Matrix Spike Duplicates (MS/MSDs)

The laboratory properly analyzed matrix spike / matrix spike duplicate (MS/MSD) samples with each preparation batch. Instances in which the parent sample used for spiking was unrelated to the Carr Point project were not used to qualify sample results. In all other instances, when the parent sample was part of the Carr Point project, qualification of sample data based on MS/MSD recoveries was limited to the parent samples only, and only when the spiked amount was at least one-fourth as much as the amount of the target analyte present in the native parent sample (i.e., when the spiked amount was not obscured by routine analytical measurement uncertainty). Twenty-five results involving three soil samples were qualified based on MS/MSD recoveries (refer to Appendix A).

4.1.8 Limits of Detection and Quantitation (LODs and LOQs)

Dilutions were necessary in the analysis of eight soil samples, with the dilution factors ranging from five to 20. Limits of detection and quantitation (LODs and LOQs) specified in the QAPP for seven of the 19 reported PAHs were met, except as adjusted by the dilution factors.

4.2 Metals

4.2.1 Initial and Continuing Calibration Verification (ICV / CCV)

All ICVs and CCVs bracketing the environmental samples and associated laboratory QC samples yielded recoveries of within 90-100% in all instances.

4.2.2 Interference Check Samples

The recoveries of all analytes in the analysis of the interference check samples (ICS solutions A and AB) associated with the analyses of the 51 environmental samples and laboratory QC samples were within 80-120% in all instances. In reviewing the raw data included in the read-only expanded laboratory data packages, some instances were noted in which recoveries of target analytes in the ICS-A and ICS-AB solutions were not within these limits; however, a review of the analytical run logs confirmed that the instruments were recalibrated following these failures and that no sample data were associated with these non-acceptable QC analyses.

4.2.3 Method Blanks

No qualifications to any sample data based on method blank data was necessary. One instance in which a low level of lead was detected in the method blank did not require qualification of sample data as the amount of lead in the associated environmental samples far exceeded the contamination factor of five times the amount detected in the blank.

4.2.4 Laboratory Control Samples (LCS)

The recoveries of target metals in the analysis of the LCSs were acceptable in all instances. No qualification of sample data was necessary.

4.2.5 Matrix Spike / Matrix Spike Duplicates (MS/MSD)

In all instances in which samples for the Carr Point project were used for MS/MSD analyses, the recoveries of spiked analytes either were within data review acceptance limits or were concluded to not be meaningful due to high concentrations of the target metal in the native parent sample. No qualifications to sample data based on MS/MSD recoveries was necessary.

4.2.6 Laboratory Duplicates

The laboratory analyzed unspiked duplicates of the samples used for MS/MSD analyses. These data were used to evaluate sample data for this project when the parent sample was from the Carr Point site. In all but two instances, the results for the laboratory duplicate yielded acceptable precision data. Qualifications were made to the detections of arsenic and chromium reported for sample MRP1-PES-4D-01 due to discrepancies between the sample-laboratory duplicate results (in milligrams per kilogram [mg/Kg]), summarized as follows.

Analyte	Sample (mg/Kg)	Duplicate (mg/Kg)	%RPD	Limit	Qualifier
Arsenic	3.40	1.00	109	20	J
Chromium	7.00	9.70	32	20	J

These discrepancies are believed largely attributable to sample nonhomogeneity.

4.2.7 Serial Dilutions

Serial dilutions were performed at a frequency of one per preparation batch of 20 or fewer samples, with the same parent samples as were used for MS/MSD analyses. The results for serial dilutions were provided by the laboratory in the raw data included in the Level 4 data packages (suffix of “L” added to the parent sample identification). Data acceptance criteria specified in the QAPP were met for all project-specific serial dilutions, with no qualification of sample data necessary.

4.2.8 Post-Digestion Spikes

Post-digestion spikes were performed for all preparation batches with additional aliquots of the unspiked, digested parent sample. The same spiking levels were used as were used for MS/MSD analyses (50 mg/Kg). The results for post-digestion spikes were provided by the laboratory in the raw data included in the Level 4 data packages and the recoveries calculated by the validator. Data acceptance criteria specified in the QAPP (75-125% recovery) were met for all project-specific post-digestion spike analyses, with no qualification of sample data necessary.

4.2.9 Limits of Detection and Quantitation (LODs / LOQs)

All three target metals were detected in each of the 51 soil samples, with no dilutions required. Detected concentrations were properly coded by the laboratory with “J” qualifiers when less

than the LOQ. The LOQ and LOD specified in the QAPP for lead were met in all instances.

5.0 SUMMARY AND RECOMMENDATIONS

Of 1122 discrete results, only 65 results, or about 5.8% of the dataset, were qualified as a result of the validation. No results were rejected, and completeness in terms of usable data is 100%.

The laboratory analyzed the specified number of project-specific MS/MSDs given in the QAPP. However, because of the need to batch samples separately for rush analyses or by discrete SDG, the laboratory often used non-project-related samples for MS/MSD analyses (and, consequently, for serial dilutions and post-digestion spikes as well), with the resulting QC data not meaningful for this project. For future projects, assessment of data quality may be improved if the laboratory is instructed to use only project-specific field samples for all MS/MSD and laboratory duplicate analyses.

APPENDIX A

SUMMARY OF QUALIFIED DATA

Data Qualifier Summary

Lab Reporting Batch ID: 'L631371', 'L631375', 'L631608', **Laboratory: 'FALSE'**

EDD Filename: 'L631371_r1_8270C-SIM_rev', 'L631375_r1_8270C-SIM_rev', 'L631608_r1_8270C-SIM_rev', 'L631768_r1_8270C-SIM_rev', 'L631829_r1_8270C-SIM_rev', 'L632014_r1_8270C-SIM_rev', 'L632275_r1_8270C-SIM_rev', 'L632501_r1_8270C-SIM_rev', 'L632829_r1_8270C-SIM_rev', 'L633498_r1_8270C-SIM_rev' **eQAPP Name: TPMC Carr Point**

SDG: **L631371**

Method Category: **SVOA**

Method: **8270C-SIM** ***Matrix:*** **Soil**

Sample ID: **MRP1-PES-1A-01** ***Collected:*** **4/17/2013 3:45:00** ***Analysis Type:*** **Initial-** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ACENAPHTHENE	0.0012	J	0.0070	MRL	0.0070	MRL	mg/kg	J	RI
ACENAPHTHYLENE	0.0021	J	0.0070	MRL	0.0070	MRL	mg/kg	J	RI
ANTHRACENE	0.003	J	0.0070	MRL	0.0070	MRL	mg/kg	J	RI
BENZO(K)FLUORANTHENE	0.0061	J	0.0070	MRL	0.0070	MRL	mg/kg	J	RI
DIBENZ(A,H)ANTHRACENE	0.0048	J	0.0070	MRL	0.0070	MRL	mg/kg	J	RI
FLUORENE	0.00095	J	0.0070	MRL	0.0070	MRL	mg/kg	J	RI

Sample ID: **MRP1-PES-1B-01** ***Collected:*** **4/17/2013 5:00:00** ***Analysis Type:*** **Initial-** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1-Methylnaphthalene	0.0024	J	0.022	MRL	0.022	MRL	mg/kg	J	RI
2-METHYLNAPHTHALENE	0.006	J	0.022	MRL	0.022	MRL	mg/kg	J	RI
ACENAPHTHENE	0.0031	J	0.0067	MRL	0.0067	MRL	mg/kg	J	RI
FLUORENE	0.0051	J	0.0067	MRL	0.0067	MRL	mg/kg	J	RI

Sample ID: **MRP1-PES-1B-01 DUP** ***Collected:*** **4/17/2013 5:00:00** ***Analysis Type:*** **Initial-** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1-Methylnaphthalene	0.0031	J	0.023	MRL	0.023	MRL	mg/kg	J	RI
2-METHYLNAPHTHALENE	0.0065	J	0.023	MRL	0.023	MRL	mg/kg	J	RI
ACENAPHTHENE	0.0027	J	0.0068	MRL	0.0068	MRL	mg/kg	J	RI
FLUORENE	0.0058	J	0.0068	MRL	0.0068	MRL	mg/kg	J	RI

Sample ID: **MRP1-PES-1C-01** ***Collected:*** **4/17/2013 5:59:00** ***Analysis Type:*** **Initial-** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ACENAPHTHENE	0.00076	J	0.0065	MRL	0.0065	MRL	mg/kg	J	RI
ANTHRACENE	0.0012	J	0.0065	MRL	0.0065	MRL	mg/kg	J	RI
BENZO(A)ANTHRACENE	0.0055	J	0.0065	MRL	0.0065	MRL	mg/kg	J	RI

* denotes a non-reportable result

Project Name and Number: -

Data Qualifier Summary

Lab Reporting Batch ID: 'L631371', 'L631375', 'L631608', **Laboratory: 'FALSE'**

EDD Filename: 'L631371_r1_8270C-SIM_rev', 'L631375_r1_8270C-SIM_rev', 'L631608_r1_8270C-SIM_rev', 'L631768_r1_8270C-SIM_rev', 'L631829_r1_8270C-SIM_rev', 'L632014_r1_8270C-SIM_rev', 'L632275_r1_8270C-SIM_rev', 'L632501_r1_8270C-SIM_rev', 'L632829_r1_8270C-SIM_rev', 'L633498_r1_8270C-SIM_rev' **eQAPP Name: TPMC Carr Point**

Method Category: **SVOA**

Method: **8270C-SIM** ***Matrix:*** **Soil**

Sample ID: **MRP1-PES-1C-01** ***Collected:*** **4/17/2013 5:59:00** ***Analysis Type:*** **Initial-** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BENZO(K)FLUORANTHENE	0.0029	J	0.0065	MRL	0.0065	MRL	mg/kg	J	RI
DIBENZ(A,H)ANTHRACENE	0.0018	J	0.0065	MRL	0.0065	MRL	mg/kg	J	RI
INDENO(1,2,3-CD)PYRENE	0.0047	J	0.0065	MRL	0.0065	MRL	mg/kg	J	RI
PHENANTHRENE	0.0048	J	0.0065	MRL	0.0065	MRL	mg/kg	J	RI

SDG: **L631375**

Method Category: **SVOA**

Method: **8270C-SIM** ***Matrix:*** **Soil**

Sample ID: **MRP1-PES-1D-01** ***Collected:*** **4/18/2013 3:25:00** ***Analysis Type:*** **Initial-** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1-Methylnaphthalene	0.0042	J	0.022	MRL	0.022	MRL	mg/kg	J	RI
2-METHYLNAPHTHALENE	0.0071	J	0.022	MRL	0.022	MRL	mg/kg	J	RI
ACENAPHTHYLENE	0.0036	J	0.0066	MRL	0.0066	MRL	mg/kg	J	RI
NAPHTHALENE	0.0066	J	0.022	MRL	0.022	MRL	mg/kg	J	RI

Sample ID: **MRP1-PES-1E-01** ***Collected:*** **4/18/2013 3:35:00** ***Analysis Type:*** **Initial-** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ACENAPHTHENE	0.0027	J	0.0064	MRL	0.0064	MRL	mg/kg	J	RI
ANTHRACENE	0.0045	J	0.0064	MRL	0.0064	MRL	mg/kg	J	RI
FLUORENE	0.0016	J	0.0064	MRL	0.0064	MRL	mg/kg	J	RI

Sample ID: **MRP1-PES-2A-01** ***Collected:*** **4/18/2013 3:45:00** ***Analysis Type:*** **Initial-** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1-Methylnaphthalene	0.0088	J	0.024	MRL	0.024	MRL	mg/kg	J	RI
2-METHYLNAPHTHALENE	0.014	J	0.024	MRL	0.024	MRL	mg/kg	J	RI
NAPHTHALENE	0.019	J	0.024	MRL	0.024	MRL	mg/kg	J	RI

* denotes a non-reportable result

Project Name and Number: -

Data Qualifier Summary

Lab Reporting Batch ID: 'L631371', 'L631375', 'L631608', **Laboratory: 'FALSE'**

EDD Filename: 'L631371_r1_8270C-SIM_rev', 'L631375_r1_8270C-SIM_rev', 'L631608_r1_8270C-SIM_rev', 'L631768_r1_8270C-SIM_rev', 'L631829_r1_8270C-SIM_rev', 'L632014_r1_8270C-SIM_rev', 'L632275_r1_8270C-SIM_rev', 'L632501_r1_8270C-SIM_rev', 'L632829_r1_8270C-SIM_rev', 'L633498_r1_8270C-SIM_rev' **eQAPP Name: TPMC Carr Point**

Method Category: **SVOA**

Method: **8270C-SIM** ***Matrix:*** **Soil**

Sample ID: **MRP1-PES-2A-01** ***Collected:*** **4/18/2013 3:45:00** ***Analysis Type:*** **Initial-** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code

Sample ID: **MRP1-PES-2B-01** ***Collected:*** **4/18/2013 3:55:00** ***Analysis Type:*** **Initial-** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1-Methylnaphthalene	0.0038	J	0.023	MRL	0.023	MRL	mg/kg	J	RI
2-METHYLNAPHTHALENE	0.006	J	0.023	MRL	0.023	MRL	mg/kg	J	RI

SDG: **L631608**

Method Category: **SVOA**

Method: **8270C-SIM** ***Matrix:*** **Soil**

Sample ID: **MRP1-PES-3E-01** ***Collected:*** **4/19/2013 11:00:00** ***Analysis Type:*** **Initial-** ***Dilution:*** **5**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ACENAPHTHYLENE	0.011	J	0.036	MRL	0.036	MRL	mg/kg	J	RI

Sample ID: **MRP1-PES-4A-01** ***Collected:*** **4/19/2013 11:05:00** ***Analysis Type:*** **Initial-** ***Dilution:*** **5**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
2-METHYLNAPHTHALENE	0.013	J	0.12	MRL	0.12	MRL	mg/kg	J	RI
FLUORENE	0.033	J	0.036	MRL	0.036	MRL	mg/kg	J	RI

Sample ID: **MRP1-PES-4B-01** ***Collected:*** **4/19/2013 11:10:00** ***Analysis Type:*** **Initial-** ***Dilution:*** **20**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BENZO(A)ANTHRACENE	0.034	J	0.14	MRL	0.14	MRL	mg/kg	J	RI
BENZO(A)PYRENE	0.025	J	0.14	MRL	0.14	MRL	mg/kg	J	RI
BENZO(B)FLUORANTHENE	0.029	J	0.14	MRL	0.14	MRL	mg/kg	J	RI
BENZO(G,H,I)PERYLENE	0.022	J	0.14	MRL	0.14	MRL	mg/kg	J	RI
CHRYSENE	0.13	J	0.14	MRL	0.14	MRL	mg/kg	J	RI

* denotes a non-reportable result

Project Name and Number: -

Data Qualifier Summary

Lab Reporting Batch ID: 'L631371', 'L631375', 'L631608', **Laboratory: 'FALSE'**

EDD Filename: 'L631371_r1_8270C-SIM_rev', 'L631375_r1_8270C-SIM_rev', 'L631608_r1_8270C-SIM_rev', 'L631768_r1_8270C-SIM_rev', 'L631829_r1_8270C-SIM_rev', 'L632014_r1_8270C-SIM_rev', 'L632275_r1_8270C-SIM_rev', 'L632501_r1_8270C-SIM_rev', 'L632829_r1_8270C-SIM_rev', 'L633498_r1_8270C-SIM_rev' **eQAPP Name: TPMC Carr Point**

Method Category: **SVOA**

Method: **8270C-SIM** ***Matrix:*** **Soil**

Sample ID: **MRP1-PES-4B-01** ***Collected:*** **4/19/2013 11:10:00** ***Analysis Type:*** **Initial-** ***Dilution:*** **20**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
FLUORANTHENE	0.042	J	0.14	MRL	0.14	MRL	mg/kg	J	RI
PHENANTHRENE	0.033	J	0.14	MRL	0.14	MRL	mg/kg	J	RI
PYRENE	0.066	J	0.14	MRL	0.14	MRL	mg/kg	J	RI

Sample ID: **MRP1-PES-4E-01** ***Collected:*** **4/19/2013 11:15:00** ***Analysis Type:*** **Initial-** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1-Methylnaphthalene	0.0026	J	0.023	MRL	0.023	MRL	mg/kg	J	RI, Fd
2-METHYLNAPHTHALENE	0.0026	J	0.023	MRL	0.023	MRL	mg/kg	J	RI
ANTHRACENE	0.00088	J	0.0069	MRL	0.0069	MRL	mg/kg	J	RI, Fd
BENZO(A)ANTHRACENE	0.0034	J	0.0069	MRL	0.0069	MRL	mg/kg	J	RI, Fd
BENZO(A)PYRENE	0.0047	J	0.0069	MRL	0.0069	MRL	mg/kg	J	RI, Fd
BENZO(B)FLUORANTHENE	0.0053	J	0.0069	MRL	0.0069	MRL	mg/kg	J	RI
BENZO(G,H,I)PERYLENE	0.004	J	0.0069	MRL	0.0069	MRL	mg/kg	J	RI, Fd
BENZO(K)FLUORANTHENE	0.0019	J	0.0069	MRL	0.0069	MRL	mg/kg	J	RI
CHRYSENE	0.0049	J	0.0069	MRL	0.0069	MRL	mg/kg	J	RI
DIBENZ(A,H)ANTHRACENE	0.00086	J	0.0069	MRL	0.0069	MRL	mg/kg	J	RI, Fd
FLUORANTHENE	0.0049	J	0.0069	MRL	0.0069	MRL	mg/kg	J	RI
INDENO(1,2,3-CD)PYRENE	0.0029	J	0.0069	MRL	0.0069	MRL	mg/kg	J	RI, Fd
PHENANTHRENE	0.0045	J	0.0069	MRL	0.0069	MRL	mg/kg	J	RI
PYRENE	0.005	J	0.0069	MRL	0.0069	MRL	mg/kg	J	RI, Fd

Sample ID: **MRP1-PES-4E-01DUP** ***Collected:*** **4/19/2013 11:15:00** ***Analysis Type:*** **Initial-** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
2-METHYLNAPHTHALENE	0.0025	J	0.023	MRL	0.023	MRL	mg/kg	J	RI
ACENAPHTHENE	0.00082	J	0.0069	MRL	0.0069	MRL	mg/kg	J	RI, Fd
ANTHRACENE	0.0037	J	0.0069	MRL	0.0069	MRL	mg/kg	J	RI, Fd
BENZO(A)ANTHRACENE	0.002	J	0.0069	MRL	0.0069	MRL	mg/kg	J	RI, Fd
BENZO(A)PYRENE	0.0022	J	0.0069	MRL	0.0069	MRL	mg/kg	J	RI, Fd

* denotes a non-reportable result

Project Name and Number: -

Data Qualifier Summary

Lab Reporting Batch ID: 'L631371', 'L631375', 'L631608', **Laboratory: 'FALSE'**

EDD Filename: 'L631371_r1_8270C-SIM_rev', 'L631375_r1_8270C-SIM_rev', 'L631608_r1_8270C-SIM_rev', 'L631768_r1_8270C-SIM_rev', 'L631829_r1_8270C-SIM_rev', 'L632014_r1_8270C-SIM_rev', 'L632275_r1_8270C-SIM_rev', 'L632501_r1_8270C-SIM_rev', 'L632829_r1_8270C-SIM_rev', 'L633498_r1_8270C-SIM_rev' **eQAPP Name: TPMC Carr Point**

Method Category: **SVOA**

Method: **8270C-SIM** ***Matrix:*** **Soil**

Sample ID: **MRP1-PES-4E-01DUP** ***Collected:*** **4/19/2013 11:15:00** ***Analysis Type:*** **Initial-** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BENZO(B)FLUORANTHENE	0.0047	J	0.0069	MRL	0.0069	MRL	mg/kg	J	RI
BENZO(G,H,I)PERYLENE	0.0073		0.0069	MRL	0.0069	MRL	mg/kg	J	Fd
BENZO(K)FLUORANTHENE	0.0026	J	0.0069	MRL	0.0069	MRL	mg/kg	J	RI
CHRYSENE	0.0054	J	0.0069	MRL	0.0069	MRL	mg/kg	J	RI
FLUORANTHENE	0.0068	J	0.0069	MRL	0.0069	MRL	mg/kg	J	RI
FLUORENE	0.002	J	0.0069	MRL	0.0069	MRL	mg/kg	J	RI, Fd
INDENO(1,2,3-CD)PYRENE	0.0017	J	0.0069	MRL	0.0069	MRL	mg/kg	J	RI, Fd
PHENANTHRENE	0.0053	J	0.0069	MRL	0.0069	MRL	mg/kg	J	RI
PYRENE	0.018		0.0069	MRL	0.0069	MRL	mg/kg	J	Fd

SDG: **L631768**

Method Category: **SVOA**

Method: **8270C-SIM** ***Matrix:*** **Soil**

Sample ID: **MRP1-PES-2C-01** ***Collected:*** **4/20/2013 11:45:00** ***Analysis Type:*** **Initial-** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1-Methylnaphthalene	0.0031	J	0.026	MRL	0.026	MRL	mg/kg	J	RI
2-METHYLNAPHTHALENE	0.0036	J	0.026	MRL	0.026	MRL	mg/kg	J	RI
ACENAPHTHYLENE	0.0027	J	0.0077	MRL	0.0077	MRL	mg/kg	J	RI
NAPHTHALENE	0.01	J	0.026	MRL	0.026	MRL	mg/kg	J	RI

Sample ID: **MRP1-PES-3B-01** ***Collected:*** **4/20/2013 11:40:00** ***Analysis Type:*** **Initial-** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ANTHRACENE	0.0013	J	0.0073	MRL	0.0073	MRL	mg/kg	J	RI
BENZO(A)ANTHRACENE	0.005	J	0.0073	MRL	0.0073	MRL	mg/kg	J	RI
BENZO(A)PYRENE	0.0052	J	0.0073	MRL	0.0073	MRL	mg/kg	J	RI
BENZO(B)FLUORANTHENE	0.0062	J	0.0073	MRL	0.0073	MRL	mg/kg	J	RI

* denotes a non-reportable result

Project Name and Number: -

Data Qualifier Summary

Lab Reporting Batch ID: 'L631371', 'L631375', 'L631608', **Laboratory: 'FALSE'**

EDD Filename: 'L631371_r1_8270C-SIM_rev', 'L631375_r1_8270C-SIM_rev', 'L631608_r1_8270C-SIM_rev', 'L631768_r1_8270C-SIM_rev', 'L631829_r1_8270C-SIM_rev', 'L632014_r1_8270C-SIM_rev', 'L632275_r1_8270C-SIM_rev', 'L632501_r1_8270C-SIM_rev', 'L632829_r1_8270C-SIM_rev', 'L633498_r1_8270C-SIM_rev' **eQAPP Name: TPMC Carr Point**

Method Category: **SVOA**

Method: **8270C-SIM** ***Matrix:*** **Soil**

Sample ID: **MRP1-PES-3B-01** ***Collected:*** **4/20/2013 11:40:00** ***Analysis Type:*** **Initial-** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BENZO(G,H,I)PERYLENE	0.0036	J	0.0073	MRL	0.0073	MRL	mg/kg	J	RI
BENZO(K)FLUORANTHENE	0.0035	J	0.0073	MRL	0.0073	MRL	mg/kg	J	RI
CHRYSENE	0.0051	J	0.0073	MRL	0.0073	MRL	mg/kg	J	RI
DIBENZ(A,H)ANTHRACENE	0.00076	J	0.0073	MRL	0.0073	MRL	mg/kg	J	RI
INDENO(1,2,3-CD)PYRENE	0.0029	J	0.0073	MRL	0.0073	MRL	mg/kg	J	RI
PHENANTHRENE	0.0043	J	0.0073	MRL	0.0073	MRL	mg/kg	J	RI
PYRENE	0.0072	J	0.0073	MRL	0.0073	MRL	mg/kg	J	RI

Sample ID: **MRP1-PES-3C-01** ***Collected:*** **4/20/2013 11:30:00** ***Analysis Type:*** **Initial-** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ACENAPHTHENE	0.0018	J	0.0078	MRL	0.0078	MRL	mg/kg	J	RI
ANTHRACENE	0.0033	J	0.0078	MRL	0.0078	MRL	mg/kg	J	RI
BENZO(K)FLUORANTHENE	0.0068	J	0.0078	MRL	0.0078	MRL	mg/kg	J	RI
DIBENZ(A,H)ANTHRACENE	0.0018	J	0.0078	MRL	0.0078	MRL	mg/kg	J	RI
FLUORENE	0.00085	J	0.0078	MRL	0.0078	MRL	mg/kg	J	RI

Sample ID: **MRP1-PES-3D-01** ***Collected:*** **4/20/2013 11:35:00** ***Analysis Type:*** **Initial-** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1-Methylnaphthalene	0.0029	J	0.026	MRL	0.026	MRL	mg/kg	J	RI
2-METHYLNAPHTHALENE	0.0026	J	0.026	MRL	0.026	MRL	mg/kg	J	RI
ACENAPHTHENE	0.0013	J	0.0079	MRL	0.0079	MRL	mg/kg	J	RI
ANTHRACENE	0.0026	J	0.0079	MRL	0.0079	MRL	mg/kg	J	RI
BENZO(K)FLUORANTHENE	0.0072	J	0.0079	MRL	0.0079	MRL	mg/kg	J	RI
DIBENZ(A,H)ANTHRACENE	0.0021	J	0.0079	MRL	0.0079	MRL	mg/kg	J	RI
NAPHTHALENE	0.0033	J	0.026	MRL	0.026	MRL	mg/kg	J	RI

* denotes a non-reportable result

Project Name and Number: -

Data Qualifier Summary

Lab Reporting Batch ID: 'L631371', 'L631375', 'L631608', **Laboratory: 'FALSE'**

EDD Filename: 'L631371_r1_8270C-SIM_rev', 'L631375_r1_8270C-SIM_rev', 'L631608_r1_8270C-SIM_rev', 'L631768_r1_8270C-SIM_rev', 'L631829_r1_8270C-SIM_rev', 'L632014_r1_8270C-SIM_rev', 'L632275_r1_8270C-SIM_rev', 'L632501_r1_8270C-SIM_rev', 'L632829_r1_8270C-SIM_rev', 'L633498_r1_8270C-SIM_rev' **eQAPP Name: TPMC Carr Point**

Method Category: **SVOA**

Method: **8270C-SIM** ***Matrix:*** **Soil**

Sample ID: **MRP1-PES-4C-01** ***Collected:*** **4/20/2013 11:25:00** ***Analysis Type:*** **Initial-** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ANTHRACENE	0.00092	J	0.0073	MRL	0.0073	MRL	mg/kg	J	RI
BENZO(A)ANTHRACENE	0.0049	J	0.0073	MRL	0.0073	MRL	mg/kg	J	RI
BENZO(A)PYRENE	0.0049	J	0.0073	MRL	0.0073	MRL	mg/kg	J	RI
BENZO(B)FLUORANTHENE	0.0059	J	0.0073	MRL	0.0073	MRL	mg/kg	J	RI
BENZO(G,H,I)PERYLENE	0.0033	J	0.0073	MRL	0.0073	MRL	mg/kg	J	RI
BENZO(K)FLUORANTHENE	0.0022	J	0.0073	MRL	0.0073	MRL	mg/kg	J	RI
CHRYSENE	0.0054	J	0.0073	MRL	0.0073	MRL	mg/kg	J	RI
DIBENZ(A,H)ANTHRACENE	0.00073	J	0.0073	MRL	0.0073	MRL	mg/kg	J	RI
INDENO(1,2,3-CD)PYRENE	0.0026	J	0.0073	MRL	0.0073	MRL	mg/kg	J	RI
PHENANTHRENE	0.0051	J	0.0073	MRL	0.0073	MRL	mg/kg	J	RI

Sample ID: **MRP1-PES-4D-01** ***Collected:*** **4/20/2013 11:20:00** ***Analysis Type:*** **Initial-** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BENZO(A)ANTHRACENE	0.00089	J	0.0072	MRL	0.0072	MRL	mg/kg	J	RI
BENZO(A)PYRENE	0.00077	J	0.0072	MRL	0.0072	MRL	mg/kg	J	RI
BENZO(B)FLUORANTHENE	0.00077	J	0.0072	MRL	0.0072	MRL	mg/kg	J	RI
FLUORANTHENE	0.001	J	0.0072	MRL	0.0072	MRL	mg/kg	J	RI
PYRENE	0.00086	J	0.0072	MRL	0.0072	MRL	mg/kg	J	RI

SDG: **L631829**

Method Category: **SVOA**

Method: **8270C-SIM** ***Matrix:*** **Soil**

Sample ID: **MRP1-PES-2E-01** ***Collected:*** **4/22/2013 3:20:00** ***Analysis Type:*** **Initial-** ***Dilution:*** **10**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1-Methylnaphthalene	0.056	J	0.24	MRL	0.24	MRL	mg/kg	J	RI
2-METHYLNAPHTHALENE	0.10	J	0.24	MRL	0.24	MRL	mg/kg	J	RI

* denotes a non-reportable result

Project Name and Number: -

Data Qualifier Summary

Lab Reporting Batch ID: 'L631371', 'L631375', 'L631608', **Laboratory: 'FALSE'**

EDD Filename: 'L631371_r1_8270C-SIM_rev', 'L631375_r1_8270C-SIM_rev', 'L631608_r1_8270C-SIM_rev', 'L631768_r1_8270C-SIM_rev', 'L631829_r1_8270C-SIM_rev', 'L632014_r1_8270C-SIM_rev', 'L632275_r1_8270C-SIM_rev', 'L632501_r1_8270C-SIM_rev', 'L632829_r1_8270C-SIM_rev', 'L633498_r1_8270C-SIM_rev' **eQAPP Name: TPMC Carr Point**

Method Category: **SVOA**

Method: **8270C-SIM** ***Matrix:*** **Soil**

Sample ID: **MRP1-PES-2E-01** ***Collected:*** **4/22/2013 3:20:00** ***Analysis Type:*** **Initial-** ***Dilution:*** **10**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
NAPHTHALENE	0.03	J	0.24	MRL	0.24	MRL	mg/kg	J	RI

Sample ID: **MRP1-PES-3A-01** ***Collected:*** **4/22/2013 3:25:00** ***Analysis Type:*** **Initial-** ***Dilution:*** **10**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1-Methylnaphthalene	0.049	J	0.23	MRL	0.23	MRL	mg/kg	J	RI
2-METHYLNAPHTHALENE	0.068	J	0.23	MRL	0.23	MRL	mg/kg	J	RI
NAPHTHALENE	0.095	J	0.23	MRL	0.23	MRL	mg/kg	J	RI

SDG: **L632014**

Method Category: **SVOA**

Method: **8270C-SIM** ***Matrix:*** **Soil**

Sample ID: **MRP1-PES-2D-01** ***Collected:*** **4/23/2013 3:30:00** ***Analysis Type:*** **Initial-** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1-Methylnaphthalene	0.003	J	0.025	MRL	0.025	MRL	mg/kg	J	RI
2-METHYLNAPHTHALENE	0.0042	J	0.025	MRL	0.025	MRL	mg/kg	J	RI
ACENAPHTHYLENE	0.0012	J	0.0075	MRL	0.0075	MRL	mg/kg	J	RI

SDG: **L632275**

Method Category: **SVOA**

Method: **8270C-SIM** ***Matrix:*** **Soil**

Sample ID: **MRP1-PES-1C-02** ***Collected:*** **4/24/2013 10:20:00** ***Analysis Type:*** **Initial-** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BENZO(A)ANTHRACENE	0.0012	J	0.0073	MRL	0.0073	MRL	mg/kg	J	RI
BENZO(A)PYRENE	0.00098	J	0.0073	MRL	0.0073	MRL	mg/kg	J	RI

* denotes a non-reportable result

Project Name and Number: -

Data Qualifier Summary

Lab Reporting Batch ID: 'L631371', 'L631375', 'L631608', **Laboratory: 'FALSE'**

EDD Filename: 'L631371_r1_8270C-SIM_rev', 'L631375_r1_8270C-SIM_rev', 'L631608_r1_8270C-SIM_rev', 'L631768_r1_8270C-SIM_rev', 'L631829_r1_8270C-SIM_rev', 'L632014_r1_8270C-SIM_rev', 'L632275_r1_8270C-SIM_rev', 'L632501_r1_8270C-SIM_rev', 'L632829_r1_8270C-SIM_rev', 'L633498_r1_8270C-SIM_rev' **eQAPP Name: TPMC Carr Point**

Method Category: **SVOA**

Method: **8270C-SIM** ***Matrix:*** **Soil**

Sample ID: **MRP1-PES-1C-02** ***Collected:*** **4/24/2013 10:20:00** ***Analysis Type:*** **Initial-** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BENZO(B)FLUORANTHENE	0.0012	J	0.0073	MRL	0.0073	MRL	mg/kg	J	RI
BENZO(G,H,I)PERYLENE	0.00089	J	0.0073	MRL	0.0073	MRL	mg/kg	J	RI
CHRYSENE	0.001	J	0.0073	MRL	0.0073	MRL	mg/kg	J	RI
FLUORANTHENE	0.0016	J	0.0073	MRL	0.0073	MRL	mg/kg	J	RI
PHENANTHRENE	0.0011	J	0.0073	MRL	0.0073	MRL	mg/kg	J	RI
PYRENE	0.0015	J	0.0073	MRL	0.0073	MRL	mg/kg	J	RI

Sample ID: **MRP1-PES-1D-02** ***Collected:*** **4/24/2013 10:25:00** ***Analysis Type:*** **Initial-** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BENZO(A)ANTHRACENE	0.00099	J	0.0072	MRL	0.0072	MRL	mg/kg	J	RI
BENZO(A)PYRENE	0.00079	J	0.0072	MRL	0.0072	MRL	mg/kg	J	RI
BENZO(B)FLUORANTHENE	0.00099	J	0.0072	MRL	0.0072	MRL	mg/kg	J	RI
CHRYSENE	0.0013	J	0.0072	MRL	0.0072	MRL	mg/kg	J	RI, Fd
FLUORANTHENE	0.0014	J	0.0072	MRL	0.0072	MRL	mg/kg	J	RI
PHENANTHRENE	0.0018	J	0.0072	MRL	0.0072	MRL	mg/kg	J	RI, Fd
PYRENE	0.0013	J	0.0072	MRL	0.0072	MRL	mg/kg	J	RI

Sample ID: **MRP1-PES-1D-02 DUP** ***Collected:*** **4/24/2013 10:25:00** ***Analysis Type:*** **Initial-** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1-Methylnaphthalene	0.0055	J	0.024	MRL	0.024	MRL	mg/kg	J	RI, Fd
2-METHYLNAPHTHALENE	0.005	J	0.024	MRL	0.024	MRL	mg/kg	J	RI, Fd
BENZO(A)ANTHRACENE	0.0012	J	0.0072	MRL	0.0072	MRL	mg/kg	J	RI
BENZO(A)PYRENE	0.001	J	0.0072	MRL	0.0072	MRL	mg/kg	J	RI
BENZO(B)FLUORANTHENE	0.0013	J	0.0072	MRL	0.0072	MRL	mg/kg	J	RI
BENZO(G,H,I)PERYLENE	0.00091	J	0.0072	MRL	0.0072	MRL	mg/kg	J	RI, Fd
CHRYSENE	0.0019	J	0.0072	MRL	0.0072	MRL	mg/kg	J	RI, Fd
FLUORANTHENE	0.0018	J	0.0072	MRL	0.0072	MRL	mg/kg	J	RI
PHENANTHRENE	0.0044	J	0.0072	MRL	0.0072	MRL	mg/kg	J	RI, Fd

* denotes a non-reportable result

Project Name and Number: -

Data Qualifier Summary

Lab Reporting Batch ID: 'L631371', 'L631375', 'L631608', **Laboratory: 'FALSE'**

EDD Filename: 'L631371_r1_8270C-SIM_rev', 'L631375_r1_8270C-SIM_rev', 'L631608_r1_8270C-SIM_rev', 'L631768_r1_8270C-SIM_rev', 'L631829_r1_8270C-SIM_rev', 'L632014_r1_8270C-SIM_rev', 'L632275_r1_8270C-SIM_rev', 'L632501_r1_8270C-SIM_rev', 'L632829_r1_8270C-SIM_rev', 'L633498_r1_8270C-SIM_rev' **eQAPP Name: TPMC Carr Point**

Method Category: **SVOA**

Method: **8270C-SIM** ***Matrix:*** **Soil**

Sample ID: **MRP1-PES-1D-02 DUP** ***Collected:*** **4/24/2013 10:25:00** ***Analysis Type:*** **Initial-** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PYRENE	0.0018	J	0.0072	MRL	0.0072	MRL	mg/kg	J	RI

Sample ID: **MRP1-PES-1E-02** ***Collected:*** **4/24/2013 2:15:00** ***Analysis Type:*** **Initial-** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BENZO(A)ANTHRACENE	0.0011	J	0.0070	MRL	0.0070	MRL	mg/kg	J	RI
BENZO(A)PYRENE	0.001	J	0.0070	MRL	0.0070	MRL	mg/kg	J	RI
BENZO(B)FLUORANTHENE	0.0013	J	0.0070	MRL	0.0070	MRL	mg/kg	J	RI
BENZO(G,H,I)PERYLENE	0.00092	J	0.0070	MRL	0.0070	MRL	mg/kg	J	RI
CHRYSENE	0.0015	J	0.0070	MRL	0.0070	MRL	mg/kg	J	RI
FLUORANTHENE	0.002	J	0.0070	MRL	0.0070	MRL	mg/kg	J	RI
PHENANTHRENE	0.0027	J	0.0070	MRL	0.0070	MRL	mg/kg	J	RI
PYRENE	0.0019	J	0.0070	MRL	0.0070	MRL	mg/kg	J	RI

Sample ID: **MRP1-PES-2A-02** ***Collected:*** **4/24/2013 2:30:00** ***Analysis Type:*** **Initial-** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1-Methylnaphthalene	0.023	U	0.023	MRL	0.023	MRL	mg/kg	UJ	Surr
2-CHLORONAPHTHALENE	0.023	U	0.023	MRL	0.023	MRL	mg/kg	UJ	Surr
2-METHYLNAPHTHALENE	0.023	U	0.023	MRL	0.023	MRL	mg/kg	UJ	Surr
ACENAPHTHENE	0.0069	U	0.0069	MRL	0.0069	MRL	mg/kg	UJ	Surr
ACENAPHTHYLENE	0.0069	U	0.0069	MRL	0.0069	MRL	mg/kg	UJ	Surr
ANTHRACENE	0.0069	U	0.0069	MRL	0.0069	MRL	mg/kg	UJ	Surr
BENZO(A)ANTHRACENE	0.0024	J	0.0069	MRL	0.0069	MRL	mg/kg	J	RI, Surr
BENZO(A)PYRENE	0.0029	J	0.0069	MRL	0.0069	MRL	mg/kg	J	RI, Surr
BENZO(B)FLUORANTHENE	0.0028	J	0.0069	MRL	0.0069	MRL	mg/kg	J	RI, Surr
BENZO(G,H,I)PERYLENE	0.0024	J	0.0069	MRL	0.0069	MRL	mg/kg	J	RI, Surr
BENZO(K)FLUORANTHENE	0.00099	J	0.0069	MRL	0.0069	MRL	mg/kg	J	RI, Surr
CHRYSENE	0.0029	J	0.0069	MRL	0.0069	MRL	mg/kg	J	RI, Surr
DIBENZ(A,H)ANTHRACENE	0.0069	U	0.0069	MRL	0.0069	MRL	mg/kg	UJ	Surr

* denotes a non-reportable result

Project Name and Number: -

Data Qualifier Summary

Lab Reporting Batch ID: 'L631371', 'L631375', 'L631608', **Laboratory: 'FALSE'**

EDD Filename: 'L631371_r1_8270C-SIM_rev', 'L631375_r1_8270C-SIM_rev', 'L631608_r1_8270C-SIM_rev', 'L631768_r1_8270C-SIM_rev', 'L631829_r1_8270C-SIM_rev', 'L632014_r1_8270C-SIM_rev', 'L632275_r1_8270C-SIM_rev', 'L632501_r1_8270C-SIM_rev', 'L632829_r1_8270C-SIM_rev', 'L633498_r1_8270C-SIM_rev' **eQAPP Name: TPMC Carr Point**

Method Category: **SVOA**

Method: **8270C-SIM** ***Matrix:*** **Soil**

Sample ID: **MRP1-PES-2A-02** ***Collected:*** **4/24/2013 2:30:00** ***Analysis Type:*** **Initial-** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
FLUORANTHENE	0.0029	J	0.0069	MRL	0.0069	MRL	mg/kg	J	RI, Surr
FLUORENE	0.0069	U	0.0069	MRL	0.0069	MRL	mg/kg	UJ	Surr
INDENO(1,2,3-CD)PYRENE	0.0016	J	0.0069	MRL	0.0069	MRL	mg/kg	J	RI, Surr
NAPHTHALENE	0.023	U	0.023	MRL	0.023	MRL	mg/kg	UJ	Surr
PHENANTHRENE	0.0021	J	0.0069	MRL	0.0069	MRL	mg/kg	J	RI, Surr
PYRENE	0.003	J	0.0069	MRL	0.0069	MRL	mg/kg	J	RI, Surr

Sample ID: **MRP1-PES-SW1-01** ***Collected:*** **4/24/2013 1:05:00** ***Analysis Type:*** **Initial-** ***Dilution:*** **10**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ACENAPHTHENE	0.012	J	0.068	MRL	0.068	MRL	mg/kg	J	RI
DIBENZ(A,H)ANTHRACENE	0.061	J	0.068	MRL	0.068	MRL	mg/kg	J	RI
FLUORENE	0.014	J	0.068	MRL	0.068	MRL	mg/kg	J	RI

Sample ID: **MRP1-PES-SW3-02** ***Collected:*** **4/24/2013 1:50:00** ***Analysis Type:*** **Initial-** ***Dilution:*** **5**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1-Methylnaphthalene	0.033	J	0.11	MRL	0.11	MRL	mg/kg	J	RI
2-METHYLNAPHTHALENE	0.028	J	0.11	MRL	0.11	MRL	mg/kg	J	RI
ACENAPHTHENE	0.21	J6	0.034	MRL	0.034	MRL	mg/kg	J-	Ms
BENZO(K)FLUORANTHENE	0.33	J6	0.034	MRL	0.034	MRL	mg/kg	J-	Ms
DIBENZ(A,H)ANTHRACENE	0.17	J6	0.034	MRL	0.034	MRL	mg/kg	J-	Ms
FLUORENE	0.20	J6	0.034	MRL	0.034	MRL	mg/kg	J-	Ms

SDG: **L632501**

* denotes a non-reportable result

Project Name and Number: -

Data Qualifier Summary

Lab Reporting Batch ID: 'L631371', 'L631375', 'L631608', **Laboratory: 'FALSE'**

EDD Filename: 'L631371_r1_8270C-SIM_rev', 'L631375_r1_8270C-SIM_rev', 'L631608_r1_8270C-SIM_rev', 'L631768_r1_8270C-SIM_rev', 'L631829_r1_8270C-SIM_rev', 'L632014_r1_8270C-SIM_rev', 'L632275_r1_8270C-SIM_rev', 'L632501_r1_8270C-SIM_rev', 'L632829_r1_8270C-SIM_rev', 'L633498_r1_8270C-SIM_rev' **eQAPP Name: TPMC Carr Point**

Method Category: **SVOA**

Method: **8270C-SIM** ***Matrix:*** **Soil**

Sample ID: **MRP1-PES-2B-02** ***Collected:*** **4/25/2013 2:00:00** ***Analysis Type:*** **Initial-** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ANTHRACENE	0.00071	J	0.0067	MRL	0.0067	MRL	mg/kg	J	RI, Fd
BENZO(A)ANTHRACENE	0.0039	J	0.0067	MRL	0.0067	MRL	mg/kg	J	RI, Fd
BENZO(A)PYRENE	0.0042	J	0.0067	MRL	0.0067	MRL	mg/kg	J	RI, Fd
BENZO(B)FLUORANTHENE	0.0044	J	0.0067	MRL	0.0067	MRL	mg/kg	J	RI, Fd
BENZO(G,H,I)PERYLENE	0.0033	J	0.0067	MRL	0.0067	MRL	mg/kg	J	RI, Fd
BENZO(K)FLUORANTHENE	0.0019	J	0.0067	MRL	0.0067	MRL	mg/kg	J	RI, Fd
CHRYSENE	0.006	J	0.0067	MRL	0.0067	MRL	mg/kg	J	RI, Fd
DIBENZ(A,H)ANTHRACENE	0.001	J	0.0067	MRL	0.0067	MRL	mg/kg	J	RI, Fd
INDENO(1,2,3-CD)PYRENE	0.0022	J	0.0067	MRL	0.0067	MRL	mg/kg	J	RI, Fd
PHENANTHRENE	0.0034	J	0.0067	MRL	0.0067	MRL	mg/kg	J	RI, Fd
PYRENE	0.0057	J	0.0067	MRL	0.0067	MRL	mg/kg	J	RI

Sample ID: **MRP1-PES-2B-02 DUP** ***Collected:*** **4/25/2013 2:00:00** ***Analysis Type:*** **Initial-** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1-Methylnaphthalene	0.022	U	0.022	MRL	0.022	MRL	mg/kg	UJ	Surr
2-CHLORONAPHTHALENE	0.022	U	0.022	MRL	0.022	MRL	mg/kg	UJ	Surr
2-METHYLNAPHTHALENE	0.022	U	0.022	MRL	0.022	MRL	mg/kg	UJ	Surr
ACENAPHTHENE	0.0068	U	0.0068	MRL	0.0068	MRL	mg/kg	UJ	Surr
ACENAPHTHYLENE	0.00072	J	0.0068	MRL	0.0068	MRL	mg/kg	J	RI, Surr, Fd
ANTHRACENE	0.0015	J	0.0068	MRL	0.0068	MRL	mg/kg	J	RI, Surr, Fd
BENZO(A)ANTHRACENE	0.0058	J	0.0068	MRL	0.0068	MRL	mg/kg	J	RI, Surr, Fd
BENZO(A)PYRENE	0.0079		0.0068	MRL	0.0068	MRL	mg/kg	J	Surr, Fd
BENZO(B)FLUORANTHENE	0.01		0.0068	MRL	0.0068	MRL	mg/kg	J	Surr, Fd
BENZO(G,H,I)PERYLENE	0.012		0.0068	MRL	0.0068	MRL	mg/kg	J	Surr, Fd
BENZO(K)FLUORANTHENE	0.0028	J	0.0068	MRL	0.0068	MRL	mg/kg	J	RI, Surr, Fd
CHRYSENE	0.012		0.0068	MRL	0.0068	MRL	mg/kg	J	Surr, Fd
DIBENZ(A,H)ANTHRACENE	0.0033	J	0.0068	MRL	0.0068	MRL	mg/kg	J	RI, Surr, Fd
FLUORANTHENE	0.0094		0.0068	MRL	0.0068	MRL	mg/kg	J-	Surr
FLUORENE	0.00096	J	0.0068	MRL	0.0068	MRL	mg/kg	J	RI, Surr, Fd

* denotes a non-reportable result

Project Name and Number: -

Data Qualifier Summary

Lab Reporting Batch ID: 'L631371', 'L631375', 'L631608', **Laboratory: 'FALSE'**

EDD Filename: 'L631371_r1_8270C-SIM_rev', 'L631375_r1_8270C-SIM_rev', 'L631608_r1_8270C-SIM_rev', 'L631768_r1_8270C-SIM_rev', 'L631829_r1_8270C-SIM_rev', 'L632014_r1_8270C-SIM_rev', 'L632275_r1_8270C-SIM_rev', 'L632501_r1_8270C-SIM_rev', 'L632829_r1_8270C-SIM_rev', 'L633498_r1_8270C-SIM_rev' **eQAPP Name: TPMC Carr Point**

Method Category: **SVOA**

Method: **8270C-SIM** ***Matrix:*** **Soil**

Sample ID: **MRP1-PES-2B-02 DUP** ***Collected:*** **4/25/2013 2:00:00** ***Analysis Type:*** **Initial-** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
INDENO(1,2,3-CD)PYRENE	0.0074		0.0068	MRL	0.0068	MRL	mg/kg	J	Surr, Fd
NAPHTHALENE	0.022	U	0.022	MRL	0.022	MRL	mg/kg	UJ	Surr
PHENANTHRENE	0.0058	J	0.0068	MRL	0.0068	MRL	mg/kg	J	RI, Surr, Fd
PYRENE	0.0076		0.0068	MRL	0.0068	MRL	mg/kg	J-	Surr

Sample ID: **MRP1-PES-2E-02** ***Collected:*** **4/25/2013 3:00:00** ***Analysis Type:*** **Initial-** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ANTHRACENE	0.026	J5	0.0070	MRL	0.0070	MRL	mg/kg	J+	Ms
BENZO(A)ANTHRACENE	0.11	J5	0.0070	MRL	0.0070	MRL	mg/kg	J+	Ms
BENZO(A)PYRENE	0.16	J5	0.0070	MRL	0.0070	MRL	mg/kg	J+	Ms
BENZO(B)FLUORANTHENE	0.16	J5	0.0070	MRL	0.0070	MRL	mg/kg	J+	Ms
BENZO(G,H,I)PERYLENE	0.14	J5	0.0070	MRL	0.0070	MRL	mg/kg	J+	Ms
BENZO(K)FLUORANTHENE	0.058	J5	0.0070	MRL	0.0070	MRL	mg/kg	J+	Ms
CHRYSENE	0.13	J5J3	0.0070	MRL	0.0070	MRL	mg/kg	J+	Ms
FLUORANTHENE	0.18	J5	0.0070	MRL	0.0070	MRL	mg/kg	J+	Ms
INDENO(1,2,3-CD)PYRENE	0.10	J5	0.0070	MRL	0.0070	MRL	mg/kg	J+	Ms
PHENANTHRENE	0.08	J5	0.0070	MRL	0.0070	MRL	mg/kg	J+	Ms
PYRENE	0.14	J5J3	0.0070	MRL	0.0070	MRL	mg/kg	J+	Ms

Sample ID: **MRP1-PES-3A-02** ***Collected:*** **4/25/2013 3:05:00** ***Analysis Type:*** **Initial-** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ACENAPHTHENE	0.0045	J	0.0068	MRL	0.0068	MRL	mg/kg	J	RI
FLUORENE	0.0042	J	0.0068	MRL	0.0068	MRL	mg/kg	J	RI

Sample ID: **MRP1-PES-3E-02** ***Collected:*** **4/25/2013 3:10:00** ***Analysis Type:*** **Initial-** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BENZO(A)ANTHRACENE	0.00074	J	0.0070	MRL	0.0070	MRL	mg/kg	J	RI

* denotes a non-reportable result

Project Name and Number: -

Data Qualifier Summary

Lab Reporting Batch ID: 'L631371', 'L631375', 'L631608', **Laboratory: 'FALSE'**

EDD Filename: 'L631371_r1_8270C-SIM_rev', 'L631375_r1_8270C-SIM_rev', 'L631608_r1_8270C-SIM_rev', 'L631768_r1_8270C-SIM_rev', 'L631829_r1_8270C-SIM_rev', 'L632014_r1_8270C-SIM_rev', 'L632275_r1_8270C-SIM_rev', 'L632501_r1_8270C-SIM_rev', 'L632829_r1_8270C-SIM_rev', 'L633498_r1_8270C-SIM_rev' **eQAPP Name: TPMC Carr Point**

Method Category: **SVOA**

Method: **8270C-SIM** ***Matrix:*** **Soil**

Sample ID: **MRP1-PES-3E-02** ***Collected:*** **4/25/2013 3:10:00** ***Analysis Type:*** **Initial-** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
FLUORANTHENE	0.00092	J	0.0070	MRL	0.0070	MRL	mg/kg	J	RI
PYRENE	0.00079	J	0.0070	MRL	0.0070	MRL	mg/kg	J	RI

Sample ID: **MRP1-PES-SW4-01** ***Collected:*** **4/25/2013 10:15:00** ***Analysis Type:*** **Initial-** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1-Methylnaphthalene	0.01	JJ6	0.024	MRL	0.024	MRL	mg/kg	J	RI, Ms
2-CHLORONAPHTHALENE	0.024	UJ6	0.024	MRL	0.024	MRL	mg/kg	UJ	Ms
2-METHYLNAPHTHALENE	0.013	JJ6	0.024	MRL	0.024	MRL	mg/kg	J	RI, Ms
ACENAPHTHENE	0.10	J6J3	0.0072	MRL	0.0072	MRL	mg/kg	J-	Ms
ACENAPHTHYLENE	0.012	J6	0.0072	MRL	0.0072	MRL	mg/kg	J-	Ms
ANTHRACENE	0.14	J6J3	0.0072	MRL	0.0072	MRL	mg/kg	J-	Ms
BENZO(K)FLUORANTHENE	0.30	J6J3	0.0072	MRL	0.0072	MRL	mg/kg	J-	Ms
DIBENZ(A,H)ANTHRACENE	0.17	J6J3	0.0072	MRL	0.0072	MRL	mg/kg	J-	Ms
FLUORENE	0.068	J6	0.0072	MRL	0.0072	MRL	mg/kg	J-	Ms
NAPHTHALENE	0.018	JJ6	0.024	MRL	0.024	MRL	mg/kg	J	RI, Ms

Sample ID: **MRP1-PES-SW5-01** ***Collected:*** **4/25/2013 10:20:00** ***Analysis Type:*** **Initial-** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1-Methylnaphthalene	0.0072	J	0.023	MRL	0.023	MRL	mg/kg	J	RI
2-METHYLNAPHTHALENE	0.011	J	0.023	MRL	0.023	MRL	mg/kg	J	RI
NAPHTHALENE	0.012	J	0.023	MRL	0.023	MRL	mg/kg	J	RI

Sample ID: **MRP1-PES-SW6-01** ***Collected:*** **4/25/2013 10:25:00** ***Analysis Type:*** **Initial-** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1-Methylnaphthalene	0.0028	J	0.023	MRL	0.023	MRL	mg/kg	J	RI
2-METHYLNAPHTHALENE	0.0031	J	0.023	MRL	0.023	MRL	mg/kg	J	RI
NAPHTHALENE	0.0064	J	0.023	MRL	0.023	MRL	mg/kg	J	RI

* denotes a non-reportable result

Project Name and Number: -

Data Qualifier Summary

Lab Reporting Batch ID: 'L631371', 'L631375', 'L631608', **Laboratory: 'FALSE'**

EDD Filename: 'L631371_r1_8270C-SIM_rev', 'L631375_r1_8270C-SIM_rev', 'L631608_r1_8270C-SIM_rev', 'L631768_r1_8270C-SIM_rev', 'L631829_r1_8270C-SIM_rev', 'L632014_r1_8270C-SIM_rev', 'L632275_r1_8270C-SIM_rev', 'L632501_r1_8270C-SIM_rev', 'L632829_r1_8270C-SIM_rev', 'L633498_r1_8270C-SIM_rev' **eQAPP Name: TPMC Carr Point**

Method Category: **SVOA**

Method: **8270C-SIM** ***Matrix:*** **Soil**

Sample ID: **MRP1-PES-SW7-02** ***Collected:*** **4/25/2013 2:30:00** ***Analysis Type:*** **Initial-** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
2-METHYLNAPHTHALENE	0.0034	J	0.022	MRL	0.022	MRL	mg/kg	J	RI
ACENAPHTHENE	0.0044	J	0.0067	MRL	0.0067	MRL	mg/kg	J	RI
FLUORENE	0.0036	J	0.0067	MRL	0.0067	MRL	mg/kg	J	RI
NAPHTHALENE	0.0039	J	0.022	MRL	0.022	MRL	mg/kg	J	RI

Sample ID: **MRP1-PES-SW8-02** ***Collected:*** **4/25/2013 3:15:00** ***Analysis Type:*** **Initial-** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ACENAPHTHYLENE	0.00096	J	0.0069	MRL	0.0069	MRL	mg/kg	J	RI
ANTHRACENE	0.00089	J	0.0069	MRL	0.0069	MRL	mg/kg	J	RI
BENZO(K)FLUORANTHENE	0.0051	J	0.0069	MRL	0.0069	MRL	mg/kg	J	RI
DIBENZ(A,H)ANTHRACENE	0.0021	J	0.0069	MRL	0.0069	MRL	mg/kg	J	RI
PHENANTHRENE	0.0046	J	0.0069	MRL	0.0069	MRL	mg/kg	J	RI

SDG: **L632829**

Method Category: **SVOA**

Method: **8270C-SIM** ***Matrix:*** **Soil**

Sample ID: **MRP1-PES-5A-01** ***Collected:*** **4/26/2013 7:50:00** ***Analysis Type:*** **Initial-** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ANTHRACENE	0.0013	J	0.0067	MRL	0.0067	MRL	mg/kg	J	RI
BENZO(A)ANTHRACENE	0.0046	J	0.0067	MRL	0.0067	MRL	mg/kg	J	RI
BENZO(A)PYRENE	0.0054	J	0.0067	MRL	0.0067	MRL	mg/kg	J	RI
BENZO(G,H,I)PERYLENE	0.0044	J	0.0067	MRL	0.0067	MRL	mg/kg	J	RI
BENZO(K)FLUORANTHENE	0.0034	J	0.0067	MRL	0.0067	MRL	mg/kg	J	RI
DIBENZ(A,H)ANTHRACENE	0.0011	J	0.0067	MRL	0.0067	MRL	mg/kg	J	RI
INDENO(1,2,3-CD)PYRENE	0.0035	J	0.0067	MRL	0.0067	MRL	mg/kg	J	RI
PHENANTHRENE	0.0038	J	0.0067	MRL	0.0067	MRL	mg/kg	J	RI

* denotes a non-reportable result

Project Name and Number: -

Data Qualifier Summary

Lab Reporting Batch ID: 'L631371', 'L631375', 'L631608', **Laboratory: 'FALSE'**

EDD Filename: 'L631371_r1_8270C-SIM_rev', 'L631375_r1_8270C-SIM_rev', 'L631608_r1_8270C-SIM_rev', 'L631768_r1_8270C-SIM_rev', 'L631829_r1_8270C-SIM_rev', 'L632014_r1_8270C-SIM_rev', 'L632275_r1_8270C-SIM_rev', 'L632501_r1_8270C-SIM_rev', 'L632829_r1_8270C-SIM_rev', 'L633498_r1_8270C-SIM_rev' **eQAPP Name: TPMC Carr Point**

Method Category: **SVOA**

Method: **8270C-SIM** ***Matrix:*** **Soil**

Sample ID: **MRP1-PES-5B-01** ***Collected:*** **4/26/2013 7:55:00** ***Analysis Type:*** **Initial-** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1-Methylnaphthalene	0.0094	J	0.029	MRL	0.029	MRL	mg/kg	J	RI
2-METHYLNAPHTHALENE	0.016	J	0.029	MRL	0.029	MRL	mg/kg	J	RI
ANTHRACENE	0.0012	J	0.0088	MRL	0.0088	MRL	mg/kg	J	RI
BENZO(A)ANTHRACENE	0.0041	J	0.0088	MRL	0.0088	MRL	mg/kg	J	RI
BENZO(A)PYRENE	0.0041	J	0.0088	MRL	0.0088	MRL	mg/kg	J	RI
BENZO(B)FLUORANTHENE	0.006	J	0.0088	MRL	0.0088	MRL	mg/kg	J	RI
BENZO(G,H,I)PERYLENE	0.0032	J	0.0088	MRL	0.0088	MRL	mg/kg	J	RI
BENZO(K)FLUORANTHENE	0.0028	J	0.0088	MRL	0.0088	MRL	mg/kg	J	RI
CHRYSENE	0.0052	J	0.0088	MRL	0.0088	MRL	mg/kg	J	RI
DIBENZ(A,H)ANTHRACENE	0.0009	J	0.0088	MRL	0.0088	MRL	mg/kg	J	RI
FLUORENE	0.0011	J	0.0088	MRL	0.0088	MRL	mg/kg	J	RI
INDENO(1,2,3-CD)PYRENE	0.0028	J	0.0088	MRL	0.0088	MRL	mg/kg	J	RI
NAPHTHALENE	0.0069	J	0.029	MRL	0.029	MRL	mg/kg	J	RI
PHENANTHRENE	0.0082	J	0.0088	MRL	0.0088	MRL	mg/kg	J	RI
PYRENE	0.0071	J	0.0088	MRL	0.0088	MRL	mg/kg	J	RI

Sample ID: **MRP1-PES-5C-01** ***Collected:*** **4/26/2013 8:00:00** ***Analysis Type:*** **Initial-** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ACENAPHTHENE	0.0012	J	0.0064	MRL	0.0064	MRL	mg/kg	J	RI
ANTHRACENE	0.0018	J	0.0064	MRL	0.0064	MRL	mg/kg	J	RI
BENZO(K)FLUORANTHENE	0.0044	J	0.0064	MRL	0.0064	MRL	mg/kg	J	RI
DIBENZ(A,H)ANTHRACENE	0.0024	J	0.0064	MRL	0.0064	MRL	mg/kg	J	RI
PHENANTHRENE	0.0063	J	0.0064	MRL	0.0064	MRL	mg/kg	J	RI

Sample ID: **MRP1-PES-SW10-02** ***Collected:*** **4/26/2013 2:15:00** ***Analysis Type:*** **Initial-** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ANTHRACENE	0.001	J	0.0066	MRL	0.0066	MRL	mg/kg	J	RI
BENZO(A)ANTHRACENE	0.0052	J	0.0066	MRL	0.0066	MRL	mg/kg	J	RI

* denotes a non-reportable result

Project Name and Number: -

Data Qualifier Summary

Lab Reporting Batch ID: 'L631371', 'L631375', 'L631608', **Laboratory: 'FALSE'**

EDD Filename: 'L631371_r1_8270C-SIM_rev', 'L631375_r1_8270C-SIM_rev', 'L631608_r1_8270C-SIM_rev', 'L631768_r1_8270C-SIM_rev', 'L631829_r1_8270C-SIM_rev', 'L632014_r1_8270C-SIM_rev', 'L632275_r1_8270C-SIM_rev', 'L632501_r1_8270C-SIM_rev', 'L632829_r1_8270C-SIM_rev', 'L633498_r1_8270C-SIM_rev' **eQAPP Name: TPMC Carr Point**

Method Category: **SVOA**

Method: **8270C-SIM** ***Matrix:*** **Soil**

Sample ID: **MRP1-PES-SW10-02** ***Collected:*** **4/26/2013 2:15:00** ***Analysis Type:*** **Initial-** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BENZO(G,H,I)PERYLENE	0.0055	J	0.0066	MRL	0.0066	MRL	mg/kg	J	RI
BENZO(K)FLUORANTHENE	0.0034	J	0.0066	MRL	0.0066	MRL	mg/kg	J	RI
CHRYSENE	0.0052	J	0.0066	MRL	0.0066	MRL	mg/kg	J	RI
DIBENZ(A,H)ANTHRACENE	0.0012	J	0.0066	MRL	0.0066	MRL	mg/kg	J	RI
FLUORANTHENE	0.0056	J	0.0066	MRL	0.0066	MRL	mg/kg	J	RI
INDENO(1,2,3-CD)PYRENE	0.0044	J	0.0066	MRL	0.0066	MRL	mg/kg	J	RI
PHENANTHRENE	0.003	J	0.0066	MRL	0.0066	MRL	mg/kg	J	RI
PYRENE	0.0055	J	0.0066	MRL	0.0066	MRL	mg/kg	J	RI

Sample ID: **MRP1-PES-SW9-02** ***Collected:*** **4/26/2013 7:40:00** ***Analysis Type:*** **Initial-** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ACENAPHTHENE	0.0025	J	0.0068	MRL	0.0068	MRL	mg/kg	J	RI
ACENAPHTHYLENE	0.0042	J	0.0068	MRL	0.0068	MRL	mg/kg	J	RI
DIBENZ(A,H)ANTHRACENE	0.0052	J	0.0068	MRL	0.0068	MRL	mg/kg	J	RI
FLUORENE	0.0022	J	0.0068	MRL	0.0068	MRL	mg/kg	J	RI

SDG: **L633498**

Method Category: **SVOA**

Method: **8270C-SIM** ***Matrix:*** **Soil**

Sample ID: **MRP1-PES-5C-02 2 FT** ***Collected:*** **4/30/2013 8:10:00** ***Analysis Type:*** **Initial-** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ANTHRACENE	0.00097	J	0.0072	MRL	0.0072	MRL	mg/kg	J	RI
BENZO(A)ANTHRACENE	0.0042	J	0.0072	MRL	0.0072	MRL	mg/kg	J	RI
BENZO(A)PYRENE	0.0037	J	0.0072	MRL	0.0072	MRL	mg/kg	J	RI
BENZO(B)FLUORANTHENE	0.0053	J	0.0072	MRL	0.0072	MRL	mg/kg	J	RI
BENZO(G,H,I)PERYLENE	0.0023	J	0.0072	MRL	0.0072	MRL	mg/kg	J	RI

* denotes a non-reportable result

Project Name and Number: -

Data Qualifier Summary

Lab Reporting Batch ID: 'L631371', 'L631375', 'L631608', **Laboratory: 'FALSE'**

EDD Filename: 'L631371_r1_8270C-SIM_rev', 'L631375_r1_8270C-SIM_rev', 'L631608_r1_8270C-SIM_rev', 'L631768_r1_8270C-SIM_rev', 'L631829_r1_8270C-SIM_rev', 'L632014_r1_8270C-SIM_rev', 'L632275_r1_8270C-SIM_rev', 'L632501_r1_8270C-SIM_rev', 'L632829_r1_8270C-SIM_rev', 'L633498_r1_8270C-SIM_rev' **eQAPP Name: TPMC Carr Point**

Method Category: **SVOA**

Method: **8270C-SIM** ***Matrix:*** **Soil**

Sample ID: **MRP1-PES-5C-02 2 FT** ***Collected:*** **4/30/2013 8:10:00** ***Analysis Type:*** **Initial-** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BENZO(K)FLUORANTHENE	0.0023	J	0.0072	MRL	0.0072	MRL	mg/kg	J	RI
CHRYSENE	0.0042	J	0.0072	MRL	0.0072	MRL	mg/kg	J	RI
INDENO(1,2,3-CD)PYRENE	0.002	J	0.0072	MRL	0.0072	MRL	mg/kg	J	RI
NAPHTHALENE	0.0035	J	0.024	MRL	0.024	MRL	mg/kg	J	RI
PHENANTHRENE	0.0035	J	0.0072	MRL	0.0072	MRL	mg/kg	J	RI

Sample ID: **MRP1-PES-S12-01 1 FT** ***Collected:*** **5/1/2013 6:25:00 AM** ***Analysis Type:*** **Initial-** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1-Methylnaphthalene	0.0036	J	0.023	MRL	0.023	MRL	mg/kg	J	RI
2-METHYLNAPHTHALENE	0.0044	J	0.023	MRL	0.023	MRL	mg/kg	J	RI
BENZO(A)ANTHRACENE	0.0018	J	0.0069	MRL	0.0069	MRL	mg/kg	J	RI
BENZO(A)PYRENE	0.0022	J	0.0069	MRL	0.0069	MRL	mg/kg	J	RI
BENZO(B)FLUORANTHENE	0.0024	J	0.0069	MRL	0.0069	MRL	mg/kg	J	RI
BENZO(G,H,I)PERYLENE	0.0018	J	0.0069	MRL	0.0069	MRL	mg/kg	J	RI
BENZO(K)FLUORANTHENE	0.0011	J	0.0069	MRL	0.0069	MRL	mg/kg	J	RI
CHRYSENE	0.0023	J	0.0069	MRL	0.0069	MRL	mg/kg	J	RI
FLUORANTHENE	0.0032	J	0.0069	MRL	0.0069	MRL	mg/kg	J	RI
INDENO(1,2,3-CD)PYRENE	0.0013	J	0.0069	MRL	0.0069	MRL	mg/kg	J	RI
NAPHTHALENE	0.006	J	0.023	MRL	0.023	MRL	mg/kg	J	RI
PHENANTHRENE	0.0032	J	0.0069	MRL	0.0069	MRL	mg/kg	J	RI
PYRENE	0.003	J	0.0069	MRL	0.0069	MRL	mg/kg	J	RI

Sample ID: **MRP1-PES-SW11-02 2 FT** ***Collected:*** **4/30/2013 7:50:00** ***Analysis Type:*** **Initial-** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BENZO(A)ANTHRACENE	0.0013	J	0.0073	MRL	0.0073	MRL	mg/kg	J	RI
BENZO(A)PYRENE	0.0015	J	0.0073	MRL	0.0073	MRL	mg/kg	J	RI
BENZO(B)FLUORANTHENE	0.0016	J	0.0073	MRL	0.0073	MRL	mg/kg	J	RI
BENZO(G,H,I)PERYLENE	0.0012	J	0.0073	MRL	0.0073	MRL	mg/kg	J	RI

* denotes a non-reportable result

Project Name and Number: -

Data Qualifier Summary

Lab Reporting Batch ID: 'L631371', 'L631375', 'L631608', **Laboratory: 'FALSE'**

EDD Filename: 'L631371_r1_8270C-SIM_rev', 'L631375_r1_8270C-SIM_rev', 'L631608_r1_8270C-SIM_rev', 'L631768_r1_8270C-SIM_rev', 'L631829_r1_8270C-SIM_rev', 'L632014_r1_8270C-SIM_rev', 'L632275_r1_8270C-SIM_rev', 'L632501_r1_8270C-SIM_rev', 'L632829_r1_8270C-SIM_rev', 'L633498_r1_8270C-SIM_rev' **eQAPP Name: TPMC Carr Point**

Method Category: **SVOA**

Method: **8270C-SIM** ***Matrix:*** **Soil**

Sample ID: **MRP1-PES-SW11-02 2 FT** ***Collected:*** **4/30/2013 7:50:00** ***Analysis Type:*** **Initial-** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BENZO(K)FLUORANTHENE	0.0011	J	0.0073	MRL	0.0073	MRL	mg/kg	J	RI
CHRYSENE	0.0018	J	0.0073	MRL	0.0073	MRL	mg/kg	J	RI
FLUORANTHENE	0.0029	J	0.0073	MRL	0.0073	MRL	mg/kg	J	RI
INDENO(1,2,3-CD)PYRENE	0.00089	J	0.0073	MRL	0.0073	MRL	mg/kg	J	RI
PHENANTHRENE	0.002	J	0.0073	MRL	0.0073	MRL	mg/kg	J	RI
PYRENE	0.0027	J	0.0073	MRL	0.0073	MRL	mg/kg	J	RI

Sample ID: **MRP1-PES-SW13-01 1 FT** ***Collected:*** **5/1/2013 6:30:00 AM** ***Analysis Type:*** **Initial-** ***Dilution:*** **20**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ACENAPHTHENE	0.063	J	0.14	MRL	0.14	MRL	mg/kg	J	RI, Fd
ACENAPHTHYLENE	0.02	J	0.14	MRL	0.14	MRL	mg/kg	J	RI, Fd
ANTHRACENE	0.27		0.14	MRL	0.14	MRL	mg/kg	J	Fd
BENZO(A)ANTHRACENE	7.2		0.14	MRL	0.14	MRL	mg/kg	J	Fd
BENZO(A)PYRENE	7.3		0.14	MRL	0.14	MRL	mg/kg	J	Fd
BENZO(B)FLUORANTHENE	3.5		0.14	MRL	0.14	MRL	mg/kg	J	Fd
BENZO(G,H,I)PERYLENE	2.7		0.14	MRL	0.14	MRL	mg/kg	J	Fd
BENZO(K)FLUORANTHENE	0.59		0.14	MRL	0.14	MRL	mg/kg	J	Fd
CHRYSENE	14		0.14	MRL	0.14	MRL	mg/kg	J	Fd
DIBENZ(A,H)ANTHRACENE	1.4		0.14	MRL	0.14	MRL	mg/kg	J	Fd
FLUORANTHENE	1.2		0.14	MRL	0.14	MRL	mg/kg	J	Fd
FLUORENE	0.049	J	0.14	MRL	0.14	MRL	mg/kg	J	RI, Fd
INDENO(1,2,3-CD)PYRENE	0.94		0.14	MRL	0.14	MRL	mg/kg	J	Fd
PHENANTHRENE	1.1		0.14	MRL	0.14	MRL	mg/kg	J	Fd
PYRENE	4.5		0.14	MRL	0.14	MRL	mg/kg	J	Fd

Sample ID: **MRP1-PES-SW13-01 DUP 1 FT** ***Collected:*** **5/1/2013 6:30:00 AM** ***Analysis Type:*** **Initial-** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1-Methylnaphthalene	0.0032	J	0.023	MRL	0.023	MRL	mg/kg	J	RI, Fd

* denotes a non-reportable result

Project Name and Number: -

Data Qualifier Summary

Lab Reporting Batch ID: 'L631371', 'L631375', 'L631608', **Laboratory: 'FALSE'**

EDD Filename: 'L631371_r1_8270C-SIM_rev', 'L631375_r1_8270C-SIM_rev', 'L631608_r1_8270C-SIM_rev', 'L631768_r1_8270C-SIM_rev', 'L631829_r1_8270C-SIM_rev', 'L632014_r1_8270C-SIM_rev', 'L632275_r1_8270C-SIM_rev', 'L632501_r1_8270C-SIM_rev', 'L632829_r1_8270C-SIM_rev', 'L633498_r1_8270C-SIM_rev'

eQAPP Name: TPMC Carr Point

Method Category: **SVOA**

Method: **8270C-SIM** ***Matrix:*** **Soil**

Sample ID: **MRP1-PES-SW13-01 DUP 1 FT** ***Collected:*** **5/1/2013 6:30:00 AM** ***Analysis Type:*** **Initial-** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
2-METHYLNAPHTHALENE	0.0055	J	0.023	MRL	0.023	MRL	mg/kg	J	RI, Fd
ACENAPHTHENE	0.027		0.0070	MRL	0.0070	MRL	mg/kg	J	Fd
ACENAPHTHYLENE	0.0094		0.0070	MRL	0.0070	MRL	mg/kg	J	Fd
ANTHRACENE	0.05		0.0070	MRL	0.0070	MRL	mg/kg	J	Fd
BENZO(A)ANTHRACENE	0.28		0.0070	MRL	0.0070	MRL	mg/kg	J	Fd
BENZO(A)PYRENE	0.36		0.0070	MRL	0.0070	MRL	mg/kg	J	Fd
BENZO(B)FLUORANTHENE	0.34		0.0070	MRL	0.0070	MRL	mg/kg	J	Fd
BENZO(G,H,I)PERYLENE	0.23		0.0070	MRL	0.0070	MRL	mg/kg	J	Fd
BENZO(K)FLUORANTHENE	0.12		0.0070	MRL	0.0070	MRL	mg/kg	J	Fd
CHRYSENE	0.32		0.0070	MRL	0.0070	MRL	mg/kg	J	Fd
DIBENZ(A,H)ANTHRACENE	0.062		0.0070	MRL	0.0070	MRL	mg/kg	J	Fd
FLUORANTHENE	0.40		0.0070	MRL	0.0070	MRL	mg/kg	J	Fd
FLUORENE	0.014		0.0070	MRL	0.0070	MRL	mg/kg	J	Fd
INDENO(1,2,3-CD)PYRENE	0.18		0.0070	MRL	0.0070	MRL	mg/kg	J	Fd
NAPHTHALENE	0.011	J	0.023	MRL	0.023	MRL	mg/kg	J	RI, Fd
PHENANTHRENE	0.19		0.0070	MRL	0.0070	MRL	mg/kg	J	Fd
PYRENE	0.41		0.0070	MRL	0.0070	MRL	mg/kg	J	Fd

* denotes a non-reportable result

Project Name and Number: -

Data Qualifier Summary

Lab Reporting Batch ID: 'L631371', 'L631375', 'L631608',

Laboratory: 'FALSE'

EDD Filename: 'L631371_r1_8270C-SIM_rev', 'L631375_r1_8270C-SIM_rev', 'L631608_r1_8270C-SIM_rev', 'L631768_r1_8270C-SIM_rev', 'L631829_r1_8270C-SIM_rev', 'L632014_r1_8270C-SIM_rev', 'L632275_r1_8270C-SIM_rev', 'L632501_r1_8270C-SIM_rev', 'L632829_r1_8270C-SIM_rev', 'L633498_r1_8270C-SIM_rev'

eQAPP Name: TPMC Carr Point

Reason Code Legend

Reason Code	*Description*
Fd	Field Duplicate Precision
Ms	Matrix Spike Lower Estimation
Ms	Matrix Spike Precision
Ms	Matrix Spike Upper Estimation
Ms	Matrix Spike Upper Rejection
Rl	Reporting Limit Trace Value
Surr	Surrogate/Tracer Recovery Lower Estimation

* denotes a non-reportable result

Project Name and Number: -

Data Qualifier Summary

Lab Reporting Batch ID: 'L631371', 'L631375', 'L631608', **Laboratory: 'FALSE'**

EDD Filename: 'L631371_r1_6010B_rev', 'L631375_6010B_rev', 'L631608_6010B_rev', 'L631768_6010B_rev', 'L631829_6010B_rev', 'L632014_6010B_rev', 'L632275_6010B_rev', 'L632501_6010B_rev', 'L632829_6010B_rev', 'L633498_6010B_rev' **eQAPP Name: TPMC Carr Point**

SDG: **L631768**

Method Category: **METALS**

Method: **6010B** ***Matrix:*** **Soil**

Sample ID: **MRP1-PES-4D-01** ***Collected:*** **4/20/2013 11:20:00** ***Analysis Type:*** **Initial** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ARSENIC	1.2	J3	1.2	MRL	1.2	MRL	mg/kg	J	Ld
CHROMIUM	12	J3	0.60	MRL	0.60	MRL	mg/kg	J	Ld

SDG: **L632275**

Method Category: **METALS**

Method: **6010B** ***Matrix:*** **Soil**

Sample ID: **MRP1-PES-SW2-02** ***Collected:*** **4/24/2013 1:35:00** ***Analysis Type:*** **Initial** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ARSENIC	0.48	J	1.2	MRL	1.2	MRL	mg/kg	J	Rl

* denotes a non-reportable result

Project Name and Number: -

Data Qualifier Summary

Lab Reporting Batch ID: 'L631371', 'L631375', 'L631608',

Laboratory: 'FALSE'

EDD Filename: 'L631371_r1_6010B_rev', 'L631375_6010B_rev', 'L631608_6010B_rev', 'L631768_6010B_rev', 'L631829_6010B_rev', 'L632014_6010B_rev', 'L632275_6010B_rev', 'L632501_6010B_rev', 'L632829_6010B_rev', 'L633498_6010B_rev'

eQAPP Name: TPMC Carr Point

Reason Code Legend

Reason Code	*Description*
Ld	Laboratory Duplicate Precision
Mb	Method Blank Contamination
Ms	Matrix Spike Lower Estimation
Ms	Matrix Spike Upper Estimation
Rl	Reporting Limit Trace Value

* denotes a non-reportable result

Project Name and Number: -

APPENDIX D
WASTE ACCEPTANCE LETTER AND WASTE SHIPPING MANIFESTS

April 15, 2013

Rate Code: 132

Mr. Scott D. Bridgeman
Clean Management Environmental Group Inc.
P.O. Box 1606
Walterboro, SC 29488
Fax: (843) 538-7845

Dear Mr. Bridgeman:

The Rhode Island Resource Recovery Corporation (the Corporation) reviewed your request submitted on behalf of the generator, the Newport Naval Station. The request is to deliver approximately 2,850 tons of Solid Waste Soil material generated from their site located on One Simonpitri Drive in Newport, Rhode Island, to the Central Landfill.

Based on the information provided, the material will be accepted as solid waste soil provided the following conditions are strictly adhered to.

1. This approval is for approximately 2,850 tons.
2. The material must not cause a dust nuisance.
3. The material must not emit any unreasonable odors.
4. The material must not contain any free liquids.
5. The material must not contain solid waste and debris. This disposal rate is for only contaminated soils.
6. The loads will be accepted during the hours of operation.
7. You must notify the Scalehouse (942-1430 Ext. 102) a minimum of 24 hours prior to delivery.
8. Any material deemed by RIRRC not suitable for solid waste soil classification shall be tipped at the current commercial sector waste rate.
9. **Expiration Date:** June 30th, 2013, at which time the rates have potential to increase and additional testing may be required.

This letter does not exclude the loads from inspection and/or denial of delivery to the Central Landfill, if landfill personnel suspect hazardous waste. In addition, all material delivered to the Central Landfill must be in accordance with Rhode Island General Law 23-19-13.1 – Disposal of solid waste originating outside the state prohibited – Rules and regulations.

Please note that prior to delivery of this material; you or your consultant must first contact Steve Pietrantozzi (942-1430 Ext. 102) for payment arrangements and to receive load verification documents. This material will be accepted as a solid waste soil and will be tipped at the current rate.

If you have any questions regarding this matter, please do not hesitate to contact me. (942-1430 Ext. 211)

Sincerely,

Daniel K. Szetela
Engineer

Cc: Brian Card, RIRRC
Bill Anderson, RIRRC
Steve Pietrantozzi, RIRRC

CARR POINT RHODE ISLAND, APRIL 2013

DATE:	LOAD #:	TONNAGE:
Thursday, April 18, 2013	1	35.56
Thursday, April 18, 2013	2	33.95
Thursday, April 18, 2013	3	33.41
Thursday, April 18, 2013	4	32.41
Thursday, April 18, 2013	5	41.69
Thursday, April 18, 2013	6	35.86
Thursday, April 18, 2013	7	28.19
Thursday, April 18, 2013	8	29.55
Thursday, April 18, 2013	9	29.61
Thursday, April 18, 2013	10	30.84
Thursday, April 18, 2013	11	23.78
Thursday, April 18, 2013	12	33.62
Thursday, April 18, 2013	13	34.35
Thursday, April 18, 2013	14	34.43
Thursday, April 18, 2013	15	34.79
Thursday, April 18, 2013	16	27.36
Thursday, April 18, 2013	17	34.72
Friday, April 19, 2013	18	22.83
Friday, April 19, 2013	19	30.69
Friday, April 19, 2013	20	32.10
Friday, April 19, 2013	21	33.65
Friday, April 19, 2013	22	37.22
Friday, April 19, 2013	23	28.21
Friday, April 19, 2013	24	34.73
Friday, April 19, 2013	25	34.54
Friday, April 19, 2013	26	36.41
Friday, April 19, 2013	27	28.51
Friday, April 19, 2013	28	35.77
Friday, April 19, 2013	29	34.40
Saturday, April 20, 2013	30	29.85
Saturday, April 20, 2013	31	33.55
Saturday, April 20, 2013	32	30.79
Monday, April 22, 2013	33	30.74
Monday, April 22, 2013	34	33.03
Monday, April 22, 2013	35	33.46
Monday, April 22, 2013	36	32.15
Monday, April 22, 2013	37	32.47
Monday, April 22, 2013	38	35.98
Monday, April 22, 2013	39	33.72
Monday, April 22, 2013	40	33.60
Monday, April 22, 2013	41	28.92
Monday, April 22, 2013	42	29.92
Monday, April 22, 2013	43	30.60
Monday, April 22, 2013	44	31.17

DATE:	LOAD #:	TONNAGE:
Monday, April 22, 2013	45	32.61
Monday, April 22, 2013	46	35.29
Tuesday, April 23, 2013	47	32.56
Tuesday, April 23, 2013	48	27.50
Tuesday, April 23, 2013	49	32.75
Tuesday, April 23, 2013	50	32.26
Tuesday, April 23, 2013	51	31.99
Tuesday, April 23, 2013	52	33.91
Wednesday, April 24, 2013	53	31.95
Wednesday, April 24, 2013	54	35.82
Wednesday, April 24, 2013	55	36.62
Thursday, April 25, 2013	56	38.04
Thursday, April 25, 2013	57	34.78
Thursday, April 25, 2013	58	33.10
Thursday, April 25, 2013	59	36.63
Thursday, April 25, 2013	60	35.74
Thursday, April 25, 2013	61	31.59
Thursday, April 25, 2013	62	30.35
Thursday, April 25, 2013	63	32.64
Thursday, April 25, 2013	64	31.38
Thursday, April 25, 2013	65	30.90
Thursday, April 25, 2013	66	32.06
Thursday, April 25, 2013	67	35.87
Thursday, April 25, 2013	68	33.77
Thursday, April 25, 2013	69	37.92
Thursday, April 25, 2013	70	33.88
Thursday, April 25, 2013	71	32.83
Thursday, April 25, 2013	72	28.76
Friday, April 26, 2013	73	35.10
Friday, April 26, 2013	74	31.30
Friday, April 26, 2013	75	18.58
Friday, April 26, 2013	76	33.04
Friday, April 26, 2013	77	34.49
Friday, April 26, 2013	78	29.60
Friday, April 26, 2013	79	23.91
Friday, April 26, 2013	80	24.16
Friday, April 26, 2013	81	21.94
Friday, April 26, 2013	82	27.34
Friday, April 26, 2013	83	29.73
Friday, April 26, 2013	84	30.01
Friday, April 26, 2013	85	29.96
Friday, April 26, 2013	86	29.34
Friday, April 26, 2013	87	35.36
Saturday, April 27, 2013	88	33.36

DATE:	LOAD #:	TONNAGE:
Saturday, April 27, 2013	89	31.35
Saturday, April 27, 2013	90	27.68
Saturday, April 27, 2013	91	34.41
Saturday, April 27, 2013	92	37.92
Saturday, April 27, 2013	93	37.34
Wednesday, May 01, 2013	94	32.28
Wednesday, May 01, 2013	95	34.26
Wednesday, May 01, 2013	96	31.46
	TOTAL TONNAGE:	3090.55

PLATE: RI 26740

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number: CE506
2. Page 1 of 1
3. Emergency Response Phone: 800-535-5053 DOT#103674
4. Waste Tracking Number: 21009

5. Generator's Name and Mailing Address
NAVAL STATION NEWPORT
ONE SIMONPIETRI DRIVE
NEWPORT, RI 02841
Generator's Phone: 401 841-1791
Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name
U.S. EPA ID Number

7. Transporter 2 Company Name
U.S. EPA ID Number

8. Designated Facility Name and Site Address
RHODE ISLAND RESOURCE RECOVERY CORPORATION
65 SHUN PIKE
JOHNSTON, RI 02919
Facility's Phone: (401) 942-1430
U.S. EPA ID Number

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	SOIL WITH CLAY PIGEON FRAGMENTS, NON HAZARDOUS/NON REGULATED			64,000	LS	
2.			CM	30 YDS	D	
3.						
4.						

13. Special Handling Instructions and Additional Information
A:
B:
C:
D:

14. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: MARK J. RIELLY
Signature: M J Rielly
Month 4 Day 18 Year 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: Lonnie Cook
Signature:
Month Day Year
Transporter 2 Printed/Typed Name:
Signature:
Month Day Year

17. Discrepancy
17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Manifest Reference Number:
17b. Alternate Facility (or Generator)
U.S. EPA ID Number
Facility's Phone:
17c. Signature of Alternate Facility (or Generator)
Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a
Printed/Typed Name: Steve Pietranfazzi
Signature:
Month 4 Day 18 Year 13

GENERATOR — INT'L — TRANSPORTER — DESIGNATED FACILITY

169-BLS-C 6 10497 (Rev. 9/09)

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RI 65627

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
	CESQG	1	800-535-5053 OCC#103074	20990

5. Generator's Name and Mailing Address

NAVAL STATION NEWPORT
ONE SIMONPIETRI DRIVE
NEWPORT, RI 02841

Generator's Phone: 401 841-1791

Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name: X Ostrander Bros. Transport — U.S. EPA ID Number:

7. Transporter 2 Company Name — U.S. EPA ID Number:

8. Designated Facility Name and Site Address — U.S. EPA ID Number:

RHODE ISLAND RESOURCE RECOVERY CORPORATION
65 SHUN PIKE
JOHNSTON, RI 02919

Facility's Phone: (401) 942-1430

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
	1. SOIL WITH CLAY PIGEON FRIGMENTS, NON HAZARDOUS/NON REGULATED		CN	30 15 tons	000 P	
	2.					
	3.					
	4.					

13. Special Handling Instructions and Additional Information

A:
B:
C:
D:

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: MARK J. RIELLY — Signature: M. J. Rielly — Month 4 Day 18 Year 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: X Terry Goete — Signature: Terry Goete — Month 4 Day 18 Year 13

Transporter 2 Printed/Typed Name — Signature — Month Day Year

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: Steve Pietrantozzi — Signature: Steve Pietrantozzi — Month 4 Day 18 Year 13

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GENERATOR — INT'L — TRANSPORTER — DESIGNATED FACILITY

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RI 113482

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number: RI 526
2. Page 1 of 1
3. Emergency Response Phone: 800-535-5053 OCC#103074
4. Waste Tracking Number: 20931

5. Generator's Name and Mailing Address
NAVAL STATION NEWPORT
ONE SIMONPIETRI DRIVE
NEWPORT, RI 02841
Generator's Phone: 401 841-1791
Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name: X COSTANTINI BROS.
U.S. EPA ID Number

7. Transporter 2 Company Name
U.S. EPA ID Number

8. Designated Facility Name and Site Address
RHODE ISLAND RESOURCE RECOVERY CORPORATION
65 SHUN PIKE
JOHNSTON, RI 02919
Facility's Phone: (401) 942-1430
U.S. EPA ID Number

9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.
1. SOIL WITH CLAY PIGEON FRIGMENTS, NON HAZARDOUS/NON REGULATED	1	CM	50000	P POUNDS
2.				
3.				
4.				

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.
Generator's/Offeror's Printed/Typed Name: MARK J. RIELLY
Signature: M J Rielly
Month 4 Day 18 Year 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S.
Transporter Signature (for exports only):
Port of entry/exit:
Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: X TONY DANDREA
Signature
Month Day Year
Transporter 2 Printed/Typed Name
Signature
Month Day Year

17. Discrepancy
Month Day Year
17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
17b. Alternate Facility (or Generator)
Manifest Reference Number:
U.S. EPA ID Number
Facility's Phone:
17c. Signature of Alternate Facility (or Generator)
Month Day Year

18. Designated Facility Owner or Operator Certification of receipt of materials covered by the manifest except as noted in Item 17a.
Printed/Typed Name: Steve Pietrantoni
Signature
Month 4 Day 18 Year 13

GENERATOR — TRANSPORTER — INT'L — DESIGNATED FACILITY

169-BLS-C 6 10497 (Rev. 9/09)

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RI 26776

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
	CESOG	1	800-535-5053 ACC#103074	20992

GENERATOR

5. Generator's Name and Mailing Address

NAVAL STATION NEWPORT
ONE SIMONPIETRI DRIVE
NEWPORT, RI 02841

Generator's Site Address (if different than mailing address)

Generator's Phone: 401 841-1791

6. Transporter 1 Company Name: Castalloy Inc.

U.S. EPA ID Number

7. Transporter 2 Company Name

U.S. EPA ID Number

8. Designated Facility Name and Site Address

RHODE ISLAND RESOURCE RECOVERY CORPORATION
65 SHAW PIKE
JOHNSTON, RI 02919

U.S. EPA ID Number

Facility's Phone: (401) 942-1430

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
	1. SOIL WITH CLAY PIGEON FRAGMENTS, NON HAZARDOUS/NON REGULATED		C M	[illegible]	P	POUNDS
	2.					
	3.					
	4.					

13. Special Handling Instructions and Additional Information

A:
B:
C:
D:

14. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: MARK J. RIELLY — Signature: M J Rielly — Month 4 Day 18 Year 13

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:

Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Castalloy Inc. — Signature — Month Day Year

Transporter 2 Printed/Typed Name — Signature — Month Day Year

DESIGNATED FACILITY

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17

Printed/Typed Name: Steven Pietrantozzi — Signature — Month 4 Day 18 Year 13

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RI 26770

12

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
	RI5DR	1	800-535-5053 ACC#103074	20989

GENERATOR

5. Generator's Name and Mailing Address

NAVAL STATION NEWPORT
ONE SIMONPIETRI DRIVE
NEWPORT, RI 02841

Generator's Phone: 401 841-1791

Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name: Constitution Coal

U.S. EPA ID Number:

7. Transporter 2 Company Name:

U.S. EPA ID Number:

8. Designated Facility Name and Site Address

RHODE ISLAND RESOURCE RECOVERY CORPORATION
65 SHUN PIKE
JOHNSTON, RI 02919

Facility's Phone: (401) 942-1430

U.S. EPA ID Number:

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.
1.	SOIL WITH CLAY PIGEON FRAGMENTS, NON HAZARDOUS/NON REGULATED		CM	5 YDS	P
2.					
3.					
4.					

13. Special Handling Instructions and Additional Information

A:
B:
C:
D:

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: MARK J. RIELLY

Signature: M J Rielly

Month 4 Day 18 Year

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:

Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: [illegible]

Signature: [illegible]

Month 4 Day [illegible] Year

Transporter 2 Printed/Typed Name:

Signature:

Month Day Year

DESIGNATED FACILITY

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator)

U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator)

Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: Steven Pietrantozzi

Signature: [illegible]

Month 4 Day 18 Year 13

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169-BLS-C 6 10497 (Rev. 9/09)

CC:

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RI 12881

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
	CES06	1	800-535-5053 ACC#103074	20093

GENERATOR

5. Generator's Name and Mailing Address

NAVAL STATION NEWPORT
ONE SIMONPIETRI DRIVE
NEWPORT, RI 02841

Generator's Phone: 401 841-1791

Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name: X J Fowler — U.S. EPA ID Number

7. Transporter 2 Company Name — U.S. EPA ID Number

8. Designated Facility Name and Site Address — U.S. EPA ID Number

RHODE ISLAND RESOURCE RECOVERY CORPORATION
65 SHUN PIKE
JOHNSTON, RI 02919

Facility's Phone: (401) 942-1430

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	SOIL WITH CLAY PIGEON FRAGMENTS, NON HAZARDOUS/NON REGULATED		DM	63000	P	POUNDS
2.						
3.						
4.						

13. Special Handling Instructions and Additional Information

A:
B:
C:
D:

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: MARK J. RIELLY — Signature: M J Rielly — Month 4 Day 18 Year 13

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:

Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: X Jack Fowler — Signature — Month Day Year

Transporter 2 Printed/Typed Name — Signature — Month Day Year

DESIGNATED FACILITY

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: Steven Pietrantozzi — Signature — Month 4 Day 18 Year 13

169-BLS-C 6 10497 (Rev. 9/09)

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RI 2674.0

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
CESQG	1	800-535-5053 ACCN103074	20994

5. Generator's Name and Mailing Address

NAVAL STATION NEWPORT
ONE SIMONPIETRI DRIVE
NEWPORT, RI 02841

Generator's Site Address (if different than mailing address)

Generator's Phone: 401 841-1791

6. Transporter 1 Company Name: [illegible] Transport — U.S. EPA ID Number:

7. Transporter 2 Company Name — U.S. EPA ID Number:

8. Designated Facility Name and Site Address — U.S. EPA ID Number:

RHODE ISLAND RESOURCE RECOVERY CORPORATION
65 SHUN PIKE
JOHNSTON, RI 02919

Facility's Phone: (401) 942-1430

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	SOIL WITH CLAY PIGEON FRAGMENTS, NON HAZARDOUS/NON REGULATED		CM	70.00	P	POUNDS
2.	—					
3.						
4.						

13. Special Handling Instructions and Additional Information

A:
B:
C:
D:

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: MARK J. RIELLY — Signature: M. J. Rielly — Month 4 Day 18 Year 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: [illegible] — Signature: [illegible] — Month / Day / Year

Transporter 2 Printed/Typed Name — Signature — Month Day Year

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: Stan Pietrantozzi — Signature: [signature] — Month 4 Day 18 Year 13

GENERATOR — INT'L — TRANSPORTER — DESIGNATED FACILITY

169-BLS-C 6 10497 (Rev. 9/09)

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COPY

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RI 65627

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
	CESOG	1	800-535-5053 MCC#103074	20995

5. Generator's Name and Mailing Address

NAVAL STATION NEWPORT
ONE SIMONPIETRI DRIVE
NEWPORT, RI 02841

Generator's Phone: 401 841-1791

Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name: Costant & Bros. Transport

U.S. EPA ID Number

7. Transporter 2 Company Name

U.S. EPA ID Number

8. Designated Facility Name and Site Address

RHODE ISLAND RESOURCE RECOVERY CORPORATION
65 SHUN PIKE
JOHNSTON, RI 02919

Facility's Phone: (401) 942-1430

U.S. EPA ID Number

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	SOIL WITH CLAY PIGEON FRAGMENTS, NON HAZARDOUS/NON REGULATED		CM	50,000 ~~25~~ ton	P	POUNDS
2.						
3.						
4.						

13. Special Handling Instructions and Additional Information

A:
B:
C:
D:

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: MARK J. RIELLY — Signature: M J Rielly — Month 4 Day 18 Year 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Tony Costa — Signature: Tony Costa — Month 4 Day 18 Year 13

Transporter 2 Printed/Typed Name — Signature — Month Day Year

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: Steven Pietrantoni — Signature: [signature] — Month 4 Day 18 Year 13

GENERATOR — INT'L — TRANSPORTER — DESIGNATED FACILITY

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RI 113482

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
	CES06	1	800-535-5053 ACC#163074	20996

5. Generator's Name and Mailing Address

NAVAL STATION NEWPORT
ONE SIMONPIETRI DRIVE
NEWPORT, RI 02841

Generator's Site Address (if different than mailing address)

Generator's Phone: 401 841-1791

6. Transporter 1 Company Name: X COSTANTINI BROS.

U.S. EPA ID Number

7. Transporter 2 Company Name

U.S. EPA ID Number

8. Designated Facility Name and Site Address

RHODE ISLAND RESOURCE RECOVERY CORPORATION
65 SHUN PIKE
JOHNSTON, RI 02919

Facility's Phone: (401) 942-1430

U.S. EPA ID Number

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	SOIL WITH CLAY PIGEON FRAGMENTS, NON HAZARDOUS/NON REGULATED	1	CM	50,000	P	POUNDS
2.						
3.						
4.						

13. Special Handling Instructions and Additional Information

a:
b:
c:
d:

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: MARK J. RIELLY — Signature: M. J. Rielly — Month 4 Day 18 Year 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: X TODD DANDREA — Signature: Todd D'Andrea — Month 4 Day 18 Year 13

Transporter 2 Printed/Typed Name — Signature — Month Day Year

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: Steve Petrarca — Signature: [illegible] — Month 4 Day 18 Year 13

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GENERATOR — INT'L — TRANSPORTER — DESIGNATED FACILITY

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RI 26776

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number: CERCB
2. Page 1 of: 1
3. Emergency Response Phone: 800-535-5053 ACC#103074
4. Waste Tracking Number: 20997

5. Generator's Name and Mailing Address
NAVAL STATION NEWPORT
ONE SIMONPIETRI DRIVE
NEWPORT, RI 02841
Generator's Phone: 401 841-1791
Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name: X Costantini Bros
U.S. EPA ID Number:

7. Transporter 2 Company Name:
U.S. EPA ID Number:

8. Designated Facility Name and Site Address
RHODE ISLAND RESOURCE RECOVERY CORPORATION
65 SAWN PIKE
Facility's Phone: (401) 942-1420 JOHNSTON, RI 02919
U.S. EPA ID Number:

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	SOIL WITH CLAY PIGEON FRIGMENTS, NON HAZARDOUS/NON REGULATED	1	C	51,000	P	POUNDS
2.	—					
3.						
4.						

13. Special Handling Instructions and Additional Information
A:
B:
C:
D:

14. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: MARK J. RIELLY
Signature: M. J. Rielly
Month 4 Day 18 Year 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: X Costantini
Signature:
Month / Day / Year
Transporter 2 Printed/Typed Name:
Signature:
Month Day Year

17. Discrepancy
17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Manifest Reference Number:

17b. Alternate Facility (or Generator)
U.S. EPA ID Number:
Facility's Phone:

17c. Signature of Alternate Facility (or Generator)
Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a
Printed/Typed Name: Steven Pietrantozzi
Signature:
Month 4 Day 18 Year 13

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GENERATOR — INT'L — TRANSPORTER — DESIGNATED FACILITY

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RI-26770

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number: CE806
2. Page 1 of: 1
3. Emergency Response Phone: 800-535-5053 ACC#183074
4. Waste Tracking Number: 20996

5. Generator's Name and Mailing Address

NAVAL STATION NEWPORT
INF SIMONPIETRI DRIVE
NEWPORT, RI 02841

Generator's Phone: 401 841-1791

Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name: [illegible]

U.S. EPA ID Number:

7. Transporter 2 Company Name:

U.S. EPA ID Number:

8. Designated Facility Name and Site Address

RHODE ISLAND RESOURCE RECOVERY CORPORATION
65 SHUN PIKE
JOHNSTON, RI 02919

Facility's Phone: (401) 942-1420

U.S. EPA ID Number:

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	SOIL WITH CLAY PIGEON FRAGMENTS, NON HAZARDOUS/NON REGULATED	1	CM	[illegible]	P	REMADS
2.						
3.						
4.						

13. Special Handling Instructions and Additional Information

A:
B:
C:
D:

14. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: MARK J. RIELLY

Signature: M J Rielly

Month 4 Day 18 Year 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:

Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: [illegible]

Signature: [illegible]

Month Day Year

Transporter 2 Printed/Typed Name:

Signature:

Month Day Year

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator)

U.S. EPA ID Number:

Facility's Phone:

17c. Signature of Alternate Facility (or Generator)

Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: Steven Pietrantozzi

Signature: [illegible]

Month 4 Day 18 Year 13

GENERATOR — INT'L — TRANSPORTER — DESIGNATED FACILITY

169-BLS-C 6 10497 (Rev. 9/09)

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RI 12881

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number: CESQG
2. Page 1 of: 1
3. Emergency Response Phone: 800-535-5053 ACC#103074
4. Waste Tracking Number: 21008

5. Generator's Name and Mailing Address
NAVAL STATION NEWPORT
ONE SIMONPIETRI DRIVE
NEWPORT, RI 02841
Generator's Phone: 401 841-1791
Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name: X J. Fowler
U.S. EPA ID Number

7. Transporter 2 Company Name
U.S. EPA ID Number

8. Designated Facility Name and Site Address
RHODE ISLAND RESOURCE RECOVERY CORPORATION
65 SHUN PIKE
JOHNSTON, RI 02919
Facility's Phone: (401) 942-1430
U.S. EPA ID Number

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	SOIL WITH CLAY PIGEON FRAGMENTS, NON HAZARDOUS/NON REGULATED	1	CM	30.00	P	POUNDS
2.	—					
3.						
4.						

13. Special Handling Instructions and Additional Information
A:
B:
C:
D:

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: MARK J. RIELLY
Signature: M. J. Rielly
Month 4 Day 18 Year 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: X Jeff Fowler
Signature:
Month Day Year
Transporter 2 Printed/Typed Name
Signature
Month Day Year

17. Discrepancy
17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Manifest Reference Number:

17b. Alternate Facility (or Generator)
U.S. EPA ID Number
Facility's Phone:

17c. Signature of Alternate Facility (or Generator)
Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a
Printed/Typed Name: Pat Pontes
Signature: Stan Poirier
Month 4 Day 18 Year 13

GENERATOR
INT'L
TRANSPORTER
DESIGNATED FACILITY

169-BLS-C 6 10497 (Rev. 9/09)

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RI 26740

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number: CE506
2. Page 1 of: 1
3. Emergency Response Phone: 800-535-5053 HCC#103074
4. Waste Tracking Number: 21001

5. Generator's Name and Mailing Address
NAVAL STATION NEWPORT
ONE SIMONPIETRI DRIVE
NEWPORT, RI 02841
Generator's Phone: 401 841-1711

Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name: X Clad Portsmouth — U.S. EPA ID Number:
7. Transporter 2 Company Name: — U.S. EPA ID Number:
8. Designated Facility Name and Site Address
RHODE ISLAND RESOURCE RECOVERY CORPORATION
65 SHUN PIKE
JOHNSTON, RI 02919
Facility's Phone: (401) 942-1430 — U.S. EPA ID Number:

	9. Waste Shipping Name and Description	10. Containers No.	Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	SOIL WITH CLAY PIGEON FRAGMENTS, NON HAZARDOUS/NON REGULATED	1		65,000	P	POUNDS
2.						
3.						
4.						

13. Special Handling Instructions and Additional Information
A:
B:
C:
D:

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: MARK J. RIELLY — Signature: M J Rielly — Month 4 Day 18 Year 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: X Clad Portsmouth — Signature: — Month 4 Day 18 Year 13
Transporter 2 Printed/Typed Name: — Signature: — Month Day Year

17. Discrepancy
17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Manifest Reference Number:
17b. Alternate Facility (or Generator) — U.S. EPA ID Number:
Facility's Phone:
17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a
Printed/Typed Name: Steve Pretrantozi — Signature: — Month 4 Day 18 Year 13

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GENERATOR — INT'L — TRANSPORTER — DESIGNATED FACILITY

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RI 65627

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number: CE 9 0 6
2. Page 1 of 1
3. Emergency Response Phone: 800-535-5053 ACCIDENT
4. Waste Tracking Number: 2 0 0 0 0

5. Generator's Name and Mailing Address
NAVAL STATION NEWPORT
ONE SIMONPIETRI DRIVE
NEWPORT, RI 02841
Generator's Phone: 401 841-1791
Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name: X Costantino Bros. Transport
U.S. EPA ID Number

7. Transporter 2 Company Name
U.S. EPA ID Number

8. Designated Facility Name and Site Address
RHODE ISLAND RESOURCE RECOVERY CORPORATION
65 SHUN PIKE
JOHNSTON, RI 02919
Facility's Phone: (401) 942-1430
U.S. EPA ID Number

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	SOIL WITH CLAY PIGEON FRAGMENTS, NON HAZARDOUS/NON REGULATED	1	CM	50,000 25 tons	P	Pounds
2.	—					
3.						
4.						

13. Special Handling Instructions and Additional Information
A:
B:
C:
D:

14. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: MARK J RIELLY
Signature: M J Rielly
Month 4 Day 18 Year 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: X [illegible]
Signature: [illegible]
Month 4 Day [illegible] Year [illegible]
Transporter 2 Printed/Typed Name
Signature
Month Day Year

17. Discrepancy
17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Manifest Reference Number:
17b. Alternate Facility (or Generator)
U.S. EPA ID Number
Facility's Phone:
17c. Signature of Alternate Facility (or Generator)
Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a
Printed/Typed Name: Steve Pietrantozzi
Signature: [illegible]
Month 4 Day 18 Year 13

GENERATOR
INT'L
TRANSPORTER
DESIGNATED FACILITY

169-BLS-C 6 10497 (Rev. 9/09)

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15

RI 113482

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
	CF906	1	800-535-5053 NEC#102074	21003

5. Generator's Name and Mailing Address

NAVAL STATION NEWPORT
ONE SIMONPIETRI DRIVE
NEWPORT, RI 02841

Generator's Phone: 401 841-1791

Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name: X CONSTANTINO BROS. — U.S. EPA ID Number

7. Transporter 2 Company Name — U.S. EPA ID Number

8. Designated Facility Name and Site Address — U.S. EPA ID Number

RHODE ISLAND RESOURCE RECOVERY CORPORATION
65 SHUN PIKE
JOHNSTON, RI 02919

Facility's Phone: (401) 942-1430

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	SOIL WITH CLAY PIGEON FRAGMENTS, NON HAZARDOUS/NON REGULATED	1	CN	50,000	P	POUNDS
2.						
3.						
4.						

13. Special Handling Instructions and Additional Information

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: MARK J. RIELLY — Signature: M-J Rielly — Month 4 Day 18 Year 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: X TODD DANDREA — Signature: [signature] — Month 4 Day 18 Year

Transporter 2 Printed/Typed Name — Signature — Month Day Year

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: Stan Pietrantonio — Signature: [signature] — Month 4 Day 18 Year 13

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GENERATOR — INT'L — TRANSPORTER — DESIGNATED FACILITY

169-BLS-C 6 10497 (Rev. 9/09)

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RI-26770

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number: C L S 0 0
2. Page 1 of 1
3. Emergency Response Phone: 800-535-5053 ACC0103074
4. Waste Tracking Number: 2 1 0 0 4

5. Generator's Name and Mailing Address
NAVAL STATION NEWPORT
ONE SIMONPIETRI DRIVE
NEWPORT, RI 02841
Generator's Phone: 401 841-1791
Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name — U.S. EPA ID Number

7. Transporter 2 Company Name — U.S. EPA ID Number

8. Designated Facility Name and Site Address
RHODE ISLAND RESOURCE RECOVERY CORPORATION
65 SHUN PIKE
JOHNSTON, RI 02919
Facility's Phone: (401) 942-1430 — U.S. EPA ID Number

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	SOIL WITH CLAY PIGEON FRAGMENTS, NON DOT/GROUND/NON REGULATED		CM	2500	P	POUNDS
2.						
3.						
4.						

13. Special Handling Instructions and Additional Information
A:
B:
C:
D:

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.
Generator's/Offeror's Printed/Typed Name: MARK J. RIELLY — Signature: M J Rielly — Month 4 Day 18 Year 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name — Signature — Month Day Year
Transporter 2 Printed/Typed Name — Signature — Month Day Year

17. Discrepancy
17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Manifest Reference Number:
17b. Alternate Facility (or Generator) — U.S. EPA ID Number
Facility's Phone:
17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a
Printed/Typed Name: Steve Pietramtozzi — Signature: [signature] — Month 4 Day 18 Year 13
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GENERATOR — INT'L — TRANSPORTER — DESIGNATED FACILITY

17

R1 26776

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number: C E S 0 0
2. Page 1 of: 1
3. Emergency Response Phone: 800-535-5053 HOC#183074
4. Waste Tracking Number: 2 1 0 0 5

5. Generator's Name and Mailing Address
NAVAL STATION NEWPORT
ONE SIMONPIETRI DRIVE
NEWPORT, RI 02841
Generator's Phone: 401 841-1751

Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name: X [illegible]
U.S. EPA ID Number:

7. Transporter 2 Company Name:
U.S. EPA ID Number:

8. Designated Facility Name and Site Address
RHODE ISLAND RESOURCE RECOVERY CORPORATION
55 SHAW PIKE
JOHNSTON, RI 02919
Facility's Phone: (401) 942-1430
U.S. EPA ID Number:

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	SOIL WITH CLAY PIGEON FRAGMENTS, NON HAZARDOUS/NON REGULATED	1	CH	[illegible]	P	POUNDS
2.						
3.						
4.						

13. Special Handling Instructions and Additional Information
A:
B:
C:
D:

14. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: MARK J. RIELLY
Signature: M J Rielly
Month 4 Day 18 Year

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: X [illegible]
Signature:
Month Day Year

Transporter 2 Printed/Typed Name:
Signature:
Month Day Year

17. Discrepancy
17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Manifest Reference Number:
17b. Alternate Facility (or Generator)
U.S. EPA ID Number:
Facility's Phone:
17c. Signature of Alternate Facility (or Generator)
Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a
Printed/Typed Name: Steven Pietrantozzi
Signature:
Month 4 Day 18 Year 13

101985907

GENERATOR — INT'L — TRANSPORTER — DESIGNATED FACILITY

169-BLS-C 6 10497 (Rev. 9/09)

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RI 26774

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
	CE900	1	800-535-5053 ACC#103074	21095

5. Generator's Name and Mailing Address

NAVAL STATION NEWPORT
ONE SIMMPIETRI DRIVE
NEWPORT, RI 02841

Generator's Phone: 401 841-1791

Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name — U.S. EPA ID Number

7. Transporter 2 Company Name — U.S. EPA ID Number

8. Designated Facility Name and Site Address — U.S. EPA ID Number

RHODE ISLAND RESOURCE RECOVERY CORPORATION
65 SHUN PIKE
JOHNSTON, RI 02919

Facility's Phone: (401) 942-1430

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	SOIL WITH CLAY PIGEON FRAGMENTS, NON HAZARDOUS/NON REGULATED		CB	[illegible]	P	POUNDS
2.						
3.						
4.						

13. Special Handling Instructions and Additional Information

A:
B:
C:
D:

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: MARK J. RIELLY — Signature: M J Rielly — Month 4 Day 18 Year 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name — Signature — Month Day Year

Transporter 2 Printed/Typed Name — Signature — Month Day Year

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name — Signature — Month Day Year

GENERATOR — INT'L — TRANSPORTER — DESIGNATED FACILITY

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RI 26740

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
	CESQG	1	800-535-5053 RCC#103074	21007

5. Generator's Name and Mailing Address

NAVAL STATION NEWPORT
ONE SIMONPIETRI DRIVE
NEWPORT, RI 02841

Generator's Site Address (if different than mailing address)

Generator's Phone: 401 841-1791

6. Transporter 1 Company Name: Cooper Bros Transport Inc — U.S. EPA ID Number

7. Transporter 2 Company Name — U.S. EPA ID Number

8. Designated Facility Name and Site Address — U.S. EPA ID Number

RHODE ISLAND RESOURCE RECOVERY CORPORATION
65 SHUN PIKE
JOHNSTON, RI 02919

Facility's Phone: (401) 942-1430

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	SOIL WITH CLAY PIGEON FRIGMENTS, NON HAZARDOUS/NON REGULATED		DM	64000	P	POUNDS
2.						
3.						
4.						

13. Special Handling Instructions and Additional Information

A:
B:
C:
D:

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: MARK J. RIELLY — Signature: M J Rielly — Month 4 Day 19 Year 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit: —
Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Kenneth Cooper — Signature: [signature] — Month 4 Day 19 Year 13

Transporter 2 Printed/Typed Name — Signature — Month Day Year

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: [illegible] — Signature: [signature] — Month 4 Day 19 Year 13

GENERATOR — INT'L — TRANSPORTER — DESIGNATED FACILITY

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RI - 113482

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number: [illegible]
2. Page 1 of 1
3. Emergency Response Phone: 800-535-5053 ACCIDENT 74
4. Waste Tracking Number: 21005

5. Generator's Name and Mailing Address
NAVAL STATION NEWPORT
ONE SIMONPIETRI DRIVE
NEWPORT, RI 02841
Generator's Phone: 401 841-1791

Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name: X COSTANTINO BROS.
U.S. EPA ID Number:

7. Transporter 2 Company Name:
U.S. EPA ID Number:

8. Designated Facility Name and Site Address
RHODE ISLAND RESOURCE RECOVERY CORPORATION
65 SHUN PIKE
JOHNSTON, RI 02919
Facility's Phone: (401) 942-1330
U.S. EPA ID Number:

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	SOIL WITH CLAY PIGEON FRAGMENTS, NON HAZARDOUS/NON REGULATED			50,000	P	POUNDS
2.						
3.						
4.						

13. Special Handling Instructions and Additional Information
A:
B:
C:
D:

14. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: MARK J. RIELLY
Signature: M. J. Rielly
Month 4 Day 17 Year 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: X TONY DANDREA
Signature: [illegible]
Month 4 Day 17 Year
Transporter 2 Printed/Typed Name:
Signature:
Month Day Year

17. Discrepancy
17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Manifest Reference Number:
17b. Alternate Facility (or Generator)
U.S. EPA ID Number:
Facility's Phone:
17c. Signature of Alternate Facility (or Generator)
Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in item 17a
Printed/Typed Name: [illegible]
Signature: [illegible]
Month Day Year

GENERATOR
INT'L
TRANSPORTER
DESIGNATED FACILITY

169-BLS-C 6 10497 (Rev. 9/09)

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RI 26776

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number: CE506
2. Page 1 of 1
3. Emergency Response Phone: 800-535-5053 ACC#103074
4. Waste Tracking Number: 21010

GENERATOR

5. Generator's Name and Mailing Address
NAVAL STATION NEWPORT
ONE SIMONPIETRI DRIVE
NEWPORT, RI 02841
Generator's Phone: 401 841-1791
Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name: X Costantini Bros
U.S. EPA ID Number:

7. Transporter 2 Company Name:
U.S. EPA ID Number:

8. Designated Facility Name and Site Address
RHODE ISLAND RESOURCE RECOVERY CORPORATION
65 SHUN PIKE
Facility's Phone: (401) 942-1430 JOHNSTON, RI 02919
U.S. EPA ID Number:

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	SOIL WITH CLAY PIGEON FRAGMENTS, NON HAZARDOUS/NON REGULATED			1	P	POUNDS
2.						
3.						
4.						

13. Special Handling Instructions and Additional Information
A:
B:
C:
D:

14. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: MARK J. RIELLY
Signature: M-J Rielly
Month 4 Day 17 Year 13

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S.
Transporter Signature (for exports only):
Port of entry/exit:
Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: X Philip Costantini
Signature: Philip Costantini
Month 4 Day 17 Year 13
Transporter 2 Printed/Typed Name:
Signature:
Month Day Year

DESIGNATED FACILITY

17. Discrepancy
17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Manifest Reference Number:
17b. Alternate Facility (or Generator)
U.S. EPA ID Number:
Facility's Phone:
17c. Signature of Alternate Facility (or Generator)
Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a
Printed/Typed Name: [illegible]
Signature: [illegible]
Month 4 Day 17 Year 13

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NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number: CFS80
2. Page 1 of 1
3. Emergency Response Phone: 800-535-5053 ACC#103074
4. Waste Tracking Number: 21611

5. Generator's Name and Mailing Address
NAVAL STATION NEWPORT
ONE SIMONPIETRI DRIVE
NEWPORT, RI 02841
Generator's Phone: 401 841-1791
Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name: Lockwood Bros Transport Inc
U.S. EPA ID Number:

7. Transporter 2 Company Name
U.S. EPA ID Number:

8. Designated Facility Name and Site Address
RHODE ISLAND RESOURCE RECOVERY CORPORATION
65 SHUN PIKE
JOHNSTON, RI 02919
Facility's Phone: (401) 942-1430
U.S. EPA ID Number:

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	SOIL WITH CLAY PIGEON FRAGMENTS, NON HAZARDOUS/NON REGULATED		CM	6400	P	POUNDS
2.	---					
3.						
4.						

13. Special Handling Instructions and Additional Information
A:
B:
C:
D:

14. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: MARK J. RIELLY
Signature: M J Rielly
Month 4 Day 18 Year 05

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: Lockwood
Signature:
Month 4 Day 18 Year 05
Transporter 2 Printed/Typed Name
Signature
Month Day Year

17. Discrepancy
17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Manifest Reference Number:
17b. Alternate Facility (or Generator)
U.S. EPA ID Number
Facility's Phone:
17c. Signature of Alternate Facility (or Generator)
Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a
Printed/Typed Name
Signature
Month 4 Day 18 Year 05

GENERATOR — INT'L — TRANSPORTER — DESIGNATED FACILITY

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R1 26770

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number: C E S 0 6
2. Page 1 of: 1
3. Emergency Response Phone: 800-535-5053 ACCN102074
4. Waste Tracking Number: 2 1 0 1 7

5. Generator's Name and Mailing Address
NAVAL STATION NEWPORT
INK STIMPETRI DRIVE
NEWPORT, RI 02841
Generator's Phone: 401 841-1791

Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name: [illegible]
U.S. EPA ID Number:

7. Transporter 2 Company Name:
U.S. EPA ID Number:

8. Designated Facility Name and Site Address
RHODE ISLAND RESOURCE RECOVERY CORPORATION
65 SHUN PIKE
JOHNSTON, RI 02919
Facility's Phone: (401) 942-1430
U.S. EPA ID Number:

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
	1. SOIL WITH DIRT PIGEON FRIGMENTS, NON HAZARDOUS/NON REGULATED		DM	[illegible]	P	POUNDS
	2.					
	3.					
	4.					

13. Special Handling Instructions and Additional Information
A:
B:
C:
D:

14. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: MARK J. RIELLY
Signature: M J Rielly
Month 4 Day [illegible] Year [illegible]

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: [illegible]
Signature: [illegible]
Month [illegible] Day [illegible] Year

Transporter 2 Printed/Typed Name:
Signature:
Month Day Year

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator)
U.S. EPA ID Number:
Facility's Phone:

17c. Signature of Alternate Facility (or Generator)
Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: [illegible]
Signature: [illegible]
Month [illegible] Day [illegible] Year [illegible]

GENERATOR — INT'L — TRANSPORTER — DESIGNATED FACILITY

169-BLS-C 6 10497 (Rev. 9/09)

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RI-113482

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
CESQG	1	800-535-5053 ACC#103074	21013

GENERATOR

5. Generator's Name and Mailing Address

NAVAL STATION NEWPORT
ONE SIMONPIETRI DRIVE
NEWPORT, RI 02841

Generator's Phone: 401 841-1791

Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name: X COMANTINI BROS.

U.S. EPA ID Number

7. Transporter 2 Company Name

U.S. EPA ID Number

8. Designated Facility Name and Site Address

RHODE ISLAND RESOURCE RECOVERY CORPORATION
65 SHUN PIKE
JOHNSTON, RI 02919

Facility's Phone: (401) 942-1430

U.S. EPA ID Number

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	SOIL WITH CLAY PIGEON FRAGMENTS, NON HAZARDOUS/NON REGULATED		CM	50000	P	POWDS
2.	—					
3.						
4.						

13. Special Handling Instructions and Additional Information

A:
B:
C:
D:

14. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: MARK J. RIELLY | Signature: M J Rielly | Month 4 | Day 19 | Year 1[illegible]

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:

Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: X TODD DIANDREA | Signature: [illegible] | Month 4 | Day 19 | Year

Transporter 2 Printed/Typed Name | Signature | Month | Day | Year

DESIGNATED FACILITY

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) | U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) | Month | Day | Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in item 17a

Printed/Typed Name: Kevin Johnson | Signature: Kevin Johnson | Month 4 | Day 1[illegible] | Year 1[illegible]

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RI 26776

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
	CE506	1	800-535-5053 ACCN103074	21014

GENERATOR

5. Generator's Name and Mailing Address

NAVAL STATION NEWPORT
ONE SIMONPIETRI DRIVE
NEWPORT, RI 02841

Generator's Phone: 401 841-1791

Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name: X Costantini Bros — U.S. EPA ID Number:

7. Transporter 2 Company Name — U.S. EPA ID Number:

8. Designated Facility Name and Site Address — U.S. EPA ID Number:

RHODE ISLAND RESOURCE RECOVERY CORPORATION
65 SHUN PIKE
JOHNSTON, RI 02919

Facility's Phone: (401) 942-1430

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	SOIL WITH CLAY PIGEON FRAGMENTS, NON HAZARDOUS/NON REGULATED		C/M	6000	P	POUNDS
2.						
3.						
4.						

13. Special Handling Instructions and Additional Information

A:
B:
C:
D:

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: MARK J. RIELLY — Signature: M J Rielly — Month 4 Day 19 Year 13

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: X Costantini — Signature: [signature] — Month 4 Day 19 Year 13

Transporter 2 Printed/Typed Name — Signature — Month Day Year

DESIGNATED FACILITY

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month Day Year

NOT

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: Ron Dotson — Signature: [signature] — Month 4 Day 19 Year 13

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AI 26740

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
CCSDB	1	800-535-5053 PCC#183074	21878

5. Generator's Name and Mailing Address

NAVAL STATION NEWPORT
ONE STRONGPIETRI DRIVE
NEWPORT, RI 02841

Generator's Site Address (if different than mailing address)

Generator's Phone: 401 841-1751

6. Transporter 1 Company Name: Capital Rail Transport Inc — U.S. EPA ID Number:

7. Transporter 2 Company Name — U.S. EPA ID Number:

8. Designated Facility Name and Site Address — U.S. EPA ID Number:

RHODE ISLAND RESOURCE RECOVERY CORPORATION
65 SHUN PIKE
JOHNSTON, RI 02919

Facility's Phone: (401) 942-1430

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt/Vol.	
1.	SOIL WITH CLAY PIGEON FRAGMENTS, NON HAZARDOUS/NON REGULATED		CR	64000	P	
2.						
3.						
4.						

13. Special Handling Instructions and Additional Information

A:
B:
C:
D:

14. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: MARK J. RIELLY — Signature: M J Rielly — Month 4 Day 19 Year

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name — Signature — Month Day Year

Transporter 2 Printed/Typed Name — Signature — Month Day Year

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in item 17a

Printed/Typed Name — Signature — Month Day Year

GENERATOR — INT'L — TRANSPORTER — DESIGNATED FACILITY

169-BLS-C 6 10497 (Rev. 9/09)

101986588

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RI 26770

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
	CF506	1	800-535-5053 OCC#103074	21015

5. Generator's Name and Mailing Address

NAVAL STATION NEWPORT
ONE SIMONPIETRI DRIVE
NEWPORT, RI 02841

Generator's Site Address (if different than mailing address)

Generator's Phone: 401 841-1791

6. Transporter 1 Company Name — U.S. EPA ID Number

7. Transporter 2 Company Name — U.S. EPA ID Number

8. Designated Facility Name and Site Address — U.S. EPA ID Number

RHODE ISLAND RESOURCE RECOVERY CORPORATION
65 SHUN PIKE
JOHNSTON, RI 02919

Facility's Phone: (401) 942-1430

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	SOIL WITH CLAY DIGESTIN FRAGMENTS, NON HAZARDOUS/NON REGULATED		CY		P	POUNDS
2.						
3.						
4.						

13. Special Handling Instructions and Additional Information

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: MARK J. RIELLY — Signature: M. J. Rielly — Month 4 Day 19 Year 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name — Signature — Month Day Year

Transporter 2 Printed/Typed Name — Signature — Month Day Year

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name — Signature — Month Day Year

GENERATOR — INT'L — TRANSPORTER — DESIGNATED FACILITY

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COPY

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RI 113482

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number: CESBG

2. Page 1 of 1

3. Emergency Response Phone: 800-535-5053 ACC#103074

4. Waste Tracking Number: 21021

GENERATOR

5. Generator's Name and Mailing Address
NAVAL STATION NEWPORT
ONE SIMONPIETRI DRIVE
NEWPORT, RI 02841

Generator's Site Address (if different than mailing address)

Generator's Phone: 401 841-1791

6. Transporter 1 Company Name: K COSTANTINI BROS.
U.S. EPA ID Number

7. Transporter 2 Company Name
U.S. EPA ID Number

8. Designated Facility Name and Site Address
RHODE ISLAND RESOURCE RECOVERY CORPORATION
65 SHUN PIKE
JOHNSTON, RI 02919

Facility's Phone: (401) 942-1430

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
	1. SOIL WITH CLAY PIPE FRAGMENTS, NON HAZARDOUS/NON REGULATED	1	CH	50,000	P	POUNDS
	2.					
	3.					
	4.					

13. Special Handling Instructions and Additional Information
H:
H:
S:
D:

14. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: MARK J. RIELLY
Signature: M J Rielly
Month / Day / Year: 4 / 11 / 10

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Date leaving U.S.:
Transporter Signature (for exports only):

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: TODD DANDREA
Signature: [illegible]
Month / Day / Year: 4 / 12

Transporter 2 Printed/Typed Name
Signature
Month / Day / Year

DESIGNATED FACILITY

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:
U.S. EPA ID Number

17b. Alternate Facility (or Generator)

Facility's Phone:

17c. Signature of Alternate Facility (or Generator)
Month / Day / Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: RON JOHNSON
Signature: [illegible]
Month / Day / Year

101986683

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RI 26776.

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
	[illegible]	1	800-535-5053 ACC#103874	21022

GENERATOR

5. Generator's Name and Mailing Address

NAVAL STATION NEWPORT
ONE SIMONPIETRI DRIVE
NEWPORT, RI 02841

Generator's Phone: 401 841-1791

Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name: J Costantini Recc

U.S. EPA ID Number

7. Transporter 2 Company Name

U.S. EPA ID Number

8. Designated Facility Name and Site Address

RHODE ISLAND RESOURCE RECOVERY CORPORATION
65 SHUN PIKE
JOHNSTON, RI 02919

Facility's Phone: (401) 942-1430

U.S. EPA ID Number

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	SOIL WITH CLAY PIGEON FRAGMENTS, NON HAZARDOUS/NON REGULATED			60,000	P	POUNDS
2.						
3.						
4.						

13. Special Handling Instructions and Additional Information

A:
B:
C:
D:

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: MARK J. RIELLY

Signature: M J Rielly

Month 4 Day 19 Year 13

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:

Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: J Costantini

Signature: [illegible] Costantini

Month [illegible] Day [illegible] Year [illegible]

Transporter 2 Printed/Typed Name

Signature

Month Day Year

DESIGNATED FACILITY

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator)

U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator)

Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name

Signature

Month [illegible] Day [illegible] Year [illegible]

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RI26776

...MFEST	...Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
	CESQG	1	800-535-5053 ACC#183074	21618

5. Generator's Name and Mailing Address

NAVAL STATION NEWPORT
ONE SIMONPIETRI DRIVE
NEWPORT, RI 02841

Generator's Site Address (if different than mailing address)

Generator's Phone: 401 841-1791

6. Transporter 1 Company Name: Costantino Bros. — U.S. EPA ID Number

7. Transporter 2 Company Name — U.S. EPA ID Number

8. Designated Facility Name and Site Address

RHODE ISLAND RESOURCE RECOVERY CORPORATION
65 SHUN PIKE
JOHNSTON, RI 02919

U.S. EPA ID Number

Facility's Phone: (401) 942-1430

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
	1. SOIL WITH CLAY PIGEON FRAGMENTS, NON HAZARDOUS/NON REGULATED			6500	POUNDS	
	2.					
	3.					
	4.					

13. Special Handling Instructions and Additional Information

A:
B:
C:
D:

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: MARK J. RIELLY — Signature: M J Rielly — Month 4 Day 11 Year 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: John P. Costantino — Signature: [signature] — Month 4 Day 11 Year 13

Transporter 2 Printed/Typed Name — Signature — Month Day Year

17. Discrepancy — Month Day Year

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

17b. Alternate Facility (or Generator) — Manifest Reference Number: — U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name — Signature: Joe Mattera — Month 4 Day 20 Year 13

GENERATOR — TRANSPORTER INT'L — DESIGNATED FACILITY

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COPY

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RI 26740

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
	CESPG	1	800-535-5053 ACC#103074	21016

5. Generator's Name and Mailing Address

NAVAL STATION NEWPORT
ONE SIMONPIETRI DRIVE
NEWPORT, RI 02841

Generator's Phone: 401 841-1791

Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name: X Central Pro Tankers Inc

U.S. EPA ID Number

7. Transporter 2 Company Name

U.S. EPA ID Number

8. Designated Facility Name and Site Address

RHODE ISLAND RESOURCE RECOVERY CORPORATION
65 SHUN PIKE
JOHNSTON, RI 02919

Facility's Phone: (401) 942-1430

U.S. EPA ID Number

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
	1. SOIL WITH CLAY BISCUIT FRAGMENTS, NON HAZARDOUS/NON REGULATED	1	CM	70,000	P	POUNDS
	2.					
	3.					
	4.					

13. Special Handling Instructions and Additional Information

A:
B:
C:
D:

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: MARK J. RIELLY

Signature: M J Rielly

Month 1 Day 17 Year 15

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:

Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Central Pro Tankers

Signature

Month Day Year

Transporter 2 Printed/Typed Name

Signature

Month Day Year

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator)

U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator)

Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name

Signature: Lori Mallette

Month 4 Day 20 Year 13

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GENERATOR — INT'L — TRANSPORTER — DESIGNATED FACILITY

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RI 113482

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number: CESQG
2. Page 1 of: 1
3. Emergency Response Phone: 800-535-5053 ACC#103874
4. Waste Tracking Number: 21017

5. Generator's Name and Mailing Address
NAVAL STATION NEWPORT
ONE SIMONPIETRI DRIVE
NEWPORT, RI 02841
Generator's Phone: 401 841 1791

Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name: X CONSTANTINI BROS.
U.S. EPA ID Number:

7. Transporter 2 Company Name:
U.S. EPA ID Number:

8. Designated Facility Name and Site Address
RHODE ISLAND RESOURCE RECOVERY CORPORATION
65 SHUN PIKE
JOHNSTON, RI 02919
Facility's Phone: (401) 942-1430
U.S. EPA ID Number:

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	SOIL WITH CLAY PIGEON FRAGMENTS, NON HAZARDOUS/NON REGULATED		DM	50.00	P	POUNDS
2.	—					
3.						
4.						

13. Special Handling Instructions and Additional Information
A:
B:
C:
D:

14. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: MARK J. RIELLY
Signature: M J Rielly
Month 4 Day 15 Year 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S.
Port of entry/exit:
Transporter Signature (for exports only):
Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: X TIM SHADRICK
Signature: Tim Shadrick
Month 4 Day 15 Year

Transporter 2 Printed/Typed Name:
Signature:
Month Day Year

17. Discrepancy
17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Manifest Reference Number:
17b. Alternate Facility (or Generator)
U.S. EPA ID Number:
Facility's Phone:
17c. Signature of Alternate Facility (or Generator)
Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a
Printed/Typed Name:
Signature:
Month 4 Day 20 Year 13

GENERATOR — TRANSPORTER — INT'L — DESIGNATED FACILITY

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RI 113482

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
CESQG	1	800-535-5053 ACCN163074	21017

GENERATOR

5. Generator's Name and Mailing Address

NAVAL STATION NEWPORT
ONE SIMONPIETRY DRIVE
NEWPORT, RI 02841

Generator's Phone: 401 841-1791

Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name: X CONSTANTINI BROS.

U.S. EPA ID Number

7. Transporter 2 Company Name

U.S. EPA ID Number

8. Designated Facility Name and Site Address

RHODE ISLAND RESOURCE RECOVERY CORPORATION
65 SHUN PIKE
JOHNSTON, RI 02919

Facility's Phone: (401) 942-1430

U.S. EPA ID Number

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
	1. SOIL WITH CLAY FIRING FRAGMENTS, NON HAZARDOUS/NON REGULATED	1	CY	50,000	P	POUNDS
	2. —					
	3.					
	4.					

13. Special Handling Instructions and Additional Information

A:
B:
C:
D:

14. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: MARK J. RIELLY | Signature: M J Rielly | Month 4 | Day 22 | Year 13

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:

Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: X TODD D'ANDREA | Signature: Todd D'Andrea | Month 4 | Day | Year

Transporter 2 Printed/Typed Name | Signature | Month | Day | Year

DESIGNATED FACILITY

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) | U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) | Month | Day | Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: LOU MASS | Signature: [illegible] | Month 4 | Day 22 | Year 13

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RI 26740

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number: CE996
2. Page 1 of: 1
3. Emergency Response Phone: 800-535-5053 ACC#103874
4. Waste Tracking Number: 21075

5. Generator's Name and Mailing Address
NAVAL STATION NEWPORT
ONE SIMONPIETRI DRIVE
NEWPORT, RI 02841
Generator's Phone: 401 841-1791

Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name: [illegible]
U.S. EPA ID Number:

7. Transporter 2 Company Name:
U.S. EPA ID Number:

8. Designated Facility Name and Site Address
RHODE ISLAND RESOURCE RECOVERY CORPORATION
65 SHUN PIKE
JOHNSTON, RI 02919
Facility's Phone: (401) 942-1430
U.S. EPA ID Number:

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	SOIL WITH CLAY PIGEON FRAGMENTS, NON HAZARDOUS/NON REGULATED	1	CM	2000	P	POUNDS
2.	—					
3.						
4.						

13. Special Handling Instructions and Additional Information
A:
B:
C:
D:

14. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: MARK J. RIELLY
Signature: M. J. Rielly
Month: 4 Day: 22 Year: 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: [illegible]
Signature: [illegible]
Month: 4 Day: 22 Year:
Transporter 2 Printed/Typed Name:
Signature:
Month: Day: Year:

17. Discrepancy
17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Manifest Reference Number:
17b. Alternate Facility (or Generator)
U.S. EPA ID Number:
Facility's Phone:
17c. Signature of Alternate Facility (or Generator)
Month: Day: Year:

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a
Printed/Typed Name: Lou MASS
Signature: [illegible]
Month: 4 Day: 22 Year: 13

GENERATOR — INT'L — TRANSPORTER — DESIGNATED FACILITY

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10198 7316

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RI 26776

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
	CESRG	1	800-535-5053 ACC#103074	21074

5. Generator's Name and Mailing Address

NAVAL STATION NEWPORT
ONE SIMONPIETRI DRIVE
NEWPORT, RI 02841

Generator's Phone: 401 841-1791

Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name: Costa Bros — U.S. EPA ID Number

7. Transporter 2 Company Name — U.S. EPA ID Number

8. Designated Facility Name and Site Address — U.S. EPA ID Number

RHODE ISLAND RESOURCE RECOVERY CORPORATION
65 SHUN PIKE
JOHNSTON, RI 02919

Facility's Phone: (401) 942-1430

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	SOIL WITH CLAY PIGEON FRAGMENTS, NON HAZARDOUS/NON REGULATED	1	CY	[illegible]	P	PAINTS
2.						
3.						
4.						

13. Special Handling Instructions and Additional Information

A:
B:
C:
D:

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: MARK J. RIELLY — Signature: M. J. Rielly — Month 4 Day 22 Year 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: [illegible] — Signature: [illegible] — Month Day Year

Transporter 2 Printed/Typed Name — Signature — Month Day Year

17. Discrepancy

17a. Discrepancy indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: [illegible] — Signature: [illegible] — Month 4 Day 22 Year 13

GENERATOR — INT'L — TRANSPORTER — DESIGNATED FACILITY

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KELLER & ... ...the United States

RI-26931

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
RES06	1	800-535-5053 ACCT#103074	21075

5. Generator's Name and Mailing Address
NAVAL STATION NEWPORT
ONE STRONGTERT DRIVE
NEWPORT, RI 02841

Generator's Site Address (if different than mailing address)

Generator's Phone: 401 841-1791

6. Transporter 1 Company Name — U.S. EPA ID Number

7. Transporter 2 Company Name — U.S. EPA ID Number

8. Designated Facility Name and Site Address
RHODE ISLAND RESOURCE RECOVERY CORPORATION
65 SHUN PIKE
JOHNSTON, RI 02919

Facility's Phone: (401) 942-1430

9. Waste Shipping Name and Description	10. Containers No.	Type	11. Total Quantity	12. Unit Wt./Vol.	
1. SOIL WITH CLAY PIGEON FRAGMENTS, NON HAZARDOUS/NON REGULATED	1	DM	5500	P	POUNDS
2.					
3.					
4.					

13. Special Handling Instructions and Additional Information
A:
B:
C:
D:

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: MARK J. RIELLY — Signature: M. J. Rielly — Month 4 Day 22 Year

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit: Date leaving U.S.:

Transporter Signature (for exports only):

16. Transporter Acknowledgment of Receipt of Materials — Signature — Month Day Year

Transporter 1 Printed/Typed Name — Signature — Month Day Year

Transporter 2 Printed/Typed Name

17. Discrepancy
17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number: U.S. EPA ID Number

17b. Alternate Facility (or Generator)

Facility's Phone: 4/22/13 Month Day Year

17c. Signature of Alternate Facility (or Generator)

Steven Pietrantozzi, Steve Pietrantozzi

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted

Page 1 of 1

Print... Name

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RI 113482

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
	DE506	1	800-535-5053 ACC#103074	21073

5. Generator's Name and Mailing Address

NAVAL STATION NEWPORT
ONE SIMONPIETRI DRIVE
NEWPORT, RI 02841

Generator's Site Address (if different than mailing address)

Generator's Phone: 401 841-1791

6. Transporter 1 Company Name: COSTANTINI BROS. — U.S. EPA ID Number

7. Transporter 2 Company Name — U.S. EPA ID Number

8. Designated Facility Name and Site Address — U.S. EPA ID Number

RHODE ISLAND RESOURCE RECOVERY CORPORATION
65 SHUN PIKE
JOHNSTON, RI 02919

Facility's Phone: (401) 942-1430

	9. Waste Shipping Name and Description	10. Containers No.	Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	SOIL WITH CLAY PIGEON FRAGMENTS, NON HAZARDOUS/NON REGULATED	1	CY	50,000	P	POUNDS
2.						
3.						
4.						

13. Special Handling Instructions and Additional Information

A:
B:
C:
D:

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: MARK J. RIELLY — Signature: M. J. Rielly — Month 4 Day 22 Year 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: TODD D'ANDREA — Signature: Todd D'Andrea — Month 4 Day Year

Transporter 2 Printed/Typed Name — Signature — Month Day Year

17. Discrepancy

17a. Discrepancy Indication Space ☑ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

17b. Alternate Facility (or Generator) — Manifest Reference Number: — U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: LOU MASS — Signature: Lou Mass — Month 4 Day 22 Year 13

GENERATOR — TRANSPORTER — DESIGNATED FACILITY

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COPY

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RI 26740

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
	CESQG	1	800-535-5053 ACC#103074	21072

GENERATOR

5. Generator's Name and Mailing Address
NAVAL STATION NEWPORT
ONE SIMONPIETRI DRIVE
NEWPORT, RI 02841
Generator's Phone: 401 841-1791

Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name — U.S. EPA ID Number

7. Transporter 2 Company Name — U.S. EPA ID Number

8. Designated Facility Name and Site Address — U.S. EPA ID Number
RHODE ISLAND RESOURCE RECOVERY CORPORATION
65 SHUN PIKE
JOHNSTON, RI 02919
Facility's Phone: (401) 942-1438

9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1. SOIL WITH CLAY PIGEON FRIGMENTS, NON HAZARDOUS/NON REGULATED	1	CM	7[illegible]	P	POUNDS
2.					
3.					
4.					

13. Special Handling Instructions and Additional Information
A:
B:
C:
D:

14. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: MARK J. RIELLY — Signature: [signature] — Month 4 Day 22 Year 13

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name — Signature — Month Day Year
Transporter 2 Printed/Typed Name — Signature — Month Day Year

DESIGNATED FACILITY

17. Discrepancy
17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Manifest Reference Number:
17b. Alternate Facility (or Generator) — U.S. EPA ID Number
Facility's Phone:
17c. Signature of Alternate Facility (or Generator) — Month Day Year

NOW

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a
Printed/Typed Name: LOU MASS — Signature: [signature] — Month 4 Day 22 Year 13

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RI 26931

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number: C F S 0 6
2. Page 1 of: 1
3. Emergency Response Phone: 800-535-5053 ACC#103074
4. Waste Tracking Number: 2 1 0 7 1

GENERATOR

5. Generator's Name and Mailing Address
NAVAL STATION NEWPORT
ONE SHOUMPIETRI DRIVE
NEWPORT, RI 02841
Generator's Phone: 401 841-1791
Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name
U.S. EPA ID Number

7. Transporter 2 Company Name
U.S. EPA ID Number

8. Designated Facility Name and Site Address
RHODE ISLAND RESOURCE RECOVERY CORPORATION
65 SHUN PIKE
JOHNSTON, RI 02919
Facility's Phone: (401) 942-1430
U.S. EPA ID Number

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	OIL WITH CLAY PIGEON FRAGMENTS, NON HAZARDOUS/NON REGULATED	1	CM	600	P	PANWOS
2.						
3.						
4.						

13. Special Handling Instructions and Additional Information

14. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: MARK J. RIELLY
Signature: M J Rielly
Month 4 Day 22 Year 13

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S.
Port of entry/exit:
Transporter Signature (for exports only):
Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name
Signature
Month Day Year
Transporter 2 Printed/Typed Name
Signature
Month Day Year

DESIGNATED FACILITY

17. Discrepancy
17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Manifest Reference Number:
17b. Alternate Facility (or Generator)
U.S. EPA ID Number
Facility's Phone:
17c. Signature of Alternate Facility (or Generator)
Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a
Printed/Typed Name: LOU MASS
Signature
Month 4 Day 22 Year 13

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RI 26776

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
	DESRB	1	800-535-5053 ACC#103074	21114

GENERATOR

5. Generator's Name and Mailing Address
NAVAL STATION NEWPORT
ONE SIMONPIETRI DRIVE
Generator's Phone: 401 841 1791 NEWPORT, RI 02841

Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name — U.S. EPA ID Number

7. Transporter 2 Company Name — U.S. EPA ID Number

8. Designated Facility Name and Site Address — U.S. EPA ID Number
RHODE ISLAND RESOURCE RECOVERY CORPORATION
65 SHUN PIKE
Facility's Phone: (401) 942-1430 JOHNSTON, RI 02919

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	SOIL WITH CLAY PIGEON FRAGMENTS, NON HAZARDOUS/NON REGULATED	1	CM		P	POUNDS
2.	—					
3.						
4.						

13. Special Handling Instructions and Additional Information
A:
B:
C:
D:

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: [illegible] — Signature: [illegible] — Month 4 Day 22 Year 13

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: [illegible] — Signature: [illegible] — Month Day Year
Transporter 2 Printed/Typed Name — Signature — Month Day Year

DESIGNATED FACILITY

17. Discrepancy
17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Manifest Reference Number:
17b. Alternate Facility (or Generator) — U.S. EPA ID Number
Facility's Phone:
17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a
Printed/Typed Name: [illegible] — Signature: [illegible] — Month 7 Day 22 Year 13

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RI 113482

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
	CFSDB	1	800-535-5053 ACC#103074	21113

GENERATOR

5. Generator's Name and Mailing Address

NAVAL STATION NEWPORT
ONE SIMONPIETRI DRIVE
NEWPORT, RI 02841

Generator's Site Address (if different than mailing address)

Generator's Phone: 401 841-1751

6. Transporter 1 Company Name: COSTANTINI BROS. — U.S. EPA ID Number

7. Transporter 2 Company Name — U.S. EPA ID Number

8. Designated Facility Name and Site Address — U.S. EPA ID Number

RHODE ISLAND RESOURCE RECOVERY CORPORATION
65 SHUN PIKE
JOHNSTON, RI 02919

Facility's Phone: (401) 942-1430

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	SOIL WITH CLAY PIGEON FRAGMENTS, NON HAZARDOUS/NON REGULATED	1	CN	50,000	P	
2.	—					
3.						
4.						

13. Special Handling Instructions and Additional Information

a:
b:
c:
d:

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: [illegible] — Signature: [illegible] — Month 4 Day 22 Year 13

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: TODD D'ANDREA — Signature: [illegible] — Month 4 Day 22 Year

Transporter 2 Printed/Typed Name — Signature — Month Day Year

DESIGNATED FACILITY

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: [illegible] — Signature: [illegible] — Month 4 Day 22 Year 13

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RI 26740

HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
	UES06	1	800-535-5053 RCC#183074	21112

GENERATOR

5. Generator's Name and Mailing Address

NAVAL STATION NEWPORT
ONE SIMONPIETRI DRIVE
NEWPORT, RI 02841

Generator's Site Address (if different than mailing address)

Generator's Phone: 401 841-1791

6. Transporter 1 Company Name — U.S. EPA ID Number

7. Transporter 2 Company Name — U.S. EPA ID Number

8. Designated Facility Name and Site Address — U.S. EPA ID Number

RHODE ISLAND RESOURCE RECOVERY CORPORATION
65 SHUN PIKE
JOHNSTON, RI 02919

Facility's Phone: (401) 942-1430

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	SOIL WITH CLAY PIGEON FRAGMENTS, NON HAZARDOUS/NON REGULATED	1	CY	20,000	P	
2.						
3.						
4.						

13. Special Handling Instructions and Additional Information

A:
B:
C:
D:

14. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Keith Wilson — Signature: Keith Wilson — Month 4 Day 22 Year

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name — Signature — Month 4 Day 22 Year

Transporter 2 Printed/Typed Name — Signature — Month Day Year

DESIGNATED FACILITY

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name — Signature — Month 4 Day 22 Year 13

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RI 26931

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number: CC586
2. Page 1 of 1
3. Emergency Response Phone: 800-535-5053 ACC#103074
4. Waste Tracking Number: 2111

5. Generator's Name and Mailing Address
NAVAL STATION NEWPORT
ONE SIMONPIETRI DRIVE
NEWPORT, RI 02841
Generator's Phone: 401 841-1791

Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name
U.S. EPA ID Number

7. Transporter 2 Company Name
U.S. EPA ID Number

8. Designated Facility Name and Site Address
RHODE ISLAND RESOURCE RECOVERY CORPORATION
65 SHUN PIKE
JOHNSTON, RI 02919
Facility's Phone: (401) 942-1430
U.S. EPA ID Number

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	SOIL WITH CLAY PIGEON FRAGMENTS, NON HAZARDOUS/NON REGULATED	1	C	6300	P	
2.	—					
3.						
4.						

13. Special Handling Instructions and Additional Information
A:
B:
C:
D:

14. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Keith Wilcox
Signature: Keith Wilcox
Month 4 Day 22 Year 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name
Signature
Month 4 Day 22 Year 13
Transporter 2 Printed/Typed Name
Signature
Month Day Year

17. Discrepancy
17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Manifest Reference Number:
17b. Alternate Facility (or Generator)
U.S. EPA ID Number
Facility's Phone:
17c. Signature of Alternate Facility (or Generator)
Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a
Printed/Typed Name
Signature
Month 4 Day 22 Year 13

GENERATOR
INT'L
TRANSPORTER
DESIGNATED FACILITY

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RI 26776

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number: CESQG
2. Page 1 of 1
3. Emergency Response Phone: 800-535-5053 ACC#103074
4. Waste Tracking Number: 21111

5. Generator's Name and Mailing Address
NAVAL STATION NEWPORT
ONE SIMONPIETRI DRIVE
NEWPORT, RI 02841
Generator's Phone: 401 841-1791

Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name: Costantino Bros.
U.S. EPA ID Number

7. Transporter 2 Company Name
U.S. EPA ID Number

8. Designated Facility Name and Site Address
RHODE ISLAND RESOURCE RECOVERY CORPORATION
65 SHUN PIKE
JOHNSTON, RI 02919
Facility's Phone: (401) 942-1430
U.S. EPA ID Number

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.
1.	SOIL WITH CLAY PIGEON FRIGMENTS, NON HAZARDOUS/NON REGULATED	1	CY	Cubic Yards	P
2.					
3.					
4.					

13. Special Handling Instructions and Additional Information
A:
B:
C:
D:

14. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: KEITH WEBER
Signature: Keith Weber
Month 4 Day 22 Year 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S.
Port of entry/exit:
Transporter Signature (for exports only):
Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: Costantino
Signature
Month Day Year
Transporter 2 Printed/Typed Name
Signature
Month Day Year

17. Discrepancy
17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

17b. Alternate Facility (or Generator)
Manifest Reference Number:
U.S. EPA ID Number
Facility's Phone:

17c. Signature of Alternate Facility (or Generator)
Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a
Printed/Typed Name: Joe Mello
Signature: Joe Mello
Month 4 Day 22 Year 13

GENERATOR — INT'L — TRANSPORTER — DESIGNATED FACILITY

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RI 113482

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number: CESQG
2. Page 1 of 1
3. Emergency Response Phone: 800-535-5053 PCC#103874
4. Waste Tracking Number: 21109

GENERATOR

5. Generator's Name and Mailing Address
NAVAL STATION NEWPORT
ONE SIMONPIETRI DRIVE
NEWPORT, RI 02841
Generator's Phone: 401 841 1791
Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name: COSTANTINI BROS.
U.S. EPA ID Number

7. Transporter 2 Company Name
U.S. EPA ID Number

8. Designated Facility Name and Site Address
RHODE ISLAND RESOURCE RECOVERY CORPORATION
65 SHUN PIKE
JOHNSTON, RI 02919
Facility's Phone: (401) 942-1430
U.S. EPA ID Number

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	SOIL WITH CLAY PIGEON FRAGMENTS, NON HAZARDOUS/NON REGULATED	1		50,000	P	
2.	—					
3.						
4.						

13. Special Handling Instructions and Additional Information
A:
B:
C:
D:

14. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: KEITH WEBER
Signature: Keith Weber
Month 4 Day 22 Year 13

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: TODD DIANDREA
Signature: Todd Diandrea
Month 4 Day 22 Year 13
Transporter 2 Printed/Typed Name
Signature
Month Day Year

DESIGNATED FACILITY

17. Discrepancy
17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Manifest Reference Number:
17b. Alternate Facility (or Generator)
U.S. EPA ID Number
Facility's Phone:
17c. Signature of Alternate Facility (or Generator)
Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a
Printed/Typed Name: Stan Piotrowicz
Signature
Month 4 Day 24 Year 13

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RI-26740

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
	CESQG	1	800-535-5053 REC#183874	21100

GENERATOR

5. Generator's Name and Mailing Address

HOWA STATION NEWPORT
ONE SHAMROCK DRIVE
NEWPORT, RI 02841

Generator's Phone: 401 841-1791

Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name: Cochato Bus Transport Inc.

U.S. EPA ID Number

7. Transporter 2 Company Name

U.S. EPA ID Number

8. Designated Facility Name and Site Address

RHODE ISLAND RESOURCE RECOVERY CORPORATION
65 SHUN PIKE
JOHNSTON, RI 02919

Facility's Phone: (401) 942-1430

U.S. EPA ID Number

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.
1.	SOIL WITH CLAY PIGEON FRAGMENTS, NON HAZARDOUS/NON REGULATED		CY	1-10	P
2.					
3.					
4.					

13. Special Handling Instructions and Additional Information

A:
B:
C:
D:

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: KEITH WEBSTER | Signature: Keith Webster | Month 4 | Day 22 | Year 13

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:

Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name | Signature | Month | Day | Year

Transporter 2 Printed/Typed Name | Signature | Month | Day | Year

DESIGNATED FACILITY

17. Discrepancy

17a. Discrepancy Indication Space ☒ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) | U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) | Month | Day | Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: Steve Pierdomenico | Signature: [signature] | Month 4 | Day 22 | Year 13

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RI 26776

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number: [illegible]
2. Page 1 of 1
3. Emergency Response Phone: 800-535-5053 ACC#103078
4. Waste Tracking Number: 21106

5. Generator's Name and Mailing Address
NAVAL STATION NEWPORT
ONE SIMMPIFIRT DRIVE
NEWPORT, RI 02841
Generator's Phone: 401 841-1791

Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name: [illegible] — U.S. EPA ID Number:
7. Transporter 2 Company Name: — U.S. EPA ID Number:
8. Designated Facility Name and Site Address
RHODE ISLAND RESOURCE RECOVERY CORPORATION
65 SHUN PIKE
Facility's Phone: (401) 942-1430 JOHNSTON, RI 02919
U.S. EPA ID Number:

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	SOIL WITH CLAY PIGEON FRAGMENTS, NON HAZARDOUS/NON REGULATED		C	[illegible]	P	
2.	—					
3.						
4.						

13. Special Handling Instructions and Additional Information
A:
B:
C:
D:

14. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.
Generator's/Offeror's Printed/Typed Name: KEITH WEBER — Signature: [signature] — Month 4 Day 22 Year 12

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. — Port of entry/exit:
Transporter Signature (for exports only): — Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: [illegible] — Signature: [signature] — Month Day Year
Transporter 2 Printed/Typed Name: — Signature: — Month Day Year

17. Discrepancy
17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Manifest Reference Number:
17b. Alternate Facility (or Generator) — U.S. EPA ID Number:
Facility's Phone:
17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a
Printed/Typed Name: PAUL P. HOULE — Signature: [signature] — Month 4 Day 22 Year 12

GENERATOR — INT'L — TRANSPORTER — DESIGNATED FACILITY

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RI 26931

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number: CESQG
2. Page 1 of 1
3. Emergency Response Phone: 800-535-5053 ACC#103074
4. Waste Tracking Number: 21107

GENERATOR

5. Generator's Name and Mailing Address
NAVAL STATION NEWPORT
ONE SIMONPIETRI DRIVE
NEWPORT, RI 02841
Generator's Phone: 401 841-1721
Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name: Cardinal Waste
U.S. EPA ID Number

7. Transporter 2 Company Name
U.S. EPA ID Number

8. Designated Facility Name and Site Address
RHODE ISLAND RESOURCE RECOVERY CORPORATION
65 SHUN PIKE
JOHNSTON, RI 02919
Facility's Phone: (401) 942-1430
U.S. EPA ID Number

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	SOIL WITH CLAY PIGEON FRAGMENTS, NON HAZARDOUS/NON REGULATED			6000		
2.	—					
3.						
4.						

13. Special Handling Instructions and Additional Information
A:
B:
C:
D:

14. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: KEITH WEBER
Signature: Keith Weber
Month 4 Day 22 Year 13

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: Frank Pitre
Signature: [illegible]
Month 4 Day Year

Transporter 2 Printed/Typed Name
Signature
Month Day Year

DESIGNATED FACILITY

17. Discrepancy
17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Manifest Reference Number:

17b. Alternate Facility (or Generator)
U.S. EPA ID Number
Facility's Phone:

17c. Signature of Alternate Facility (or Generator)
Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a
Printed/Typed Name: Paul P. Hoult
Signature: Paul P. Hoult
Month 4 Day Year

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RI 2640

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
CESQG	1	800-535-5053 [illegible]	[illegible]

5. Generator's Name and Mailing Address

NAVAL STATION NEWPORT
ONE SIMMPIETRI DRIVE
NEWPORT, RI 02841

Generator's Phone: 401 841-1791

Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name: Rockland Bay Transit Co. — U.S. EPA ID Number:

7. Transporter 2 Company Name — U.S. EPA ID Number:

8. Designated Facility Name and Site Address — U.S. EPA ID Number:

RHODE ISLAND RESOURCE RECOVERY CORPORATION
65 SHUN PIKE
JOHNSTON, RI 02919

Facility's Phone: (401) 942-1430

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	SOIL WITH CLAY PIGEON FRAGMENTS, NON HAZARDOUS/NON REGULATED	1		[illegible]		
2.						
3.						
4.						

13. Special Handling Instructions and Additional Information

A:
B:
C:
D:

14. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: KEITH WEBER — Signature: [signature] — Month 4 Day 23 Year 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: [illegible] — Signature: [signature] — Month 4 Day [illegible] Year [illegible]

Transporter 2 Printed/Typed Name — Signature — Month — Day — Year

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month — Day — Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: PAUL P. HOWE — Signature: [signature] — Month 4 Day [illegible] Year 13

GENERATOR — INT'L — TRANSPORTER — DESIGNATED FACILITY

169-BLS-C 6 10497 (Rev. 9/09)

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RI 26776

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
[illegible]	1	800-535-5053 ACC#103074	21104

GENERATOR

5. Generator's Name and Mailing Address

NAVAL STATION NEWPORT
ONE SIMONPIETRI DRIVE
NEWPORT, RI 02841

Generator's Site Address (if different than mailing address)

Generator's Phone: 401 841-1791

6. Transporter 1 Company Name — U.S. EPA ID Number

7. Transporter 2 Company Name — U.S. EPA ID Number

8. Designated Facility Name and Site Address — U.S. EPA ID Number

RHODE ISLAND RESOURCE RECOVERY CORPORATION
65 SHUN PIKE
JOHNSTON, RI 02919

Facility's Phone: (401) 942-1430

9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.
1. SOIL WITH CLAY PIGEON FRAGMENTS, NON HAZARDOUS/NON REGULATED	1		[illegible]	P
2.				
3.				
4.				

13. Special Handling Instructions and Additional Information

A:
B:
C:
D:

14. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: KEITH WEBER — Signature: [signature] — Month 4 Day 23 Year 13

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:

Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name — Signature — Month Day Year

Transporter 2 Printed/Typed Name — Signature — Month Day Year

DESIGNATED FACILITY

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: PAUL P. HOULE — Signature: [signature] — Month 4 Day 23 Year 13

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RI 26740

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number: CESQG
2. Page 1 of 1
3. Emergency Response Phone: 800-535-5053 ACC#103074
4. Waste Tracking Number: 21103

5. Generator's Name and Mailing Address
NAVAL STATION NEWPORT
ONE SIMONPIETRI DRIVE
NEWPORT, RI 02841
Generator's Phone: 401 841-1791
Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name: Carlisle Pub Tans Inc
U.S. EPA ID Number

7. Transporter 2 Company Name
U.S. EPA ID Number

8. Designated Facility Name and Site Address
RHODE ISLAND RESOURCE RECOVERY CORPORATION
65 SHUN PIKE
JOHNSTON, RI 02919
Facility's Phone: (401) 942-1430
U.S. EPA ID Number

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.
1.	SOIL WITH CLAY PIGEON FRAGMENTS, NON HAZARDOUS/NON REGULATED		CY	70,000	P
2.					
3.					
4.					

13. Special Handling Instructions and Additional Information
A:
B:
C:
D:

14. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.
Generator's/Offeror's Printed/Typed Name: Keith Weber
Signature: Keith Weber
Month 4 Day 23 Year 12

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name
Signature
Month 4 Day 23 Year
Transporter 2 Printed/Typed Name
Signature
Month Day Year

17. Discrepancy
17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Manifest Reference Number:
17b. Alternate Facility (or Generator)
U.S. EPA ID Number
Facility's Phone:
17c. Signature of Alternate Facility (or Generator)
Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a
Printed/Typed Name: Paul P Hoole
Signature: Paul P Hoole
Month 4 Day 23 Year 12

GENERATOR — INT'L — TRANSPORTER — DESIGNATED FACILITY

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RI 26/10

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
	[illegible]	1	800-535-5053 ACC#103076	21102

GENERATOR

5. Generator's Name and Mailing Address

NAVAL STATION NEWPORT
DBF SIMMAPIETRI DRIVE
NEWPORT, RI 02841

Generator's Site Address (if different than mailing address)

Generator's Phone: 401 841-1791

6. Transporter 1 Company Name — U.S. EPA ID Number

7. Transporter 2 Company Name — U.S. EPA ID Number

8. Designated Facility Name and Site Address — U.S. EPA ID Number

RHODE ISLAND RESOURCE RECOVERY CORPORATION
65 SHUN PIKE
JOHNSTON, RI 02919

Facility's Phone: (401) 942-1430

9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.
1. SOIL WITH CLAY PIGEON FRIGMENTS, NON HAZARDOUS/NON REGULATED			20000	P
2. —				
3.				
4.				

13. Special Handling Instructions and Additional Information

A:
B:
C:
D:

14. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: [illegible] WEBER — Signature: [illegible] — Month / Day / Year

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:

Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name — Signature — Month 4 Day 23 Year 13

Transporter 2 Printed/Typed Name — Signature — Month / Day / Year

DESIGNATED FACILITY

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month / Day / Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: Paul P. [illegible] — Signature: [illegible] — Month 4 Day 23 Year 13

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RI 26776

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number: CES00
2. Page 1 of 1
3. Emergency Response Phone: 800-535-5053 [illegible]
4. Waste Tracking Number: 21100

5. Generator's Name and Mailing Address
NAVAL STATION NEWPORT
ONE SIMONPIETRI DRIVE
NEWPORT, RI 02841
Generator's Phone: 401 841-1791

Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name: Costantini Bros.
U.S. EPA ID Number

7. Transporter 2 Company Name
U.S. EPA ID Number

8. Designated Facility Name and Site Address
RHODE ISLAND RESOURCE RECOVERY CORPORATION
65 SHUN PIKE
JOHNSTON, RI 02919
Facility's Phone: (401) 942-1430
U.S. EPA ID Number

9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1. SOIL WITH CLAY PIGEON FRAGMENTS, NON HAZARDOUS/NON REGULATED	1		[illegible]		
2.					
3.					
4.					

13. Special Handling Instructions and Additional Information
A:
B:
C:
D:

14. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: KEITH WEBER
Signature: [illegible]
Month 4 Day 23 Year 09

15. International Shipments ☐ Import to U.S. ☐ Export from U.S.
Port of entry/exit:
Transporter Signature (for exports only):
Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: Costantini
Signature
Month Day Year
Transporter 2 Printed/Typed Name
Signature
Month Day Year

17. Discrepancy
17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

17b. Alternate Facility (or Generator)
Manifest Reference Number:
U.S. EPA ID Number
Facility's Phone:

17c. Signature of Alternate Facility (or Generator)
Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a
Printed/Typed Name
Signature
Month 4 Day 23 Year 09

GENERATOR — INT'L — TRANSPORTER — DESIGNATED FACILITY

169-BLS-C 6 10497 (Rev. 9/09)

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RI 26740

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
	CESQG	1	800-535-5053 NCC#103074	21101

5. Generator's Name and Mailing Address

NAVAL STATION NEWPORT
ONE SIMONPIETRI DRIVE
NEWPORT, RI 02841

Generator's Site Address (if different than mailing address)

Generator's Phone: 401 841-1791

6. Transporter 1 Company Name — U.S. EPA ID Number

7. Transporter 2 Company Name — U.S. EPA ID Number

8. Designated Facility Name and Site Address — U.S. EPA ID Number

RHODE ISLAND RESOURCE RECOVERY CORPORATION
65 SHUN PIKE
JOHNSTON, RI 02919

Facility's Phone: (401) 942-1430

9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.
1. SOIL WITH CLAY PIGEON FRIGMENTS, NON HAZARDOUS/NON REGULATED	1	CY		
2.				
3.				
4.				

13. Special Handling Instructions and Additional Information

A:
B:
C:
D:

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: KEITH WEBER — Signature: Keith Weber — Month 4 Day 23 Year 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name — Signature — Month Day Year

Transporter 2 Printed/Typed Name — Signature — Month 4 Day 23 Year 13

17. Discrepancy — Month Day Year

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

17b. Alternate Facility (or Generator) — Manifest Reference Number: — U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name — Signature — Month 4 Day 24 Year 13

GENERATOR — INT'L — TRANSPORTER — DESIGNATED FACILITY

169-BLS-C 6 10497 (Rev. 9/09)

101988856 TRANSPORTER #2

55

RI 26740

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number: CES86
2. Page 1 of 1
3. Emergency Response Phone: 800-535-5053 ACCT#103076
4. Waste Tracking Number: 21699

GENERATOR

5. Generator's Name and Mailing Address

NAVAL STATION NEWPORT
ONE SIMONPIETRI DRIVE
NEWPORT, RI 02841

Generator's Phone: 401 841-1791

Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name: [illegible]

U.S. EPA ID Number

7. Transporter 2 Company Name

U.S. EPA ID Number

8. Designated Facility Name and Site Address

RHODE ISLAND RESOURCE RECOVERY CORPORATION
65 SHUN PIKE
JOHNSTON, RI 02919

Facility's Phone: (401) 942-1430

U.S. EPA ID Number

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.
1.	SOIL WITH CLAY PIGEON FRAGMENTS, NON HAZARDOUS/NON REGULATED	1	CM	7000	P
2.					
3.					
4.					

13. Special Handling Instructions and Additional Information

A:
B:
C:
D:

14. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Keith Weber
Signature: Keith Weber
Month 4 Day 24 Year 13

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S.
Port of entry/exit:
Transporter Signature (for exports only):
Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: [illegible]
Signature: [illegible]
Month Day Year

Transporter 2 Printed/Typed Name
Signature
Month Day Year

DESIGNATED FACILITY

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator)

U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator)

Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: Steve Pietrantoni
Signature: [illegible]
Month 4 Day [illegible] Year

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101989579

56 RI 12881 Fowler 007

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
	CESQG	1	800-535-5053 ACCID#0307	21098

GENERATOR

5. Generator's Name and Mailing Address

NAVAL STATION NEWPORT
ONE SIMONPIETRI DRIVE
NEWPORT, RI 02841

Generator's Phone: 401 841-1791

Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name: Fowler — U.S. EPA ID Number:

7. Transporter 2 Company Name — U.S. EPA ID Number:

8. Designated Facility Name and Site Address — U.S. EPA ID Number:

RHODE ISLAND RESOURCE RECOVERY CORPORATION
65 SHUN PIKE
JOHNSTON, RI 02919

Facility's Phone: (401) 942-1430

9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.
1. SOIL WITH CLAY PIGEON FRAGMENTS, NON HAZARDOUS/NON REGULATED		CM	6000	D
2.				
3.				
4.				

13. Special Handling Instructions and Additional Information

A:
B:
C:
D:

14. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: KEITH WEBER — Signature: [signature] — Month 4 Day 24 Year 13

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:

Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Jeff Fowler — Signature: [signature] — Month 4 Day 24 Year 13

Transporter 2 Printed/Typed Name — Signature — Month Day Year

DESIGNATED FACILITY

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: LOU MAISS — Signature: [signature] — Month 4 Day 25 Year 13

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RI 113482

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
	CESQG	1	800-535-5053 RECEIVED	21997

GENERATOR

5. Generator's Name and Mailing Address

NAVAL STATION NEWPORT
ONE SIMONPIETRI DRIVE
NEWPORT, RI 02841

Generator's Phone: 401 841-1791

Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name: COSTANTINI BROS. — U.S. EPA ID Number

7. Transporter 2 Company Name — U.S. EPA ID Number

8. Designated Facility Name and Site Address — U.S. EPA ID Number

RHODE ISLAND RESOURCE RECOVERY CORPORATION
65 SHUN PIKE
JOHNSTON, RI 02919

Facility's Phone: (401) 942-1430

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	SOIL WITH CLAY PIGEON FRAGMENTS, NON HAZARDOUS/NON REGULATED	1	CY	50,000	P	
2.						
3.						
4.						

13. Special Handling Instructions and Additional Information

A:
B:
C:
D:

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: KEITH WEBER — Signature: [signature] — Month 4 Day 24 Year 13

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: TODD D'ANDREA — Signature: [signature] — Month 4 Day 24 Year 13

Transporter 2 Printed/Typed Name — Signature — Month Day Year

DESIGNATED FACILITY

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: LOU MISS — Signature: [signature] — Month 4 Day 25 Year 13

1019 89638

160 RI S-C 6 10497 (Rev. 9/09) COPY

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RI 65627

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of 1	3. Emergency Response Phone	4. Waste Tracking Number
	RI 6 5 6 2 6		800-535-5053 ACCN103074	21096

GENERATOR

5. Generator's Name and Mailing Address

NAVAL STATION NEWPORT
ONE SIMONPIETRI DRIVE
NEWPORT, RI 02841

Generator's Site Address (if different than mailing address)

Generator's Phone: 401 841-1751

U.S. EPA ID Number

6. Transporter 1 Company Name: Costantini Bros

U.S. EPA ID Number

7. Transporter 2 Company Name

U.S. EPA ID Number

8. Designated Facility Name and Site Address

RHODE ISLAND RESOURCE RECOVERY CORPORATION
65 SHUN PIKE
JOHNSTON, RI 02919

Facility's Phone: (401) 942-1430

9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.
1. SOIL WITH CLAY PIGEON FRAGMENTS, NON HAZARDOUS/NON REGULATED	1	CM	60000	P
2.				
3.				
4.				

13. Special Handling Instructions and Additional Information

A:
B:
C:
D:

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Keith Weber

Signature: Keith Weber

Month 4 Day 25 Year 1

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:

Date leaving U.S.:

Transporter Signature (for exports only):

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Philip Costantini

Signature: Philip Costantini

Month 4 Day 25 Year

Transporter 2 Printed/Typed Name

Signature

Month Day Year

DESIGNATED FACILITY

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

U.S. EPA ID Number

17b. Alternate Facility (or Generator)

Facility's Phone:

Month Day

17c. Signature of Alternate Facility (or Generator)

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: Wheaton Arnold

Signature

Month 4 Day 25

101989729

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20170

	Emergency Response Phone	4. Waste Tracking Number
	800-535-5053 RCC#103074	21095

Generator's Site Address (if different than mailing address)

NAVAL STATION NEWPORT
ONE SIMONPIETRI DRIVE
NEWPORT, RI 02841

Generator's Phone: 401 841-1791

6. Transporter 1 Company Name: Casella Bros — U.S. EPA ID Number

7. Transporter 2 Company Name — U.S. EPA ID Number

8. Designated Facility Name and Site Address — U.S. EPA ID Number

RHODE ISLAND RESOURCE RECOVERY CORPORATION
65 SHUN PIKE
JOHNSTON, RI 02919

Facility's Phone: (401) 942-1436

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	SOIL WITH CLAY PIGEON FRAGMENTS, NON HAZARDOUS/NON REGULATED	1	CY	20,000		
2.						
3.						
4.						

13. Special Handling Instructions and Additional Information

A:
B:
C:
D:

14. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: KEITH WEBER — Signature: Keith Weber — Month 4 Day 25 Year 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: [illegible] — Signature: [illegible] — Month Day Year

Transporter 2 Printed/Typed Name — Signature — Month Day Year

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

17b. Alternate Facility (or Generator) — Manifest Reference Number: — U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name — Signature: Wheaton Arnold — Month 4 Day 25 Year 13

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RI 12881

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
	CE586	1	800-535-5053 OCTN105074	21092

5. Generator's Name and Mailing Address

NAVAL STATION NEWPORT
ONE SIMONPIETRI DRIVE
NEWPORT, RI 02841

Generator's Phone: 401 841-1791

Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name: Howard

U.S. EPA ID Number

7. Transporter 2 Company Name

U.S. EPA ID Number

8. Designated Facility Name and Site Address

RHODE ISLAND RESOURCE RECOVERY CORPORATION
65 SHUN PIKE
JOHNSTON, RI 02919

Facility's Phone: (401) 942-1430

U.S. EPA ID Number

9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1. SOIL WITH CLAY PIGEON FRAGMENTS, NON HAZARDOUS/NON REGULATED	1		600000	P	
2.					
3.					
4.					

13. Special Handling Instructions and Additional Information

A:
B:
C:
D:

14. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Keith Weaver | Signature: Keith Weaver | Month 4 | Day 25 | Year 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:

Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Howard | Signature | Month 4 | Day 25 | Year 13

Transporter 2 Printed/Typed Name | Signature | Month | Day | Year

17. Discrepancy

17a. Discrepancy Indication Space ☑ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator)

U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) | Month | Day | Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name | Signature: Wheaton ARNOLD | Month 4 | Day 25 | Year 13

GENERATOR — INT'L — TRANSPORTER — DESIGNATED FACILITY

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NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number: CT 9 0 6
2. Page 1 of 1
3. Emergency Response Phone: 800-535-5053 ACCB10207
4. Waste Tracking Number: 2 1 0 9 4

5. Generator's Name and Mailing Address
NAVAL STATION NEWPORT
ONE SIMONPIETRI DRIVE
NEWPORT, RI 02841
Generator's Phone: 401 841-1791

Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name: CLP MASONRY INC
U.S. EPA ID Number:

7. Transporter 2 Company Name:
U.S. EPA ID Number:

8. Designated Facility Name and Site Address
RHODE ISLAND RESOURCE RECOVERY CORPORATION
65 SHUN PIKE
JOHNSTON, RI 02919
Facility's Phone: (401) 942-1430

U.S. EPA ID Number:

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	SOIL WITH CLAY PIGEON FRAGMENTS, NON HAZARDOUS/NON REGULATED	1	CY	70,000	P	POUNDS
2.						
3.						
4.						

13. Special Handling Instructions and Additional Information
A:
B:
C:
D:

14. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: KEITH WEBSTER
Signature: Keith Webster
Month 4 Day 25 Year 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: BRIAN CANDATO
Signature:
Month Day Year

Transporter 2 Printed/Typed Name:
Signature:
Month Day Year

17. Discrepancy
17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Manifest Reference Number:

17b. Alternate Facility (or Generator)
U.S. EPA ID Number:
Facility's Phone:

17c. Signature of Alternate Facility (or Generator)
Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a
Printed/Typed Name: PAUL P HOULE
Signature:
Month 4 Day 25 Year 13

GENERATOR | INT'L | TRANSPORTER | DESIGNATED FACILITY

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RI 113482

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number: CESDG
2. Page 1 of 1
3. Emergency Response Phone: 800-535-5053 ACCN10307
4. Waste Tracking Number: 21092

5. Generator's Name and Mailing Address
NAVAL STATION NEWPORT
ONE SIMONPIETRI DRIVE
NEWPORT, RI 02841
Generator's Phone: 401 841-1791

Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name: COSTANTINI BROS.
U.S. EPA ID Number

7. Transporter 2 Company Name
U.S. EPA ID Number

8. Designated Facility Name and Site Address
RHODE ISLAND RESOURCE RECOVERY CORPORATION
65 SHUN PIKE
JOHNSTON, RI 02919
Facility's Phone: (401) 942-1430

U.S. EPA ID Number

9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt/Vol.
1. SOIL WITH CLAY PIGEON FRAGMENTS, NON HAZARDOUS/NON REGULATED	1	CN	50,000	P
2. —				
3.				
4.				

13. Special Handling Instructions and Additional Information
A:
B:
C:
D:

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: KEITH WEBER
Signature: Keith Weber
Month 4 Day 25 Year 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: TODD D'ANDREA
Signature: Todd D'Andrea
Month 4 Day 25 Year 13

Transporter 2 Printed/Typed Name
Signature
Month Day Year

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator)
U.S. EPA ID Number
Facility's Phone:

17c. Signature of Alternate Facility (or Generator)
Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: Wharton Arnold
Signature
Month 4 Day 25 Year 13

GENERATOR — TRANSPORTER — INT'L — DESIGNATED FACILITY

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NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number: CESQG
2. Page 1 of 1
3. Emergency Response Phone: 800-535-5053 PETRIB3074
4. Waste Tracking Number: 21008

5. Generator's Name and Mailing Address
NAVAL STATION NEWPORT
ONE SIMONPIETRI DRIVE
NEWPORT, RI 02841
Generator's Phone: 401 841-1791

Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name: Costantini Bros.
U.S. EPA ID Number:

7. Transporter 2 Company Name:
U.S. EPA ID Number:

8. Designated Facility Name and Site Address
RHODE ISLAND RESOURCE RECOVERY CORPORATION
65 SHUN PIKE
JOHNSTON, RI 02919
Facility's Phone: (401) 942-1430
U.S. EPA ID Number:

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.
1.	SOIL WITH CLAY PIGEON FRAGMENTS, NON HAZARDOUS/NON REGULATED	1	CY	40,000	P
2.					
3.					
4.					

13. Special Handling Instructions and Additional Information
A:
B:
C:
D:

14. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: KEITH WEBER
Signature: Keith Weber
Month 4 Day 25 Year 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S.
Port of entry/exit:
Transporter Signature (for exports only):
Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: Mike Costantini
Signature:
Month 4 Day 25 Year 13
Transporter 2 Printed/Typed Name:
Signature:
Month Day Year

17. Discrepancy
17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

17b. Alternate Facility (or Generator)
Manifest Reference Number:
U.S. EPA ID Number:
Facility's Phone:

17c. Signature of Alternate Facility (or Generator)
Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a
Printed/Typed Name: EDWARD FERNANDES
Signature:
Month 4 Day 25 Year 13

GENERATOR — INT'L — TRANSPORTER — DESIGNATED FACILITY

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NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number: E E S 0 6
2. Page 1 of 1
3. Emergency Response Phone: 800-535-5053 CCN810307
4. Waste Tracking Number: 21991

5. Generator's Name and Mailing Address
NAVAL STATION NEWPORT
ONE SIMONPIETRI DRIVE
NEWPORT, RI 02841
Generator's Phone: 401 841-1791

Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name: [illegible]
U.S. EPA ID Number:

7. Transporter 2 Company Name:
U.S. EPA ID Number:

8. Designated Facility Name and Site Address
RHODE ISLAND RESOURCE RECOVERY CORPORATION
65 SHUN PIKE
JOHNSTON, RI 02919
Facility's Phone: (401) 942-2430
U.S. EPA ID Number:

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.
1.	SOIL WITH CLAY PIGEON FRAGMENTS, NON HAZARDOUS/NON REGULATED	1	CY	20	C
2.					
3.					
4.					

13. Special Handling Instructions and Additional Information
a.
b.
c.
d.

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: KEITH WEBER
Signature: [illegible]
Month 4 Day 25 Year 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: [illegible]
Signature: [illegible]
Month 4 Day Year

Transporter 2 Printed/Typed Name:
Signature:
Month Day Year

17. Discrepancy
17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Manifest Reference Number:

17b. Alternate Facility (or Generator)
U.S. EPA ID Number:
Facility's Phone:

17c. Signature of Alternate Facility (or Generator)
Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a
Printed/Typed Name: [illegible]
Signature: [illegible]
Month 4 Day 25 Year 13

GENERATOR — INT'L — TRANSPORTER — DESIGNATED FACILITY

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NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number: [illegible]
2. Page 1 of 1
3. Emergency Response Phone: 888-525-5053 [illegible]
4. Waste Tracking Number: [illegible]

5. Generator's Name and Mailing Address
NAVAL STATION NEWPORT
ONE STANDPIPE DRIVE
NEWPORT, RI 02841
Generator's Phone: 401 841 1711

Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name: [illegible] U.S. EPA ID Number:

7. Transporter 2 Company Name: U.S. EPA ID Number:

8. Designated Facility Name and Site Address
RHODE ISLAND RESOURCE RECOVERY CORPORATION
65 SPRN PIKE
JOHNSTON, RI 02919
Facility's Phone: (401) 942-1430

U.S. EPA ID Number:

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	SOIL WITH CLAY PIGEON FRAGMENTS, NON HAZARDOUS/NON REGULATED	1	CY	700	P	
2.						
3.						
4.						

13. Special Handling Instructions and Additional Information
A:
B:
C:
D:

14. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: [illegible] Signature: [illegible] Month 7 Day 25 Year 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: [illegible] Signature: [illegible] Month Day Year
Transporter 2 Printed/Typed Name: Signature: Month Day Year

17. Discrepancy
17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Manifest Reference Number:
17b. Alternate Facility (or Generator) U.S. EPA ID Number:
Facility's Phone:
17c. Signature of Alternate Facility (or Generator) Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a
Printed/Typed Name: [illegible] Signature: [illegible] Month Day Year

GENERATOR — INT'L — TRANSPORTER — DESIGNATED FACILITY

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GENERATOR'S/SHIPPER'S INITIAL COPY

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NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number: CESOG
2. Page 1 of 1
3. Emergency Response Phone: 800-535-5053 ACC#10397
4. Waste Tracking Number: 21089

5. Generator's Name and Mailing Address
NAVAL STATION NEWPORT
ONE SIMONPIETRI DRIVE
NEWPORT, RI 02841
Generator's Phone: 401 841-1791

Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name: COSTANTINI BROS.
U.S. EPA ID Number:

7. Transporter 2 Company Name:
U.S. EPA ID Number:

8. Designated Facility Name and Site Address
RHODE ISLAND RESOURCE RECOVERY CORPORATION
65 SHUN PIKE
JOHNSTON, RI 02919
Facility's Phone: (401) 942-1430
U.S. EPA ID Number:

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.
1.	SOIL WITH CLAY PIGEON FRIGMENTS, NON HAZARDOUS/NON REGULATED	1		50,000	P
2.					
3.					
4.					

13. Special Handling Instructions and Additional Information
A:
B:
C:
D:

14. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: KEITH WEBER
Signature: Keith Weber
Month 4 Day 25 Year 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: TODD DANDREA
Signature: Todd D'Andrea
Month 4 Day 25 Year 13

Transporter 2 Printed/Typed Name:
Signature:
Month Day Year

17. Discrepancy
17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Manifest Reference Number:

17b. Alternate Facility (or Generator)
U.S. EPA ID Number:
Facility's Phone:

17c. Signature of Alternate Facility (or Generator)
Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a
Printed/Typed Name: EDWARD FERNANDES
Signature:
Month 4 Day 25 Year 13

GENERATOR — INT'L — TRANSPORTER — DESIGNATED FACILITY

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RI 12881

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
CESDG	1	800-535-5053 ACT#193074	21087

5. Generator's Name and Mailing Address

NAVAL STATION NEWPORT
ONE SIMONPIETRI DRIVE
NEWPORT, RI 02841

Generator's Site Address (if different than mailing address)

Generator's Phone: 401 841-1791

6. Transporter 1 Company Name: X Fowler — U.S. EPA ID Number:

7. Transporter 2 Company Name — U.S. EPA ID Number:

8. Designated Facility Name and Site Address — U.S. EPA ID Number:

RHODE ISLAND RESOURCE RECOVERY CORPORATION
65 SHUN PIKE
JOHNSTON, RI 02919

Facility's Phone: (401) 942-1430

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.
1.	SOIL WITH CLAY PIGEON FRAGMENTS, NON HAZARDOUS/NON REGULATED	1		60000	CY
2.					
3.					
4.					

13. Special Handling Instructions and Additional Information

A:
B:
C:
D:

14. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: KEITH WEBER — Signature: Keith Weber — Month 4 Day 25 Year 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:

Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: X Jeff Fowler — Signature: [signature] — Month Day Year

Transporter 2 Printed/Typed Name — Signature: [signature] — Month Day Year

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number:

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: Nicholas Mancini — Signature: [signature] — Month 4 Day 25 Year 13

GENERATOR — INT'L — TRANSPORTER — DESIGNATED FACILITY

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RI 65627

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number: CESQG	2. Page 1 of 1	3. Emergency Response Phone: 800-535-5053 OCT#103074	4. Waste Tracking Number: 21085

5. Generator's Name and Mailing Address: NAVAL STATION NEWPORT, ONE SIMONPIETRI DRIVE, NEWPORT, RI 02841

Generator's Site Address (if different than mailing address):

Generator's Phone: 401 841-1791

6. Transporter 1 Company Name: Costantini Bros — U.S. EPA ID Number:

7. Transporter 2 Company Name — U.S. EPA ID Number:

8. Designated Facility Name and Site Address: RHODE ISLAND RESOURCE RECOVERY CORPORATION, 65 SHUN PIKE, JOHNSTON, RI 02919

Facility's Phone: (401) 942-1430

9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt/Vol.
1. SOIL WITH CLAY PIGEON FRIGMENTS, NON HAZARDOUS/NON REGULATED	1		50,000	P
2.				
3.				
4.				

13. Special Handling Instructions and Additional Information

A:
B:
C:
D:

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Kevin Weber — Signature: [signature] — Month 4 Day 25 Year 15

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit: Date leaving U.S.:

Transporter Signature (for exports only):

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Paul Costantini — Signature: [signature] — Month 4 Day 25 Year 15

Transporter 2 Printed/Typed Name — Signature — Month Day Year

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number: U.S. EPA ID Number

17b. Alternate Facility (or Generator)

Facility's Phone: Month Day Year

17c. Signature of Alternate Facility (or Generator)

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: [illegible] — Signature: [illegible] — Month 4 Day 25 Year 15

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NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
	CE500	1	800-535-5053 ACC#183874	21005

GENERATOR

5. Generator's Name and Mailing Address

NAVAL STATION NEWPORT
ONE SIMONPIETRI DRIVE
NEWPORT, RI 02841

Generator's Site Address (if different than mailing address)

Generator's Phone: 401 841-1791

6. Transporter 1 Company Name: Costa Bros

U.S. EPA ID Number

7. Transporter 2 Company Name

U.S. EPA ID Number

8. Designated Facility Name and Site Address

RHODE ISLAND RESOURCE RECOVERY CORPORATION
65 SHUN PIKE
JOHNSTON, RI 02919

U.S. EPA ID Number

Facility's Phone: (401) 942-1430

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.
1.	SOIL WITH CLAY PIGEON FRAGMENTS, NON HAZARDOUS/NON REGULATED	1	CY	70.00	
2.					
3.					
4.					

13. Special Handling Instructions and Additional Information

A:
B:
C:
D:

14. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Keith Weduke | Signature: Keith Weduke | Month 4 Day 25 Year 13

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:

Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name | Signature | Month 4 Day 25 Year 13

Transporter 2 Printed/Typed Name | Signature | Month Day Year

DESIGNATED FACILITY

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name | Signature | Month 4 Day 25 Year 13

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RI 113482

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number: CE506
2. Page 1 of 1
3. Emergency Response Phone: 800-535-5053 ACC#105074
4. Waste Tracking Number: 21083

5. Generator's Name and Mailing Address
NAVAL STATION NEWPORT
ONE SIMONPIETRI DRIVE
NEWPORT, RI 02841
Generator's Phone: 401 841-1791
Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name: COSTANTINI BROS
U.S. EPA ID Number

7. Transporter 2 Company Name
U.S. EPA ID Number

8. Designated Facility Name and Site Address
RHODE ISLAND RESOURCE RECOVERY CORPORATION
65 SHUN PIKE
JOHNSTON, RI 02919
Facility's Phone: (401) 942-1430
U.S. EPA ID Number

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.
1.	SOIL WITH CLAY PIGEON FRIGMENTS, NON HAZARDOUS/NON REGULATED	1	CM	50,000	P
2.					
3.					
4.					

13. Special Handling Instructions and Additional Information
A:
B:
C:
D:

14. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: KEITH WEBLER
Signature: Keith Webler
Month 4 Day 25 Year 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: TODD DANDREA
Signature: [illegible]
Month 4 Day 15 Year [illegible]
Transporter 2 Printed/Typed Name
Signature
Month Day Year

17. Discrepancy
17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Manifest Reference Number:
17b. Alternate Facility (or Generator)
U.S. EPA ID Number
Facility's Phone:
17c. Signature of Alternate Facility (or Generator)
Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a
Printed/Typed Name: [illegible]
Signature: [illegible]
Month 4 Day 2 Year 13

GENERATOR — INT'L — TRANSPORTER — DESIGNATED FACILITY

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RI 12-881

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number: CE906
2. Page 1 of: 1
3. Emergency Response Phone: 800-535-5053 ACCN103074
4. Waste Tracking Number: 21882

5. Generator's Name and Mailing Address
NAVAL STATION NEWPORT
ONE SIMONPIETRI DRIVE
NEWPORT, RI 02841
Generator's Phone: 401 841-1701
Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name: X J Fowler
U.S. EPA ID Number

7. Transporter 2 Company Name
U.S. EPA ID Number

8. Designated Facility Name and Site Address
RHODE ISLAND RESOURCE RECOVERY CORPORATION
65 SHUN PIKE
JOHNSTON, RI 02919
Facility's Phone: (401) 942-1430
U.S. EPA ID Number

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.
1.	SOIL WITH CLAY PIGEON FRAGMENTS, NON HAZARDOUS/NON REGULATED	1	CM	30 000	P
2.	—				
3.					
4.					

13. Special Handling Instructions and Additional Information
A:
B:
C:
D:

14. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: KEITH WEBER
Signature: Keith Weber
Month 4 Day 25 Year 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: X Jeff Fowler
Signature:
Month Day Year
Transporter 2 Printed/Typed Name:
Signature:
Month Day Year

17. Discrepancy
17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Manifest Reference Number:
17b. Alternate Facility (or Generator)
U.S. EPA ID Number
Facility's Phone:
17c. Signature of Alternate Facility (or Generator)
Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a
Printed/Typed Name: Winston Wilson
Signature:
Month Day Year

GENERATOR — INT'L — TRANSPORTER — DESIGNATED FACILITY

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RI 65627

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
	CESDG	1	800-535-5053 NCC#103074	21081

5. Generator's Name and Mailing Address

NAVAL STATION NEWPORT
ONE SIMONPIETRI DRIVE
NEWPORT, RI 02841

Generator's Phone: 401 841-1791

Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name — U.S. EPA ID Number

7. Transporter 2 Company Name — U.S. EPA ID Number

8. Designated Facility Name and Site Address — U.S. EPA ID Number

RHODE ISLAND RESOURCE RECOVERY CORPORATION
65 SHUN PIKE
JOHNSTON, RI 02919

Facility's Phone: (401) 942-1430

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	SOIL WITH CLAY PIGEON FRAGMENTS, NON HAZARDOUS/NON REGULATED	1	CY	400		
2.						
3.						
4.						

13. Special Handling Instructions and Additional Information

A:
B:
C:
D:

14. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: KEITH WEBER — Signature: Keith Weber — Month 4 Day 25 Year 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name — Signature — Month 4 Day 25 Year 13

Transporter 2 Printed/Typed Name — Signature — Month Day Year

17. Discrepancy

17a. Discrepancy Indication Space ☑ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name — Signature — Month 4 Day 25 Year 13

GENERATOR — INT'L — TRANSPORTER — DESIGNATED FACILITY

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RI 12881

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
	CESQG	1	800-535-5053 ACC#103074	21000

5. Generator's Name and Mailing Address

NAVAL STATION NEWPORT
ONE SIMONPIETRI DRIVE
NEWPORT, RI 02841

Generator's Phone: 401 841-1791

Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name: Fowler — U.S. EPA ID Number:

7. Transporter 2 Company Name — U.S. EPA ID Number:

8. Designated Facility Name and Site Address — U.S. EPA ID Number:

RHODE ISLAND RESOURCE RECOVERY CORPORATION
65 SHUN PIKE
JOHNSTON, RI 02919

Facility's Phone: (401) 942-1430

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	SOIL WITH CLAY PIGEON FRIGMENTS, NON HAZARDOUS/NON REGULATED	1	CM	30000	P	
2.						
3.						
4.						

13. Special Handling Instructions and Additional Information

A:
B:
C:
D:

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: KEITH WEBER — Signature: [signature] — Month 4 Day 25 Year 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Jeff Fowler — Signature: [signature] — Month 4 Day 25 Year 13

Transporter 2 Printed/Typed Name — Signature — Month Day Year

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: LOU MASS — Signature: [signature] — Month 4 Day 26 Year 13

GENERATOR — INT'L — TRANSPORTER — DESIGNATED FACILITY

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RI 27921

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
	CESQG	1	800-535-5053 ACC#103074	21084

5. Generator's Name and Mailing Address

NAVAL STATION NEWPORT
ONE SIMONPIETRI DRIVE
NEWPORT, RI 02841

Generator's Site Address (if different than mailing address)

Generator's Phone: 401 841-1791

6. Transporter 1 Company Name — U.S. EPA ID Number

7. Transporter 2 Company Name — U.S. EPA ID Number

8. Designated Facility Name and Site Address — U.S. EPA ID Number

RHODE ISLAND RESOURCE RECOVERY CORPORATION
65 SHUN PIKE
JOHNSTON, RI 02919

Facility's Phone: (401) 942-1430

9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.
1. SOIL WITH CLAY PIGEON FRAGMENTS, NON HAZARDOUS/NON REGULATED	1	CY	70,000	P
2.				
3.				
4.				

13. Special Handling Instructions and Additional Information

A:
B:
C:
D:

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: KEITH WEBBER — Signature: [signature] — Month 4 Day 25 Year 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: [illegible] — Signature: [signature] — Month / Day / Year

Transporter 2 Printed/Typed Name — Signature — Month Day Year

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: [illegible] — Signature: [signature] — Month 4 Day 26 Year 13

GENERATOR — INT'L — TRANSPORTER — DESIGNATED FACILITY

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NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
	CESQG	1	800-535-5053 MCC#10207	21079

GENERATOR

5. Generator's Name and Mailing Address

NAVAL STATION NEWPORT
ONE SIMONPIETRI DRIVE
NEWPORT, RI 02841

Generator's Phone: 401 841-1791

Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name: G P MASONRY — U.S. EPA ID Number

7. Transporter 2 Company Name — U.S. EPA ID Number

8. Designated Facility Name and Site Address — U.S. EPA ID Number

RHODE ISLAND RESOURCE RECOVERY CORPORATION
65 SHUN PIKE
JOHNSTON, RI 02919

Facility's Phone: (401) 942-1430

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.
1.	SOIL WITH CLAY PIGEON FRAGMENTS, NON HAZARDOUS/NON REGULATED	1	CY	2000	P
2.					
3.					
4.					

13. Special Handling Instructions and Additional Information

A:
B:
C:
D:

14. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: KEITH WEBLER — Signature: Keith Webler — Month 4 Day 25 Year 13

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:

Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: THOMAS MENNA — Signature — Month 4 Day 25 Year 13

Transporter 2 Printed/Typed Name — Signature — Month Day Year

DESIGNATED FACILITY

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: Cesar Fernandez — Signature — Month 4 Day 26 Year 13

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RI 65627

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number: CESQG
2. Page 1 of: 1
3. Emergency Response Phone: 800-535-5053 ACCN102074
4. Waste Tracking Number: 21074

GENERATOR

5. Generator's Name and Mailing Address
NAVAL STATION NEWPORT
ONE SIMONPIETRI DRIVE
NEWPORT, RI 02841
Generator's Phone: 401 841-1791

Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name: Costa Bros.
U.S. EPA ID Number:

7. Transporter 2 Company Name:
U.S. EPA ID Number:

8. Designated Facility Name and Site Address
RHODE ISLAND RESOURCE RECOVERY CORPORATION
65 SHUN PIKE
JOHNSTON, RI 02919
Facility's Phone: (401) 942-1430

U.S. EPA ID Number:

9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1. SOIL WITH CLAY PIGEON FRAGMENTS, NON HAZARDOUS/NON REGULATED	1	CM	5000	P	
2.					
3.					
4.					

13. Special Handling Instructions and Additional Information
A:
B:
C:
D:

14. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: KEITH WEBER
Signature: Keith Weber
Month: 4 Day: 26 Year: 13

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: Philip Costa
Signature:
Month: 4 Day: 26 Year: 13
Transporter 2 Printed/Typed Name:
Signature:
Month: Day: Year:

DESIGNATED FACILITY

17. Discrepancy
17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Manifest Reference Number:
17b. Alternate Facility (or Generator)
U.S. EPA ID Number:
Facility's Phone:
17c. Signature of Alternate Facility (or Generator)
Month: Day: Year:

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a
Printed/Typed Name: KEVIN JOHNSON
Signature: Kevin Johnson
Month: 4 Day: 26 Year: 13

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RI 113482

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
	CE 806	1	800-535-5053 ACC#103074	21077

5. Generator's Name and Mailing Address

NAVAL STATION NEWPORT
ONE SIMONPIETRI DRIVE
NEWPORT, RI 02841

Generator's Phone: 401 841-1791

Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name: COSTANTINI BROS.

U.S. EPA ID Number

7. Transporter 2 Company Name

U.S. EPA ID Number

8. Designated Facility Name and Site Address

RHODE ISLAND RESOURCE RECOVERY CORPORATION
65 SHUN PIKE
JOHNSTON, RI 02919

Facility's Phone: (401) 942-1430

U.S. EPA ID Number

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.
1.	SOIL WITH CLAY PIGEON FRAGMENTS, NON HAZARDOUS/NON REGULATED	1		50,000	
2.					
3.					
4.					

13. Special Handling Instructions and Additional Information

a:
b:
c:
d:

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: KEITH WEBER | Signature: Keith Weber | Month 4 | Day 26 | Year 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:

Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: TODD D'ANDREA | Signature: Todd D'Andrea | Month 4 | Day 26 | Year 13

Transporter 2 Printed/Typed Name | Signature | Month | Day | Year

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator)

U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) | Month | Day | Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: KEVIN JOHNSON | Signature: Kevin Johnson | Month 4 | Day 26 | Year 13

GENERATOR — INT'L — TRANSPORTER — DESIGNATED FACILITY

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RI 26740

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number: [illegible]
2. Page 1 of 1
3. Emergency Response Phone: 800-535-5053 OCCIDENTAL
4. Waste Tracking Number: 21840

5. Generator's Name and Mailing Address
NAVAL STATION NEWPORT
ONE SIMPKIETRI DRIVE
NEWPORT, RI 02841
Generator's Phone: 401 841-1791

Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name: [illegible] U.S. EPA ID Number:
7. Transporter 2 Company Name: U.S. EPA ID Number:
8. Designated Facility Name and Site Address
RHODE ISLAND RESOURCE RECOVERY CORPORATION
65 SHUN PIKE
JOHNSTON, RI 02919
Facility's Phone: (401) 942-1430
U.S. EPA ID Number:

	9. Waste Shipping Name and Description	10. Containers No.	Type	11. Total Quantity	12. Unit Wt./Vol.
1.	SOIL WITH CLAY PIGEON FRAGMENTS, NON HAZARDOUS/NON REGULATED	1	CM	2000	
2.					
3.					
4.					

13. Special Handling Instructions and Additional Information
A:
B:
C:
D:

14. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Keith Weber
Signature: Keith Weber
Month 4 Day 26 Year 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: [illegible] Signature: Month Day Year
Transporter 2 Printed/Typed Name: Signature: Month Day Year

17. Discrepancy
17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

17b. Alternate Facility (or Generator) Manifest Reference Number:
U.S. EPA ID Number
Facility's Phone:
17c. Signature of Alternate Facility (or Generator) Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a
Printed/Typed Name: Kevin Johnson
Signature: Kevin Johnson
Month 4 Day 26 Year 13

GENERATOR / INT'L / TRANSPORTER / DESIGNATED FACILITY

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RI 27921

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number: CE500
2. Page 1 of 1
3. Emergency Response Phone: 800-535-5053 ACC#103074
4. Waste Tracking Number: 21039

5. Generator's Name and Mailing Address
NAVAL STATION NEWPORT
ONE SIMONPIETRI DRIVE
NEWPORT, RI 02841
Generator's Phone: 401 841-1791

Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name: X C.P. MASONRY INC
U.S. EPA ID Number

7. Transporter 2 Company Name
U.S. EPA ID Number

8. Designated Facility Name and Site Address
RHODE ISLAND RESOURCE RECOVERY CORPORATION
65 SHUN PIKE
JOHNSTON, RI 02919
Facility's Phone: (401) 942-1430

U.S. EPA ID Number

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.
1.	SOIL WITH CLAY PIGEON FRAGMENTS, NON HAZARDOUS/NON REGULATED	1	CN	70000	P
2.					
3.					
4.					

13. Special Handling Instructions and Additional Information
A:
B:
C:
D:

14. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: KEITH WEBSTER
Signature: [signature]
Month 4 Day 26 Year 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: X BRIAN APPLETON
Signature: [signature]
Month 4 Day 26 Year 13

Transporter 2 Printed/Typed Name
Signature
Month Day Year

17. Discrepancy
17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Manifest Reference Number:

17b. Alternate Facility (or Generator)
U.S. EPA ID Number
Facility's Phone:

17c. Signature of Alternate Facility (or Generator)
Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a
Printed/Typed Name: KEVIN JOHNSON
Signature: [signature]
Month 4 Day 26 Year 13

GENERATOR — INT'L — TRANSPORTER — DESIGNATED FACILITY

169-BLS-C 6 10497 (Rev. 9/09)

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RI 6562+

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number: CESQG

2. Page 1 of 1

3. Emergency Response Phone: 800-535-5053 ACC#103074

4. Waste Tracking Number: 21030

5. Generator's Name and Mailing Address: NAVAL STATION NEWPORT, ONE SIMONPIETRI DRIVE, NEWPORT, RI 02841

Generator's Site Address (if different than mailing address)

Generator's Phone: 401 841-1791

6. Transporter 1 Company Name: Costantini Bros.

U.S. EPA ID Number

7. Transporter 2 Company Name

U.S. EPA ID Number

8. Designated Facility Name and Site Address: RHODE ISLAND RESOURCE RECOVERY CORPORATION, 65 BOWN PIKE, JOHNSTON, RI 02919

U.S. EPA ID Number

Facility's Phone: (401) 942-1430

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.
1.	SOIL WITH CLAY PIGEON FRAGMENTS, NON HAZARDOUS/NON REGULATED	1		60,000	P
2.					
3.					
4.					

13. Special Handling Instructions and Additional Information

A:
B:
C:
D:

14. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: KEITH WEBBER

Signature: Keith Webber

Month 4 Day 26 Year 12

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit: Date leaving U.S.:

Transporter Signature (for exports only):

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Costantini

Signature

Month 4 Day 26 Year

Transporter 2 Printed/Typed Name

Signature

Month Day Year

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

U.S. EPA ID Number

17b. Alternate Facility (or Generator)

Facility's Phone:

Month Day Y

17c. Signature of Alternate Facility (or Generator)

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: Leon Schwartz

Signature: Leon Schwartz

Month 4 Day 26

GENERATOR

INT'L

TRANSPORTER

DESIGNATED FACILITY

169-BLS-C 6 10497 (Rev. 9/09)

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OS 81

RI 113482

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
	CE506	1	800-535-5053 REC#103074	21037

5. Generator's Name and Mailing Address

NAVAL STATION NEWPORT
ONE SIMONPIETRI DRIVE
NEWPORT, RI 02841

Generator's Phone: 401 841-1791

Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name: COSTANTINI BROS. — U.S. EPA ID Number

7. Transporter 2 Company Name — U.S. EPA ID Number

8. Designated Facility Name and Site Address — U.S. EPA ID Number

RHODE ISLAND RESOURCE RECOVERY CORPORATION
65 SHUN PIKE
JOHNSTON, RI 02919

Facility's Phone: (401) 942-1430

9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1. SOIL WITH CLAY PIGEON FRIGMENTS, NON HAZARDOUS/NON REGULATED	1	CM	50,000	P	
2.					
3.					
4.					

13. Special Handling Instructions and Additional Information

A:
B:
C:
D:

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: KEITH WEBER — Signature: Keith Weber — Month 4 Day 26 Year 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit: Date leaving U.S.:

Transporter Signature (for exports only):

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: TODD DANDREA — Signature: Todd D'Andrea — Month 4 Day 26 Year 13

Transporter 2 Printed/Typed Name — Signature — Month Day Year

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: KEVIN JOHNSON — Signature: Kevin Johnson — Month 4 Day 26 Year 13

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GENERATOR — INT'L — TRANSPORTER — DESIGNATED FACILITY

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RI 26740

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number: CESDO
2. Page 1 of 1
3. Emergency Response Phone: 800-535-5053 OCCH103074
4. Waste Tracking Number: 21036

5. Generator's Name and Mailing Address
NAVAL STATION NEWPORT
ONE SIMONPIETRI DRIVE
NEWPORT, RI 02841
Generator's Phone: 401 841-1791

Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name: Coastal Pro
U.S. EPA ID Number

7. Transporter 2 Company Name
U.S. EPA ID Number

8. Designated Facility Name and Site Address
RHODE ISLAND RESOURCE RECOVERY CORPORATION
65 SHUN PIKE
JOHNSTON, RI 02919
Facility's Phone: (401) 942-1430
U.S. EPA ID Number

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	SOIL WITH CLAY PIGEON FRIGMENTS, NON HAZARDOUS/NON REGULATED	1	CM	20000	P	
2.						
3.						
4.						

13. Special Handling Instructions and Additional Information
A:
B:
C:
D:

14. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: KEITH WEBLER
Signature: Keith Webler
Month 4 Day 26 Year 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: Coastal
Signature:
Month 4 Day 26 Year 13
Transporter 2 Printed/Typed Name
Signature
Month Day Year

17. Discrepancy
17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Manifest Reference Number:
17b. Alternate Facility (or Generator)
U.S. EPA ID Number
Facility's Phone:
17c. Signature of Alternate Facility (or Generator)
Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a
Printed/Typed Name: Kevin Johnson
Signature: Kevin Johnson
Month 4 Day 26 Year 13

GENERATOR — INT'L — TRANSPORTER — DESIGNATED FACILITY

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RI 27921

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number: CESQG
2. Page 1 of 1
3. Emergency Response Phone: 800-535-5053 RCC#102074
4. Waste Tracking Number: 21035

5. Generator's Name and Mailing Address

NAVAL STATION NEWPORT
ONE STOUMPFETRI DRIVE
NEWPORT, RI 02841

Generator's Phone: 401 841-1791

Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name: X GP WASTE

U.S. EPA ID Number

7. Transporter 2 Company Name

U.S. EPA ID Number

8. Designated Facility Name and Site Address

RHODE ISLAND RESOURCE RECOVERY CORPORATION
65 SAWN PIKE
JOHNSTON, RI 02919

U.S. EPA ID Number

Facility's Phone: (401) 942-1430

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.
1.	SOIL WITH CLAY PIGEON FRAGMENTS, NON HAZARDOUS/NON REGULATED	1	CY	10	P
2.					
3.					
4.					

13. Special Handling Instructions and Additional Information

A:
B:
C:
D:

14. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Kevin Webber
Signature: Kevin Webber
Month 9 Day 26 Year 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: X Brian Campbell
Signature:
Month Day Year

Transporter 2 Printed/Typed Name
Signature:
Month Day Year

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator)

U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator)

Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: Brian Arnold
Signature:
Month Day Year

GENERATOR — INT'L — TRANSPORTER — DESIGNATED FACILITY

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RI 65627

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number: CE506
2. Page 1 of 1
3. Emergency Response Phone: 800-535-5053 ACCT#103074
4. Waste Tracking Number: 21034

5. Generator's Name and Mailing Address
NAVAL STATION NEWPORT
ONE SIMONPIETRI DRIVE
NEWPORT, RI 02841
Generator's Phone: 401 841-1791
Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name: Costantino Bros.
U.S. EPA ID Number:

7. Transporter 2 Company Name:
U.S. EPA ID Number:

8. Designated Facility Name and Site Address
RHODE ISLAND RESOURCE RECOVERY CORPORATION
65 SHUN PIKE
JOHNSTON, RI 02919
Facility's Phone: (401) 942-1430
U.S. EPA ID Number:

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	SOIL WITH CLAY PIGEON FRAGMENTS, NON HAZARDOUS/NON REGULATED	1	CM	5000	P	
2.						
3.						
4.						

13. Special Handling Instructions and Additional Information
A:
B:
C:
D:

14. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Keith Weber
Signature: Keith Weber
Month 7 Day 26 Year 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: Philip Costantino
Signature: Philip Costantino
Month 7 Day 26 Year 13
Transporter 2 Printed/Typed Name:
Signature:
Month Day Year

17. Discrepancy
17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Manifest Reference Number:
17b. Alternate Facility (or Generator)
U.S. EPA ID Number
Facility's Phone:
17c. Signature of Alternate Facility (or Generator)
Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a
Printed/Typed Name: [illegible]
Signature: [illegible]
Month 8 Day [illegible] Year 13

GENERATOR — INT'L — TRANSPORTER — DESIGNATED FACILITY

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RI 26740

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number: CE506

2. Page 1 of 1

3. Emergency Response Phone: 800-535-5053 ACC#103074

4. Waste Tracking Number: 21032

5. Generator's Name and Mailing Address

NAVAL STATION NEWPORT
ONE SIMONPIETRI DRIVE
NEWPORT, RI 02841

Generator's Site Address (if different than mailing address)

Generator's Phone: 401 841-1791

6. Transporter 1 Company Name: Costa Pics — U.S. EPA ID Number

7. Transporter 2 Company Name — U.S. EPA ID Number

8. Designated Facility Name and Site Address — U.S. EPA ID Number

RHODE ISLAND RESOURCE RECOVERY CORPORATION
65 SHUN PIKE
JOHNSTON, RI 02919

Facility's Phone: (401) 942-1430

9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.
1. SOIL WITH CLAY PIGEON FRAGMENTS, NON HAZARDOUS/NON REGULATED	1	CY	2400	P
2.				
3.				
4.				

13. Special Handling Instructions and Additional Information

A:
B:
C:
D:

14. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Keith Weber — Signature: [signature] — Month 4 Day 26 Year 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit: Date leaving U.S.:

Transporter Signature (for exports only):

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: [illegible] — Signature: [signature] — Month 4 Day 26 Year 13

Transporter 2 Printed/Typed Name: — Signature: — Month Day Year

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number: U.S. EPA ID Number

17b. Alternate Facility (or Generator)

Facility's Phone: Month Day Year

17c. Signature of Alternate Facility (or Generator)

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: Kevin Johnson — Signature: [signature] — Month 6 Day 20 Year 13

GENERATOR — INT'L — TRANSPORTER — DESIGNATED FACILITY

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RI 113482

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number: CE506

2. Page 1 of 1

3. Emergency Response Phone: 800-535-5053 REC#103074

4. Waste Tracking Number: 21033

GENERATOR

5. Generator's Name and Mailing Address

NAVAL STATION NEWPORT
ONE SIMONPIETRY DRIVE
NEWPORT, RI 02841

Generator's Site Address (if different than mailing address)

Generator's Phone: 401 841-1791

6. Transporter 1 Company Name: COSTANTINI BROS — U.S. EPA ID Number

7. Transporter 2 Company Name — U.S. EPA ID Number

8. Designated Facility Name and Site Address — U.S. EPA ID Number

RHODE ISLAND RESOURCE RECOVERY CORPORATION
65 DAVIS PIKE
JOHNSTON, RI 02919

Facility's Phone: (401) 942-1430

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.
1.	SOIL WITH CLAY PIGEON FRAGMENTS, NON HAZARDOUS/NON REGULATED	1		50,000	P
2.					
3.					
4.					

13. Special Handling Instructions and Additional Information

A:
B:
C:
D:

14. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: KEITH WEBBER — Signature: Keith Webber — Month 4 Day 26 Year 13

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:

Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: TODD D'ANDREA — Signature: [signature] — Month 4 Day 26 Year

Transporter 2 Printed/Typed Name — Signature — Month Day Year

DESIGNATED FACILITY

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: KEVIN SIMPSON — Signature: [signature] — Month 4 Day 26 Year

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RI 27921

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number: CESQG
2. Page 1 of 1
3. Emergency Response Phone: [redacted] 853 ACC#193874
4. Waste Tracking Number: 21031

GENERATOR

5. Generator's Name and Mailing Address

NAVAL STATION NEWPORT
ONE SIMMPIETRY DRIVE
NEWPORT, RI 02841

Generator's Phone: 401 841-1791

Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name: X G.P. MASONRY — U.S. EPA ID Number

7. Transporter 2 Company Name — U.S. EPA ID Number

8. Designated Facility Name and Site Address — U.S. EPA ID Number

RHODE ISLAND RESOURCE RECOVERY CORPORATION
65 SAWN PIKE
JOHNSTON, RI 02919

Facility's Phone: (401) 942-1630

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	SOIL WITH CLAY PIGEON FRAGMENTS, NON HAZARDOUS/NON REGULATED	1	CN			
2.						
3.						
4.						

13. Special Handling Instructions and Additional Information

A:
B:
C:
D:

14. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: KEITH WEBER — Signature: Keith Weber — Month 4 Day 26 Year 13

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: X KEVIN CHANDLER — Signature: [signature] — Month 4 Day 26 Year 13

Transporter 2 Printed/Typed Name — Signature — Month Day Year

DESIGNATED FACILITY

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: KEVIN JOHNSON — Signature: [signature] — Month 4 Day 26 Year 13

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RI 26740

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number: DESQG
2. Page 1 of: 1
3. Emergency Response Phone: 800-535-5053 ACC#107076
4. Waste Tracking Number: 21030

5. Generator's Name and Mailing Address

NAVAL STATION NEWPORT
ONE SIMONPIETRI DRIVE
NEWPORT, RI 02841

Generator's Phone: 401 841-1791

Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name: Cecil's Roll Tonight

U.S. EPA ID Number

7. Transporter 2 Company Name

U.S. EPA ID Number

8. Designated Facility Name and Site Address

RHODE ISLAND RESOURCE RECOVERY CORPORATION
65 SHUN PIKE
JOHNSTON, RI 02919

Facility's Phone: (401) 942-1430

U.S. EPA ID Number

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	SOIL WITH CLAY PIGEON FRAGMENTS, NON HAZARDOUS/NON REGULATED	1		P M 70,000 P		
2.						
3.						
4.						

13. Special Handling Instructions and Additional Information

A:
B:
C:
D:

14. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: KEITH WEBER
Signature: Keith Weber
Month / Day / Year

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name
Signature
Month / Day / Year: 4 / 27 / 13

Transporter 2 Printed/Typed Name
Signature
Month / Day / Year

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator)

U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator)
Month / Day / Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: LOU MASS
Signature
Month / Day / Year: 4/27/13

GENERATOR | INT'L | TRANSPORTER | DESIGNATED FACILITY

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RI 65627

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
CE586	1	800-535-5053 ACCN103874	21029

5. Generator's Name and Mailing Address

NAVAL STATION NEWPORT
ONE SIMONPIETRI DRIVE
NEWPORT, RI 02841

Generator's Site Address (if different than mailing address)

Generator's Phone: 401 841-1791

6. Transporter 1 Company Name: Coastline Bros

U.S. EPA ID Number

7. Transporter 2 Company Name

U.S. EPA ID Number

8. Designated Facility Name and Site Address

RHODE ISLAND RESOURCE RECOVERY CORPORATION
65 SHUN PIKE
JOHNSTON, RI 02919

Facility's Phone: (401) 942-1430

U.S. EPA ID Number

9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.
1. SOIL WITH CLAY PIGEON FRAGMENTS, NON HAZARDOUS/NON REGULATED	1	CM	6000	P
2.				
3.				
4.				

13. Special Handling Instructions and Additional Information

A:
B:
C:
D:

14. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: KEITH WEBBER — Signature: Keith Webber — Month 4 Day 27 Year 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Frank Pizzo — Signature: Frank Pizzo — Month 4 Day 27 Year 13

Transporter 2 Printed/Typed Name — Signature — Month Day Year

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: Lou Williss — Signature: Lou Williss — Month 4 Day 27 Year 13

GENERATOR — INT'L — TRANSPORTER — DESIGNATED FACILITY

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RI 113482

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number: CE500
2. Page 1 of: 1
3. Emergency Response Phone: 800-535-5053 ACC#192976
4. Waste Tracking Number: 21022A

5. Generator's Name and Mailing Address
NAVAL STATION NEWPORT
ONE SIMONPIETRI DRIVE
NEWPORT, RI 02841
Generator's Phone: 401 841-1291
Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name: Costantini Bros Transport
U.S. EPA ID Number

7. Transporter 2 Company Name
U.S. EPA ID Number

8. Designated Facility Name and Site Address
RHODE ISLAND RESOURCE RECOVERY CORPORATION
65 SHUN PIKE
JOHNSTON, RI 02919
Facility's Phone: (401) 942-1430
U.S. EPA ID Number

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.
1.	SOIL WITH CLAY PIGEON FRAGMENTS, NON HAZARDOUS/NON-REGULATED	1	CM	5900	P
2.					
3.					
4.					

13. Special Handling Instructions and Additional Information
A:
B:
C:
D:

14. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.
Generator's/Offeror's Printed/Typed Name: KEITH WEBER
Signature: Keith Weber
Month 4 Day 27 Year 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Date leaving U.S.:
Transporter Signature (for exports only):

16. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: Terry Scott
Signature: Terry Scott
Month 4 Day 27 Year 13
Transporter 2 Printed/Typed Name
Signature
Month Day Year

17. Discrepancy
17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Manifest Reference Number:
U.S. EPA ID Number
17b. Alternate Facility (or Generator)
Facility's Phone:
17c. Signature of Alternate Facility (or Generator)
Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a
Printed/Typed Name: Tom Mass
Signature: Tom Mass
Month 4 Day 27 Year 13

101991560

GENERATOR
INT'L
TRANSPORTER
DESIGNATED FACILITY

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RI 2670

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
	CE506	1	800-535-5053 ACC#102074	21027

GENERATOR

5. Generator's Name and Mailing Address

NAVAL STATION NEWPORT
ONE SIMONPIETRI DRIVE
NEWPORT, RI 02841

Generator's Site Address (if different than mailing address)

Generator's Phone: 401 841-1791

6. Transporter 1 Company Name: Coastal Pro

U.S. EPA ID Number

7. Transporter 2 Company Name

U.S. EPA ID Number

8. Designated Facility Name and Site Address

RHODE ISLAND RESOURCE RECOVERY CORPORATION
65 SHUN PIKE
JOHNSTON, RI 02919

U.S. EPA ID Number

Facility's Phone: (401) 942-1430

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	SOIL WITH CLAY PIGEON FRAGMENTS, NON HAZARDOUS/NON REGULATED	1	CN	2000	P	
2.						
3.						
4.						

13. Special Handling Instructions and Additional Information

A:
B:
C:
D:

14. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: KEITH WEBER | Signature: Keith Weber | Month 4 Day 27 Year 13

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:

Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name | Signature | Month 4 Day 27 Year 13

Transporter 2 Printed/Typed Name | Signature | Month Day Year

DESIGNATED FACILITY

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) | U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) | Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: LOU MAES | Signature: Lou Maes | Month 4 Day 27 Year 13

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RI 65627

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
	CES06	1	800-535-5053 ACC#103074	21026

5. Generator's Name and Mailing Address

NAVAL STATION NEWPORT
ONE SIMONPIETRI DRIVE
NEWPORT, RI 02841

Generator's Phone: 401 841-1791

Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name: Costantini Bros

U.S. EPA ID Number

7. Transporter 2 Company Name

U.S. EPA ID Number

8. Designated Facility Name and Site Address

RHODE ISLAND RESOURCE RECOVERY CORPORATION
65 SHUN PIKE
JOHNSTON, RI 02919

Facility's Phone: (401) 942-1430

U.S. EPA ID Number

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	SOIL WITH CLAY PIGEON FRAGMENTS, NON HAZARDOUS/NON REGULATED	1	CM	6700	P	
2.						
3.						
4.						

13. Special Handling Instructions and Additional Information

A:
B:
C:
D:

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Keith Weber — Signature: Keith Weber — Month 4 Day 27 Year 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:

Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Tim Yoder — Signature: [signature] — Month 4 Day 27 Year 13

Transporter 2 Printed/Typed Name — Signature — Month Day Year

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: Lou Mass — Signature: [signature] — Month 4 Day 27 Year 13

GENERATOR — INT'L — TRANSPORTER — DESIGNATED FACILITY

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RI 113482

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number: CE800
2. Page 1 of 1
3. Emergency Response Phone: 800-535-5053 ACC#103074
4. Waste Tracking Number: 21025

5. Generator's Name and Mailing Address

NAVAL STATION NEWPORT
ONE SIMONPIETRI DRIVE
NEWPORT, RI 02841

Generator's Phone: 401 841-1791

Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name: Costantini Bros. Transport

U.S. EPA ID Number

7. Transporter 2 Company Name

U.S. EPA ID Number

8. Designated Facility Name and Site Address

RHODE ISLAND RESOURCE RECOVERY CORPORATION
65 SHUN PIKE
JOHNSTON, RI 02919

Facility's Phone: (401) 942-1430

U.S. EPA ID Number

9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.
1. SOIL WITH CLAY PIGEON FRAGMENTS, NON HAZARDOUS/NON REGULATED	1	CM	50,000	P
2.				
3.				
4.				

13. Special Handling Instructions and Additional Information

A:
B:
C:
D:

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: KEITH WEBER
Signature: Keith Weber
Month 4 Day 27 Year 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S.
Transporter Signature (for exports only):
Port of entry/exit:
Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Terry Cote
Signature: Terry Cote
Month 4 Day 27 Year 13

Transporter 2 Printed/Typed Name
Signature
Month Day Year

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

17b. Alternate Facility (or Generator)
Manifest Reference Number:
U.S. EPA ID Number
Facility's Phone:

17c. Signature of Alternate Facility (or Generator)
Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 19.

GENERATOR
INT'L
TRANSPORTER
DESIGNATED FACILITY

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RI 26740

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
	CESQG	1	800-535-5053 OCCR103074	21041

5. Generator's Name and Mailing Address

NAVY STATION NEWPORT
ONE SIMMPTETRI DRIVE

Generator's Phone: 401 841 1720 NEWPORT, RI 02841

Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name

U.S. EPA ID Number

7. Transporter 2 Company Name

U.S. EPA ID Number

8. Designated Facility Name and Site Address

U.S. EPA ID Number

RHODE ISLAND RESOURCE RECOVERY CORPORATION
65 SHUN PIKE

Facility's Phone: (401) 942-1430 JOHNSTON, RI 02919

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
	1. NON RCRA CLASS PROTON CONTAMINATED, NON HAZARDOUS/NON REGULATED	1	CM	70	P	
	2.					
	3.					
	4.					

13. Special Handling Instructions and Additional Information

A:
B:
C:
D:

14. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name | Signature | Month 4 | Day 5 | Year

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:

Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name | Signature | Month | Day | Year

Transporter 2 Printed/Typed Name | Signature | Month | Day | Year

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) | Month | Day | Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name | Signature | Month | Day | Year

GENERATOR — INT'L — TRANSPORTER — DESIGNATED FACILITY

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RI 26740

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number: [illegible]
2. Page 1 of 1
3. Emergency Response Phone: 800-535-5053 (CCN10074)
4. Waste Tracking Number: 21023

5. Generator's Name and Mailing Address
NAVAL STATION NEWPORT
UNE SIMONPIETRI DRIVE
NEWPORT, RI 02841
Generator's Phone: 401 841-1791

Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name
U.S. EPA ID Number

7. Transporter 2 Company Name
U.S. EPA ID Number

8. Designated Facility Name and Site Address
RHODE ISLAND RESOURCE RECOVERY CORPORATION
65 SHUN PIKE
JOHNSTON, RI 02919
Facility's Phone: (401) 942 1430
U.S. EPA ID Number

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.
1.	[illegible] NON HAZARDOUS/NOT REGULATED	1	CM	2	P
2.					
3.					
4.					

13. Special Handling Instructions and Additional Information
a:
b:
c:
d:

GENERATOR

14. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: [illegible]
Signature: [illegible]
Month 5 Day 1 Year [illegible]

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S.
Transporter Signature (for exports only):
Port of entry/exit:
Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name
Signature
Month Day Year
Transporter 2 Printed/Typed Name
Signature
Month Day Year

DESIGNATED FACILITY

17. Discrepancy
Month Day Year

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

17b. Alternate Facility (or Generator)
Manifest Reference Number:
U.S. EPA ID Number
Facility's Phone:

17c. Signature of Alternate Facility (or Generator)
Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a
Printed/Typed Name: [illegible]
Signature: [illegible]
Month Day Year [illegible]

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RI 26740

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
	CE500	1	800-535-5053 RECEIVED	21824

5. Generator's Name and Mailing Address

NAVAL STATION NEWPORT
OHL SIMONPIETRI DRIVE
NEWPORT, RI 02841

Generator's Site Address (if different than mailing address)

Generator's Phone: 401 841 1791

6. Transporter 1 Company Name — U.S. EPA ID Number

7. Transporter 2 Company Name — U.S. EPA ID Number

8. Designated Facility Name and Site Address — U.S. EPA ID Number

RHODE ISLAND RESOURCE RECOVERY CORPORATION
65 SHIP ROAD
PORTSMOUTH, RI 02871

Facility's Phone: (401) 942-1430

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
	1. SOIL WITH CLAY PIPEER FRAGMENTS, NON HAZARDOUS/NON REGULATED	1	CM	20,000	P	
	2.					
	3.					
	4.					

13. Special Handling Instructions and Additional Information

14. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name — Signature — Month 5 Day 1 Year 15

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:

Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name — Signature — Month Day Year

Transporter 2 Printed/Typed Name — Signature — Month Day Year

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name — Signature — Month Day Year

GENERATOR — INT'L — TRANSPORTER — DESIGNATED FACILITY

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