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CONFIRMATORY SAMPLING INVESTIGATION REPORT FOR ASSEMBLIES G AND H FOR SOLID WASTE MANAGEMENT UNITS 23, 24, 41, 43, 47, 48, 49 AND 61 MILLINGTON

SUPPACT TN
8/13/1999
ENSAFE INC

CONFIRMATORY SAMPLING INVESTIGATION REPORT ASSEMBLIES G AND H NAVAL SUPPORT ACTIVITY MID-SOUTH

SWMUs 23, 24, 41, 43, 47, 48, 49, and 61

Revision: 1

CTO-0106

Prepared for:

Department of the Navy
Southern Division
Naval Facilities Engineering Command
North Charleston, South Carolina

Prepared by:

EnSafe Inc.
5724 Summer Trees Drive
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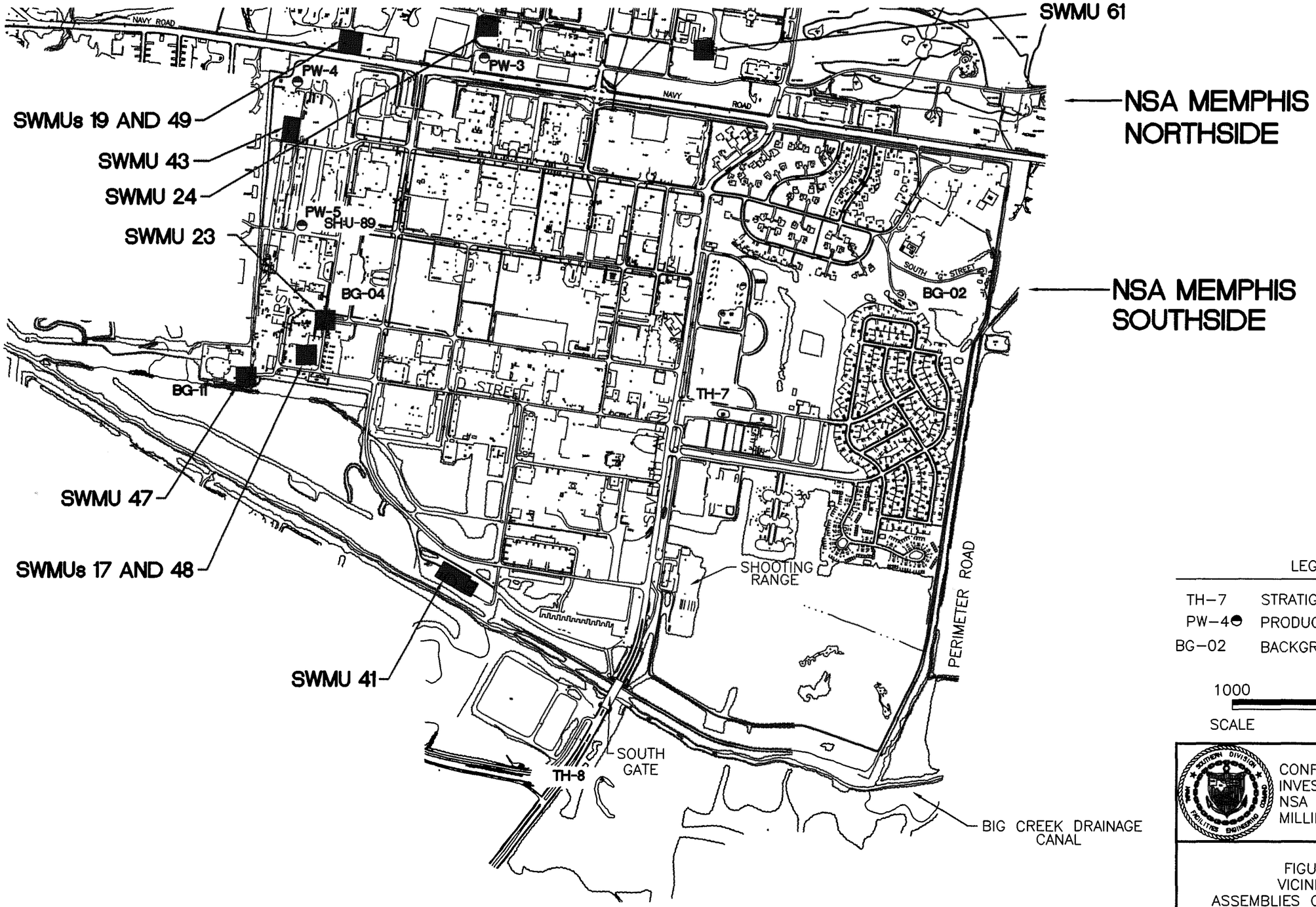
August 13, 1999



LEGEND

TH–7	STRATIGRAPHIC TEST HOLE
PW–4	PRODUCTION WELL
BG–02	BACKGROUND WELL

1000 0 1000

SCALE FEET

CONFIRMATORY SAMPLING INVESTIGATION
NSA MID–SOUTH
MILLINGTON, TN.

FIGURE 1.1
VICINITY MAP
ASSEMBLIES G AND H SWMUs

DWG DATE: 08/13/99 | DWG NAME: 0106G018

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The Contractor, EnSafe Inc., hereby certifies that, to the best of its knowledge and belief, the technical data delivered herewith under Contract No. N62467-89D-0318 is complete, accurate, and complies with all requirements of the contract.

Date:	August 13, 1999
Signature:	
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Title:	Task Order Manager

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Acronyms and Abbreviations

°C	Degrees Celsius
AST	Aboveground storage tank
atm-m^3/mole	Atmospheres-cubic meter per mole
BEQ	Benzo(a)pyrene equivalents
bls	Below land surface
BRAC	Base Realignment and Closure Act of 1990
CEC	Cation exchange capacity
cm/sec	centimeters per second
COPC	Chemicals of Potential Concern
CSI	Confirmatory Sampling Investigation
DI	De-ionized
DPT	Direct push technology
DQO	Data Quality Objectives
DRO	Diesel Range Organics
E/A&H	EnSafe/Allen & Hoshall
ERA	Environmental Risk Assessment
ERNA	Environmental Restoration Navy Account
f_{oc}	Percent of organic carbon
FSA	Full Scan Analysis
GRO	Gasoline Range Organics
HI	Hazard Index
HQ	Hazard Quotient
IDW	Investigation-derived waste
ILCR	Incremental Lifetime Cancer Risk
K_d	Distribution coefficient
kg-day/mg	Kilograms per day per milligram
K_{oc}	Organic Carbon Partition Coefficient
MCL	Maximum contaminant levels
μg/dL	Micrograms per deciliter
μg/kg	Micrograms per kilogram
μg/L	Micrograms per liter
mg/kg	Milligrams per kilogram
mL/g	Milliliters per gram
mm Hg^2	Millimeters of mercury
NET	National Environmental Testing
NFA	No further action
NSA	Naval Support Activity
PAH	Polyaromatic hydrocarbons
PCB	Polychlorinated biphenyl
pH	Negative logarithm of the hydrogen ion concentration
PRE	Preliminary Risk Evaluation
QA/QC	Quality assurance/quality control

RAGS	Risk Assessment Guide for Superfund
RBC	Risk-Based Concentration
RC	Reference concentration
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation
SG	Specific gravity
SSL	Soil Screening Level
SVOC	Semivolatile Organic Compounds
SWMU	Solid Waste Management Unit
TCE	Trichloroethene
TEF	Toxicity Equivalence Factor
TPH	Total Petroleum Hydrocarbons
TRPH	Total Recoverable Petroleum Hydrocarbons
UST	Underground storage tank
VCA	Voluntary Corrective Action
VOC	Volatile Organic Compounds

EXECUTIVE SUMMARY

As part of the U.S. Navy Installation Restoration Program, a Confirmatory Sampling Investigation (CSI) report was prepared for eight solid waste management units (SWMUs) in Assemblies G and H at Naval Support Activity (NAVSUPPACT or NSA) Mid-South, Millington, Tennessee. The CSI, undertaken by EnSafe Inc. on behalf of the Navy, adhered to the requirements of the Hazardous and Solid Waste Amendments portion (HSWA-TN002) of Resource Conservation and Recovery Act (RCRA) Permit No. TN2-170-022-600 and applicable regulations.

As a result of the Base Closure and Realignment Act of 1990 (BRAC), a portion of NSA Mid-South has been closed and is being prepared for transfer to the City of Millington. Eight SWMU assemblies (i.e., groups) have been defined for the NSA Mid-South RCRA Corrective Action Program. Four of these assemblies (A, B, C, and D), which are on portions of the base that will close, have been categorized and ranked according to their BRAC status. The remaining four assemblies (E, F, G, and H) are on portions of the base that have been realigned and will remain under control of the Navy. Due to their similarities, Assemblies G and H are being studied under one CSI.

The Assembly G investigation studied SWMUs 43, 47, 48, 49, and 61, which are made up of inactive aboveground hazardous waste accumulation points. Due to the Navy's construction/demolition schedule, SWMU 61 samples were collected in a prior sampling from the east side of former Building N-26. Based on initial sampling results, soil was excavated prior to the demolition of the building. Detailed information regarding the soil sampling and excavation are included in this CSI report. The Assembly H investigation studied SWMUs 23, 24, and 41, which are made up of active operational areas with waste stored aboveground.

All Assemblies G and H SWMUs investigated during the CSI are discussed in this report. SWMU 17 and SWMU 19, which are a part of Assembly F, were investigated at the same time, but will be included in the Assembly F RFI report, which will be published in November 1999.

The following table lists the individual SWMUs, the chemicals of potential concern (COPCs), and the conclusions and recommendations based on the results of this CSI.

Assemblies G and H
Conclusions and Recommendations by SWMU

SWMUs	COPCs	Conclusions	Recommendations
SWMU 23	None	No excess risk	NFA
SWMU 24	Arsenic TPH	TPH levels exceed the TDEC cleanup value of 1,000 and 500 mg/kg. PCE in soil exceeds the SSL (soil screening level).	— Remove TPH-contaminated soil and collect Shelby tube sample for permeability analysis below 5 feet — Sample at least four Geoprobe groundwater locations to determine if PCE has impacted fluvial deposits groundwater
SWMU 41	Cadmium Chromium Copper Aroclor-1260 1,2-Dichloroethane TPH	PCBs in soil and VOCs in groundwater warrant further investigation. TPH levels exceed the TDEC cleanup value of 100 mg/kg.	— Install at least four monitoring wells — Collect additional surface soil samples — Conduct an ERA — Remove TPH-contaminated soil
SWMU 43	Arsenic TPH	TCE in soil exceeds SSL. TPH levels exceed the TDEC cleanup value of 100 mg/kg.	— Sample at least four Geoprobe groundwater locations to determine if TCE has impacted fluvial deposits groundwater — Remove TPH-contaminated soil
SWMU 47	Dieldrin TPH	TPH levels exceed the TDEC cleanup value of 100 mg/kg.	Remove TPH-contaminated soil
SWMU 48	TPH	TPH levels exceed the TDEC cleanup value of 100 mg/kg.	Remove TPH-contaminated soil
SWMU 49	TPH	TPH levels exceed the TDEC cleanup value of 100 mg/kg.	Remove TPH-contaminated soil
SWMU 61	BEQ Lead TPH	Soil removal conducted to address contamination.	NFA recommended and approved by TDEC and EPA.

Notes:

BEQ = Benzo(a)pyrene Equivalents
EPA = Environmental Protection Agency
ERA = Environmental Risk Assessment
mg/kg = milligrams per kilogram
NFA = No further action
PCBs = Polychlorinated biphenyls
TCE = Trichloroethene
TDEC = Tennessee Department of Environment and Conservation
TPH = Total petroleum hydrocarbons
VOCs = Volatile organic compounds

Based on information gathered from sampling surface and subsurface soil and fluvial deposits groundwater, a full RCRA Facility Investigation (RFI) is recommended for SWMUs 24, 41, and 43 to address elevated TPH concentrations, to assess the extent of the contamination, and to determine the risk associated with this contamination. A Voluntary Corrective Action soil removal is recommended for SWMUs 47, 48, and 49 to address TPH-contaminated soil.

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1.0 INTRODUCTION

As part of the U.S. Navy Installation Restoration Program, the following Confirmatory Sampling Investigation (CSI) report has been prepared for eight solid waste management units (SWMUs) in Assemblies G and H at Naval Support Activity (NAVSUPPACT or NSA) Mid-South, Millington, Tennessee. The CSI, undertaken by EnSafe Inc. on behalf of the Navy, adhered to the requirements of the Hazardous and Solid Waste Amendments portion (HSWA-TN002) of Resource Conservation and Recovery Act (RCRA) Permit No. TN2-170-022-600 and applicable regulations. Figure 1.1 provides a vicinity map of Assemblies G and H SWMUs.

As a result of the Base Closure and Realignment Act of 1990 (BRAC), a portion of NSA Mid-South has been closed and is being prepared for transfer to the City of Millington. Eight SWMU assemblies (i.e., groups) have been defined for the NSA Mid-South RCRA Corrective Action Program. Four of these assemblies (A, B, C, and D), which are on portions of the base that will close, have been categorized and ranked according to their BRAC status. The remaining four assemblies (E, F, G, and H) are on portions of the base that will remain under control of the Navy.

Assemblies G and H were combined into this CSI report. Assembly G (SWMUs 43, 47, 48, 49, and 61) consists of inactive aboveground hazardous waste accumulation points. When it was first established, it also included SWMUs 45 and 46. SWMU 45 has since received a no-further-action status based on findings of an interim measures investigation (EnSafe/Allen&Hoshall [E/A&H], August 1995). Because of its proximity to SWMU 14, SWMU 46 was investigated during the SWMU 14 (Assembly E) RCRA Facility Investigation (RFI). Results are documented in the *Assembly E RFI Report* (EnSafe, February 1998). The investigation and remediation of SWMU 61 was expedited to meet the Navy's demolition project schedule. Detailed information regarding the soil sampling and excavation are included in Section 7.8 of this report.

Assembly H (SWMUs 23, 24, and 41) consists of active operational areas with waste stored aboveground. When it was first established, Assembly H also included SWMU 39, site of former Building S-74. SWMU 39 was moved into Assembly F when it was determined that Building S-74 had housed dry-cleaning operations and thus had a greater potential for contaminating groundwater.

All Assemblies G and H SWMUs investigated during the CSI are discussed in this report. SWMU 17 and SWMU 19, which are a part of Assembly F, were investigated at the same time as Assemblies G and H, but will be included in the Assembly F RFI Report, which will be published in November 1999.

As shown in Figure 1.1, the Assemblies G and H CSI consisted of the following SWMUs:

SWMU	Location	Description
23	Building S-8	Underground storage tank, removal attempted
24	Buildings N-114, N-349	Aboveground storage tanks, one removed
41	Salvage Yard No. 2	Nonhazardous storage area
43	Building S-176	Former hazardous waste accumulation point
47	Building S-344	Former hazardous waste accumulation point
17/48	Building S-9	17 — underground waste tank; 48 — hazardous waste accumulation points
19/49	Building 757	19 — underground waste tank; 49 — hazardous waste accumulation point

Note:
SWMU 61 was sampled prior to the Assemblies G and H CSI.

Sections 2 through 4 describe the regional geology, background conditions, and general sampling and analysis methods used during the Assemblies G and H CSI. Section 5 discusses the methods used to calculate risk estimates based on the contaminants detected. Section 6 describes chemical and physical properties that will affect the fate and transport of chemicals of potential concern detected at Assemblies G and H SWMUs. Detailed sampling schemes, analytical results, fate and transport perspectives, and conclusions/recommendations for each SWMU are presented in Section 7. Section 8 discusses ecological risk, Section 9 summarizes the conclusions and recommendations for each SWMU, and Section 10 contains references. Analytical data and other information related to specific SWMUs are presented in the appendices of this report.

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2.0 PHYSICAL SETTING

2.1 Regional Geology and Hydrogeology

The general hydrogeology of the Memphis area and a conceptual model of NSA Mid-South hydrogeology are presented in Sections 2.11 and Section 2.12 of the *Comprehensive RFI Work Plan* (E/A&H, October 1994). Updated information is available in the *Hydrogeology of Post-Wilcox Group Stratigraphic Units in the Area of the Naval Air Station Memphis, near Millington, Tennessee* (Kingsbury and Carmichael, 1995) and in the *Hydrogeology and Groundwater Quality at Naval Support Activity Memphis, Millington, Tennessee* (Carmichael and others, 1997). On the basis of this updated information, the regional geology and hydrogeology of NSA Mid-South are summarized in this section.

The stratigraphic units of importance identified during the investigations at NSA Mid-South are, in descending order: the alluvium of Holocene and Pleistocene age, the loess of Pleistocene age, the fluvial deposits of Pleistocene to Pliocene age, and the Cockfield Formation, Cook Mountain Formation, and Memphis Sand of Eocene age. The loess — eolian deposits consisting of silt, silty clay, clay, and minor amounts of sand — is the principal unit at land surface within most of the NSA Mid-South, except for areas near stream valleys, where alluvium is present. Water-bearing zones have been encountered in each stratigraphic unit investigated at NSA Mid-South. The following sections discuss the hydrogeology of each stratigraphic unit, except the Cook Mountain Formation and the Memphis Sand because these were not encountered in this investigation.

2.1.1 Alluvium

Alluvium, which is restricted to stream valleys, includes alluviated or reworked loess. The lateral and vertical extents of the alluvium at NSA Mid-South have not been determined because they are lithologically similar to the loess and fluvial deposits.

The lithology of the upper portion of the alluvium (informally called the "upper alluvium" at NSA Mid-South) is similar to the loess and is composed primarily of silt with varying clay content and some fine sand. Near the Big Creek Drainage Canal (Figure 1.1), the upper alluvium is present from ground surface to depths between 22 and 41 feet below land surface (bls). Fine-grained, generally saturated sand lenses are common in the upper alluvium, but are encountered at greater depths than the first water-bearing zone in the loess. The lithology of the lower portion of the alluvium (informally called the "deep alluvium" at NSA Mid-South) is similar to the fluvial deposits and is composed of fine to very coarse-grained sand and gravel with varying clay and silt content. The sand coarsens and the gravel content increases with depth in the deep alluvium. Generally, a coarse sand and gravel mixture is present at the base of the alluvium just above the Cockfield Formation. Near the Big Creek Drainage Canal, the thickness of the deep alluvium ranges from 6 to 34 feet. Some of the sand and gravel in the lower part of the deep alluvium may be remnant fluvial deposits based on oxidative coloration in this zone.

As previously mentioned, the lateral extent of the alluvium has not been determined at NSA Mid-South. Due to the nature of alluvial deposition and the lithologic similarity of the lower part of the fluvial deposits and deep alluvium, it is reasonable to assume that the lower part of the fluvial deposits and deep alluvium are hydraulically connected laterally. It has not been determined if the water-bearing zones of the loess and upper alluvium are hydraulically connected.

2.1.2 Loess

The loess is typically 0 to 65 feet thick in the Memphis area; on the Southside of NSA Mid-South (the area where most of the SWMUs described in this report are located) it ranges from 30 to 39 feet thick. Any water-bearing loess zones are generally in the upper part of the unit; however, yields are low (less than 1 gallon per minute), and groundwater from the loess does not meet select primary and secondary drinking-water standards (e.g., antimony, cadmium, chromium, iron, thallium, nickel, and turbidity), based on water-quality analyses of samples from background

monitoring wells located throughout NSA Mid-South and previous water-use surveys performed during Northside underground storage tank (UST) investigations. Refer to the *Reference Concentrations Technical Memorandum* (E/A&H, August 1996) for metals concentrations in loess background monitoring wells.

Previous investigations at NSA Mid-South have identified depth to water in the loess varying from 5 to 15 feet (bls), and vertical hydraulic conductivities of loess samples ranging from 10^{-8} to 10^{-6} centimeters per second (cm/sec). Although the loess may be considered an aquitard on the basis of the relatively low hydraulic conductivities, the shallowest water-bearing zone beneath NSA Mid-South is present within this interval. In some areas of NSA Mid-South, there is no water-bearing zone in the loess; therefore, the zone is not laterally continuous throughout NSA Mid-South and may be considered a "perched zone" where present. Any loess groundwater most likely moves primarily downward to recharge the underlying fluvial deposits, although locally, some groundwater in the loess may discharge to nearby streams, drainage ditches, and other surface-water bodies. Lateral groundwater movement in the loess is thought to be controlled by topography.

2.1.3 Fluvial Deposits

The fluvial deposits underlie the loess in areas outside of stream valleys; they consist of sand, gravel, and some clay, with thin layers of ferruginous sandstone and conglomerate, primarily at the base or the unit. This unit ranges from 0 to 100 feet thick in the Memphis area; on the Southside of NSA Mid-South, it ranges from 12 to 59 feet thick and represents the most significant component of the surficial aquifer (the alluvium and fluvial deposits make up the alluvial-fluvial deposits aquifer, also informally referred to as the surficial aquifer at NSA Mid-South). Sediments in the fluvial deposits generally coarsen with depth. Typically, the upper portion consists of a mixture of very fine sand with varying degrees of silt and clay that become increasingly less silty

with depth, grading into a fine to medium sand near the middle of the unit. Grain sizes typically coarsen below this interval, grading into a gravelly sand near the basal section of the fluvial deposits.

Shallow domestic wells in some rural areas of Memphis are completed in the fluvial deposits. Relative groundwater elevations in wells completed in the fluvial deposits indicate semiconfined to confined conditions in the unit. Typically, a downward vertical gradient exists between water in the loess (where present) and the fluvial deposits. Groundwater flows in the fluvial deposits generally southwest beneath the NSA Mid-South Southside.

2.1.4 Cockfield Formation

The Cockfield Formation, a part of the Jackson-upper Claiborne confining unit in the Memphis area, is a heterogeneous formation of very fine silty sand interbedded with clay and silt lenses or clay with interbedded fine sand lenses. It underlies the fluvial deposits and deep alluvium, which are the preferential zones of groundwater flow and the primary route for contaminant transport in groundwater beneath NSA Mid-South based on the fact that they are more highly permeable than the overlying loess/upper alluvium and underlying Cockfield Formation.

2.1.5 Cook Mountain Formation

The Cook Mountain Formation, which underlies the Cockfield Formation, consists predominantly of clay and silt; however, minor lenses of silty fine sand may be present locally. The Cook Mountain Formation, which contains the most areally extensive clay in the upper part of the Claiborne Group in Shelby County, serves as the lower confining unit for the Cockfield aquifer and the upper confining unit for the Memphis aquifer, which is the principal source of public drinking water in the Memphis area.

2.2 Site-Specific Geology and Hydrogeology

Due to the objectives of this investigation and the predetermined shallow soil-sampling depths (i.e., surface-soil samples and shallow subsurface-soil sample depths selected based on depth of tank bottoms), there was no need for rigorous, site-specific lithologic characterization associated with sampling activities conducted during this phase.

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3.0 BACKGROUND REFERENCE CONCENTRATIONS

Thirteen background locations were sampled to assess ambient inorganic soil and groundwater concentrations at NSA Mid-South. As discussed in Section 2.9 of the *Comprehensive RFI Work Plan* (E/A&H, October 1994), 13 soil types are recognized at NSA Mid-South. Eleven are silty loam soils, and two are silty fill material. NSA Mid-South soil was assumed to be homogeneous, and the reference concentrations (RCs) were assumed to represent basewide conditions; however, RCs do not account for different soil types. Background data for soil were established from 18 samples collected from the 13 borings shown on Figure 3.1. Background RCs for groundwater from the loess, fluvial deposits, alluvium, and upper Cockfield water-bearing zones were calculated from samples collected from the first and third quarterly groundwater sampling (*Reference Concentrations*; E/A&H, August 1996). The data from the second sampling were omitted because metals concentrations were elevated relative to the first and third quarters. Omitting the second-quarter data makes the background RC values more conservative.

Background RCs were established for inorganics detected in soil for comparison to samples collected at Assemblies G and H SWMUs. The objective of this CSI was to determine if a release had occurred. To achieve this goal, volatile organic compounds (VOCs) were selected as the best indication of a release due to their mobility, wide usage throughout the base, and small sample volume; therefore, groundwater samples collected were not submitted for inorganics analysis.

3.1 Inorganics

The background RCs were calculated by doubling (2x) the mean concentrations of analytes detected at all the background locations, as recommended by the U.S. Environmental Protection Agency (USEPA) Region IV.

The RCs and the methodologies used to calculate them are presented and described in *Reference Concentrations* (E/A&H, August 1996). Data summary tables for each

SWMU (Section 7) compare inorganic concentrations to background RCs, risk-based concentrations (RBCs), and soil screening levels (SSLs) for potential transfer of contaminants from soil to groundwater. Industrial and residential RBCs were taken from the April 12, 1999, Risk-Based Concentration Table (April 1999, USEPA Region III RBC Memo). Soil screening levels were taken from the May 1996 Generic Screening Levels (May 1996, *USEPA/OSWER Soil Screening Level Guidance: Technical Background Document*, EPA/540/R-95/128).

3.2 Organics

Pesticides have been applied across NSA Mid-South throughout its history. Background samples were also analyzed for chlorinated pesticides to determine average concentrations because routine application for pest control. Background dieldrin samples were collected and evaluated as discussed in the technical memorandum *Background Dieldrin Concentrations in Surface Soils* (E/A&H, June 1997). According to this 1997 memorandum, dieldrin was ubiquitous at NSA Mid-South as a result of aerial applications during a U.S. Department of Agriculture quarantine on the white-fringed beetle during the 1950s and 1960s. Dieldrin was also used in the pest-control trade, along with chlordane for general subterranean termite control. Risk estimates based on reported dieldrin soil concentrations at NSA Mid-South did not exceed the 1E-4 incremental lifetime cancer risk (ILCR). As stated in the memorandum, "This finding indicates that dieldrin levels found at each SWMU do not necessitate remedial action in the absence of other significant carcinogenic risk contributors." In background samples, dieldrin concentrations ranged from less than quantitation limits to 311 micrograms per kilogram (μg/kg), with a mean of 131 μg/kg. The 1997 technical memorandum established a 2x mean background RC in surface soil for dieldrin of 262 μg/kg at NSA Mid-South.

Dieldrin was detected in some of the surface samples collected during this CSI; however, most concentrations detected were less than the 262 μg/kg RC and can most likely be attributed to the applications discussed above.

LEGEND

▼ SOIL BACKGROUND DATA ONLY

BG-2 ● BACKGROUND LOCATION 2

0 feet 6000

NOTES:

1. SURFACE SOIL BACKGROUND DATA COLLECTED FROM BACKGROUND LOCATIONS BG-1 THROUGH BG-13.
2. SUBSURFACE SOIL BACKGROUND DATA COLLECTED FROM BACKGROUND LOCATIONS BG-1 THROUGH BG-5.
3. LOESS AND LOWER FLUVIAL DEPOSITS GROUNDWATER DATA COLLECTED FROM BACKGROUND LOCATIONS BG-1, BG-2, BG-4 AND BG-5.
4. UPPER FLUVIAL DEPOSITS GROUNDWATER DATA COLLECTED FROM BACKGROUND LOCATIONS BG-1, BG-2, BG-4, BG-5, BG-8, BG-10, BG-12 AND BG-13.
5. MIDDLE FLUVIAL DEPOSITS GROUNDWATER DATA COLLECTED FROM BACKGROUND LOCATION BG-9.
6. MIDDLE ALLUVIUM GROUNDWATER DATA COLLECTED FROM BACKGROUND LOCATION BG-11.
7. UPPER COCKFIELD GROUNDWATER DATA COLLECTED FROM BACKGROUND LOCATIONS BG-6 AND BG-7.

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FIGURE 3.1
SOIL & GROUNDWATER BACKGROUND LOCATIONS

ARL: [illegible]

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4.0 GENERAL FIELD INVESTIGATION METHODS AND RATIONALE

This section summarizes the general sampling and analytical tasks conducted during the CSI. The field sampling activities followed the procedures outlined in the USEPA and Tennessee Department of Environment and Conservation (TDEC) approved *Comprehensive RFI Work Plan* (E/A&H, October 1994) and *Assemblies G and H CSI Work Plan*; (E/A&H, December 1997).

The Assemblies G and H work plan required collecting surface and subsurface soil and groundwater samples for chemical analysis by either onsite or offsite laboratories. The sample locations and intervals, the rationale for laboratory analyses, and any deviations from the general investigation approach are detailed in the SWMU-specific discussions in Section 7. Deviations from the approved work plan were documented in the field logbook and are listed in the site-specific discussions. Table 4.1 summarizes sampling and analytical requirements for the first phase of the Assemblies G and H CSI.

4.1 Sampling Rationale

Screening sampling was conducted at the Assemblies G and H SWMUs to determine whether past activities have impacted surface soil, subsurface soil, or groundwater. Surface and subsurface-soil samples were collected with a stainless-steel hand auger or direct push technology (DPT) sampling equipment (Geoprobe). Groundwater samples were collected using a stainless-steel DPT groundwater sampler. The use of DPT sampling methods to sample subsurface soil and groundwater is a relatively quick and inexpensive alternative to installing groundwater monitoring wells during preliminary investigations. If contamination is not detected in DPT samples, there are no wells left to abandon, and little, if any, investigation-derived waste (IDW) that requires disposal. If a release is confirmed, the screening data will facilitate selection of monitoring-well locations and screen intervals.

Table 4.1
Assemblies G and H — Sampling and Analysis Summary

SWMU	Description	Sampling Locations	Samples Collected	Medium Sampled	Interval Sampled	Laboratory Analyses
23	Building S-8 — UST, Removal attempted	7	2	Soil	0-1'	FSA[a]
			2	Soil	3-4'	Group 1
			3	Soil	12-15'	Group 1
			2	Groundwater	Fluvial Deposits	VOCs[b]
24	Buildings N-114 and N-349 — ASTs, One removed.	6	2	Soil	0-1'	FSA
			4	Soil	0-1'	Group 2
			6	Soil	3-4'	Group 2
41	Salvage Yard No. 2, Nonhazardous storage area	12	4	Soil	0-1'	FSA
			4	Groundwater	Upper Alluvium	VOCs
			4	Groundwater	Deep Alluvium	VOCs
43	Building S-176 — Former hazardous waste accumulation point	3	2	Soil	0-1'	FSA
			1	Soil	0-1'	Group 3
			3	Soil	3-4'	Group 3
47	Building S-344 — Former hazardous waste accumulation point	12	2	Soil	0-1'	FSA
			3	Soil	0-1'	Group 2
			3	Soil	3-4'	Group 2
			2	Groundwater	Deep Alluvium	VOCs
48	Building S-9 — Hazardous waste accumulation point	4	4	Soil	0-1'	Group 4
			4	Soil	3-4'	Group 4
49	Building N-757 — Hazardous waste accumulation point	7	1	Soil	0-1'	FSA
			1	Soil	3-4'	Group 5
			6	Groundwater	Fluvial Deposits	VOCs

Notes:

a = FSA = Full Scan Analysis: Appendix IX Metals = USEPA Method 6010/7000 Series; Total cyanide = USEPA Method 9010; Chlorinated pesticides/PCBs = USEPA Method 8080; Organophosphorus pesticides = USEPA Method 8140; Chlorinated herbicides = USEPA Method 8150; Semivolatile Organic Compounds = USEPA Method 8270; Total Petroleum Hydrocarbons (TPH) = Tennessee Modified Method 8015 for Gasoline Range Organics and Diesel Range Organics and TPH = USEPA Method 418.1; VOC = USEPA Method 5030/8240. Analyzed offsite at Savannah Analytical Laboratory of Savannah, Georgia.

b = VOCs = Volatile Organic Compounds

Group 1 = VOCs, Total Petroleum Hydrocarbons-Diesel Range Organics (TPH-DRO), Total Petroleum Hydrocarbons-Gasoline Range Organics (TPH-GRO)

Group 2 = VOCs, Semivolatile Organic Compounds (SVOCs), TPH, TPH-DRO, TPH-GRO, Appendix IX Metals.

Group 3 = VOCs, SVOCs, Appendix IX Metals

Group 4 = VOCs, TPH, TPH-DRO, TPH-GRO, Appendix IX Metals

Group 5 = VOCs, TPH, TPH-DRO, TPH-GRO, Appendix IX Metals, chlorinated pesticides/polychlorinated biphenyls

All screening samples collected during the CSI were analyzed for VOCs because petroleum-related compounds were detected in previous investigations (i.e., tank removals) or are suspected at SWMUs 23, 24, 17/48, and 19/49, and because chlorinated solvents and petroleum constituents have been the most common groundwater contaminants at other NSA Mid-South sites. VOC analyses should indicate the presence of either contaminant type in site soil or groundwater.

In addition to the screening samples, at least one surface-soil sample collected per site (except SWMU 48) was analyzed for full scan analysis (FSA), which included the following: VOCs, semivolatile organic compounds (SVOCs), chlorinated pesticides/polychlorinated byphenyls (PCBs), organophosphorus pesticides, chlorinated herbicides, metals, cyanide, Total Petroleum Hydrocarbons (TPH) — Diesel Range Organics (DRO), TPH-Gasoline Range Organics (GRO), and TPH. The chemical data obtained from the surface-soil samples were used to inspect for surface spills and to prepare preliminary risk evaluations (PREs) for each SWMU. The specific methods and requirements for the referenced analyses are discussed in Section 4.2.

Subsurface soil-sampling intervals were at depths of 3 to 4 feet bls for hand-auger samples and 12 to 16 feet bls for Geoprobe samples. The sampling depths corresponded with the approximate depth of the particular former underground tanks or the perched water zone in the loess. The lower-interval samples were collected to determine the vertical migration of contaminants released below the tanks or hazardous waste accumulation points.

Fewer subsurface hand-auger samples were collected than proposed at SWMU 47 due to obstructions, refusal, and limitations of the sample equipment (e.g., refusal due to unidentified metal or concrete debris). Geoprobe soil samples were collected from the loess at a depth approximate to that of the perched zone (12 to 15 feet bls). Groundwater screening samples were collected from the fluvial deposits, upper alluvium, and deep alluvium, which are the shallowest true aquifers and the most likely groundwater contaminant migration pathways beneath NSA Mid-South.

4.2 Analytical Requirements

Soil samples were collected for either FSA or various groups of analyses (Table 4.1), while groundwater samples were collected for VOC screening only. During the CSI, VOC screening samples were analyzed by an offsite laboratory, Savannah Analytical Laboratory of Savannah, Georgia. Samples were screened for VOCs using Level III-equivalent Data Quality Objectives (DQOs). Duplicate samples were screened using Level IV-equivalent DQOs, which met and exceeded the requirements of the *Comprehensive RFI Work Plan* (E/A&H, October 1994).

The FSA list consists of the following analyses:

- VOCs, USEPA Method 5030 (pre-Encore VOC method)/8240
- SVOCs, USEPA Method 8270
- TPH, USEPA Method 418.1
- TPH-GRO, Tennessee (TN) Modified 8015/GRO
- TPH-DRO, TN Modified 8015/DRO
- Chlorinated pesticides/PCBs, USEPA Method 8080
- Organophosphorus pesticides, USEPA Method 8140
- Chlorinated herbicides, USEPA Method 8150
- RCRA Part 264, Appendix IX Total Metals, USEPA Method 6010/7000 series
- Total cyanide, USEPA Method 9010

The data from FSA samples were used to calculate health-based risk for each SWMU.

4.3 Sample Management

CSI sample management procedures adhered to Sections 4.12 and 5 of the *Comprehensive RFI Work Plan* (E/A&H, October 1994).

4.4 Sample Custody

CSI sample custody procedures were implemented as outlined in Section 4.12.5 of the *Comprehensive RFI Work Plan* (E/A&H, October 1994).

4.5 Quality Assurance/Quality Control

CSI quality assurance/quality control (QA/QC) procedures adhered to Section 4.14 of the *Comprehensive RFI Work Plan* (E/A&H, October 1994).

4.6 Decontamination Procedures

Decontamination procedures during the CSI followed Section 4.11 of the *Comprehensive RFI Work Plan* (E/A&H, October 1994).

4.7 Investigation-Derived Waste

IDW was handled as specified in Section 4.13 of the *Comprehensive RFI Work Plan* (E/A&H, October 1994) and the *NSA Memphis IDW Management Plan* (E/A&H, October 1995).

4.8 Sample Labeling

All samples were labeled as specified in Section 4.12.4 of the *Comprehensive RFI Work Plan* (E/A&H, October 1994). All samples were labeled with a 10-digit alphanumeric code that identifies the site, sample type, sample location, sample depth, and QA sample type (as appropriate).

The labeling format was as follows:

ABC-D-EFGH-IJ

The following describes the specific information groups:

- **Site Location (ABC)** The three-character code ABC identifies the site location as follows: 023-SWMU 23, 024-SWMU 24, 041-SWMU 41, 047-SWMU 47, etc.

- **Matrix/QC Code (D)** This character code identifies the sample matrix using the following letters:

Matrix Codes		QC Codes	
S	Soil (surface, borings, and trenches)	T	Trip blank
C	Soil duplicate sample	E	Equipment rinse blank
M	Sediment (settled, fluid-borne solid)	D	DI system blank
N	Sediment duplicate sample	P	Potable water blank
G	Groundwater	F	Field blank
H	Groundwater duplicate sample	L	Filter blank
W	Surface water	B	USEPA blind spike sample
R	Surface water duplicate sample	2	Cement blank
U	Sludge	3	Drilling mud
Y	Sludge duplicate sample	4	Grout blank
Z	Liquid waste (including IDW drums)	5	Bentonite blank
V	Solid waste (including IDW drums)	6	Sand blank

For the purpose of this report, the proper matrix identifier is used only in the results tables. All other references to sample location, including on text and maps, use an "X" as the matrix code.

- **Sample Location Identifier (EFGH)** This four-character code identifies the sample location within a specific SWMU, which was identified by the first three digits of the 10-digit labeling system. For example:

  0001: Indicates sample number 01.

- **Depth, Interval, Serial Number (IJ)** This two-character code identifies a sampling location according to vertical depth, sample interval, or sample serial number. The recorded sample depth is the deepest point of the sample interval; for example, a sample collected from 12 to 15 feet bls would be designated as 15.

Example: 023S000115 = NSA Mid-South SWMU 23 soil sample from location number 01 from a depth of 15 feet (12- to 15-foot interval).

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5.0 PRELIMINARY RISK EVALUATION

PREs were conducted for each SWMU to estimate the human-health risk that may exist as a result of contaminants released at the site. Risk was estimated using the surface-soil samples collected at each SWMU.

In accordance with Supplemental Guidance to Risk Assessment Guidance for Superfund (RAGS) *Bulletin 1, Data Collection and Evaluation* (USEPA, November 1995), COPCs were identified by comparing the maximum concentration of each detected chemical with its corresponding RBC value from the *USEPA Region III Risk-Based Concentration Table* (USEPA, April 12, 1999). Inorganics were also compared with background RCs. If the maximum detected concentration exceeded both the RC and the corresponding RBC, the chemical was retained as a COPC. This methodology was employed to focus the PRE on source contaminants that may pose a human-health risk, while eliminating those that are naturally occurring (i.e., do not exceed the RC) or pose relatively low risk due to concentrations less than RBCs. The RBCs are based on a target ILCR of 1E-06 and a target hazard quotient (HQ) of 1.0. Noncarcinogenic-based RBCs were adjusted from a target HQ of 1.0 to 0.1, in accordance with the previously cited *USEPA Region IV Supplemental Guidance to RAGS, Bulletin 1*. The cumulative ILCR threshold is 1E-04 and the cumulative hazard threshold is 1.0, in accordance with the previously cited November 1994 USEPA Region IV Memorandum.

Risk-based screening, as opposed to calculating risk and hazard for each chemical present in site samples, should not affect PRE conclusions. Elimination of carcinogens based on the target ILCR of 1E-06 would not be expected to contribute significantly to the cumulative ILCR because the cumulative threshold is 1E-04. Likewise, noncarcinogens would not be expected to significantly contribute to the hazard index (HI) because the target HQ of 0.1 is less than the cumulative threshold of 1.0. In effect, this method provides insight into which contaminants pose the most significant threats to human receptors, helps identify hot spots, and eliminates those chemicals that

are naturally occurring, are not source contaminants, or would not significantly affect the PRE conclusions. Risk was estimated for each COPC using the ratio between the maximum reported concentration and the corresponding RBC. A risk ratio is calculated for each contaminant by one of the following two equations:

Carcinogenic Risk Ratio:

$$RR = \frac{\text{media concentration} * TR}{\text{screening value}}$$

Noncarcinogenic Risk Ratio:

$$RR = \frac{\text{media concentration} * THQ}{\text{screening value}}$$

Where:

RR	=	the risk ratio
Media concentration	=	the maximum concentration of a site chemical
Screening value	=	the RBC value for that particular chemical
TR	=	target risk used to calculate RBCs for carcinogens (1E-6)
THQ	=	target hazard quotient used to calculate RBCs for noncarcinogens (0.1)

The risk ratios for each chemical are summed separately for both residential and industrial scenarios to determine the overall site risk. Cumulative risk (for carcinogens) and cumulative HI (for noncarcinogens) are calculated separately, and the cumulative risk and HI are compared to the corresponding cumulative thresholds in accordance with the November 1994 USEPA Region IV Memorandum, the USEPA Region IV November 1995 Supplemental Guidance to RAGS, and E/A&H's technical memorandum (E/A&H, August 1996). Risk estimates for both land-use scenarios include the following assumptions.

A residential scenario includes exposure during childhood and adulthood, and it assumes exposure for 350 days per year for at least 30 total years. The future site-resident scenario assumed dwellings would be constructed onsite. Site workers are assumed to contact the affected area for eight hours each day, 250 days per year for 25 years. Current site workers' exposure would be less than that assumed for the hypothetical future site worker scenario because of their limited soil

contact and the fact that groundwater from the surficial aquifer is not currently used onsite as drinking or process water.

Construction or maintenance worker exposure would be considered less than the hypothetical future worker exposure assumed in this PRE because construction or maintenance workers would be exposed less frequently and for shorter durations. Consequently, future worker assessment is considered protective of both current site use and future construction/maintenance. As previously mentioned, an ILCR greater than 1E-04 (USEPA's cumulative upper-bound acceptable risk threshold) or an HI greater than 1 (USEPA's cumulative HI threshold) indicates that the site may require additional investigation for the corresponding land-use scenario (USEPA Region IV Memorandum, November 1994). In accordance with the USEPA Region IV memorandum, the property is considered suitable to lease for the specified land-use scenario if neither threshold is exceeded.

Uncertainty

The PRE for each SWMU is based on the maximum reported concentrations of each COPC and a future residential and industrial scenario. The conservative approach includes these assumptions regarding uncertainties:

- Exposure to maximum reported concentrations will be uniform, regardless of sample location, which theoretically creates a "hot spot." The PRE was based on a minimum number of samples. Use of the maximum concentration potentially overestimates exposure, especially if the maximum detected concentration was in a "hot spot." Likewise, exposure could be underestimated if a "hot spot" were missed during sampling.

- While the sites will not be used for residential purposes, the residential scenario was incorporated into the PRE to provide a conservative representation of potential risk or hazard.

- Cumulative effects will occur, regardless of target organs and mechanisms of action, which could cause the risk to be either overestimated or underestimated.

- Shallow (loess and fluvial deposits) groundwater will be used for potable purposes. This is not likely, as the current potable water supply sources are the much deeper Memphis and Fort Pillow aquifers.

6.0 FATE AND TRANSPORT

This section provides guidance for evaluating the transport, transformation, and fate of contaminants in the environment. Specifically, fate and transport assessment seeks to evaluate a contaminant's ability to become mobile or change in the environment. To accomplish this goal, the chemical and physical properties that govern the contaminant's interaction within environmental media must be understood. Site characteristics, e.g., topography, hydrogeology, and characteristics of site soil, sediment, and water, as well as the contaminant's chemical and physical properties, play roles in evaluating the processes of fate and transport. To streamline the fate and transport discussion, this section focuses on understanding the properties that affect fate and transport. Site and contaminant-specific discussions are included in Section 7 for each SWMU. Fate and transport evaluations will be predetermined for contaminants defined as COPCs in a PRE, for any organic contaminant that exceeds its SSL (soil to groundwater), and for any inorganic contaminant that exceeds both its SSL (soil to groundwater) and RC. Also, contaminants will be evaluated if they exceed the SSL for soil-to-air transport or if they are in more than one media (e.g., a contaminant is present in both soil and groundwater).

Evaluation of Assemblies G and H SWMUs with regard to the above characteristics identified four *potential* routes of contaminant migration:

- Air emissions from VOCs released from surface soil
- Contaminants leaching from soil to groundwater
- Surface soil erosion and transport of contaminants sorbed to sediment
- The migration of contaminants from shallow groundwater into surface-water bodies

6.1 Properties That Affect Fate and Transport

The persistence, transport, and fate of chemicals in the environment depend on individual chemical and physical properties as well as properties of the media in which the chemicals reside. These

properties are outlined in the sections below, which describe the significance of each property to volatilization, sorption, diffusion, dispersion, biodegradation, and other attenuation processes.

6.1.1 Chemical and Physical Properties

Chemical and physical properties relevant to the evaluation of fate and transport of organic contaminants include water solubility, vapor pressure, Henry's law constant, specific gravity, organic carbon partition coefficient, distribution coefficient, and half-life. Water solubility and adsorption coefficients are properties of interest for inorganic contaminants. After the properties are introduced, the impact on each relevant class of compounds is discussed. Table 6.1 provides an overview of chemical behavior based on these properties.

Table 6.1
Chemical and Physical Properties

Chemical Property	Critical Value[a]	A chemical with a higher value may....	A chemical with a lower value may....
Vapor Pressure	10^{-6} mmHg	be more volatile.	be less volatile.
Density[b]	water: 1.0 g/cm^3 air: 1.20 kg/m^3	sink in water or fall in the atmosphere.	float on water or rise in the atmosphere.
Solubility	0 to 100 mg/L	leach from soil, be more mobile in water, and not readily volatilize from water.	adsorb to soil, be immobile in water; volatilize from water.
Henry's law constant	10^{-3} to 10^{-5} atm-m^3/mole	volatilize easily from water.	not volatilize easily from water.
Half-Life	biologically dependent	not degrade readily.	degrade readily.
Organic Carbon Partition Coefficient	10 to 10^5 mL/g	be more apt to remain in soil.	be more mobile and diffuse easily in water.

Notes:
[a] = Critical values are based on literature review and professional judgment.
[b] = Approximate density of air at standard temperature and pressure
g/cm^3 = grams per cubic centimeter
kg/m^3 = kilograms per cubic meter
atm-m^3/mole = atmosphere-cubic meter per mole
mL/g = milliliters per gram

Water Solubility

The solubility of a chemical in water is the maximum amount that will dissolve in pure water at a specified temperature. Chemicals with high solubility are relatively mobile in water and likely to leach from wastes and soils. These chemicals tend to have low volatilization potential, but tend to be biodegradable. Conversely, chemicals with low solubility tend to adsorb onto soil and sediment and are not readily biodegraded. They also have a greater tendency to volatilize.

Vapor Pressure

Vapor pressure measures the tendency of a substance to pass from a solid or a liquid to a vapor state. It is measured as the pressure of the gas in equilibrium with the liquid or solid at a given temperature. From dry soil, the vapor pressure determines the volatilization of a given chemical to the atmosphere. From surface water and moist soil, volatilization depends upon vapor pressure and the Henry's law constant (discussed below). A compound with a vapor pressure less than 10^{-6} millimeters of mercury (mm Hg) tends to associate with particulate matter; a compound with a higher vapor pressure tends to associate with the vapor phase. Highly water-soluble compounds generally show little volatilization from water or moist soils unless they also have a high vapor pressure.

Henry's Law Constant

The Henry's law constant describes a linear relation between vapor pressure and water solubility, providing a measure of a chemical's ability to move from water or moist soil to air. Compounds with Henry's law constants greater than 10^{-3} atmospheres-cubic meter per mole (atm-m^3/mole) can be expected to readily volatilize from water. Compounds with values ranging from 10^{-3} to 10^{-5} atm-m^3/mole exhibit moderate volatilization. Compounds with values less than 10^{-5} atm-m^3/mole show limited ability to volatilize from water or moist soil.

Specific Gravity

The specific gravity (SG) of a substance is the ratio of the weight of a given volume of that substance to the weight of the same volume of water. The water weight is usually measured at 4°C; the other substance is often measured at some other temperature, typically 20°C. If the SG of a substance is less than 1.0, that substance will float on water; if the SG is greater than 1.0, the substance will sink. The SG can sometimes be used to predict the vertical distribution of the immiscible or insoluble portion of a chemical within an aquifer or other body of water.

Organic Carbon Partition Coefficient

The organic carbon partition coefficient (K_{oc}) measures the degree to which a substance will preferentially adsorb to organic carbon. The typical range of K_{oc} values is from 1 to 10^5 milliliters per gram (mL/g), with higher values indicating a greater tendency to remain sorbed. Chemicals moving through the subsurface will alternately adsorb or desorb from available organic matter in the soil matrix. The higher the K_{oc} values, the greater the tendency of a chemical to be attracted to the organic fraction of the soil and the lower its mobility in the subsurface environment.

Half-life

A half-life is the time required for the concentration of a substance to decrease from its initial concentration to one-half that level. The apparent decrease may be caused by various processes including biodegradation, reactions with other substances, or mass removal from the media in question.

Chemical Behaviors

VOCs can be expected to be mobile in the environment based on their physical and chemical properties. They have the potential to volatilize to the atmosphere and leach to groundwater; when sorbed to sediment, they can migrate to surface water with mobilized sediment and move with groundwater flow. Relative to other categories of compounds, VOCs have low molecular weights

and high water solubilities, vapor pressures, and Henry's law constants, along with correspondingly low K_{oc} values. These properties all enhance the potential for VOC mobility and degradation. Compared with chemicals in other categories, many VOCs tend to have relatively short half-lives in groundwater and surface water. VOCs have a limited tendency to adsorb to solids and can be expected to be moderately to highly mobile in the environment. Especially in near-surface soil, VOCs can migrate via diffusion through soil-air pore spaces to the ground surface, where they can volatilize from the soil and be transported by wind.

SVOCs generally have higher molecular weights and lower solubilities, vapor pressures, and Henry's law constants than VOCs. Because of their higher K_{oc}, SVOCs tend to sorb to solids and are relatively immobile in the environment. SVOCs are more likely to be transported in the solid phase than in the dissolved phase. These characteristics lead to a likelihood of greater persistence but lower mobility of SVOCs in the environment than VOCs.

Pesticides/PCBs have moderate molecular weights, generally high densities, high K_{oc} values, and generally low solubilities, vapor pressures, and Henry's law constants. Typical fate and transport characteristics of pesticides/PCBs include a tendency to sorb to soil particles. They are hydrophobic (avoid water), immobile in the environment, and tend to degrade relatively slowly. Overall, pesticides/PCBs are anticipated to be immobile and persistent in the environment, not readily diffusing into groundwater.

Herbicides can leach from soil particles to groundwater and tend to be mobile in both soil and groundwater. They tend to degrade relatively slowly. The chemical property with the greatest influence on the fate and transport of herbicides is solubility. Herbicides have low Henry's law constants and vapor pressures, and moderate molecular weights, K_{oc} and solubilities. Overall, herbicides are expected to be moderately mobile in groundwater with some retention in soil.

Inorganic compounds do not degrade in the environment, but they may change chemical form or speciation. They are generally considered to be indefinitely persistent. Inorganic metals may interact with soil or other solids by ion exchange, adsorption, precipitation, or complexation and they can act as catalysts in biodegradation processes. These processes are affected by pH, composition of leachate or groundwater oxidation-reduction (redox) condition, and the type and amount of organic matter, minerals, clay, and hydrous oxides present. In general, the solubility of metals in potable groundwater is low, resulting in limited mobility in the environment. However, groundwater containing elevated concentrations of chloride, bicarbonate, sulfate, or phosphate can enhance the solubility and mobility of metals by forming aqueous complexes.

6.1.2 Media Properties

The properties of environmental media used to evaluate fate and transport are total organic carbon, soil sorptive capacity, cation exchange capacity (CEC), redox conditions, pH, and hydrogeology. The following briefly discusses these properties.

Total Organic Carbon

The abiotic process of sorption (accumulation of the contaminant at the surface of a solid surface) will slow down the movement of the contaminant as it accumulates on the subsurface medium. For organic contaminants and subsurface materials with organic carbon, hydrophobic chemicals are commonly sorbed into the soil organic-carbon content. As the organic-carbon content of the subsurface material increases, the total capacity of the soil to sorb the contaminant increases. In fate and transport calculations, organic carbon is typically expressed as a percent of total soil mass (f_{oc}).

Distribution Coefficient

The distribution coefficient (K_d) is a valid representation of the partitioning between liquid and solids, or the ratio of the mass of contaminant in soil to the mass of contaminant dissolved in the

groundwater. K_d is used in modeling contaminant movement through the subsurface. The larger the K_d value, the greater the sorption to the solid phase. The simplest method for acquiring a K_d value for a specific contaminant is to obtain it from a K_{oc} value listed in literature sources. K_{oc} is analogous to K_d, except that the adsorbing material is considered to be the organic carbon (oc) in the soil as opposed to the entire soil matrix. By normalizing K_d on the basis of the soil's oc content, a great deal of the variation observed among K_d values over different soils can be eliminated; thus, K_d can be estimated from the K_{oc} of the chemical and the f_{oc} in the soil, e.g., $K_d = K_{oc} \, x \, f_{oc}$.

Cation Exchange Capacity

CEC reflects the capacity of the soil to adsorb ions by neutralizing an ionic deficiency on its surface. Certain compounds can either gain or lose a proton as a function of pH and thus transform from a neutral to an ionic form. For organic compounds, this ionization will greatly increase the solubility of the chemical in the groundwater. The gain of a proton will yield a positive ion. In this case, the ionic compound may associate to a greater degree with the CEC of the clay minerals. The overall impact on sorption (mobility) will depend on the relative sorption of the neutral and ionic forms of the compound.

Redox Conditions

Redox refers to the transfer of electrons and species change of ions or compounds. Redox is the process that includes oxidation (the loss of electrons) and reduction (the gain of electrons). As an example, consider iron in groundwater. Groundwater that reaches the surface in a highly reduced state is exposed to the atmosphere (oxygen), which oxidizes the iron. Iron oxidation is a reverse process and causes the iron to go from its soluble to insoluble form.

pH

pH, a logarithmic measure of hydrogen ions in the soil and groundwater, indicates the acidity or basicity of the medium. Chemicals react significantly differently under different pHs. Low pH conditions tend to mobilize chemicals, especially inorganics, while high pH conditions may form immobile metal hydroxides.

Hydrogeology

The physical properties of soil (mineralogical composition, particle size distribution, etc.) dictate how a contaminant is transported in the subsurface. Some of the properties are porosity, hydraulic gradient, hydraulic conductivity, and unsaturated and saturated flow.

Porosity is defined as the ratio of openings (voids) to the total volume of a soil or rock. Typically, fine-grained materials tend to be better sorted and thus tend to have the largest porosities. Porosity indicates the maximum amount of water that a rock or soil can contain when it is saturated.

The direction of slope of the groundwater table or potentiometric surface indicates the direction of groundwater movement. All other factors being constant, the rate of groundwater movement depends on the hydraulic gradient. The hydraulic gradient, which is the change in head per unit distance in a given direction, is important in the transport of contaminants because it may indicate the velocity and direction at which a contaminant may migrate in groundwater.

The factors controlling groundwater movement are largely dictated by the hydraulic conductivity of the aquifer media. Hydraulic conductivity depends on the size and arrangement of pores and the dynamic characteristics of groundwater, such as viscosity and density. Hydraulic conductivity refers to the water-transmitting characteristics of soil and varies in different types of soil. If the hydraulic conductivity is essentially the same in any area of soil, it is said to be homogeneous;

otherwise, it is heterogeneous. Hydraulic conductivity tends to be greater in sand and reduced in material containing clay.

Most aquifer recharge occurs during the percolation of water across the unsaturated zone. Movement of water in the unsaturated zone is controlled by both gravitational and capillary forces. Capillarity results from two forces: the mutual attraction (cohesion) between water molecules and the molecular attraction (adhesion) between water and different solid materials. As a consequence of these two forces, water is pulled upward into a capillary fringe above the water table. Flow in the unsaturated zone is important because contaminants released at the surface that percolate through the unsaturated zone may remain due to capillarity, or contaminants may be transported to the unsaturated zone through a fluctuating water table.

In the saturated zone, all interconnected openings are full of water and the groundwater moves through these openings in the direction controlled by the hydraulic gradient. Movement in this zone may be either laminar or turbulent. In laminar flow, water particles move in an orderly manner along streamlines. In turbulent flow, water particles move in a disordered, highly irregular manner, which results in a complete mixing of the particles. Dispersion is an important transport process of contaminants in the saturated zone. It is the process by which solutes are mixed with uncontaminated water, diluted, and transported due to the heterogeneity of the aquifer. Diffusion, the process by which solutes are transported from a region of high concentration to a region of low concentration, is also important. In very fine sediments, diffusive transport may be the dominant process. However, contaminant movement is typically advective. Advective flow is the process by which dissolved substances migrate with flowing groundwater. This is the dominant transport process for contaminant movement in groundwater.

6.2 Fate and Transport Approach for Assemblies G and H

The fate and transport discussion for each SWMU begins by describing site characteristics that have the potential to promote or inhibit the contaminant migration. As presented in Section 6.0, four potential routes of migration may exist. Each SWMU was evaluated as to site conditions that affect these migration pathways.

An individual contaminant's ability to migrate was evaluated based on the four cross-media transfer mechanisms — soil to groundwater, surface soil to air, groundwater to surface water, and surface soil to sediment (erosion of sediments containing sorbed contaminants)— as described below in Sections 6.2.1 through 6.2.4. The chemical and physical properties of the contaminant were evaluated, where necessary, in support of each transfer mechanism. Table 6.2 presents the chemical and physical properties used to evaluate fate and transport for *all* contaminants detected at Assemblies G and H sites.

6.2.1 Soil-to-Groundwater Cross-Media Transport

To evaluate the potential for soil-to-groundwater contaminant migration, a phased screening approach was used to focus on chemicals with the greatest potential for impacting the water-bearing zones. The screening process is summarized as follows:

- Qualitative — Analytical data for soil and groundwater were compared to determine which chemicals were present in both media.

- Quantitative — Soil results were compared with the leachability-based soil-to-groundwater SSLs as presented in the USEPA, *Soil Screening Guidance: Technical Background Document*, (USEPA, May 1996). An organic contaminant was considered a threat to impact an underlying water-bearing zone, if the maximum detected concentration exceeded its SSL. An inorganic contaminant was considered a threat to impact an underlying water-bearing zone, if the maximum detected concentration exceeded its SSL ***and*** its background RC.

Table 6.2
Fate and Transport Properties for
Contaminants Detected in Soil and Groundwater
NSA Mid-South, Assemblies G and H

Parameter	Group	Mw[a] (g/mole)	Density[a] (g/cm³)	Vapor Pressure[a,b] (mm Hg)	Solubility[a,b] (mg/L)	Henry's law constant[b,c] (atm-m³/mole)	Koc[b,c] (mL/g)	SSL soil to gw[d] (mg/kg)	SSL soil to air[d] (mg/kg)
Acenaphthene	SVOC	154.21	1.02e+00	1.60e-03	3.50e+00	1.70e-04	1.78e+01	29	120
Acetone	VOC	58.08	7.90e-01	2.70e+02	1.00e+06	3.97e-05	3.70e-01	0.8	62,000
Aldrin	PEST	364.92	1.70e+00	6.00e-06	2.70e-02	2.67e-05	4.07e+02	0.02	0.5
Anthracene	SVOC	178.24	1.30e+00	2.00e-04	4.50e-02	6.50e-05	1.86e+04	590	6.8
Aroclor-1260	PCB	370.00	1.60e+00	4.10e-05	8.00e-02	7.10e-03	8.22e+05	NDA	NDA
Benzene	VOC	78.11	8.70e-01	9.50e+01	1.80e+03	5.40e-03	5.00e+01	0.002	0.5
Benzo(a)anthracene	SVOC	228.30	1.27e+00	5.00e-09	1.20e-02	2.30e-06	1.38e+06	0.08	27
Benzo(a)pyrene	SVOC	252.32	1.40e+00	5.60e-09	3.90e-03	2.40e-06	1.77e+06	0.4	11
Benzo(b)fluoranthene	SVOC	252.30	NDA	5.00e-07	1.40e-02	1.20e-05	5.50e+05	0.2	23
Benzo(g,h,i)perylene	SVOC	276.34	NDA	1.00e-10	2.60e-04	1.40e-07	7.76e+06	NDA	NDA
Benzo(k)fluoranthene	SVOC	252.30	NDA	9.59e-11	5.50e-04	1.04e-03	4.37e+06	2	0
beta-BHC	PEST	290.82	1.90e+00	2.80e-07	2.40e-01	2.30e-07	2.88e+03	NDA	NDA
2-Butanone (MEK)	VOC	72.11	8.10e-01	7.80e+01	2.70e+05	4.66e-05	1.23e+00	NDA	NDA
Butylbenzylphthalate	SVOC	312.37	1.10e+00	8.60e-06	2.80e+00	1.30e-06	1.51e+02	810	530
Carbazole	SVOC	167.20	1.10e+00	4.00e+02	3.80e-03	NDA	NDA	0.03	11
Chlordane	PEST	409.78	1.60e+00	1.00e-05	5.60e-02	4.80e-05	4.95e+04	0.5	10
Chrysene	SVOC	228.30	1.27e+00	6.30e-09	1.80e-03	7.26e-20	2.45e+05	8	3.6
4,4'-DDD	PEST	320.05	1.50e+00	1.00e-06	2.00e-02	2.16e-05	4.37e+04	0.8	37
4,4'-DDE	PEST	319.03	6.49e-06	6.50e-06	4.00e-02	2.34e-05	2.45e+05	3	10

Table 6.2
Fate and Transport Properties for
Contaminants Detected in Soil and Groundwater
NSA Mid-South, Assemblies G and H

Parameter	Group	Mw[a] (g/mole)	Density[a] (g/cm^3)	Vapor Pressure[a,b] (mm Hg)	Solubility[a,b] (mg/L)	Henry's law constant[b,c] ($atm\text{-}m^3/mole$)	Koc[b,c] (mL/g)	SSL soil to gw[d] (mg/kg)	SSL soil to air[d] (mg/kg)
4,4'-DDT	PEST	354.49	1.60e+00	1.90e-07	5.00e-03	4.89e-05	3.87e+05	2	80
1,2-Dichloroethane	VOC	98.96	1.30e+00	6.40e+01	8.70e+03	9.80e-04	1.41e+01	0.001	0.3
Dichlorprop	HERB	235.07	NDA	1.00e-06	3.50e+02	NDA	NDA	NDA	NDA
Dieldrin	PEST	380.93	1.80e+00	1.80e-07	2.00e-01	2.00e-05	1.34e+04	0.0002	2
Diethylphthalate	SVOC	222.24	1.10e+00	2.00e-03	9.00e+02	8.46e-07	6.92e+01	23	520
Endosulfan I	PEST	406.92	1.70e+00	1.00e-05	5.30e-01	1.01e-04	2.04e+03	0.9	1
Endrin Aldehyde	PEST	380.92	NDA	2.00e-07	2.60e-01	3.86e-07	2.69e+04	NDA	NDA
Ethylbenzene	VOC	106.16	8.70e-01	7.10e+00	1.50e+02	6.60e-03	1.87e+02	0.7	260
bis(2-Ethylhexyl)phthalate (BEHP)	SVOC	340.57	9.90e-01	2.00e-07	3.00e-01	1.10e-05	1.00e+05	180	210
Fluoranthene	SVOC	202.26	1.30e+00	5.00e-06	2.40e-01	1.69e-02	4.17e+04	210	68
Fluorene	SVOC	166.22	1.20e+00	7.00e-03	1.70e+00	2.10e-04	5.01e+03	28	89
Gamma BHC (Lindane)	PEST	290.82	1.60e+00	6.70e-05	7.50e+00	3.25e-06	1.21e+03	0.0005	NDA
Indeno(123-cd)pyrene	SVOC	276.34	6.20e-02	1.00e-10	6.20e-02	2.96e-20	3.09e+07	0.7	280
2-Methylnaphthalene	SVOC	142.21	1.00e+00	NDA	2.50e+01	NDA	8.51e+03	NDA	NDA
Naphthalene	SVOC	128.18	1.10e+00	5.40e-02	3.00e+01	4.60e-04	7.92e+02	4	180
Phenanthrene	SVOC	178.24	1.20e+00	6.80e-04	1.00e+00	3.90e-05	2.29e+04	NDA	NDA
Pyrene	SVOC	202.26	1.30e+00	2.50e-06	1.40e-01	1.09e-05	6.46e+04	210	56
TPH-DRO		NDA	NDA	NDA	NDA	NDA	NDA	NDA	NDA
TPH-GRO		NDA	NDA	NDA	NDA	NDA	NDA	NDA	NDA

Table 6.2
Fate and Transport Properties for
Contaminants Detected in Soil and Groundwater
NSA Mid-South, Assemblies G and H

Parameter	Group	Mw[a] (g/mole)	Density[a] (g/cm^3)	Vapor Pressure[a,b] (mm Hg)	Solubility[a,b] (mg/L)	Henry's law constant[b,c] (atm-m^3/mole)	Koc[b,c] (mL/g)	SSL soil to gw[d] (mg/kg)	SSL soil to air[d] (mg/kg)
Toluene	VOC	92.13	8.70e-01	2.20e+01	5.20e+02	6.70e-03	1.29e+02	0.6	520
Tetrachloroethene	VOC	165.83	1.60e+00	1.40e+01	1.50e+02	1.53e-02	2.64e+02	0.003	11
Trichloroethene	VOC	131.40	1.50e+00	5.80e+01	1.10e+03	9.10e-03	8.70e+01	0.003	3
Xylene	VOC	106.17	8.80e-01	8.70e+00	2.00e+02	7.10e-03	2.34e+02	NDA	320
Antimony	INOR	121.80	NDA	NDA	NDA	NDA	NDA	0.3	NDA
Arsenic	INOR	74.90	NDA	NDA	NDA	NDA	NDA	1	380
Barium	INOR	137.33	NDA	NDA	NDA	NDA	NDA	82	350000
Beryllium	INOR	9.01	NDA	NDA	NDA	NDA	NDA	3	690
Cadmium	INOR	112.40	NDA	NDA	NDA	NDA	NDA	0.4	920
Chromium	INOR	52.00	NDA	NDA	NDA	NDA	NDA	2	NDA
Cobalt	INOR	58.93	NDA	NDA	NDA	NDA	NDA	NDA	NDA
Copper	INOR	63.55	NDA	NDA	NDA	NDA	NDA	NDA	NDA
Lead	INOR	207.20	NDA	NDA	NDA	NDA	NDA	NDA	NDA
Mercury	INOR	200.60	NDA	NDA	NDA	NDA	NDA	NDA	7
Nickel	INOR	58.71	NDA	NDA	NDA	NDA	NDA	7	6,900
Selenium	INOR	78.96	NDA	NDA	NDA	NDA	NDA	0.3	NDA
Silver	INOR	107.90	NDA	NDA	NDA	NDA	NDA	2	NDA
Tin	INOR	118.69	NDA	NDA	NDA	NDA	NDA	NDA	NDA

Table 6.2
Fate and Transport Properties for
Contaminants Detected in Soil and Groundwater
NSA Mid-South, Assemblies G and H

Parameter	Group	Mw[a] (g/mole)	Density[a] (g/cm^3)	Vapor Pressure[a,b] (mm Hg)	Solubility[a,b] (mg/L)	Henry's law constant[b,c] ($atm\text{-}m^3/mole$)	Koc[b,c] (mL/g)	SSL soil to gw[d] (mg/kg)	SSL soil to air[d] (mg/kg)
Vanadium	INOR	50.94	NDA	NDA	NDA	NDA	NDA	300	NDA
Zinc	INOR	65.38	NDA	NDA	NDA	NDA	NDA	620	NDA

Notes:

[a] = Merck & Co., *The Merck Index*, Merck & Co., Rahway, NJ, 1983.
= Lide, *CRC Handbook of Chemistry and Physics*, CRC Press, Boca Raton, Florida, 1994.
USEPA, *Treatability Database*, USEPA Risk Reduction Engineering Laboratory, Cincinnati, Ohio, 1992.
Resource Consultants, *Chemtox Release K*, 1985-1995.
[b] = Howard, *Fate and Exposure Data*, Lewis Publishers, Chelsea, Michigan, 1993.
[c] = Knox, Sabatini, Canter, *Subsurface Transport and Fate Processes*, Lewis Publishers, Chelsea, Michigan, 1993.
[d] = SSL considered protective of contaminant transfer from soil to groundwater (from the May 1996 Generic Screening Levels (May 1996, USEPA/OSWER SSL Guidance Document, EPA/540/R-95/128).
NDA = No Data Available
VOC = Volatile organic compound
SVOC = Semivolatile organic compound
PCB = Polychlorinated biphenyl
PEST = Pesticide
HERB = Herbicide
INOR = Inorganic
mg/L = milligrams per liter
mg/kg = milligrams per kilogram
TPH-DRO = Total Petroleum Hydrocarbons-Diesel Range Organics
TPH-GRO = Total Petroleum Hydrocarbons-Gasoline Range Organics

Due to the nature and age of most SWMU operations, it is assumed that any impacts from compounds that could migrate from soil would be currently manifested in either the loess or fluvial deposits groundwater. The number and location of monitoring wells or DPT groundwater samples are considered adequate to detect the presence of groundwater contamination. As a result, the qualitative comparison was used to identify those chemicals with reported concentrations in both media.

6.2.2 Soil-to-Air Cross-Media Transport

To evaluate the potential for soil-to-air migration of VOCs, a screening approach was used to focus on contaminants having the greatest potential to volatilize in sufficient quantities to create a human-health threat in ambient air. The screening process is summarized as follows:

> Quantitative — The maximum concentrations of VOCs detected in surface soil at each SWMU were compared with soil-to-air screening levels as presented in the USEPA Region III October 1, 1998 RBC Table.

No qualitative screening was performed because ambient air sampling was not part of the field sampling procedure at any of the Assemblies G and H SWMUs.

If soil concentrations did not exceed soil-to-air volatilization screening levels, it was assumed that no significant migration potential exists and that current surface-soil conditions are protective of human health relative to potential inhalation exposure pathways. Other factors included: type of cover (vegetation, asphalt, etc.); physical properties of the surface soil that might limit or enhance mobility of contaminants; and physical/chemical properties of the class of contaminants (e.g., VOCs are more likely to volatilize from soil to air than SVOCs).

6.2.3 Groundwater-to-Surface Water Cross-Media Transport

The principal focus of this evaluation was determining whether contaminants identified in groundwater have the potential to extend their impacts by discharging to surface water. This transport mechanism is not discussed in detail due to the lack of water bodies at or near any of the Assemblies G and H SWMUs, and the unlikelihood that shallow groundwater in the loess will impact surface water based on the lithology of the soil matrix.

6.2.4 Surface Soil-to-Sediment Cross-Media Transport

To evaluate the potential for surface soil-to-sediment erosional migration, the following approach was taken:

> Qualitative — Analytical data from both soil and sediment were compared to determine which chemicals were present in both media.

Also, to evaluate the potential for sorbed contaminants in near-surface soil to migrate by soil-erosional processes, contaminants were identified that exhibited characteristics that would render them mobile under erosional processes such as surface-water drainage and wind erosion. The most influential process by which sediments are formed involves the erosion of surface soil containing no vegetation, which eventually collects in depositional areas. Therefore, topography at each SWMU is also used as a screening process in evaluating this transport mechanism as a migration pathway.

7.0 CONFIRMATORY SAMPLING INVESTIGATIONS

For each of the Assemblies G and H SWMUs investigated during this CSI, this section details available background information, CSI sampling activities and analytical results, a site-specific PRE, a site-specific fate and transport discussion, and site-specific conclusions and recommendations. Analytical results for all screening and FSA samples are provided in Appendix A.

7.1 SWMU 23 — Underground Storage Tank, Building S-8 (Fire Station)

The underground storage tank (UST) is located on the south end of Building S-8, Fire Station No. 1, on the NSA Mid-South Southside. The UST stored No. 2 fuel oil and/or diesel fuel from 1944 through 1987. During a 1990 inspection, no visual evidence of a release was identified (ERC/EDGe, 1990). In 1992, a UST removal was attempted in the Building S-8 vicinity, but excavation was backfilled and compacted when the UST was not found (National Salvage, July 2, 1992). On January 23, 1997, a geophysical investigation was performed at SWMU 23 to try and locate the UST. The search area, approximately 15 feet wide by 70 feet long, was south of Building S-8 and offset from the location of the 1992 excavation. Anomalies were identified, but the data did not suggest an in-place metal UST in the area surveyed (E/A&H, July 1997). Figure 1.1 shows the location of SWMU 23.

SWMU 23 and the surrounding area are characterized by relatively level, low-relief topography. Surrounding areas are covered concrete or grass. Surface water drains south and west into a north-south drainage ditch (SWMU 38) which flows into Big Creek Drainage Canal. The regional and local hydrogeology are described in Sections 2.11 and 2.12 of the *Comprehensive RFI Work Plan* (E/A&H, October 1994). Site-specific geologic and hydrogeologic information and references are in Section 2 of this report and in Section 2.0 of the *Assemblies G and H CSI Work Plan* (EnSafe, December 1997). Because soil and groundwater samples were collected by pushing

DPT sampling tools to a predetermined depth without lithologic characterization, no additional site-specific lithologic information was collected during this investigation.

7.1.1 Previous Sampling Activities

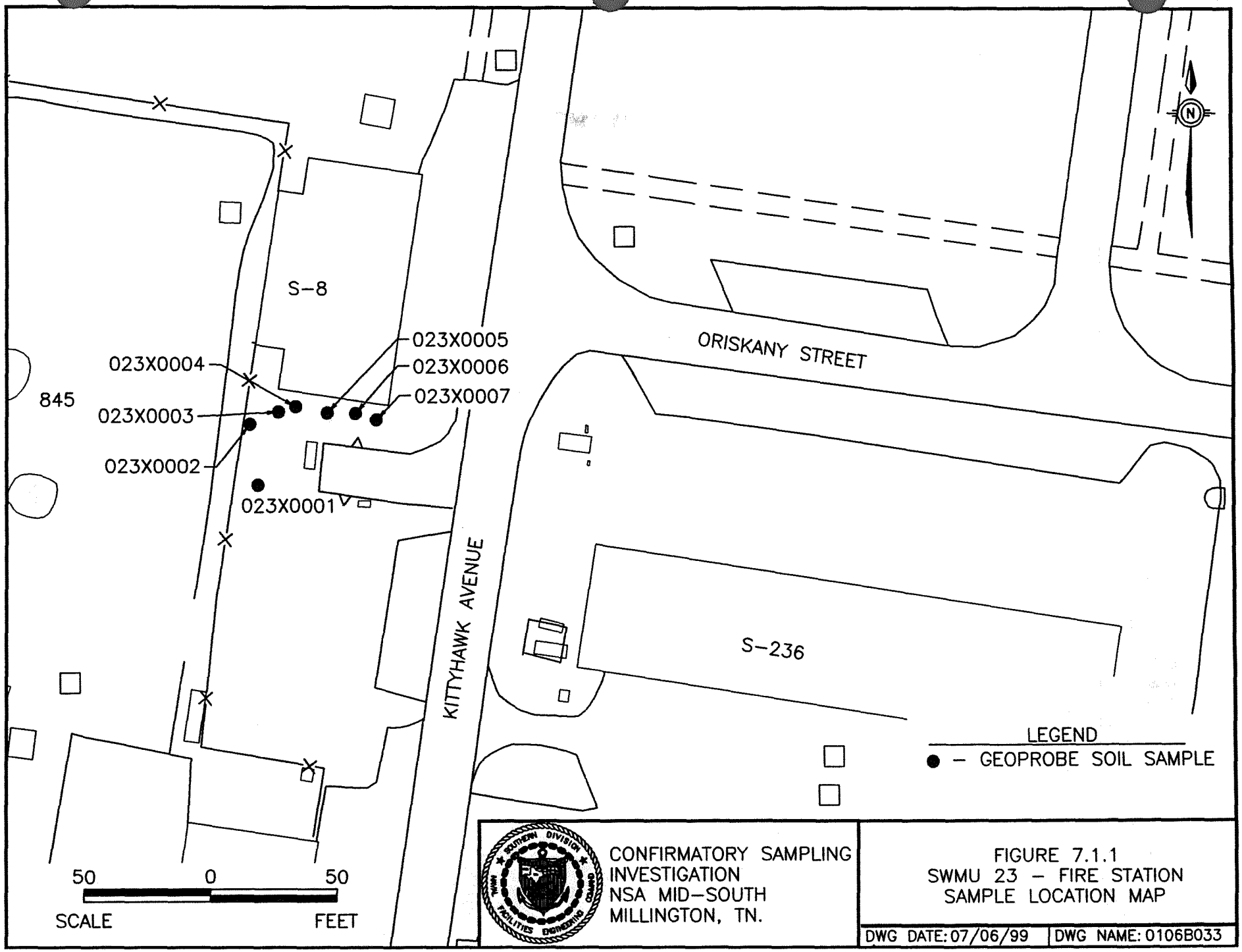
The 1992 UST Closure Report discussed an attempt to locate the UST near Building S-8. Contractors dug 11 feet deep, and excavated soil appeared to be disturbed; however, no contamination was visible (National Salvage, July 2, 1992). A disconnected pipe was discovered which was thought to be an abandoned vent line. The excavation was backfilled and compacted when the UST was not identified. No certification of UST removal or plans showing UST locations have been identified from available information. Analytical data were not available in the UST Closure Report (National Salvage, July 2, 1992).

7.1.2 Field Investigation

Field sampling was performed as outlined in Section 2.2 of the *Assemblies G and H CSI Work Plan* (EnSafe, December 1997) to determine if a release had occurred at SWMU 23. Figure 7.1.1 shows the sample locations.

Soil

The soil investigation consisted of hand-auger and Geoprobe sampling, as outlined in Section 4.4.4.3 of the *Comprehensive RFI Work Plan* (E/A&H, October 1994), for offsite laboratory analysis. Five soil sample locations were selected in the area of the UST. Soil samples were collected from the surface to 1 foot deep (upper interval) using a hand auger at two locations (023X0004 and 023X0006), while three subsurface sample locations (023X0003, 023X0005, 023X0007) were collected at a depth interval of 12 to 15 feet (lower interval) using Geoprobe equipment. Since the depth of the UST was unknown, the sampling interval was estimated based on the 500-gallon UST described in the 1990 RCRA Facility Assessment (RFA).


S-8
845
023X0004
023X0003
023X0002
023X0001
023X0005
023X0006
023X0007
ORISKANY STREET
KITTYHAWK AVENUE
S-236
N
LEGEND
● - GEOPROBE SOIL SAMPLE
50 0 50
SCALE FEET
CONFIRMATORY SAMPLING
INVESTIGATION
NSA MID-SOUTH
MILLINGTON, TN.
FIGURE 7.1.1
SWMU 23 - FIRE STATION
SAMPLE LOCATION MAP
DWG DATE: 07/06/99
DWG NAME: 0106B033

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An FSA was run on the two upper interval samples for risk assessment purposes, and the three lower interval samples were analyzed for VOCs, TPH-GRO, and TPH-DRO. All soil samples were analyzed at Savannah Analytical Laboratory in Savannah, Georgia.

Groundwater

Geoprobe samples were collected from the fluvial deposits during the groundwater investigation and analyzed for VOCs at the offsite laboratory. Based on previous work at other SWMUs, the Geoprobe was driven into the fluvial deposits a few feet, for a total depth of approximately 50 feet. Groundwater samples were collected from two Geoprobe locations (023X0001 and 023X0002). The samples were collected from the southwest side of the reported former UST location since this is the assumed direction of groundwater flow in the fluvial deposits. Groundwater samples were analyzed at Savannah Analytical Laboratory in Savannah, Georgia for VOCs, because these are an indicator of petroleum and solvent contamination.

7.1.3 Confirmatory Sampling Results

Tables and figures in this section present the analytical results for all CSI soil and groundwater samples. Values for organic analyses of soil are compared to each compound's corresponding RBC for both residential and industrial scenarios, as published in the *USEPA Region III April 1999 RBC Table* (April 12, 1999), and to the SSL for protection of groundwater. SSLs were taken from *EPA/540/R-95/128* (May 1996). Inorganic results are compared to RCs from NSA Mid-South, residential and industrial RBCs, and SSLs. Groundwater results are compared to tap water RBCs from the USEPA Region III tables and to maximum contaminant levels (MCLs) published in the *Drinking Water Regulations and Health Advisories Table* (USEPA, October 1996).

Organics in Soil

Organic and TPH soil data for SWMU 23 samples are presented in Tables 7.1.1 and 7.1.2, respectively.

Table 7.1.1
Assemblies G and H — SWMU 23 Organic Detections in Soil by Location (μg/kg)

Location	Depth (in feet)	Contaminant	RC[a]	RBC[b] Industrial	RBC[b] Residential	SSL[c]	Result
023X0003	15'	Tetrachloroethene	—	110,000	12,000	3	1.6 J
023X0004	01'	Dieldrin*	262	360	40	0.2	0.14 J
023X0005	15'	Acetone	—	20,000,000	780,000	800	22 J
		Tetrachloroethene	—	110,000	12,000	3	2.6 J
023X0006	01'	4,4'-DDE	—	17,000	1,900	3,000	1.4 J
		4,4'-DDT	—	17,000	1,900	2,000	1.3 J
		Dieldrin*	262	360	40	**0.2**	**1.4 J**
		Diethylphthalate	—	160,000,000	6,300,000	23,000	59 J
		Endosulfan I	—	1,200,000	47,000	900	0.12 J
		Xylene (Total)	—	410,000,000	16,000,000	9,000	1.2 J
023X0007	15'	Tetrachloroethene	—	110,000	12,000	3	2.2 J

Notes:

a = Background Reference Concentration (RC) from the *Reference Concentrations Technical Memorandum* (August 27, 1996, E/A&H).

b = Industrial and residential RBCs from the *Risk-Based Concentration Table* (April 12, 1999, USEPA Region III RBC Memo).

c = Soil Screening Level (SSL) from the *Generic Screening Levels* (May 1996, USEPA/OSWER SSL Guidance Document, EPA/540/R-95/128).

* = Reference concentration for dieldrin determined from base-wide background sampling and screening (*Surface Soil (0 to 1 foot) Background Dieldrin Concentrations at NSA Memphis*. June 3, 1997 Tech Memo).

J = Contaminant detected in concentrations less than the method reporting limit; value estimated.

— = RC value does not exist.

μg/kg = micrograms per kilograms

Bold indicates samples that exceed any of the standard reference values.

As indicated in Table 7.1.1, eight contaminants were detected in SWMU 23 soil samples. Six organic compounds were detected in surface-soil samples from SWMU 23, none of which exceeded their residential or industrial RBCs, while one (dieldrin) exceeded its soil-to-groundwater SSL. Dieldrin exceeded its SSL (0.2 μg/kg) in one soil sample 023X000601 (1.4 μg/kg).

Although the SSL for dieldrin is exceeded in the surface-soil sample from location 023X000601, the concentration detected at SWMU 23 is less than the 262 μg/kg RC, the 360 μg/kg industrial RBC, and the 40 μg/kg residential RBC for dieldrin. No organics were detected in subsurface soils at concentrations exceeding the industrial and residential RBCs or the SSLs.

Table 7.1.2
Assemblies G and H — SWMU 23 Petroleum Hydrocarbon Detections in Soil by Location (mg/kg)

Location	Depth (in feet)	Contaminant	Result
023X0004	01'	Petroleum Hydrocarbons, TPH	84
023X0005	15'	TPH - DRO	1.1 J

Notes:
mg/kg = milligrams per kilogram
DRO = Diesel range organics
TPH = Total petroleum hydrocarbons
TDEC TPH cleanup level ranges from 100 mg/kg to 1,000 mg/kg

Because no RBC values exist for TPH or TPH-GRO/DRO, TDEC soil-cleanup values were used for comparison. TDEC has established three cleanup concentrations for TPH — these are 100 mg/kg, 500 mg/kg, and 1,000 mg/kg — depending on the soil permeability. Initially, the TDEC cleanup level of 500 mg/kg for total TPH in nondrinking water aquifers (i.e., the upper alluvium), with soil permeabilities between 10^{-4} and 10^{-6} centimeters per second (cm/sec) (TDEC, 1997), was compared to total TPH concentrations in surface and subsurface soil. This cleanup level was chosen because 1.84E-6 cm/sec, a value representing the average soil permeability from 20 samples across the base, was used as the default for sites lacking permeability data (Appendix B); however, as requested by the PWD Env. Div., TPH detections in soil from 0 to 5 feet deep that exceed the TDEC cleanup level of 100 mg/kg will be designated for removal. As shown in Table 7.1.2, no SWMU 23 sample detections exceeded any of the TDEC soil-cleanup values.

Inorganics in Soil

Inorganic soil data for SWMU 23 samples are presented in Table 7.1.3.

Table 7.1.3
Assemblies G and H — SWMU 23 Inorganic Detections in Soil by Location (mg/kg)

Location	Depth (in feet)	Constituent	RC[a] Surface	RBC[b] Industrial	RBC[b] Residential	SSL[c]	Result
023X0004	01'	**Arsenic (As)**	14.6	**3.8**	**0.43**	**1**	**7.6**
		Barium (Ba)	223	14,000	550	**82**	**117**
		Beryllium (Be)	1.00	410	16	3	0.43 J
		Cadmium (Cd)	1.54	100	3.9	0.4	0.17 J
		Chromium (Cr)	24.0	610	23	2	11.7
		Cobalt (Co)	16.0	12,000	470	DNE	9.1 J
		Copper (Cu)	24.2	8,200	310	DNE	15.5
		Lead (Pb)	**26.0**	400[d]	400[d]	DNE	**32.8 J**
		Mercury (Hg)	0.46	DNE	DNE	DNE	0.11
		Nickel (Ni)	20.6	4,100	160	7	14 J
		Vanadium (V)	45.1	1,400	55	300	23.3
		Zinc (Zn)	98	61,000	2,300	620	58.7 J
023X0006	01'	**Arsenic (As)**	14.6	**3.8**	**0.43**	**1**	**7.8**
		Barium (Ba)	223	14,000	550	**82**	**144**
		Beryllium (Be)	1.00	410	16	3	0.47 J
		Cadmium (Cd)	1.54	100	3.9	**0.4**	**0.94**
		Chromium (Cr)	24.0	610	23	**2**	**12.8**
		Cobalt (Co)	16.0	12,000	470	DNE	8.8 J
		Copper (Cu)	24.2	8,200	310	DNE	18.4
		Lead (Pb)	**26.0**	400[d]	400[d]	DNE	**46.9 J**
		Mercury (Hg)	0.46	DNE	DNE	DNE	0.05
		Nickel (Ni)	20.6	4,100	160	**7**	**13.4 J**
		Silver (Ag)	2.1	1,000	39	2	0.46 J

Table 7.1.3
Assemblies G and H — SWMU 23 Inorganic Detections in Soil by Location (mg/kg)

Location	Depth (in feet)	Constituent	RC[a] Surface	RBC[b] Industrial	RBC[b] Residential	SSL[c]	Result
023X0006 (continued)	01'	Vanadium (V)	45.1	1,400	55	300	24.3
		Zinc (Zn)	**98**	61,000	2,300	620	**116 J**

Notes:
a = Background Reference Concentration (RC) from the *Reference Concentrations Technical Memorandum* (August 27, 1996, E/A&H).
b = Industrial and residential RBCs from the *Risk-Based Concentration Table* (April 12, 1999, USEPA Region III RBC Memo).
c = Soil Screening Level (SSL) from the *Generic Screening Levels* (May 1996, USEPA/OSWER SSL Guidance Document, EPA/540/R-95/128).
d = Lead soil-cleanup value, as established by USEPA/OSWER directive #9355.4-12, substituted for RBC.
DNE = Does not exist.
J = Constituent detected in concentrations less than the method reporting limit; value estimated.
Bold indicates samples that exceed any of the standard reference values.

As presented in Table 7.1.3, 13 inorganics were detected at SWMU 23. Two inorganics exceeded their RCs, one exceeded its residential and industrial RBCs, and five exceeded their soil-to-groundwater SSLs. No COPCs were identified because none of the inorganics detected at SWMU 23 exceeded both their RC and residential or industrial RBC.

- Lead exceeded its surface-soil RC (26.0 mg/kg) in samples 023X000401 (32.8 mg/kg) and 023X000601 (46.9 mg/kg).

- Zinc exceeded its surface-soil RC (98 mg/kg) in sample 023X000601 (116 mg/kg).

- Arsenic exceeded its residential RBC (0.43 mg/kg) in both samples 023X000401 (7.6 mg/kg) and 023X000601 (7.8 mg/kg). Arsenic also exceeded its industrial RBC (3.8 mg/kg) and soil-to-groundwater SSL (1 mg/kg) in both samples.

- Barium, cadmium, chromium, and nickel exceeded their soil-to-groundwater SSLs.

Groundwater Investigation

Two groundwater locations (023X0001, 023X0002) were investigated for VOCs. There were no detections in the groundwater samples collected at SWMU 23.

7.1.4 Preliminary Risk Evaluation

In accordance with *Guidance on Preliminary Risk Evaluations for the Purpose of Reaching a Finding of Suitability to Lease* (USEPA Region IV Memorandum, November 1994), the potential for a PRE was examined for SWMU 23 using data from surface-soil samples collected during the CSI. It was determined that the PRE was unnecessary because no COPC was identified. For more information on calculation of the HQ and cancer risk, refer to Section 5.

PRE Conclusion

Based on the information gathered during the investigation, the following conclusion has been reached based on the analytical data:

Residential and Industrial Land Use

The site is acceptable for either land-use scenario.

7.1.5 Fate and Transport

Evaluation of contaminant fate and transport for Assemblies G and H is discussed in Section 6.2. This section applies that approach to contaminants detected at SWMU 23. Transport processes for contaminants other than those designated as COPCs are also discussed if they occur in multiple environmental media or have the potential to migrate to other media.

Potential migration pathways for contaminants at SWMU 23 include leaching from soil to groundwater, and erosion of surface soil containing sorbed contaminants from the unpaved, grass-covered areas, forming sediments in drainage ways. Surface-soil analytical data indicate that

no VOCs exceeded their respective soil-to-air SSL, and thus the soil-to-air cross-media transport process is not discussed.

No COPCs were detected at SWMU 23, but some organic contaminants and naturally occurring inorganics exceeded soil-to-groundwater SSLs:

- The pesticide dieldrin exceeded its soil-to-groundwater SSL in soil at one location.

- The inorganics arsenic, barium, cadmium, chromium, and nickel exceeded their soil-to-groundwater SSLs in soil. However, none of these inorganics also exceeded their background RCs.

7.1.5.1 Soil-to-Groundwater Cross-Media Transport

Dieldrin is the SWMU 23 contaminant that exhibits the potential for soil-to-groundwater transport, based on comparison of soil concentrations to the groundwater-protection soil-screening criteria. Inorganics that exceeded their SSLs are not discussed since they were detected at concentrations below background RCs.

Dieldrin was detected at one of two surface-soil sample locations. Dieldrin may be attributed to basewide aerial application during the 1950s and 1960s (E/A&H, June 1997). Dieldrin is not likely to migrate to groundwater due to its low solubility, vapor pressure, and Henry's law constant. Overall, dieldrin is expected to be immobile and persistent in the environment because of its affinity for binding to soil grains, which prevents it from readily diffusing into groundwater.

Since only one contaminant is considered a potential concern in soil, and there were no contaminant detections in groundwater at SWMU 23, the soil-to-groundwater cross-media transport process should not be considered significant.

7.1.5.2 Soil-to-Sediment Cross-Media Transport

Contaminants detected in near-surface soil were evaluated to determine their potential for transport by erosion in areas with vegetation or asphalt, should this cover be removed. Drainage patterns and topography at SWMU 23 were also examined to determine whether site features would support contaminant transport.

Contaminants detected in surface soil consist of VOCs, SVOCs, pesticides, and inorganics. Only the pesticide dieldrin is considered a contaminant of concern in SWMU 23 surface soil. As described in Section 6, pesticides tend to sorb to soil particles and are relatively immobile in the environment, leading to a likelihood of greater persistence in the environment. Inorganic chemicals do not degrade, but may change chemical form or speciation in the environment. Like pesticides, inorganics tend to sorb to soil particles, rendering them immobile apart from the soil particles.

Drainage patterns and the vegetation/asphalt cover at SWMU 23 leave little potential for surface soil to erode and form sediments that can become mobile via surface water. Therefore, the soil-to-sediment transport process at SWMU 23 is not considered significant.

7.1.6 Conclusions and Recommendations

Based on the data from this investigation, the following conclusions and recommendations are presented:

Conclusions

- SWMU 23 is suitable for industrial or residential land use.

- Eight organic compounds were detected in surface (0 to 1 foot) soil. Of these, dieldrin was detected in one sample at a concentration of 1.4 μg/kg, exceeding its SSL of

0.2 μg/kg. However, the detected concentrations did not exceed the RC of 262 μg/kg established for NSA Mid-South in the June 1997 technical memorandum, *Background Dieldrin Concentrations in Surface Soils* (E/A&H, June 1997).

- TPH and TPH/DRO were detected in surface soil, neither of which exceeded the more-conservative cleanup standard of 100 mg/kg established for NSA Mid-South. These TPH concentrations are therefore not considered a concern at SWMU 23.

- Thirteen metals were detected in surface soil at SWMU 23, of which, arsenic, barium, cadmium, chromium, and nickel exceeded their soil-to-groundwater SSLs. No COPCs were identified because none of the inorganics exceeded both RCs and residential or industrial RBCs.

- A PRE was determined to be unnecessary for this site.

Recommendations

Based on surface-soil, subsurface-soil, and fluvial deposits groundwater data, no further action is recommended for SWMU 23.

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7.2 SWMU 24 — Auto Hobby Shop

SWMU 24 consisted of two aboveground waste-oil tanks located between Buildings N-114 (Auto Hobby Shop) and N-349 at Astoria Avenue (formerly 1st Avenue) and Bougainville Street on the NSA Mid-South Northside (Figure 1.1). The AST next to Building N-349 was removed, leaving one 500-gallon AST. The tanks were used by NSA Mid-South personnel for changing lubricants and other fluids in their private vehicles. The tanks were installed in 1980. During a 1990 inspection, the open ditch on the north end of the site appeared stained from oil discharge in surface runoff (ERC/EDGe, 1990).

SWMU 24 and the surrounding area are characterized by relatively level, low-relief topography. The immediate area is covered with asphalt and concrete. Surface water drains south under Navy Road to a storm water system on the NSA Mid-South Southside, which drains into Big Creek Drainage Canal. The regional and local hydrogeology are described in Sections 2.11 and 2.12 of the *Comprehensive RFI Work Plan* (E/A&H, October 1994). Site-specific geologic and hydrogeologic information and references are in Section 2 of this report and in Section 2.0 of the *Assemblies G and H CSI Work Plan* (EnSafe, December 1997).

7.2.1 Previous Sampling Activities

No previous sampling is known to have been conducted at SWMU 24, although two contemporaneous samples were collected nearby for the Environmental Restoration Navy Account (ERNA) investigation. Results are provided in the *ERNA Gray Areas Investigation Report* (EnSafe, May 13, 1999) which is currently in regulatory review. Two samples were collected with a Geoprobe rig at each of two locations, one each from the surface at 0 to 1 ft. bls (114X0001 and 397X0001) and the saturated portion of the loess at 12 to 15 ft. bls (114X0001 and 397X0001). Saturated loess samples at each location were analyzed only for VOCs. Surface-soil samples collected at Facility N-114 were analyzed for VOCs, SVOCs, Appendix IX metals, TPH, and ethylene glycol. Surface-soil samples collected at Facility N-397 were analyzed for VOCs,

Appendix IX metals, and TPH. Only TPH was detected in concentrations exceeding standard reference values. Sample location 114X0001 had a TPH detection of 1,900 mg/kg, exceeding the site specific TDEC cleanup level of 100 mg/kg for surface soil.

7.2.2 Field Investigation

The primary objective of the field investigation was to determine whether a release had occurred at SWMU 24. Field sampling was performed as outlined in Section 3.2 of the *Assemblies G and H CSI Work Plan* (EnSafe, December 1997) and Section 4 of the *Comprehensive RFI Work Plan* (E/A&H, October 1994) to better define the nature and extent of contamination that was visually identified.

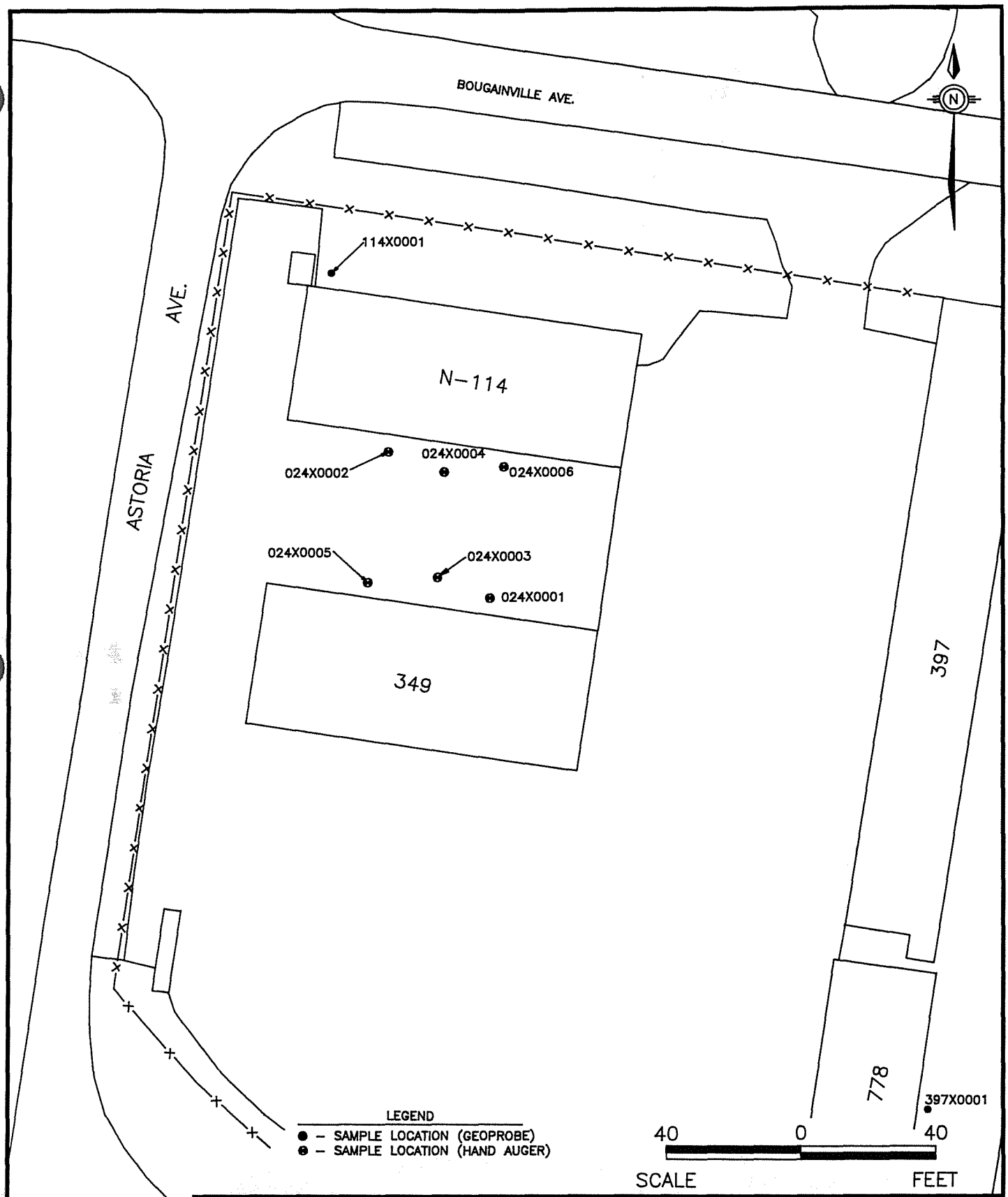
Soil

The soil investigation consisted of hand-auger sampling, as outlined in Section 4.4.4.3 of the *Comprehensive RFI Work Plan* (E/A&H, October 1994) at 0 to 1-foot and 3 to 4-foot depth intervals. Six sample locations (024X0001, 024X0002, 024X0003, 024X0004, 024X0005, and 024X0006) were based on discoloration of soil around the remaining tank and the soil beneath the tank that had been removed (Figure 7.2.1). Surface-soil sample results were used to assess risk and inspect for surface releases. The subsurface samples were collected to indicate the extent of possible contamination.

Two surface-soil samples (024S000301 and 024S000401) were submitted for FSA, while the remaining surface and all subsurface-soil samples were analyzed for VOCs, SVOCs, Appendix IX metals, TPH, TPH-GRO, and TPH-DRO. All soil samples were analyzed at Savannah Analytical Laboratory in Savannah, Georgia.

Groundwater

No groundwater investigation was conducted at SWMU 24 during this CSI.



CONFIRMATORY SAMPLING INVESTIGATION
NSA MID-SOUTH
MILLINGTON, TN.

FIGURE 7.2.1
SWMU 24
SAMPLE LOCATION MAP

DWG DATE: 08/13/99 | DWG NAME: 0106G016

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7.2.3 Confirmatory Sampling Results

Tables and figures in this section present the analytical results for all CSI soil samples. Values for organic analyses of soil are compared with each compound's corresponding RBC for both residential and industrial scenarios, as published in the *USEPA Region III April 1998 RBC Table* (April 12, 1999), and with the SSL for protection of groundwater. Inorganic results are compared to RCs from NSA Mid-South, residential and industrial RBCs, and SSLs. SSLs were taken from *EPA/540/R-95/128* (May 1996).

Organics in Soil

Organic and TPH soil data for SWMU 24 samples are presented in Tables 7.2.1 and 7.2.2, respectively.

Table 7.2.1
Assemblies G and H — SWMU 24 Organic Detections in Soil by Location (μg/kg)

Location	Depth (in feet)	Contaminant	RC[a]	RBC[b] Industrial	RBC[b] Residential	SSL[c]	Result
024X0001	01'	Acetone	—	20,000,000	780,000	800	30 J
		Toluene	—	41,000,000	1,600,000	600	1 J
024X0002	01'	2-Methylnaphthalene	—	4,100,000	160,000	DNE	360 J
		Acenaphthene	—	12,000,000	470,000	29,000	120 J
		Acetone	—	20,000,000	780,000	800	17 J
		Fluoranthene	—	8,200,000	310,000	210,000	26 J
		Fluorene	—	8,200,000	310,000	28,000	100 J
		Pyrene	—	6,100,000	230,000	210,000	210 J
		Xylene (Total)	—	410,000,000	16,000,000	9,000	1.4 J

Table 7.2.1
Assemblies G and H — SWMU 24 Organic Detections in Soil by Location (μg/kg)

Location	Depth (in feet)	Contaminant	RC[a]	RBC[b] Industrial	RBC[b] Residential	SSL[c]	Result
024X0003	01'	4,4'-DDD	—	24,000	2,700	800	4.7
		4,4'-DDE	—	17,000	1,900	3,000	0.81 J
		Benzene	—	200,000	22,000	2	1.6 J
		Pyrene	—	6,100,000	230,000	210,000	12 J
		Tetrachloroethene	—	110,000	12,000	3	7.7
024X0006	01'	Benzo(a)anthracene	—	7,800	880	80	46 J
		Benzo(a)pyrene	565	780	88	400	44 J
		Benzo(b)fluoranthene	—	7,800	880	200	56 J
		Chrysene	—	780,000	88,000	8,000	47 J
		Diethylphthalate	—	160,000,000	78,000,000	23,000	58 J
		Fluoranthene	—	8,200,000	310,000	210,000	67 J
		Phenanthrene†	—	6,100,000	230,000	210,000	17 J
		Pyrene	—	6,100,000	230,000	210,000	67 J
024X0006	04'	Diethylphthalate	—	—	—	23,000	62 J

Notes:

a = Background Reference Concentration (RC) from the *Reference Concentrations Technical Memorandum* (August 27, 1996, E/A&H).
b = Industrial and residential RBCs from the *Risk-Based Concentration Table* (April 12, 1999, USEPA Region III RBC Memo).
c = Soil Screening Level (SSL) from the *Generic Screening Levels* (May 1996, USEPA/OSWER SSL Guidance Document, EPA/540/R-95/128).
DNE = Does not exist.
— = RC value does not exist or RBC value does not apply to subsurface soil.
J = Contaminant detected in concentrations less than the method reporting limit; value estimated.
† = Pyrene used as a surrogate.
Bold indicates samples that exceed any of the standard reference values.

As indicated in Table 7.2.1, 18 contaminants were detected in SWMU 24 soil samples, of which one (tetrachloroethene) exceeded its soil-to-groundwater SSL (3 μg/kg) in sample 024S000301 (7.7 μg/kg). No COPCs were identified because no samples exceeded both their RCs and residential or industrial RBCs.

Table 7.2.2
Assemblies G and H — SWMU 24 Petroleum Hydrocarbon Detections in Soil by Location (mg/kg)

Location	Depth (in feet)	Contaminant	Result
024X0001	01'	TPH - DRO	46
		TPH	**330 J**
024X0001	04'	TPH - DRO	1.8 J
		TPH	19 J
024X0002	01'	***TPH - DRO***	***990***
		TPH	***2,900 J***
024X0002	04'	TPH - DRO	1.1 J
		TPH	***1,100 J***
024X0003	01'	**TPH - DRO**	**120**
		TPH	**480 J**
024X0003	04'	TPH - DRO	1.5 J
		TPH	41 J
024X0004	01'	**TPH**	**170 J**
024X0004	04'	TPH - DRO	1.1 J
		TPH	**190 J**
024X0005	01'	TPH - DRO	53
		TPH	***790 J***
024X0005	04'	TPH - DRO	16
		TPH	**180 J**
024X0006	01'	TPH - DRO	1.5 J
		TPH	82 J
024X0006	04'	**TPH**	**420 J**

Notes:
DRO = Diesel range organics
mg/kg = milligrams per kilogram
TPH = Total petroleum hydrocarbons.
TDEC TPH cleanup level ranges from 100 mg/kg to 1,000 mg/kg.
Bold indicates samples that exceed the TDEC cleanup level of 100 mg/kg.
Bold/Italics indicate samples that exceed either the 500 or 1,000 mg/kg TDEC cleanup level.

Because no RBC values exist for TPH or TPH-GRO/DRO, TDEC soil-cleanup values were used for comparison. TDEC has established three cleanup concentrations for TPH — these are 100 mg/kg, 500 mg/kg, and 1,000 mg/kg — depending on the soil permeability. Initially, the TDEC cleanup level of 500 mg/kg for total TPH in nondrinking water aquifers (i.e., the upper alluvium), with soil permeabilities between 10^{-4} and 10^{-6} centimeters per second (cm/sec) (TDEC, 1997), was compared to total TPH concentrations in surface and subsurface soil. This cleanup level was chosen because 1.84E-6 cm/sec, a value representing the average soil permeability from 20 samples across the base, was used as the default for sites lacking permeability data (Appendix B); however, as requested by the PWD Env. Div., TPH detections in soil from 0 to 5 feet deep that exceed the TDEC cleanup level of 100 mg/kg will be designated for removal. As shown in Table 7.2.2, 11 SWMU 24 sample detections exceeded the most conservative TDEC soil-cleanup value (100 mg/kg). Four sample values exceeded the NSA Mid-South estimated TDEC cleanup values of 500 mg/kg and 1,000 mg/kg. Future sampling at SWMU 24 should include permeability analysis to confirm the appropriate TDEC cleanup level below a 5-foot depth.

- Total petroleum hydrocarbons (TPH)exceeded the TDEC cleanup value of 100 mg/kg in samples 024S000101 (330 mg/kg), 024S000301 (480 mg/kg), 024S000401 (170 mg/kg), 024S000404 (190 mg/kg), 024S000504 (180 mg/kg), and 024S000604 (420 mg/kg).

- TPH exceeded the TDEC cleanup values of 500 and 1,000 mg/kg in samples 024S000201 (2,900 mg/kg), 024S000204 (1,100 mg/kg), and 024S000501 (790 mg/kg).

- TPH-DRO exceeded the 100 mg/kg and 500 mg/kg standards in samples 024S000301 (120 mg/kg) and 024S000201 (990 mg/kg).

Inorganics in Soil

Inorganic soil data for SWMU 24 samples are presented in Table 7.2.3.

Table 7.2.3
Assemblies G and H — SWMU 24 Inorganic Detections in Soil by Location (mg/kg)

Location	Depth (in feet)	Constituent	RC[a]	RBC[b] Industrial	RBC[b] Residential	SSL[c]	Result
024X0001	01'	**Arsenic (As)**	14.6	3.8	0.43	1	7.9
		Barium (Ba)	223	14,000	550	82	173
		Beryllium (Be)	1.00	410	16	3	0.46 J
		Cadmium (Cd)	1.54	100	3.9	0.4	0.14 J
		Chromium (Cr)	24.0	610	23	2	10.9 J
		Cobalt (Co)	16.0	12,000	470	DNE	8.8
		Copper (Cu)	24.2	8,200	310	DNE	15.6
		Lead (Pb)	26.0	400[d]	400[d]	DNE	35.8 J
		Mercury (Hg)	0.46	DNE	DNE	DNE	0.04
		Nickel (Ni)	20.6	4,100	160	7	17.1
		Selenium (Se)	—	1,000	39	0.3	0.43 J
		Vanadium (V)	45.1	1,400	55	300	22.2
		Zinc (Zn)	98	61,000	2,300	620	54.6 J
024X0001	04'	**Arsenic (As)**	20.3	—	—	1	8
		Barium (Ba)	265	—	—	82	104
		Beryllium (Be)	1.00	—	—	3	0.46 J
		Chromium (Cr)	28.3	—	—	2	9.8 J
		Cobalt (Co)	14.4	—	—	DNE	6.6
		Copper (Cu)	32.5	—	—	DNE	16.4
		Lead (Pb)	19.8	—	—	DNE	9 J
		Mercury (Hg)	0.18	—	—	DNE	0.03

Table 7.2.3
Assemblies G and H — SWMU 24 Inorganic Detections in Soil by Location (mg/kg)

Location	Depth (in feet)	Constituent	RC[a]	RBC[b] Industrial	RBC[b] Residential	SSL[c]	Result
024X0001	04'	**Nickel (Ni)**	—	—	—	**7**	**17.8**
(continued)		Vanadium (V)	43.7	—	—	300	20.6
		Zinc (Zn)	109	—	—	620	48.3 J
024X0002	01'	**Antimony (Sb)**	—	82	3.1	**0.3**	**0.48 J**
		Arsenic (As)	***14.6***	***3.8***	***0.43***	***1***	***17.1***
		Barium (Ba)	223	14,000	550	**82**	**147**
		Chromium (Cr)	24.0	610	23	**2**	**12.2 J**
		Cobalt (Co)	16.0	12,000	470	DNE	6
		Copper (Cu)	24.2	8,200	310	DNE	12.3
		Lead (Pb)	**26.0**	400[d]	400[d]	DNE	**61.2 J**
		Mercury (Hg)	0.46	DNE	DNE	DNE	0.03 J
		Nickel (Ni)	20.6	4,100	160	**7**	**13 J**
		Vanadium (V)	45.1	1,400	55	300	19.7
		Zinc (Zn)	98	61,000	2,300	620	43.9 J
024X0002	04'	**Arsenic (As)**	20.3	—	—	**1**	**8.3**
		Barium (Ba)	265	—	—	**82**	**124**
		Chromium (Cr)	28.3	—	—	**2**	**10.5 J**
		Cobalt (Co)	14.4	—	—	DNE	7.7
		Copper (Cu)	32.5	—	—	DNE	16.7
		Lead (Pb)	19.8	—	—	DNE	10.9 J
		Mercury (Hg)	0.18	—	—	DNE	0.02 J
		Nickel (Ni)	—	—	—	**7**	**18.9 J**
		Selenium (Se)	—	—	—	**0.3**	**0.52 J**
		Vanadium (V)	43.7	—	—	300	20.7
		Zinc (Zn)	109	—	—	620	48.1 J

Table 7.2.3
Assemblies G and H — SWMU 24 Inorganic Detections in Soil by Location (mg/kg)

Location	Depth (in feet)	Constituent	RC[a]	RBC[b] Industrial	RBC[b] Residential	SSL[c]	Result
024X0003	01'	**Arsenic (As)**	**14.6**	**3.8**	**0.43**	**1**	**8.1**
		Barium (Ba)	223	14,000	550	82	171
		Beryllium (Be)	1.00	410	16	3	0.5 J
		Cadmium (Cd)	1.54	100	3.9	0.4	0.04 J
		Chromium (Cr)	24.0	610	23	2	**11.8 J**
		Cobalt (Co)	16.0	12,000	470	DNE	9
		Copper (Cu)	24.2	8,200	310	DNE	17.6 J
		Lead (Pb)	26.0	400[d]	400[d]	DNE	14.6 J
		Mercury (Hg)	0.46	DNE	DNE	DNE	0.03
		Nickel (Ni)	20.6	4,100	160	7	**20.5**
		Selenium (Se)	—	1,000	39	**0.3**	**0.54 J**
		Silver (Ag)	2.05	1,000	39	2	0.15 J
		Vanadium (V)	45.1	1,400	55	300	24
		Zinc (Zn)	98	61,000	2,300	620	55.5 J
024X0003	04'	**Arsenic (As)**	20.3	—	—	**1**	**6.9**
		Barium (Ba)	265	—	—	**82**	**113**
		Beryllium (Be)	1.00	—	—	3	0.43 J
		Chromium (Cr)	28.3	—	—	**2**	**10.2 J**
		Cobalt (Co)	14.4	—	—	DNE	7.6
		Copper (Cu)	32.5	—	—	DNE	14.8 J
		Lead (Pb)	19.8	—	—	DNE	9 J
		Mercury (Hg)	0.18	—	—	DNE	0.03
		Nickel (Ni)	—	—	—	**7**	**17.8**
		Vanadium (V)	43.7	—	—	300	21.3
		Zinc (Zn)	109	—	—	620	45.8 J

Table 7.2.3
Assemblies G and H — SWMU 24 Inorganic Detections in Soil by Location (mg/kg)

Location	Depth (in feet)	Constituent	RC[a]	RBC[b] Industrial	RBC[b] Residential	SSL[c]	Result
024X0004	01'	Antimony (Sb)	—	82	3.1	0.3	0.49 J
		Arsenic (As)	14.6	3.8	0.43	1	5.4
		Barium (Ba)	223	14,000	550	82	54.9
		Chromium (Cr)	24.0	610	23	2	10.3 J
		Cobalt (Co)	16.0	12,000	470	DNE	4.4
		Copper (Cu)	24.2	8,200	310	DNE	7
		Lead (Pb)	26.0	400[d]	400[d]	DNE	5.8 J
		Mercury (Hg)	0.46	DNE	DNE	DNE	0.01 J
		Nickel (Ni)	20.6	4,100	160	7	7.5 J
		Vanadium (V)	45.1	1,400	55	300	14.5
		Zinc (Zn)	98	61,000	2,300	620	21.4 J
024X0004	04'	**Arsenic (As)**	20.3	—	—	**1**	**8.1**
		Barium (Ba)	265	—	—	**82**	**102**
		Chromium (Cr)	28.3	—	—	**2**	**9 J**
		Cobalt (Co)	14.4	—	—	DNE	6.8
		Copper (Cu)	32.5	—	—	DNE	14
		Lead (Pb)	19.8	—	—	DNE	9.1 J
		Mercury (Hg)	0.18	—	—	DNE	0.02 J
		Nickel (Ni)	—	—	—	**7**	**16.4 J**
		Selenium (Se)	—	—	—	**0.3**	**0.63 J**
		Vanadium (V)	43.7	—	—	300	19
		Zinc (Zn)	109	—	—	620	46.5 J
024X0005	01'	Arsenic (As)	14.6	3.8	0.43	1	4.3 J
		Barium (Ba)	223	14,000	550	82	64.4
		Beryllium (Be)	1.00	410	16	3	0.3 J

Table 7.2.3
Assemblies G and H — SWMU 24 Inorganic Detections in Soil by Location (mg/kg)

Location	Depth (in feet)	Constituent	RC[a]	RBC[b] Industrial	RBC[b] Residential	SSL[c]	Result
024X0005	01'	**Chromium (Cr)**	24.0	610	23	**2**	**10.2 J**
		Cobalt (Co)	16.0	12,000	470	DNE	4
		Copper (Cu)	24.2	8,200	310	DNE	7.2 J
		Lead (Pb)	26.0	400[d]	400[d]	DNE	16.4 J
		Mercury (Hg)	0.46	DNE	DNE	DNE	0.03
		Nickel (Ni)	20.6	4,100	160	7	**8**
		Vanadium (V)	45.1	1,400	55	300	18.1
		Zinc (Zn)	98	61,000	2,300	620	22 J
024X0005	04'	**Arsenic (As)**	20.3	—	—	**1**	**6.9**
		Barium (Ba)	265	—	—	**82**	**90.6**
		Beryllium (Be)	1.00	—	—	3	0.43 J
		Chromium (Cr)	28.3	—	—	**2**	**9.6 J**
		Cobalt (Co)	14.4	—	—	DNE	7.4
		Copper (Cu)	32.5	—	—	DNE	16.1 J
		Lead (Pb)	19.8	—	—	DNE	9.6 J
		Mercury (Hg)	0.18	—	—	DNE	0.02
		Nickel (Ni)	—	—	—	**7**	**17.5**
		Vanadium (V)	43.7	—	—	300	20.2
		Zinc (Zn)	109	—	—	620	48.3 J
024X0006	01'	**Antimony (Sb)**	—	82	3.1	**0.3**	**0.58 J**
		Arsenic (As)	***14.6***	***3.8***	***0.43***	***1***	***16.5***
		Barium (Ba)	223	14,000	550	**82**	**147**
		Chromium (Cr)	24.0	610	23	**2**	**8.8 J**
		Cobalt (Co)	16.0	12,000	470	DNE	7.5
		Copper (Cu)	24.2	8,200	310	DNE	12

Table 7.2.3
Assemblies G and H — SWMU 24 Inorganic Detections in Soil by Location (mg/kg)

Location	Depth (in feet)	Constituent	RC[a]	RBC[b] Industrial	RBC[b] Residential	SSL[c]	Result
024X0006	01'	Lead (Pb)	26.0	400[d]	400[d]	DNE	18.6 J
		Mercury (Hg)	0.46	DNE	DNE	DNE	0.03 J
		Nickel (Ni)	20.6	4,100	160	7	13.1 J
		Selenium (Se)	—	1,000	39	0.3	0.53 J
		Vanadium (V)	45.1	1,400	55	300	18.2
		Zinc (Zn)	98	61,000	2,300	620	41.5 J
024X0006	04'	**Antimony (Sb)**	—	—	—	**0.3**	**0.63 J**
		Arsenic (As)	20.3	—	—	**1**	**8.1**
		Barium (Ba)	265	—	—	**82**	**133**
		Chromium (Cr)	28.3	—	—	**2**	**9 J**
		Cobalt (Co)	14.4	—	—	DNE	7
		Copper (Cu)	32.5	—	—	DNE	14.1
		Lead (Pb)	19.8	—	—	DNE	9.6 J
		Mercury (Hg)	0.18	—	—	DNE	0.02 J
		Nickel (Ni)	—	—	—	**7**	**18 J**
		Selenium (Se)	—	—	—	**0.3**	**0.63 J**
		Vanadium (V)	43.7	—	—	300	18.6
		Zinc (Zn)	109	—	—	620	46.9 J

Notes:

a = Background Reference Concentration (RC) from the *Reference Concentrations Technical Memorandum* (August 27,1996, E/A&H).

b = Industrial and residential RBCs from the *Risk-Based Concentration Table* (April 12, 1999, USEPA Region III RBC Memo).

c = Soil Screening Level (SSL) from the *Generic Screening Levels* (May 1996, USEPA/OSWER SSL Guidance Document, EPA/540/R-95/128).

d = Lead soil-cleanup value, as established by USEPA/OSWER directive #9355.4-12, substituted for RBC.

DNE = Does not exist.

— = RC values does not exist or RBC value does not apply to subsurface soil.

J = Constituent detected at concentrations less than the method reporting limit; value estimated.

Bold indicates samples that exceed any of the standard reference values.

Bold/Italics indicate samples that were included in the PRE.

As presented in Table 7.2.3, 15 inorganics were detected at SWMU 24. The only COPC identified was arsenic, which exceeded its RC, its residential and industrial RBC, and its soil-to-groundwater SSL in two samples. Six inorganics exceeded their soil-to-groundwater SSLs. Two exceeded their RCs, one exceeded its residential RBC, and one exceeded its industrial RBC.

- Arsenic was identified as a COPC because it exceeded its surface-soil RC (14.6 mg/kg), industrial RBC (3.8 mg/kg), residential RBC (0.43 mg/kg), and soil-to-groundwater SSL (1 mg/kg) in samples 024S000201 (17.1 mg/kg) and 024S000601 (16.5 mg/kg).

- Antimony exceeded its soil-to-groundwater SSL (0.3 mg/kg) in four samples: 024S000201 (0.48 mg/kg), 024S000401 (0.49 mg/kg), 024S000601 (0.58 mg/kg), and 024S000604 (0.63 mg/kg).

- Barium exceeded its soil-to-groundwater SSL (82 mg/kg) in all surface and subsurface-soil samples except 024S000401 and 024S000501.

- Chromium and nickel exceeded their soil-to-groundwater SSLs (2 mg/kg and 7 mg/kg, respectively) in all surface and subsurface-soil samples.

- Selenium exceeded its soil-to-groundwater SSL (0.3 mg/kg) in six soil samples: 024S000101 (0.43 mg/kg), 024S000204 (0.52 mg/kg), 024S000301 (0.54 mg/kg), 024S000404 (0.63 mg/kg), 024S000601 (0.53 mg/kg), and 024S000604 (0.63 mg/kg).

- Lead exceeded its RC (26.0 mg/kg) in two samples: 024S000101 (35.8 mg/kg) and 024S000201 (61.2 mg/kg).

7.2.4 Preliminary Risk Evaluation

In accordance with *Guidance on Preliminary Risk Evaluations for the Purpose of Reaching a Finding of Suitability to Lease* (USEPA Region IV memorandum, November 1994), a PRE was conducted for SWMU 24 using data from surface-soil samples collected during the CSI (Table 7.2.4). All non-carcinogen RBC values are shown as adjusted screening RBCs where the value from the *USEPA Risk-Based Concentration Table* (April 1999) is multiplied by 0.1. Arsenic was identified as a COPC because it exceeded both its RC and its RBCs. Arsenic's HQ and excess cancer risk were calculated because arsenic can significantly contribute to both HI and cancer risk. The non-carcinogen arsenic RBC values of 610 mg/kg (industrial) and 23 mg/kg (residential) were used to calculate the HQ, while the carcinogen arsenic RBC values of 3.8 mg/kg (industrial) and 0.43 mg/kg (residential) were used for the excess cancer risk. For more information on calculation of HQ and cancer risk, refer to Section 5.

Table 7.2.4
SWMU 24
Preliminary Risk Evaluation

				Residential			Industrial		
Chemical	**Maximum Reported Concentration**	**Units**	**RC**	**RBC**	**Hazard Quotient**	**ILCR**	**RBC**	**Hazard Quotient**	**ILCR**
Arsenic	17.1	µg/L	14.6	23 N	0.74	NA	610 N	0.03	NA
Arsenic (carcinogen)	17.1	µg/L	14.6	0.43 C	NA	3.97E-5	3.8 C	NA	4.5E-6
Sum					0.74	3.97E-5		0.03	4.5E-6

Notes:

RBC = Risk-based concentration from *USEPA Region III April 1999 RBC Table*; in accordance with *USEPA Region IV Supplemental Guidance to RAGS Bulletin 1*, non-carcinogen RBCs were conservatively adjusted to reflect a hazard quotient of 0.1.
RC = Reference concentration
N = Non-carcinogen
C = Carcinogen
NA = Not applicable
ILCR = Incremental lifetime (excess) cancer risk

The HI for the industrial and residential scenarios are both less than the risk threshold of 1. The excess cancer risk for both scenarios is less than the 1E-4 risk threshold for arsenic.

PRE Conclusions

The following conclusions are based on PRE data for surface soil:

Residential Land Use

- Carcinogens: Arsenic was the only constituent examined for cancer risk. The excess cancer risk was estimated to be 3.97E-5, which is less than the risk threshold of 1E-4 for arsenic, and indicates suitability for residential land use in accordance with the USEPA Risk Management Policy 1988 memorandum regarding cleanup goals for arsenic.

- Non-carcinogens: Arsenic was the only constituent examined in the PRE. The cumulative residential HI was estimated to be approximately 0.74, which is less than the risk threshold of 1 and indicates suitability for residential land use in accordance with the USEPA Region IV November 1994 memorandum.

Industrial Land Use

- Carcinogens: The excess cancer risk for arsenic was determined to be 4.5E-6, which is less than the risk threshold of 1E-4 for arsenic, and indicates suitability for industrial land use in accordance with the USEPA Risk Management Policy 1988 memorandum regarding cleanup goals for arsenic.

- Non-carcinogens: Arsenic was the only constituent examined in the PRE. The cumulative industrial HI was estimated to be approximately 0.03, which is less than the risk threshold of 1, and indicates suitability for industrial land use in accordance with the USEPA Region IV November 1994 memorandum.

7.2.5 Fate and Transport

Evaluation of contaminant fate and transport for Assemblies G and H is discussed in Section 6.2. This section applies that approach to contaminants detected at SWMU 24. Transport processes for contaminants other than those designated as COPCs are also discussed if they occur in multiple environmental media or have the potential to migrate to other media.

Potential migration pathways for contaminants at SWMU 24 include leaching from soil to groundwater. Soil-to-sediment transport was not examined because the area is fully paved, greatly minimizing the possibility of contaminant transport through this medium. Surface-soil analytical data indicate that no VOCs exceeded soil-to-air SSLs, and thus the soil-to-air cross-media transport process is not discussed.

Arsenic is the only COPC detected at SWMU 24, but some contaminants and naturally occurring constituents exceeded their soil-to-groundwater SSLs:

- The VOC tetrachloroethene exceeded its soil-to-groundwater SSL at one location.

- The inorganics antimony, arsenic, barium, chromium, nickel, and selenium exceeded their soil-to-groundwater SSLs. However, only arsenic *also* exceeded its background RC (at locations 024000201 and 024000601). Barium exceeded its SSL at every sample location, but did not exceed its background RC.

Soil-to-Groundwater Cross-Media Transport

The VOC tetrachloroethene and the inorganic arsenic are the SWMU 24 contaminants that exhibit the potential for soil-to-groundwater transport, based on comparison of soil concentrations to the groundwater-protection soil-screening criteria.

Tetrachloroethene was detected at only one soil-sample location, where it exceeded its soil-to-groundwater SSL. The potential exists for leaching to underlying groundwater; however, since tetrachloroethene was detected in only one of six locations, widespread impact to groundwater is not expected.

Arsenic was detected in two surface-soil samples where it exceeded its SSL and RC. No groundwater results for inorganics are available at this time for SWMU 24. Arsenic is not considered a soil-to-groundwater migration concern; however, the potential exists for leaching to groundwater based on the SSL and RC exceedances.

7.2.6 Conclusions and Recommendations

Based on the data from this investigation, the following conclusions and recommendations are presented:

Conclusions

- SWMU 24 requires further action because TPH in concentrations exceed all three TDEC cleanup values.

- Tetrachloroethene detected in surface soil (0 to 1 foot) exceeded its soil-to-groundwater SSL.

- TPH and TPH-DRO were detected in surface and subsurface soil. Of these:

  — TPH was detected in one surface-soil sample (024S000201) at a concentration of 2,900 mg/kg and in one subsurface-soil sample (024S000204) at a concentration of 1,100 mg/kg, both of which exceed the TDEC soil-cleanup level of 1,000 mg/kg.

- TPH was detected in one surface-soil sample (024S000501) at a concentration of 790 mg/kg, and TPH-DRO was detected in one surface-soil sample (024S000201) at a concentration of 990 mg/kg. Both exceed the TDEC soil-cleanup level of 500 mg/kg.

- TPH was detected in three surface-soil samples (024S000101, 024S000301, and 024S000401) at concentrations of 330 mg/kg, 480 mg/kg, and 170 mg/kg, respectively, exceeding the TDEC soil-cleanup level of 100 mg/kg.

- TPH was detected in three subsurface-soil samples (024S000404, 024S000504, and 024S000604) at concentrations of 190 mg/kg, 180 mg/kg, and 420 mg/kg, respectively, exceeding the TDEC soil-cleanup level of 100 mg/kg.

• Fifteen metals were detected in surface soil at SWMU 24. Of these:

- Arsenic exceeded its RC, industrial and residential RBCs, and its SSL in two samples (024S000201 and 024S000601).

- Barium exceeded its SSL in all soil samples.

• A PRE for SWMU 24 determined that:

- Non-carcinogenic arsenic does not pose a threat to the residential or industrial land-use scenarios.

- Carcinogenic arsenic does not pose a threat to the residential or industrial land-use scenarios.

Recommendations

Based on surface and subsurface-soil results indicating the presence of TPH and PCE in soil, a full RFI is recommended for SWMU 24. This should include the soil permeability testing to determine the proper TDEC cleanup level and delineate the vertical and horizontal extent of TPH contamination, removal of TPH-contaminated soil. Due to the presence of PCE in soil at concentrations exceeding the SSL, groundwater in the SWMU 24 area should be assessed under an RFI to determine if a release to groundwater has occurred, and the nature and extent of the contamination.

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7.3 SWMU 41 — Salvage Yard No. 2

SWMU 41 is an approximately 5,700-square-yard asphalt-covered storage yard (Salvage Yard No. 2), designated as a nonhazardous storage area, near the southwest corner of the NSA Mid-South Southside (Figure 1.1). SWMU 41 is reported to have been in operation since 1944 and, although designated for nonhazardous storage, may have received hazardous material. During a 1990 inspection, no visual evidence of a release was found (ERC/EDGe, 1990). This SWMU is reported to have stored scrap metal, derelict equipment (planes, helicopters, etc.), tires, furniture, and batteries.

SWMU 41 and the surrounding area are characterized by relatively level, low-relief topography. A flood-control levy exists north of SWMU 41; therefore, flooding in Big Creek Drainage Canal would affect SWMU 41 before it would impact areas north of the levy. The SWMU 41 area was covered with gravel until the early 1980s and has since been capped with asphalt. Surface water flows south into Big Creek Drainage Canal.

The regional and local hydrogeology are described in Sections 2.11 and 2.12 of the *Comprehensive RFI Work Plan* (E/A&H, October 1994). Site-specific geologic and hydrogeologic information and references are in Section 2 of this report and in Section 2.0 of the *Assemblies G and H CSI Work Plan* (EnSafe, December 1997). Because soil and groundwater samples were collected by pushing DPT sampling tools to a predetermined depth without lithologic characterization, no additional site-specific lithologic information was collected during this investigation.

7.3.1 Previous Sampling Activities

No previous sampling was known to have been conducted at SWMU 41 prior to this CSI. A May 1998 report indicates that radioactivity at SWMU 41 (referred to as "Facility 885") exceeded background radiation levels and recommended remediation of affected areas (*General Radioactive*

Material (G-RAM) Radiological Survey Report for Facilities at Naval Support Activity Memphis, TN; May 18, 1998)

7.3.2 Field Investigation

The primary objective of the field investigation was to determine whether a release had occurred at SWMU 41. All samples were collected and processed according to Section 4 of the *Comprehensive RFI Work Plan* (E/A&H, October 1994).

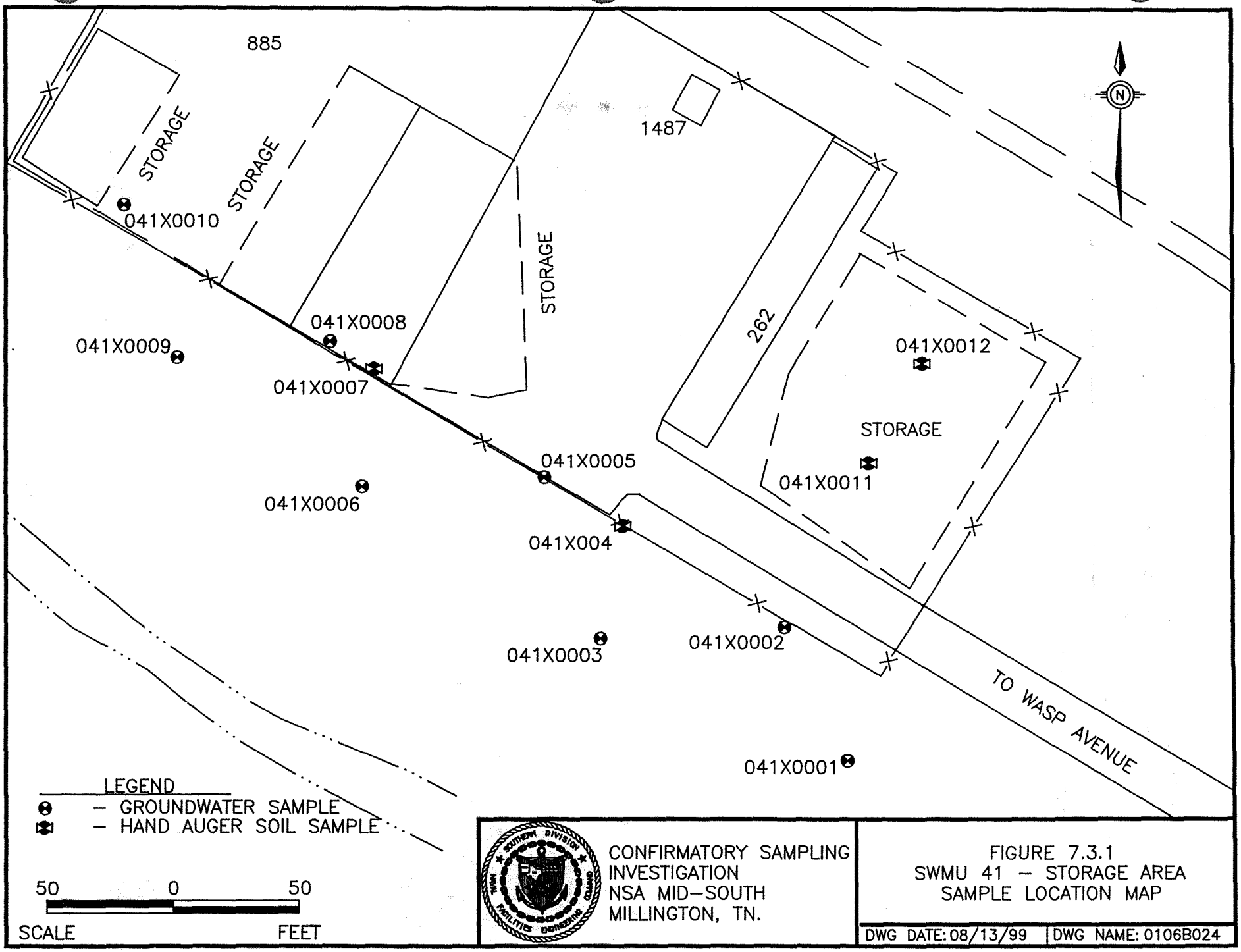
Soil

The soil investigation consisted of Geoprobe sampling at four sample locations, as outlined in Section 4.4.4.3 of the *Comprehensive RFI Work Plan* (E/A&H, October 1994). Soil samples were collected and submitted for laboratory analysis from the surface to about 1 foot deep (Figure 7.3.1). These samples were used to assess risk associated with any surface contaminants and to inspect for any surface spills. The four soil samples (041S000401, 041S000701, 041S001101, 041S001201) underwent FSA for risk assessment. All soil samples were analyzed at Savannah Analytical Laboratory in Savannah, Georgia.

Groundwater

Groundwater samples were collected to determine if material that may have been stored on the gravel before the area was covered with asphalt could have affected groundwater. Samples were collected from the deep alluvium (DA) at four sample locations (041X0001, 041X0003, 041X0006, and 041X0009). Four additional samples were collected from the upper alluvium (UA) at different sample locations (041X0002, 041X0005, 041X0008, and 041X0010).

Geoprobe samples were collected for offsite laboratory VOC analysis because VOCs are an indicator of petroleum and solvents (common contaminants at NSA Mid-South) and because of the small sample volume required. The Geoprobe penetrated to a refusal depth of about 50 feet


885
STORAGE
STORAGE
STORAGE
1487
262
STORAGE
041X0010
041X0009
041X0008
041X0007
041X0006
041X0005
041X004
041X0003
041X0002
041X0001
041X0012
041X0011
TO WASP AVENUE
N
LEGEND
– GROUNDWATER SAMPLE
– HAND AUGER SOIL SAMPLE
50 0 50
SCALE FEET
CONFIRMATORY SAMPLING
INVESTIGATION
NSA MID–SOUTH
MILLINGTON, TN.
FIGURE 7.3.1
SWMU 41 – STORAGE AREA
SAMPLE LOCATION MAP
DWG DATE: 08/13/99
DWG NAME: 0106B024

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through the UA and into sand and gravel in the DA, based on previous work at other SWMUs. All groundwater samples were analyzed at Savannah Analytical Laboratory in Savannah, Georgia.

7.3.3 Confirmatory Sampling Results

Tables and figures in this section present the analytical results for all CSI soil and groundwater samples. Values for organic analyses of soil are compared to corresponding RBCs for each compound for both residential and industrial scenarios, as published in the *USEPA Region III April 1999, RBC Table* (April 12, 1999). Inorganic results are compared to RCs from NSA Mid-South, residential and industrial RBCs, and SSLs. SSLs were taken from *EPA/540/R-95/128* (May 1996). Groundwater results are compared to tap-water RBCs from the USEPA Region III tables, and MCLs published in the *Drinking Water Regulations and Health Advisories Table* (USEPA, October 1996).

Organics in Soil

Organic and TPH soil data for SWMU 41 samples are presented in Tables 7.3.1 and 7.3.2, respectively.

Table 7.3.1
Assemblies G and H — SWMU 41 Organic Detections in Soil by Location (μg/kg)

Location	Depth (in feet)	Contaminant	RC[a]	RBC[b] Industrial	RBC[b] Residential	SSL[c]	Result
041X0004	01'	4,4'-DDE	—	17,000	1,900	3,000	2.2 J
		Aroclor-1260*	—	2,900	320	1,000	130 J
		Dieldrin*	262	360	40	0.2	0.67 J

Table 7.3.1
Assemblies G and H — SWMU 41 Organic Detections in Soil by Location (μg/kg)

Location	Depth (in feet)	Contaminant	RC[a]	RBC[b] Industrial	RBC[b] Residential	SSL[c]	Result
041X0007	01'	4,4'-DDE	—	17,000	1,900	3,000	14 J
		Aroclor-1260+	—	2,900	***320***	***1,000***	***1,200***
		Dichlorprop‡	—	20,000	780	DNE	11 J
		Dieldrin*	262	360	40	**0.2**	**17 J**
		Pyrene	—	6,100,000	230,000	210,000	62 J
		bis(2-Ethylhexyl)phthalate (BEHP)	—	410,000	46,000	180,000	84 J
041X0011	01'	4,4'-DDD	—	24,000	2,700	800	17 J
		4,4'-DDE	—	17,000	1,900	3,000	70
		4,4'-DDT	—	17,000	1,900	2,000	110
		Aroclor-1260+	—	2,900	320	1,000	200
		Dieldrin*	262	360	40	**0.2**	**4.8 J**
		Endosulfan I	—	1,200,000	47,000	900	1.2 J
		Pyrene	—	6,100,000	230,000	210,000	68 J
		bis(2-Ethylhexyl)phthalate (BEHP)	—	410,000	46,000	180,000	78 J
		gamma-BHC (Lindane)	—	4,400	490	0.5	0.38 J
041X0012	01'	4,4'-DDD	—	24,000	2,700	800	33 J
		4,4'-DDE	—	17,000	1,900	3,000	91
		4,4'-DDT	—	17,000	1,900	2,000	130
		Aroclor-1260+	—	2,900	***320***	1,000	***710***
		Benzo(a)anthracene	—	7,800	880	**80**	**160 J**
		Chrysene	—	780,000	88,000	8,000	180 J
		Dieldrin*	262	360	40	**0.2**	**12 J**
		Endosulfan I	—	1,200,000	47,000	900	6.3 J
		Fluoranthene	—	8,200,000	310,000	210,000	290 J
		Phenanthrene†	—	6,100,000	230,000	210,000	140 J
		Pyrene	—	6,100,000	230,000	210,000	360 J

Table 7.3.1
Assemblies G and H — SWMU 41 Organic Detections in Soil by Location (μg/kg)

Location	Depth (in feet)	Contaminant	RC[a]	RBC[b] Industrial	RBC[b] Residential	SSL[c]	Result
041X0012 (continued)	01'	bis(2-Ethylhexyl)phthalate (BEHP)	—	410,000	46,000	180,000	2,200

Notes:
a = Background Reference Concentration (RC) from the *Reference Concentrations Technical Memorandum* (August 27, 1996, E/A&H).
b = Industrial and residential RBCs from the *Risk-Based Concentration Table* (April 12, 1999, USEPA Region III RBC Memo).
c = Soil Screening Level (SSL) from the *Generic Screening Levels* (May 1996, USEPA/OSWER SSL Guidance Document, EPA/540/R-95/128).
* Reference concentration for dieldrin determined from base-wide background sampling and screening (*Surface Soil (0 to 1 foot) Background Dieldrin Concentrations at NSA Memphis*. June 3, 1997 Tech Memo).
+ = A preliminary remediation goal of 1 mg/kg has been set for PCBs based on *Guidance on Remedial Actions for Superfund Sites with PCB Contamination* (USEPA, 1990) and on EPA efforts to manage PCB contamination.
DNE = Does not exist.
— = RC values does not exist.
J = Contaminant detected in concentrations less than the method reporting limit; value estimated.
† = Pyrene used as a surrogate.
‡ = 2,4-dichlorophenoxyacetic acid was used as a surrogate based on toxicological similarity (Dreisbach, 1987).
Bold indicates samples that exceed any of the standard reference values.
Bold/Italics indicate samples that were considered in the PRE.

Table 7.3.2
Assemblies G and H — SWMU 41 Petroleum Hydrocarbon Detections in Soil by Location (mg/kg)

Location	Depth (in feet)	Constituent	Result
041X0004	01'	TPH - DRO	1.2 J
		TPH	19 J
041X0007	01'	TPH - DRO	7.6
		TPH	61 J
041X0011	01'	TPH - DRO	9.5
		TPH	69 J
041X0012	01'	TPH - DRO	11
		TPH	**140 J**

Notes:
DRO = Diesel range organics
mg/kg = milligrams per kilogram
TPH = Total petroleum hydrocarbons.
TDEC TPH cleanup level ranges from 100 mg/kg to 1,000 mg/kg.
Bold indicates samples that exceed any of the standard reference values.

As indicated in Table 7.3.1, 13 contaminants in all were detected in SWMU 41 soil samples. Of these 13, one exceeded its residential RBC in two samples and was retained as a COPC. Two exceeded their soil-to-groundwater SSLs.

- Aroclor-1260 exceeded its residential RBC (320 μg/kg) in two soil samples: 041X000701 (1,200 μg/kg) and 041X001201 (710 μg/kg).

- Benzo(a)anthracene exceeded its soil-to-groundwater SSL (80 μg/kg) in sample 041X001201 (160 μg/kg).

- Dieldrin exceeded its soil-to-groundwater SSL (0.2 μg/kg) in four soil samples: 041X000401 (0.67 μg/kg), 041X000701 (17 μg/kg), 041X001101 (4.8 μg/kg), and 041X001201 (12 μg/kg)

Although the SSL for dieldrin is exceeded in the surface-soil samples from locations 041X000401, 041X000701, 041X001101, and 041X001201, the concentration detected at SWMU 41 is less than the 262 μg/kg RC for dieldrin at NSA Mid-South.

Because no RBC values exist for TPH or TPH-GRO/DRO, TDEC soil-cleanup values were used for comparison. TDEC has established three cleanup concentrations for TPH — these are 100 mg/kg, 500 mg/kg, and 1,000 mg/kg — depending on the soil permeability. Initially, the TDEC cleanup level of 500 mg/kg for total TPH in nondrinking water aquifers (i.e., the upper alluvium), with soil permeabilities between 10^{-4} and 10^{-6} centimeters per second (cm/sec) (TDEC,1997), was compared to total TPH concentrations in surface and subsurface soil. This cleanup level was chosen because 1.84E-6 cm/sec, a value representing the average soil permeability from 20 samples across the base, was used as the default for sites lacking permeability data (Appendix B); however, as requested by the PWD Env. Div., TPH detections

in soil from 0 to 5 feet deep that exceed the TDEC cleanup level of 100 mg/kg will be designated for removal. As shown in Table 7.3.2, one SWMU 41 sample (041X001201) detection exceeded the TDEC soil-cleanup value of 100 mg/kg.

Inorganics in Soil

Inorganic soil data for SWMU 41 samples are presented in Table 7.3.3.

Table 7.3.3
Assemblies G and H — SWMU 41 Inorganic Detections in Soil by Location (mg/kg)

Location	Depth (in feet)	Constituent	RC[a]	RBC[b] Industrial	RBC[b] Residential	SSL[c]	Result
041X0004	01'	Arsenic (As)	14.6	3.8	0.43	1	4.7 J
		Barium (Ba)	223	14,000	550	82	114
		Beryllium (Be)	1.00	410	16	3	0.41 J
		Cadmium (Cd)	1.54	100	3.9	0.4	0.53 J
		Chromium (Cr)	24.0	610	23	2	11 J
		Cobalt (Co)	16.0	12,000	470	DNE	6.3
		Copper (Cu)	24.2	8,200	310	DNE	21 J
		Lead (Pb)	26.0	400[d]	400[d]	DNE	18.6 J
		Mercury (Hg)	0.46	DNE	DNE	DNE	0.03
		Nickel (Ni)	20.6	4,100	160	7	12.1
		Vanadium (V)	45.1	1,400	55	300	16.9
		Zinc (Zn)	98	61,000	2,300	620	93.6 J

Table 7.3.3
Assemblies G and H — SWMU 41 Inorganic Detections in Soil by Location (mg/kg)

Location	Depth (in feet)	Constituent	RC[a]	RBC[b] Industrial	RBC[b] Residential	SSL[c]	Result
041X0007	01'	**Arsenic (As)**	14.6	3.8	0.43	1	7.3
		Barium (Ba)	223	14,000	550	82	115
		Beryllium (Be)	1.00	410	16	3	0.43 J
		Cadmium (Cd)	*1.54*	100	*3.9*	*0.4*	*8.5 J*
		Chromium (Cr)	24.0	610	23	2	18.7 J
		Cobalt (Co)	16.0	12,000	470	DNE	6.3
		Copper (Cu)	24.2	8,200	310	DNE	74.9 J
		Lead (Pb)	26.0	400[d]	400[d]	DNE	82.1 J
		Mercury (Hg)	0.46	DNE	DNE	DNE	0.32
		Nickel (Ni)	20.6	4,100	160	7	**15.8**
		Silver (Ag)	2.05	1,000	39	2	0.26 J
		Vanadium (V)	45.1	1,400	55	300	19
		Zinc (Zn)	**98**	61,000	2,300	620	**379 J**

Table 7.3.3
Assemblies G and H — SWMU 41 Inorganic Detections in Soil by Location (mg/kg)

Location	Depth (in feet)	Constituent	RC[a]	RBC[b] Industrial	RBC[b] Residential	SSL[c]	Result
041X0011	01'	**Arsenic (As)**	14.6	**3.8**	**0.43**	1	**4.6 J**
		Barium (Ba)	223	14,000	550	82	39.8
		Beryllium (Be)	1.00	410	16	3	0.33 J
		Cadmium (Cd)	*1.54*	100	*3.9*	*0.4*	*25.1*
		Chromium (Cr)	*24.0*	610	*23*	*2*	*57.4 J*
		Cobalt (Co)	16.0	12,000	470	DNE	2
		Copper (Cu)	*24.2*	8,200	*310*	DNE	*483 J*
		Lead (Pb)	**26.0**	400[d]	400[d]	DNE	**73 J**
		Mercury (Hg)	0.46	DNE	DNE	DNE	0.02
		Nickel (Ni)	20.6	4,100	160	7	**10.5**
		Silver (Ag)	2.05	1,000	39	2	1.7
		Tin (Sn)	33.6	120,000	4,700	DNE	4.5 J
		Vanadium (V)	45.1	1,400	55	300	14.6
		Zinc (Zn)	**98**	61,000	2,300	620	**530 J**

Table 7.3.3
Assemblies G and H — SWMU 41 Inorganic Detections in Soil by Location (mg/kg)

Location	Depth (in feet)	Constituent	RC[a]	RBC[b] Industrial	RBC[b] Residential	SSL[c]	Result
041X0012	01'	Arsenic (As)	14.6	3.8	0.43	1	4.4 J
		Barium (Ba)	223	14,000	550	82	52.1
		Beryllium (Be)	1.00	410	16	3	0.22 J
		Cadmium (Cd)	***1.54***	100	***3.9***	***0.4***	***53***
		Chromium (Cr)	***24.0***	610	***23***	***2***	***55.2 J***
		Cobalt (Co)	16.0	12,000	470	DNE	3.3
		Copper (Cu)	24.2	8,200	310	DNE	145 J
		Lead (Pb)	26.0	400[d]	400[d]	DNE	81 J
		Mercury (Hg)	0.46	DNE	DNE	DNE	0.08
		Nickel (Ni)	20.6	4,100	160	7	13.3
		Selenium (Se)	—	1,000	39	0.3	0.61 J
		Silver (Ag)	2.05	1,000	39	2	0.72 J
		Tin (Sn)	33.6	120,000	4,700	DNE	3.4 J
		Vanadium (V)	45.1	1,400	55	300	13.2
		Zinc (Zn)	98	61,000	2,300	620	185 J

Notes:

a = Background Reference Concentration (RC) from the *Reference Concentrations Technical Memorandum* (August 27, 1996, E/A&H).

b = Industrial and residential RBCs from the *Risk-Based Concentration Table* (April 12, 1999, USEPA Region III RBC Memo).

c = Soil Screening Level (SSL) from the *Generic Screening Levels* (May 1996, USEPA/OSWER SSL Guidance Document, EPA/540/R-95/128).

d = Lead soil-cleanup value, as established by USEPA/OSWER directive #9355.4-12, substituted for RBC.

DNE = Does not exist.

— = RC value does not exist.

J = Constituent detected in concentrations less than the method reporting limit; value estimated.

Bold indicates samples that exceed any of the standard reference values.

Bold/Italics indicate samples that were considered in the PRE.

As presented in Table 7.3.3, three of 15 inorganics detected at SWMU 41 (cadmium, chromium, and copper) exceeded both their RC and residential or industrial RBCs, and were retained as COPCs. Five inorganics exceeded their RCs, one exceeded its industrial RBC, four exceeded their residential RBCs, and six exceeded their soil-to-groundwater SSLs.

- Cadmium exceeded its surface-soil RC (1.54 mg/kg), residential RBC (3.9 mg/kg), and soil-to-groundwater SSL (0.4 mg/kg) in samples 041X000701 (8.5 mg/kg), 041X001101 (25.1 mg/kg), and 041X001201 (53 mg/kg). It exceeded only its soil-to-groundwater SSL in sample 041X000401 (0.53 mg/kg).

- Chromium exceeded its surface-soil RC (24.0 mg/kg), residential RBC (23 mg/kg), and soil-to-groundwater SSL (2 mg/kg) in samples 041X001101 (57.4 mg/kg) and 041X001201 (55.2 mg/kg). It exceeded only its soil-to-groundwater SSL in samples 041X000401 (11 mg/kg) and 041X000701 (18.7 mg/kg).

- Copper exceeded its surface-soil RC (24.2 mg/kg) in three samples (041X000701 [74.9 mg/kg], 041X001101 [483 mg/kg], and 041X001201 [145 mg/kg]) and residential RBC (310 mg/kg) in sample 041X001101 (483 mg/kg).

- Lead and zinc exceeded their surface-soil RCs in samples 041X000701, 041X001101, and 041X001201.

- Arsenic exceeded its industrial RBC (3.8 mg/kg), residential RBC (0.43 mg/kg), and soil-to-groundwater SSL (1 mg/kg) in samples 041X000401 (4.7 mg/kg), 041X000701 (7.3 mg/kg), 041X001101 (4.6 mg/kg), and 041X001201 (4.4 mg/kg).

- Nickel exceeded only its soil-to-groundwater SSL (7 mg/kg) in all samples.

- Barium exceeded its soil-to-groundwater SSL (82 mg/kg) in 041X000401 and 041X000701.

- Selenium exceeded its soil-to-groundwater SSL (0.3 mg/kg) in sample 041X001201 (0.61 mg/kg).

Groundwater Investigation

The groundwater VOC data for SWMU 41 are presented in Table 7.3.4.

Table 7.3.4
Assemblies G and H — SWMU 41 Detections in Groundwater by Location (μg/L)

Location	Depth (in feet)/Formation	Contaminant	RBC[a]	MCL[b]	Result
041G000827	27' / (UA)	***1,2-Dichloroethane***	***0.12***	***5***	***59***

Notes:
a = Tap-water RBC from the *April 1999 Risk-Based Concentration Table* (April 1999, USEPA Region III RBC Memo).
b = MCL from *USEPA National Primary Drinking Water Standards* (October 1996, USEPA Office of Water, Drinking Water Regulations and Health Advisories).
UA = Upper alluvium
Bold/Italics indicate sample exceeds both the RBC and MCL.

As shown in Table 7.3.4, only one VOC (1,2-dichloroethane) exceeded its tap-water RBC (0.12 μg/L) and MCL (5 μg/L) in groundwater sample 041G000827 (59 μg/L).

7.3.4 Preliminary Risk Evaluation

In accordance with *Guidance on Preliminary Risk Evaluations for the Purpose of Reaching a Finding of Suitability to Lease* (USEPA Region IV memorandum, November 1994), a PRE was conducted for SWMU 41 using data from surface-soil and groundwater samples collected during the CSI. All non-carcinogenic RBC values are shown as adjusted screening RBCs where the value from the USEPA Risk-Based Concentration Table (April 1999) is multiplied by 0.1. For more information on the calculation of the HQ and cancer risk, refer to Section 5. Aroclor-1260,

cadmium, chromium, and copper were identified as COPCs in surface soil at SWMU 41. 1,2-dichloroethane was identified as a COPC in groundwater at SWMU 41. Table 7.3.5 is the calculation of the HQ for non-carcinogen COPCs and the calculation of the excess cancer risk for carcinogenic COPCs.

Table 7.3.5
SWMU 41
Preliminary Risk Evaluation

				Residential			Industrial		
Chemical	**Maximum Reported Concentration**	**Units**	**RC**	**RBC**	**Hazard Quotient**	**ILCR**	**RBC**	**Hazard Quotient**	**ILCR**
Soil Results:									
Aroclor-1260	1200	µg/kg	NA	320C	NA	3.75E-6	2900C	NA	4.14E-7
Cadmium	53	mg/kg	1.54	3.9 N	14	NA	100 N	0.53	NA
Chromium	57.4	mg/kg	24.0	23 N	2.5	NA	610 N	0.094	NA
Copper	483	mg/kg	24.2	310N	1.56	NA	8200N	0.059	NA
Sum:					18	3.75E-6		0.68	4.14E-7
Groundwater Results:									
1,2-dichloroethane	59	µg/L	NA	0.12C	NA	4.9E-4	0.48C	NA	1.2E-4
Sum:					NA	4.9E-4		NA	1.2E-4
Sum Total (Groundwater and Soil):					18	4.9E-4		0.68	1.2E-4

Notes:

RBC = Risk-based concentration from *USEPA Region III April 1999 RBC Table*; in accordance with *USEPA Region IV Supplemental Guidance to RAGS Bulletin 1*, non-carcinogen RBCs above were conservatively adjusted to reflect a hazard quotient of 0.1; residential RBCs were divided by 0.25 to calculate RBCs for nonresidential (industrial) groundwater in accordance with USEPA Region IV PRE Guidance.
RC = Reference concentration
N = Non-carcinogen
C = Carcinogen
NA = Not applicable
ILCR = Incremental lifetime (excess) cancer risk

PRE Conclusions

Based on the information gathered during the investigation, the following conclusions have been reached based on a PRE performed on data from surface soil and fluvial deposits groundwater:

Residential Land Use

- Carcinogens: The excess cancer risk for the residential scenario was estimated to be 4.9E-4, which is greater than the risk threshold value of 1E-4. Because the estimated value is greater than the acceptable cancer risk value, this property is currently considered to be unsuitable for residential land use, as established in the USEPA Region IV November 1994 memorandum.

- Non-carcinogens: The cumulative residential HI was estimated to be approximately 18, which is greater than the risk threshold of 1 for a residential land use scenario. Because the estimated value is greater than the acceptable non-cancer risk value, this property is currently considered to be unsuitable for residential land use, as established in the USEPA Region IV November 1994 memorandum.

Industrial Land Use

- Carcinogens: The excess cancer risk for industrial use of SWMU 41 was determined to be 1.2E-4, which is greater than the risk threshold of 1E-4. Because the estimated value is greater than the acceptable cancer risk value, this property is currently considered to be unsuitable for industrial land use, as established in the USEPA Region IV November 1994 memorandum.

- Non-carcinogens: The cumulative industrial HI was estimated to be approximately 0.68, which is less than the risk threshold of 1 for an industrial land use scenario. Because the estimated value is less than the acceptable non-cancer risk value, this property is currently

considered to be suitable for industrial land use, as established by the USEPA Region IV November 1994 memorandum.

7.3.5 Fate and Transport

The approach for evaluating the fate and transport of Assemblies G and H contaminants was discussed in Section 6.2. This section applies that approach to contaminants detected at SWMU 41. Transport processes for contaminants other than those designated as COPCs are also discussed if they occur in multiple environmental media or have the potential to migrate to other media.

Potential migration pathways for contaminants at SWMU 41 include leaching from soil to groundwater and erosion of surface soil containing sorbed contaminants from the unpaved, grass-covered areas, forming sediments in drainage ways. Surface-soil analytical data indicate that no VOCs exceeded their respective soil-to-air SSL; therefore, the soil-to-air cross-media transport process is not discussed.

SWMU 41 had five COPCs, along with four contaminants that exceeded their soil-to-groundwater SSL.

- Cadmium and Chromium exceeded their soil-to-groundwater SSLs *and* their RCs. Both are also designated as COPCs per the PRE.

- Dieldrin and benzo(a)anthracene exceeded their soil-to-groundwater SSLs.

- Copper exceeded its RC and residential RBC in soil; an SSL does not exist for copper.

- Aroclor-1260 exceeded its residential RBC for soil and was retained as a COPC; an SSL does not exist for this compound.

- 1,2-dichloroethane exceeded its tap-water RBC and its MCL for groundwater, and was retained as a COPC.

7.3.5.1 Soil-to-Groundwater Cross-Media Transport

the inorganics cadmium and chromium; the SVOC benzo(a)anthracene; and the pesticide dieldrin are the SWMU 41 contaminants that exhibit the potential for soil-to-groundwater transport, based on comparison of soil concentrations to the groundwater-protection soil-screening criteria.

Cadmium exceeded both its SSL and RC in three samples. Chromium exceeded both its SSL and RC in two samples. No groundwater results are currently available for SWMU 41 inorganics. Cadmium and chromium are not considered a soil-to-groundwater migration concern because of their affinity for soil particles and reduced mobility; however, the potential exists for leaching to groundwater based on the SSL and RC exceedances.

The SVOC benzo(a)anthracene was detected in only one soil-sample location where it exceeded its SSL. Typical properties of SVOCs limit their mobility in the environment relative to VOCs. Higher K_{oc} values lead to a lack of mobility in soil, which in turn limits the potential for leaching to underlying groundwater.

Dieldrin was detected in all four surface-soil sample locations, and exceeded its SSL at all four. Dieldrin may be attributed to basewide aerial application during the 1950s and 1960s (E/A&H, June 1997). Dieldrin is not likely to migrate to groundwater because of its low solubility, vapor pressure, and Henry's law constant. Overall, dieldrin is anticipated to be immobile and persistent

in the environment because of its affinity for binding to soil grains, not readily diffusing into groundwater.

Although an SSL for the PCB Aroclor-1260 does not exist, it is considered a COPC per the PRE. Its industrial and residential RBCs were exceeded in soil. The typical fate and transport characteristics of PCBs include a tendency to sorb to soil particles because of their relatively high K_{oc} values. Overall, they are anticipated to be immobile and persistent in the environment, not readily diffusing into groundwater.

The inorganic copper exceeded its background RC at three soil-sampling locations. There is no established soil-to-groundwater SSL for copper and, like other inorganics, copper is not expected to be a threat to groundwater.

None of the contaminants discussed above were detected in groundwater at SWMU 41. However, 1,2-dichloroethane was detected in one groundwater sample where it exceeded its tap-water RBC and MCL. 1,2-dichloroethene was not detected in soil at SWMU 41. Advective flow, or the migration of dissolved constituents with groundwater flow, is the most significant pathway for movement of contaminants in groundwater. Typical of VOCs, 1,2-dichloroethane has a relatively high solubility in water (meaning it is more mobile in water than other classes of contaminants), but it has a greater potential for degradability in groundwater than other classes of contaminants.

7.3.5.2 Soil-to-Sediment Cross-Media Transport

Contaminants detected in surface soil were evaluated to determine their potential for transport by erosional processes in areas with vegetation. Drainage patterns and topography at SWMU 41 were also examined to determine whether site features would support contaminant transport.

Contaminants detected in surface soil consist of SVOCs, pesticides/PCBs, and inorganics. Only the pesticide dieldrin and the PCB Aroclor-1260 exceeded their residential RBCs. As described in Section 6, these classes of contaminants (in relation to VOCs) tend to sorb to soil particles and are relatively immobile in the environment.

Drainage patterns at SWMU 41 are toward Big Creek Drainage Canal. Vegetation cover between SWMU 41 and Big Creek Drainage Canal leaves little potential for surface soil to erode and form sediments that can become mobile via surface water; therefore, the soil-to-sediment transport process is not considered significant at SWMU 41.

7.3.6 Conclusions and Recommendations

Based on the data gathered during this investigation, the following conclusions and recommendations have been reached:

Conclusions

- SWMU 41 should undergo a full RFI characterization prior to the selection of a land-use scenario.

- 13 organic compounds were detected in surface soil (0 to 1 foot); however, only the PCB Aroclor-1260 was detected in two samples at concentrations exceeding the residential and industrial RBCs.

- TPH was detected in surface soil exceeding the TDEC cleanup level of 100 mg/kg.

- Fifteen metals were detected in surface soil at SWMU 41. Of these,

  — Cadmium exceeded its RC, residential RBC, and its SSL in three soil samples.

— Chromium exceeded its RC, residential RBC, and its SSL in two soil samples.

— Copper exceeded its RC and residential RBC in one soil sample.

— Arsenic, barium, nickel, and selenium exceeded their SSLs in surface-soil samples.

- One organic contaminant was detected in fluvial deposits groundwater.

  — 1,2-dichloroethane exceeded its tap-water RBC and MCL in one groundwater sample.

- A PRE was performed for SWMU 41 and determined the following:

  — Non-carcinogen cadmium poses a threat to the residential land-use scenario with an HI of 14, but not to the industrial land-use scenario.

  — Non-carcinogen chromium poses a threat to the residential land-use scenario with an HI of 2.5, but not to the industrial land-use scenario.

  — Non-carcinogen copper poses a threat to the residential land-use scenario with an HI of 1.56, but not to the industrial land-use scenario.

  — Carcinogen 1,2-dichloroethane poses a threat to the residential and industrial land-use scenarios for groundwater.

Recommendations

Based on surface-soil and groundwater results, full RFI characterization is recommended for SWMU 41.

7.4 SWMU 43 — Former Hazardous Waste Accumulation Point

SWMU 43 is a former hazardous waste accumulation point along the west side of former Building S-176 on the NSA Mid-South Southside (Figure 1.1). Building S-176 was demolished on January 28, 1986, and the area is now covered with gravel and used for parking or storage. The hazardous waste accumulation point at Building S-176 is reported to have operated from an unknown date until 1986. Limited information is available on the past use of SWMU 43 as a hazardous waste accumulation point. SWMU 43 is reported to have been used to store drummed waste paint and solvents. During a 1990 inspection, Building S-176 had been demolished and the accumulation point was no longer in use (ERC/EDGe, 1990). In a 1951 drawing, Building S-176 was listed as a cement shed, while in a 1970s drawing it was listed as family housing storage.

SWMU 43 and the surrounding area are characterized by relatively level, low-relief topography. The building foundation appears to have been removed or to have been covered with gravel. Surrounding areas are covered with gravel or grass. Surface water drains south toward a catch basin and then flows west to a north-south drainage ditch (SWMU 38), which flows into Big Creek Drainage Canal. The regional and local hydrogeology are described in Sections 2.11 and 2.12, respectively, of the *Comprehensive RFI Work Plan* (E/A&H, October 1994). Site-specific geologic and hydrogeologic information and references are in Section 2 of this report and in Section 2.0 of the *Assemblies G and H CSI Work Plan* (EnSafe, December 1997).

7.4.1 Previous Sampling Activities

No previous sampling is known to have been conducted at SWMU 43.

7.4.2 Field Investigation

The primary objective of the field investigation was to determine whether a release had occurred at SWMU 43. All samples were collected and processed according to Section 4 of the *Comprehensive RFI Work Plan* (E/A&H, October 1994).

Soil

The soil investigation consisted of hand-auger sampling, using procedures outlined in Section 4.4.4.3 of the *Comprehensive RFI Work Plan* (E/A&H, October 1994) at three sampling locations (043X0001, 043X0002, and 043X0003) in and around the former hazardous waste accumulation area (Figure 7.4.1). Location 043X0001 was selected in a nearby drainage ditch to determine whether surface contaminants had migrated via surface runoff. Soil samples were collected at locations 043X0002 and 043X0003 from beneath the gravel surface to 1 foot deep, and from the 3 to 4-foot depth interval. The upper-interval soil samples were used to assess risk associated with any surface contaminants, while the lower-interval soil samples were used to inspect for contaminant migration from a possible release.

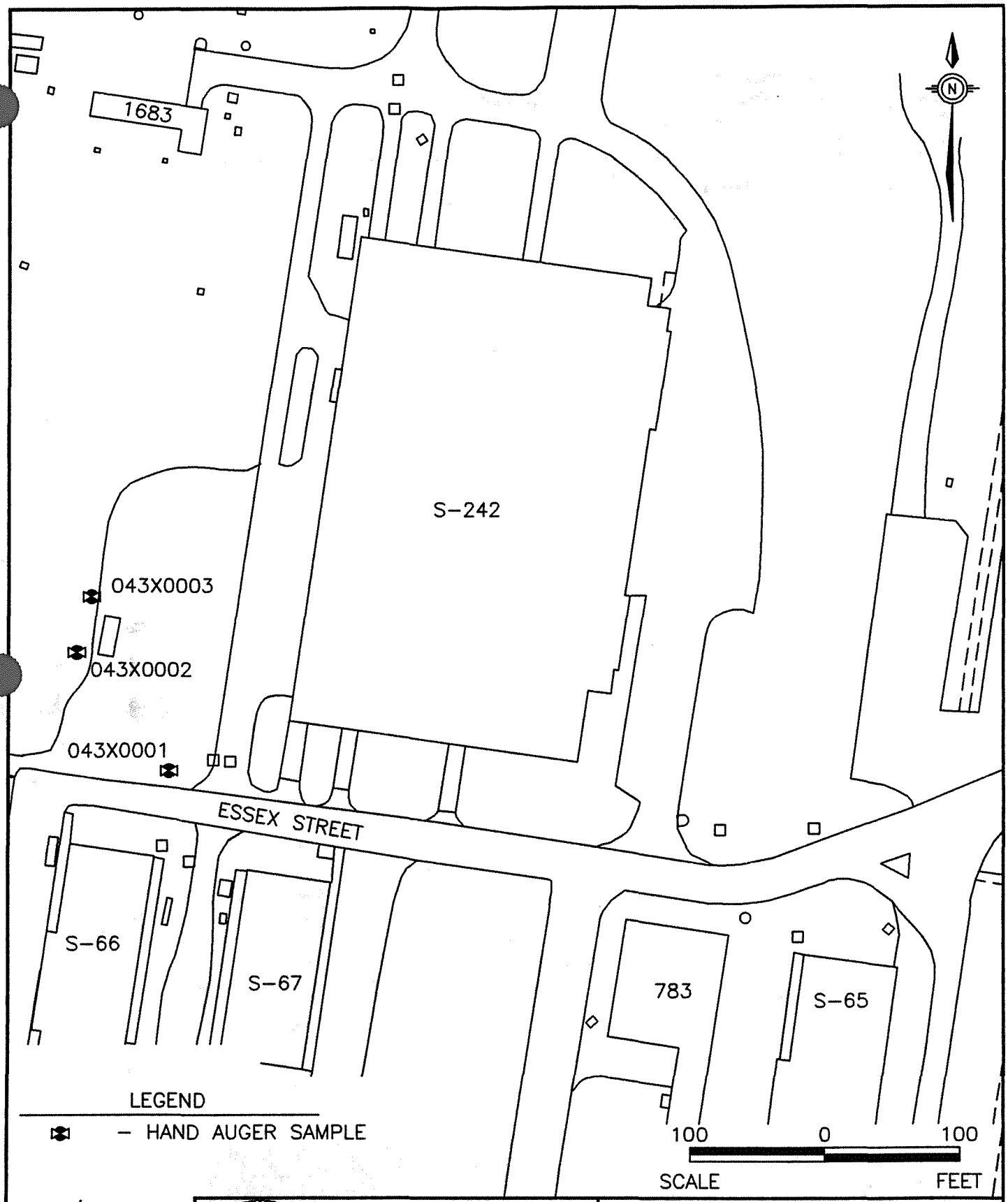
Two biased surface-soil samples, collected from the most visibly stained areas, underwent FSA for risk assessment purposes. The remaining upper-interval soil sample from the ditch and the three lower-interval samples were analyzed for VOCs, SVOCs, and Appendix IX metals since these are indicators of the types of materials reportedly stored at the accumulation point. All soil samples were analyzed at Savannah Analytical Laboratory in Savannah, Georgia.

Groundwater

No groundwater investigation was conducted at SWMU 43 during this CSI.

7.4.3 Confirmatory Sampling Results

Tables and figures in this section present the analytical results for all CSI soil samples. Values for organic analyses of soil are compared to each compound's corresponding RBC for both residential and industrial scenarios, and with the SSL for protection



CONFIRMATORY SAMPLING INVESTIGATION
NSA MID-SOUTH
MILLINGTON, TN.

FIGURE 7.4.1
SWMU 43 – FORMER S-176
SAMPLE LOCATION MAP

DWG DATE: 07/06/99 | DWG NAME: 0106B026

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of groundwater, as published in the *USEPA Region III April 1999 RBC Table*. Inorganic results are compared to background RCs from NSA Mid-South, residential and industrial RBCs, and SSLs. SSLs were taken from *EPA/540/R-95/128* (May 1996).

Organics in Soil

Organic and TPH soil data for SWMU 43 samples are presented in Tables 7.4.1 and 7.4.2, respectively.

Table 7.4.1
Assemblies G and H — SWMU 43 Organic Detections in Soil by Location (μg/kg)

Location	Depth (in feet)	Contaminant	RC[a]	RBC[b] Industrial	RBC[b] Residential	SSL[c]	Result
043X0001	01'	Acetone	—	20,000,000	780,000	800	22 J
		Anthracene	—	61,000,000	2,300,000	590,000	31 J
		Benzo(a)anthracene*	—	7,800	880	80	80 J
		Benzo(a)pyrene	565	780	88	400	75 J
		Benzo(b)fluoranthene	—	7,800	880	200	96 J
		Benzo(k)fluoranthene	—	78,000	8,800	2,000	93 J
		Butylbenzylphthalate	—	41,000,000	1,600,000	810,000	84 J
		Chrysene	—	780,000	88,000	8,000	99 J
		4,4'-DDE	—	17,000	1,900	3,000	4.1 J
		4,4'-DDT	—	17,000	1,900	2,000	6.1 J
		Dieldrin*	262	360	40	0.2	13
		Diethylphthalate	—	160,000,000	6,300,000	23,000	72 J
		Endosulfan I	—	1,200,000	47,000	900	1.9 J
		Endrin aldehyde‡	—	61,000	2,300	50	0.56 J
		Fluoranthene	—	8,200,000	310,000	210,000	170 J
		Fluorene	—	8,200,000	310,000	28,000	30 J

Table 7.4.1
Assemblies G and H — SWMU 43 Organic Detections in Soil by Location (μg/kg)

Location	Depth (in feet)	Contaminant	RC[a]	RBC[b] Industrial	RBC[b] Residential	SSL[c]	Result
043X0001 (continued)	01'	Phenanthrene†	—	6,100,000	230,000	210,000	180 J
		Pyrene	—	6,100,000	230,000	210,000	180 J
		Xylene (Total)	—	410,000,000	16,000,000	9,000	2.1 J
		bis(2-Ethylhexyl)phthalate (BEHP)	—	410,000	46,000	180,000	240 J
043X0001	04'	Diethylphthalate	—	—	—	23,000	77 J
043X0002	01'	Benzene	—	200,000	22,000	2	4 J
		Diethylphthalate	—	100,000,000	6,300,000	23,000	77 J
		Ethylbenzene	—	20,000,000	780,000	0.7	2.3 J
		Fluoranthene	—	8,200,000	310,000	210,000	26 J
		Pyrene	—	6,100,000	230,000	210,000	27 J
043X0002	04'	Diethylphthalate	—	—	—	23,000	95 J
043X0003	01'	2-Methylnaphthalene	—	4,100,000	160,000	DNE	51 J
		Anthracene	—	61,000,000	2,300,000	590,000	17 J
		Benzene	—	200,000	22,000	2	3.1 J
		Benzo(a)anthracene	—	7,800	880	80	65 J
		Benzo(a)pyrene	565	780	88	400	91 J
		Chrysene	—	780,000	88,000	8,000	90 J
		Diethylphthalate	—	160,000,000	6,300,000	23,000	69 J
		Fluoranthene	—	8,200,000	310,000	210,000	100 J
		Naphthalene	—	4,100,000	160,000	4,000	20 J
		Phenanthrene†	—	6,100,000	230,000	210,000	100 J
		Pyrene	—	6,100,000	230,000	210,000	120 J
		Trichloroethene	—	520,000	58,000	3	5 J
		Xylene (Total)	—	410,000,000	16,000,000	9,000	2.9 J

Table 7.4.1
Assemblies G and H — SWMU 43 Organic Detections in Soil by Location (μg/kg)

Location	Depth (in feet)	Contaminant	RC[a]	RBC[b] Industrial	RBC[b] Residential	SSL[c]	Result
043X0003	04'	2-Butanone (MEK)	—	—	—	DNE	9.1 J
		Acetone	—	—	—	800	71
		Diethylphthalate	—	—	—	23,000	64 J

Notes:

a = Background Reference Concentration (RC) from the *Reference Concentrations Technical Memorandum* (August 27,1996, E/A&H).
b = Industrial and residential RBCs from the *Risk-Based Concentration Table* (April 12, 1999, USEPA Region III RBC Memo).
c = Soil Screening Level (SSL) from the *Generic Screening Levels* (May 1996, USEPA/OSWER SSL Guidance Document, EPA/540/R-95/128).
DNE = Does not exist.
— = RC value does not exist or RBC values do not apply to subsurface soil.
J = Contaminant detected at concentrations less than the method reporting limit; value estimated.
* = Reference concentration for dieldrin determined from base-wide background sampling and screening (*Surface Soil (0 to 1 foot) Background Dieldrin Concentrations at NSA Memphis*. June 3, 1997 Tech Memo).
✧ = Value meets but does not exceed reference value.
‡ = Endrin used as a surrogate.
† = Pyrene used as a surrogate.
Bold indicates samples that exceed any of the standard reference values.

As indicated in Table 7.4.1, 26 contaminants in all were detected in SWMU 43 soil samples, 25 of which were detected in surface soil. Of these 25, one exceeded its residential RBC, and four exceeded their soil-to-groundwater SSLs.

- Benzo(a)pyrene exceeded its residential RBC (88 μg/kg) in one soil sample 043S000301 (91 μg/kg).

- Dieldrin exceeded its soil-to-groundwater SSL (0.2 μg/kg) in one soil sample 043S000101 (13 μg/kg).

- Benzene exceeded its soil-to-groundwater SSL (2 μg/kg) in two samples 043S000201 (4 μg/kg) and 043S000301 (3.1 μg/kg).

- Ethylbenzene exceeded its soil-to-groundwater SSL (0.7 μg/kg) in sample 043S000201 (2.3 μg/kg).

- Trichloroethene exceeded its soil-to-groundwater SSL (3 μg/kg) in sample 043S000301 (5 μg/kg).

Although the SSL for dieldrin is exceeded in the surface-soil sample from location 043X0001, the concentration detected at SWMU 43 is substantially less than the 262 μg/kg RC for surface soil, less than the 40 μg/kg residential RBC, and substantially less than the 360 μg/kg industrial RBC.

Table 7.4.2
Assemblies G and H — SWMU 43 Petroleum Hydrocarbon Detections in Soil by Location (mg/kg)

Location	Depth (in feet)	Contaminant	Result
043X0001	01'	TPH	57
		TPH - DRO	22
043X0002	01'	**TPH - DRO**	**408**
043X0002	04'	TPH	110
043X0003	01'	TPH	51
		TPH - DRO	14
043X0003	04'	TPH	17
		TPH - DRO	13

Notes:
DRO = Diesel range organics
mg/kg = milligrams per kilogram
TPH = Total petroleum hydrocarbons.
TDEC TPH soil-cleanup level ranges from 100 mg/kg to 1,000 mg/kg.
Bold indicates samples that exceed any of the standard reference values.

Because no RBC values exist for TPH or TPH-GRO/DRO, TDEC soil-cleanup values were used for comparison. TDEC has established three cleanup concentrations for TPH — these are 100 mg/kg, 500 mg/kg, and 1,000 mg/kg — depending on the soil permeability. Initially, the TDEC cleanup level of 500 mg/kg for total TPH in nondrinking water aquifers (i.e., the upper alluvium), with soil permeabilities between 10^{-4} and 10^{-6} centimeters per second (cm/sec) (TDEC, 1997), was compared to total TPH concentrations in surface and subsurface soil. This cleanup level was chosen because 1.84E-6 cm/sec, a value representing the average soil permeability from 20 samples across the base, was used as the default for sites lacking permeability data (Appendix B); however, as requested by the PWD Env. Div., TPH detections in soil from 0 to 5 feet deep that exceed the TDEC cleanup level of 100 mg/kg will be designated for removal. As shown in Table 7.4.2, two SWMU 43 sample detections exceeded the TDEC soil-cleanup value of 100 mg/kg.

- TPH-DRO was detected in soil sample 043S000201 at a concentration of 408 mg/kg.

- TPH was detected in soil sample 043S000204 at a concentration of 110 mg/kg.

Inorganics in Soil

Inorganic soil data for SWMU 43 samples are presented in Table 7.4.3.

Table 7.4.3
Assemblies G and H — SWMU 43 Inorganic Detections in Soil by Location (mg/kg)

Location	Depth (in feet)	Constituent	RC[a]	RBC[b] Industrial	RBC[b] Residential	SSL[c]	Result
043X0001	01'	*Arsenic (As)*	*14.6*	*3.8*	*0.43*	*1*	*32.9*
		Barium (Ba)	223	14,000	550	82	143
		Beryllium (Be)	1.00	410	16	3	0.6 J
		Cadmium (Cd)	1.54	100	4	0.4	0.33 J
		Chromium (Cr)	24.0	610	23	2	17.4

Table 7.4.3
Assemblies G and H — SWMU 43 Inorganic Detections in Soil by Location (mg/kg)

Location	Depth (in feet)	Constituent	RC[a]	RBC[b] Industrial	RBC[b] Residential	SSL[c]	Result
043X0001 (continued)	01'	Cobalt (Co)	16.0	12,000	470	DNE	4.5 J
		Copper (Cu)	24.2	8,200	310	DNE	14.6
		Lead (Pb)	26.0	400[d]	400[d]	DNE	38.4 J
		Mercury (Hg)	0.46	DNE	DNE	DNE	0.07
		Nickel (Ni)	20.6	4,100	160	7	11.8 J
		Vanadium (V)	45.1	1,400	55	300	21.9
		Zinc (Zn)	98	61,000	2,300	620	64.2 J
043X0001	04'	**Arsenic (As)**	20.3	—	—	**1**	**10.3**
		Barium (Ba)	265	—	—	**82**	**155**
		Beryllium (Be)	1.00	—	—	3	0.54 J
		Chromium (Cr)	28.3	—	—	**2**	**16.1**
		Cobalt (Co)	14.4	—	—	DNE	4.7 J
		Copper (Cu)	32.5	—	—	DNE	13.4
		Lead (Pb)	19.8	—	—	DNE	8.2 J
		Mercury (Hg)	0.18	—	—	DNE	0.03
		Nickel (Ni)	—	—	—	**7**	**15.1 J**
		Vanadium (V)	43.7	—	—	300	24.5
043X0002	01'	Arsenic (As)	14.6	3.8	0.43	1	4.8
		Barium (Ba)	223	14,000	550	82	144
		Beryllium (Be)	1.00	410	16	3	0.41 J
		Cadmium (Cd)	1.54	100	4	0.4	0.09 J
		Chromium (Cr)	24.0	610	23	2	9
		Cobalt (Co)	16.0	12,000	470	DNE	7 J
		Copper (Cu)	24.2	8,200	310	DNE	9.2
		Lead (Pb)	26.0	400[d]	400[d]	DNE	16.8 J
		Mercury (Hg)	0.46	DNE	DNE	DNE	0.03
		Nickel (Ni)	20.6	4,100	160	7	8.8 J
		Vanadium (V)	45.1	1,400	55	300	18.9
		Zinc (Zn)	98	61,000	2,300	620	32 J
		Zinc (Zn)	109	—	—	620	51.1 J

Table 7.4.3
Assemblies G and H — SWMU 43 Inorganic Detections in Soil by Location (mg/kg)

Location	Depth (in feet)	Constituent	RC[a]	RBC[b] Industrial	RBC[b] Residential	SSL[c]	Result
043X0002	04'	**Arsenic (As)**	20.3	—	—	**1**	**6.6**
		Barium (Ba)	265	—	—	**82**	**199**
		Beryllium (Be)	1.00	—	—	3	0.87
		Chromium (Cr)	28.3	—	—	**2**	**18.3**
		Cobalt (Co)	14.4	—	—	DNE	4.4 J
		Copper (Cu)	32.5	—	—	DNE	14.7
		Lead (Pb)	19.8	—	—	DNE	7.1 J
		Mercury (Hg)	0.18	—	—	DNE	0.06
		Nickel (Ni)	—	—	—	**7**	**17.8 J**
		Vanadium (V)	43.7	—	—	300	28.2
		Zinc (Zn)	109	—	—	620	50.5 J
043X0003	01'	***Arsenic (As)***	***14.6***	***3.8***	***0.43***	***1***	***15.1***
		Barium (Ba)	223	14,000	550	**82**	**208**
		Beryllium (Be)	1.00	410	16	3	0.74
		Cadmium (Cd)	1.54	100	4	0.4	0.32 J
		Chromium (Cr)	24.0	610	23	**2**	**12**
		Cobalt (Co)	**16.0**	12,000	470	DNE	**17 J**
		Copper (Cu)	24.2	8,200	310	DNE	14.5
		Lead (Pb)	**26.0**	400[d]	400[d]	DNE	**28.8 J**
		Mercury (Hg)	0.46	DNE	DNE	DNE	0.03
		Nickel (Ni)	20.6	4,100	160	**7**	**18.4 J**
		Vanadium (V)	45.1	1,400	55	300	33.2
		Zinc (Zn)	98	61,000	2,300	620	37.8 J
043X0003	04'	**Arsenic (As)**	20.3	—	—	**1**	**11.3**
		Barium (Ba)	265	—	—	**82**	**223**
		Beryllium (Be)	1.00	—	—	3	0.76
		Cadmium (Cd)	3.24	—	—	**0.4**	**0.43 J**
		Chromium (Cr)	28.3	—	—	**2**	**15.1**
		Cobalt (Co)	14.4	—	—	DNE	8.8 J
		Copper (Cu)	32.5	—	—	DNE	14.1
		Lead (Pb)	19.8	—	—	DNE	16.9 J

Table 7.4.3
Assemblies G and H — SWMU 43 Inorganic Detections in Soil by Location (mg/kg)

Location	Depth (in feet)	Constituent	RC[a]	RBC[b] Industrial	RBC[b] Residential	SSL[c]	Result
043X0003	04'	Mercury (Hg)	0.18	—	—	DNE	0.05
(continued)		**Nickel (Ni)**	—	—	—	**7**	**24.5 J**
		Vanadium (V)	43.7	—	—	300	27.4
		Zinc (Zn)	109	—	—	620	44.5 J

Notes:
a = Background Reference Concentration (RC) from the *Reference Concentrations Technical Memorandum* (August 27,1996, E/A&H).
b = Industrial and residential RBCs from the *Risk-Based Concentration Table* (April 12, 1999, USEPA Region III RBC Memo).
c = Soil Screening Level (SSL) from the *Generic Screening Levels* (May 1996, USEPA/OSWER SSL Guidance Document, EPA/540/R-95/128).
d = Lead soil-cleanup value, as established by USEPA/OSWER directive #9355.4-12, substituted for RBC.
— = RC value does not exist or RBC values do not apply to subsurface soil.
DNE = Does not exist.
J = Constituent detected at concentrations less than the method reporting limit; value estimated.
Bold indicates samples that exceed any of the standard reference values.
Bold/Italics indicate samples that were included in the PRE.

As presented in Table 7.4.3, three of the 12 inorganics detected in surface soil at SWMU 43 exceeded their RCs; one exceeded both its RC and residential and industrial RBCs; and four exceeded their soil-to-groundwater SSLs.

- Arsenic was identified as a COPC because it exceeded its surface-soil RC (14.6 mg/kg), residential RBC (0.43 mg/kg), industrial RBC (3.8 mg/kg), and SSL (1 mg/kg) in two surface-soil samples: 043S000101 (32.9 mg/kg) and 043S000301 (15.1 mg/kg) and exceeded its soil-to-groundwater SSL in all three subsurface-soil samples.

- Lead exceeded its RC (26.0 mg/kg) in two surface-soil samples: 043S000101 (38.4 mg/kg) and 043S000301 (28.8 mg/kg).

- Cobalt exceeded its RC (16.0 mg/kg) in surface-soil sample 043S000301 (17 mg/kg).

- Barium, chromium, and nickel exceeded their soil-to-groundwater SSLs in all surface-soil samples.

- Arsenic, barium, chromium, and nickel exceeded their soil-to-groundwater SSLs in all subsurface-soil samples. Cadmium exceeded its soil-to-groundwater SSL in one subsurface-soil sample.

Groundwater

No groundwater samples were collected at SWMU 43.

7.4.4 Preliminary Risk Evaluation

In accordance with *Guidance on Preliminary Risk Evaluations for the Purpose of Reaching a Finding of Suitability to Lease* (USEPA Region IV Memorandum, November 1994), the potential for a PRE was examined for SWMU 43 using data from surface-soil samples collected during the CSI (Table 7.4.4). Arsenic was identified as a COPC because it exceeded both its RC and its RBCs. Arsenic's HQ and excess cancer risk were calculated because arsenic can significantly contribute to both HI and cancer risk. The non-carcinogen arsenic RBC values of 610 mg/kg (industrial) and 23 mg/kg (residential) were used to calculate the HQ, while the carcinogen arsenic RBC values of 3.8 mg/kg (industrial) and 0.43 mg/kg (residential) were used for the excess cancer risk. For more information on calculation of HQ and cancer risk, refer to Section 5.

Table 7.4.4
SWMU 43
Preliminary Risk Evaluation

					Residential			Industrial	
Chemical	Maximum Reported Concentration	Units	RC	RBC	Hazard Quotient	ILCR	RBC	Hazard Quotient	ILCR
Arsenic	32.9	mg/kg	14.6	23 N	1.4	NA	610 N	0.05	NA
Arsenic (carcinogen)	32.9	mg/kg	14.6	0.43 C	NA	7.7E-5	3.8 C	NA	8.7E-6
Sum					1.4	7.7E-5		0.05	8.7E-6

Notes:
RBC = Risk-based concentration from *USEPA Region III April 1999 RBC Table*; in accordance with *USEPA Region IV Supplemental Guidance to RAGS Bulletin 1*, non-carcinogen RBCs above were conservatively adjusted to reflect a hazard quotient of 0.1.
RC = Reference concentration
N = Non-carcinogen
C = Carcinogen
NA = Not applicable
ILCR = Incremental lifetime (excess) cancer risk

PRE Conclusions

The following conclusions are based on PRE data from surface-soil samples:

Residential Land Use

- Carcinogens: Arsenic was the only constituent examined in the PRE for cancer risk. The excess cancer risk was estimated to be 7.7E-5, which is less than the risk threshold of 1E-4 for arsenic. Because the estimated value is less than the acceptable cancer risk value, this property is currently considered to be suitable for residential land use, as established in the USEPA Region IV November 1994 memorandum.

- Non-carcinogens: The cumulative residential HI was estimated to be approximately 1.4 due to the presence of arsenic, which is greater than the risk threshold of 1 for a residential land-use scenario. Because the estimated value is greater than the acceptable non-cancer risk value, this property is currently considered to be unsuitable for residential land use, as established in the USEPA Region IV November 1994 memorandum.

Industrial Land Use

- Carcinogens: The excess cancer risk for arsenic was determined to be 8.7E-6, which is less than the risk threshold of 1E-4 for arsenic as an industrial land use scenario. Because the estimated value is less than the acceptable cancer risk value, this property is currently considered to be suitable for industrial land use, as established in the USEPA Region IV November 1994 memorandum.

- Non-carcinogens: The HI for arsenic at this site was estimated to be 0.05, which is less than the risk threshold of 1 for an industrial land use scenario. Because the estimated value is less than the acceptable non-cancer risk value, this property is currently considered to be suitable for industrial land use, as established by the USEPA Region IV November 1994 memorandum.

7.4.5 Fate and Transport

The approach for evaluating the fate and transport of Assemblies G and H contaminants was discussed in Section 6.2. This section applies that approach to contaminants detected at SWMU 43. Transport processes for contaminants other than those designated as COPCs are also discussed if they occur in multiple environmental media, or have the potential to migrate to other media.

Potential migration pathways for contaminants at SWMU 43 include leaching from soil to groundwater and erosion of surface soil containing sorbed contaminants, which forms sediment in drainage ways. Surface-soil analytical data indicate that no VOCs exceeded soil-to-air SSLs; therefore, the soil-to-air cross-media transport process is not discussed.

Discussion of fate and transport is limited to organics that exceeded their soil-to-groundwater SSLs, inorganics that exceeded both their SSLs and background RCs, and COPCs as determined

by the PRE. The inorganics barium, chromium, and nickel exceeded their soil-to-groundwater SSLs, but are not discussed here because they did not exceed background RCs.

Fate and transport mechanisms are discussed for the following contaminants at SWMU 43:

- Arsenic is identified as a COPC because it exceeded its surface-soil RC, residential RBC, and industrial RBC in two surface-soil samples. Both non-carcinogenic and carcinogenic arsenic were identified as COPCs in the PRE. Arsenic also exceeded its SSL in all surface- and subsurface-soil samples.

- The four organics — benzene, trichloroethene, ethylbenzene, and dieldrin — each exceeded their soil-to-groundwater SSLs in at least one sampling location.

7.4.5.1 Soil-to-Groundwater Cross-Media Transport

SWMU 43 contaminants that exhibit the potential for soil-to-groundwater transport, based on comparison of soil concentrations to the groundwater-protection soil-screening criteria, are the inorganic arsenic; the pesticide dieldrin; and the organics benzene, ethylbenzene, and trichloroethene.

Arsenic exceeded its SSL, RC, and residential and industrial RBCs in two samples. Arsenic is not considered a soil-to-groundwater migration concern because of its immobility in soil; however, the potential exists for leaching to groundwater based on the SSL and RC exceedances. No groundwater results are currently available for SWMU 43 inorganics.

Dieldrin was detected in one surface-soil sample exceeding its SSL. Dieldrin may be attributed to basewide aerial application during the 1950s and 1960s (E/A&H, June 1997). The potential for dieldrin to migrate to groundwater is not likely because of its low solubility, vapor pressure,

and Henry's law constant. Overall, dieldrin is anticipated to be immobile and persistent in the environment because of its affinity for binding to soil grains, not readily diffusing into groundwater.

Benzene, ethylbenzene, and trichloroethene pose the greatest threat for leaching to underlying groundwater because of the chemical and physical properties of VOCs. VOCs have a limited tendency to sorb to solids and can be expected to be moderately to highly mobile in the environment. Although no groundwater samples were collected at SWMU 43, the relatively low VOC concentrations in soil are not expected to widely impact groundwater.

7.4.5.2 Soil-to-Sediment Cross-Media Transport

Contaminants detected in near-surface soil were evaluated to determine their potential for transport by erosion in areas with vegetation or gravel cover. Drainage patterns and topography at SWMU 43 were also examined to determine whether site features would support contaminant transport.

Contaminants detected in surface soil consist of VOCs, SVOCs, pesticides, and inorganics. The majority of contaminants detected in surface soil are SVOCs. As described in Section 6, SVOCs tend to associate with soil particles and are relatively immobile in the environment, leading to a likelihood of greater persistence in soil.

Surface water at SWMU 43 drains south toward a catch basin, and then flows west into a north-south drainage ditch. Erosion is necessary for surface-soil contaminants to become mobile, and the majority of the area is covered with gravel and vegetation that will help prohibit soil erosion and sediment formation in the drainage ditch.

7.4.6 Conclusions and Recommendations

The following conclusions and recommendations were developed from the investigation data:

Conclusions

- SWMU 43 is suitable only for industrial use because of the presence of arsenic in concentrations exceeding the residential HI threshold and the presence of TCE in soil.

- Twenty-five organic compounds were detected in surface (0 to 1 foot bls) soil:

  — Benzo(a)pyrene detected in one sample (043S000301) exceeded the residential RBC.

  — TCE exceeded its soil-to-groundwater SSL at location 043X0003.

- TPH detected in one sample exceeded the TDEC cleanup level of 100 mg/kg.

- 12 metals were detected in surface soil at SWMU 43. Of these:

  — Arsenic exceeded its RC, residential and industrial RBCs, and its SSL in two soil samples.

  — Cadmium exceeded its soil-to-groundwater SSL in one subsurface-soil sample, but is not a significant threat to groundwater.

  — Barium, chromium, and nickel exceeded their soil-to-groundwater SSLs in all surface and subsurface-soil samples, but they are not considered a threat to groundwater.

- A PRE for SWMU 43 determined the following:

  - Non-carcinogen arsenic poses a threat to the residential land-use scenario with an HI of 1.4, but not to the industrial land-use scenario.

  - Carcinogen arsenic poses little threat to the residential and industrial land-use scenarios.

Recommendations

Based on the presence of TCE and TPH in soil, an RFI is recommended for SWMU 43, including a the characterization of the groundwater and a TPH-contaminated soil removal.

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7.5 SWMU 47 — Former Hazardous Waste Accumulation Point

SWMU 47, a former hazardous waste accumulation point, is a concrete block building on the south side of Building S-344 (former Sea Bees Compound), which is in the southwest corner of the NSA Mid-South Southside at the west end of Ticonderoga Street (formerly D Street; Figure 1.1). The SWMU is a concrete pad that joins a concrete wash rack and abuts Building S-344. A grass field south of the concrete extends approximately 50 feet to the north bank of a tributary (SWMU 38) of Big Creek Drainage Canal. SWMU 47 reportedly stored mineral spirits, waste oil, and hydraulic fluid between 1983 and 1992. No visual evidence of a release was identified during a 1990 inspection (ERC/EDGe, 1990).

SWMU 47 and the surrounding area are characterized by relatively level, low-relief topography. Surrounding areas are covered with concrete or grass. Surface water drains south to an east-west drainage ditch (SWMU 38), which flows west into Big Creek Drainage Canal. The regional and local hydrogeology are described in Sections 2.11 and 2.12, respectively, of the *Comprehensive RFI Work Plan* (E/A&H, October 1994). Site-specific geologic and hydrogeologic information and references are in Section 2 of this report and in Section 2.0 of the *Assemblies G and H CSI Work Plan* (EnSafe, December 1997). Because soil and groundwater samples were collected by pushing DPT sampling tools to a predetermined depth without lithologic characterization, no additional site-specific lithologic information was collected during this investigation.

7.5.1 Previous Sampling Activities

No previous sampling is known to have been conducted at SWMU 47.

7.5.2 Field Investigation

The primary objective of the field investigation was to determine whether a release had occurred at SWMU 47. All samples were collected and processed according to Section 4 of the *Comprehensive RFI Work Plan* (E/A&H, October 1994).

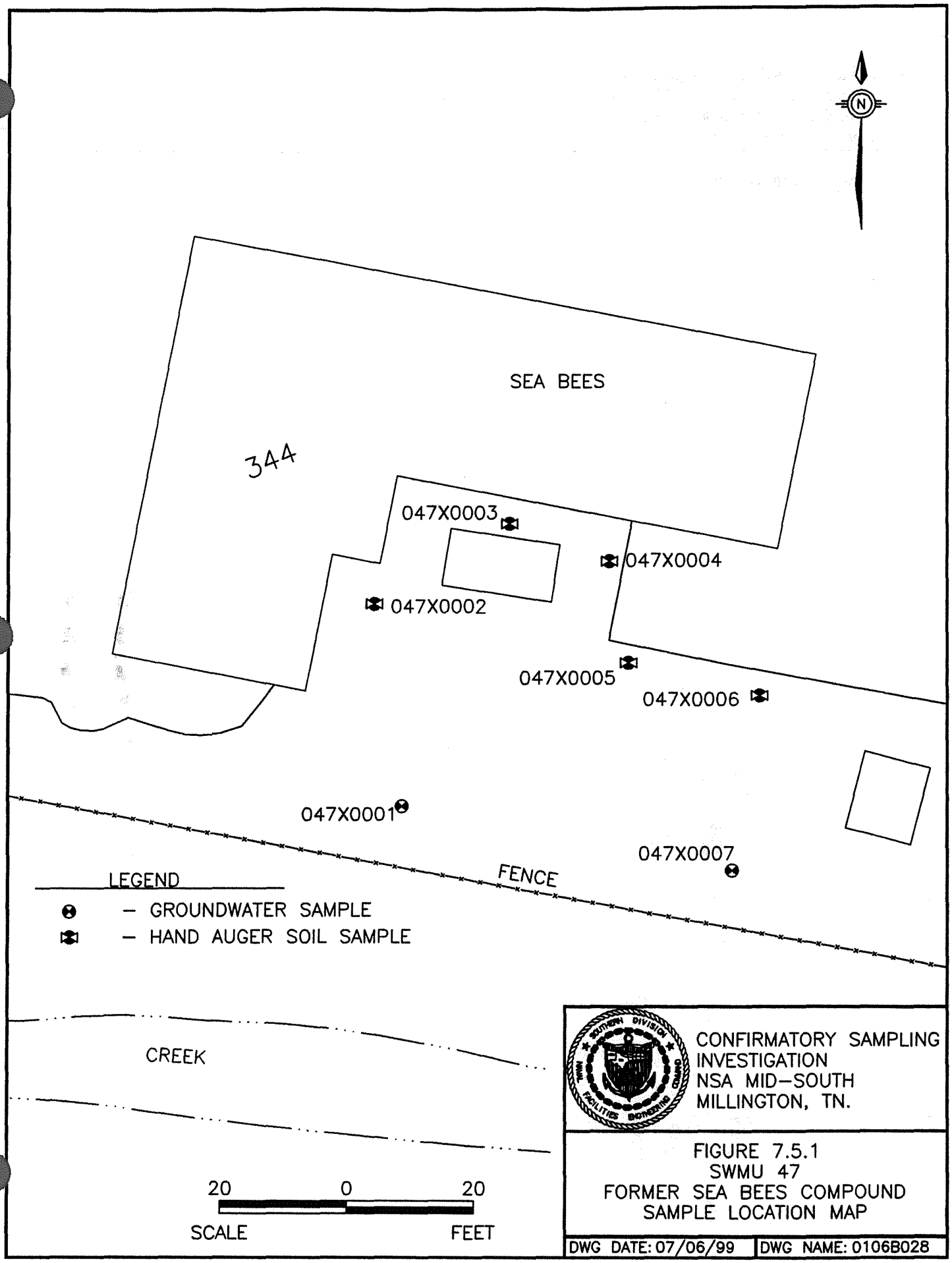
Soil

The soil investigation consisted of hand-auger sampling, as outlined in Section 4.4.4.3 of the *Comprehensive RFI Work Plan* (E/A&H, October 1994), at five locations inside and outside the perimeter of the concrete pad and wash rack at the southeast end of Building S-344 (Figure 7.5.1). Soil samples were collected from the surface below the grass (0 to 1 foot deep), and the subsurface (3 to 4 feet deep). The surface-soil samples were collected to assess risk and inspect for surface releases; subsurface samples were collected to indicate the extent of contamination if a release had occurred.

Two surface-soil samples (047S000201 and 047S000601) were collected from the most visibly stained area and underwent FSA for risk-assessment purposes, while the other three surface-soil samples (047S000301, 047S000401, and 047S000501) and three (047S000204, 047S000404, and 047S000604) of the proposed five subsurface-soil samples were analyzed for VOCs, SVOCs, Appendix IX metals, TPH, TPH-GRO, and TPH-DRO. These analyses include indicators of the types of materials once stored at SWMU 47. The 3 to 4 foot interval was not sampled at locations 047X0003 and 047X0005 because subsurface concrete pieces and other debris obstructed the hand auger. All soil samples were analyzed at Savannah Analytical Laboratory in Savannah, Georgia.

Groundwater

Groundwater samples were collected from the deep alluvium at two sample locations (047X0001 and 047X0007). The groundwater investigation consisted of Geoprobe sampling for offsite-laboratory VOC analysis. VOCs were used as an indicator analysis because they include constituents of petroleum and solvents (common contaminants at NSA Mid-South) and because of the small sample volume required. Based on previous work at other SWMUs, it was estimated that there would be a refusal depth of approximately 50 feet using the Geoprobe equipment. The Geoprobe was able to penetrate through the upper alluvium into sand and gravel in the deep alluvium to a refusal depth of about 50 feet. Groundwater samples were analyzed at Savannah Analytical Laboratory in Savannah, Georgia, for VOC analysis.


N
SEA BEES
344
047X0003
047X0004
047X0002
047X0005
047X0006
047X0001
047X0007
FENCE
LEGEND
– GROUNDWATER SAMPLE
– HAND AUGER SOIL SAMPLE
CREEK
20 0 20
SCALE FEET
SOUTHERN DIVISION NAVAL FACILITIES ENGINEERING COMMAND
CONFIRMATORY SAMPLING INVESTIGATION
NSA MID–SOUTH
MILLINGTON, TN.
FIGURE 7.5.1
SWMU 47
FORMER SEA BEES COMPOUND
SAMPLE LOCATION MAP
DWG DATE: 07/06/99
DWG NAME: 0106B028

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7.5.3 Confirmatory Sampling Results

Tables and figures in this section present the analytical results for all CSI soil and groundwater samples. Values for organic analyses of soil are compared to corresponding RBCs for each compound for both residential and industrial scenarios, and with the SSL for protection of groundwater as published in the *USEPA Region III April 1999, RBC Table* (April 12, 1999). Inorganic results are compared to RCs from NSA Mid-South, residential and industrial RBCs, and SSLs. SSLs were taken from *EPA/540/R-95/128* (May 1996). Groundwater results are compared to tap-water RBCs from the USEPA Region III tables and to MCLs published in the *Drinking Water Regulations and Health Advisories Table* (USEPA, October 1996).

Organics in Soil

Organic and TPH soil data for SWMU 47 samples are presented in Tables 7.5.1 and 7.5.2, respectively.

All polyaromatic hydrocarbons (PAHs) listed below are classified by USEPA as B2 carcinogens, and their carcinogenicity is addressed relative to that of benzo(a)pyrene, which has a slope factor of 7.3 kilograms per day per milligram (kg-day/mg). Toxicity Equivalence Factors (TEFs), also determined by USEPA, are multipliers that are applied to the detected concentrations. The results are subsequently summed and used to estimate the cancer risk posed by benzo(a)pyrene and other PAHs with similar toxicology. BEQs were estimated in accordance with *USEPA Region IV November 1995 Supplemental Guidance to RAGS Bulletin 2*, as presented in Table 7.5.1 and discussed below.

BEQs include the following:

PAH	TEF
Benzo(a)anthracene	0.1
Benzo(b)fluoranthene	0.1

Benzo(k)fluoranthene	0.01
Benzo(a)pyrene	1.0
Chrysene	0.001
Dibenz(a,h)anthracene	1.0
Indeno(1,2,3-cd)pyrene	0.1

Only BEQs greater than 200 μg/kg are included in the following table, indicated separately in a shaded box, followed by the PAHs that are considered in its summation. After calculation, only the BEQ value is considered in a PRE and only BEQs whose values exceed both the RC and the residential or industrial RBCs of benzo(a)pyrene are considered COPCs.

Table 7.5.1
Assemblies G and H — SWMU 47 Organic Detections in Soil by Location (μg/kg)

Location	Depth (in feet)	Contaminant	RC[a]	RBC[b] Industrial	RBC[b] Residential	SSL[c]	Result
047X0002	01'	4,4'-DDT	—	17,000	1,900	2,000	44 J
		Aldrin	—	340	38	20	11 J
		Anthracene	—	61,000,000	2,300,000	590,000	35 J
		Benzene*	—	200,000	22,000	2	2 J
		Benzo(g,h,i)perylene†	—	6,100,000	230,000	210,000	120 J
		BEQ*	**565**	**780**	**88**	**400**	**245**
		Benzo(a)anthracene	**—**	**7,800**	**880**	**80**	**200 J**
		Benzo(b)fluoranthene	**—**	**7,800**	**880**	**200**	**210 J**
		Benzo(k)fluoranthene	**—**	**78,000**	**8,800**	**2,000**	**170 J**
		Benzo(a)pyrene	**565**	**780**	**88**	**400**	**190 J**
		Chrysene	—	780,000	88,000	8,000	210 J
		Indeno(1,2,3-cd)pyrene	—	7,800	880	700	120 J
		Dieldrin*	***262***	***360***	***40***	***0.2***	***420***
		Endrin aldehyde	—	61,000	2,300	50	21 J
		Fluoranthene	—	8,200,000	310,000	210,000	320 J
		Phenanthrene†	—	6,100,000	230,000	210,000	140 J
		Pyrene	—	6,100,000	230,000	210,000	350 J
		Xylene (Total)	—	410,000,000	16,000,000	9,000	2.3 J

Table 7.5.1
Assemblies G and H — SWMU 47 Organic Detections in Soil by Location (μg/kg)

Location	Depth (in feet)	Contaminant	RC[a]	RBC[b] Industrial	RBC[b] Residential	SSL[c]	Result
047X0002 (continued)	01'	bis(2-Ethylhexyl)phthalate (BEHP)	—	410,000	46,000	180,000	280 J
047X0002	04'	2-Butanone (MEK)	—	—	—	DNE	7.3 J
		Acenaphthene	—	—	—	29,000	13 J
		Acetone	—	—	—	800	76
		Anthracene	—	—	—	590,000	48 J
		Benzo(a)anthracene	—	—	—	**80**	**110 J**
		Benzo(a)pyrene	565	—	—	400	89 J
		Benzo(b)fluoranthene	—	—	—	200	86 J
		Benzo(k)fluoranthene	—	—	—	2,000	85 J
		Chrysene	—	—	—	8,000	110 J
		Diethylphthalate	—	—	—	23,000	54 J
		Fluoranthene	—	—	—	210,000	250 J
		Phenanthrene†	—	—	—	210,000	140 J
		Pyrene	—	—	—	210,000	230 J
		bis(2-Ethylhexyl)phthalate (BEHP)	—	—	—	180,000	210 J
047X0003	01'	2-Methylnaphthalene	—	8,200,000	310,000	DNE	75 J
		Acenaphthylene	—	12,000,000	470,000	29,000	27 J
		Fluoranthene	—	8,200,000	310,000	210,000	36 J
		Naphthalene	—	8,200,000	310,000	4,000	210 J
		Phenanthrene†	—	6,100,000	230,000	210,000	64 J
		Pyrene	—	6,100,000	230,000	210,000	52 J
		bis(2-Ethylhexyl)phthalate (BEHP)	—	410,000	46,000	180,000	240 J
047X0004	01'	Acenaphthene	—	12,000,000	470,000	29,000	47 J
		Anthracene	—	61,000,000	2,300,000	590,000	110 J
		Benzo(a)anthracene	—	7,800	880	**80**	**160 J**
		Benzo(a)pyrene	565	780	**88**	400	**100 J**
		Carbazole	—	290,000	32,000	**30**	**56 J**
		Chrysene	—	780,000	88,000	8,000	170 J
		Di-n-butylphthalate	—	20,000,000	780,000	DNE	410 J

Table 7.5.1
Assemblies G and H — SWMU 47 Organic Detections in Soil by Location (μg/kg)

Location	Depth (in feet)	Contaminant	RC[a]	RBC[b] Industrial	RBC[b] Residential	SSL[c]	Result
047X0004	01'	Fluoranthene	—	8,200,000	310,000	210,000	380 J
(continued)		Fluorene	—	8,200,000	310,000	28,000	43 J
		Naphthalene	—	8,200,000	310,000	4,000	23 J
		Pyrene	—	6,100,000	230,000	210,000	390 J
047X0004	04'	Fluoranthene	—	—	—	210,000	23 J
		Pyrene	—	—	—	210,000	22 J
047X0005	01'	Anthracene	—	61,000,000	2,300,000	590,000	110 J
		BEQ[+]	565	780	**88**	400	**353**
		Benzo(a)anthracene	—	7,800	880	**80**	**320 J**
		Benzo(b)fluoranthene	—	7,800	880	**200**	**250 J**
		Benzo(k)fluoranthene	—	78,000	8,800	2,000	360 J
		Benzo(a)pyrene	565	780	**88**	400	**280 J**
		Chrysene	—	780,000	88,000	8,000	380 J
		Indeno(1,2,3-cd)pyrene	—	7,800	880	700	120 J
		Carbazole	—	290,000	32,000	**30**	**60 J**
		Diethylphthalate	—	160,000,000	6,300,000	23,000	64 J
		Fluoranthene	—	8,200,000	310,000	210,000	620 J
		Phenanthrene†	—	6,100,000	230,000	210,000	910 J
		Pyrene	—	6,100,000	230,000	210,000	430 J
047X0006	01'	4,4'-DDE	—	17,000	1,900	3,000	1.2 J
		Aldrin	—	340	38	20	0.38 J
		Aroclor-1260*	—	2,900	320	DNE	140 J
		Benzene*	—	200,000	22,000	2	2 J
		Benzo(a)anthracene	—	7,800	880	80	65 J
		Benzo(a)pyrene	565	780	88	200	83 J
		Benzo(b)fluoranthene	—	7,800	880	2,000	150 J
		Chrysene	—	780,000	88,000	8,000	88 J
		Dieldrin*	262	360	40	0.2	26 J
		Diethylphthalate	—	160,000,000	6,300,000	23,000	93 J
		Endosulfan I	—	1,200,000	47,000	900	0.87 J
		Ethylbenzene	—	20,000,000	780,000	700	1.4 J

Table 7.5.1
Assemblies G and H — SWMU 47 Organic Detections in Soil by Location (μg/kg)

Location	Depth (in feet)	Contaminant	RC[a]	RBC[b] Industrial	RBC[b] Residential	SSL[c]	Result
047X0006 (continued)	01'	Fluoranthene	—	8,200,000	310,000	210,000	80 J
		Phenanthrene†	—	6,100,000	230,000	210,000	31 J
		Pyrene	—	6,100,000	230,000	210,000	110 J
		Xylene (Total)	—	410,000,000	16,000,000	9,000	5.5 J
		bis(2-Ethylhexyl)phthalate (BEHP)	—	410,000	46,000	180,000	89 J
047X0006	04'	Diethylphthalate	—	—	—	23,000	95 J
		Fluoranthene	—	—	—	210,000	45 J
		Phenanthrene†	—	—	—	210,000	30 J
		Pyrene	—	—	—	210,000	55 J

Notes:

a = Background Reference Concentration (RC) from the *Reference Concentrations Technical Memorandum* (August 27, 1996, E/A&H).
b = Industrial and residential RBCs from the *Risk-Based Concentration Table* (April 12, 1999, USEPA Region III RBC Memo).
c = Soil Screening Level (SSL) from the *Generic Screening Levels* (May 1996, USEPA/OSWER SSL Guidance Document, EPA/540/R-95/128).
— = RC value does not exist or RBC values do not apply to subsurface soil.
DNE = Does not exist.
J = Contaminant detected at concentrations less than the method reporting limit; value estimated.
+ = A preliminary remediation goal of 1 mg/kg has been set for PCBs based on *Guidance on Remedial Actions for Superfund Sites with PCB Contamination* (USEPA, 1990) and on EPA efforts to manage PCB contamination.
* = Reference concentration for dieldrin determined from base-wide background sampling and screening (*Surface Soil (0 to 1 foot) Background Dieldrin Concentrations at NSA Memphis*. June 3, 1997 Tech Memo).
+ = Benzo(a)pyrene Equivalent (BEQ) was calculated in accordance with *USEPA Region IV November 1995 Supplemental Guidance to RAGS Bulletin 2*.
✧ = Value meets but does not exceed reference value.
† = Pyrene used as a surrogate.
Bold indicates samples that exceed any of the standard reference values.
Bold/Italics indicate samples included in PRE.

As indicated in Table 7.5.1, 31 contaminants were detected in SWMU 47 soil samples. The concentration of benzene in two samples met but did not exceed its soil-to-groundwater SSL.

- Dieldrin is the only COPC for SWMU 47. It exceeded its RC (262 μg/kg), residential RBC (40 μg/kg), industrial RBC (360 μg/kg), and soil-to-groundwater SSL (0.2 μg/kg)

in soil sample, 047X000201 (420 μg/kg). Dieldrin also exceeded its soil-to-groundwater SSL in sample 047X000601 (26 μg/kg).

- BEQ exceeded its residential RBC (88 μg/kg) in two samples: 047X000201 (245 μg/kg) and 047X000501 (353 μg/kg).

- Carbazole exceeded its soil-to-groundwater SSL (30 μg/kg) in samples 047X000401 (56 μg/kg) and 047X000501 (60 μg/kg).

Table 7.5.2
Assemblies G and H — SWMU 47 Petroleum Hydrocarbon Detections in Soil by Location (mg/kg)

Location	Depth (in feet)	Contaminant	Result
047X0002	01'	TPH	320
		TPH - DRO	14
047X0002	04'	TPH	14
		TPH - DRO	28
047X0004	01'	TPH - DRO	7.6
047X0004	04'	TPH - DRO	7.9
047X0005	01'	TPH - DRO	16
047X0006	01'	**TPH**	**340**
		TPH - DRO	21
047X0006	04'	TPH	86
		TPH - DRO	9.9

Notes:
DRO = Diesel range organics
mg/kg = milligrams per kilogram
TPH = Total petroleum hydrocarbons.
TDEC TPH soil-cleanup level ranges from 100 mg/kg to 1,000 mg/kg.
Bold indicates samples that exceed any of the standard reference values.

Because no RBC values exist for TPH or TPH-GRO/DRO, TDEC soil-cleanup values were used for comparison. TDEC has established three cleanup concentrations for TPH — these are 100 mg/kg, 500 mg/kg, and 1,000 mg/kg — depending on the soil permeability. Initially, the TDEC cleanup level of 500 mg/kg for total TPH in nondrinking water aquifers (i.e., the upper alluvium), with soil permeabilities between 10^{-4} and 10^{-6} centimeters per second (cm/sec) (TDEC, 1997), was compared to total TPH concentrations in surface and subsurface soil. This cleanup level was chosen because 1.84E-6 cm/sec, a value representing the average soil permeability from 20 samples across the base, was used as the default for sites lacking permeability data (Appendix B); however, as requested by the PWD Env. Div., TPH detections in soil from 0 to 5 feet deep that exceed the TDEC cleanup level of 100 mg/kg will be designated for removal. As shown in Table 7.5.2, two SWMU 47 samples (047X000201 [320 mg/kg], and 047X000601 [340 mg/kg]) had detections exceeding the TDEC soil-cleanup value of 100 mg/kg. No SWMU 47 samples exceeded the 500 or 1,000 mg/kg TDEC soil-cleanup values.

Inorganics in Soil

Inorganic soil data for SWMU 47 samples are presented in Table 7.5.3.

Table 7.5.3
Assemblies G and H — SWMU 47 Inorganic Detections in Soil by Location (mg/kg)

Location	Depth (in feet)	Constituent	RC[a]	RBC[b] Industrial	RBC[b] Residential	SSL[c]	Result
047X0002	01'	Arsenic (As)	14.6	3.8	0.43	1	5.3
		Barium (Ba)	223	14,000	550	82	93.3
		Beryllium (Be)	1.00	410	16	3	0.38 J
		Cadmium (Cd)	1.54	100	4	0.4	0.17 J
		Chromium (Cr)	24.0	610	23	2	9.5
		Cobalt (Co)	16.0	12,000	470	DNE	5.3 J

Table 7.5.3
Assemblies G and H — SWMU 47 Inorganic Detections in Soil by Location (mg/kg)

Location	Depth (in feet)	Constituent	RC[a]	RBC[b] Industrial	RBC[b] Residential	SSL[c]	Result
047X0002	01'	Copper (Cu)	24.2	8,200	310	DNE	13.2
(continued)		**Lead (Pb)**	**26.0**	400[d]	400[d]	DNE	**45.8 J**
		Mercury (Hg)	0.46	DNE	DNE	DNE	0.06
		Nickel (Ni)	20.6	4,100	160	7	**10.2 J**
		Silver (Ag)	2.05	1,000	39	2	0.64 J
		Vanadium (V)	45.1	1,400	55	300	16.2
		Zinc (Zn)	98	61,000	2,300	620	62.3 J
047X0002	04'	**Arsenic (As)**	20.3	—	—	**1**	**4.4**
		Barium (Ba)	265	—	—	**82**	**144**
		Beryllium (Be)	1.00	—	—	3	0.43 J
		Cadmium (Cd)	3.24	—	—	0.4	0.11 J
		Chromium (Cr)	28.3	—	—	**2**	**10.6**
		Cobalt (Co)	14.4	—	—	DNE	6.7 J
		Copper (Cu)	32.5	—	—	DNE	12.2
		Lead (Pb)	19.8	—	—	DNE	14.5 J
		Mercury (Hg)	0.18	—	—	DNE	0.03
		Nickel (Ni)	—	—	—	**7**	**13.2 J**
		Vanadium (V)	43.7	—	—	300	18.4
		Zinc (Zn)	109	—	—	620	46.9 J
047X0003	01'	**Arsenic (As)**	14.6	3.8	0.43	1	10.7
		Barium (Ba)	223	14,000	550	82	135
		Beryllium (Be)	1.00	410	16	3	0.53 J
		Cadmium (Cd)	1.54	100	4	0.4	0.47 J
		Chromium (Cr)	24.0	610	23	2	13.9

Table 7.5.3
Assemblies G and H — SWMU 47 Inorganic Detections in Soil by Location (mg/kg)

Location	Depth (in feet)	Constituent	RC[a]	RBC[b] Industrial	RBC[b] Residential	SSL[c]	Result
047X0003	01'	Cobalt (Co)	16.0	12,000	470	DNE	7.7 J
(continued)		Copper (Cu)	24.2	8,200	310	DNE	14.6
		Lead (Pb)	26.0	400[d]	400[d]	DNE	24.7 J
		Mercury (Hg)	0.46	DNE	DNE	DNE	0.07
		Nickel (Ni)	20.6	4,100	160	7	15.9 J
		Vanadium (V)	45.1	1,400	55	300	26.9
		Zinc (Zn)	98	61,000	2,300	620	97.3 J
047X0004	01'	**Arsenic (As)**	14.6	**3.8**	**0.43**	**1**	**7.7**
		Barium (Ba)	223	14,000	550	**82**	**109**
		Beryllium (Be)	1.00	410	16	3	0.45 J
		Cadmium (Cd)	1.54	100	4	0.4	0.38 J
		Chromium (Cr)	24.0	610	23	**2**	**12.2**
		Cobalt (Co)	16.0	12,000	470	DNE	5.8 J
		Copper (Cu)	24.2	8,200	310	DNE	21.3
		Lead (Pb)	**26.0**	400[d]	400[d]	DNE	**33.2 J**
		Mercury (Hg)	0.46	DNE	DNE	DNE	0.06
		Nickel (Ni)	20.6	4,100	160	**7**	**12.6 J**
		Vanadium (V)	45.1	1,400	55	300	19.7
		Zinc (Zn)	**98**	61,000	2,300	620	**106 J**
047X0004	04'	**Arsenic (As)**	20.3	—	—	**1**	**8.1**
		Barium (Ba)	265	—	—	**82**	**125**
		Beryllium (Be)	1.00	—	—	3	0.45 J
		Chromium (Cr)	28.3	—	—	**2**	**10.8**
		Cobalt (Co)	14.4	—	—	DNE	7.7 J

Table 7.5.3
Assemblies G and H — SWMU 47 Inorganic Detections in Soil by Location (mg/kg)

Location	Depth (in feet)	Constituent	RC[a]	RBC[b] Industrial	RBC[b] Residential	SSL[c]	Result
047X0004	04'	Copper (Cu)	32.5	—	—	DNE	13.7
(continued)		**Lead (Pb)**	**19.8**	—	—	DNE	**19.9 J**
		Mercury (Hg)	0.18	—	—	DNE	0.04
		Nickel (Ni)	—	—	—	7	14.5 J
		Vanadium (V)	43.7	—	—	300	20.9
		Zinc (Zn)	109	—	—	620	60.3 J
047X0005	01'	**Arsenic (As)**	14.6	**3.8**	**0.43**	**1**	**7**
		Barium (Ba)	223	14,000	550	**82**	**82.6**
		Beryllium (Be)	1.00	410	16	3	0.32 J
		Cadmium (Cd)	1.54	100	4	0.4	0.23 J
		Chromium (Cr)	24.0	610	23	**2**	**9**
		Cobalt (Co)	16.0	12,000	470	DNE	4.9 J
		Copper (Cu)	24.2	8,200	310	DNE	11.6
		Lead (Pb)	**26.0**	400[d]	400[d]	DNE	**35.7 J**
		Mercury (Hg)	0.46	DNE	DNE	DNE	0.04
		Nickel (Ni)	20.6	4,100	160	**7**	**9.4 J**
		Vanadium (V)	45.1	1,400	55	300	15.2
		Zinc (Zn)	98	61,000	2,300	620	53.4 J
047X0006	01'	**Arsenic (As)**	14.6	**3.8**	**0.43**	**1**	**8.8**
		Barium (Ba)	223	14,000	550	**82**	**118**
		Beryllium (Be)	1.00	410	16	3	0.45 J
		Cadmium (Cd)	1.54	100	4	0.4	0.32 J
		Chromium (Cr)	24.0	610	23	**2**	**11.6**
		Cobalt (Co)	16.0	12,000	470	DNE	6.2 J
		Copper (Cu)	24.2	8,200	310	DNE	16
		Lead (Pb)	**26.0**	400[d]	400[d]	DNE	**31.7 J**
		Mercury (Hg)	0.46	DNE	DNE	DNE	0.12

Table 7.5.3
Assemblies G and H — SWMU 47 Inorganic Detections in Soil by Location (mg/kg)

Location	Depth (in feet)	Constituent	RC[a]	RBC[b] Industrial	RBC[b] Residential	SSL[c]	Result
047X0006 (continued)	01'	Nickel (Ni)	20.6	4,100	160	7	13.4 J
		Vanadium (V)	45.1	1,400	55	300	19.3
		Zinc (Zn)	98	61,000	2,300	620	78.8 J
047X0006	04'	**Arsenic (As)**	20.3	—	—	**1**	**3.2**
		Barium (Ba)	265	—	—	82	38.7
		Beryllium (Be)	1.00	—	—	3	0.15 J
		Cadmium (Cd)	3.24	—	—	0.4	0.16 J
		Chromium (Cr)	28.3	—	—	**2**	**5.5**
		Cobalt (Co)	14.4	—	—	DNE	2.5 J
		Copper (Cu)	32.5	—	—	DNE	4.5
		Lead (Pb)	19.8	—	—	DNE	8.2 J
		Mercury (Hg)	0.18	—	—	DNE	0.06
		Nickel (Ni)	—	—	—	7	5.3 J
		Vanadium (V)	43.7	—	—	300	8.5
		Zinc (Zn)	109	—	—	620	22.4 J

Notes:

a = Background Reference Concentration (RC) from the *Reference Concentrations Technical Memorandum* (August 27, 1996, E/A&H).

b = Industrial and residential RBCs from the *Risk-Based Concentration Table* (April 12, 1999, USEPA Region III RBC Memo).

c = Soil Screening Level (SSL) from the *Generic Screening Levels* (May 1996, USEPA/OSWER SSL Guidance Document, EPA/540/R-95/128).

d = Lead soil-cleanup value, as established by *USEPA/OSWER directive #9355.4-12*, substituted for RBC.

— = RC value does not exist or RBC values do not apply to subsurface soil.

DNE = Does not exist.

J = Constituent detected at concentrations less than the method reporting limit; value estimated.

Bold indicates samples that exceed any of the standard reference values.

As presented in Table 7.5.3, none of the 13 inorganics detected at SWMU 47 exceeded both its RC and residential or industrial RBCs; therefore, no inorganics were retained as COPCs or included in the PRE calculation. The following inorganics exceeded one or more of the standard reference values.

- Arsenic exceeded its residential (0.43 mg/kg) and industrial (3.8 mg/kg) RBCs and its soil- to-groundwater SSL (1 mg/kg) in all five surface-soil samples. It exceeded its soil-to-groundwater SSL in all three subsurface-soil samples.

- Barium exceeded its soil-to-groundwater SSL (82 mg/kg) in all five surface-soil samples, and two of the three subsurface-soil samples (047X000204 and 047X000404).

- Lead exceeded its surface-soil RC (26.0 mg/kg) in four of the five surface-soil samples, and its subsurface-soil RC (19.8 mg/kg) in one sample.

- Chromium and nickel exceeded their soil-to-groundwater SSLs (2 mg/kg and 7 mg/kg, respectively) in all five surface-soil samples. Chromium also exceeded its soil-to-groundwater SSL in all three subsurface-soil samples, and nickel exceeded its soil-to-groundwater SSL in two of the three subsurface-soil samples (047X000204 and 047X000404).

- Cadmium exceeded its soil-to-groundwater SSL (0.4 mg/kg) in sample 047X000301 (0.47 mg/kg).

- Zinc exceeded its surface-soil RC (98 mg/kg) in sample 047X000401 (106 mg/kg).

Groundwater

No contaminants were detected in the two groundwater samples taken at SWMU 47.

7.5.4 Preliminary Risk Evaluation

In accordance with *Guidance on Preliminary Risk Evaluations for the Purpose of Reaching a Finding of Suitability to Lease* (USEPA Region IV Memorandum, November 1994), the potential for a PRE was examined for SWMU 47 using data from surface-soil samples collected during the CSI (Table 7.5.4). Only one COPC was identified at SWMU 47. Dieldrin was detected in sample 047X000201 at a concentration of 420 μg/kg, exceeding its RC, residential and industrial RBCs, and its soil-to-groundwater SSL. All non-carcinogen RBC values are shown as adjusted screening RBCs where the value from the *USEPA Risk-Based Concentration Table* (April 1999) is multiplied by 0.1. For more information on the calculation of HQ and cancer risk, refer to Section 5.

Table 7.5.4
SWMU 47
Preliminary Risk Evaluation

Chemical	Maximum Reported Concentration	Units	RC	RBC	Residential Hazard Quotient	Residential ILCR	Industrial RBC	Industrial Hazard Quotient	Industrial ILCR
Dieldrin	420	μg/kg	262	40 C	NA	1.1E-5	360 C	NA	1.2E-6
Sum					NA	1.1E-5		NA	1.2E-6

Notes:

RBC = Risk-based concentration from USEPA Region III's June 1996 RBC Table; in accordance with USEPA Region IV's Supplemental Guidance to RAGS Bulletin 1, non-carcinogen RBCs above were conservatively adjusted to reflect a hazard quotient of 0.1.
RC = Reference concentration
N = Non-carcinogen
C = Carcinogen
NA = Not applicable
ILCR = Incremental lifetime (excess) cancer risk

PRE Conclusions

The following conclusions are based on CSI and PRE data for surface soil:

Residential Land Use

- Carcinogens: The excess cancer risk for dieldrin at SWMU 47 was estimated to be approximately 1.1E-5, which is less than the risk threshold of 1E-4 for a residential scenario thus this property is currently considered suitable for residential land use, as established in the USEPA Region IV November 1994 memorandum.

- Non-carcinogens: No non-carcinogens were detected in quantities requiring a PRE.

Industrial Land Use

- Carcinogens: The excess cancer risk for dieldrin at SWMU 47 was estimated to be approximately 1.2E-6, which is less than the risk threshold of 1E-4 for an industrial scenario thus this property is currently considered suitable for industrial land use, as established in the USEPA Region IV November 1994 memorandum.

- Non-carcinogens: No non-carcinogens were detected in quantities requiring a PRE.

7.5.5 Fate and Transport

Evaluation of contaminant fate and transport for Assemblies G and H is discussed in Section 6.2. This section applies that approach to contaminants detected at SWMU 47. Transport processes for contaminants other than those designated as COPCs are also discussed if they occur in multiple environmental media or have the potential to migrate to other media.

Potential migration pathways for contaminants at SWMU 47 include leaching from soil to groundwater and erosion of surface soil containing sorbed contaminants from the unpaved, grass- covered areas, forming sediments in drainage ways. Surface-soil analytical data indicate that no VOCs exceeded their respective soil-to-air SSL; therefore, the soil-to-air cross-media transport process is not discussed.

7.5.5.1 Soil-to-Groundwater Cross-Media Transport

The pesticide dieldrin and the organics benzo(a)anthracene, benzo(b)fluoranthene, and carbazole are the SWMU 47 contaminants that exhibit the potential for soil-to-groundwater transport, based on comparison of soil concentrations to the groundwater-protection soil-screening criteria. No volatile organics exceeded their soil-to-groundwater SSLs in surface or subsurface soil. The inorganics arsenic, barium, chromium, nickel, and cadmium exceeded their soil-to-groundwater SSLs in at least one sampling location, but none their background RCs. The only inorganics that exceeded their background RCs are lead, which does not have a soil-to-groundwater SSL, and zinc, which did not exceed its SSL.

Benzo(a)anthracene exceeded its SSL in four samples, three of which were surface soil. Benzo(b)fluoranthene exceeded its SSL in two surface samples, as did carbazole. Dieldrin exceeded its SSL in two surface samples, and is also considered a COPC by the PRE. As discussed in Section 6, SVOCs and pesticides are relatively immobile in the environment and may persist for long periods of time. Both of these contaminant types possess high K_{oc} values (relative to VOCs), making them more likely to sorb to solids and not readily diffusing to underlying groundwater. Because none of these contaminants were detected in SWMU 47 groundwater samples, it is unlikely that they will widely impact groundwater.

7.5.5.2 Soil-to-Sediment Cross-Media Transport

Contaminants detected in near-surface soil were evaluated to determine their potential for transport by erosion. Drainage patterns, cover type (vegetation, asphalt, etc.), and topography at SWMU 47 were also examined to determine whether site features would support contaminant transport.

Contaminants detected in surface soil consist of SVOCs, pesticides, and inorganics. SVOCs and pesticides tend to sorb to soil particles and are relatively immobile in the environment. Inorganics do not degrade, but may change chemical form or speciation in the environment. Like SVOCs and pesticides, inorganics tend to sorb to soil particles, rendering them immobile apart from these particles.

The concrete cover at SWMU 47 leaves little potential for surface soil to erode and form sediments that can become mobile via surface water (as a result of precipitation). However, the grassy area to the south drains toward a drainage ditch (SWMU 38) that ultimately leads to Big Creek Drainage Canal. Vegetative cover in this area should restrict soil-sorbed contaminants from becoming mobile, unless this cover is removed.

7.5.6 Conclusions and Recommendations

The following conclusions and recommendations are based on the data from this investigation:

Conclusions

- SWMU 47 is suitable for either industrial or residential land use.

- Twenty-nine organic compounds were detected in surface (0 to 1 foot bls) soil. Of these, dieldrin was the only one retained as a COPC because dieldrin exceeded its RC, industrial

and residential RBC, and its soil-to-groundwater SSL in one sample. Dieldrin did not, however, exceed the excess cancer risk.

- TPH detected in two locations exceeded the TDEC cleanup level of 100 mg/kg.

- Thirteen metals were detected in surface soil at SWMU 47. Of these, none were retained as COPCs and all are considered nonthreatening.

- A PRE for SWMU 47 determined the following:

  — Non-carcinogen: No non-carcinogens were identified requiring a PRE.

  — Carcinogen: Dieldrin was identified as the only COPC, but it did not exceed the excess cancer risk of 1E-4 and is not considered a risk to either the residential or industrial land-use scenarios.

Recommendations

Based on surface-soil results, removal of TPH-contaminated soil is recommended for SWMU 47.

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7.6 SWMU 48 — Hazardous Waste Accumulation Points

SWMU 48, an open area of unprotected ground surface, consists of various inactive hazardous waste accumulation points for containerized paint thinner and degreasing agents on the service side (west side) of the Building S-9 complex, just outside the overhead work bays doors. It has no containment, and is bordered by Building S-9 on the east and south and SWMU 17 on the west. SWMU 48, approximately 150 feet north of Ticonderoga Avenue (formerly D Street) (Figure 1.1), reportedly operated since 1950 as a storage area for waste thinners, degreasers, and batteries. No evidence of a release was visible at this inactive SWMU during the RFA (ERC/EDGe, 1990).

SWMU 17, sampled in conjunction with SWMU 48, consisted of an underground waste tank (UWT), removed in 1996, located approximately 100 feet east of Kearsarge Avenue (formerly 1st Avenue) on the NSA Mid-South Southside in the Building S-9 complex. No evidence of a release was visible at SWMUs 17 during the RFA (ERC/EDGe, 1990), but data from the Voluntary Corrective Action (VCA) removal in June of 1996 of the UWT at SWMU 17, indicate that a release had occurred before the UWT was removed. The period of operation for SWMU 17 is unknown.

SWMU 48 and the surrounding area, including SWMU 17, are characterized by relatively level, low-relief topography. The immediate area is covered by gravel or asphalt and descends slightly south and west toward a north-south drainage ditch (SWMU 38), which flows south into Big Creek Drainage Canal. The regional and local hydrogeology are described in Sections 2.11 and 2.12, respectively, of the *Comprehensive RFI Work Plan* (E/A&H, October 1994). Site-specific geologic and hydrogeologic information and references are in Section 2 of this report and in Section 2.0 of the *Assemblies G and H CSI Work Plan* (EnSafe, December 1997).

7.6.1 Previous Sampling Activities

No previous sampling is known to have been conducted at SWMU 48.

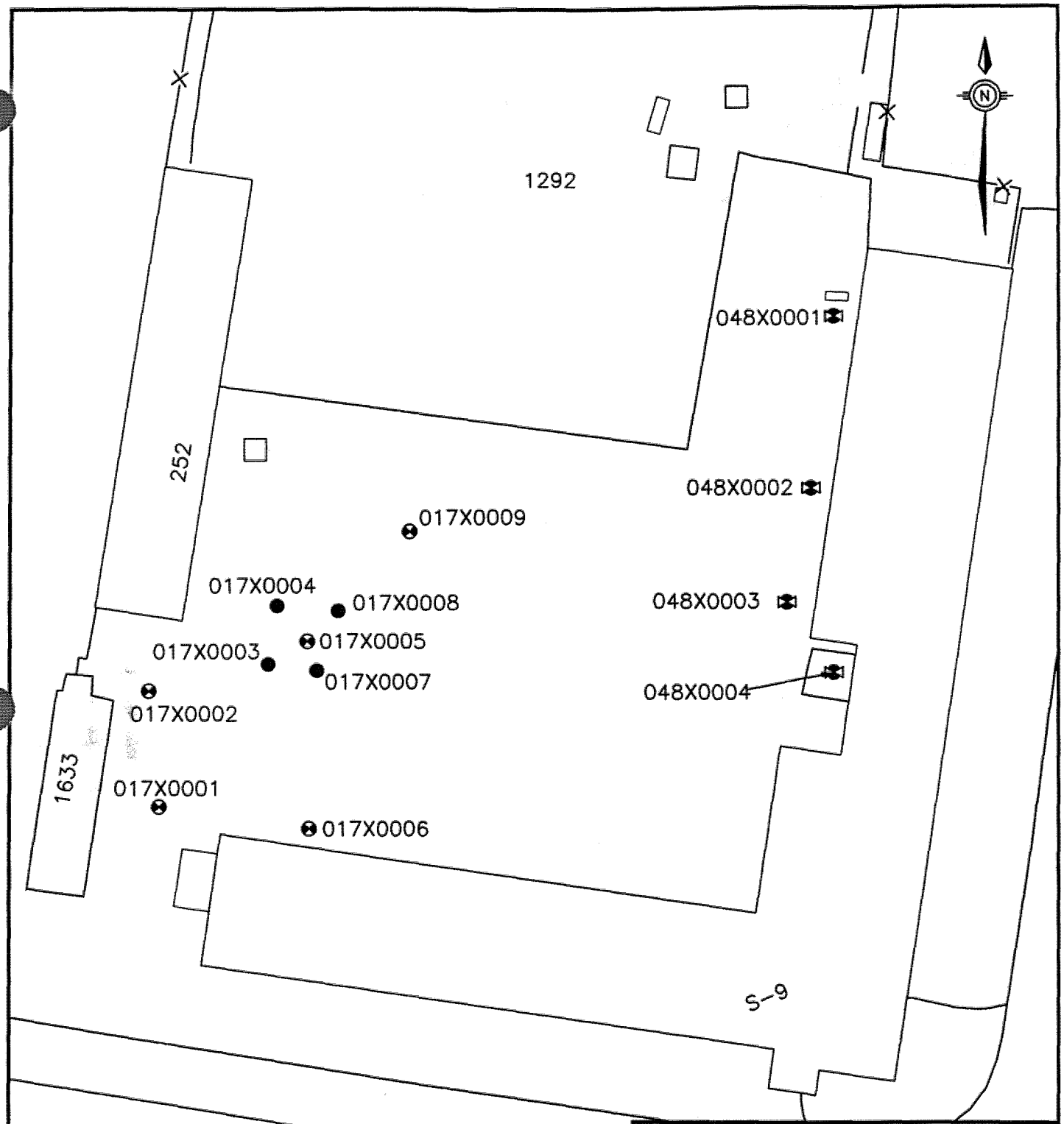
7.6.2 Field Investigation

The primary objective of the field investigation was to determine whether a release had occurred at SWMU 17 or SWMU 48. Although SWMU 17 was investigated with SWMU 48, sample results will be addressed in the Assembly F RFI Report, to be completed in November 1999. All samples were collected and processed according to Section 4 of the *Comprehensive RFI Work Plan* (E/A&H, October 1994).

Soil

The soil investigation consisted of hand-auger sampling (as outlined in Section 4.4.4.3 of the *Comprehensive RFI Work Plan* [E/A&H, October 1994]) for offsite laboratory analysis. Eight soil samples were collected from four locations (048X0001, 048X0002, 048X0003, and 048X0004), as shown in Figure 7.6.1, one outside each bay on the western side of Building S-9 in the area of the hazardous waste accumulation point (SWMU 48). Two samples were collected at each location, one below the asphalt/concrete (to approximately 1 foot deep) and one 3 to 4 feet deep using a hand auger. The surface-soil samples were used to inspect for surface releases, and subsurface samples were used to better define the vertical extent of contamination. The soil samples were analyzed for VOCs, DRO, GRO, TPH, and Appendix IX metals. Analytical methods included analytes that indicate what types of materials were stored at SWMU 48.

Soil samples were also collected at SWMU 17. Geoprobe samples were collected from 12 to 15 feet deep as shown in grey lettering on Figure 7.6.1. All of the soil samples were analyzed at Savannah Analytical Laboratory in Savannah, Georgia.



LEGEND

- ● – GEOPROBE SOIL SAMPLE
- ◘ – HAND AUGER SOIL SAMPLE
- ⊗ – GEOPROBE SOIL AND GROUNDWATER SAMPLE

50 0 50

SCALE FEET

CONFIRMATORY SAMPLING INVESTIGATION
NSA MID-SOUTH
MILLINGTON, TN.

FIGURE 7.6.1
SWMUs 17/48 –
BUILDINGS S-9 AND GARAGE
SAMPLE LOCATION MAP

DWG DATE: 07/06/99 | DWG NAME: 0106B030

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Groundwater

No groundwater investigation was undertaken at SWMU 48, but five samples were collected at SWMU 17 (Figure 7.6.1). Results will be included in the 1999 Assembly F RFI Report. All groundwater samples were analyzed at Savannah Analytical Laboratory in Savannah, Georgia.

7.6.3 Confirmatory Sampling Results

Tables and figures in this section present the analytical results for all CSI soil samples. Values for organic analyses of soil are compared to each compound's corresponding RBC for both residential and industrial scenarios and with the SSL for protection of groundwater, as published in the *USEPA Region III April 1999, RBC Table* (April 12, 1999). Inorganic results are compared to RCs from NSA Mid-South, residential and industrial RBCs, and SSLs. SSLs were taken from *EPA/540/R-95/128* (May 1996).

Organics in Soil

Organic and TPH soil data for SWMU 48 samples are presented in Tables 7.6.1 and 7.6.2, respectively.

Table 7.6.1
Assemblies G and H — SWMU 48 Organic Detections in Soil by Location (μg/kg)

Location	Depth (in feet)	Contaminant	RBC[a] Industrial	RBC[a] Residential	SSL[b]	Result
048X0001	01'	Acetone	20,000,000	780,000	800	43 J
048X0001	04'	Acetone	—	—	800	48 J
048X0002	01'	Acetone	20,000,000	780,000	800	90
048X0002	04'	Acetone	—	—	800	16 J

Table 7.6.1
Assemblies G and H — SWMU 48 Organic Detections in Soil by Location (μg/kg)

Location	Depth (in feet)	Contaminant	RBC[a] Industrial	RBC[a] Residential	SSL[b]	Result
048X0003	01'	Acetone	20,000,000	780,000	800	110
048X0003	04'	Acetone	—	—	800	110
048X0004	01'	Acetone	20,000,000	780,000	800	70
048X0004	04'	Acetone	—	—	800	15 J

Notes:
a = Industrial and residential RBCs from the *Risk-Based Concentration Table* (April 12, 1999, USEPA Region III RBC Memo).
b = Soil Screening Level (SSL) from the *Generic Screening Levels* (May 1996, USEPA/OSWER SSL Guidance Document, EPA/540/R-95/128).
— = RBC value does not apply to subsurface soil.
J = Contaminant detected at concentrations less than the method reporting limit; value estimated.

As indicated in Table 7.6.1, acetone was the only organic contaminant detected. All detections in surface-soil samples were less than the residential and industrial RBCs and soil-to-groundwater SSL of acetone. No acetone detection in subsurface soil exceeded its soil-to-groundwater SSL. Acetone is a common laboratory contaminant and may or may not be a laboratory artifact. No COPCs were determined from organics detected at SWMU 48.

Table 7.6.2
Assemblies G and H — SWMU 48 Petroleum Hydrocarbon Detections in Soil by Location (mg/kg)

Location	Depth (in feet)	Constituent	Result
048X0001	01'	TPH	160 J
048X0001	04'	TPH	120 J
048X0002	01'	TPH	200 J

Table 7.6.2
Assemblies G and H — SWMU 48 Petroleum Hydrocarbon Detections in Soil by Location (mg/kg)

Location	Depth (in feet)	Constituent	Result
048X0002	04'	TPH-GRO	0.61
		TPH	**150 J**
048X0003	01'	TPH-DRO	4.7 J
		TPH	**230 J**
048X0003	04'	TPH	84 J
048X0004	01'	TPH-DRO	0.96 J
		TPH	**140 J**
048X0004	04'	**TPH**	**140 J**

Notes:
DRO = Diesel range organics
GRO = Gasoline range organics
mg/kg = milligrams per kilogram
TPH = Total petroleum hydrocarbons.
TDEC TPH soil-cleanup level ranges from 100 mg/kg to 1,000 mg/kg.
Bold indicates samples that exceed any of the standard reference values.

Because no RBC values exist for TPH or TPH-GRO/DRO, TDEC soil-cleanup values were used for comparison. TDEC has established three cleanup concentrations for TPH — these are 100 mg/kg, 500 mg/kg, and 1,000 mg/kg — depending on the soil permeability. Initially, the TDEC cleanup level of 500 mg/kg for total TPH in nondrinking water aquifers (i.e., the upper alluvium), with soil permeabilities between 10^{-4} and 10^{-6} centimeters per second (cm/sec) (TDEC, 1997), was compared to total TPH concentrations in surface and subsurface soil. This cleanup level was chosen because 1.84E-6 cm/sec, a value representing the average soil permeability from 20 samples across the base, was used as the default for sites lacking permeability data (Appendix B); however, as requested by the PWD Env. Div., TPH detections in soil from 0 to 5 feet deep that exceed the TDEC cleanup level of 100 mg/kg will be designated for removal. As shown in Table 7.6.2, seven SWMU 48 sample detections exceeded the TDEC

soil-cleanup value of 100 mg/kg. No detections exceeded the 500 or 1,000 mg/kg TDEC soil-cleanup levels.

Inorganics in Soil

Inorganic soil data for SWMU 48 samples are presented in table 7.6.3.

Table 7.6.3
Assemblies G and H — SWMU 48 Inorganic Detections in Soil by Location (mg/kg)

Location	Depth (in feet)	Constituent	RC[a] Surface	RBC[b] Industrial	RBC[b] Residential	SSL[c]	Result
048X0001	01'	Arsenic (As)	14.6	3.8	0.43	1	3.9
		Barium (Ba)	223	14,000	550	82	48.2
		Chromium (Cr)	24.0	610	23	2	20.6 J
		Cobalt (Co)	16.0	12,000	470	DNE	6.8
		Copper (Cu)	24.2	8,200	310	DNE	7.5
		Lead (Pb)	26.0	400[d]	400[d]	DNE	13.7 J
		Mercury (Hg)	0.46	DNE	DNE	DNE	0.02 J
		Nickel (Ni)	20.6	4,100	160	7	13.2 J
		Silver (Ag)	2.05	1,000	39	2	0.22 J
		Vanadium (V)	45.1	1,400	55	300	12.6
		Zinc (Zn)	98	61,000	2,300	620	20.3 J
048X0001	04'	**Antimony (Sb)**	—	—	—	**0.3**	**0.63 J**
		Arsenic (As)	20.3	—	—	**1**	**11.3**
		Barium (Ba)	265	—	—	**82**	**83.8**
		Chromium (Cr)	28.3	—	—	**2**	**16 J**
		Cobalt (Co)	14.4	—	—	DNE	7.5
		Copper (Cu)	32.5	—	—	DNE	17.4
		Lead (Pb)	19.8	—	—	DNE	14.7 J
		Mercury (Hg)	0.18	—	—	DNE	0.03 J
		Nickel (Ni)	—	—	—	**7**	**15.1 J**
		Selenium (Se)	—	—	—	**0.3**	**0.74 J**

Table 7.6.3
Assemblies G and H — SWMU 48 Inorganic Detections in Soil by Location (mg/kg)

Location	Depth (in feet)	Constituent	RC[a] Surface	RBC[b] Industrial	RBC[b] Residential	SSL[c]	Result
048X0001	04'	Vanadium (V)	43.7	—	—	300	31
(continued)		Zinc (Zn)	109	—	—	620	47.8 J
048X0002	01'	Arsenic (As)	14.6	3.8	0.43	1	6.7
		Barium (Ba)	223	14,000	550	82	86.9
		Beryllium (Be)	1.00	410	16	3	0.54 J
		Chromium (Cr)	24.0	610	23	2	9.8 J
		Cobalt (Co)	16.0	12,000	470	DNE	23.6 J
		Copper (Cu)	24.2	8,200	310	DNE	11.9
		Lead (Pb)	26.0	400[d]	400[d]	DNE	16.4 J
		Mercury (Hg)	0.46	DNE	DNE	DNE	0.02 J
		Nickel (Ni)	20.6	4,100	160	7	14 J
		Selenium (Se)	DNE	1,000	39	0.3	0.42 J
		Silver (Ag)	2.05	1,000	39	2	0.21 J
		Vanadium (V)	45.1	1,400	55	300	21
		Zinc (Zn)	98	61,000	2,300	620	36.1 J
048X0002	04'	**Arsenic (As)**	20.3	—	—	**1**	**12.6**
		Barium (Ba)	265	—	—	**82**	**96.7**
		Chromium (Cr)	28.3	—	—	**2**	**18.1 J**
		Cobalt (Co)	14.4	—	—	DNE	8.8
		Copper (Cu)	32.5	—	—	DNE	18.3
		Lead (Pb)	19.8	—	—	DNE	13.7 J
		Mercury (Hg)	0.18	—	—	DNE	0.03 J
		Nickel (Ni)	—	—	—	**7**	**15.8 J**
		Selenium (Se)	—	—	—	**0.3**	**0.42 J**
		Vanadium (V)	43.7	—	—	300	29.2
		Zinc (Zn)	109	—	—	620	49.8 J

Table 7.6.3
Assemblies G and H — SWMU 48 Inorganic Detections in Soil by Location (mg/kg)

Location	Depth (in feet)	Constituent	RC[a] Surface	RBC[b] Industrial	RBC[b] Residential	SSL[c]	Result
048X0003	01'	Arsenic (As)	14.6	3.8	0.43	1	8.1
		Barium (Ba)	223	14,000	550	82	118
		Chromium (Cr)	24.0	610	23	2	12.5J
		Cobalt (Co)	16.0	12,000	470	DNE	11.6
		Copper (Cu)	24.2	8,200	310	DNE	14
		Lead (Pb)	26.0	400[d]	400[d]	DNE	13.4 J
		Mercury (Hg)	0.46	DNE	DNE	DNE	0.03 J
		Nickel (Ni)	20.6	4,100	160	7	14.7 J
		Vanadium (V)	45.1	1,400	55	300	24.5
		Zinc (Zn)	98	61,000	2,300	620	46.2 J
048X0003	04'	**Arsenic (As)**	20.3	—	—	**1**	**13**
		Barium (Ba)	265	—	—	82	80.9
		Chromium (Cr)	28.3	—	—	**2**	**13.2 J**
		Cobalt (Co)*	14.4	—	—	DNE	14.4
		Copper (Cu)	32.5	—	—	DNE	18.6
		Lead (Pb)	19.8	—	—	DNE	18.1 J
		Mercury (Hg)	0.18	—	—	DNE	0.02 J
		Nickel (Ni)	—	—	—	**7**	**16.3 J**
		Vanadium (V)	43.7	—	—	300	28.1
		Zinc (Zn)	109	—	—	620	55.7 J
048X0004	01'	Antimony (Sb)	DNE	82	3.1	0.3	0.43 J
		Arsenic (As)	14.6	3.8	0.43	1	6.9
		Barium (Ba)	223	14,000	550	82	71.7
		Chromium (Cr)	24.0	610	23	2	9.7 J
		Cobalt (Co)	16.0	12,000	470	DNE	12.6
		Copper (Cu)	24.2	8,200	310	DNE	9.4
		Lead (Pb)	26.0	400[d]	400[d]	DNE	7.8 J
		Mercury (Hg)	0.46	DNE	DNE	DNE	0.01 J
		Nickel (Ni)	20.6	4,100	160	7	10.9 J

Table 7.6.3
Assemblies G and H — SWMU 48 Inorganic Detections in Soil by Location (mg/kg)

Location	Depth (in feet)	Constituent	RC[a] Surface	RBC[b] Industrial	RBC[b] Residential	SSL[c]	Result
048X0004	01'	Thallium (Tl)	—	DNE	DNE	0.04	0.75 J
(continued)		Vanadium (V)	45.1	1,400	55	300	17.2
		Zinc (Zn)	98	61,000	2,300	620	28.3 J
048X0004	04'	**Arsenic (As)**	20.3	—	—	**1**	**11.9**
		Barium (Ba)	265	—	—	**82**	**183**
		Beryllium (Be)	1.00	—	—	3	0.84
		Chromium (Cr)	28.3	—	—	**2**	**14.6 J**
		Cobalt (Co)	14.4	—	—	DNE	12.3
		Copper (Cu)	32.5	—	—	DNE	18.4
		Lead (Pb)	19.8	—	—	DNE	13.8 J
		Mercury (Hg)	0.18	—	—	DNE	0.01 J
		Nickel (Ni)	—	—	—	**7**	**19.2 J**
		Vanadium (V)	43.7	—	—	300	24.4
		Zinc (Zn)	109	—	—	620	68.5 J

Notes:

a = Background Reference Concentration (RC) from the *Reference Concentrations Technical Memorandum* (August 27, 1996, E/A&H).
b = Industrial and residential RBCs from the *Risk-Based Concentration Table* (April 12, 1999, USEPA Region III RBC Memo).
c = Soil Screening Level (SSL) from the *Generic Screening Levels* (May 1996, USEPA/OSWER SSL Guidance Document, EPA/540/R-95/128).
d = Lead soil-cleanup value, as established by USEPA/OSWER directive #9355.4-12, substituted for RBC.
DNE = Does not exist.
— = RC value does not exist or RBC value does not apply to subsurface soil.
J = Constituent detected at concentrations less than the method reporting limit; value estimated.
* = Detection meets but does not exceed standard reference value.
Bold indicates samples that exceed any of the standard reference values.

As presented in Table 7.6.3, none of 15 inorganics detected at SWMU 48 exceeded both surface-soil RCs and industrial or residential RBCs. One inorganic exceeded its residential and industrial RBC, seven exceeded their soil-to-groundwater SSLs in surface soil, and six exceeded their soil-to-groundwater SSLs in subsurface soil.

- Arsenic exceeded its residential (0.43 mg/kg) and industrial (3.8 mg/kg) RBCs in all four surface-soil samples, but did not exceed its RC and therefore was not calculated in a PRE. Arsenic exceeded its soil-to-groundwater SSL (1 mg/kg) in all soil samples.

- Cobalt exceeded its surface-soil RC (16.0 mg/kg) in sample 048X000201 (23.6 mg/kg).

- Barium exceeded its soil-to-groundwater SSL (82 mg/kg) in two surface-soil samples — 048X000201 (86.9 mg/kg) and 048X000301 (118 mg/kg) and three subsurface-soil samples — 048X000104 (83.8 mg/kg), 048X000204 (96.7 mg/kg), 048X000404 (183 mg/kg).

- Chromium and nickel exceeded their soil-to-groundwater SSLs (2 mg/kg and 7 mg/kg, respectively) in all surface- and subsurface-soil samples.

- Selenium exceeded its soil-to-groundwater SSL (0.3 mg/kg) in three samples: 048X000104 (0.74 mg/kg), 048X000201 (0.42 mg/kg), and 048X000204 (0.42 mg/kg).

- Antimony exceeded its soil-to-groundwater SSL (0.3 mg/kg) in two samples: 048X000104 (0.63 mg/kg) and 048X000401 (0.43 mg/kg).

- Thallium exceeded its soil-to-groundwater SSL (0.04 mg/kg) in sample 048X000401 (0.75 mg/kg).

7.6.4 Preliminary Risk Evaluation

In accordance with *Guidance on Preliminary Risk Evaluations for the Purpose of Reaching a Finding of Suitability to Lease* (USEPA Region IV Memorandum, November 1994), the potential for a PRE was examined for SWMU 48 using data from surface-soil samples collected during the CSI. It was determined that a PRE was unnecessary because no COPCs were identified. For more information on calculation of the HI and excess cancer risk, refer to Section 5.

PRE Conclusions

Based on the investigation data, no contaminant was detected at concentrations warranting a PRE; therefore, under PRE guidelines and based on the surface and subsurface-soil results only, this property is acceptable for residential or industrial land use. Groundwater is being addressed under the SWMU 17 RFI.

7.6.5 Fate and Transport

Evaluation of contaminant fate and transport for Assemblies G and H is discussed in Section 6.2. This section applies that approach to contaminants detected at SWMU 48. Transport processes for contaminants other than those designated as COPCs are also discussed if they occur in multiple environmental media or have the potential to migrate to other media. Because no COPCs were determined, other contaminants were examined for the migration potential.

Potential migration pathways for contaminants at SWMU 48 include leaching from soil to groundwater and erosion of surface soil containing sorbed contaminants from the unpaved, grass-covered areas, forming sediments in drainage ways. Surface-soil analytical data indicate that no VOCs exceeded their respective soil-to-air SSL; therefore, the soil-to-air cross-media transport process is not discussed.

7.6.5.1 Soil-to-Groundwater Cross-Media Transport

Based on comparison of soil concentrations to the groundwater-protection soil-screening criteria, no SWMU 48 contaminants exhibit the potential for soil-to-groundwater transport.

The following inorganics exceeded their soil-to-groundwater SSL, but none exceeded background RCs: antimony, arsenic, barium, chromium, nickel, selenium, and thallium. The only inorganic to exceed its background RC was cobalt, which does not have an established SSL.

Since no contaminants have the potential to leach from soil to underlying groundwater, the soil-to-groundwater transport process is not significant at SWMU 48.

7.6.5.2 Soil-to-Sediment Cross-Media Transport

Contaminants detected in near-surface soil were evaluated to determine their potential for transport by erosion. Drainage patterns, cover type (vegetative, asphalt, etc.), and topography at SWMU 48 were also examined to determine whether site features would support contaminant transport.

Contaminants detected in surface soil consist of inorganics and the VOC acetone. As described in Section 6, inorganics tend to sorb to soil particles, rendering them immobile apart from these particles become mobile. Acetone is a common laboratory artifact and may not be associated with SWMU 48 activities.

Drainage patterns and the cover type at SWMU 48 leave little potential for surface soil to erode and form sediments that can become mobile via surface water; therefore, the soil-to-sediment transport process at SWMU 48 is not considered significant.

7.6.6 Conclusions and Recommendations

The following conclusions and recommendations are based on the investigation data :

Conclusions

- SWMU 48 is suitable for residential or industrial use.

- Acetone was the only organic compound detected in surface (0 to 1 foot bls) and subsurface (3 to 4 feet bls) soil; however, it did not exceed any reference values and is commonly a laboratory artifact.

- TPH exceeded the TDEC cleanup value of 100 mg/kg at all four surface-soil locations and in three of the subsurface-soil samples.

- Fourteen metals were detected in surface soil at SWMU 48. Of these, none were retained as COPCs and all are not considered to pose a threat.

- No PRE was performed for SWMU 48 because no COPCs were identified.

Recommendations

Based on surface and subsurface-soil results, removal of TPH-contaminated soil is recommended for SWMU 48.

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7.7 SWMU 49 — Navy Exchange Service Station

SWMU 49 is approximately 150 feet north of Navy Road (Figure 1.1) on the NSA Mid-South Northside. SWMU 49 is bounded on the north by a wooded area and on the south by SWMU 19, Navy Road, and Building N-341 of the Navy Exchange Service Station. SWMU 49 is bordered on the east by Building N-757 of the Navy Exchange Service Station, and on the northwest by the Aircraft Fire Fighting Training Facility (SWMU 5).

SWMU 19, sampled in conjunction with SWMU 49, is bounded on the north by SWMU 49 and a wooded area, and on the south by Navy Road and Building N-341. SWMU 19 is bordered on the east by Building N-757 and on the northwest by the Aircraft Fire Fighting Training Facility. SWMU 19 reportedly operated as a UWT from 1983 through 1992, and data from the removal of UWT 1648 (SWMU 19) indicate that a release may have occurred during its operational history.

SWMU 49 was reportedly operated as a hazardous waste accumulation point for Building N-757 from 1969 through 1986. Automobile batteries, waste paints, containerized waste mineral spirits, and tires were stored there. During a 1990 inspection, oil stains were observed on the asphalt around SWMU 49 (ERC/EDGe, 1990). Because SWMU 49 is adjacent to SWMU 19, it was suspected that the SWMUs may have impacted each other.

SWMU 49 and the surrounding area are characterized by relatively level, low-relief topography. The immediate area is covered with asphalt and descends slightly west and northwest toward two storm drains and a wooded area to the north. Both storm drains discharge into a ditch that drains SWMU 5 and leads into a tributary of North Fork Creek. The regional and local hydrogeology are described in Sections 2.11 and 2.12, respectively, of the *Comprehensive RFI Work Plan* (E/A&H, October 1994). Site-specific geologic and hydrogeologic information and references are in Section 2 of this report and in Section 2.0 of the *Assemblies G and H CSI Work Plan*

(EnSafe, December 1997). Because soil and groundwater samples were collected by pushing DPT sampling tools to a predetermined depth without lithologic characterization, no additional site-specific lithologic information was collected during this investigation.

7.7.1 Previous Sampling Activities

No previous sampling is known to have been conducted at SWMU 49; however, information from a previous UST investigation at SWMU 5 (E/A&H, 1992) indicates that groundwater is typically encountered at the interface between the silt and silt-clay units in the loess. Potentiometric data indicate that shallow (loess) groundwater at SWMU 5 is held under confining pressure; water levels in monitoring wells screened in the loess equilibrated several feet higher than the silt/silty clay interface where water was generally encountered during drilling. Some groundwater in the loess appears to flow toward the drainage ditch (SWMU 4) that flows east-west across the north side of SWMU 5, although the primary direction of flow is probably vertical. Water in this ditch eventually drains into North Fork Creek. It is unknown if shallow groundwater flow at SWMUs 19 and 49 is in a similar direction as that observed at SWMU 5. Water-level data from previous RFIs across the Northside indicate that groundwater in the fluvial deposits flows west-northwest.

7.7.2 Field Investigation

The objective of the field investigation was to better define the extent of potential contamination at SWMUs 19 and 49. Although SWMU 19 was investigated in conjunction with SWMU 49, SWMU 19 results will be included in the 1999 Assembly F RFI Report. All samples were collected and processed according to Section 4 of the *Comprehensive RFI Work Plan* (E/A&H, October 1994).

Soil

The soil investigation consisted of hand-auger sampling, (using methods outlined in Section 4.4.4.3 of the *Comprehensive RFI Work Plan* [E/A&H, October 1994]) for offsite laboratory analysis. Location 049X0001 inside the hazardous waste accumulation area was sampled at the 0 to 1-foot and the 3 to 4-foot depth intervals using a hand auger (Figure 7.7.1). This surface-soil sample underwent FSA in order to assess risk and inspect for surface spills, while the subsurface-soil sample was analyzed for VOCs, SVOCs, TPH, chlorinated pesticides/PCBs, and Appendix IX metals to assess the extent of contamination. Four soil locations were sampled for SWMU 19 and are shown in grey lettering on Figure 7.7.1. SWMU 19 results will be discussed in the 1999 Assembly F RFI Report. All soil samples were analyzed at Savannah Analytical Laboratory in Savannah, Georgia.

Groundwater

The groundwater investigation focused on the fluvial deposits underlying the loess because it is the preferential zone for groundwater flow and a potential route for contaminant transport, particularly chlorinated solvents, at NSA Mid-South. The groundwater investigation consisted of Geoprobe sampling for laboratory analysis. Based on work at other SWMUs, the Geoprobe was able to penetrate through the loess and into the fluvial deposits to approximately 50 feet bls. Groundwater samples were collected from six Geoprobe locations (049X0002, 049X0003, 049X0004, 049X0005, 049X0006, and 049X0007) on the northwest end of Building N-757 and in the direction of SWMU 5 to see if contaminants had migrated (Figure 7.7.1). Three groundwater locations were sampled at SWMU 19 shown in grey lettering on Figure 7.7.1. All groundwater samples were analyzed for VOCs at Savannah Analytical Laboratory in Savannah, Georgia.

7.7.3 Confirmatory Sampling Results

Tables and figures in this section present the analytical results for all CSI soil and groundwater samples. Values for organic analyses of soil are compared to each compound's corresponding RBC for both residential and industrial scenarios, and with the SSL for protection of groundwater as published in the *USEPA Region III April 1999, RBC Table* (April 12, 1999). Inorganic results are compared to RCs from NSA Mid-South, residential and industrial RBCs, and SSLs. SSLs were taken from *EPA/540/R-95/128* (May 1996). Groundwater results are compared to tap-water RBCs from the USEPA Region III tables and to MCLs published in the *Drinking Water Regulations and Health Advisories Table* (USEPA, October 1996).

Organics in Soil

Organic and TPH soil data for SWMU 49 samples are presented in Tables 7.7.1 and 7.7.2, respectively.

Table 7.7.1
Assemblies G and H — SWMU 49 Organic Detections in Soil by Location (μg/kg)

Location	Depth (in feet)	Contaminant	RC[a]	RBC[b] Industrial	RBC[b] Residential	SSL[c]	Result
049X0001	01'	Benzo(a)pyrene	565	780	88	400	8.8 J
		Benzo(b)fluoranthene	—	7,800	880	200	13 J
		Dieldrin*	262	360	40	0.2	46 J
		Diethylphthalate	—	160,000,000	6,300,000	23,000	51 J
		Fluoranthene	—	8,200,000	310,000	210,000	16 J
		Pyrene	—	6,100,000	230,000	210,000	11 J
		bis(2-Ethylhexyl)phthalate (BEHP)	—	410,000	46,000	180,000	200 J

Notes:

a = Background Reference Concentration (RC) from the *Reference Concentrations Technical Memorandum* (August 27,1996, E/A&H).

b = Industrial and residential RBCs from the *Risk-Based Concentration Table* (April 12, 1999, USEPA Region III RBC Memo).

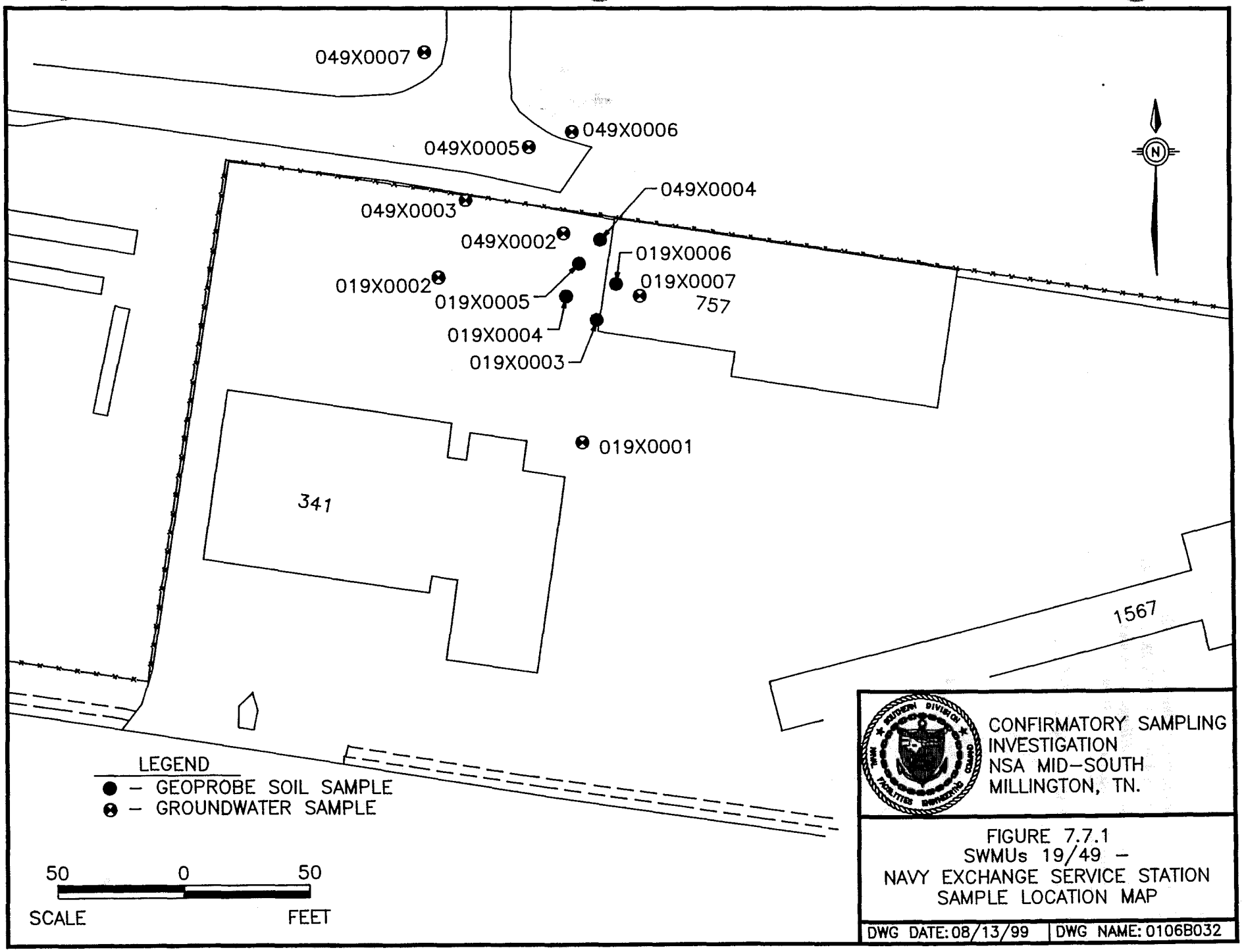
c = Soil Screening Level (SSL) from the *Generic Screening Levels* (May 1996, USEPA/OSWER SSL Guidance Document, EPA/540/R-95/128).

J = Contaminant detected at concentrations less than the method reporting limit; value estimated.

— = RC value does not exist.

* = Reference concentration for dieldrin determined from base-wide background sampling and screening (*Surface Soil (0 to 1 foot) Background Dieldrin Concentrations at NSA Memphis*. June 3, 1997 Tech Memo).

Bold indicates samples that exceed one of the standard reference values.


049X0007
049X0006
049X0005
049X0004
049X0003
049X0002
019X0006
019X0002
019X0007
019X0005
757
019X0004
019X0003
019X0001
341
1567
N
LEGEND
● – GEOPROBE SOIL SAMPLE
⊗ – GROUNDWATER SAMPLE
50 0 50
SCALE FEET
CONFIRMATORY SAMPLING
INVESTIGATION
NSA MID-SOUTH
MILLINGTON, TN.
FIGURE 7.7.1
SWMUs 19/49 –
NAVY EXCHANGE SERVICE STATION
SAMPLE LOCATION MAP
DWG DATE: 08/13/99
DWG NAME: 0106B032

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As indicated in Table 7.7.1, none of the seven contaminants detected at SWMU 49 exceeded both RCs and residential or industrial RBCs. No organics were detected in subsurface soil. One organic, dieldrin, exceeded its residential RBC (40 μg/kg) and its SSL (0.2 μg/kg) in surface-soil sample 049S000101 (46 μg/kg).

Table 7.7.2
Assemblies G and H — SWMU 49 Petroleum Hydrocarbon Detections in Soil by Location (mg/kg)

Location	Depth (in feet)	Contaminant	Result
049X0001	01'	TPH	**280**
049X0001	04'	TPH	24

Notes:
mg/kg = milligrams per kilogram
TPH = Total petroleum hydrocarbons.
TDEC TPH soil-cleanup level ranges from 100 mg/kg to 1,000 mg/kg.
Bold indicates samples that exceed any of the standard reference values.

Because no RBC values exist for TPH or TPH-GRO/DRO, TDEC soil-cleanup values were used for comparison. TDEC has established three cleanup concentrations for TPH — these are 100 mg/kg, 500 mg/kg, and 1,000 mg/kg — depending on the soil permeability. Initially, the TDEC cleanup level of 500 mg/kg for total TPH in nondrinking water aquifers (i.e., the upper alluvium), with soil permeabilities between 10^{-4} and 10^{-6} centimeters per second (cm/sec) (TDEC, 1997), was compared to total TPH concentrations in surface and subsurface soil. This cleanup level was chosen because 1.84E-6 cm/sec, a value representing the average soil permeability from 20 samples across the base, was used as the default for sites lacking permeability data (Appendix B); however, as requested by the PWD Env. Div., TPH detections in soil from 0 to 5 feet deep that exceed the TDEC cleanup level of 100 mg/kg will be designated for removal. As shown in Table 7.7.2, one SWMU 49 sample (049S0001) detection exceeded the TDEC soil-cleanup value of 100 mg/kg. No detections exceeded the 500 or 1,000 mg/kg TDEC soil-cleanup levels.

Inorganics in Soil

Inorganic soil data for SWMU 49 samples are presented in Table 7.7.3.

Table 7.7.3
Assemblies G and H — SWMU 49 Inorganic Detections in Soil by Location (mg/kg)

Location	Depth (in feet)	Constituent	RC[a] Surface	RBC[b] Industrial	RBC[b] Residential	SSL[c]	Result
049X0001		Arsenic (As)	14.6	3.8	0.43	1	7.2
		Barium (Ba)	223	14,000	550	82	84.2
		Beryllium (Be)	1.00	410	16	3	0.38 J
		Chromium (Cr)	24.0	610	23	2	9.3 J
		Cobalt (Co)	16.0	12,000	470	DNE	3.9
		Copper (Cu)	24.2	8,200	310	DNE	8.4 J
		Lead (Pb)	26.0	400[d]	400[d]	DNE	48.7 J
		Mercury (Hg)	0.46	DNE	DNE	DNE	0.05
		Nickel (Ni)	20.6	4,100	160	7	7.8
		Vanadium (V)	45.1	1,400	55	300	16.5
		Zinc (Zn)	98	61,000	2,300	620	46.6 J
049X0001		**Arsenic (As)**	20.3	—	—	**1**	**5.6 J**
		Barium (Ba)	265	—	—	**82**	**143**
		Beryllium (Be)	1.00	—	—	3	0.63 J
		Chromium (Cr)	28.3	—	—	**2**	**14.8 J**
		Cobalt (Co)	14.4	—	—	DNE	5.8
		Copper (Cu)	32.5	—	—	DNE	11.6 J
		Lead (Pb)	19.8	—	—	DNE	10.3 J
		Mercury (Hg)	0.18	—	—	DNE	0.05
		Nickel (Ni)	—	—	—	**7**	**14.6**
		Selenium (Se)	—	—	—	**0.3**	**0.64 J**

Table 7.7.3
Assemblies G and H — SWMU 49 Inorganic Detections in Soil by Location (mg/kg)

Location	Depth (in feet)	Constituent	RC[a] Surface	RBC[b] Industrial	RBC[b] Residential	SSL[c]	Result
049X0001		Vanadium (V)	43.7	—	—	300	26
(continued)		Zinc (Zn)	109	—	—	620	47.6 J

Notes:
a = Background Reference Concentration (RC) from the *Reference Concentrations Technical Memorandum* (August 27, 1996, E/A&H).
b = Industrial and residential RBCs from the *Risk-Based Concentration Table* (April 12, 1999, USEPA Region III RBC Memo).
c = Soil Screening Level (SSL) from the *Generic Screening Levels* (May 1996, USEPA/OSWER SSL Guidance Document, EPA/540/R-95/128).
d = Lead soil-cleanup value, as established by USEPA/OSWER directive #9355.4-12, substituted for RBC.
DNE = Does not exist
— = RC value does not exist or RBC values do not apply to subsurface soil.
J = Constituent detected at concentrations less than the method reporting limit; value estimated.
Bold indicates samples that exceed any of the standard reference values.

As presented in Table 7.7.3, only one of 12 inorganics detected at SWMU 49 exceeded its RC. Because none of the inorganics exceeded both RCs and residential or industrial RBCs, no COPCs were retained for SWMU 49. The following inorganics exceeded one or more of the standard reference values.

- Lead exceeded its surface-soil RC (26.0 mg/kg) in sample 049S000101 (48.7 mg/kg).

- Arsenic exceeded its residential (0.43 mg/kg) and industrial (3.8 mg/kg) RBCs and its soil-to-groundwater SSL (1 mg/kg) in sample 049S000101 (7.2 mg/kg), and its soil-to-groundwater SSL in sample 049S000104 (5.6 mg/kg).

- Barium, chromium, and nickel exceeded their soil-to-groundwater SSLs (82 mg/kg, 2 mg/kg, and 7 mg/kg, respectively) in both the surface and subsurface samples.

- Selenium exceeded its soil-to-groundwater SSL (0.3 mg/kg) in sample 049S000104 (0.64 mg/kg).

Groundwater

No VOCs were detected in the six groundwater samples collected at SWMU 49.

7.7.4 Preliminary Risk Evaluation

In accordance with *Guidance on Preliminary Risk Evaluations for the Purpose of Reaching a Finding of Suitability to Lease* (USEPA Region IV Memorandum, November 1994), the potential for a PRE was examined for SWMU 49 using data from surface-soil samples collected during the CSI. It was determined that a PRE was unnecessary because no COPC was identified. For more information on calculation of the HI and excess cancer risk, refer to Section 5.

PRE Conclusions

Based on the investigation data for surface-soil, subsurface-soil, and fluvial deposits groundwater, SWMU 49 is suitable for either the residential or industrial land-use scenarios in accordance with USEPA Region IV November 1994 memorandum.

7.7.5 Fate and Transport

Evaluation of contaminant fate and transport for Assemblies G and H is discussed in Section 6.2. This section applies that approach to contaminants detected at SWMU 49. Transport processes for contaminants other than those designated as COPCs are also discussed if they occur in multiple environmental media, or have the potential to migrate to other media. Because no COPCs were identified for SWMU 49, other contaminants were examined for the potential to migrate.

Potential migration pathways for contaminants at SWMU 49 include leaching from soil to groundwater and erosion of surface soil containing sorbed contaminants from the unpaved, grass-

covered areas, forming sediments in drainage ways. Surface-soil analytical data indicate that no VOCs exceeded their respective soil-to-air SSL; therefore, the soil-to-air cross-media transport process is not discussed.

7.7.5.1 Soil-to-Groundwater Cross-Media Transport

The pesticide dieldrin is the only SWMU 49 contaminant that exhibits the potential for soil-to-groundwater transport, based on comparison of soil concentrations to the groundwater-protection soil-screening criteria. The inorganics arsenic, barium, chromium, nickel, and selenium all exceeded their soil-to-groundwater SSLs, but not their background RCs. The only inorganic that exceeded its background SSL was lead, which does not have an established soil-to-groundwater SSL.

Dieldrin is ubiquitous at NSA Mid-South because of aerial applications during a U.S. Department of Agriculture quarantine on the white-fringed beetle in the 1950s and 1960s (E/A&H, June 1997). Although dieldrin exceeded its soil-to-groundwater SSL in surface soil at SWMU 49, it did not exceed its background RC. Dieldrin was not detected in subsurface-soil samples, indicating that it is not leaching and that impact to underlying groundwater is unlikely.

7.7.5.2 Soil-to-Sediment Cross-Media Transport

Contaminants detected in near-surface soil were evaluated to determine their potential for erosional transport. Drainage patterns and topography at SWMU 49 were also examined to determine whether site features would support such contaminant transport.

Contaminants detected in surface soil are the pesticide dieldrin and the inorganics arsenic, barium, beryllium, chromium, lead, and nickel. Again, only the inorganic lead exceeded its background RC. Pesticides and inorganics have a tendency to sorb to soil particles, rendering them immobile apart from these particles.

SWMU 49 and the surrounding area are relatively level with low-relief topography. The immediate area is covered with asphalt and descends slightly west and northwest toward two storm drains and a wooded area to the north. Contaminants were detected at only two sampling locations, indicating that contaminant migration by the soil-to-sediment process is not significant.

7.7.6 Conclusions and Recommendations

The following conclusions and recommendations are based on the investigation data:

Conclusions

- SWMU 49 is suitable for residential or industrial land use.
- Seven organic compounds were detected in surface (0 to 1 foot bls) soil; however, only dieldrin was detected at concentrations exceeding its residential RBC and SSL.
- TPH was detected in the surface-soil sample at 280 mg/kg, exceeding the TDEC cleanup level of 100 mg/kg.
- Eleven metals were detected in surface soil at SWMU 49, none of which were retained as COPCs. All are not considered to pose a threat.
- No VOCs were detected in fluvial deposits groundwater.
- No PRE was performed for SWMU 49 because no COPCs were identified.

Recommendations

Based on surface-soil results, removal of TPH-contaminated soil is recommended for SWMU 49.

7.8 SWMU 61 — Former Printing Shop Building N-26

A CSI was conducted at SWMU 61 prior to the other Assemblies G and H SWMUs to facilitate the Navy's demolition project. SWMU 61 was a concrete pad reportedly used as a cleaning area for printing equipment from former Building N-26, which was demolished in July 1997. The sides of the pad were approximately 2 inches high and sloped toward two central drains that discharged into the sewer. SWMU 61 was approximately 250 feet east of Helena Avenue (formerly 8th Ave.), adjacent to the east side of Building N-26 (Figure 1.1) on the NSA Mid-South Northside. SWMU 61 was bounded on the north by a concrete area and on the south by a grassy area and Building 1356.

Building N-26 was formerly used as a printing shop and stored printing inks that may have contained solvents and heavy metals such as cadmium, chromium, and lead. The exact time range of this cleaning operation is unknown, but it is estimated to be several years in the early 1980s. It was also reported that previous uses included cleaning of garbage cans and mops. During a 1990 inspection, stains were observed surrounding SWMU 61 (ERC/EDGe, 1990).

The former location of SWMU 61 and the surrounding area are characterized by relatively level, low-relief topography. The immediate area was concrete and descended slightly west and northwest toward two storm drains, both of which discharged into the sewer. The regional and local hydrogeology are described in Sections 2.11 and 2.12, respectively, of the *Comprehensive RFI Work Plan* (E/A&H, October 1994). Site-specific geologic and hydrogeologic information and references are in Section 2 of this report and in Section 2.0 of the *Assemblies G and H CSI Work Plan* (EnSafe, December 1997).

7.8.1 Previous Sampling Activities

No previous sampling is known to have been conducted at SWMU 61 prior to the CSI: However, as a result of this CSI, a soil removal was undertaken in July 1997, which is detailed in Section 7.8.6.

7.8.2 Field Investigation

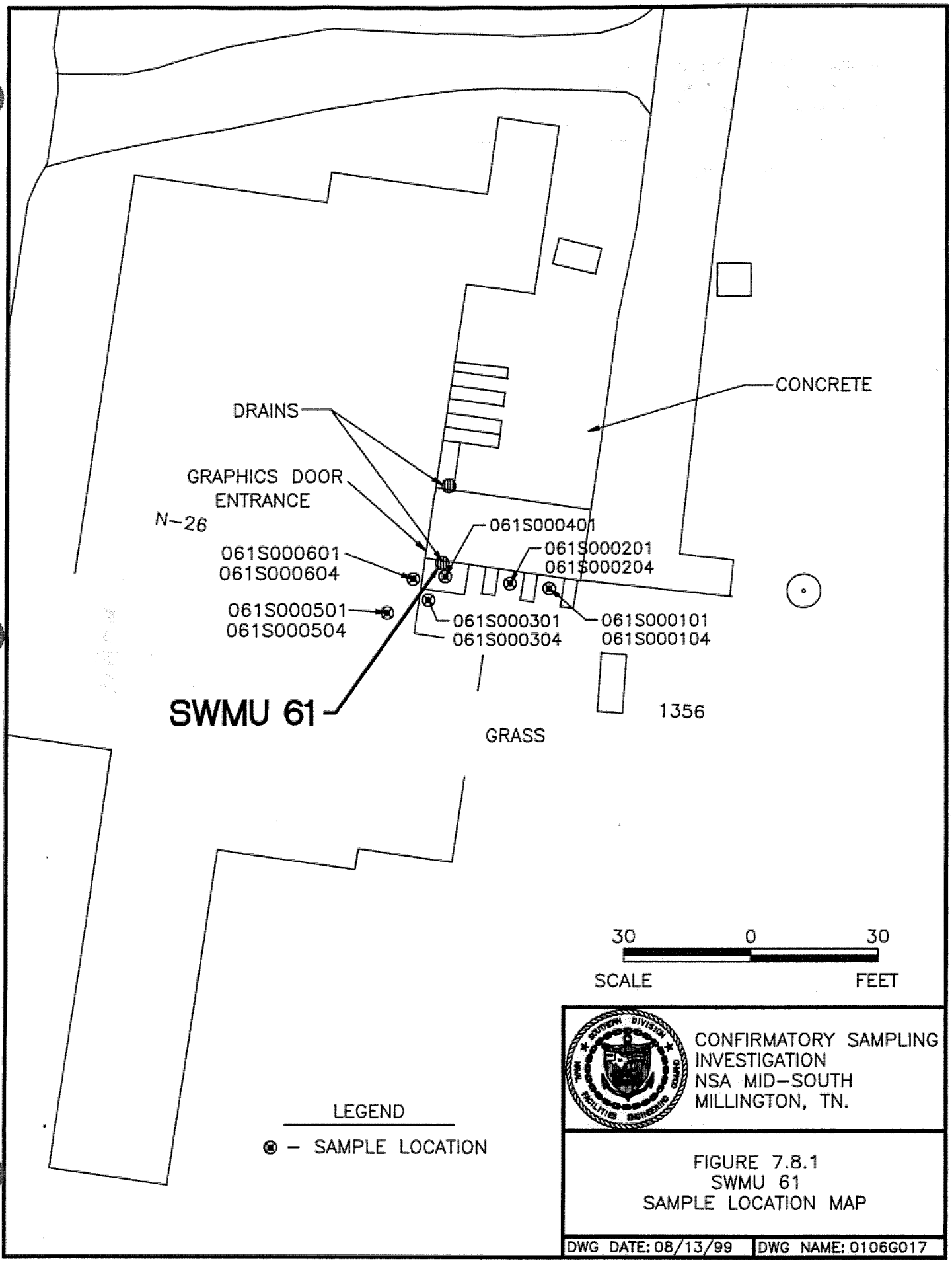
The objective of the field investigation was to better define the extent of potential contamination at SWMU 61. All samples were collected and processed per Section 4 of the *Comprehensive RFI Work Plan* (E/A&H, October 1994).

Soil

The soil investigation consisted of both surface and subsurface-soil sampling (using methods outlined in Section 4.4.4.3 of the *Comprehensive RFI Work Plan* [E/A&H, October 1994]) for offsite laboratory analysis from the 0 to 1-foot and 3 to 4-foot depth intervals, as shown in Figure 7.8.1. Due to the nature of operations, surface-soil samples 061S000101, 061S000401, and 061S000601 underwent FSA, while the other surface-soil samples (061S000201, 061S000301, and 061S000501) and all subsurface-soil samples (061S000104, 061S000204, 061S000304, 061S000504, and 061S000604) were analyzed for VOCs, SVOCs, Appendix IX Metals, and cyanides to assess the extent of contamination.

7.8.3 Confirmatory Sampling Results

Tables and figures in this section present the analytical results for all soil samples collected during this CSI. Values for organic analyses of soil are compared to each compound's corresponding RBC for both residential and industrial scenarios, and with the SSL for protection of groundwater as published in the *USEPA Region III April 1999 RBC Table* (April 12, 1999). Inorganic results are compared to RCs from NSA Mid-South, residential and industrial RBCs, and SSLs. SSLs were taken from *EPA/540/R-95/128* (May 1996).



CONFIRMATORY SAMPLING
INVESTIGATION
NSA MID-SOUTH
MILLINGTON, TN.

FIGURE 7.8.1
SWMU 61
SAMPLE LOCATION MAP

DWG DATE: 08/13/99 | DWG NAME: 0106G017

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Organics in Soil

Organic and TPH soil data for SWMU 61 samples are presented in Tables 7.8.1 and 7.8.2, respectively.

BEQs were estimated in accordance with *USEPA Region IV November 1995 Supplemental Guidance to RAGS Bulletin 2*, as presented in Table 7.8.1 and discussed below. No groundwater samples were collected at SWMU 61.

All PAHs listed below are classified by USEPA as B2 carcinogens, and their carcinogenicity is addressed relative to that of benzo(a)pyrene, which has a slope factor of 7.3 kg-day/mg. TEFs, also determined by USEPA, are multipliers that are applied to the detected concentrations. The results are subsequently summed and used to estimate the cancer risk posed by benzo(a)pyrene and other PAHs with similar toxicology.

BEQs include the following:

PAH	TEF
Benzo(a)anthracene	0.1
Benzo(b)fluoranthene	0.1
Benzo(k)fluoranthene	0.01
Benzo(a)pyrene	1.0
Chrysene	0.001
Dibenz(a,h)anthracene	1.0
Indeno(1,2,3-cd)pyrene	0.1

BEQ is listed in Table 7.8.1 as a separate value with a box around it and is followed by the PAHs that are considered in its summation. Only BEQs exceeding 100 μg/kg are separated in the table. After calculation, only the BEQ value is considered in a PRE and only BEQs whose values exceed both the RC and the residential or industrial RBCs of benzo(a)pyrene are considered COPCs.

Table 7.8.1
Assemblies G and H — SWMU 61 Organic Detections in Soil by Location (μg/kg)

Location	Depth (in feet)	Contaminant	RC[a]	RBC[b] Industrial	RBC[b] Residential	SSL[c]	Result
061X0001	01'	4,4'-DDE	—	17,000	1,900	3,000	10
		4,4'-DDT	—	17,000	1,900	2,000	19
		Acenaphthene	—	12,000,000	470,000	29,000	48 J
		Anthracene	—	61,000,000	2,300,000	590,000	170 J
		Benzo(g,h,i)perylene†	—	6,100,000	230,000	210,000	180 J
		BEQ*	565	780	88	400	469
		Benzo(a)anthracene	—	7,800	880	80	450
		Benzo(a)pyrene	—	780	88	400	370 J
		Benzo(b)fluoranthene	—	7,800	880	200	310 J
		Benzo(k)fluoranthene	—	78,000	8,800	2,000	430
		Chrysene	—	780,000	88,000	8,000	490
		Indeno(1,2,3-cd)pyrene	—	7,800	880	700	180 J
		Carbazole	—	290,000	32,000	30	130 J
		Dieldrin+	262	360	40	0.2	21
		Fluoranthene	—	8,200,000	310,000	210,000	1000
		Fluorene	—	8,200,000	310,000	28,000	58 J
		Phenanthrene†	—	6,100,000	230,000	210,000	730
		Pyrene	—	6,100,000	230,000	210,000	790
		beta-BHC	—	3,200	350	0.1	0.33 J
061X0002	01'	Acenaphthene	—	12,000,000	470,000	29,000	14 J
		Anthracene	—	61,000,000	2,300,000	590,000	38 J
		Benzo(g,h,i)perylene†	—	6,100,000	230,000	210,000	150 J
		BEQ*	565	780	88	400	203
		Benzo(a)anthracene	—	7,800	880	80	140 J
		Benzo(a)pyrene	—	780	88	400	160 J

Table 7.8.1
Assemblies G and H — SWMU 61 Organic Detections in Soil by Location (μg/kg)

Location	Depth (in feet)	Contaminant	RC[a]	RBC[b] Industrial	RBC[b] Residential	SSL[c]	Result
061X0002 (continued)	01'	Benzo(b)fluoranthene	—	7,800	880	200	160 J
		Benzo(k)fluoranthene	—	78,000	8,800	2,000	140 J
		Chrysene	—	780,000	88,000	8,000	160 J
		Indeno(1,2,3-cd)pyrene	—	7,800	880	700	110 J
		Carbazole	—	290,000	32,000	**30**	**44 J**
		Fluoranthene	—	8,200,000	310,000	210,000	320 J
		Fluorene	—	8,200,000	310,000	28,000	20 J
		Phenanthrene†	—	6,100,000	230,000	210,000	190 J
		Pyrene	—	6,100,000	230,000	210,000	260 J
061X0002	04'	Acenaphthene	—	—	—	29,000	20 J
		Acenaphthylene‡	—	—	—	29,000	16 J
		Anthracene	—	—	—	590,000	340 J
		Benzo(g,h,i)perylene†	—	—	—	210,000	230 J
		BEQ*	**565**	—	—	**400**	**717**
		Benzo(a)anthracene	—	—	—	**80**	**830**
		Benzo(a)pyrene	—	—	—	**400**	**550**
		Benzo(b)fluoranthene	—	—	—	**200**	**550**
		Benzo(k)fluoranthene	—	—	—	2,000	560
		Chrysene	—	—	—	8,000	850
		Indeno(1,2,3-cd)pyrene	—	—	—	700	230 J
		Carbazole	—	—	—	**30**	**430**
		Fluoranthene	—	—	—	210,000	2200
		Fluorene	—	—	—	28,000	100 J
		Phenanthrene†	—	—	—	210,000	1600
		Pyrene	—	—	—	210,000	1800

Table 7.8.1
Assemblies G and H — SWMU 61 Organic Detections in Soil by Location (μg/kg)

Location	Depth (in feet)	Contaminant	RC[a]	RBC[b] Industrial	RBC[b] Residential	SSL[c]	Result
061X0003	01'	Acenaphthene	—	12,000,000	470,000	29,000	10 J
		Anthracene	—	61,000,000	2,300,000	590,000	23 J
		Benzo(g,h,i)perylene†	—	6,100,000	230,000	210,000	64 J
		BEQ*	565	780	88	400	139
		Benzo(a)anthracene	—	7,800	880	80	94 J
		Benzo(a)pyrene	—	780	88	400	110 J
		Benzo(b)fluoranthene	—	7,800	880	200	120 J
		Benzo(k)fluoranthene	—	78,000	8,800	2,000	130 J
		Chrysene	—	780,000	88,000	8,000	130 J
		Indeno(1,2,3-cd)pyrene	—	7,800	880	700	60 J
		Fluoranthene	—	8,200,000	310,000	210,000	270 J
		Phenanthrene†	—	6,100,000	230,000	210,000	140 J
		Pyrene	—	6,100,000	230,000	210,000	180 J
061X0003	04'	Pyrene	—	—	—	210,000	11 J
061X0004	01'	4,4'-DDT	—	17,000	1,900	2,000	2.4 J
		Benzo(a)anthracene	—	7,800	880	80	13 J
		Benzo(g,h,i)perylene†	—	6,100,000	230,000	210,000	26 J
		Fluoranthene	—	8,200,000	310,000	210,000	23 J
		Phenanthrene†	—	6,100,000	230,000	210,000	9.4 J
		Pyrene	—	6,100,000	230,000	210,000	20 J
061X0005	01'	Acenaphthene	—	12,000,000	470,000	29,000	14 J
		Anthracene	—	61,000,000	2,300,000	590,000	46 J
		Benzo(g,h,i)perylene†	—	6,100,000	230,000	210,000	75 J
		BEQ*	565	780	88	400	243
		Benzo(a)anthracene	—	7,800	880	80	210 J

Table 7.8.1
Assemblies G and H — SWMU 61 Organic Detections in Soil by Location (μg/kg)

Location	Depth (in feet)	Contaminant	RC[a]	RBC[b] Industrial	RBC[b] Residential	SSL[c]	Result
061X0005 (continued)	01'	Benzo(a)pyrene	—	780	88	400	190 J
		Benzo(b)fluoranthene	—	7,800	880	200	220 J
		Benzo(k)fluoranthene	—	78,000	8,800	2,000	200 J
		Chrysene	—	780,000	88,000	8,000	230 J
		Indeno(1,2,3-cd)pyrene	—	7,800	880	700	81 J
		Fluoranthene	—	8,200,000	310,000	210,000	250 J
		Phenanthrene†	—	6,100,000	230,000	210,000	170 J
		Pyrene	—	6,100,000	230,000	210,000	310 J
061X0005	04'	Fluoranthene	—	—	—	210,000	35 J
		Phenanthrene†	—	—	—	210,000	24 J
		Pyrene	—	—	—	210,000	25 J
061X0006	01'	4,4'-DDE	—	17,000	1,900	3,000	0.42 J
		4,4'-DDT	—	17,000	1,900	2,000	1.8 J
		Butylbenzylphthalate	—	41,000,000	1,600,000	810,000	170 J
		Chlordane	—	16,000	1,800	500	13 J
		Fluoranthene	—	8,200,000	310,000	210,000	45 J
		Pyrene	—	6,100,000	230,000	210,000	37 J

Notes:

a = Background Reference Concentration (RC) from the *Reference Concentrations Technical Memorandum* (August 27, 1996, E/A&H).
b = Industrial and residential RBCs from the *Risk-Based Concentration Table* (April 12, 1999, USEPA Region III RBC Memo).
c = Soil Screening Level (SSL) from the *Generic Screening Levels* (May 1996, USEPA/OSWER SSL Guidance Document, EPA/540/R-95/128).
— = RC value does not exist or RBC values do not apply to subsurface soil.
J = Contaminant detected at concentrations less than the method reporting limit; value estimated.
* = Benzo(a)pyrene Equivalent (BEQ) was calculated in accordance with *USEPA Region IV November 1995 = Supplemental Guidance to RAGS Bulletin 2.*
+ = Reference concentration for dieldrin determined from base-wide background sampling and screening.
† = Pyrene is used as a surrogate.
‡ = Acenaphthene is used as a surrogate.
Bold indicates samples that exceed any one of the standard reference values.

As indicated in Table 7.8.1, only one of the 21 contaminants detected in SWMU 61 soil samples, (benzo(a)pyrene) exceeded only its residential RBC in four surface-soil samples, and three exceeded only their soil-to-groundwater SSLs in surface and subsurface samples. Benzo(a)pyrene is addressed under the BEQ where no surface-soil samples exceeded both the RC and the residential RBC. One subsurface sample exceeded the RC and soil-to-groundwater SSL for BEQ.

- BEQ exceeded the RC (565 μg/kg) and soil-to-groundwater SSL (400 μg/kg) in subsurface-soil sample 061S000204 (717 μg/kg).

- Carbazole exceeded its soil-to-groundwater SSL (30 μg/kg) in samples 061S000101 (130 μg/kg), 061S000201 (44 μg/kg), and 061S000204 (430 μg/kg).

- Dieldrin and beta-BHC exceeded their SSLs (0.2 μg/kg and 0.1 μg/kg, respectively) in one soil sample, 061S000101, at 21 μg/kg and 0.33 μg/kg, respectively.

Table 7.8.2
Assemblies G and H — SWMU 61 Petroleum Hydrocarbon Detections in Soil by Location (mg/kg)

Location	Depth (in feet)	Contaminant	Result
061X0001	01'	TPH	3,600 J
061X0004	01'	TPH	88 J
061X0006	01'	TPH	15 J

Notes:
J = value estimated
mg/kg = milligrams per kilogram
TPH = Total petroleum hydrocarbons.
TDEC TPH soil-cleanup level ranges from 100 mg/kg to 1,000 mg/kg.
Bold indicates samples that exceed any of the standard reference values.

Because no RBC values exist for TPH or TPH-GRO/DRO, TDEC soil-cleanup values were used for comparison. TDEC has established three cleanup concentrations for TPH — 100 mg/kg, 500 mg/kg, and 1,000 mg/kg — depending on the soil permeability. The TDEC cleanup level of 500 mg/kg for total TPH in nondrinking-water aquifers (i.e., the upper alluvium), with soil permeabilities between 10^{-4} and 10^{-6} centimeters per second (cm/sec) (TDEC, 1997), was initially compared to total TPH concentrations in surface and subsurface soil. This cleanup level was chosen because 1.84E-6 cm/sec, a value representing the average soil permeability from 20 samples across the base, was used as the default for sites lacking permeability data (Appendix B).

Inorganics in Soil

Inorganic soil data for SWMU 61 samples are presented in Table 7.8.3.

Table 7.8.3
Assemblies G and H — SWMU 61 Inorganic Detections in Soil by Location (mg/kg)

Location	Depth (in feet)	Constituent	RC[a]	RBC[b] Industrial	RBC[b] Residential	SSL[c]	Result
061X0001	01'	Arsenic (As)	14.6	3.8	0.43	1	8.8
		Barium (Ba)	223	14,000	550	82	134
		Beryllium (Be)	1.00	410	16	3	0.48 J
		Chromium (Cr)	24.0	610	23	2	12.3
		Cobalt (Co)	16.0	12,000	470	DNE	7.9 J
		Copper (Cu)	24.2	8,200	310	DNE	13.1
		Lead (Pb)	26	400[d]	400[d]	DNE	246 J
		Mercury (Hg)	0.46	DNE	DNE	DNE	0.04
		Nickel (Ni)	20.6	4,100	160	7	13.6

Table 7.8.3
Assemblies G and H — SWMU 61 Inorganic Detections in Soil by Location (mg/kg)

Location	Depth (in feet)	Constituent	RC[a]	RBC[b] Industrial	RBC[b] Residential	SSL[c]	Result
061X0001	01'	Thallium (Tl)	—	DNE	DNE	0.04	0.67 J
(continued)		Vanadium (V)	45.1	1,400	55	300	23.8
		Zinc (Zn)	98	61,000	2,300	620	80.5 J
061X0001	04'	**Arsenic (As)**	20.3	—	—	**1**	**11.6**
		Barium (Ba)	265	—	—	**82**	**118**
		Beryllium (Be)	1.00	—	—	3	0.56 J
		Chromium (Cr)	28.3	—	—	**2**	**14.6**
		Cobalt (Co)	14.4	—	—	DNE	7.3 J
		Copper (Cu)	32.5	—	—	DNE	17.3
		Lead (Pb)	**19.8**	—	—	DNE	**152 J**
		Mercury (Hg)	0.18	—	—	DNE	0.06
		Nickel (Ni)	—	—	—	**7**	**15.6**
		Vanadium (V)	43.7	—	—	300	27.8
		Zinc (Zn)	109	—	—	620	71.6 J
061X0002	01'	Arsenic (As)	14.6	3.8	0.43	1	11.4
		Barium (Ba)	223	14,000	550	82	143
		Beryllium (Be)	1.00	410	16	3	0.45 J
		Cadmium (Cd)	1.54	100	3.9	0.4	0.44 J
		Chromium (Cr)	24.0	610	23	2	18.7
		Cobalt (Co)	16.0	12,000	470	DNE	8.4 J
		Copper (Cu)	24.2	8,200	310	DNE	21.4
		Lead (Pb)	*26*	*400[d]*	*400[d]*	*DNE*	*403 J*
		Mercury (Hg)	0.46	DNE	DNE	DNE	0.06
		Nickel (Ni)	20.6	4,100	160	7	13.5
		Selenium (Se)	—	1,000	39	0.3	0.48 J

Table 7.8.3
Assemblies G and H — SWMU 61 Inorganic Detections in Soil by Location (mg/kg)

Location	Depth (in feet)	Constituent	RC[a]	RBC[b] Industrial	RBC[b] Residential	SSL[c]	Result
061X0002	01'	Thallium (Tl)	—	DNE	DNE	0.4	0.8 J
(continued)		Vanadium (V)	45.1	1,400	55	300	20.6
		Zinc (Zn)	98	61,000	2,300	620	271 J
061X0002	04'	**Arsenic (As)**	20.3	—	—	**1**	**9.6**
		Barium (Ba)	265	—	—	**82**	**122**
		Beryllium (Be)	1.00	—	—	3	0.33 J
		Chromium (Cr)	28.3	—	—	**2**	**12.2**
		Cobalt (Co)	14.4	—	—	DNE	9.5 J
		Copper (Cu)	32.5	—	—	DNE	14.7
		Lead (Pb)	**19.8**	—	—	DNE	**20.9 J**
		Mercury (Hg)	0.18	—	—	DNE	0.03
		Nickel (Ni)	—	—	—	**7**	**13**
		Selenium (Se)	—	—	—	**0.3**	**0.81 J**
		Vanadium (V)	43.7	—	—	300	25.6
		Zinc (Zn)	109	—	—	620	59.2 J
061X0003	01'	Arsenic (As)	14.6	3.8	0.43	1	7.4
		Barium (Ba)	223	14,000	550	82	124
		Beryllium (Be)	1.00	410	16	3	0.58 J
		Cadmium (Cd)	1.54	100	3.9	0.4	1.3
		Chromium (Cr)	24.0	610	23	2	12.3
		Cobalt (Co)	16.0	12,000	470	DNE	7.1 J
		Copper (Cu)	24.2	8,200	310	DNE	66.3
		Lead (Pb)	26	400[d]	400[d]	DNE	115 J
		Mercury (Hg)	0.46	DNE	DNE	DNE	0.32
		Nickel (Ni)	20.6	4,100	160	7	13.7
		Selenium (Se)	—	1,000	39	0.3	0.6 J

Table 7.8.3
Assemblies G and H — SWMU 61 Inorganic Detections in Soil by Location (mg/kg)

Location	Depth (in feet)	Constituent	RC[a]	RBC[b] Industrial	RBC[b] Residential	SSL[c]	Result
061X0003	01'	Silver (Ag)	—	1,000	39	2	0.52 J
(continued)		Vanadium (V)	45.1	1,400	55	300	24.4
		Zinc (Zn)	98	61,000	2,300	620	689 J
061X0003	04'	**Arsenic (As)**	20.3	—	—	**1**	**12.6**
		Barium (Ba)	265	—	—	**82**	**146**
		Beryllium (Be)	1.00	—	—	3	0.67 J
		Chromium (Cr)	28.3	—	—	**2**	**18.5**
		Cobalt (Co)	**14.4**	—	—	DNE	**15.4 J**
		Copper (Cu)	32.5	—	—	DNE	22.8
		Lead (Pb)	**19.8**	—	—	DNE	**25.5 J**
		Mercury (Hg)	0.18	—	—	DNE	0.06
		Nickel (Ni)	—	—	—	**7**	**18.2**
		Selenium (Se)	—	—	—	**0.3**	**0.5 J**
		Thallium (Tl)	—	—	—	**0.04**	**1 J**
		Vanadium (V)	43.7	—	—	300	38.5
		Zinc (Zn)	109	—	—	620	89.4 J
061X0004	01'	Arsenic (As)	14.6	3.8	0.43	1	5.2
		Barium (Ba)	223	14,000	550	82	106
		Beryllium (Be)	1.00	410	16	3	0.42 J
		Chromium (Cr)	24.0	610	23	2	9.2
		Cobalt (Co)	16.0	12,000	470	DNE	7.4 J
		Copper (Cu)	24.2	8,200	310	DNE	8.7
		Lead (Pb)	26	400[d]	400[d]	DNE	12.6 J
		Mercury (Hg)	0.46	610	23	DNE	0.08

Table 7.8.3
Assemblies G and H — SWMU 61 Inorganic Detections in Soil by Location (mg/kg)

Location	Depth (in feet)	Constituent	RC[a]	RBC[b] Industrial	RBC[b] Residential	SSL[c]	Result
061X0004	01'	Nickel (Ni)	20.6	4,100	160	7	11.1
(continued)		Vanadium (V)	45.1	1,400	55	300	17.7
		Zinc (Zn)	98	61,000	2,300	620	32.7 J
061X0005	01'	**Arsenic (As)**	14.6	**3.8**	**0.43**	**1**	**11.8**
		Barium (Ba)	223	14,000	550	**82**	**162**
		Beryllium (Be)	1.00	410	16	3	0.56 J
		Chromium (Cr)	24.0	610	23	**2**	**15.8**
		Cobalt (Co)	16.0	12,000	470	DNE	9.8 J
		Copper (Cu)	24.2	8,200	310	DNE	22.9
		Lead (Pb)	26	400[d]	400[d]	DNE	22.5 J
		Mercury (Hg)	0.46	DNE	DNE	DNE	0.04
		Nickel (Ni)	**20.6**	4,100	160	**7**	**20.7**
		Selenium (Se)	—	1,000	39	**0.3**	**0.52 J**
		Vanadium (V)	45.1	1,400	55	300	32.4
		Zinc (Zn)	98	61,000	2,300	620	90.5 J
061X0005	04'	Arsenic (As)	20.3	—	—	1	10
		Barium (Ba)	265	—	—	82	135
		Beryllium (Be)	1.00	—	—	3	0.56 J
		Chromium (Cr)	28.3	—	—	2	12.2
		Cobalt (Co)	14.4	—	—	DNE	8.1 J
		Copper (Cu)	32.5	—	—	DNE	17.1
		Lead (Pb)	19.8	—	—	DNE	11.9 J
		Mercury (Hg)	0.18	—	—	DNE	0.03
		Nickel (Ni)	—	—	—	7	16.6

Table 7.8.3
Assemblies G and H — SWMU 61 Inorganic Detections in Soil by Location (mg/kg)

Location	Depth (in feet)	Constituent	RC[a]	RBC[b] Industrial	RBC[b] Residential	SSL[c]	Result
061X0005	04'	Selenium (Se)	—	—	—	0.3	0.55 J
(continued)		Vanadium (V)	43.7	—	—	300	26
		Zinc (Zn)	109	—	—	620	52.4 J
061X0006	01'	**Arsenic (As)**	14.6	**3.8**	**0.43**	**1**	**7.7**
		Barium (Ba)	223	14,000	550	**82**	**133**
		Beryllium (Be)	1.00	410	16	3	0.55 J
		Chromium (Cr)	24.0	610	23	**2**	**12.8**
		Cobalt (Co)	16.0	12,000	470	DNE	4.9 J
		Copper (Cu)	24.2	8,200	310	DNE	13.4
		Lead (Pb)	26	400[d]	400[d]	DNE	11.9 J
		Mercury (Hg)	0.46	DNE	DNE	DNE	0.05
		Nickel (Ni)	20.6	4,100	160	**7**	**12.7**
		Selenium (Se)	—	1,000	39	**0.3**	**0.46 J**
		Silver (Ag)	—	1,000	39	2	0.48 J
		Vanadium (V)	45.1	1,400	55	300	25.2
		Zinc (Zn)	98	61,000	2,300	620	45.9 J
061X0006	04'	Arsenic (As)	20.3	—	—	1	9.8
		Barium (Ba)	265	—	—	82	145
		Beryllium (Be)	1.00	—	—	3	0.64 J
		Chromium (Cr)	28.3	—	—	2	14.8
		Cobalt (Co)	14.4	—	—	DNE	8.2 J
		Copper (Cu)	32.5	—	—	DNE	15.9
		Lead (Pb)	19.8	—	—	DNE	12.8 J
		Mercury (Hg)	0.18	—	—	DNE	0.05
		Nickel (Ni)	—	—	—	7	15.4

Table 7.8.3
Assemblies G and H — SWMU 61 Inorganic Detections in Soil by Location (mg/kg)

Location	Depth (in feet)	Constituent	RC[a]	RBC[b] Industrial	RBC[b] Residential	SSL[c]	Result
061X0006	04'	Selenium (Se)	—	—	—	0.3	0.57 J
(continued)		Silver (Ag)	—	—	—	2	0.43 J
		Vanadium (V)	43.7	—	—	300	27.6
		Zinc (Zn)	109	—	—	620	52.1 J

Notes:
a = Background Reference Concentration (RC) from the *Reference Concentrations Technical Memorandum* (August 27, 1996, E/A&H).
b = Industrial and residential RBCs from the *Risk-Based Concentration Table* (April 12, 1999, USEPA Region III RBC Memo).
c = Soil Screening Level (SSL) from the *Generic Screening Levels* (May 1996, USEPA/OSWER SSL Guidance Document, EPA/540/R-95/128).
d = Lead soil-cleanup value, as established by *USEPA/OSWER Directive #9355.4-12*, substituted for RBC.
— = RC value does not exist or RBC values do not apply to subsurface soil.
DNE = Does not exist.
J = Constituent detected at concentrations less than the method reporting limit; value estimated.
Bold indicates samples that exceed any of the standard reference values.
Bold/Italics indicate samples included in PRE.

Table 7.8.3 shows that lead was the only of 15 inorganics detected at SWMU 61 that exceeded both its RC and the established TDEC cleanup value, and was therefore included in the PRE. The following inorganics exceeded one or more of the standard reference values.

- Lead was established as a COPC because it exceeded its RC (26 mg/kg) and USEPA/Office of Solid Waste and Emergency Response (OSWER) soil-cleanup value (400 mg/kg) in sample 061S000201 (403 mg/kg). Lead exceeded only its RC in three surface-soil samples and in their three corresponding subsurface-soil samples.

- Arsenic exceeded its residential RBC (0.43 mg/kg), industrial RBC (3.8 mg/kg), and soil-to-groundwater SSL (1 mg/kg) in all six surface-soil samples.

- Barium, cadmium, chromium, nickel, selenium, and thallium exceeded their respective soil-to-groundwater SSLs in multiple surface- and subsurface-soil samples.

- Cobalt exceeded its background subsurface RC (14.4 mg/kg) in sample 061S000304 (15.4 mg/kg).

- Copper and zinc exceeded their respective RCs (24.2 mg/kg and 98 mg/kg) in sample 061S000301 (66.3 mg/kg and 689 mg/kg). Zinc also exceeded its soil-to-groundwater SSL (620 mg/kg) in sample 061S000301.

7.8.4 Preliminary Risk Evaluation / Lead Model

In accordance with *Guidance on Preliminary Risk Evaluations for the Purpose of Reaching a Finding of Suitability to Lease* (USEPA Region IV memorandum, November 1994), the potential for a PRE was examined for SWMU 61 using data from surface-soil samples collected during the CSI. Lead was the only constituent to qualify as a COPC in surface soil and BEQ was identified as a COPC in subsurface soil. The maximum reported lead concentration of 403 mg/kg exceeded the soil lead action level of 400 mg/kg. The maximum reported concentration of BEQ (717 μg/kg) exceeded the RC and the soil-to-groundwater SSL. A PRE was not considered appropriate for lead because it has no industrial or residential RBC. BEQ did not need a PRE either because RBCs do not apply to subsurface soil. Instead, risk was evaluated by Version 0.99d of USEPA's Integrated Exposure-Uptake Biokinetic (IEUBK) model for lead in soil and the construction-worker scenario for BEQ in subsurface soil.

Lead Model

The IEUBK model calculates the probability that blood lead concentrations would exceed 0.010 micrograms per deciliter (μg/dl), which is the USEPA blood-lead threshold. The USEPA probability threshold is 5%, which is indicated by the Y-intercept on a probability density

function, calculated and graphed by the USEPA model assuming a child would ingest site soil from the age of zero to 84 months.

Appendix C presents model assumptions and a graphical representation of the intersection of the probability percent and blood-lead concentration. Assuming the maximum reported soil concentration represents site-wide values, the USEPA model predicts a less than 5% probability that the blood-lead level would exceed 0.010 mg/dl. In addition, the arithmetic mean lead concentration in soil is less than the soil action level of 400 mg/kg.

Construction Worker RBC Development

Screening concentrations were developed to address a future construction worker's hypothetical exposure to subsurface soil. RAGS and E/A&H's technical memorandum (February 4, 1997) detail exposure assumptions for this HHRA. The construction-worker scenario and assumptions are not discussed in the technical memorandum and are summarized below.

Construction projects would not be expected to meet the RAGS definition of chronic exposure (i.e., seven years or more). Toxicological information used to estimate risk is often based on subchronic studies, and the data are extrapolated and modified for chronic exposure and toxicity assessment. No adjustments were made to the toxicological data for subchronic exposure conditions in this CSI, so toxic endpoints used for some chemicals could overestimate risk.

Using the chronic toxicological data and exposure models compiled by USEPA Region III in their RBC Tables (*www.epa.gov,* January 1998), exposure assumptions were modified to address construction-worker exposure, and residential RBCs were modified to develop construction-worker RBCs. Multipliers were developed to simplify the process, and the equations, exposure assumptions, and resulting multipliers are explained below.

Non-carcinogens

USEPA Region III Soil RBC = (THI)(BW)(AT)(RfD)/[(IR)(EF)(ED)(F)]

Where:

CDI_s	=	ingested dose (mg/kg-day)
THI	=	target hazard index (1.0)
BW	=	body weight (kg)
AT	=	averaging time (days)
RfD	=	reference dose (mg/kg-day)
IR	=	ingestion rate (milligrams per day [mg/day])
EF	=	exposure frequency (days/year)
ED	=	exposure duration (years)
F	=	conversion factor (1E-6 kg/mg)

Carcinogens

In accordance with RAGS Parts A and D, the lifetime weighted average (LWA) is used to estimate the intake for site residents. An example of the LWA calculation is shown below for the soil ingestion pathway.

$LWA = [(IR_a \times ED_a)/BW_a] + [(IR_c \times ED_c)/BW_c]$

Where:

LWA	=	lifetime weighted average
IR	=	ingestion rate (milligrams per day [mg/day])
ED	=	exposure duration (years)
BW	=	body weight (kg)
a	=	adult
c	=	child

Consequently, the RBC for carcinogens would be calculated as follows for site residents:

$$RBC = (AT)/[(EPC_s)(EF)(LWA)(F)(SF)]$$

Where:

RBC	=	Risk-based concentration (mg/kg)
AT	=	averaging time (days)
EPC_s	=	exposure point concentration of contaminant (mg/kg)
EF	=	exposure frequency (days/year)
LWA	=	lifetime weighted average
F	=	conversion factor (1E-6 kg/mg)
SF	=	slope factor (kg-day/mg)

The exposure frequency was changed to reflect trespasser and construction-worker exposure. Specific exposure assumptions are listed in Table 7.8.4.

Table 7.8.4
Parameters Used to Estimate CDI

Pathway Parameters	Resident Adult	Resident Child	Trespassing Adolescent (age 7-16)	Construction Worker	Units
Ingestion Rate (soil/sediment) (IR_s)	100[a]	200[a]	100[a]	340	mg/day
Ingestion Rate (groundwater) (IR_w)	2[a]	1[a]	0.13[b]	NA	L/day
Skin Surface Area (SSA)	4,100	2,900	4,100	NA	cm^2/event
Soil to Skin Adherence Factor (ADH)	1	1	1	NA	unitless
Absorption Factor [i] (ABS)	0.01 (organics) 0.001 (inorganics)	0.01 (organics) 0.001 (inorganics)	0.01 (organics) 0.001 (inorganics)	NA	unitless
Oral Absorption Efficiency [i] (OAE)	0.2 (inorganics) 0.8 (VOCs) 0.5 (others)	0.2 (inorganics) 0.8 (VOCs) 0.5 (others)	0.2 (inorganics) 0.8 (VOCs) 0.5 (others)	NA	unitless
Exposure Frequency (EF)	350[b]	350[b]	52[f]	120	days/year

Table 7.8.4
Parameters Used to Estimate CDI

Pathway Parameters	Resident Adult	Resident Child	Trespassing Adolescent (age 7-16)	Construction Worker	Units
Exposure Duration (ED)	24[c]	6[c]	10[g]	1	years
Conversion Factor (C)	1E-6	1E-6	1E-6	1E-6	kg/mg
Body Weight (BW)	70[a]	15[a]	45[a]	70[a]	kg
Averaging Time, Noncancer (AT_n)	8,760[d]	2,190[d]	3,650[d]	365[d]	days
Averaging Time, Cancer (AT_c)	25,550[e]	25,550[e]	25,550[e]	25,550[e]	days

Notes:
a = USEPA (1989a) *Risk Assessment Guidance for Superfund Vol. I, Human Health Evaluation Manual (Part A).*
b = USEPA (1991b) *Risk Assessment Guidance for Superfund Vol. I: Human Health Evaluation Manual Supplemental Guidance, Standard Default Exposure Factors, Interim Final*, OSWER Directive: 9285.6-03.EPA/600/8-89/043.
c = USEPA (1991a), *Risk Assessment Guidance for Superfund: Vol. I — Human Health Evaluation Manual (Part B, Development of Risk-Based Preliminary Remediation Goals)*, OSWER Directive 9285.7-01B.
d = Calculated as the product of ED (years) x 365 days/year.
e = Calculated as the product of 70 years (assumed lifetime) x 365 days per year.
f = Assuming one day per week exposure.
g = Assuming trespassing occurs during the 10-year adolescent/teenage period.
h = Assuming 2.6 hours swimming/day x 50 ml/hr ingestion x 0.001 L/ml = 0.13 L/day
i = USEPA (1995) *Supplemental Guidance to RAGS Bulletins 2 and 3, Exposure Assessment and Toxicity Assessment.*
NA = Not applicable.

Construction Worker RBC

As shown in Table 7.8.4, soil ingestion rates are quite different for residents and construction workers. These parameters were changed to reflect the likelihood that a construction worker would ingest soil at a higher rate (e.g., 480 mg/day) during heavy construction activities, and the rate would be expected to diminish (e.g., 200 mg/day) over time as the structure or project neared completion. A six-month exposure period was assumed, based on recommendations from TDEC, the USEPA Region IV and its review contractor. A weighted average of 340 mg/day was calculated and agreed upon as a default construction-worker ingestion rate. The modified ingestion rate, exposure duration, and exposure frequency were substituted in the USEPA Region III equations to estimate a construction-worker RBC.

For example, the site resident soil carcinogen and non-carcinogen RBCs for arsenic are 0.43 mg/kg and 23.5 mg/kg, respectively. Using the construction-worker assumptions in Table 7.8.4, the corresponding carcinogen and non-carcinogen construction-worker RBCs would be 29.2 mg/kg and 187.9 mg/kg, respectively. These RBCs result in multipliers of 68.6 and 8.0 for carcinogens and non-carcinogens, respectively, which were used in screening comparisons for subsurface soil. The BEQ RBC of 0.088 mg/kg converts to a construction-worker RBC of 6.0 mg/kg, which was used to screen subsurface soil for BEQ.

PRE/Lead Model Conclusions

The following conclusions were based on information gathered during the investigation.

- The USEPA IEUBK lead model calculations predicted that the probability of blood-lead levels exceeding 10 μg/dL is less than 5%. Lead is therefore not retained as a COPC for this site.

- No excess risk is posed by a construction worker's exposure to BEQ as determined by the subsurface-soil lead concentration of 0.717 mg/kg, which does not exceed the 6 mg/kg adjusted RBC.

7.8.5 Fate and Transport

The evaluation of fate and transport for Assemblies G and H contaminants is discussed in Section 6.2, which is applied here for SWMU 61 contaminants. Transport processes for contaminants other than COPCs are also discussed if they occur in multiple environmental media or migrate to other media.

Potential migration pathways for contaminants at SWMU 61 include leaching from soil to groundwater, and erosion of contaminated surface soil from unpaved grass-covered areas to form

sediments in drainage-ways. Surface-soil analytical data indicate that no VOCs exceeded their respective soil-to-air SSL, and the soil-to-air cross-media transport process is therefore not discussed.

Soil-to-Groundwater Cross-Media Transport

SWMU 61 contaminants that exhibit the potential for soil-to-groundwater transport, based on comparison of soil concentrations to the groundwater-protection soil-screening criteria, are the SVOCs benzo(a)anthracene, benzo(b)fluoranthene, benzo(a)pyrene, and carbazole, the pesticides dieldrin and beta-BHC, and the inorganics nickel and zinc. Several inorganics exceeded their soil-to-groundwater SSLs, but only zinc exceed its background RC. Zinc is not considered a soil-to-groundwater migration concern because of its immobility and affinity for soil particles; however, the potential exists for leaching to groundwater based on the SSL and RC exceedances. The other inorganics are not considered for fate and transport discussions since their concentrations, which were less than their background RCs, are considered naturally occurring.

7.8.6 Removal Action

Based on elevated concentrations of BEQ, lead, and TPH in the surface soil, a removal was conducted at SWMU 61. In July 1997, approximately 18 yards of soil were removed to about 2 feet deep by the Navy and Environmental Transport Company, and disposed of by the Navy as non-regulated waste at LWD Sanitary Landfill in Calvert, Kentucky. No confirmatory samples were collected from the bottom of the excavation because the extent of contamination was limited and the subsurface soil risk was low.

7.8.7 Conclusions and Recommendations

The following conclusions and recommendations are based on site investigation data:

Conclusions

SWMU 61 is considered suitable for industrial or residential land use because the contaminated soil was removed in July 1997.

The following conclusions were made Prior to the soil removal,

- Twenty organic compounds were detected in surface soil (0 to 1 foot), although none were identified as COPCs.

- TPH at one location (061X0001) exceeded the TDEC cleanup value of 1,000 mg/kg at a concentration of 3,600 mg/kg.

- Fifteen metals were detected in surface soil at SWMU 61. Of these:

  — Lead exceeded its RC and residential and industrial RBCs in one surface-soil sample, and was retained as a COPC.

- A PRE was not performed for SWMU 61. Instead, lead was modeled statistically and BEQ was evaluated for the exposure of a construction worker.

  — The probability of blood-lead levels exceeding 10 μg/dl is less than 5%, which is below the risk threshold.

  — BEQ does not pose excess risk to a construction worker exposed to the maximum concentration in subsurface soil at SWMU 61.

Recommendations

SWMU 61 is recommended for no further action, based on the removal of contaminated soil and demolition of the associated building in July 1997.

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8.0 ECOLOGICAL RISK ASSESSMENT

An ecological risk assessment assesses the actual or potential adverse effects on ecological receptors resulting from contamination. This ERA will focus on the terrestrial ecosystem associated with the SWMUs in Assemblies G and H at NSA Mid-South. It considers exposure pathways that could result in unacceptable levels of exposure to ecological receptors now, or in the future. The approach to this assessment is based on the USEPA *Risk Assessment Guidance for Superfund Volume II —Environmental Evaluation Manual* (1989), the USEPA *Framework for Ecological Risk Assessment* (USEPA/630/R-92/001), and the USEPA *Ecological Risk Guidance for Superfund: Process for Designing and Conducting Ecological Risk Interim Final (1997).*

Evaluating potential exposure pathways is one of the primary tasks of the screening-level ecological characterization of the site. For an exposure pathway to be complete, a contaminant must be able to travel from the source to ecological receptors and to be taken up by the receptors via one or more exposure routes.

SWMUs 23, 24, 41, 43, 47, 48, 49, and 61

No complete exposure pathways exist at these sites because of the lack of receptors. All sites, which are in developed and/or industrialized areas of the base, consist of graveled, paved, and fenced areas surrounded by streets with no quality habitat available; therefore, no further action is recommended based on potential ecological risk at these sites. No connection between stormwater runoff and nearby ditches was observed at most sites. At sites where the potential for stormwater runoff to impact receptors exists, the ecological risk was addressed in the SWMU 38 assessment.

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9.0 CONCLUSIONS AND RECOMMENDATIONS SUMMARY

A follow-up RFI is recommended for SWMUs 24, 41, and 43. The following table summarizes the findings of this CSI and the work recommended for the RFI. It provides a brief overview of the COPCs, PRE results, contaminant exceedances, and the recommendations and rationale based on these findings.

Table 9.1
Assemblies G and H
CSI Conclusions and Recommendations Summary

SWMU	COPCs [a]	Media Affected [b]	PRE Results Residential	PRE Results Industrial	Screening Criteria Exceeded [c]	RFI Recommendations [d]	Rationale
23	None	NA	NA	NA	NA	No further action	No COPCs were identified
24	Arsenic TPH	Surface and subsurface soil	Suitable for use	Suitable for use	3, 4, 5, 6, 7	Collect Shelby tube sample for permeability analysis and remove TPH-contaminated soil. Undertake Geoprobe groundwater investigation.	Permeability — Establish appropriate TDEC cleanup levels for TPH detected in surface and subsurface soil and bring TPH levels in soil into compliance with TDEC regulations. Geoprobe groundwater locations — Determine if PCE has leached to fluvial groundwater from soil.
41	Cadmium Chromium Copper Aroclor-1260 1,2-dichloroethane TPH	Surface soil and fluvial groundwater	Not suitable for use	Not suitable for use	1, 2, 3, 5, 6, 7	Install at least four monitoring wells. Collect additional surface soil samples. Conduct an ERA. Remove TPH-contaminated soil	Wells — Determine groundwater flow direction, and extent of contamination. Soil Samples — Determine extent of PCB contamination. ERA — To assess actual or potential effects to ecological receptors resulting from contamination. Bring TPH levels in soil into compliance with TDEC regulations.
43	Arsenic TPH	Surface soil	Not suitable for use	Suitable for use	3, 4, 5, 6, 7	Sample at least four Geoprobe groundwater locations. Remove TPH-contaminated soil	Geoprobe groundwater locations — Determine if TCE has leached to fluvial groundwater from soil. Bring TPH levels in soil into compliance with TDEC regulations.
47	Dieldrin TPH	Surface soil	Suitable for use	Suitable for use	3, 4, 5, 6, 7	Remove TPH-contaminated soil	Bring TPH levels in soil into compliance with TDEC regulations.

Table 9.1
Assemblies G and H
CSI Conclusions and Recommendations Summary

SWMU	COPCs [a]	Media Affected [b]	PRE Results Residential	PRE Results Industrial	Screening Criteria Exceeded [c]	RFI Recommendations [d]	Rationale
48	TPH	Surface and subsurface soil	NA	NA	7	Remove TPH-contaminated soil	Bring TPH levels in soil into compliance with TDEC regulations.
49	TPH	Surface soil	NA	NA	7	Remove TPH-contaminated soil	Bring TPH levels in soil into compliance with TDEC regulations.
61	BEQ Lead TPH	Surface and subsurface soil	NA	NA	3, 4, 6, 7	No further action	Soil removal and building demolition was completed in July 1997.

Notes:

a	=	Contaminant of potential concern identified in the PRE
b	=	Media where the COPC was identified
c	=	Indicates a contaminant(s) exceeded a screening criteria and lists the criteria that was exceeded
d	=	Recommendation based on screening criteria exceedances
1	=	MCL (maximum contaminant level)
2	=	tap-water RBC
3	=	residential RBC
4	=	industrial RBC
5	=	soil-to-groundwater SSL
6	=	background RCs
7	=	TDEC soil-cleanup levels for TPH
BEQ	=	Benzo(a)pyrene Equivalents
PCE	=	Tetrachloroethene
TCE	=	Trichloroethene

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10.0 REFERENCES

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Appendix A

Soil and Groundwater Analytical Results

Groundwater

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 23 ANALYTICAL GROUNDWATER RESULTS

SW846-VOA											
	SAMPLE ID ------->	023-G-0001-51		023-G-0002-51		023-H-0002-51					
	ORIGINAL ID ----->	023G000151		023G000251		023H000251					
	LAB SAMPLE ID --->	S880249*6		S880249*7		S880249C*1					
	ID FROM REPORT -->	023G000151		023G000251		023H000251					
	SAMPLE DATE ----->	01/14/98		01/14/98		01/14/98					
	DATE ANALYZED --->	01/19/98		01/20/98		01/19/98					
	MATRIX ---------->	Water		Water		Water					
	UNITS ---------->	UG/L		UG/L		UG/L					
CAS #	Parameter	EM1H08	VAL	EM1H08	VAL	EM1H07	VAL				
74-87-3	Chloromethane	10.	U	10.	U	10.	U				
75-01-4	Vinyl chloride	10.	U	10.	U	10.	U				
74-83-9	Bromomethane	10.	U	10.	UJ	10.	U				
75-00-3	Chloroethane	10.	U	10.	UJ	10.	U				
75-35-4	1,1-Dichloroethene	5.	U	5.	U	5.	U				
75-09-2	Methylene chloride	5.	U	5.	U	5.	U				
75-34-3	1,1-Dichloroethane	5.	U	5.	U	5.	U				
67-66-3	Chloroform	5.	U	5.	U	5.	U				
71-55-6	1,1,1-Trichloroethane	5.	U	5.	U	5.	U				
56-23-5	Carbon tetrachloride	5.	U	5.	U	5.	U				
71-43-2	Benzene	5.	U	5.	U	5.	U				
107-06-2	1,2-Dichloroethane	5.	U	5.	U	5.	U				
79-01-6	Trichloroethene	5.	U	5.	U	5.	U				
78-87-5	1,2-Dichloropropane	5.	U	5.	U	5.	U				
75-27-4	Bromodichloromethane	5.	U	5.	U	5.	U				
108-88-3	Toluene	5.	U	5.	U	5.	U				
79-00-5	1,1,2-Trichloroethane	5.	U	5.	U	5.	U				
127-18-4	Tetrachloroethene	5.	U	5.	U	5.	U				
124-48-1	Dibromochloromethane	5.	U	5.	U	5.	U				
108-90-7	Chlorobenzene	5.	U	5.	U	5.	U				
100-41-4	Ethylbenzene	5.	U	5.	U	0.72	J				
100-42-5	Styrene	5.	U	5.	U	5.	UR				
75-25-2	Bromoform	5.	U	5.	U	5.	U				
79-34-5	1,1,2,2-Tetrachloroethane	5.	U	5.	U	5.	U				
67-64-1	Acetone	50.	U	50.	U	50.	U				
75-15-0	Carbon disulfide	5.	U	5.	U	5.	U				
78-93-3	2-Butanone (MEK)	25.	U	25.	U	25.	U				
108-10-1	4-Methyl-2-Pentanone (MIBK)	25	U	25.	U	25.	U				
10061-01-5	cis-1,3-Dichloropropene	5.	U	5.	U	5.	U				
10061-02-6	trans-1,3-Dichloropropene	5.	U	5.	U	5.	U				
591-78-6	2-Hexanone	25.	U	25.	U	25.	U				
1330-20-7	Xylene (Total)	5.	U	5.	UJ	6.1	J				
540-59-0	1,2-Dichloroethene (total)	5.	U	5.	U	5.	U				
1330-20-7	Xylene (Total)	NR		NR		NR					
9999000-44-2	XYLENES	NR		NR		NR					

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 41 ANALYTICAL GROUNDWATER RESULTS

SW846-VOA													
	SAMPLE ID ------->	041-G-0001-51		041-H-0001-51		041-G-0002-27		041-G-0003-50		041-G-0005-27		041-G-0006-51	
	ORIGINAL ID ----->	041G000151		041H000151		041G000227		041G000350		041G000527		041G000651	
	LAB SAMPLE ID --->	S880211*1		S880211A*1		S880211*3		S880211*2		S880249*1		S880249*3	
	ID FROM REPORT -->	041G000151		041H000151		041G000227		041G000350		041G000527		041G000651	
	SAMPLE DATE ----->	01/13/98		01/13/98		01/13/98		01/13/98		01/14/98		01/14/98	
	DATE ANALYZED --->	01/21/98		01/19/98		01/22/98		01/21/98		01/19/98		01/19/98	
	MATRIX ---------->	Water		Water		Water		Water		Water		Water	
	UNITS ---------->	UG/L		UG/L		UG/L		UG/L		UG/L		UG/L	
CAS #	Parameter	EM1H08	VAL	EM1H07	VAL	EM1H08	VAL	EM1H08	VAL	EM1H08	VAL	EM1H08	VAL
74-87-3	Chloromethane	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
75-01-4	Vinyl chloride	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
74-83-9	Bromomethane	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
75-00-3	Chloroethane	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
75-35-4	1,1-Dichloroethene	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
75-09-2	Methylene chloride	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
75-34-3	1,1-Dichloroethane	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
67-66-3	Chloroform	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
71-55-6	1,1,1-Trichloroethane	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
56-23-5	Carbon tetrachloride	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
71-43-2	Benzene	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
107-06-2	1,2-Dichloroethane	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
79-01-6	Trichloroethene	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
78-87-5	1,2-Dichloropropane	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
75-27-4	Bromodichloromethane	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
108-88-3	Toluene	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
79-00-5	1,1,2-Trichloroethane	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
127-18-4	Tetrachloroethene	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
124-48-1	Dibromochloromethane	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
108-90-7	Chlorobenzene	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
100-41-4	Ethylbenzene	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
100-42-5	Styrene	5.	U	5.	UR	5.	U	5.	U	5.	U	5.	U
75-25-2	Bromoform	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
79-34-5	1,1,2,2-Tetrachloroethane	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
67-64-1	Acetone	50.	UJ	51.	J	50.	U	50.	U	50.	U	50.	U
75-15-0	Carbon disulfide	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
78-93-3	2-Butanone (MEK)	25.	U	25.	U	25.	U	25.	U	25.	U	25.	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	25.	U	25.	U	25.	U	25.	U	25.	U	25.	U
10061-01-5	cis-1,3-Dichloropropene	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
10061-02-6	trans-1,3-Dichloropropene	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
591-78-6	2-Hexanone	25.	U	25.	U	25.	U	25.	U	25.	U	25.	U
1330-20-7	Xylene (Total)	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
540-59-0	1,2-Dichloroethene (total)	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
1330-20-7	Xylene (Total)	NR		NR		NR		NR		NR		NR	
9999000-44-2	XYLENES	NR		NR		NR		NR		NR		NR	

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 41 ANALYTICAL GROUNDWATER RESULTS

SW846-VOA											
	SAMPLE ID ------->	041-G-0008-27		041-G-0009-50		041-G-0010-27					
	ORIGINAL ID ----->	041G000827		041G000950		041G001027					
	LAB SAMPLE ID --->	S880249*2		S880249*4		S880249*5					
	ID FROM REPORT -->	041G000827		041G000950		041G001027					
	SAMPLE DATE ----->	01/14/98		01/14/98		01/14/98					
	DATE ANALYZED --->	01/19/98		01/19/98		01/19/98					
	MATRIX ---------->	Water		Water		Water					
	UNITS ---------->	UG/L		UG/L		UG/L					
CAS #	Parameter	EM1H08	VAL	EM1H08	VAL	EM1H08	VAL				
74-87-3	Chloromethane	10.	U	10.	U	10.	U				
75-01-4	Vinyl chloride	10.	U	10.	U	10.	U				
74-83-9	Bromomethane	10.	U	10.	U	10.	U				
75-00-3	Chloroethane	10.	U	10.	U	10.	U				
75-35-4	1,1-Dichloroethene	5.	U	5.	U	5.	U				
75-09-2	Methylene chloride	5.	U	5.	U	5.	U				
75-34-3	1,1-Dichloroethane	5.	U	5.	U	5.	U				
67-66-3	Chloroform	5.	U	5.	U	5.	U				
71-55-6	1,1,1-Trichloroethane	5.	U	5.	U	5.	U				
56-23-5	Carbon tetrachloride	5.	U	5.	U	5.	U				
71-43-2	Benzene	5.	U	5.	U	5.	U				
107-06-2	1,2-Dichloroethane	59.		5.	U	5.	U				
79-01-6	Trichloroethene	5.	U	5.	U	5.	U				
78-87-5	1,2-Dichloropropane	5.	U	5.	U	5.	U				
75-27-4	Bromodichloromethane	5.	U	5.	U	5.	U				
108-88-3	Toluene	5.	U	5.	U	5.	U				
79-00-5	1,1,2-Trichloroethane	5.	U	5.	U	5.	U				
127-18-4	Tetrachloroethene	5.	U	5.	U	5.	U				
124-48-1	Dibromochloromethane	5.	U	5.	U	5.	U				
108-90-7	Chlorobenzene	5.	U	5.	U	5.	U				
100-41-4	Ethylbenzene	5.	U	5.	U	5.	U				
100-42-5	Styrene	5.	U	5.	U	5.	U				
75-25-2	Bromoform	5.	U	5.	U	5.	U				
79-34-5	1,1,2,2-Tetrachloroethane	5.	U	5.	U	5.	U				
67-64-1	Acetone	50.	U	50.	U	50.	U				
75-15-0	Carbon disulfide	5.	U	5.	U	5.	U				
78-93-3	2-Butanone (MEK)	25.	U	25.	U	25.	U				
108-10-1	4-Methyl-2-Pentanone (MIBK)	25.	U	25.	U	25.	U				
10061-01-5	cis-1,3-Dichloropropene	5.	U	5.	U	5.	U				
10061-02-6	trans-1,3-Dichloropropene	5.	U	5.	U	5.	U				
591-78-6	2-Hexanone	25.	U	25.	U	25.	U				
1330-20-7	Xylene (Total)	5.	U	5.	U	5.	U				
540-59-0	1,2-Dichloroethene (total)	5.	U	5.	U	5.	U				
1330-20-7	Xylene (Total)	NR		NR		NR					
9999000-44-2	XYLENES	NR		NR		NR					

*** Validation Complete ***

4.0 STEEL BAFFLE

The contractor is to furnish, supply details (including design of all connections), fabricate, and erect the structural steel framing, supports, metal sheets, and bracing for the baffle. The contractor is to prime and finish-coat the erected steel using a suitable rust preventive enamel paint (Rust-Oleum or equivalent) in a color selected by the owner.

5.0 PIPING

5.1 The contractor is to provide and install all piping components, including manually operated valves, strainers, pipe supports, anchors, and hangers.

All piping indicated is to be installed by the contractor. **The contractor will be responsible for field-routing any piping that is not detailed on the plans and elevations and is responsible for determining the exact routing of all piping.** The contractor is to make field measurements to determine actual equipment and tie-in point locations and to locate all interferences. The piping plans provided to the contractor are intended to be used to convey the intent and general arrangement of the piping.

5.2 A 3-inch pipe shall be buried 2 feet deep from Sump (T-01) to Ahoskie Creek, approximately 2,500 feet.

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NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 47 ANALYTICAL GROUNDWATER RESULTS

SW846-VOA

SAMPLE ID ------->	047-G-0001-50		047-H-0001-50 *		047-G-0007-50			
ORIGINAL ID ----->	047G000150		047H000150		047G000750			
LAB SAMPLE ID --->	S880192A*5		S8801928*2		S8801920*1			
ID FROM REPORT -->	047G000150		047H000150		047G000750			
SAMPLE DATE ----->	01/11/98		01/11/98		01/11/98			
DATE ANALYZED --->	01/15/98		01/21/98		01/21/98			
MATRIX ---------->	Water		Water		Water			
UNITS ---------->	UG/L		UG/L		UG/L			
CAS # Parameter	EM1H05	VAL	EM1H07	VAL	EM1H08	VAL		
74-87-3 Chloromethane	10.	UJ	10.	U	10.	U		
75-01-4 Vinyl chloride	10.	U	10.	U	10.	U		
74-83-9 Bromomethane	10.	U	10.	U	10.	U		
75-00-3 Chloroethane	10.	U	10.	U	10.	U		
75-35-4 1,1-Dichloroethene	5.	U	5.	U	5.	U		
75-09-2 Methylene chloride	5.	U	5.	U	5.	U		
75-34-3 1,1-Dichloroethane	5.	U	5.	U	5.	U		
67-66-3 Chloroform	5.	U	5.	U	5.	U		
71-55-6 1,1,1-Trichloroethane	5.	U	5.	U	5.	U		
56-23-5 Carbon tetrachloride	5.	U	5.	U	5.	U		
71-43-2 Benzene	5.	U	5.	U	5.	U		
107-06-2 1,2-Dichloroethane	5.	U	5.	U	5.	U		
79-01-6 Trichloroethene	5.	U	5.	U	5.	U		
78-87-5 1,2-Dichloropropene	5.	U	5.	U	5.	U		
75-27-4 Bromodichloromethane	5.	U	5.	U	5.	U		
108-88-3 Toluene	5.	U	5.	U	5.	U		
79-00-5 1,1,2-Trichloroethane	5.	U	5.	U	5.	U		
127-18-4 Tetrachloroethene	5.	U	5.	U	5.	U		
124-48-1 Dibromochloromethane	5.	U	5.	U	5.	U		
108-90-7 Chlorobenzene	5.	U	5.	U	5.	U		
100-41-4 Ethylbenzene	5.	U	5.	U	5.	U		
100-42-5 Styrene	5.	U	5.	U	5.	U		
75-25-2 Bromoform	5.	U	5.	U	5.	U		
79-34-5 1,1,2,2-Tetrachloroethane	5.	U	5.	U	5.	U		
67-64-1 Acetone	50.	U	50.	U	50.	U		
75-15-0 Carbon disulfide	5.	U	5.	U	5.	U		
78-93-3 2-Butanone (MEK)	25.	U	25.	U	25.	U		
108-10-1 4-Methyl-2-Pentanone (MIBK)	25.	U	25.	U	25.	U		
10061-01-5 cis-1,3-Dichloropropene	5.	U	5.	U	5.	U		
10061-02-6 trans-1,3-Dichloropropene	5.	U	5.	U	5.	U		
591-78-6 2-Hexanone	25.	U	25.	U	25.	U		
1330-20-7 Xylene (Total)	5.	U	5.	U	5.	U		
540-59-0 1,2-Dichloroethene (total)	5.	U	5.	U	5.	U		
1330-20-7 Xylene (Total)	NR		NR		NR			
9999000-44-2 XYLENES	NR		NR		NR			

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 49 ANALYTICAL GROUNDWATER RESULTS

SW846-VOA

	SAMPLE ID ------->	049-G-0002-50		049-G-0003-51		049-H-0003-51		049-G-0004-50		049-G-0005-51		049-G-0006-50	
	ORIGINAL ID ----->	049G000250		049G000351		049H000351		049G000450		049G000551		049G000650	
	LAB SAMPLE ID --->	S880192A*3		S880153A*2		S880153C*1		S880153A*5		S880153A*1		S880153A*4	
	ID FROM REPORT -->	049G000250		049G000351		049H000351		049G000450		049G000551		049G000650	
	SAMPLE DATE ----->	01/10/98		01/09/98		01/09/98		01/09/98		01/09/98		01/09/98	
	DATE ANALYZED --->	01/21/98		01/14/98		01/15/98		01/14/98		01/14/98		01/14/98	
	MATRIX ---------->	Water		Water		Water		Water		Water		Water	
	UNITS ---------->	UG/L		UG/L		UG/L		UG/L		UG/L		UG/L	
CAS #	Parameter	EM1H05	VAL	EM1H05	VAL	EM1H07	VAL	EM1H05	VAL	EM1H05	VAL	EM1H05	VAL
74-87-3	Chloromethane	10.	U	10.	UJ	10.	U	10.	UJ	10.	UJ	10.	UJ
75-01-4	Vinyl chloride	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
74-83-9	Bromomethane	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
75-00-3	Chloroethane	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
75-35-4	1,1-Dichloroethene	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
75-09-2	Methylene chloride	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
75-34-3	1,1-Dichloroethane	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
67-66-3	Chloroform	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
71-55-6	1,1,1-Trichloroethane	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
56-23-5	Carbon tetrachloride	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
71-43-2	Benzene	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
107-06-2	1,2-Dichloroethane	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
79-01-6	Trichloroethene	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
78-87-5	1,2-Dichloropropane	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
75-27-4	Bromodichloromethane	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
108-88-3	Toluene	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
79-00-5	1,1,2-Trichloroethane	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
127-18-4	Tetrachloroethene	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
124-48-1	Dibromochloromethane	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
108-90-7	Chlorobenzene	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
100-41-4	Ethylbenzene	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
100-42-5	Styrene	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
75-25-2	Bromoform	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
79-34-5	1,1,2,2-Tetrachloroethane	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
67-64-1	Acetone	50.	U	50.	U	50.	U	50.	U	50.	U	50.	U
75-15-0	Carbon disulfide	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
78-93-3	2-Butanone (MEK)	25.	U	25.	U	25.	U	25.	U	25.	U	25.	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	25.	U	25.	U	25.	U	25.	U	25.	U	25.	U
10061-01-5	cis-1,3-Dichloropropene	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
10061-02-6	trans-1,3-Dichloropropene	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
591-78-6	2-Hexanone	25.	U	25.	U	25.	U	25.	U	25.	U	25.	U
1330-20-7	Xylene (Total)	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
540-59-0	1,2-Dichloroethene (total)	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
1330-20-7	Xylene (Total)	NR		NR		NR		NR		NR		NR	
9999000-44-2	XYLENES	NR		NR		NR		NR		NR		NR	

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 49 ANALYTICAL GROUNDWATER RESULTS

SW846-VOA

SAMPLE ID ------->	049-G-0007-50
ORIGINAL ID ----->	049G000750
LAB SAMPLE ID --->	S880153A*6
ID FROM REPORT -->	049G000750
SAMPLE DATE ----->	01/09/98
DATE ANALYZED --->	01/14/98
MATRIX ---------->	Water
UNITS ----------->	UG/L

CAS #	Parameter	EM1H05	VAL
74-87-3	Chloromethane	10.	UJ
75-01-4	Vinyl chloride	10.	U
74-83-9	Bromomethane	10.	U
75-00-3	Chloroethane	10.	U
75-35-4	1,1-Dichloroethene	5.	U
75-09-2	Methylene chloride	5.	U
75-34-3	1,1-Dichloroethane	5.	U
67-66-3	Chloroform	5.	U
71-55-6	1,1,1-Trichloroethane	5.	U
56-23-5	Carbon tetrachloride	5.	U
71-43-2	Benzene	5.	U
107-06-2	1,2-Dichloroethane	5.	U
79-01-6	Trichloroethene	5.	U
78-87-5	1,2-Dichloropropane	5.	U
75-27-4	Bromodichloromethane	5.	U
108-88-3	Toluene	5.	U
79-00-5	1,1,2-Trichloroethane	5.	U
127-18-4	Tetrachloroethene	5.	U
124-48-1	Dibromochloromethane	5.	U
108-90-7	Chlorobenzene	5.	U
100-41-4	Ethylbenzene	5.	U
100-42-5	Styrene	5.	U
75-25-2	Bromoform	5.	U
79-34-5	1,1,2,2-Tetrachloroethane	5.	U
67-64-1	Acetone	50.	U
75-15-0	Carbon disulfide	5.	U
78-93-3	2-Butanone (MEK)	25.	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	25.	U
10061-01-5	cis-1,3-Dichloropropene	5.	U
10061-02-6	trans-1,3-Dichloropropene	5.	U
591-78-6	2-Hexanone	25.	U
1330-20-7	Xylene (Total)	5.	U
540-59-0	1,2-Dichloroethene (total)	5.	U
1330-20-7	Xylene (Total)	NR	
9999000-44-2	XYLENES	NR	

*** Validation Complete ***

Soil

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 23 ANALYTICAL SOIL RESULTS

APX9-METAL									
	SAMPLE ID ------->	023-S-0004-01		023-S-0006-01					
	ORIGINAL ID ----->	023S000401		023S000601					
	LAB SAMPLE ID --->	S776941*2		S776941*1					
	ID FROM REPORT -->	023S000401		023S000601					
	SAMPLE DATE ----->	12/08/97		12/08/97					
	DATE EXTRACTED -->	12/22/97		12/22/97					
	DATE ANALYZED --->	12/23/97		12/23/97					
	MATRIX ---------->	Soil		Soil					
	UNITS ---------->	MG/KG		MG/KG					
CAS #	Parameter	EM1H01	VAL	EM1H01	VAL				
7439-97-6	Mercury	0.11		0.05					
7440-36-0	Antimony	0.42	UR	0.66	UR				
7440-38-2	Arsenic	7.6		7.8					
7440-39-3	Barium	117.		144.					
7440-41-7	Beryllium	0.43	J	0.47	J				
7440-43-9	Cadmium	0.17	J	0.94					
7440-47-3	Chromium	11.7		12.8					
7440-48-4	Cobalt	9.1	J	8.8	J				
7440-50-8	Copper	15.5		18.4					
7439-92-1	Lead	32.8	J	46.9	J				
7440-02-0	Nickel	14.	J	13.4	J				
7782-49-2	Selenium	0.65	U	0.36	U				
7440-22-4	Silver	0.37	U	0.46	J				
7440-28-0	Thallium	0.59	U	0.56	U				
7440-62-2	Vanadium	23.3		24.3					
7440-66-6	Zinc	58.7	J	116.	J				
7440-31-5	Tin	1.8	U	3.	U				

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 23 ANALYTICAL SOIL RESULTS

METAL-CN								
	SAMPLE ID ------->	023-S-0004-01		023-S-0006-01				
	ORIGINAL ID ----->	023S000401		023S000601				
	LAB SAMPLE ID --->	S776941*2		S776941*1				
	ID FROM REPORT -->	023S000401		023S000601				
	SAMPLE DATE ----->	12/08/97		12/08/97				
	DATE EXTRACTED -->	12/16/97		12/16/97				
	DATE ANALYZED --->	12/16/97		12/16/97				
	MATRIX ---------->	Soil		Soil				
	UNITS ---------->	MG/KG		MG/KG				
CAS #	Parameter	EM1H01	VAL	EM1H01	VAL			
57-12-5	Cyanide (CN)	1.2	U	1.2	U			

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 23 ANALYTICAL SOIL RESULTS

SW846-MERB

	SAMPLE ID ------->	023-S-0004-01		023-S-0006-01				
	ORIGINAL ID ----->	023S000401		023S000601				
	LAB SAMPLE ID --->	$776941*2		$776941*1				
	ID FROM REPORT -->	023S000401		023S000601				
	SAMPLE DATE ----->	12/08/97		12/08/97				
	DATE EXTRACTED -->	12/15/97		12/15/97				
	DATE ANALYZED --->	12/19/97		12/19/97				
	MATRIX ---------->	Soil		Soil				
	UNITS ---------->	UG/KG		UG/KG				
CAS #	Parameter	EM1H01	VAL	EM1H01	VAL			
75-99-0	Dalapon	2500.	U	2400.	U			
93-65-2	MCPP	2500.	U	2400.	U			
1918-00-9	Dicamba	25.	U	24.	U			
94-74-6	MCPA	2500.	U	2400.	U			
120-36-5	Dichlorprop	120.	U	120.	U			
94-75-7	2,4-D	10.	U	9.9	U			
93-72-1	2,4,5-TP (Silvex)	10.	U	9.9	U			
93-76-5	2,4,5-T	10.	U	9.9	U			
88-85-7	Dinoseb	120.	U	120.	U			
94-82-6	2,4-DB	10.	U	9.9	U			

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 23 ANALYTICAL SOIL RESULTS

SW846-OP P

SAMPLE ID ------->	023-S-0004-01		023-S-0006-01					
ORIGINAL ID ----->	023S000401		023S000601					
LAB SAMPLE ID --->	S776941*2		S776941*1					
ID FROM REPORT -->	023S000401		023S000601					
SAMPLE DATE ----->	12/08/97		12/08/97					
DATE EXTRACTED -->	12/17/97		12/17/97					
DATE ANALYZED --->	12/19/97		12/19/97					
MATRIX ---------->	Soil		Soil					
UNITS ---------->	UG/KG		UG/KG					
CAS # Parameter	EM1H01	VAL	EM1H01	VAL				
86-50-0 Azinphos methyl	82.	U	78.	U				
35400-43-2 Sulprofos (Bolstar)	41.	U	39.	U				
2921-88-2 Chloropyrifos	41.	U	39.	U				
56-72-4 Coumaphos	410.	U	390.	U				
8065-48-3 Demeton,O	100.	U	99.	U				
126-75-0 Demeton,S	100.	U	99.	U				
333-41-5 Diazinon	41.	U	39.	U				
62-73-7 Dichlorvos	82.	U	78.	U				
298-04-4 Disulfoton	82.	U	78.	U				
13194-48-4 Ethoprop	21.	U	20.	U				
115-90-2 Fensulfothion	410.	U	390.	U				
55-38-9 Fenthion	41.	U	39.	U				
7786-34-7 Mevinphos, Alpha	82.	U	78.	U				
300-76-5 Naled	410.	U	390.	U				
298-00-0 Methyl parathion	21.	U	20.	U				
298-02-2 Phorate	41.	U	39.	U				
299-84-3 Ronnel	41.	U	39.	U				
22248-79-9 Stirophos (Tetrachlorovinphos)	41.	U	39.	U				
327-98-0 Trichloronate	410.	U	390.	U				
150-50-5 Merphos	41.	U	39.	U				
34643-46-4 Tokuthion	41.	U	39.	U				
60-51-5 Dimethoate	82.	U	78.	U				
121-75-5 Malathion	41.	U	39.	U				
2157-98-4 Monocrotophos	410.	U	390.	U				
56-38-2 Parathion	41.	U	39.	U				
3689-24-5 Sulfotep	21.	U	20.	U				
2104-64-5 EPN	41.	U	39.	U				

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 23 ANALYTICAL SOIL RESULTS

SW846-PEST									
		SAMPLE ID ------->	023-S-0004-01		023-S-0006-01				
		ORIGINAL ID ----->	023S000401		023S000601				
		LAB SAMPLE ID --->	S776941*2		S776941*1				
		ID FROM REPORT -->	023S000401		023S000601				
		SAMPLE DATE ----->	12/08/97		12/08/97				
		DATE EXTRACTED -->	12/15/97		12/15/97				
		DATE ANALYZED --->	12/31/97		12/31/97				
		MATRIX ---------->	Soil		Soil				
		UNITS ---------->	UG/KG		UG/KG				
CAS #	Parameter		EM1H01	VAL	EM1H01	VAL			
319-84-6	alpha-BHC		2.1	U	2.	U			
319-85-7	beta-BHC		2.1	U	2.	U			
319-86-8	delta-BHC		2.1	U	2.	U			
58-89-9	gamma-BHC (Lindane)		2.1	U	2.	U			
76-44-8	Heptachlor		2.1	U	2.	U			
309-00-2	Aldrin		2.1	U	2.	U			
1024-57-3	Heptachlor epoxide		2.1	U	2.	U			
959-98-8	Endosulfan I		2.1	U	0.12	J			
60-57-1	Dieldrin		0.14	J	1.4	J			
72-55-9	4,4'-DDE		4.1	U	1.4	J			
72-20-8	Endrin		4.1	U	3.9	U			
33213-65-9	Endosulfan II		4.1	U	3.9	U			
72-54-8	4,4'-DDD		4.1	U	3.9	U			
1031-07-8	Endosulfan sulfate		4.1	U	3.9	U			
50-29-3	4,4'-DDT		4.1	U	1.3	J			
72-43-5	Methoxychlor		21.	U	20.	U			
7421-93-4	Endrin aldehyde		4.1	U	3.9	U			
8001-35-2	Toxaphene		210.	U	200.	U			
12674-11-2	Aroclor-1016		41.	U	39.	U			
11104-28-2	Aroclor-1221		84.	U	80.	U			
11141-16-5	Aroclor-1232		41.	U	39.	U			
53469-21-9	Aroclor-1242		41.	U	39.	U			
12672-29-6	Aroclor-1248		41.	U	39.	U			
11097-69-1	Aroclor-1254		41.	U	39.	U			
11096-82-5	Aroclor-1260		41.	U	39.	U			
57-74-9	Chlordane		21.	U	20.	U			

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 23 ANALYTICAL SOIL RESULTS

SUB46-SVOA								
	SAMPLE ID ------->	023-S-0004-01		023-S-0006-01				
	ORIGINAL ID ----->	023S000401		023S000601				
	LAB SAMPLE ID --->	S776941*2		S776941*1				
	ID FROM REPORT -->	023S000401		023S000601				
	SAMPLE DATE ----->	12/08/97		12/08/97				
	DATE EXTRACTED -->	12/15/97		12/15/97				
	DATE ANALYZED --->	01/03/98		01/03/98				
	MATRIX ---------->	Soil		Soil				
	UNITS ---------->	UG/KG		UG/KG				
CAS #	Parameter	EM1H01	VAL	EM1H01	VAL			
108-95-2	Phenol	410.	U	390.	U			
111-44-4	bis(2-Chloroethyl)ether	410.	U	390.	U			
95-57-8	2-Chlorophenol	410.	U	390.	U			
541-73-1	1,3-Dichlorobenzene	410.	U	390.	U			
106-46-7	1,4-Dichlorobenzene	410.	U	390.	U			
95-50-1	1,2-Dichlorobenzene	410.	U	390.	U			
95-48-7	2-Methylphenol (o-Cresol)	410.	U	390.	U			
108-60-1	2,2'-oxybis(1-Chloropropane)	410.	U	390.	U			
9999900-32-2	3-Methylphenol/4-Methylphenol	410.	U	390.	U			
621-64-7	N-Nitroso-di-n-propylamine	410.	U	390.	U			
67-72-1	Hexachloroethane	410.	U	390.	U			
98-95-3	Nitrobenzene	410.	U	390.	U			
78-59-1	Isophorone	410.	U	390.	U			
88-75-5	2-Nitrophenol	410.	U	390.	U			
105-67-9	2,4-Dimethylphenol	410.	U	390.	U			
120-83-2	2,4-Dichlorophenol	410.	U	390.	U			
120-82-1	1,2,4-Trichlorobenzene	410.	U	390.	U			
91-20-3	Naphthalene	410.	U	390.	U			
106-47-8	4-Chloroaniline	820.	U	780.	U			
87-68-3	Hexachlorobutadiene	410.	U	390.	U			
111-91-1	bis(2-Chloroethoxy)methane	410.	U	390.	U			
59-50-7	4-Chloro-3-methylphenol	410.	U	390.	U			
91-57-6	2-Methylnaphthalene	410.	U	390.	U			
77-47-4	Hexachlorocyclopentadiene	410.	U	390.	U			
88-06-2	2,4,6-Trichlorophenol	410.	U	390.	U			
95-95-4	2,4,5-Trichlorophenol	410.	U	390.	U			
91-58-7	2-Chloronaphthalene	410.	U	390.	U			
88-74-4	2-Nitroaniline	2100.	U	2000.	U			
131-11-3	Dimethylphthalate	410.	U	390.	U			
208-96-8	Acenaphthylene	410.	U	390.	U			
606-20-2	2,6-Dinitrotoluene	410.	U	390.	U			
99-09-2	3-Nitroaniline	2100.	U	2000.	U			
83-32-9	Acenaphthene	410.	U	390.	U			
51-28-5	2,4-Dinitrophenol	2100.	U	2000.	U			
100-02-7	4-Nitrophenol	2100.	U	2000.	U			
132-64-9	Dibenzofuran	410.	U	390.	U			

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 23 ANALYTICAL SOIL RESULTS

SW846-SVOA

	SAMPLE ID ------->	023-S-0004-01		023-S-0006-01				
	ORIGINAL ID ----->	023S000401		023S000601				
	LAB SAMPLE ID --->	S776941*2		S776941*1				
	ID FROM REPORT -->	023S000401		023S000601				
	SAMPLE DATE ----->	12/08/97		12/08/97				
	DATE EXTRACTED -->	12/15/97		12/15/97				
	DATE ANALYZED --->	01/03/98		01/03/98				
	MATRIX ---------->	Soil		Soil				
	UNITS ---------->	UG/KG		UG/KG				
CAS #	Parameter	EM1H01	VAL	EM1H01	VAL			
121-14-2	2,4-Dinitrotoluene	410.	U	390.	U			
84-66-2	Diethylphthalate	410.	U	59.	J			
7005-72-3	4-Chlorophenylphenyl ether	410.	U	390.	U			
86-73-7	Fluorene	410.	U	390.	U			
100-01-6	4-Nitroaniline	2100.	U	2000.	U			
534-52-1	2-Methyl-4,6-Dinitrophenol	2100.	U	2000.	U			
86-30-6	N-Nitrosodiphenylamine	410.	U	390.	U			
101-55-3	4-Bromophenyl-phenylether	410.	U	390.	U			
118-74-1	Hexachlorobenzene	410.	U	390.	U			
87-86-5	Pentachlorophenol	2100.	U	2000.	U			
85-01-8	Phenanthrene	410.	U	390.	U			
120-12-7	Anthracene	410.	U	390.	U			
86-74-8	Carbazole	410.	U	390.	U			
84-74-2	Di-n-butylphthalate	410.	U	390.	U			
206-44-0	Fluoranthene	410.	U	390.	U			
129-00-0	Pyrene	410.	U	390.	U			
85-68-7	Butylbenzylphthalate	410.	U	390.	U			
91-94-1	3,3'-Dichlorobenzidine	820.	U	780.	U			
56-55-3	Benzo(a)anthracene	410.	U	390.	U			
218-01-9	Chrysene	410.	U	390.	U			
117-81-7	bis(2-Ethylhexyl)phthalate (BEHP)	410.	U	390.	U			
117-84-0	Di-n-octylphthalate	410.	U	390.	U			
205-99-2	Benzo(b)fluoranthene	410.	U	390.	U			
207-08-9	Benzo(k)fluoranthene	410.	U	390.	U			
50-32-8	Benzo(a)pyrene	410.	U	390.	U			
193-39-5	Indeno(1,2,3-cd)pyrene	410.	U	390.	U			
53-70-3	Dibenz(a,h)anthracene	410.	U	390.	U			
191-24-2	Benzo(g,h,i)perylene	410.	U	390.	U			
122-39-4	Diphenylamine	NR		NR				

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 23 ANALYTICAL SOIL RESULTS

SW846-VOA													
	SAMPLE ID ------->	023-S-0003-15		023-C-0003-15		023-S-0004-01		023-S-0005-15		023-S-0006-01		023-S-0007-15	
	ORIGINAL ID ----->	023S000315		023C000315		023S000401		023S000515		023S000601		023S000715	
	LAB SAMPLE ID --->	S880336*1		S880336A*1		S776941*2		S880336*2		S776941*1		S880336*3	
	ID FROM REPORT -->	023S000315		023C000315		023S000401		023S000515		023S000601		023S000715	
	SAMPLE DATE ----->	01/19/98		01/19/98		12/08/97		01/19/98		12/08/97		01/19/98	
	DATE ANALYZED --->	01/26/98		01/28/98		12/14/97		01/26/98		12/14/97		01/26/98	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	EM1H09	VAL	EM1H10	VAL	EM1H01	VAL	EM1H09	VAL	EM1H01	VAL	EM1H09	VAL
74-87-3	Chloromethane	13.	U	13.	U	12.	U	13.	U	12.	U	13.	U
75-01-4	Vinyl chloride	13.	U	13.	U	12.	U	13.	U	12.	U	13.	U
74-83-9	Bromomethane	13.	U	13.	U	12.	U	13.	U	12.	U	13.	U
75-00-3	Chloroethane	13.	U	13.	U	12.	U	13.	U	12.	U	13.	U
75-35-4	1,1-Dichloroethene	6.4	U	6.5	U	6.2	U	6.5	U	6.	U	6.7	U
75-09-2	Methylene chloride	6.4	U	6.5	U	6.2	U	6.5	U	6.	U	6.7	U
75-34-3	1,1-Dichloroethane	6.4	U	6.5	U	6.2	U	6.5	U	6.	U	6.7	U
67-66-3	Chloroform	6.4	U	6.5	U	6.2	U	6.5	U	6.	U	6.7	U
71-55-6	1,1,1-Trichloroethane	6.4	U	6.5	U	6.2	U	6.5	U	6.	U	6.7	U
56-23-5	Carbon tetrachloride	6.4	U	6.5	U	6.2	U	6.5	U	6.	U	6.7	U
71-43-2	Benzene	6.4	U	6.5	U	6.2	U	6.5	U	6.	U	6.7	U
107-06-2	1,2-Dichloroethane	6.4	U	6.5	U	6.2	U	6.5	U	6.	U	6.7	U
79-01-6	Trichloroethene	6.4	U	6.5	U	6.2	U	6.5	U	6.	U	6.7	U
78-87-5	1,2-Dichloropropane	6.4	U	6.5	U	6.2	U	6.5	U	6.	U	6.7	U
75-27-4	Bromodichloromethane	6.4	U	6.5	U	6.2	U	6.5	U	6.	U	6.7	U
108-88-3	Toluene	6.4	U	6.5	U	6.2	U	6.5	U	6.	U	6.7	U
79-00-5	1,1,2-Trichloroethane	6.4	U	6.5	U	6.2	U	6.5	U	6.	U	6.7	U
127-18-4	Tetrachloroethene	1.6	J	6.5	U	6.2	U	2.6	J	6.	U	2.2	J
124-48-1	Dibromochloromethane	6.4	U	6.5	U	6.2	U	6.5	U	6.	U	6.7	U
108-90-7	Chlorobenzene	6.4	U	6.5	U	6.2	U	6.5	U	6.	U	6.7	U
100-41-4	Ethylbenzene	6.4	U	6.5	U	6.2	U	6.5	U	6.	U	6.7	U
100-42-5	Styrene	6.4	U	6.5	U	6.2	U	6.5	U	6.	U	6.7	U
75-25-2	Bromoform	6.4	U	6.5	U	6.2	U	6.5	U	6.	U	6.7	U
79-34-5	1,1,2,2-Tetrachloroethane	6.4	U	6.5	U	6.2	U	6.5	U	6.	U	6.7	U
67-64-1	Acetone	64.	U	65.	U	62.	U	22.	J	60.	U	67.	U
75-15-0	Carbon disulfide	6.4	U	6.5	U	6.2	U	6.5	U	6.	U	6.7	U
78-93-3	2-Butanone (MEK)	32.	U	32.	U	31.	U	32.	U	30.	U	33.	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	32.	U	32.	U	31.	U	32.	U	30.	U	33.	U
10061-01-5	cis-1,3-Dichloropropene	6.4	U	6.5	U	6.2	U	6.5	U	6.	U	6.7	U
10061-02-6	trans-1,3-Dichloropropene	6.4	U	6.5	U	6.2	U	6.5	U	6.	U	6.7	U
591-78-6	2-Hexanone	32.	U	32.	U	31.	U	32.	U	30.	U	33.	U
1330-20-7	Xylene (Total)	6.4	U	6.5	U	6.2	U	6.5	U	1.2	J	6.7	U
540-59-0	1,2-Dichloroethene (total)	6.4	U	6.5	U	6.2	U	6.5	U	6.	U	6.7	U
1330-20-7	Xylene (Total)	NR		NR		NR		NR		NR		NR	
9999000-44-2	XYLENES	NR		NR		NR		NR		NR		NR	

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 23 ANALYTICAL SOIL RESULTS

TPH								
	SAMPLE ID ------->	023-S-0004-01		023-S-0006-01				
	ORIGINAL ID ----->	023S000401		023S000601				
	LAB SAMPLE ID --->	S776941*2		S776941*1				
	ID FROM REPORT -->	023S000401		023S000601				
	SAMPLE DATE ----->	12/08/97		12/08/97				
	DATE EXTRACTED -->	12/31/97		12/31/97				
	DATE ANALYZED --->	01/02/98		01/02/98				
	MATRIX ---------->	Soil		Soil				
	UNITS ---------->	MG/KG		MG/KG				
CAS #	Parameter	EM1H01	VAL	EM1H01	VAL			
9999900-02-4	Petroleum Hydrocarbons, TPH	84.		12.	U			
9999000-83-9	TOTAL RECOVERABLE PETROLEUM HYDROCARBONS	NR		NR				

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 23 ANALYTICAL SOIL RESULTS

TPH-DRO													
	SAMPLE ID ------->	023-S-0003-15		023-C-0003-15		023-S-0004-01 RE		023-S-0005-15		023-S-0006-01		023-S-0007-15	
	ORIGINAL ID ----->	023S000315		023C000315		023S000401		023S000515		023S000601		023S000715	
	LAB SAMPLE ID --->	S880336*1		S880336A*1		76941-2		S880336*2		S776941*1		S880336*3	
	ID FROM REPORT -->	023S000315		023C000315		023S000401		023S000515		023S000601		023S000715	
	SAMPLE DATE ----->	01/19/98		01/19/98		12/08/97		01/19/98		12/08/97		01/19/98	
	DATE EXTRACTED -->	01/27/98		01/27/98		01/02/98		01/27/98		12/17/97		01/27/98	
	DATE ANALYZED --->	02/02/98		02/02/98		01/04/98		02/02/98		12/20/97		02/02/98	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	MG/KG		MG/KG		MG/KG		MG/KG		MG/KG		MG/KG	
CAS #	Parameter	EM1H09	VAL	EM1H10	VAL	EM1H01	VAL	EM1H09	VAL	EM1H01	VAL	EM1H09	VAL
9999900-02-6	TPH - Diesel Range Organics	5.1	U	5.2	U	5.	UJ	1.1	J	4.8	U	5.3	U

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 23 ANALYTICAL SOIL RESULTS

TPH-GRO													
	SAMPLE ID ------->	023-S-0003-15		023-C-0003-15		023-S-0004-01		023-S-0005-15		023-S-0006-01		023-S-0007-15	
	ORIGINAL ID ----->	023S000315		023C000315		023S000401		023S000515		023S000601		023S000715	
	LAB SAMPLE ID --->	S880336*1		S880336A*1		S776941*2		S880336*2		S776941*1		S880336*3	
	ID FROM REPORT -->	023S000315		023C000315		023S000401		023S000515		023S000601		023S000715	
	SAMPLE DATE ----->	01/19/98		01/19/98		12/08/97		01/19/98		12/08/97		01/19/98	
	DATE ANALYZED --->	01/26/98		01/26/98		12/10/97		02/02/98		12/10/97		01/31/98	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	MG/KG		MG/KG		MG/KG		MG/KG		MG/KG		MG/KG	
CAS #	Parameter	EM1H09	VAL	EM1H10	VAL	EM1H01	VAL	EM1H09	VAL	EM1H01	VAL	EM1H09	VAL
9999900-02-5	TPH - Gasoline Range Organics	0.23	U	0.23	U	0.22	U	0.23	U	0.21	U	0.24	UJ

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 24 ANALYTICAL SOIL RESULTS

APX9-METAL																			
	SAMPLE ID ------->	024-S-0001-01		024-S-0001-04		024-S-0002-01		024-C-0002-01		024-S-0002-04		024-S-0003-01	
	ORIGINAL ID ----->	024S000101		024S000104		024S000201		024C000201		024S000204		024S000301	
	LAB SAMPLE ID --->	S880153*3		S880153*4		S880069*1		S880069A*1		S880069*2		S880153*1	
	ID FROM REPORT -->	024S000101		024S000104		024S000201		024C000201		024S000204		024S000301	
	SAMPLE DATE ----->	01/09/98		01/09/98		01/06/98		01/06/98		01/06/98		01/09/98	
	DATE EXTRACTED -->	01/21/98		01/21/98		01/09/98		01/21/98		01/09/98		01/21/98	
	DATE ANALYZED --->	01/22/98		01/22/98		01/13/98		01/22/98		01/13/98		01/22/98	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	MG/KG		MG/KG		MG/KG		MG/KG		MG/KG		MG/KG	
CAS #	Parameter	EM1H06	VAL	EM1H06	VAL	EM1H03	VAL	EM1H04	VAL	EM1H03	VAL	EM1H06	VAL
7439-97-6	Mercury	0.04		0.03		0.03	J	0.04	J	0.02	J	0.03	
7440-36-0	Antimony	0.4	UR	0.73	UR	0.48	J	0.39	UR	0.42	UR	0.55	UR
7440-38-2	Arsenic	7.9		8.		17.1		23.7		8.3		8.1	
7440-39-3	Barium	173.		104.		147.		156.		124.		171.	
7440-41-7	Beryllium	0.46	J	0.46	J	0.5	U	0.53	U	0.43	U	0.5	J
7440-43-9	Cadmium	0.14	J	0.04	UJ	0.19	U	0.2	U	0.11	U	0.04	J
7440-47-3	Chromium	10.9	J	9.8	J	12.2	J	11.2		10.5	J	11.8	J
7440-48-4	Cobalt	8.8		6.6		6.		6.3		7.7		9.	
7440-50-8	Copper	15.6	J	16.4	J	12.3		13.		16.7		17.6	J
7439-92-1	Lead	35.8	J	9.	J	61.2	J	67.6	J	10.9	J	14.6	J
7440-02-0	Nickel	17.1		17.8		13.	J	13.4	J	18.9	J	20.5	
7782-49-2	Selenium	0.43	J	0.4	U	0.38	UJ	0.38	U	0.52	J	0.54	J
7440-22-4	Silver	0.12	U	0.12	U	0.11	U	0.14	J	0.12	U	0.15	J
7440-28-0	Thallium	0.71	UJ	0.74	UJ	0.69	UJ	0.7	U	0.76	UJ	0.71	UJ
7440-62-2	Vanadium	22.2		20.6		19.7		19.4		20.7		24.	
7440-66-6	Zinc	54.6	J	48.3	J	43.9	J	48.8	J	48.1	J	55.5	J
7440-31-5	Tin	0.7	U	1.2	U	1.1	U	1.1	U	1.2	U	2.	U

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 24 ANALYTICAL SOIL RESULTS

APX9-METAL													
	SAMPLE ID ------->	024-C-0003-01		024-S-0003-04		024-S-0004-01		024-S-0004-04		024-S-0005-01		024-S-0005-04	
	ORIGINAL ID ----->	024C000301		024S000304		024S000401		024S000404		024S000501		024S000504	
	LAB SAMPLE ID --->	S8801538*1		S880153*2		S880069*6		S880069*3		S880103*1		S880103*2	
	ID FROM REPORT -->	024C000301		024S000304		024S000401		024S000404		024S000501		024S000504	
	SAMPLE DATE ----->	01/09/98		01/09/98		01/06/98		01/06/98		01/07/98		01/07/98	
	DATE EXTRACTED -->	01/21/98		01/21/98		01/09/98		01/09/98		01/21/98		01/21/98	
	DATE ANALYZED --->	01/22/98		01/22/98		01/13/98		01/13/98		01/22/98		01/22/98	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	MG/KG		MG/KG		MG/KG		MG/KG		MG/KG		MG/KG	
CAS #	Parameter	EM1H04	VAL	EM1H06	VAL	EM1H03	VAL	EM1H03	VAL	EM1H06	VAL	EM1H06	VAL
7439-97-6	Mercury	0.03	J	0.03		0.01	J	0.02	J	0.03		0.02	
7440-36-0	Antimony	0.4	UR	0.42	UR	0.49	J	0.42	UR	0.4	UR	0.64	UR
7440-38-2	Arsenic	8.		6.9		5.4		8.1		4.3	J	6.9	
7440-39-3	Barium	161.		113.		54.9		102.		64.4		90.6	
7440-41-7	Beryllium	0.48	U	0.43	J	0.27	U	0.37	U	0.3	J	0.43	J
7440-43-9	Cadmium	0.05	U	0.04	UJ	0.03	U	0.13	U	0.04	UJ	0.04	UJ
7440-47-3	Chromium	11.5		10.2	J	10.3	J	9.	J	10.2	J	9.6	J
7440-48-4	Cobalt	12.2		7.6		4.4		6.8		4.		7.4	
7440-50-8	Copper	17.1		14.8	J	7.		14.		7.2	J	16.1	J
7439-92-1	Lead	15.4	J	9.	J	5.8	J	9.1	J	16.4	J	9.6	J
7440-02-0	Nickel	20.5	J	17.8		7.5	J	16.4	J	8.		17.5	
7782-49-2	Selenium	0.7	J	0.41	U	0.36	UJ	0.63	J	0.39	U	0.43	U
7440-22-4	Silver	0.12	U	0.12	U	0.11	U	0.12	U	0.12	U	0.13	U
7440-28-0	Thallium	0.71	U	0.75	UJ	0.66	UJ	0.76	UJ	0.72	UJ	0.79	UJ
7440-62-2	Vanadium	22.7		21.3		14.5		19.		18.1		20.2	
7440-66-6	Zinc	74.2	J	45.8	J	21.4	J	46.5	J	22.	J	48.3	J
7440-31-5	Tin	0.64	U	1.	U	1.	U	0.97	U	0.8	U	1.7	U

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 24 ANALYTICAL SOIL RESULTS

APX9-METAL

	SAMPLE ID ------->	024-S-0006-01		024-S-0006-04				
	ORIGINAL ID ----->	024S000601		024S000604				
	LAB SAMPLE ID --->	S880069*4		S880069*5				
	ID FROM REPORT -->	024S000601		024S000604				
	SAMPLE DATE ----->	01/06/98		01/06/98				
	DATE EXTRACTED -->	01/09/98		01/09/98				
	DATE ANALYZED --->	01/13/98		01/13/98				
	MATRIX ---------->	Soil		Soil				
	UNITS ---------->	MG/KG		MG/KG				
CAS #	Parameter	EM1H03	VAL	EM1H03	VAL			
7439-97-6	Mercury	0.03	J	0.02	J			
7440-36-0	Antimony	0.58	J	0.63	J			
7440-38-2	Arsenic	16.5		8.1				
7440-39-3	Barium	147.		133.				
7440-41-7	Beryllium	0.46	U	0.38	U			
7440-43-9	Cadmium	0.22	U	0.11	U			
7440-47-3	Chromium	8.8	J	9.	J			
7440-48-4	Cobalt	7.5		7.				
7440-50-8	Copper	12.		14.1				
7439-92-1	Lead	18.6	J	9.6	J			
7440-02-0	Nickel	13.1	J	18.	J			
7782-49-2	Selenium	0.53	J	0.63	J			
7440-22-4	Silver	0.11	U	0.12	U			
7440-28-0	Thallium	0.7	UJ	0.76	UJ			
7440-62-2	Vanadium	18.2		18.6				
7440-66-6	Zinc	41.5	J	46.9	J			
7440-31-5	Tin	1.	U	1.1	U			

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 24 ANALYTICAL SOIL RESULTS

METAL-CN												
	SAMPLE ID ------->	024-S-0003-01		024-C-0003-01		024-S-0004-01						
	ORIGINAL ID ----->	024S000301		024C000301		024S000401						
	LAB SAMPLE ID --->	S880153*1		S880153B*1		S880069*6						
	ID FROM REPORT -->	024S000301		024C000301		024S000401						
	SAMPLE DATE ----->	01/09/98		01/09/98		01/06/98						
	DATE EXTRACTED -->	01/19/9[illegible]		01/19/98		01/19/98						
	DATE ANALYZED --->	01/20/98		01/20/98		01/20/98						
	MATRIX ---------->	Soil		Soil		Soil						
	UNITS ---------->	MG/KG		MG/KG		MG/KG						
CAS #	Parameter	EM1H06	VAL	EM1H04	VAL	EM1H03	VAL					
57-12-5	Cyanide (CN)	1.2	UJ	1.2	U	1.1	U					

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 24 ANALYTICAL SOIL RESULTS

SW846-HERB											
	SAMPLE ID ------->	024-S-0003-01		024-C-0003-01		024-S-0004-01					
	ORIGINAL ID ----->	024S000301		024C000301		024S000401					
	LAB SAMPLE ID --->	S880153*1		S880153B*1		S880069*6					
	ID FROM REPORT -->	024S000301		024C000301		024S000401					
	SAMPLE DATE ----->	01/09/98		01/09/98		01/06/98					
	DATE EXTRACTED -->	01/14/98		01/14/98		01/09/98					
	DATE ANALYZED --->	01/27/98		01/27/98		01/13/98					
	MATRIX ---------->	Soil		Soil		Soil					
	UNITS ---------->	UG/KG		UG/KG		UG/KG					
CAS #	Parameter	EM1H06	VAL	EM1H04	VAL	EM1H03	VAL				
75-99-0	Dalapon	2400.	U	2400.	U	2200.	U				
93-65-2	MCPP	2400.	U	2400.	U	2200.	U				
1918-00-9	Dicamba	24.	U	24.	U	22.	U				
94-74-6	MCPA	2400.	U	2400.	U	2200.	U				
120-36-5	Dichlorprop	120.	U	120.	U	110.	U				
94-75-7	2,4-D	10.	U	10.	U	9.3	U				
93-72-1	2,4,5-TP (Silvex)	10.	U	10.	U	9.3	U				
93-76-5	2,4,5-T	10.	U	10.	U	9.3	U				
88-85-7	Dinoseb	120.	U	120.	U	110.	U				
94-82-6	2,4-DB	10.	U	5.1	J	9.3	U				

*** Validati Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 24 ANALYTICAL SOIL RESULTS

SW846-OP P

SAMPLE ID ------->	024-S-0003-01		024-C-0003-01		024-S-0004-01			
ORIGINAL ID ----->	024S000301		024C000301		024S000401			
LAB SAMPLE ID --->	S880153*1		S8801538*1		S880069*6			
ID FROM REPORT -->	024S000301		024C000301		024S000401			
SAMPLE DATE ----->	01/09/98		01/09/98		01/06/98			
DATE EXTRACTED -->	01/13/98		01/13/98		01/12/98			
DATE ANALYZED --->	01/27/98		02/03/98		01/27/98			
MATRIX ---------->	Soil		Soil		Soil			
UNITS ---------->	UG/KG		UG/KG		UG/KG			
CAS # Parameter	EM1H06	VAL	EM1H04	VAL	EM1H03	VAL		
86-50-0 Azinphos methyl	80.	U	80.	U	74.	U		
35400-43-2 Sulprofos (Bolstar)	40.	U	40.	U	37.	U		
2921-88-2 Chloropyrifos	40.	U	40.	U	37.	U		
56-72-4 Coumaphos	400.	U	400.	U	370.	U		
8065-48-3 Demeton,O	100.	U	100.	U	93.	U		
126-75-0 Demeton,S	100.	U	100.	U	93.	U		
333-41-5 Diazinon	40.	U	40.	U	37.	U		
62-73-7 Dichlorvos	80.	U	80.	U	74.	U		
298-04-4 Disulfoton	80.	U	80.	U	74.	U		
13194-48-4 Ethoprop	21.	U	21.	U	19.	U		
115-90-2 Fensulfothion	400.	U	400.	U	370.	U		
55-38-9 Fenthion	40.	U	40.	U	37.	U		
7786-34-7 Mevinphos, Alpha	80.	U	80.	U	74.	U		
300-76-5 Naled	400.	U	400.	U	370.	U		
298-00-0 Methyl parathion	21.	U	21.	U	19.	U		
298-02-2 Phorate	40.	U	40.	U	37.	U		
299-84-3 Ronnel	40.	U	40.	U	37.	U		
22248-79-9 Stirophos (Tetrachlorovinphos)	40.	U	40.	U	37.	U		
327-98-0 Trichloronate	400.	U	400.	U	370.	U		
150-50-5 Merphos	40.	U	40.	U	37.	U		
34643-46-4 Tokuthion	40.	U	40.	U	37.	U		
60-51-5 Dimethoate	80.	U	80.	U	74.	U		
121-75-5 Malathion	40.	U	40.	U	37.	U		
2157-98-4 Monocrotophos	400.	U	400.	U	370.	U		
56-38-2 Parathion	40.	U	40.	U	37.	U		
3689-24-5 Sulfotep	21.	U	21.	U	19.	U		
2104-64-5 EPN	40.	U	40.	U	37.	U		

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 24 ANALYTICAL SOIL RESULTS

SW846-PEST												
	SAMPLE ID ------->	024-S-0003-01		024-C-0003-01		024-S-0004-01						
	ORIGINAL ID ----->	024S000301		024C000301		024S000401						
	LAB SAMPLE ID --->	S880153*1		S8801538*1		S880069*6						
	ID FROM REPORT -->	024S000301		024C000301		024S000401						
	SAMPLE DATE ----->	01/09/98		01/09/98		01/06/98						
	DATE EXTRACTED -->	01/13/98		01/13/98		01/12/98						
	DATE ANALYZED --->	01/23/98		01/22/98		01/19/98						
	MATRIX ---------->	Soil		Soil		Soil						
	UNITS ---------->	UG/KG		UG/KG		UG/KG						
CAS #	Parameter	EM1H06	VAL	EM1H04	VAL	EM1H03	VAL					
319-84-6	alpha-BHC	2.1	U	2.1	U	1.9	U					
319-85-7	beta-BHC	2.1	U	2.1	U	1.9	U					
319-86-8	delta-BHC	2.1	U	2.1	U	1.9	U					
58-89-9	gamma-BHC (Lindane)	2.1	U	2.1	U	1.9	U					
76-44-8	Heptachlor	2.1	U	2.1	U	1.9	U					
309-00-2	Aldrin	2.1	U	2.1	U	1.9	U					
1024-57-3	Heptachlor epoxide	2.1	U	2.1	U	1.9	U					
959-98-8	Endosulfan I	2.1	U	2.1	U	1.9	U					
60-57-1	Dieldrin	4.	U	4.	U	3.7	U					
72-55-9	4,4'-DDE	0.81	J	1.1	J	3.7	U					
72-20-8	Endrin	4.	U	0.32	J	3.7	U					
33213-65-9	Endosulfan II	4.	U	4.	U	3.7	U					
72-54-8	4,4'-DDD	4.7		5.2		3.7	U					
1031-07-8	Endosulfan sulfate	4.	U	4.	U	3.7	U					
50-29-3	4,4'-DDT	4.	U	4.	U	3.7	U					
72-43-5	Methoxychlor	21.	U	21.	U	19.	U					
7421-93-4	Endrin aldehyde	0.64	U	0.77	J	3.7	U					
8001-35-2	Toxaphene	210.	U	210.	U	190.	U					
12674-11-2	Aroclor-1016	40.	U	40.	U	37.	U					
11104-28-2	Aroclor-1221	82.	U	82.	U	75.	U					
11141-16-5	Aroclor-1232	40.	U	40.	U	37.	U					
53469-21-9	Aroclor-1242	40.	U	40.	U	37.	U					
12672-29-6	Aroclor-1248	40.	U	40.	U	37.	U					
11097-69-1	Aroclor-1254	40.	U	40.	U	37.	U					
11096-82-5	Aroclor-1260	40.	U	40.	U	37.	U					
57-74-9	Chlordane	21.	U	21.	U	19.	U					

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 24 ANALYTICAL SOIL RESULTS

SW846-SVOA													
	SAMPLE ID ------->	024-S-0001-01		024-S-0001-04		024-S-0002-01		024-C-0002-01		024-S-0002-04		024-S-0003-01	
	ORIGINAL ID ----->	024S000101		024S000104		024S000201		024C000201		024S000204		024S000301	
	LAB SAMPLE ID --->	S880153*3		S880153*4		S880069*1		S880069A*1		S880069*2		S880153*1	
	ID FROM REPORT -->	024S000101		024S000104		024S000201		024C000201		024S000204		024S000301	
	SAMPLE DATE ----->	01/09/98		01/09/98		01/06/98		01/06/98		01/06/98		01/09/98	
	DATE EXTRACTED -->	01/13/98		01/13/98		01/12/98		01/13/98		01/12/98		01/13/98	
	DATE ANALYZED --->	02/04/98		02/02/98		01/27/98		02/02/98		01/27/98		02/02/98	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	EM1H06	VAL	EM1H06	VAL	EM1H03	VAL	EM1H04	VAL	EM1H03	VAL	EM1H06	VAL
108-95-2	Phenol	400.	U	420.	U	390.	U	400.	U	430.	U	400.	U
111-44-4	bis(2-Chloroethyl)ether	400.	UJ	420.	U	390.	U	400.	U	430.	U	400.	U
95-57-8	2-Chlorophenol	400.	U	420.	U	390.	U	400.	U	430.	U	400.	U
541-73-1	1,3-Dichlorobenzene	400.	UJ	420.	U	390.	U	400.	U	430.	U	400.	U
106-46-7	1,4-Dichlorobenzene	400.	UJ	420.	U	390.	U	400.	U	430.	U	400.	U
95-50-1	1,2-Dichlorobenzene	400.	UJ	420.	U	390.	U	400.	U	430.	U	400.	U
95-48-7	2-Methylphenol (o-Cresol)	400.	U	420.	U	390.	U	400.	U	430.	U	400.	U
108-60-1	2,2'-oxybis(1-Chloropropane)	400.	UJ	420.	U	390.	U	400.	U	430.	U	400.	U
9999900-32-2	3-Methylphenol/4-Methylphenol	400.	U	420.	U	390.	U	400.	U	430.	U	400.	U
621-64-7	N-Nitroso-di-n-propylamine	400.	UJ	420.	U	390.	U	400.	U	430.	U	400.	U
67-72-1	Hexachloroethane	400.	UJ	420.	U	390.	U	400.	U	430.	U	400.	U
98-95-3	Nitrobenzene	400.	UJ	420.	U	390.	U	400.	U	430.	U	400.	U
78-59-1	Isophorone	400.	UJ	420.	U	390.	U	400.	U	430.	U	400.	U
88-75-5	2-Nitrophenol	400.	U	420.	U	390.	U	400.	U	430.	U	400.	U
105-67-9	2,4-Dimethylphenol	400.	U	420.	U	390.	U	400.	U	430.	U	400.	U
120-83-2	2,4-Dichlorophenol	400.	U	420.	U	390.	U	400.	U	430.	U	400.	U
120-82-1	1,2,4-Trichlorobenzene	400.	UJ	420.	U	390.	U	400.	U	430.	U	400.	U
91-20-3	Naphthalene	400.	UJ	420.	U	390.	U	400.	U	430.	U	400.	U
106-47-8	4-Chloroaniline	800.	UJ	840.	U	780.	U	800.	U	860.	U	800.	U
87-68-3	Hexachlorobutadiene	400.	UJ	420.	U	390.	U	400.	U	430.	U	400.	U
111-91-1	bis(2-Chloroethoxy)methane	400.	UJ	420.	U	390.	U	400.	U	430.	U	400.	U
59-50-7	4-Chloro-3-methylphenol	400.	U	420.	U	390.	U	400.	U	430.	U	400.	U
91-57-6	2-Methylnaphthalene	400.	UJ	420.	U	360.	J	460.		430.	U	400.	U
77-47-4	Hexachlorocyclopentadiene	400.	UJ	420.	U	390.	U	400.	U	430.	U	400.	U
88-06-2	2,4,6-Trichlorophenol	400.	U	420.	U	390.	U	400.	U	430.	U	400.	U
95-95-4	2,4,5-Trichlorophenol	400.	U	420.	U	390.	U	400.	U	430.	U	400.	U
91-58-7	2-Chloronaphthalene	400.	UJ	420.	U	390.	U	400.	U	430.	U	400.	U
88-74-4	2-Nitroaniline	2100.	UJ	2200.	U	2000.	U	2000.	U	2200.	U	2100.	U
131-11-3	Dimethylphthalate	400.	UJ	420.	U	390.	U	400.	U	430.	U	400.	U
208-96-8	Acenaphthylene	400.	UJ	420.	U	390.	U	400.	U	430.	U	400.	U
606-20-2	2,6-Dinitrotoluene	400.	UJ	420.	U	390.	U	400.	U	430.	U	400.	U
99-09-2	3-Nitroaniline	2100.	UJ	2200.	U	2000.	U	2000.	U	2200.	U	2100.	U
83-32-9	Acenaphthene	400.	UJ	420.	U	120.	J	400.	U	430.	U	400.	U
51-28-5	2,4-Dinitrophenol	2100.	U	2200.	U	2000.	U	2000.	U	2200.	U	2100.	U
100-02-7	4-Nitrophenol	2100.	U	2200.	U	2000.	U	2000.	U	2200.	U	2100.	U
132-64-9	Dibenzofuran	400.	UJ	420.	U	390.	U	400.	U	430.	U	400.	U

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 24 ANALYTICAL SOIL RESULTS

SW846-SVOA													
	SAMPLE ID ------->	024-S-0001-01		024-S-0001-04		024-S-0002-01		024-C-0002-01		024-S-0002-04		024-S-0003-01	
	ORIGINAL ID ----->	024S000101		024S000104		024S000201		024C000201		024S000204		024S000301	
	LAB SAMPLE ID --->	S880153*3		S880153*4		S880069*1		S880069A*1		S880069*2		S880153*1	
	ID FROM REPORT -->	024S000101		024S000104		024S000201		024C000201		024S000204		024S000301	
	SAMPLE DATE ----->	01/09/98		01/09/98		01/06/98		01/06/98		01/06/98		01/09/98	
	DATE EXTRACTED -->	01/13/98		01/13/98		01/12/98		01/13/98		01/12/98		01/13/98	
	DATE ANALYZED --->	02/04/98		02/02/98		01/27/98		02/02/98		01/27/98		02/02/98	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	EM1H06	VAL	EM1H06	VAL	EM1H03	VAL	EM1H04	VAL	EM1H03	VAL	EM1H06	VAL
121-14-2	2,4-Dinitrotoluene	400.	UJ	420.	U	390.	U	400.	U	430.	U	400.	U
84-66-2	Diethylphthalate	400.	UJ	420.	U	390.	U	400.	U	430.	U	400.	U
7005-72-3	4-Chlorophenylphenyl ether	400.	UJ	420.	U	390.	U	400.	U	430.	U	400.	U
86-73-7	Fluorene	400.	UJ	420.	U	100.	J	400.	U	430.	U	400.	U
100-01-6	4-Nitroaniline	2100.	UJ	2200.	U	2000.	U	2000.	U	2200.	U	2100.	U
534-52-1	2-Methyl-4,6-Dinitrophenol	2100.	U	2200.	U	2000.	U	2000.	U	2200.	U	2100.	U
86-30-6	N-Nitrosodiphenylamine	NR		NR		NR		NR		NR		NR	
101-55-3	4-Bromophenyl-phenylether	400.	UJ	420.	U	390.	U	400.	U	430.	U	400.	U
118-74-1	Hexachlorobenzene	400.	UJ	420.	U	390.	U	400.	U	430.	U	400.	U
87-86-5	Pentachlorophenol	2100.	U	2200.	U	2000.	U	2000.	U	2200.	U	2100.	U
85-01-8	Phenanthrene	400.	UJ	420.	U	390.	U	300.	J	430.	U	400.	U
120-12-7	Anthracene	400.	UJ	420.	U	390.	U	400.	U	430.	U	400.	U
86-74-8	Carbazole	400.	UJ	420.	U	390.	U	400.	U	430.	U	400.	U
84-74-2	Di-n-butylphthalate	400.	UJ	420.	U	390.	U	400.	U	430.	U	400.	U
206-44-0	Fluoranthene	400.	UJ	420.	U	26.	J	400.	U	430.	U	400.	U
129-00-0	Pyrene	400.	UJ	420.	U	210.	J	290.	J	430.	U	12.	J
85-68-7	Butylbenzylphthalate	400.	UJ	420.	U	390.	U	400.	U	430.	U	400.	U
91-94-1	3,3'-Dichlorobenzidine	800.	UJ	840.	U	780.	U	800.	U	860.	U	800.	U
56-55-3	Benzo(a)anthracene	400.	UJ	420.	U	390.	U	400.	U	430.	U	400.	U
218-01-9	Chrysene	400.	UJ	420.	U	390.	U	400.	U	430.	U	400.	U
117-81-7	bis(2-Ethylhexyl)phthalate (BEHP)	400.	UJ	420.	UJ	390.	U	400.	U	430.	U	400.	UJ
117-84-0	Di-n-octylphthalate	400.	UJ	420.	U	390.	U	400.	U	430.	U	400.	U
205-99-2	Benzo(b)fluoranthene	400.	UJ	420.	U	390.	U	400.	U	430.	U	400.	U
207-08-9	Benzo(k)fluoranthene	400.	UJ	420.	U	390.	U	400.	U	430.	U	400.	U
50-32-8	Benzo(a)pyrene	400.	UJ	420.	U	390.	U	400.	U	430.	U	400.	U
193-39-5	Indeno(1,2,3-cd)pyrene	400.	UJ	420.	U	390.	U	400.	U	430.	U	400.	U
53-70-3	Dibenz(a,h)anthracene	400.	UJ	420.	U	390.	U	400.	U	430.	U	400.	U
191-24-2	Benzo(g,h,i)perylene	400.	UJ	420.	UJ	390.	U	400.	U	430.	U	400.	UJ
122-39-4	Diphenylamine	400.	UJ	420.	U	390.	U	400.	U	430.	U	400.	U

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 24 ANALYTICAL SOIL RESULTS

SW846-SVOA															
	SAMPLE ID ------->	024-C-0003-01		024-S-0003-04		024-S-0004-01		024-S-0004-04		024-S-0006-01		024-S-0006-04	
	ORIGINAL ID ----->	024C000301		024S000304		024S000401		024S000404		024S000601		024S000604	
	LAB SAMPLE ID --->	S880153B*1		S880153*2		S880069*6		S880069*3		S880069*4		S880069*5	
	ID FROM REPORT -->	024C000301		024S000304		024S000401		024S000404		024S000601		024S000604	
	SAMPLE DATE ----->	01/09/98		01/09/98		01/06/98		01/06/98		01/06/98		01/06/98	
	DATE EXTRACTED -->	01/13/98		01/13/98		01/12/98		01/12/98		01/12/98		01/12/98	
	DATE ANALYZED --->	02/02/98		02/02/98		01/27/98		01/27/98		01/27/98		01/28/98	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	EM1H04	VAL	EM1H06	VAL	EM1H03	VAL	EM1H03	VAL	EM1H03	VAL	EM1H03	VAL
108-95-2	Phenol	400.	U	420.	U	370.	U	430.	U	400.	U	430.	U
111-44-4	bis(2-Chloroethyl)ether	400.	U	420.	U	370.	U	430.	U	400.	U	430.	U
95-57-8	2-Chlorophenol	400.	U	420.	U	370.	U	430.	U	400.	U	430.	U
541-73-1	1,3-Dichlorobenzene	400.	U	420.	U	370.	U	430.	U	400.	U	430.	U
106-46-7	1,4-Dichlorobenzene	400.	U	420.	U	370.	U	430.	U	400.	U	430.	U
95-50-1	1,2-Dichlorobenzene	400.	U	420.	U	370.	U	430.	U	400.	U	430.	U
95-48-7	2-Methylphenol (o-Cresol)	400.	U	420.	U	370.	U	430.	U	400.	U	430.	U
108-60-1	2,2'-oxybis(1-Chloropropane)	400.	U	420.	U	370.	U	430.	U	400.	U	430.	U
9999900-32-2	3-Methylphenol/4-Methylphenol	400.	U	420.	U	370.	U	430.	U	400.	U	430.	U
621-64-7	N-Nitroso-di-n-propylamine	400.	U	420.	U	370.	U	430.	U	400.	U	430.	U
67-72-1	Hexachloroethane	400.	U	420.	U	370.	U	430.	U	400.	U	430.	U
98-95-3	Nitrobenzene	400.	U	420.	U	370.	U	430.	U	400.	U	430.	U
78-59-1	Isophorone	400.	U	420.	U	370.	U	430.	U	400.	U	430.	U
88-75-5	2-Nitrophenol	400.	U	420.	U	370.	U	430.	U	400.	U	430.	U
105-67-9	2,4-Dimethylphenol	400.	U	420.	U	370.	U	430.	U	400.	U	430.	U
120-83-2	2,4-Dichlorophenol	400.	U	420.	U	370.	U	430.	U	400.	U	430.	U
120-82-1	1,2,4-Trichlorobenzene	400.	U	420.	U	370.	U	430.	U	400.	U	430.	U
91-20-3	Naphthalene	400.	U	420.	U	370.	U	430.	U	400.	U	430.	U
106-47-8	4-Chloroaniline	800.	U	850.	U	740.	U	860.	U	800.	U	860.	U
87-68-3	Hexachlorobutadiene	400.	U	420.	U	370.	U	430.	U	400.	U	430.	U
111-91-1	bis(2-Chloroethoxy)methane	400.	U	420.	U	370.	U	430.	U	400.	U	430.	U
59-50-7	4-Chloro-3-methylphenol	400.	U	420.	U	370.	U	430.	U	400.	U	430.	U
91-57-6	2-Methylnaphthalene	400.	U	420.	U	370.	U	430.	U	400.	U	430.	U
77-47-4	Hexachlorocyclopentadiene	400.	U	420.	U	370.	U	430.	U	400.	U	430.	U
88-06-2	2,4,6-Trichlorophenol	400.	U	420.	U	370.	U	430.	U	400.	U	430.	U
95-95-4	2,4,5-Trichlorophenol	400.	U	420.	U	370.	U	430.	U	400.	U	430.	U
91-58-7	2-Chloronaphthalene	400.	U	420.	U	370.	U	430.	U	400.	U	430.	U
88-74-4	2-Nitroaniline	2100.	U	2200.	U	1900.	U	2200.	U	2000.	U	2200.	U
131-11-3	Dimethylphthalate	400.	U	420.	U	370.	U	430.	U	400.	U	430.	U
208-96-8	Acenaphthylene	400.	U	420.	U	370.	U	430.	U	400.	U	430.	U
606-20-2	2,6-Dinitrotoluene	400.	U	420.	U	370.	U	430.	U	400.	U	430.	U
99-09-2	3-Nitroaniline	2100.	U	2200.	U	1900.	U	2200.	U	2000.	U	2200.	U
83-32-9	Acenaphthene	400.	U	420.	U	370.	U	430.	U	400.	U	430.	U
51-28-5	2,4-Dinitrophenol	2100.	U	2200.	U	1900.	U	2200.	U	2000.	U	2200.	U
100-02-7	4-Nitrophenol	2100.	U	2200.	U	1900.	U	2200.	U	2000.	U	2200.	U
132-64-9	Dibenzofuran	400.	U	420.	U	370.	U	430.	U	400.	U	430.	U

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 24 ANALYTICAL SOIL RESULTS

SW846-SVOA													
	SAMPLE ID ------->	024-C-0003-01		024-S-0003-04		024-S-0004-01		024-S-0004-04		024-S-0006-01		024-S-0006-04	
	ORIGINAL ID ----->	024C000301		024S000304		024S000401		024S000404		024S000601		024S000604	
	LAB SAMPLE ID --->	S880153B*1		S880153*2		S880069*6		S880069*3		S880069*4		S880069*5	
	ID FROM REPORT -->	024C000301		024S000304		024S000401		024S000404		024S000601		024S000604	
	SAMPLE DATE ----->	01/09/98		01/09/98		01/06/98		01/06/98		01/06/98		01/06/98	
	DATE EXTRACTED -->	01/13/98		01/13/98		01/12/98		01/12/98		01/12/98		01/12/98	
	DATE ANALYZED --->	02/02/98		02/02/98		01/27/98		01/27/98		01/27/98		01/28/98	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	EM1H04	VAL	EM1H06	VAL	EM1H03	VAL	EM1H03	VAL	EM1H03	VAL	EM1H03	VAL
121-14-2	2,4-Dinitrotoluene	400.	U	420.	U	370.	U	430.	U	400.	U	430.	U
84-66-2	Diethylphthalate	41.	J	420.	U	370.	U	430.	U	58.	J	62.	J
7005-72-3	4-Chlorophenylphenyl ether	400.	U	420.	U	370.	U	430.	U	400.	U	430.	U
86-73-7	Fluorene	400.	U	420.	U	370.	U	430.	U	400.	U	430.	U
100-01-6	4-Nitroaniline	2100.	U	2200.	U	1900.	U	2200.	U	2000.	U	2200.	U
534-52-1	2-Methyl-4,6-Dinitrophenol	2100.	U	2200.	U	1900.	U	2200.	U	2000.	U	2200.	U
86-30-6	N-Nitrosodiphenylamine	NR		NR		NR		NR		NR		NR	
101-55-3	4-Bromophenyl-phenylether	400.	U	420.	U	370.	U	430.	U	400.	U	430.	U
118-74-1	Hexachlorobenzene	400.	U	420.	U	370.	U	430.	U	400.	U	430.	U
87-86-5	Pentachlorophenol	2100.	U	2200.	U	1900.	U	2200.	U	2000.	U	2200.	U
85-01-8	Phenanthrene	400.	U	420.	U	370.	U	430.	U	17.	J	430.	U
120-12-7	Anthracene	400.	U	420.	U	370.	U	430.	U	400.	U	430.	U
86-74-8	Carbazole	400.	U	420.	U	370.	U	430.	U	400.	U	430.	U
84-74-2	Di-n-butylphthalate	400.	U	420.	U	370.	U	430.	U	400.	U	430.	U
206-44-0	Fluoranthene	400.	U	420.	U	370.	U	430.	U	67.	J	430.	U
129-00-0	Pyrene	15.	J	420.	U	370.	U	430.	U	67.	J	430.	U
85-68-7	Butylbenzylphthalate	400.	U	420.	U	370.	U	430.	U	400.	U	430.	U
91-94-1	3,3'-Dichlorobenzidine	800.	U	850.	U	740.	U	860.	U	800.	U	860.	U
56-55-3	Benzo(a)anthracene	400.	U	420.	U	370.	U	430.	U	46.	J	430.	U
218-01-9	Chrysene	400.	U	420.	U	370.	U	430.	U	47.	J	430.	U
117-81-7	bis(2-Ethylhexyl)phthalate (BEHP)	400.	UJ	420.	UJ	370.	U	430.	U	400.	U	430.	U
117-84-0	Di-n-octylphthalate	400.	U	420.	U	370.	U	430.	U	400.	U	430.	U
205-99-2	Benzo(b)fluoranthene	400.	U	420.	U	370.	U	430.	U	56.	J	430.	U
207-08-9	Benzo(k)fluoranthene	400.	U	420.	U	370.	U	430.	U	400.	U	430.	U
50-32-8	Benzo(a)pyrene	400.	U	420.	U	370.	U	430.	U	44.	J	430.	U
193-39-5	Indeno(1,2,3-cd)pyrene	400.	U	420.	U	370.	U	430.	U	400.	U	430.	U
53-70-3	Dibenz(a,h)anthracene	400.	U	420.	U	370.	U	430.	U	400.	U	430.	U
191-24-2	Benzo(g,h,i)perylene	400.	UJ	420.	UJ	370.	U	430.	U	400.	U	430.	U
122-39-4	Diphenylamine	400.	U	420.	U	370.	U	430.	U	400.	U	430.	U

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 24 ANALYTICAL SOIL RESULTS

SW846-VOA													
	SAMPLE ID ------->	024-S-0001-01		024-S-0001-04		024-S-0002-01		024-C-0002-01		024-S-0002-04		024-S-0003-01	
	ORIGINAL ID ----->	024S000101		024S000104		024S000201		024C000201		024S000204		024S000301	
	LAB SAMPLE ID --->	S880153*3		S880153*4		S880069*1		S880069A*1		S880069*2		S880153*1	
	ID FROM REPORT -->	024S000101		024S000104		024S000201		024C000201		024S000204		024S000301	
	SAMPLE DATE ----->	01/09/98		01/09/98		01/06/98		01/06/98		01/06/98		01/09/98	
	DATE ANALYZED --->	01/17/98		01/17/98		01/08/98		01/15/98		01/14/98		01/16/98	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	EM1H06	VAL	EM1H06	VAL	EM1H03	VAL	EM1H04	VAL	EM1H03	VAL	EM1H06	VAL
74-87-3	Chloromethane	12.	U	13.	U	12.	U	12.	U	13.	U	12.	U
75-01-4	Vinyl chloride	12.	U	13.	U	12.	U	12.	U	13.	U	12.	U
74-83-9	Bromomethane	12.	U	13.	U	12.	U	12.	U	13.	U	12.	U
75-00-3	Chloroethane	12.	U	13.	U	12.	U	12.	U	13.	U	12.	U
75-35-4	1,1-Dichloroethene	6.1	U	6.3	U	6.	U	6.	U	6.5	U	6.1	U
75-09-2	Methylene chloride	6.1	U	6.3	U	6.	U	6.	U	6.5	U	6.1	U
75-34-3	1,1-Dichloroethane	6.1	U	6.3	U	6.	U	6.	U	6.5	U	6.1	U
67-66-3	Chloroform	6.1	U	6.3	U	6.	U	6.	U	6.5	U	6.1	U
71-55-6	1,1,1-Trichloroethane	6.1	U	6.3	U	6.	U	6.	U	6.5	U	6.1	U
56-23-5	Carbon tetrachloride	6.1	U	6.3	U	6.	U	6.	U	6.5	U	6.1	U
71-43-2	Benzene	6.1	U	6.3	U	6.	U	6.	U	6.5	U	1.6	J
107-06-2	1,2-Dichloroethane	6.1	U	6.3	U	6.	U	6.	U	6.5	U	6.1	U
79-01-6	Trichloroethene	6.1	U	6.3	U	6.	U	6.	U	6.5	U	6.1	U
78-87-5	1,2-Dichloropropane	6.1	U	6.3	U	6.	U	6.	U	6.5	U	6.1	U
75-27-4	Bromodichloromethane	6.1	U	6.3	U	6.	U	6.	U	6.5	U	6.1	U
108-88-3	Toluene	1.	J	6.3	U	6.	U	6.	U	6.5	U	6.1	U
79-00-5	1,1,2-Trichloroethane	6.1	U	6.3	U	6.	U	6.	U	6.5	U	6.1	U
127-18-4	Tetrachloroethene	6.1	U	6.3	U	6.	U	1.8	J	6.5	U	7.7	
124-48-1	Dibromochloromethane	6.1	U	6.3	U	6.	U	6.	U	6.5	U	6.1	U
108-90-7	Chlorobenzene	6.1	U	6.3	U	6.	U	6.	U	6.5	U	6.1	U
100-41-4	Ethylbenzene	6.1	U	6.3	U	6.	U	0.68	J	6.5	U	6.1	U
100-42-5	Styrene	6.1	U	6.3	U	6.	U	6.	U	6.5	U	6.1	U
75-25-2	Bromoform	6.1	U	6.3	U	6.	U	6.	U	6.5	U	6.1	U
79-34-5	1,1,2,2-Tetrachloroethane	6.1	U	6.3	U	6.	U	6.	U	6.5	U	6.1	U
67-64-1	Acetone	30.	J	63.	U	17.	J	60.	U	65.	U	61.	U
75-15-0	Carbon disulfide	6.1	U	6.3	U	6.	U	6.	U	6.5	U	6.1	U
78-93-3	2-Butanone (MEK)	30.	U	32.	U	30.	U	30.	U	32.	U	30.	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	30.	U	32.	U	30.	U	30.	U	32.	U	30.	U
10061-01-5	cis-1,3-Dichloropropene	6.1	U	6.3	U	6.	U	6.	U	6.5	U	6.1	U
10061-02-6	trans-1,3-Dichloropropene	6.1	U	6.3	U	6.	U	6.	U	6.5	U	6.1	U
591-78-6	2-Hexanone	30.	U	32.	U	30.	U	30.	U	32.	U	30.	U
1330-20-7	Xylene (Total)	6.1	U	6.3	U	1.4	J	1.8	J	6.5	U	6.1	U
540-59-0	1,2-Dichloroethene (total)	6.1	U	6.3	U	6.	U	6.	U	6.5	U	6.1	U
1330-20-7	Xylene (Total)	NR		NR		NR		NR		NR		NR	
9999000-44-2	XYLENES	NR		NR		NR		NR		NR		NR	

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 24 ANALYTICAL SOIL RESULTS

SW846-VOA													
	SAMPLE ID ------->	024-C-0003-01		024-S-0003-04		024-S-0004-01		024-S-0004-04		024-S-0005-01		024-S-0005-04	
	ORIGINAL ID ----->	024C000301		024S000304		024S000401		024S000404		024S000501		024S000504	
	LAB SAMPLE ID --->	S8801538*1		S880153*2		S880069*6		S880069*3		S880103*1		S880103*2	
	ID FROM REPORT -->	024C000301		024S000304		024S000401		024S000404		024S000501		024S000504	
	SAMPLE DATE ----->	01/09/98		01/09/98		01/06/98		01/06/98		01/07/98		01/07/98	
	DATE ANALYZED --->	01/15/98		01/16/98		01/08/98		01/08/98		01/16/98		01/16/98	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	EM1H04	VAL	EM1H06	VAL	EM1H03	VAL	EM1H03	VAL	EM1H06	VAL	EM1H06	VAL
74-87-3	Chloromethane	12.	U	13.	U	11.	U	13.	U	12.	U	14.	U
75-01-4	Vinyl chloride	12.	U	13.	U	11.	U	13.	U	12.	U	14.	U
74-83-9	Bromomethane	12.	U	13.	U	11.	U	13.	U	12.	U	14.	U
75-00-3	Chloroethane	12.	U	13.	U	11.	U	13.	U	12.	U	14.	U
75-35-4	1,1-Dichloroethene	6.1	U	6.4	U	5.6	U	6.5	U	6.2	U	6.8	U
75-09-2	Methylene chloride	6.1	U	6.4	U	5.6	U	6.5	U	6.2	U	6.8	U
75-34-3	1,1-Dichloroethane	6.1	U	6.4	U	5.6	U	6.5	U	6.2	U	6.8	U
67-66-3	Chloroform	6.1	U	6.4	U	5.6	U	6.5	U	6.2	U	6.8	U
71-55-6	1,1,1-Trichloroethane	6.1	U	6.4	U	5.6	U	6.5	U	6.2	U	6.8	U
56-23-5	Carbon tetrachloride	6.1	U	6.4	U	5.6	U	6.5	U	6.2	U	6.8	U
71-43-2	Benzene	6.1	U	6.4	U	5.6	U	6.5	U	6.2	U	6.8	U
107-06-2	1,2-Dichloroethane	6.1	U	6.4	U	5.6	U	6.5	U	6.2	U	6.8	U
79-01-6	Trichloroethene	6.1	U	6.4	U	5.6	U	6.5	U	6.2	U	6.8	U
78-87-5	1,2-Dichloropropene	6.1	U	6.4	U	5.6	U	6.5	U	6.2	U	6.8	U
75-27-4	Bromodichloromethane	6.1	U	6.4	U	5.6	U	6.5	U	6.2	U	6.8	U
108-88-3	Toluene	6.1	U	6.4	U	5.6	U	6.5	U	6.2	U	6.8	U
79-00-5	1,1,2-Trichloroethane	6.1	U	6.4	U	5.6	U	6.5	U	6.2	U	6.8	U
127-18-4	Tetrachloroethene	5.8	J	6.4	U	5.6	U	6.5	U	6.2	U	6.8	U
124-48-1	Dibromochloromethane	6.1	U	6.4	U	5.6	U	6.5	U	6.2	U	6.8	U
108-90-7	Chlorobenzene	6.1	U	6.4	U	5.6	U	6.5	U	6.2	U	6.8	U
100-41-4	Ethylbenzene	6.1	U	6.4	U	5.6	U	6.5	U	6.2	U	6.8	U
100-42-5	Styrene	6.1	U	6.4	U	5.6	U	6.5	U	6.2	U	6.8	U
75-25-2	Bromoform	6.1	U	6.4	U	5.6	U	6.5	U	6.2	U	6.8	U
79-34-5	1,1,2,2-Tetrachloroethane	6.1	U	6.4	U	5.6	U	6.5	U	6.2	U	6.8	U
67-64-1	Acetone	60.	U	64.	U	56.	U	65.	U	62.	U	68.	U
75-15-0	Carbon disulfide	6.1	U	6.4	U	5.6	U	6.5	U	6.2	U	6.8	U
78-93-3	2-Butanone (MEK)	30.	U	32.	U	28.	U	32.	U	31.	U	34.	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	30.	U	32.	U	28.	U	32.	U	31.	U	34.	U
10061-01-5	cis-1,3-Dichloropropene	6.1	U	6.4	U	5.6	U	6.5	U	6.2	U	6.8	U
10061-02-6	trans-1,3-Dichloropropene	6.1	U	6.4	U	5.6	U	6.5	U	6.2	U	6.8	U
591-78-6	2-Hexanone	30.	U	32.	U	28.	U	32.	U	31.	U	34.	U
1330-20-7	Xylene (Total)	6.1	U	6.4	U	5.6	U	6.5	U	6.2	U	6.8	U
540-59-0	1,2-Dichloroethene (total)	6.1	U	6.4	U	5.6	U	6.5	U	6.2	U	6.8	U
1330-20-7	Xylene (Total)	NR		NR		NR		NR		NR		NR	
9999000-44-2	XYLENES	NR		NR		NR		NR		NR		NR	

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 24 ANALYTICAL SOIL RESULTS

SW846-VOA									
		SAMPLE ID ------->	024-S-0006-01		024-S-0006-04				
		ORIGINAL ID ----->	024S000601		024S000604				
		LAB SAMPLE ID --->	S880069*4		S880069*5				
		ID FROM REPORT -->	024S000601		024S000604				
		SAMPLE DATE ----->	01/06/9*		01/06/98				
		DATE ANALYZED --->	01/08/98		01/08/98				
		MATRIX ---------->	Soil		Soil				
		UNITS ---------->	UG/KG		UG/KG				
CAS #	Parameter		EM1H03	VAL	EM1H03	VAL			
74-87-3	Chloromethane		12.	U	13.	U			
75-01-4	Vinyl chloride		12.	U	13.	U			
74-83-9	Bromomethane		12.	U	13.	U			
75-00-3	Chloroethane		12.	U	13.	U			
75-35-4	1,1-Dichloroethene		6.	U	6.5	U			
75-09-2	Methylene chloride		6.	U	6.5	U			
75-34-3	1,1-Dichloroethane		6.	U	6.5	U			
67-66-3	Chloroform		6.	U	6.5	U			
71-55-6	1,1,1-Trichloroethane		6.	U	6.5	U			
56-23-5	Carbon tetrachloride		6.	U	6.5	U			
71-43-2	Benzene		6.	U	6.5	U			
107-06-2	1,2-Dichloroethane		6.	U	6.5	U			
79-01-6	Trichloroethene		6.	U	6.5	U			
78-87-5	1,2-Dichloropropane		6.	U	6.5	U			
75-27-4	Bromodichloromethane		6.	U	6.5	U			
108-88-3	Toluene		6.	U	6.5	U			
79-00-5	1,1,2-Trichloroethane		6.	U	6.5	U			
127-18-4	Tetrachloroethene		6.	U	6.5	U			
124-48-1	Dibromochloromethane		6.	U	6.5	U			
108-90-7	Chlorobenzene		6.	U	6.5	U			
100-41-4	Ethylbenzene		6.	U	6.5	U			
100-42-5	Styrene		6.	U	6.5	U			
75-25-2	Bromoform		6.	U	6.5	U			
79-34-5	1,1,2,2-Tetrachloroethane		6.	U	6.5	U			
67-64-1	Acetone		60.	U	65.	U			
75-15-0	Carbon disulfide		6.	U	6.5	U			
78-93-3	2-Butanone (MEK)		30.	U	32.	U			
108-10-1	4-Methyl-2-Pentanone (MIBK)		30.	U	32.	U			
10061-01-5	cis-1,3-Dichloropropene		6.	U	6.5	U			
10061-02-6	trans-1,3-Dichloropropene		6.	U	6.5	U			
591-78-6	2-Hexanone		30.	U	32.	U			
1330-20-7	Xylene (Total)		6.	U	6.5	U			
540-59-0	1,2-Dichloroethene (total)		6.	U	6.5	U			
1330-20-7	Xylene (Total)		NR		NR				
9999000-44-2	XYLENES		NR		NR				

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 24 ANALYTICAL SOIL RESULTS

TPH													
	SAMPLE ID ------->	024-S-0001-01		024-S-0001-04		024-S-0002-01		024-C-0002-01		024-S-0002-04		024-S-0003-01	
	ORIGINAL ID ----->	024S000101		024S000104		024S000201		024C000201		024S000204		024S000301	
	LAB SAMPLE ID --->	S880153*3		S880153*4		S880069*1		S880069A*1		S880069*2		S880153*1	
	ID FROM REPORT -->	024S000101		024S000104		024S000201		024C000201		024S000204		024S000301	
	SAMPLE DATE ----->	01/09/98		01/09/98		01/06/98		01/06/98		01/06/98		01/09/98	
	DATE EXTRACTED -->	02/04/98		02/04/98		01/14/98		01/29/98		01/14/98		02/04/98	
	DATE ANALYZED --->	02/05/98		02/05/98		01/14/98		01/29/98		01/14/98		02/05/98	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	MG/KG		MG/KG		MG/KG		MG/KG		MG/KG		MG/KG	
CAS #	Parameter	EM1H06	VAL	EM1H06	VAL	EM1H03	VAL	EM1H04	VAL	EM1H03	VAL	EM1H06	VAL
9999900-02-4	Petroleum Hydrocarbons, TPH	NR		NR		NR		NR		NR		NR	
9999000-83-9	TOTAL RECOVERABLE PETROLEUM HYDROCARBONS	330.	J	19.	J	2900.	J	2400.	J	1100.	J	480.	J

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 24 ANALYTICAL SOIL RESULTS

TPN													
	SAMPLE ID ------->	024-C-0003-01		024-S-0003-04		024-S-0004-01		024-S-0004-04		024-S-0005-01		024-S-0005-04	
	ORIGINAL ID ----->	024C000301		024S000304		024S000401		024S000404		024S000501		024S000504	
	LAB SAMPLE ID --->	S8801538*1		S880153*2		S880069*6		S880069*3		S880103*1		S880103*2	
	ID FROM REPORT -->	024C000301		024S000304		024S000401		024S000404		024S000501		024S000504	
	SAMPLE DATE ----->	01/09/98		01/09/98		01/06/98		01/06/98		01/07/98		01/07/98	
	DATE EXTRACTED -->	01/29/98		02/04/98		01/14/98		01/14/98		02/04/98		02/04/98	
	DATE ANALYZED --->	01/29/98		02/05/98		01/14/98		01/14/98		02/05/98		02/05/98	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	MG/KG		MG/KG		MG/KG		MG/KG		MG/KG		MG/KG	
CAS #	Parameter	EM1H04	VAL	EM1H06	VAL	EM1H03	VAL	EM1H03	VAL	EM1H06	VAL	EM1H06	VAL
9999900-02-4	Petroleum Hydrocarbons, TPH	NR		NR		NR		NR		NR		NR	
9999000-83-9	TOTAL RECOVERABLE PETROLEUM HYDROCARBONS	1100.	J	41.	J	170.	J	190.	J	790.	J	180.	J

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 24 ANALYTICAL SOIL RESULTS

TPH								
	SAMPLE ID ------->	024-S-0006-01		024-S-0006-04				
	ORIGINAL ID ----->	024S000601		024S000604				
	LAB SAMPLE ID --->	S880069*4		S880069*5				
	ID FROM REPORT -->	024S000601		024S000604				
	SAMPLE DATE ----->	01/06/98		01/06/98				
	DATE EXTRACTED -->	01/14/98		01/14/98				
	DATE ANALYZED --->	01/14/98		01/14/98				
	MATRIX ---------->	Soil		Soil				
	UNITS ---------->	MG/KG		MG/KG				
CAS #	Parameter	EM1H03	VAL	EM1H03	VAL			
9999900-02-4	Petroleum Hydrocarbons, TPH	NR		NR				
9999000-83-9	TOTAL RECOVERABLE PETROLEUM HYDROCARBONS	82.	J	420.	J			

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 24 ANALYTICAL SOIL RESULTS

TPH-DRO													
	SAMPLE ID ------->	024-S-0001-01		024-S-0001-04		024-S-0002-01		024-C-0002-01		024-S-0002-04		024-S-0003-01	
	ORIGINAL ID ----->	024S000101		024S000104		024S000201		024C000201		024S000204		024S000301	
	LAB SAMPLE ID --->	S880153*3		S880153*4		S880049*1		S880069A*1		S880069*2		S880153*1	
	ID FROM REPORT -->	024S000101		024S000104		024S000201		024C000201		024S000204		024S000301	
	SAMPLE DATE ----->	01/09/98		01/09/98		01/06/98		01/06/98		01/06/98		01/09/98	
	DATE EXTRACTED -->	01/20/98		01/13/98		01/12/98		01/13/98		01/12/98		01/13/98	
	DATE ANALYZED --->	01/21/98		01/16/98		01/19/98		01/19/98		01/15/98		01/20/98	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	MG/KG		MG/KG		MG/KG		MG/KG		MG/KG		MG/KG	
CAS #	Parameter	EM1H06	VAL	EM1H06	VAL	EM1H03	VAL	EM1H04	VAL	EM1H03	VAL	EM1H06	VAL
9999900-02-6	TPH - Diesel Range Organics	46.		1.8	J	990.		1900.	J	1.1	J	120.	

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 24 ANALYTICAL SOIL RESULTS

TPH-DRO	SAMPLE ID ------->	024-C-0003-01		024-S-0003-04		024-S-0004-01		024-S-0004-04		024-S-0005-01		024-S-0005-04	
	ORIGINAL ID ----->	024C000301		024S000304		024S000401		024S000404		024S000501		024S000504	
	LAB SAMPLE ID --->	S8801538*1		S880153*2		S880069*6		S880069*3		S880103*1		S880103*2	
	ID FROM REPORT -->	024C000301		024S000304		024S000401		024S000404		024S000501		024S000504	
	SAMPLE DATE ----->	01/09/98		01/09/98		01/06/98		01/06/98		01/07/98		01/07/98	
	DATE EXTRACTED -->	01/13/98		01/13/98		01/12/98		01/12/98		01/20/98		01/20/98	
	DATE ANALYZED --->	01/20/98		01/16/98		01/16/98		01/16/98		01/21/98		01/21/98	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	MG/KG		MG/KG		MG/KG		MG/KG		MG/KG		MG/KG	
CAS #	Parameter	EM1H04	VAL	EM1H06	VAL	EM1H03	VAL	EM1H03	VAL	EM1H06	VAL	EM1H06	VAL
9999900-02-6	TPH - Diesel Range Organics	140.		1.5	J	4.5	U	1.1	J	53.		16.	

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 24 ANALYTICAL SOIL RESULTS

TPH-DRO								
	SAMPLE ID ------->	024-S-0006-01		024-S-0006-04				
	ORIGINAL ID ----->	024S000601		024S000604				
	LAB SAMPLE ID --->	S880069*4		S880069*5				
	ID FROM REPORT -->	024S000601		024S000604				
	SAMPLE DATE ----->	01/06/98		01/06/98				
	DATE EXTRACTED -->	01/12/98		01/12/98				
	DATE ANALYZED --->	01/19/98		01/16/98				
	MATRIX ---------->	Soil		Soil				
	UNITS ---------->	MG/KG		MG/KG				
CAS #	Parameter	EM1H03	VAL	EM1H03	VAL			
9999900-02-6	TPH - Diesel Range Organics	1.5	J	5.2	U			

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 24 ANALYTICAL SOIL RESULTS

TPH-GRO													
	SAMPLE ID ------->	024-S-0001-01		024-S-0001-04		024-S-0002-01		024-C-0002-01		024-S-0002-04		024-S-0003-01	
	ORIGINAL ID ----->	024S000101		024S000104		024S000201		024C000201		024S000204		024S000301	
	LAB SAMPLE ID --->	S880153*3		S880153*4		S880069*1		S880069A*1		S880069*2		S880153*1	
	ID FROM REPORT -->	024S000101		024S000104		024S000201		024C000201		024S000204		024S000301	
	SAMPLE DATE ----->	01/09/98		01/09/98		01/06/98		01/06/98		01/06/98		01/09/98	
	DATE ANALYZED --->	01/13/98		01/13/98		01/09/98		01/09/98		01/09/98		01/13/98	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	MG/KG		MG/KG		MG/KG		MG/KG		MG/KG		MG/KG	
CAS #	Parameter	EM1H06	VAL	EM1H06	VAL	EM1H03	VAL	EM1H04	VAL	EM1H03	VAL	EM1H06	VAL
9999900-02-5	TPH - Gasoline Range Organics	0.22	U	0.23	U	0.21	U	0.22	U	0.23	U	0.22	U

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 24 ANALYTICAL SOIL RESULTS

TPH-GRO													
	SAMPLE ID ------->	024-C-0003-01		024-S-0003-04		024-S-0004-01		024-S-0004-04		024-S-0005-01		024-S-0005-04	
	ORIGINAL ID ----->	024C000301		024S000304		024S000401		024S000404		024S000501		024S000504	
	LAB SAMPLE ID --->	S8801538*1		S880153*2		S880069*6		S880069*3		S880103*1		S880103*2	
	ID FROM REPORT -->	024C000301		024S000304		024S000401		024S000404		024S000501		024S000504	
	SAMPLE DATE ----->	01/09/98		01/09/98		01/06/98		01/06/98		01/07/98		01/07/98	
	DATE ANALYZED --->	01/13/98		01/13/98		01/11/98		01/09/98		01/11/98		01/11/98	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	MG/KG		MG/KG		MG/KG		MG/KG		MG/KG		MG/KG	
CAS #	Parameter	EM1H04	VAL	EM1H06	VAL	EM1H03	VAL	EM1H03	VAL	EM1H06	VAL	EM1H06	VAL
9999900-02-5	TPH - Gasoline Range Organics	0.22	U	0.23	U	0.2	U	0.23	U	0.22	U	0.24	U

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 24 ANALYTICAL SOIL RESULTS

TPH-GRO	SAMPLE ID ------->	024-S-0006-01		024-S-0006-04	
	ORIGINAL ID ----->	024S000601		024S000604	
	LAB SAMPLE ID --->	S880069*4		S880069*5	
	ID FROM REPORT -->	024S000601		024S000604	
	SAMPLE DATE ----->	01/06/98		01/06/98	
	DATE ANALYZED --->	01/09/98		01/11/98	
	MATRIX ---------->	Soil		Soil	
	UNITS ---------->	MG/KG		MG/KG	
CAS #	Parameter	EM1H03	VAL	EM1H03	VAL
9999900-02-5	TPH - Gasoline Range Organics	0.22	U	0.23	U

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 41 ANALYTICAL SOIL RESULTS

APX9-METAL											
	SAMPLE ID ------->	041-S-0004-01		041-C-0004-01		041-S-0007-01		041-S-0011-01		041-S-0012-01	
	ORIGINAL ID ----->	041S000401		041C000401		041S000701		041S001101		041S001201	
	LAB SAMPLE ID --->	S8802498*4		S880249A*1		S8802498*3		S8802498*2		S8802498*1	
	ID FROM REPORT -->	041S000401		041C000401		041S000701		041S001101		041S001201	
	SAMPLE DATE ----->	01/14/98		01/14/98		01/14/98		01/14/98		01/14/98	
	DATE EXTRACTED -->	01/21/98		01/21/98		01/21/98		01/21/98		01/21/98	
	DATE ANALYZED --->	01/22/98		01/22/98		01/22/98		01/22/98		01/22/98	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	MG/KG		MG/KG		MG/KG		MG/KG		MG/KG	
CAS #	Parameter	EM1H06	VAL	EM1H04	VAL	EM1H06	VAL	EM1H06	VAL	EM1H06	VAL
7439-97-6	Mercury	0.03		0.04	J	0.32		0.02		0.08	
7440-36-0	Antimony	0.4	UR	0.41	UR	1.1	UR	1.1	UR	0.98	UR
7440-38-2	Arsenic	4.7	J	3.1	J	7.3		4.6	J	4.4	J
7440-39-3	Barium	114.		83.1		115.		39.8		52.1	
7440-41-7	Beryllium	0.41	J	0.28	U	0.43	J	0.33	J	0.22	J
7440-43-9	Cadmium	0.53	J	0.85		8.5	J	25.1		53.	
7440-47-3	Chromium	11.	J	10.		18.7	J	57.4	J	55.2	J
7440-48-4	Cobalt	6.3		4.8		6.3		2.		3.3	
7440-50-8	Copper	21.	J	20.4		74.9	J	483.	J	145.	J
7439-92-1	Lead	18.6	J	25.	J	82.1	J	73.	J	81.	J
7440-02-0	Nickel	12.1		9.	J	15.8		10.5		13.3	
7782-49-2	Selenium	0.39	U	0.8	J	0.39	U	0.38	U	0.61	J
7440-22-4	Silver	0.12	U	0.12	U	0.26	J	1.7		0.72	J
7440-28-0	Thallium	0.72	UJ	0.73	U	0.72	UJ	0.69	UJ	0.74	UJ
7440-62-2	Vanadium	16.9		12.7		19.		14.6		13.2	
7440-66-6	Zinc	93.6	J	160.	J	379.	J	530.	J	185.	J
7440-31-5	Tin	0.78	U	1.1	U	2.3	U	4.5	J	3.4	J

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 41 ANALYTICAL SOIL RESULTS

METAL-CN						
SAMPLE ID ------->	041-S-0004-01	041-C-0004-01	041-S-0007-01	041-S-0011-01	041-S-0012-01	
ORIGINAL ID ----->	041S000401	041C000401	041S000701	041S001101	041S001201	
LAB SAMPLE ID --->	S8802498*4	S880249A*1	S8802498*3	S8802498*2	S8802498*1	
ID FROM REPORT -->	041S000401	041C000401	041S000701	041S001101	041S001201	
SAMPLE DATE ----->	01/14/98	01/14/98	01/14/98	01/14/98	01/14/98	
DATE EXTRACTED -->	01/19/98	01/19/98	01/19/98	01/19/98	01/19/98	
DATE ANALYZED --->	01/20/98	01/20/98	01/20/98	01/20/98	01/20/98	
MATRIX ---------->	Soil	Soil	Soil	Soil	Soil	
UNITS ---------->	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	

CAS #	Parameter	EM1H06	VAL	EM1H04	VAL	EM1H06	VAL	EM1H06	VAL	EM1H06	VAL	
57-12-5	Cyanide (CN)	1.2	UJ	1.2	U	1.2	UJ	1.2	UJ	1.3	UJ	

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 41 ANALYTICAL SOIL RESULTS

SW846-MERB											
	SAMPLE ID ------->	041-S-0004-01		041-C-0004-01		041-S-0007-01		041-S-0011-01		041-S-0012-01	
	ORIGINAL ID ----->	041S000401		041C000401		041S000701		041S001101		041S001201	
	LAB SAMPLE ID --->	S8802498*4		S880249A*1		S8802498*3		S8802498*2		S8802498*1	
	ID FROM REPORT -->	041S000401		041C000401		041S000701		041S001101		041S001201	
	SAMPLE DATE ----->	01/14/98		01/14/98		01/14/98		01/14/98		01/14/98	
	DATE EXTRACTED -->	01/19/98		01/19/98		01/19/98		01/19/98		01/28/98	
	DATE ANALYZED --->	01/27/98		01/27/98		01/27/98		01/27/98		01/30/98	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	EM1H06	VAL	EM1H04	VAL	EM1H06	VAL	EM1H06	VAL	EM1H06	VAL
75-99-0	Dalapon	2500.	U	2500.	U	2500.	U	2400.	U	2500.	U
93-65-2	MCPP	2500.	U	2500.	U	2500.	U	2400.	U	2500.	U
1918-00-9	Dicamba	25.	U	25.	U	25.	U	24.	U	25.	U
94-74-6	MCPA	2500.	U	2500.	U	2500.	U	2400.	U	2500.	U
120-36-5	Dichlorprop	120.	U	120.	U	11.	J	120.	U	130.	U
94-75-7	2,4-D	10.	U	10.	U	10.	U	9.9	U	10.	U
93-72-1	2,4,5-TP (Silvex)	10.	U	10.	U	10.	U	9.9	U	10.	U
93-76-5	2,4,5-T	10.	U	10.	U	10.	U	9.9	U	10.	U
88-85-7	Dinoseb	120.	U	120.	U	120.	U	120.	U	130.	U
94-82-6	2,4-DB	10.	U	10.	U	10.	U	9.9	U	10.	U

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 41 ANALYTICAL SOIL RESULTS

SW846-OP P											
	SAMPLE ID ------->	041-S-0004-01		041-C-0004-01		041-S-0007-01		041-S-0011-01		041-S-0012-01	
	ORIGINAL ID ----->	041S000401		041C000401		041S000701		041S001101		041S001201	
	LAB SAMPLE ID --->	S8802498*4		S880249A*1		S8802498*3		S8802498*2		S8802498*1	
	ID FROM REPORT -->	041S000401		041C000401		041S000701		041S001101		041S001201	
	SAMPLE DATE ----->	01/14/98		01/14/98		01/14/98		01/14/98		01/14/98	
	DATE EXTRACTED -->	01/27/98		01/27/98		01/27/98		01/27/98		01/27/98	
	DATE ANALYZED --->	02/05/98		02/03/98		02/04/98		02/04/98		02/06/98	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	EM1H06	VAL	EM1H04	VAL	EM1H06	VAL	EM1H06	VAL	EM1H06	VAL
86-50-0	Azinphos methyl	81.	U	82.	U	81.	U	78.	U	84.	U
35400-43-2	Sulprofos (Bolstar)	41.	U	41.	U	41.	U	39.	U	42.	U
2921-88-2	Chloropyrifos	41.	U	41.	U	41.	U	39.	U	42.	U
56-72-4	Coumaphos	410.	U	410.	U	410.	U	390.	U	420.	U
8065-48-3	Demeton,O	100.	U	100.	U	100.	U	99.	U	100.	U
126-75-0	Demeton,S	100.	U	100.	U	100.	U	99.	U	100.	U
333-41-5	Diazinon	41.	U	41.	U	41.	U	39.	U	42.	U
62-73-7	Dichlorvos	81.	U	82.	U	81.	U	78.	U	84.	U
298-04-4	Disulfoton	81.	U	82.	U	81.	U	78.	U	84.	U
13194-48-4	Ethoprop	21.	U	21.	U	21.	U	20.	U	22.	U
115-90-2	Fensulfothion	410.	U	410.	U	410.	U	390.	U	420.	U
55-38-9	Fenthion	41.	U	41.	U	41.	U	39.	U	42.	U
7786-34-7	Mevinphos, Alpha	81.	U	82.	U	81.	U	78.	U	84.	U
300-76-5	Naled	410.	U	410.	U	410.	U	390.	U	420.	U
298-00-0	Methyl parathion	21.	U	21.	U	21.	U	20.	U	22.	U
298-02-2	Phorate	41.	U	41.	U	41.	U	39.	U	42.	U
299-84-3	Ronnel	41.	U	41.	U	41.	U	39.	U	42.	U
22248-79-9	Stirophos (Tetrachlorovinphos)	41.	U	41.	U	41.	U	39.	U	42.	U
327-98-0	Trichloronate	410.	U	410.	U	410.	U	390.	U	420.	U
150-50-5	Merphos	41.	U	41.	U	41.	U	39.	U	42.	U
34643-46-4	Tokuthion	41.	U	41.	U	41.	U	39.	U	42.	U
60-51-5	Dimethoate	81.	U	82.	U	81.	U	78.	U	84.	U
121-75-5	Malathion	41.	U	41.	U	41.	U	39.	U	42.	U
2157-98-4	Monocrotophos	410.	U	410.	U	410.	U	390.	U	420.	U
56-38-2	Parathion	41.	U	41.	U	41.	U	39.	U	42.	U
3689-24-5	Sulfotep	21.	U	21.	U	21.	U	20.	U	22.	U
2104-64-5	EPN	41.	U	41.	U	41.	U	39.	U	42.	U

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 41 ANALYTICAL SOIL RESULTS

SW846-PEST													
	SAMPLE ID ------->	041-S-0004-01		041-C-0004-01		041-S-0007-01		041-S-0011-01		041-S-0012-01			
	ORIGINAL ID ----->	041S000401		041C000401		041S000701		041S001101		041S001201			
	LAB SAMPLE ID --->	S8802498*4		S880249A*1		S8802498*3		S8802498*2		S8802498*1			
	ID FROM REPORT -->	041S000401		041C000401		041S000701		041S001101		041S001201			
	SAMPLE DATE ----->	01/14/98		01/14/98		01/14/98		01/14/98		01/14/98			
	DATE EXTRACTED -->	01/16/98		01/16/98		01/16/98		01/16/98		01/16/98			
	DATE ANALYZED --->	01/23/98		01/22/98		01/26/98		01/26/98		01/26/98			
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil			
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG			
CAS #	Parameter	EM1H06	VAL	EM1H04	VAL	EM1H06	VAL	EM1H06	VAL	EM1H06	VAL		
319-84-6	alpha-BHC	2.1	U	2.1	U	10.	U	10.	U	22.	U		
319-85-7	beta-BHC	2.1	U	2.1	U	10.	U	10.	U	22.	U		
319-86-8	delta-BHC	2.1	U	2.1	U	10.	U	10.	U	22.	U		
58-89-9	gamma-BHC (Lindane)	2.1	U	2.1	U	10.	U	0.38	J	22.	U		
76-44-8	Heptachlor	2.1	U	2.1	U	10.	U	10.	U	22.	U		
309-00-2	Aldrin	2.1	U	2.1	U	10.	U	10.	U	22.	U		
1024-57-3	Heptachlor epoxide	2.1	U	2.1	U	10.	U	10.	U	22.	U		
959-98-8	Endosulfan I	2.1	U	2.1	U	10.	U	1.2	J	6.3	J		
60-57-1	Dieldrin	0.67	J	1.6	J	17.	J	4.8	J	12.	J		
72-55-9	4,4'-DDE	2.2	J	3.7	J	14.	J	70.		91.			
72-20-8	Endrin	4.1	U	4.1	U	20.	U	20.	U	42.	U		
33213-65-9	Endosulfan II	4.1	U	4.1	U	20.	U	20.	U	42.	U		
72-54-8	4,4'-DDD	4.1	U	4.1	U	20.	U	17.	J	33.	J		
1031-07-8	Endosulfan sulfate	4.1	U	4.1	U	20.	U	20.	U	42.	U		
50-29-3	4,4'-DDT	4.1	U	4.1	U	20.	U	110.		130.			
72-43-5	Methoxychlor	21.	U	21.	U	100.	U	100.	U	220.	U		
7421-93-4	Endrin aldehyde	4.1	U	4.1	U	20.	U	20.	U	42.	U		
8001-35-2	Toxaphene	210.	U	210.	U	1000.	U	1000.	U	2200.	U		
12674-11-2	Aroclor-1016	41.	U	41.	U	200.	U	200.	U	420.	U		
11104-28-2	Aroclor-1221	83.	U	84.	U	410.	U	400.	U	850.	U		
11141-16-5	Aroclor-1232	41.	U	41.	U	200.	U	200.	U	420.	U		
53469-21-9	Aroclor-1242	41.	U	41.	U	200.	U	200.	U	420.	U		
12672-29-6	Aroclor-1248	41.	U	41.	U	200.	U	200.	U	420.	U		
11097-69-1	Aroclor-1254	41.	U	41.	U	200.	U	200.	U	420.	U		
11096-82-5	Aroclor-1260	130.	J	250.	J	1200.		200.		710.			
57-74-9	Chlordane	21.	U	21.	U	100.	U	100.	U	220.	U		

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 41 ANALYTICAL SOIL RESULTS

SW846-SVOA

SAMPLE ID ------->	041-S-0004-01	041-C-0004-01	041-S-0007-01	041-S-0011-01	041-S-0012-01	
ORIGINAL ID ----->	041S000401	041C000401	041S000701	041S001101	041S001201	
LAB SAMPLE ID --->	S8802498*4	S880249A*1	S8802498*3	S8802498*2	S8802498*1	
ID FROM REPORT -->	041S000401	041C000401	041S000701	041S001101	041S001201	
SAMPLE DATE ----->	01/14/98	01/14/98	01/14/98	01/14/98	01/14/98	
DATE EXTRACTED -->	01/17/98	01/17/98	01/17/98	01/17/98	01/17/98	
DATE ANALYZED --->	02/04/98	02/04/98	02/04/98	02/04/98	02/04/98	
MATRIX ---------->	Soil	Soil	Soil	Soil	Soil	
UNITS ---------->	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	

CAS #	Parameter	EM1H06	VAL	EM1H04	VAL	EM1H06	VAL	EM1H06	VAL	EM1H06	VAL
108-95-2	Phenol	410.	U	410.	U	410.	U	390.	U	420.	U
111-44-4	bis(2-Chloroethyl)ether	410.	U	410.	U	410.	U	390.	U	420.	U
95-57-8	2-Chlorophenol	410.	U	410.	U	410.	U	390.	U	420.	U
541-73-1	1,3-Dichlorobenzene	410.	U	410.	U	410.	U	390.	U	420.	U
106-46-7	1,4-Dichlorobenzene	410.	U	410.	U	410.	U	390.	U	420.	U
95-50-1	1,2-Dichlorobenzene	410.	U	410.	U	410.	U	390.	U	420.	U
95-48-7	2-Methylphenol (o-Cresol)	410.	U	410.	U	410.	U	390.	U	420.	U
108-60-1	2,2'-oxybis(1-Chloropropane)	410.	U	410.	U	410.	U	390.	U	420.	U
9999900-32-2	3-Methylphenol/4-Methylphenol	410.	U	410.	U	410.	U	390.	U	420.	U
621-64-7	N-Nitroso-di-n-propylamine	410.	U	410.	U	410.	U	390.	U	420.	U
67-72-1	Hexachloroethane	410.	U	410.	U	410.	U	390.	U	420.	U
98-95-3	Nitrobenzene	410.	U	410.	U	410.	U	390.	U	420.	U
78-59-1	Isophorone	410.	U	410.	U	410.	U	390.	U	420.	U
88-75-5	2-Nitrophenol	410.	U	410.	U	410.	U	390.	U	420.	U
105-67-9	2,4-Dimethylphenol	410.	U	410.	U	410.	U	390.	U	420.	U
120-83-2	2,4-Dichlorophenol	410.	U	410.	U	410.	U	390.	U	420.	U
120-82-1	1,2,4-Trichlorobenzene	410.	U	410.	U	410.	U	390.	U	420.	U
91-20-3	Naphthalene	410.	U	410.	U	410.	U	390.	U	420.	U
106-47-8	4-Chloroaniline	810.	U	820.	U	810.	U	780.	U	840.	U
87-68-3	Hexachlorobutadiene	410.	U	410.	U	410.	U	390.	U	420.	U
111-91-1	bis(2-Chloroethoxy)methane	410.	U	410.	U	410.	U	390.	U	420.	U
59-50-7	4-Chloro-3-methylphenol	410.	U	410.	U	410.	U	390.	U	420.	U
91-57-6	2-Methylnaphthalene	410.	U	410.	U	410.	U	390.	U	420.	U
77-47-4	Hexachlorocyclopentadiene	410.	U	410.	U	410.	U	390.	U	420.	U
88-06-2	2,4,6-Trichlorophenol	410.	U	410.	U	410.	U	390.	U	420.	U
95-95-4	2,4,5-Trichlorophenol	410.	U	410.	U	410.	U	390.	U	420.	U
91-58-7	2-Chloronaphthalene	410.	U	410.	U	410.	U	390.	U	420.	U
88-74-4	2-Nitroaniline	2100.	U	2100.	U	2100.	U	2000.	U	2200.	U
131-11-3	Dimethylphthalate	410.	U	410.	U	410.	U	390.	U	420.	U
208-96-8	Acenaphthylene	410.	U	410.	U	410.	U	390.	U	420.	U
606-20-2	2,6-Dinitrotoluene	410.	U	410.	U	410.	U	390.	U	420.	U
99-09-2	3-Nitroaniline	2100.	U	2100.	U	2100.	U	2000.	U	2200.	U
83-32-9	Acenaphthene	410.	U	410.	U	410.	U	390.	U	420.	U
51-28-5	2,4-Dinitrophenol	2100.	U	2100.	U	2100.	U	2000.	U	2200.	U
100-02-7	4-Nitrophenol	2100.	U	2100.	U	2100.	U	2000.	U	2200.	U
132-64-9	Dibenzofuran	410.	U	410.	U	410.	U	390.	U	420.	U

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 41 ANALYTICAL SOIL RESULTS

SW846-SVOA											
	SAMPLE ID ------->	041-S-0004-01		041-C-0004-01		041-S-0007-01		041-S-0011-01		041-S-0012-01	
	ORIGINAL ID ----->	041S000401		041C000401		041S000701		041S001101		041S001201	
	LAB SAMPLE ID --->	S8802498*4		S880249A*1		S8802498*3		S8802498*2		S8802498*1	
	ID FROM REPORT -->	041S000401		041C000401		041S000701		041S001101		041S001201	
	SAMPLE DATE ----->	01/14/98		01/14/98		01/14/98		01/14/98		01/14/98	
	DATE EXTRACTED -->	01/17/98		01/17/98		01/17/98		01/17/98		01/17/98	
	DATE ANALYZED --->	02/04/98		02/04/98		02/04/98		02/04/98		02/04/98	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	EM1H06	VAL	EM1H04	VAL	EM1H06	VAL	EM1H06	VAL	EM1H06	VAL
121-14-2	2,4-Dinitrotoluene	410.	U	410.	U	410.	U	390.	U	420.	U
84-66-2	Diethylphthalate	410.	U	410.	U	410.	U	390.	U	420.	U
7005-72-3	4-Chlorophenylphenyl ether	410.	U	410.	U	410.	U	390.	U	420.	U
86-73-7	Fluorene	410.	U	410.	U	410.	U	390.	U	420.	U
100-01-6	4-Nitroaniline	2100.	U	2100.	U	2100.	U	2000.	U	2200.	U
534-52-1	2-Methyl-4,6-Dinitrophenol	2100.	U	2100.	U	2100.	U	2000.	U	2200.	U
86-30-6	N-Nitrosodiphenylamine	NR		NR		NR		NR		NR	
101-55-3	4-Bromophenyl-phenylether	410.	U	410.	U	410.	U	390.	U	420.	U
118-74-1	Hexachlorobenzene	410.	U	410.	U	410.	U	390.	U	420.	U
87-86-5	Pentachlorophenol	2100.	U	2100.	U	2100.	U	2000.	U	2200.	U
85-01-8	Phenanthrene	410.	U	410.	U	410.	U	390.	U	140.	J
120-12-7	Anthracene	410.	U	410.	U	410.	U	390.	U	420.	U
86-74-8	Carbazole	410.	U	410.	U	410.	U	390.	U	420.	U
84-74-2	Di-n-butylphthalate	410.	U	410.	U	410.	U	390.	U	420.	U
206-44-0	Fluoranthene	410.	U	410.	U	410.	U	390.	U	290.	J
129-00-0	Pyrene	410.	U	410.	U	62.	J	68.	J	360.	J
85-68-7	Butylbenzylphthalate	410.	U	410.	U	410.	U	390.	U	420.	U
91-94-1	3,3'-Dichlorobenzidine	810.	U	820.	U	810.	U	780.	U	840.	U
56-55-3	Benzo(a)anthracene	410.	U	410.	U	410.	U	390.	U	160.	J
218-01-9	Chrysene	410.	U	410.	U	410.	U	390.	U	180.	J
117-81-7	bis(2-Ethylhexyl)phthalate (BEHP)	410.	U	59.	J	84.	J	78.	J	2200.	
117-84-0	Di-n-octylphthalate	410.	U	410.	U	410.	U	390.	U	420.	U
205-99-2	Benzo(b)fluoranthene	410.	U	410.	U	410.	U	390.	U	420.	U
207-08-9	Benzo(k)fluoranthene	410.	U	410.	U	410.	U	390.	U	420.	U
50-32-8	Benzo(a)pyrene	410.	U	410.	U	410.	U	390.	U	420.	U
193-39-5	Indeno(1,2,3-cd)pyrene	410.	U	410.	U	410.	U	390.	U	420.	U
53-70-3	Dibenz(a,h)anthracene	410.	U	410.	U	410.	U	390.	U	420.	U
191-24-2	Benzo(g,h,i)perylene	410.	U	410.	U	410.	U	390.	U	420.	U
122-39-4	Diphenylamine	410.	U	410.	U	410.	U	390.	U	420.	U

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 41 ANALYTICAL SOIL RESULTS

SW846-VOA											
	SAMPLE ID ------->	041-S-0004-01		041-C-0004-01		041-S-0007-01		041-S-0011-01		041-S-0012-01	
	ORIGINAL ID ----->	041S000401		041C000401		041S000701		041S001101		041S001201	
	LAB SAMPLE ID --->	S8802498*4		S880249A*1		S8802498*3		S8802498*2		S8802498*1	
	ID FROM REPORT -->	041S000401		041C000401		041S000701		041S001101		041S001201	
	SAMPLE DATE ----->	01/14/98		01/14/98		01/14/98		01/14/98		01/14/98	
	DATE ANALYZED --->	01/22/98		01/22/98		01/22/98		01/22/98		01/22/98	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	EM1H06	VAL	EM1H04	VAL	EM1H06	VAL	EM1H06	VAL	EM1H06	VAL
74-87-3	Chloromethane	12.	U	12.	U	12.	U	12.	U	13.	U
75-01-4	Vinyl chloride	12.	U	12.	U	12.	U	12.	U	13.	U
74-83-9	Bromomethane	12.	U	12.	U	12.	U	12.	U	13.	U
75-00-3	Chloroethane	12.	U	12.	U	12.	U	12.	U	13.	U
75-35-4	1,1-Dichloroethene	6.2	U	6.2	U	6.2	U	6.	U	6.3	U
75-09-2	Methylene chloride	6.2	U	6.2	U	6.2	U	6.	U	6.3	U
75-34-3	1,1-Dichloroethane	6.2	U	6.2	U	6.2	U	6.	U	6.3	U
67-66-3	Chloroform	6.2	U	6.2	U	6.2	U	6.	U	6.3	U
71-55-6	1,1,1-Trichloroethane	6.2	U	6.2	U	6.2	U	6.	U	6.3	U
56-23-5	Carbon tetrachloride	6.2	U	6.2	U	6.2	U	6.	U	6.3	U
71-43-2	Benzene	6.2	U	6.2	U	6.2	U	6.	U	6.3	U
107-06-2	1,2-Dichloroethane	6.2	U	6.2	U	6.2	U	6.	U	6.3	U
79-01-6	Trichloroethene	6.2	U	6.2	U	6.2	U	6.	U	6.3	U
78-87-5	1,2-Dichloropropane	6.2	U	6.2	U	6.2	U	6.	U	6.3	U
75-27-4	Bromodichloromethane	6.2	U	6.2	U	6.2	U	6.	U	6.3	U
108-88-3	Toluene	6.2	U	6.2	U	6.2	U	6.	U	6.3	U
79-00-5	1,1,2-Trichloroethane	6.2	U	6.2	U	6.2	U	6.	U	6.3	U
127-18-4	Tetrachloroethene	6.2	U	6.2	U	6.2	U	6.	U	6.3	U
124-48-1	Dibromochloromethane	6.2	U	6.2	U	6.2	U	6.	U	6.3	U
108-90-7	Chlorobenzene	6.2	U	6.2	U	6.2	U	6.	U	6.3	U
100-41-4	Ethylbenzene	6.2	U	6.2	U	6.2	U	6.	U	6.3	U
100-42-5	Styrene	6.2	U	6.2	U	6.2	U	6.	U	6.3	U
75-25-2	Bromoform	6.2	U	6.2	U	6.2	U	6.	U	6.3	U
79-34-5	1,1,2,2-Tetrachloroethane	6.2	U	6.2	U	6.2	U	6.	U	6.3	U
67-64-1	Acetone	62.	U	62.	U	62.	U	60.	U	63.	U
75-15-0	Carbon disulfide	6.2	U	6.2	U	6.2	U	6.	U	6.3	U
78-93-3	2-Butanone (MEK)	31.	U	31.	U	31.	U	30.	U	32.	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	31.	U	31.	U	31.	U	30.	U	32.	U
10061-01-5	cis-1,3-Dichloropropene	6.2	U	6.2	U	6.2	U	6.	U	6.3	U
10061-02-6	trans-1,3-Dichloropropene	6.2	U	6.2	U	6.2	U	6.	U	6.3	U
591-78-6	2-Hexanone	31	U	31.	U	31.	U	30.	U	32.	U
1330-20-7	Xylene (Total)	6.2	U	6.2	U	6.2	U	6.	U	6.3	U
540-59-0	1,2-Dichloroethene (total)	6.2	U	6.2	U	6.2	U	6.	U	6.3	U
1330-20-7	Xylene (Total)	NR		NR		NR		NR		NR	
9999000-44-2	XYLENES	NR		NR		NR		NR		NR	

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 41 ANALYTICAL SOIL RESULTS

TPH											
	SAMPLE ID ------->	041-S-0004-01		041-C-0004-01		041-S-0007-01		041-S-0011-01		041-S-0012-01	
	ORIGINAL ID ----->	041S000401		041C000401		041S000701		041S001101		041S001201	
	LAB SAMPLE ID --->	S8802498*4		S880249A*1		S8802498*3		S8802498*2		S8802498*1	
	ID FROM REPORT -->	041S000401		041C000401		041S000701		041S001101		041S001201	
	SAMPLE DATE ----->	01/14/98		01/14/98		01/14/98		01/14/98		01/14/98	
	DATE EXTRACTED -->	02/04/98		01/29/98		02/04/98		02/04/98		02/04/98	
	DATE ANALYZED --->	02/05/98		01/29/98		02/05/98		02/05/98		02/05/98	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	MG/KG		MG/KG		MG/KG		MG/KG		MG/KG	
CAS #	Parameter	EM1H06	VAL	EM1H04	VAL	EM1H06	VAL	EM1H06	VAL	EM1H06	VAL
9999900-02-4	Petroleum Hydrocarbons, TPH	NR		NR		NR		NR		NR	
9999000-83-9	TOTAL RECOVERABLE PETROLEUM HYDROCARBONS	19.	J	47.	J	61.	J	69.	J	140.	J

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 41 ANALYTICAL SOIL RESULTS

TPH-DRO											
	SAMPLE ID ------->	041-S-0004-01		041-C-0004-01		041-S-0007-01		041-S-0011-01		041-S-0012-01	
	ORIGINAL ID ----->	041S000401		041C000401		041S000701		041S001101		041S001201	
	LAB SAMPLE ID --->	S8802498*4		S880249A*1		S8802498*3		S8802498*2		S8802498*1	
	ID FROM REPORT -->	041S000401		041C000401		041S000701		041S001101		041S001201	
	SAMPLE DATE ----->	01/14/98		01/14/98		01/14/98		01/14/98		01/14/98	
	DATE EXTRACTED -->	01/16/98		01/16/98		01/16/98		01/16/98		01/16/98	
	DATE ANALYZED --->	01/20/98		01/20/98		01/20/98		01/20/98		01/20/98	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	MG/KG		MG/KG		MG/KG		MG/KG		MG/KG	
CAS #	Parameter	EM1H06	VAL	EM1H04	VAL	EM1H06	VAL	EM1H06	VAL	EM1H06	VAL
9999900-02-6	TPH - Diesel Range Organics	1.2	J	2.5	J	7.6		9.5		11.	

*** Validati Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 41 ANALYTICAL SOIL RESULTS

TPH-GRO											
	SAMPLE ID ------->	041-S-0004-01		041-C-0004-01		041-S-0007-01		041-S-0011-01		041-S-0012-01	
	ORIGINAL ID ----->	041S000401		041C000401		041S000701		041S001101		041S001201	
	LAB SAMPLE ID --->	S8802498*4		S880249A*1		S8802498*3		S8802498*2		S8802498*1	
	ID FROM REPORT -->	041S000/ :1		041C000401		041S000701		041S001101		041S001201	
	SAMPLE DATE ----->	01/14/98		01/14/98		01/14/98		01/14/98		01/14/98	
	DATE ANALYZED --->	01/16/98		01/19/98		01/16/98		01/16/98		01/16/98	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	MG/KG		MG/KG		MG/KG		MG/KG		MG/KG	
CAS #	Parameter	EM1H06	VAL	EM1H04	VAL	EM1H06	VAL	EM1H06	VAL	EM1H06	VAL
9999900-02-5	TPH - Gasoline Range Organics	0.22	U	0.22	U	0.22	U	0.21	U	0.23	U

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 43 ANALYTICAL SOIL RESULTS

APX9-METAL													
	SAMPLE ID ------->	043-S-0001-01		043-C-0001-01		043-S-0001-04		043-C-0001-04		043-S-0002-01		043-S-0002-04	
	ORIGINAL ID ----->	043S000101		043C000101		043S000102		043C000102		043S000201		043S000202	
	LAB SAMPLE ID --->	S777001*3		S777001A*2		S777001*6		S777001A*4		S777001*7		S777001*8	
	ID FROM REPORT -->	043S000101		043C000101		043S000102		043C000102		043S000201		043S000202	
	SAMPLE DATE ----->	12/10/97		12/10/97		12/10/97		12/10/97		12/10/97		12/10/97	
	DATE EXTRACTED -->	12/22/97		12/22/97		12/22/97		12/22/97		12/22/97		12/22/97	
	DATE ANALYZED --->	12/23/97		12/23/97		12/23/97		12/23/97		12/23/97		12/23/97	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	MG/KG		MG/KG		MG/KG		MG/KG		MG/KG		MG/KG	
CAS #	Parameter	EM1H01	VAL	EM1H02	VAL	EM1H01	VAL	EM1H02	VAL	EM1H01	VAL	EM1H01	VAL
7439-97-6	Mercury	0.07		0.05	J	0.03		0.03	J	0.03		0.06	
7440-36-0	Antimony	0.41	UR	0.41	UJ	0.42	UR	0.42	UJ	0.37	UR	0.4	UR
7440-38-2	Arsenic	32.9		37.		10.3		12.3		4.8		6.6	
7440-39-3	Barium	143.		169.		155.		139.		144.		199.	
7440-41-7	Beryllium	0.6	J	0.63	J	0.54	J	0.52	J	0.41	J	0.87	
7440-43-9	Cadmium	0.33	J	0.26	J	0.08	U	0.08	U	0.09	J	0.07	U
7440-47-3	Chromium	17.4		20.1		16.1		14.6		9.		18.3	
7440-48-4	Cobalt	4.5	J	4.8		4.7	J	4.2		7.	J	4.4	J
7440-50-8	Copper	14.6		18.		13.4		13.1		9.2		14.7	
7439-92-1	Lead	38.4	J	48.8	J	8.2	J	8.5	J	16.8	J	7.1	J
7440-02-0	Nickel	11.8	J	13.6	J	15.1	J	13.1	J	8.8	J	17.8	J
7782-49-2	Selenium	0.33	U	0.64	U	0.34	U	0.34	U	0.34	U	0.38	U
7440-22-4	Silver	0.38	U	0.38	U	0.39	U	0.39	U	0.34	U	0.37	U
7440-28-0	Thallium	0.6	U	0.6	UJ	0.61	U	0.62	UJ	0.54	U	0.59	U
7440-62-2	Vanadium	21.9		24.5		24.5		24.5		18.9		28.2	
7440-66-6	Zinc	64.2	J	71.4	J	51.1	J	50.7	J	32.	J	50.5	J
7440-31-5	Tin	1.7	U	1.6	U	1.7	U	1.2	U	1.7	U	1.4	U

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 43 ANALYTICAL SOIL RESULTS

APX9-METAL									
		SAMPLE ID ------->	043-S-0003-01		043-S-0003-04				
		ORIGINAL ID ----->	043S000301		043S000302				
		LAB SAMPLE ID --->	S777039*1		S777039*2				
		ID FROM REPORT -->	043S000301		043S000302				
		SAMPLE DATE ----->	12/11/97		12/11/97				
		DATE EXTRACTED -->	12/22/97		12/22/97				
		DATE ANALYZED --->	12/23/97		12/23/97				
		MATRIX ---------->	Soil		Soil				
		UNITS ---------->	MG/KG		MG/KG				
CAS #	Parameter		EM1H01	VAL	EM1H01	VAL			
7439-97-6	Mercury		0.03		0.05				
7440-36-0	Antimony		0.41	UR	0.38	UR			
7440-38-2	Arsenic		15.1		11.3				
7440-39-3	Barium		208.		223.				
7440-41-7	Beryllium		0.74		0.76				
7440-43-9	Cadmium		0.32	J	0.43	J			
7440-47-3	Chromium		12.		15.1				
7440-48-4	Cobalt		17.	J	8.8	J			
7440-50-8	Copper		14.5		14.1				
7439-92-1	Lead		28.8	J	16.9	J			
7440-02-0	Nickel		18.4	J	24.5	J			
7782-49-2	Selenium		0.6	U	0.31	U			
7440-22-4	Silver		0.38	U	0.35	U			
7440-28-0	Thallium		0.59	U	0.55	U			
7440-62-2	Vanadium		33.2		27.4				
7440-66-6	Zinc		37.8	J	44.5	J			
7440-31-5	Tin		1.7	U	1.2	U			

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 43 ANALYTICAL SOIL RESULTS

METAL-CN								
	SAMPLE ID ------->	043-S-0001-01		043-C-0001-01				
	ORIGINAL ID ----->	043S000101		043C000101				
	LAB SAMPLE ID --->	S777001*3		S777001A*2				
	ID FROM REPORT -->	043S000101		043C000101				
	SAMPLE DATE ----->	12/10/97		12/10/97				
	DATE EXTRACTED -->	12/17/97		12/17/97				
	DATE ANALYZED --->	12/17/97		12/17/97				
	MATRIX ---------->	Soil		Soil				
	UNITS ---------->	MG/KG		MG/KG				
CAS #	Parameter	EM1H01	VAL	EM1H02	VAL			
57-12-5	Cyanide (CN)	1.3	U	1.3	U			

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 43 ANALYTICAL SOIL RESULTS

SUB46-MERB								
	SAMPLE ID ------->	043-S-0001-01		043-C-0001-01				
	ORIGINAL ID ----->	043S000101		043C000101				
	LAB SAMPLE ID --->	S777001*3		S777001A*2				
	ID FROM REPORT -->	043S000101		043C000101				
	SAMPLE DATE ----->	12/10/97		12/10/97				
	DATE EXTRACTED -->	12/15/97		12/15/97				
	DATE ANALYZED --->	12/19/97		12/19/97				
	MATRIX ---------->	Soil		Soil				
	UNITS ---------->	UG/KG		UG/KG				
CAS #	Parameter	EM1H01	VAL	EM1H02	VAL			
75-99-0	Dalapon	2600.	U	2600.	U			
93-65-2	MCPP	2600.	U	2600.	U			
1918-00-9	Dicamba	26.	U	26.	U			
94-74-6	MCPA	2600.	U	2600.	U			
120-36-5	Dichlorprop	130.	U	130.	U			
94-75-7	2,4-D	11.	U	11.	U			
93-72-1	2,4,5-TP (Silvex)	11.	U	11.	U			
93-76-5	2,4,5-T	11.	U	11.	U			
88-85-7	Dinoseb	130.	U	130.	U			
94-82-6	2,4-DB	11.	U	11.	U			

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 43 ANALYTICAL SOIL RESULTS

SW846-OP P									
		SAMPLE ID ------->	043-S-0001-01		043-C-0001-01				
		ORIGINAL ID ----->	043S000101		043C000101				
		LAB SAMPLE ID --->	S777001*3		S777001A*2				
		ID FROM REPORT -->	043S000101		043C000101				
		SAMPLE DATE ----->	12/10/97		12/10/97				
		DATE EXTRACTED -->	12/17/97		12/17/97				
		DATE ANALYZED --->	12/19/97		12/21/97				
		MATRIX ---------->	Soil		Soil				
		UNITS ---------->	UG/KG		UG/KG				
CAS #	Parameter		EM1H01	VAL	EM1H02	VAL			
86-50-0	Azinphos methyl		85.	U	85.	U			
35400-43-2	Sulprofos (Bolstar)		42.	U	42.	U			
2921-88-2	Chloropyrifos		42.	U	42.	U			
56-72-4	Coumaphos		420.	U	420.	U			
8065-48-3	Demeton,O		110.	U	110.	U			
126-75-0	Demeton,S		110.	U	110.	U			
333-41-5	Diazinon		42.	U	42.	U			
62-73-7	Dichlorvos		85.	U	85.	U			
298-04-4	Disulfoton		85.	U	85.	U			
13194-48-4	Ethoprop		22.	U	22.	U			
115-90-2	Fensulfothion		420.	U	420.	U			
55-38-9	Fenthion		42.	U	42.	U			
7786-34-7	Mevinphos, Alpha		85.	U	85.	U			
300-76-5	Naled		420.	U	420.	U			
298-00-0	Methyl parathion		22.	U	22.	U			
298-02-2	Phorate		42.	U	42.	U			
299-84-3	Ronnel		42.	U	42.	U			
22248-79-9	Stirophos (Tetrachlorovinphos)		42.	U	42.	U			
327-98-0	Trichloronate		420.	U	420.	U			
150-50-5	Merphos		42.	U	42.	U			
34643-46-4	Tokuthion		42.	U	42.	U			
60-51-5	Dimethoate		85.	U	85.	U			
121-75-5	Malathion		42.	U	42.	U			
2157-98-4	Monocrotophos		420.	U	420.	U			
56-38-2	Parathion		42.	U	42.	U			
3689-24-5	Sulfotep		22.	U	22.	U			
2104-64-5	EPN		42.	U	42.	U			

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 43 ANALYTICAL SOIL RESULTS

SW846-PEST									
		SAMPLE ID ------->	043-S-0001-01		043-C-0001-01				
		ORIGINAL ID ----->	043S000101		043C000101				
		LAB SAMPLE ID --->	S777001*3		S777001A*2				
		ID FROM REPORT -->	043S000101		043C000101				
		SAMPLE DATE ----->	12/10/97		12/10/97				
		DATE EXTRACTED -->	12/15/97		12/15/97				
		DATE ANALYZED --->	12/31/97		12/31/97				
		MATRIX ---------->	Soil		Soil				
		UNITS ---------->	UG/KG		UG/KG				
CAS #	Parameter		EM1H01	VAL	EM1H02	VAL			
319-84-6	alpha-BHC		2.2	U	2.2	U			
319-85-7	beta-BHC		2.2	U	2.2	U			
319-86-8	delta-BHC		2.2	U	2.2	U			
58-89-9	gamma-BHC (Lindane)		2.2	U	2.2	U			
76-44-8	Heptachlor		2.2	U	2.2	U			
309-00-2	Aldrin		2.2	U	2.2	U			
1024-57-3	Heptachlor epoxide		1.7	U	2.2	UJ			
959-98-8	Endosulfan I		1.9	J	1.7	J			
60-57-1	Dieldrin		13.		12.	J			
72-55-9	4,4'-DDE		4.1	J	4.3				
72-20-8	Endrin		4.2	U	0.12	U			
33213-65-9	Endosulfan II		4.2	U	4.2	U			
72-54-8	4,4'-DDD		0.58	U	0.17	U			
1031-07-8	Endosulfan sulfate		0.79	U	0.57	U			
50-29-3	4,4'-DDT		6.1	J	7.8				
72-43-5	Methoxychlor		0.58	U	0.71	U			
7421-93-4	Endrin aldehyde		0.56	J	0.46	J			
8001-35-2	Toxaphene		220.	U	220.	U			
12674-11-2	Aroclor-1016		42.	U	42.	U			
11104-28-2	Aroclor-1221		86.	U	86.	U			
11141-16-5	Aroclor-1232		42.	U	42.	U			
53469-21-9	Aroclor-1242		42.	U	42.	U			
12672-29-6	Aroclor-1248		42.	U	42.	U			
11097-69-1	Aroclor-1254		42.	U	42.	U			
11096-82-5	Aroclor-1260		42.	U	42.	U			
57-74-9	Chlordane		22.	U	22.	U			

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 43 ANALYTICAL SOIL RESULTS

SW846-SVOA													
	SAMPLE ID ------->	043-S-0001-01		043-C-0001-01		043-S-0001-04		043-C-0001-04		043-S-0002-01		043-S-0002-04	
	ORIGINAL ID ----->	043S000101		043C000101		043S000102		043C000102		043S000201		043S000202	
	LAB SAMPLE ID --->	S777001*3		S777001A*2		S777001*6		S777001A*4		S777001*7		S777001*8	
	ID FROM REPORT -->	043S000101		043C000101		043S000102		043C000102		043S000201		043S000202	
	SAMPLE DATE ----->	12/10/97		12/10/97		12/10/97		12/10/97		12/10/97		12/10/97	
	DATE EXTRACTED -->	12/15/97		12/15/97		12/15/97		12/15/97		12/15/97		12/15/97	
	DATE ANALYZED --->	01/03/98		01/06/98		01/03/98		01/03/98		01/03/98		01/03/98	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	EM1H01	VAL	EM1H02	VAL	EM1H01	VAL	EM1H02	VAL	EM1H01	VAL	EM1H01	VAL
108-95-2	Phenol	420.	U	420.	U	430.	U	430.	U	380.	U	410.	U
111-44-4	bis(2-Chloroethyl)ether	420.	U	420.	U	430.	U	430.	U	380.	U	410.	U
95-57-8	2-Chlorophenol	420.	U	420.	U	430.	U	430.	U	380.	U	410.	U
541-73-1	1,3-Dichlorobenzene	420.	U	420.	U	430.	U	430.	U	380.	U	410.	U
106-46-7	1,4-Dichlorobenzene	420.	U	420.	U	430.	U	430.	U	380.	U	410.	U
95-50-1	1,2-Dichlorobenzene	420.	U	420.	U	430.	U	430.	U	380.	U	410.	U
95-48-7	2-Methylphenol (o-Cresol)	420.	U	420.	U	430.	U	430.	U	380.	U	410.	U
108-60-1	2,2'-oxybis(1-Chloropropane)	420.	U	420.	U	430.	U	430.	U	380.	U	410.	U
9999900-32-2	3-Methylphenol/4-Methylphenol	420.	U	420.	U	430.	U	430.	U	380.	U	410.	U
621-64-7	N-Nitroso-di-n-propylamine	420.	U	420.	U	430.	U	430.	U	380.	U	410.	U
67-72-1	Hexachloroethane	420.	U	420.	U	430.	U	430.	U	380.	U	410.	U
98-95-3	Nitrobenzene	420.	U	420.	U	430.	U	430.	U	380.	U	410.	U
78-59-1	Isophorone	420.	U	420.	U	430.	U	430.	U	380.	U	410.	U
88-75-5	2-Nitrophenol	420.	U	420.	U	430.	U	430.	U	380.	U	410.	U
105-67-9	2,4-Dimethylphenol	420.	U	420.	U	430.	U	430.	U	380.	U	410.	U
120-83-2	2,4-Dichlorophenol	420.	U	420.	U	430.	U	430.	U	380.	U	410.	U
120-82-1	1,2,4-Trichlorobenzene	420.	U	420.	U	430.	U	430.	U	380.	U	410.	U
91-20-3	Naphthalene	420.	U	420.	U	430.	U	430.	U	380.	U	410.	U
106-47-8	4-Chloroaniline	850.	U	850.	U	860.	U	870.	U	760.	U	820.	U
87-68-3	Hexachlorobutadiene	420.	U	420.	U	430.	U	430.	U	380.	U	410.	U
111-91-1	bis(2-Chloroethoxy)methane	420.	U	420.	U	430.	U	430.	U	380.	U	410.	U
59-50-7	4-Chloro-3-methylphenol	420.	U	420.	U	430.	U	430.	U	380.	U	410.	U
91-57-6	2-Methylnaphthalene	420.	U	420.	U	430.	U	430.	U	380.	U	410.	U
77-47-4	Hexachlorocyclopentadiene	420.	U	420.	U	430.	U	430.	U	380.	U	410.	U
88-06-2	2,4,6-Trichlorophenol	420.	U	420.	U	430.	U	430.	U	380.	U	410.	U
95-95-4	2,4,5-Trichlorophenol	420.	U	420.	U	430.	U	430.	U	380.	U	410.	U
91-58-7	2-Chloronaphthalene	420.	U	420.	U	430.	U	430.	U	380.	U	410.	U
88-74-4	2-Nitroaniline	2200.	U	2200.	U	2200.	U	2200.	U	2000.	U	2100.	U
131-11-3	Dimethylphthalate	420.	U	420.	U	430.	U	430.	U	380.	U	410.	U
208-96-8	Acenaphthylene	420.	U	420.	U	430.	U	430.	U	380.	U	410.	U
606-20-2	2,6-Dinitrotoluene	420.	U	420.	U	430.	U	430.	U	380.	U	410.	U
99-09-2	3-Nitroaniline	2200.	U	2200.	U	2200.	U	2200.	U	2000.	U	2100.	U
83-32-9	Acenaphthene	420.	U	420.	U	430.	U	430.	U	380.	U	410.	U
51-28-5	2,4-Dinitrophenol	2200.	U	2200.	U	2200.	U	2200.	U	2000.	U	2100.	U
100-02-7	4-Nitrophenol	2200.	U	2200.	U	2200.	U	2200.	U	2000.	U	2100.	U
132-64-9	Dibenzofuran	420.	U	420.	U	430.	U	430.	U	380.	U	410.	U

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 43 ANALYTICAL SOIL RESULTS

SW846-SVOA													
	SAMPLE ID ------->	043-S-0001-01		043-C-0001-01		043-S-0001-04		043-C-0001-04		043-S-0002-01		043-S-0002-04	
	ORIGINAL ID ----->	043S000101		043C000101		043S000102		043C000102		043S000201		043S000202	
	LAB SAMPLE ID --->	S777001*3		S777001A*2		S777001*6		S777001A*4		S777001*7		S777001*8	
	ID FROM REPORT -->	043S000101		043C000101		043S000102		043C000102		043S000201		043S000202	
	SAMPLE DATE ----->	12/10/97		12/10/97		12/10/97		12/10/97		12/10/97		12/10/97	
	DATE EXTRACTED -->	12/15/97		12/15/97		12/15/97		12/15/97		12/15/97		12/15/97	
	DATE ANALYZED --->	01/03/98		01/06/98		01/03/98		01/03/98		01/03/98		01/03/98	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	EM1H01	VAL	EM1H02	VAL	EM1H01	VAL	EM1H02	VAL	EM1H01	VAL	EM1H01	VAL
121-14-2	2,4-Dinitrotoluene	420.	U	420.	U	430.	U	430.	U	380.	U	410.	U
84-66-2	Diethylphthalate	72.	J	92.	J	77.	J	430.	U	77.	J	95.	J
7005-72-3	4-Chlorophenylphenyl ether	420.	U	420.	U	430.	U	430.	U	380.	U	410.	U
86-73-7	Fluorene	30.	J	420.	U	430.	U	430.	U	380.	U	410.	U
100-01-6	4-Nitroaniline	2200.	U	2200.	U	2200.	U	2200.	U	2000.	U	2100.	U
534-52-1	2-Methyl-4,6-Dinitrophenol	2200.	U	2200.	U	2200.	U	2200.	U	2000.	U	2100.	U
86-30-6	N-Nitrosodiphenylamine	420.	U	420.	U	430.	U	430.	U	380.	U	410.	U
101-55-3	4-Bromophenyl-phenylether	420.	U	420.	U	430.	U	430.	U	380.	U	410.	U
118-74-1	Hexachlorobenzene	420.	U	420.	U	430.	U	430.	U	380.	U	410.	U
87-86-5	Pentachlorophenol	2200.	U	2200.	U	2200.	U	2200.	U	2000.	U	2100.	U
85-01-8	Phenanthrene	180.	J	40.	J	430.	U	430.	U	380.	U	410.	U
120-12-7	Anthracene	31.	J	420.	U	430.	U	430.	U	380.	U	410.	U
86-74-8	Carbazole	420.	U	420.	U	430.	U	430.	U	380.	U	410.	U
84-74-2	Di-n-butylphthalate	420.	U	420.	U	430.	U	430.	U	380.	U	410.	U
206-44-0	Fluoranthene	170.	J	100.	J	430.	U	430.	U	26.	J	410.	U
129-00-0	Pyrene	180.	J	160.	J	430.	U	430.	U	27.	J	410.	U
85-68-7	Butylbenzylphthalate	84.	J	420.	U	430.	U	430.	U	380.	U	410.	U
91-94-1	3,3'-Dichlorobenzidine	850.	U	850.	U	860.	U	870.	U	760.	U	820.	U
56-55-3	Benzo(a)anthracene	80.	J	65.	J	430.	U	430.	U	380.	U	410.	U
218-01-9	Chrysene	99.	J	98.	J	430.	U	430.	U	380.	U	410.	U
117-81-7	bis(2-Ethylhexyl)phthalate (BEHP)	240.	J	150.	J	430.	U	430.	U	380.	U	410.	U
117-84-0	Di-n-octylphthalate	420.	U	420.	U	430.	U	430.	U	380.	U	410.	U
205-99-2	Benzo(b)fluoranthene	96.	J	420.	U	430.	U	430.	U	380.	U	410.	U
207-08-9	Benzo(k)fluoranthene	93.	J	220.	J	430.	U	430.	U	380.	U	410.	U
50-32-8	Benzo(a)pyrene	75.	J	420.	U	430.	U	430.	U	380.	U	410.	U
193-39-5	Indeno(1,2,3-cd)pyrene	420	U	420.	U	430.	U	430.	U	380.	U	410.	U
53-70-3	Dibenz(a,h)anthracene	420.	U	420.	U	430.	U	430.	U	380.	U	410.	U
191-24-2	Benzo(g,h,i)perylene	420.	U	420.	U	430.	U	430.	U	380.	U	410.	U
122-39-4	Diphenylamine	NR		NR		NR		NR		NR		NR	

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 43 ANALYTICAL SOIL RESULTS

SW846-SVOA									
	SAMPLE ID ------->	043-S-0003-01		043-S-0003-04					
	ORIGINAL ID ----->	043S000301		043S000302					
	LAB SAMPLE ID --->	S777039*1		S777039*2					
	ID FROM REPORT -->	043S000301		043S000302					
	SAMPLE DATE ----->	12/11/97		12/11/97					
	DATE EXTRACTED -->	12/15/97		12/15/97					
	DATE ANALYZED --->	01/03/98		01/03/98					
	MATRIX ---------->	Soil		Soil					
	UNITS ---------->	UG/KG		UG/KG					
CAS #	Parameter	EM1H01	VAL	EM1H01	VAL				
108-95-2	Phenol	420.	U	390.	U				
111-44-4	bis(2-Chloroethyl)ether	420.	U	390.	U				
95-57-8	2-Chlorophenol	420.	U	390.	U				
541-73-1	1,3-Dichlorobenzene	420.	U	390.	U				
106-46-7	1,4-Dichlorobenzene	420.	U	390.	U				
95-50-1	1,2-Dichlorobenzene	420.	U	390.	U				
95-48-7	2-Methylphenol (o-Cresol)	420.	U	390.	U				
108-60-1	2,2'-oxybis(1-Chloropropane)	420.	U	390.	U				
9999900-32-2	3-Methylphenol/4-Methylphenol	420.	U	390.	U				
621-64-7	N-Nitroso-di-n-propylamine	420.	U	390.	U				
67-72-1	Hexachloroethane	420.	U	390.	U				
98-95-3	Nitrobenzene	420.	U	390.	U				
78-59-1	Isophorone	420.	U	390.	U				
88-75-5	2-Nitrophenol	420.	U	390.	U				
105-67-9	2,4-Dimethylphenol	420.	U	390.	U				
120-83-2	2,4-Dichlorophenol	420.	U	390.	U				
120-82-1	1,2,4-Trichlorobenzene	420.	U	390.	U				
91-20-3	Naphthalene	20.	J	390.	U				
106-47-8	4-Chloroaniline	840.	U	780.	U				
87-68-3	Hexachlorobutadiene	420.	U	390.	U				
111-91-1	bis(2-Chloroethoxy)methane	420.	U	390.	U				
59-50-7	4-Chloro-3-methylphenol	420.	U	390.	U				
91-57-6	2-Methylnaphthalene	51.	J	390.	U				
77-47-4	Hexachlorocyclopentadiene	420.	U	390.	U				
88-06-2	2,4,6-Trichlorophenol	420.	U	390.	U				
95-95-4	2,4,5-Trichlorophenol	420.	U	390.	U				
91-58-7	2-Chloronaphthalene	420.	U	390.	U				
88-74-4	2-Nitroaniline	2200.	U	2000.	U				
131-11-3	Dimethylphthalate	420.	U	390.	U				
208-96-8	Acenaphthylene	420.	U	390.	U				
606-20-2	2,6-Dinitrotoluene	420.	U	390.	U				
99-09-2	3-Nitroaniline	2200.	U	2000.	U				
83-32-9	Acenaphthene	420.	U	390.	U				
51-28-5	2,4-Dinitrophenol	2200.	U	2000.	U				
100-02-7	4-Nitrophenol	2200.	U	2000.	U				
132-64-9	Dibenzofuran	420.	U	390.	U				

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 43 ANALYTICAL SOIL RESULTS

SW846-SVOA								
	SAMPLE ID ------->	043-S-0003-01		043-S-0003-04				
	ORIGINAL ID ----->	043S000301		043S000302				
	LAB SAMPLE ID --->	S777039*1		S777039*2				
	ID FROM REPORT -->	043S000[illegible]1		043S000302				
	SAMPLE DATE ----->	12/11/97		12/11/97				
	DATE EXTRACTED -->	12/15/97		12/15/97				
	DATE ANALYZED --->	01/03/98		01/03/98				
	MATRIX ---------->	Soil		Soil				
	UNITS ---------->	UG/KG		UG/KG				
CAS #	Parameter	EM1H01	VAL	EM1H01	VAL			
121-14-2	2,4-Dinitrotoluene	420.	U	390.	U			
84-66-2	Diethylphthalate	69.	J	64.	J			
7005-72-3	4-Chlorophenylphenyl ether	420.	U	390.	U			
86-73-7	Fluorene	420.	U	390.	U			
100-01-6	4-Nitroaniline	2200.	U	2000.	U			
534-52-1	2-Methyl-4,6-Dinitrophenol	2200.	U	2000.	U			
86-30-6	N-Nitrosodiphenylamine	420.	U	390.	U			
101-55-3	4-Bromophenyl-phenylether	420.	U	390.	U			
118-74-1	Hexachlorobenzene	420.	U	390.	U			
87-86-5	Pentachlorophenol	2200.	U	2000.	U			
85-01-8	Phenanthrene	100.	J	390.	U			
120-12-7	Anthracene	17.	J	390.	U			
86-74-8	Carbazole	420.	U	390.	U			
84-74-2	Di-n-butylphthalate	420.	U	390.	U			
206-44-0	Fluoranthene	100.	J	390.	U			
129-00-0	Pyrene	120.	J	390.	U			
85-68-7	Butylbenzylphthalate	420.	U	390.	U			
91-94-1	3,3'-Dichlorobenzidine	840.	U	780.	U			
56-55-3	Benzo(a)anthracene	65.	J	390.	U			
218-01-9	Chrysene	90.	J	390.	U			
117-81-7	bis(2-Ethylhexyl)phthalate (BEHP)	420.	U	390.	U			
117-84-0	Di-n-octylphthalate	420.	U	390.	U			
205-99-2	Benzo(b)fluoranthene	420.	U	390.	U			
207-08-9	Benzo(k)fluoranthene	420.	U	390.	U			
50-32-8	Benzo(a)pyrene	91.	J	390.	U			
193-39-5	Indeno(1,2,3-cd)pyrene	420.	U	390.	U			
53-70-3	Dibenz(a,h)anthracene	420.	U	390.	U			
191-24-2	Benzo(g,h,i)perylene	420.	U	390.	U			
122-39-4	Diphenylamine	NR		NR				

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 43 ANALYTICAL SOIL RESULTS

SW846-VOA													
	SAMPLE ID ------->	043-S-0001-01		043-C-0001-01		043-S-0001-04		043-C-0001-04		043-S-0002-01		043-S-0002-04	
	ORIGINAL ID ----->	043S000101		043C000101		043S000102		043C000102		043S000201		043S000202	
	LAB SAMPLE ID --->	S777001*3		S777001A*2		S777001*6		S777001A*4		S777001*7		S777001*8	
	ID FROM REPORT -->	043S000101		043C000101		043S000102		043C000102		043S000201		043S000202	
	SAMPLE DATE ----->	12/10/97		12/10/97		12/10/97		12/10/97		12/10/97		12/10/97	
	DATE ANALYZED --->	12/17/97		12/17/97		12/17/97		12/17/97		12/17/97		12/17/97	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	EM1H01	VAL	EM1H02	VAL	EM1H01	VAL	EM1H02	VAL	EM1H01	VAL	EM1H01	VAL
74-87-3	Chloromethane	13.	U	13.	U	13.	U	13.	U	11.	U	12.	U
75-01-4	Vinyl chloride	13.	U	13.	U	13.	U	13.	U	11.	U	12.	U
74-83-9	Bromomethane	13.	U	13.	U	13.	U	13.	U	11.	U	12.	U
75-00-3	Chloroethane	13.	U	13.	U	13.	U	13.	U	11.	U	12.	U
75-35-4	1,1-Dichloroethene	6.4	U	6.4	U	6.5	U	6.6	U	5.7	U	6.2	U
75-09-2	Methylene chloride	6.4	U	6.4	U	6.5	U	6.6	U	5.7	U	6.2	U
75-34-3	1,1-Dichloroethane	6.4	U	6.4	U	6.5	U	6.6	U	5.7	U	6.2	U
67-66-3	Chloroform	6.4	U	6.4	U	6.5	U	6.6	U	5.7	U	6.2	U
71-55-6	1,1,1-Trichloroethane	6.4	U	6.4	U	6.5	U	6.6	U	5.7	U	6.2	U
56-23-5	Carbon tetrachloride	6.4	U	6.4	U	6.5	U	6.6	U	5.7	U	6.2	U
71-43-2	Benzene	6.4	U	6.4	U	6.5	U	6.6	U	4.	J	6.2	U
107-06-2	1,2-Dichloroethane	6.4	U	6.4	U	6.5	U	6.6	U	5.7	U	6.2	U
79-01-6	Trichloroethene	6.4	U	6.4	U	6.5	U	6.6	U	5.7	U	6.2	U
78-87-5	1,2-Dichloropropane	6.4	U	6.4	U	6.5	U	6.6	U	5.7	U	6.2	U
75-27-4	Bromodichloromethane	6.4	U	6.4	U	6.5	U	6.6	U	5.7	U	6.2	U
108-88-3	Toluene	6.4	U	6.4	U	6.5	U	6.6	U	5.7	U	6.2	U
79-00-5	1,1,2-Trichloroethane	6.4	U	6.4	U	6.5	U	6.6	U	5.7	U	6.2	U
127-18-4	Tetrachloroethene	6.4	U	6.4	UJ	6.5	U	6.6	U	5.7	U	6.2	U
124-48-1	Dibromochloromethane	6.4	U	6.4	UJ	6.5	U	6.6	U	5.7	U	6.2	U
108-90-7	Chlorobenzene	6.4	U	6.4	UJ	6.5	U	6.6	U	5.7	U	6.2	U
100-41-4	Ethylbenzene	6.4	U	6.4	UJ	6.5	U	6.6	U	2.3	J	6.2	U
100-42-5	Styrene	6.4	U	6.4	UJ	6.5	U	6.6	U	5.7	U	6.2	U
75-25-2	Bromoform	6.4	U	6.4	UJ	6.5	U	6.6	U	5.7	U	6.2	U
79-34-5	1,1,2,2-Tetrachloroethane	6.4	U	6.4	UJ	6.5	U	6.6	U	5.7	U	6.2	U
67-64-1	Acetone	22.	J	64.	U	65.	U	66.	U	57.	U	62.	U
75-15-0	Carbon disulfide	6.4	U	6.4	U	6.5	U	6.6	U	5.7	U	6.2	U
78-93-3	2-Butanone (MEK)	32.	U	32.	U	32.	U	33.	U	29.	U	31.	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	32.	U	32.	U	32.	U	33.	U	29.	U	31.	U
10061-01-5	cis-1,3-Dichloropropene	6.4	U	6.4	U	6.5	U	6.6	U	5.7	U	6.2	U
10061-02-6	trans-1,3-Dichloropropene	6.4	U	6.4	U	6.5	U	6.6	U	5.7	U	6.2	U
591-78-6	2-Hexanone	32.	U	32.	UJ	32.	U	33.	U	29.	U	31.	U
1330-20-7	Xylene (Total)	2.1	J	6.4	UJ	6.5	U	6.6	U	5.7	U	6.2	U
540-59-0	1,2-Dichloroethene (total)	6.4	U	6.4	U	6.5	U	6.6	U	5.7	U	6.2	U
1330-20-7	Xylene (Total)	NR		NR		NR		NR		NR		NR	
9999000-44-2	XYLENES	NR		NR		NR		NR		NR		NR	

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 43 ANALYTICAL SOIL RESULTS

SW846-VOA									
	SAMPLE ID ------->	043-S-0003-01		043-S-0003-04					
	ORIGINAL ID ----->	043S000301		043S000302					
	LAB SAMPLE ID --->	S777039*1		S777039*2					
	ID FROM REPORT -->	043S000301		043S000302					
	SAMPLE DATE ----->	12/11/97		12/11/97					
	DATE ANALYZED --->	12/16/97		12/16/97					
	MATRIX ---------->	Soil		Soil					
	UNITS ---------->	UG/KG		UG/KG					
CAS #	Parameter	EM1H01	VAL	EM1H01	VAL				
74-87-3	Chloromethane	13.	U	12.	U				
75-01-4	Vinyl chloride	13.	U	12.	U				
74-83-9	Bromomethane	13.	U	12.	U				
75-00-3	Chloroethane	13.	U	12.	U				
75-35-4	1,1-Dichloroethene	6.3	U	5.9	U				
75-09-2	Methylene chloride	6.3	U	5.9	U				
75-34-3	1,1-Dichloroethane	6.3	U	5.9	U				
67-66-3	Chloroform	6.3	U	5.9	U				
71-55-6	1,1,1-Trichloroethane	6.3	U	5.9	U				
56-23-5	Carbon tetrachloride	6.3	U	5.9	U				
71-43-2	Benzene	3.1	J	5.9	U				
107-06-2	1,2-Dichloroethane	6.3	U	5.9	U				
79-01-6	Trichloroethene	5.	J	5.9	U				
78-87-5	1,2-Dichloropropane	6.3	U	5.9	U				
75-27-4	Bromodichloromethane	6.3	U	5.9	U				
108-88-3	Toluene	6.3	U	5.9	U				
79-00-5	1,1,2-Trichloroethane	6.3	U	5.9	U				
127-18-4	Tetrachloroethene	6.3	U	5.9	U				
124-48-1	Dibromochloromethane	6.3	U	5.9	U				
108-90-7	Chlorobenzene	6.3	U	5.9	U				
100-41-4	Ethylbenzene	6.3	U	5.9	U				
100-42-5	Styrene	6.3	U	5.9	U				
75-25-2	Bromoform	6.3	U	5.9	U				
79-34-5	1,1,2,2-Tetrachloroethane	6.3	U	5.9	U				
67-64-1	Acetone	63.	U	71.					
75-15-0	Carbon disulfide	6.3	U	5.9	U				
78-93-3	2-Butanone (MEK)	32.	U	9.1	J				
108-10-1	4-Methyl-2-Pentanone (MIBK)	32.	U	29.	U				
10061-01-5	cis-1,3-Dichloropropene	6.3	U	5.9	U				
10061-02-6	trans-1,3-Dichloropropene	6.3	U	5.9	U				
591-78-6	2-Hexanone	32.	U	29.	U				
1330-20-7	Xylene (Total)	2.9	J	5.9	U				
540-59-0	1,2-Dichloroethene (total)	6.3	U	5.9	U				
1330-20-7	Xylene (Total)	NR		NR					
9999000-44-2	XYLENES	NR		NR					

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 43 ANALYTICAL SOIL RESULTS

TPH													
	SAMPLE ID ------->	043-S-0001-01		043-C-0001-01		043-S-0001-04		043-C-0001-04		043-S-0002-01		043-S-0002-04	
	ORIGINAL ID ----->	043S000101		043C000101		043S000102		043C000102		043S000201		043S000202	
	LAB SAMPLE ID --->	S777001*3		S777001A*2		S777001*6		S777001A*4		S777001*7		S777001*8	
	ID FROM REPORT -->	043S000101		043C000101		043S000102		043C000102		043S000201		043S000202	
	SAMPLE DATE ----->	12/10/97		12/10/97		12/10/97		12/10/97		12/10/97		12/10/97	
	DATE EXTRACTED -->	12/31/97		12/30/97		12/31/97		12/30/97		12/31/97		12/31/97	
	DATE ANALYZED --->	01/02/98		12/31/97		01/02/98		12/31/97		01/02/98		01/02/98	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	MG/KG		MG/KG		MG/KG		MG/KG		MG/KG		MG/KG	
CAS #	Parameter	EM1H01	VAL	EM1H02	VAL	EM1H01	VAL	EM1H02	VAL	EM1H01	VAL	EM1H01	VAL
9999900-02-4	Petroleum Hydrocarbons, TPH	57.		NR		13.	U	NR		11.	U	110.	
9999000-83-9	TOTAL RECOVERABLE PETROLEUM HYDROCARBONS	NR		80.		NR		30.	J	NR		NR	

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 43 ANALYTICAL SOIL RESULTS

TPH							
	SAMPLE ID ------->	043-S-0003-01		043-S-0003-04			
	ORIGINAL ID ----->	043S000301		043S000302			
	LAB SAMPLE ID --->	S777039*1		S777039*2			
	ID FROM REPORT -->	043S000301		043S000302			
	SAMPLE DATE ----->	12/11/97		12/11/97			
	DATE EXTRACTED -->	12/31/97		12/31/97			
	DATE ANALYZED --->	01/02/98		01/02/98			
	MATRIX ---------->	Soil		Soil			
	UNITS ---------->	MG/KG		MG/KG			
CAS #	Parameter	EM1H01	VAL	EM1H01	VAL		
9999900-02-4	Petroleum Hydrocarbons, TPH	51.		17.			
9999000-83-9	TOTAL RECOVERABLE PETROLEUM HYDROCARBONS	NR		NR			

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 43 ANALYTICAL SOIL RESULTS

TPH-DRO													
	SAMPLE ID ------->	043-S-0001-01		043-C-0001-01		043-S-0001-04		043-C-0001-04		043-S-0002-01		043-S-0002-04	
	ORIGINAL ID ----->	043S000101		043C000101		043S000102		043C000102		043S000201		043S000202	
	LAB SAMPLE ID --->	S777001*3		S777001A*2		S777001*6		S777001A*4		S777001*7		S777001*8	
	ID FROM REPORT -->	043S000101		043C000101		043S000102		043C000102		043S000201		043S000202	
	SAMPLE DATE ----->	12/10/97		12/10/97		12/10/97		12/10/97		12/10/97		12/10/97	
	DATE EXTRACTED -->	12/17/97		12/17/97		12/17/97		12/17/97		12/17/97		12/17/97	
	DATE ANALYZED --->	12/20/97		12/20/97		12/19/97		12/19/97		12/20/97		12/19/97	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	MG/KG		MG/KG		MG/KG		MG/KG		MG/KG		MG/KG	
CAS #	Parameter	EM1H01	VAL	EM1H02	VAL	EM1H01	VAL	EM1H02	VAL	EM1H01	VAL	EM1H01	VAL
9999900-02-6	TPH - Diesel Range Organics	22.		27.		5.2	U	5.3	U	408.		5.	U

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 43 ANALYTICAL SOIL RESULTS

TPH-DRO								
	SAMPLE ID ------->	043-S-0003-01		043-S-0003-04				
	ORIGINAL ID ----->	043S000301		043S000302				
	LAB SAMPLE ID --->	S777039*1		S777039*2				
	ID FROM REPORT -->	043S000301		043S000302				
	SAMPLE DATE ----->	12/11/97		12/11/97				
	DATE EXTRACTED -->	12/17/97		12/17/97				
	DATE ANALYZED --->	12/19/97		12/19/97				
	MATRIX ---------->	Soil		Soil				
	UNITS ---------->	MG/KG		MG/KG				
CAS #	Parameter	EM1H01	VAL	EM1H01	VAL			
9999900-02-6	TPH - Diesel Range Organics	14.		13.				

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 43 ANALYTICAL SOIL RESULTS

TPH-GRO													
	SAMPLE ID ------->	043-S-0001-01		043-C-0001-01		043-S-0001-04		043-C-0001-04		043-S-0002-01		043-S-0002-04	
	ORIGINAL ID ----->	043S000101		043C000101		043S000102		043C000102		043S000201		043S000202	
	LAB SAMPLE ID --->	S777001*3		S777001A*2		S777001*6		S777001A*4		S777001*7		S777001*8	
	ID FROM REPORT -->	043S000101		043C000101		043S000102		043C000102		043S000201		043S000202	
	SAMPLE DATE ----->	12/10/97		12/10/97		12/10/97		12/10/97		12/10/97		12/10/97	
	DATE ANALYZED --->	12/12/97		12/15/97		12/12/97		12/15/97		12/12/97		12/12/97	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	MG/KG		MG/KG		MG/KG		MG/KG		MG/KG		MG/KG	
CAS #	Parameter	EM1H01	VAL	EM1H02	VAL	EM1H01	VAL	EM1H02	VAL	EM1H01	VAL	EM1H01	VAL
9999900-02-5	TPH - Gasoline Range Organics	0.23	U	0.23	U	0.23	U	0.24	U	0.21	U	0.22	U

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 43 ANALYTICAL SOIL RESULTS

TPH-GRO									
		SAMPLE ID ------->	043-S-0003-01		043-S-0003-04				
		ORIGINAL ID ----->	043S000301		043S000302				
		LAB SAMPLE ID --->	S777039*1		S777039*2				
		ID FROM REPORT -->	043S000301		043S000302				
		SAMPLE DATE ----->	12/11/97		12/11/97				
		DATE ANALYZED --->	12/15/97		12/15/97				
		MATRIX ---------->	Soil		Soil				
		UNITS ---------->	MG/KG		MG/KG				
CAS #	Parameter		EM1H01	VAL	EM1H01	VAL			
9999900-02-5	TPH - Gasoline Range Organics		0.23	U	0.21	U			

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 47 ANALYTICAL SOIL RESULTS

APX9-METAL													
	SAMPLE ID ------->	047-S-0002-01		047-S-0002-04		047-S-0003-01		047-S-0004-01		047-S-0004-04		047-S-0005-01	
	ORIGINAL ID ----->	047S000201		047S000202		047S000301		047S000401		047S000402		047S000501	
	LAB SAMPLE ID --->	S777001*2		S777001*5		S776981*1		S776981*2		S776981*3		S776981*4	
	ID FROM REPORT -->	047S000201		047S000202		047S000301		047S000401		047S000402		047S000501	
	SAMPLE DATE ----->	12/10/97		12/10/97		12/09/97		12/09/97		12/09/97		12/09/97	
	DATE EXTRACTED -->	12/22/97		12/22/97		12/22/97		12/22/97		12/22/97		12/22/97	
	DATE ANALYZED --->	12/23/97		12/23/97		12/23/97		12/23/97		12/23/97		12/23/97	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	MG/KG		MG/KG		MG/KG		MG/KG		MG/KG		MG/KG	
CAS #	Parameter	EM1H01	VAL	EM1H01	VAL	EM1H01	VAL	EM1H01	VAL	EM1H01	VAL	EM1H01	VAL
7439-97-6	Mercury	0.06		0.03		0.07		0.06		0.04		0.04	
7440-36-0	Antimony	0.51	UR	0.43	UR	0.4	UR	0.47	UR	0.4	UR	0.59	UR
7440-38-2	Arsenic	5.3		4.4		10.7		7.7		8.1		7.	
7440-39-3	Barium	93.3		144.		135.		109.		125.		82.6	
7440-41-7	Beryllium	0.38	J	0.43	J	0.53	J	0.45	J	0.45	J	0.32	J
7440-43-9	Cadmium	0.17	J	0.11	J	0.47	J	0.38	J	0.07	U	0.23	J
7440-47-3	Chromium	9.5		10.6		13.9		12.2		10.8		9.	
7440-48-4	Cobalt	5.3	J	6.7	J	7.7	J	5.8	J	7.7	J	4.9	J
7440-50-8	Copper	13.2		12.2		14.6		21.3		13.7		11.6	
7439-92-1	Lead	45.8	J	14.5	J	24.7	J	33.2	J	19.9	J	35.7	J
7440-02-0	Nickel	10.2	J	13.2	J	15.9	J	12.6	J	14.5	J	9.4	J
7782-49-2	Selenium	0.3	U	0.45	U	0.32	U	0.58	U	0.32	U	0.3	U
7440-22-4	Silver	0.64	J	0.36	U	0.37	U	0.37	U	0.37	U	0.34	U
7440-28-0	Thallium	0.54	U	0.56	U	0.59	U	0.59	U	0.58	U	0.53	U
7440-62-2	Vanadium	16.2		18.4		26.9		19.7		20.9		15.2	
7440-66-6	Zinc	62.3	J	46.9	J	97.3	J	106.	J	60.3	J	53.4	J
7440-31-5	Tin	1.8	U	1.1	U	2.2	U	2.	U	1.5	U	1.7	U

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 47 ANALYTICAL SOIL RESULTS

APX9-METAL									
	SAMPLE ID ------->	047-S-0006-01		047-C-0006-01		047-S-0006-04		047-C-0006-04	
	ORIGINAL ID ----->	047S000601		047C000601		047S000602		047C000602	
	LAB SAMPLE ID --->	S777001*'		S777001A*1		S777001*4		S777001A*3	
	ID FROM REPORT -->	047S000601		047C000601		047S000602		047C000602	
	SAMPLE DATE ----->	12/10/97		12/10/97		12/10/97		12/10/97	
	DATE EXTRACTED -->	12/22/97		12/22/97		12/22/97		12/22/97	
	DATE ANALYZED --->	12/23/97		12/23/97		12/23/97		12/23/97	
	MATRIX ---------->	Soil		Soil		Soil		Soil	
	UNITS ---------->	MG/KG		MG/KG		MG/KG		MG/KG	
CAS #	Parameter	EM1H01	VAL	EM1H02	VAL	EM1H01	VAL	EM1H02	VAL
7439-97-6	Mercury	0.12		0.09	J	0.06		0.05	J
7440-36-0	Antimony	0.93	UR	0.89	UJ	0.4	UR	0.41	UJ
7440-38-2	Arsenic	8.8		9.		3.2		11.1	
7440-39-3	Barium	118.		125.		38.7		153.	J
7440-41-7	Beryllium	0.45	J	0.46	J	0.15	J	0.53	J
7440-43-9	Cadmium	0.32	J	0.42	J	0.16	J	0.18	J
7440-47-3	Chromium	11.6		15.3		5.5		15.2	J
7440-48-4	Cobalt	6.2	J	6.9		2.5	J	8.4	J
7440-50-8	Copper	16.		18.5		4.5		15.8	J
7439-92-1	Lead	31.7	J	37.8	J	8.2	J	32.9	J
7440-02-0	Nickel	13.4	J	17.	J	5.3	J	17.1	J
7782-49-2	Selenium	0.4	U	0.32	U	0.32	U	0.33	U
7440-22-4	Silver	0.36	U	0.37	U	0.37	U	0.38	U
7440-28-0	Thallium	0.57	U	0.58	UJ	0.59	U	0.59	UJ
7440-62-2	Vanadium	19.3		21.2		8.5		25.3	J
7440-66-6	Zinc	78.8	J	93.7	J	22.4	J	66.8	J
7440-31-5	Tin	1.9	U	1.9	U	1.7	U	1.	U

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 47 ANALYTICAL SOIL RESULTS

METAL-CN								
	SAMPLE ID ------->	047-S-0002-01		047-S-0006-01		047-C-0006-01		
	ORIGINAL ID ----->	047S000201		047S000601		047C000601		
	LAB SAMPLE ID --->	S777001*2		S777001*1		S777001A*1		
	ID FROM REPORT -->	047S000201		047S000601		047C000601		
	SAMPLE DATE ----->	12/10/97		12/10/97		12/10/97		
	DATE EXTRACTED -->	12/17/97		12/17/97		12/17/97		
	DATE ANALYZED --->	12/17/97		12/17/97		12/17/97		
	MATRIX ---------->	Soil		Soil		Soil		
	UNITS ---------->	MG/KG		MG/KG		MG/KG		
CAS #	Parameter	EM1H01	VAL	EM1H01	VAL	EM1H02	VAL	
57-12-5	Cyanide (CN)	1.2	U	1.2	U	1.2	U	

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 47 ANALYTICAL SOIL RESULTS

SW846-8081B													
	SAMPLE ID ------->	047-S-0002-01		047-S-0006-01		047-C-0006-01							
	ORIGINAL ID ----->	047S000201		047S000601		047C000601							
	LAB SAMPLE ID --->	S777001*2		S777001*1		S777001A*1							
	ID FROM REPORT -->	047S000201		047S000601		047C000601							
	SAMPLE DATE ----->	12/10/97		12/10/97		12/10/97							
	DATE EXTRACTED -->	12/15/97		12/15/97		12/15/97							
	DATE ANALYZED --->	12/19/97		12/19/97		12/19/97							
	MATRIX ---------->	Soil		Soil		Soil							
	UNITS ---------->	UG/KG		UG/KG		UG/KG							
CAS #	Parameter	EM1H01	VAL	EM1H01	VAL	EM1H02	VAL						
75-99-0	Dalapon	2300.	U	2400.	U	2500.	U						
93-65-2	MCPP	2300.	U	2400.	U	2500.	U						
1918-00-9	Dicamba	23.	U	24.	U	25.	U						
94-74-6	MCPA	2300.	U	2400.	U	2500.	U						
120-36-5	Dichlorprop	120.	U	120.	U	120.	U						
94-75-7	2,4-D	9.6	U	10.	U	10.	U						
93-72-1	2,4,5-TP (Silvex)	9.6	U	10.	U	10.	U						
93-76-5	2,4,5-T	9.6	U	10.	U	10.	U						
88-85-7	Dinoseb	120.	U	120.	U	120.	U						
94-82-6	2,4-DB	9.6	U	10.	U	10.	U						

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 47 ANALYTICAL SOIL RESULTS

SW846-OP P											
	SAMPLE ID ------->	047-S-0002-01		047-S-0006-01		047-C-0006-01					
	ORIGINAL ID ----->	047S000201		047S000601		047C000601					
	LAB SAMPLE ID --->	S777001*2		S777001*1		S777001A*1					
	ID FROM REPORT -->	047S000201		047S000601		047C000601					
	SAMPLE DATE ----->	12/10/97		12/10/97		12/10/97					
	DATE EXTRACTED -->	12/17/97		12/17/97		12/17/97					
	DATE ANALYZED --->	12/19/97		12/19/97		12/21/97					
	MATRIX ---------->	Soil		Soil		Soil					
	UNITS ---------->	UG/KG		UG/KG		UG/KG					
CAS #	Parameter	EM1H01	VAL	EM1H01	VAL	EM1H02	VAL				
86-50-0	Azinphos methyl	77.	U	80.	U	81.	U				
35400-43-2	Sulprofos (Bolstar)	38.	U	40.	U	41.	U				
2921-88-2	Chloropyrifos	38.	U	40.	U	41.	U				
56-72-4	Coumaphos	380.	U	400.	U	410.	U				
8065-48-3	Demeton,O	96.	U	100.	U	100.	U				
126-75-0	Demeton,S	96.	U	100.	U	100.	U				
333-41-5	Diazinon	38.	U	40.	U	41.	U				
62-73-7	Dichlorvos	77.	U	80.	U	81.	U				
298-04-4	Disulfoton	77.	U	80.	U	81.	U				
13194-48-4	Ethoprop	20.	U	21.	U	21.	U				
115-90-2	Fensulfothion	380.	U	400.	U	410.	U				
55-38-9	Fenthion	38.	U	40.	U	41.	U				
7786-34-7	Mevinphos, Alpha	77.	U	80.	U	81.	U				
300-76-5	Naled	380.	U	400.	U	410.	U				
298-00-0	Methyl parathion	20.	U	21.	U	21.	U				
298-02-2	Phorate	38.	U	40.	U	41.	U				
299-84-3	Ronnel	38.	U	40.	U	41.	U				
22248-79-9	Stirophos (Tetrachlorovinphos)	38.	U	40.	U	41.	U				
327-98-0	Trichloronate	380.	U	400.	U	410.	U				
150-50-5	Merphos	38.	U	40.	U	41.	U				
34643-46-4	Tokuthion	38.	U	40.	U	41.	U				
60-51-5	Dimethoate	77.	U	80.	U	81.	U				
121-75-5	Malathion	38.	U	40.	U	41.	U				
2157-98-4	Monocrotophos	380.	U	400.	U	410.	U				
56-38-2	Parathion	38.	U	40.	U	41.	U				
3689-24-5	Sulfotep	20.	U	21.	U	21.	U				
2104-64-5	EPN	38.	U	40.	U	41.	U				

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 47 ANALYTICAL SOIL RESULTS

SW846-PEST											
	SAMPLE ID ------->	047-S-0002-01		047-S-0006-01		047-C-0006-01					
	ORIGINAL ID ----->	047S000201		047S000601		047C000601					
	LAB SAMPLE ID --->	S777001*2		S777001*1		S777001A*1					
	ID FROM REPORT -->	047S000201		047S000601		047C000601					
	SAMPLE DATE ----->	12/10/97		12/10/97		12/10/97					
	DATE EXTRACTED -->	12/15/97		12/15/97		12/15/97					
	DATE ANALYZED --->	12/31/97		12/31/97		12/31/97					
	MATRIX ---------->	Soil		Soil		Soil					
	UNITS ---------->	UG/KG		UG/KG		UG/KG					
CAS #	Parameter	EM1H01	VAL	EM1H01	VAL	EM1H02	VAL				
319-84-6	alpha-BHC	200.	U	4.1	U	10.	U				
319-85-7	beta-BHC	200.	U	4.1	U	10.	U				
319-86-8	delta-BHC	200.	U	4.1	U	10.	U				
58-89-9	gamma-BHC (Lindane)	200.	U	4.1	U	10.	U				
76-44-8	Heptachlor	200.	U	4.1	U	10.	U				
309-00-2	Aldrin	11.	J	0.38	J	0.37	J				
1024-57-3	Heptachlor epoxide	200.	U	4.1	U	10.	U				
959-98-8	Endosulfan I	200.	U	0.87	J	1.5	J				
60-57-1	Dieldrin	420.		26.	J	48.	J				
72-55-9	4,4'-DDE	380.	U	1.2	J	2.3	J				
72-20-8	Endrin	380.	U	8.	U	20.	U				
33213-65-9	Endosulfan II	380.	U	8.	U	20.	U				
72-54-8	4,4'-DDD	380.	U	8.	U	20.	U				
1031-07-8	Endosulfan sulfate	380.	U	8.	U	20.	U				
50-29-3	4,4'-DDT	44.	J	8.	U	20.	U				
72-43-5	Methoxychlor	2000.	U	41.	U	100.	U				
7421-93-4	Endrin aldehyde	21.	J	8.	U	20.	U				
8001-35-2	Toxaphene	20000.	U	410.	U	1000.	U				
12674-11-2	Aroclor-1016	3800.	U	80.	U	200.	U				
11104-28-2	Aroclor-1221	7800.	U	160.	U	410.	U				
11141-16-5	Aroclor-1232	3800.	U	80.	U	200.	U				
53469-21-9	Aroclor-1242	3800.	U	80.	U	200.	U				
12672-29-6	Aroclor-1248	3800.	U	80.	U	200.	U				
11097-69-1	Aroclor-1254	3800.	U	80.	U	200.	U				
11096-82-5	Aroclor-1260	3800.	U	140.	J	250.	J				
57-74-9	Chlordane	2000.	U	41.	U	100.	U				

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 47 ANALYTICAL SOIL RESULTS

SW846-SVOA

SAMPLE ID ------->	047-S-0002-01	047-S-0002-04	047-S-0003-01	047-S-0004-01	047-S-0004-04	047-S-0005-01
ORIGINAL ID ----->	047S000201	047S000202	047S000301	047S000401	047S000402	047S000501
LAB SAMPLE ID --->	S777001*2	S777001*5	S776981*1	S776981*2	S776981*3	S776981*4
ID FROM REPORT -->	047S000201	047S000202	047S000301	047S000401	047S000402	047S000501
SAMPLE DATE ----->	12/10/97	12/10/97	12/09/97	12/09/97	12/09/97	12/09/97
DATE EXTRACTED -->	12/15/97	12/15/97	12/15/97	12/15/97	12/15/97	12/15/97
DATE ANALYZED --->	01/03/98	01/03/98	01/03/98	01/03/98	01/03/98	01/03/98
MATRIX ---------->	Soil	Soil	Soil	Soil	Soil	Soil
UNITS ---------->	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG

CAS #	Parameter	EM1H01	VAL	EM1H01	VAL	EM1H01	VAL	EM1H01	VAL	EM1H01	VAL	EM1H01	VAL
108-95-2	Phenol	380.	U	400.	U	410.	U	410.	U	410.	U	380.	U
111-44-4	bis(2-Chloroethyl)ether	380.	U	400.	U	410.	U	410.	U	410.	U	380.	U
95-57-8	2-Chlorophenol	380.	U	400.	U	410.	U	410.	U	410.	U	380.	U
541-73-1	1,3-Dichlorobenzene	380.	U	400.	U	410.	U	410.	U	410.	U	380.	U
106-46-7	1,4-Dichlorobenzene	380.	U	400.	U	410.	U	410.	U	410.	U	380.	U
95-50-1	1,2-Dichlorobenzene	380.	U	400.	U	410.	U	410.	U	410.	U	380.	U
95-48-7	2-Methylphenol (o-Cresol)	380	U	400.	U	410.	U	410.	U	410.	U	380.	U
108-60-1	2,2'-oxybis(1-Chloropropane)	380.	U	400.	U	410.	U	410.	U	410.	U	380.	U
9999900-32-2	3-Methylphenol/4-Methylphenol	380.	U	400.	U	410.	U	410.	U	410.	U	380.	U
621-64-7	N-Nitroso-di-n-propylamine	380.	U	400.	U	410.	U	410.	U	410.	U	380.	U
67-72-1	Hexachloroethane	380.	U	400.	U	410.	U	410.	U	410.	U	380.	U
98-95-3	Nitrobenzene	380.	U	400.	U	410.	U	410.	U	410.	U	380.	U
78-59-1	Isophorone	380.	U	400.	U	410.	U	410.	U	410.	U	380.	U
88-75-5	2-Nitrophenol	380.	U	400.	U	410.	U	410.	U	410.	U	380.	U
105-67-9	2,4-Dimethylphenol	380.	U	400.	U	410.	U	410.	U	410.	U	380.	U
120-83-2	2,4-Dichlorophenol	380.	U	400.	U	410.	U	410.	U	410.	U	380.	U
120-82-1	1,2,4-Trichlorobenzene	380.	U	400.	U	410.	U	410.	U	410.	U	380.	U
91-20-3	Naphthalene	380.	U	400.	U	210.	J	23.	J	410.	U	380.	U
106-47-8	4-Chloroaniline	770.	U	800.	U	820.	U	820.	U	810.	U	750.	U
87-68-3	Hexachlorobutadiene	380.	U	400.	U	410.	U	410.	U	410.	U	380.	U
111-91-1	bis(2-Chloroethoxy)methane	380.	U	400.	U	410.	U	410.	U	410.	U	380.	U
59-50-7	4-Chloro-3-methylphenol	380.	U	400.	U	410.	U	410.	U	410.	U	380.	U
91-57-6	2-Methylnaphthalene	380.	U	400.	U	75.	J	410.	U	410.	U	380.	U
77-47-4	Hexachlorocyclopentadiene	380.	U	400.	U	410.	U	410.	U	410.	U	380.	U
88-06-2	2,4,6-Trichlorophenol	380.	U	400.	U	410.	U	410.	U	410.	U	380.	U
95-95-4	2,4,5-Trichlorophenol	380.	U	400.	U	410.	U	410.	U	410.	U	380.	U
91-58-7	2-Chloronaphthalene	380.	U	400.	U	410.	U	410.	U	410.	U	380.	U
88-74-4	2-Nitroaniline	2000.	U	2000.	U	2100.	U	2100.	U	2100.	U	1900.	U
131-11-3	Dimethylphthalate	380.	U	400.	U	410.	U	410.	U	410.	U	380.	U
208-96-8	Acenaphthylene	380.	U	400.	U	27.	J	410.	U	410.	U	380.	U
606-20-2	2,6-Dinitrotoluene	380.	U	400.	U	410.	U	410.	U	410.	U	380.	U
99-09-2	3-Nitroaniline	2000.	U	2000.	U	2100.	U	2100.	U	2100.	U	1900.	U
83-32-9	Acenaphthene	380.	U	13.	J	410.	U	47.	J	410.	U	16.	J
51-28-5	2,4-Dinitrophenol	2000.	U	2000.	U	2100.	U	2100.	U	2100.	U	1900.	U
100-02-7	4-Nitrophenol	2000.	U	2000.	U	2100.	U	2100.	U	2100.	U	1900.	U
132-64-9	Dibenzofuran	380.	U	400.	U	410.	U	410.	U	410.	U	380.	U

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 47 ANALYTICAL SOIL RESULTS

SW846-SVOA													
	SAMPLE ID ------->	047-S-0002-01		047-S-0002-04		047-S-0003-01		047-S-0004-01		047-S-0004-04		047-S-0005-01	
	ORIGINAL ID ----->	047S000201		047S000202		047S000301		047S000401		047S000402		047S000501	
	LAB SAMPLE ID --->	S777001*2		S777001*5		S776981*1		S776981*2		S776981*3		S776981*4	
	ID FROM REPORT -->	047S000201		047S000202		047S000301		047S000401		047S000402		047S000501	
	SAMPLE DATE ----->	12/10/97		12/10/97		12/09/97		12/09/97		12/09/97		12/09/97	
	DATE EXTRACTED -->	12/15/97		12/15/97		12/15/97		12/15/97		12/15/97		12/15/97	
	DATE ANALYZED --->	01/03/98		01/03/98		01/03/98		01/03/98		01/03/98		01/03/98	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	EM1H01	VAL	EM1H01	VAL	EM1H01	VAL	EM1H01	VAL	EM1H01	VAL	EM1H01	VAL
121-14-2	2,4-Dinitrotoluene	380.	U	400.	U	410.	U	410.	U	410.	U	380.	U
84-66-2	Diethylphthalate	380.	U	54.	J	410.	U	410.	U	410.	U	64.	J
7005-72-3	4-Chlorophenylphenyl ether	380.	U	400.	U	410.	U	410.	U	410.	U	380.	U
86-73-7	Fluorene	380.	U	400.	U	410.	U	43.	J	410.	U	380.	U
100-01-6	4-Nitroaniline	2000.	U	2000.	U	2100.	U	2100.	U	2100.	U	1900.	U
534-52-1	2-Methyl-4,6-Dinitrophenol	2000.	U	2000.	U	2100.	U	2100.	U	2100.	U	1900.	U
86-30-6	N-Nitrosodiphenylamine	380.	U	400.	U	410.	U	410.	U	410.	U	380.	U
101-55-3	4-Bromophenyl-phenylether	380.	U	400.	U	410.	U	410.	U	410.	U	380.	U
118-74-1	Hexachlorobenzene	380.	U	400.	U	410.	U	410.	U	410.	U	380.	U
87-86-5	Pentachlorophenol	2000.	U	2000.	U	2100.	U	2100.	U	2100.	U	1900.	U
85-01-8	Phenanthrene	140.	J	140.	J	64.	J	350.	J	410.	U	430.	J
120-12-7	Anthracene	35.	J	48.	J	410.	U	110.	J	410.	U	110.	J
86-74-8	Carbazole	380.	U	400.	U	410.	U	56.	J	410.	U	60.	J
84-74-2	Di-n-butylphthalate	380.	U	400.	U	410.	U	410.	J	410.	U	380.	U
206-44-0	Fluoranthene	320.	J	250.	J	36.	J	380.	J	23.	J	620.	J
129-00-0	Pyrene	350.	J	230.	J	52.	J	390.	J	22.	J	910.	J
85-68-7	Butylbenzylphthalate	380.	U	400.	U	410.	U	410.	U	410.	U	380.	U
91-94-1	3,3'-Dichlorobenzidine	770.	U	800.	U	820.	U	820.	U	810.	U	750.	U
56-55-3	Benzo(a)anthracene	200.	J	110.	J	410.	U	160.	J	410.	U	320.	J
218-01-9	Chrysene	210.	J	110.	J	410.	U	170.	J	410.	U	380.	J
117-81-7	bis(2-Ethylhexyl)phthalate (BEHP)	280.	J	210.	J	240.	J	410.	U	410.	U	380.	U
117-84-0	Di-n-octylphthalate	380.	U	400.	U	410.	U	410.	U	410.	U	380.	U
205-99-2	Benzo(b)fluoranthene	210.	J	86.	J	410.	U	410.	U	410.	U	250.	J
207-08-9	Benzo(k)fluoranthene	170.	J	85.	J	410.	U	410.	U	410.	U	360.	J
50-32-8	Benzo(a)pyrene	190.	J	89.	J	410.	U	100.	J	410.	U	280.	J
193-39-5	Indeno(1,2,3-cd)pyrene	120.	J	400.	U	410.	U	410.	U	410.	U	120.	J
53-70-3	Dibenz(a,h)anthracene	380.	U	400.	U	410.	U	410.	U	410.	U	380.	U
191-24-2	Benzo(g,h,i)perylene	120.	J	400.	U	410.	U	410.	U	410.	U	380.	U
122-39-4	Diphenylamine	NR		NR		NR		NR		NR		NR	

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 47 ANALYTICAL SOIL RESULTS

SW846-SVOA

SAMPLE ID ------->	047-S-0006-01		047-C-0006-01		047-S-0006-04		047-C-0006-04		
ORIGINAL ID ----->	047S000601		047C000601		047S000602		047C000602		
LAB SAMPLE ID --->	S777001*1		S777001A*1		S777001*4		S777001A*3		
ID FROM REPORT -->	047S000601		047C000601		047S000602		047C000602		
SAMPLE DATE ----->	12/10/97		12/10/97		12/10/97		12/10/97		
DATE EXTRACTED -->	12/15/97		12/15/97		12/15/97		12/15/97		
DATE ANALYZED --->	01/06/98		01/06/98		01/03/98		01/03/98		
MATRIX ---------->	Soil		Soil		Soil		Soil		
UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		
CAS # Parameter	EM1H01	VAL	EM1H02	VAL	EM1H01	VAL	EM1H02	VAL	
108-95-2 Phenol	400.	U	410.	U	410.	U	420.	U	
111-44-4 bis(2-Chloroethyl)ether	400.	U	410.	U	410.	U	420.	U	
95-57-8 2-Chlorophenol	400.	U	410.	U	410.	U	420.	U	
541-73-1 1,3-Dichlorobenzene	400.	U	410.	U	410.	U	420.	U	
106-46-7 1,4-Dichlorobenzene	400.	U	410.	U	410.	U	420.	U	
95-50-1 1,2-Dichlorobenzene	400.	U	410.	U	410.	U	420.	U	
95-48-7 2-Methylphenol (o-Cresol)	400.	U	410.	U	410.	U	420.	U	
108-60-1 2,2'-oxybis(1-Chloropropane)	400.	U	410.	U	410.	U	420.	U	
9999900-32-2 3-Methylphenol/4-Methylphenol	400.	U	410.	U	410.	U	420.	U	
621-64-7 N-Nitroso-di-n-propylamine	400.	U	410.	U	410.	U	420.	U	
67-72-1 Hexachloroethane	400.	U	410.	U	410.	U	420.	U	
98-95-3 Nitrobenzene	400.	U	410.	U	410.	U	420.	U	
78-59-1 Isophorone	400.	U	410.	U	410.	U	420.	U	
88-75-5 2-Nitrophenol	400.	U	410.	U	410.	U	420.	U	
105-67-9 2,4-Dimethylphenol	400.	U	410.	U	410.	U	420.	U	
120-83-2 2,4-Dichlorophenol	400.	U	410.	U	410.	U	420.	U	
120-82-1 1,2,4-Trichlorobenzene	400.	U	410.	U	410.	U	420.	U	
91-20-3 Naphthalene	400.	U	410.	U	410.	U	420.	U	
106-47-8 4-Chloroaniline	800.	U	810.	U	820.	U	840.	U	
87-68-3 Hexachlorobutadiene	400.	U	410.	U	410.	U	420.	U	
111-91-1 bis(2-Chloroethoxy)methane	400.	U	410.	U	410.	U	420.	U	
59-50-7 4-Chloro-3-methylphenol	400.	U	410.	U	410.	U	420.	U	
91-57-6 2-Methylnaphthalene	400.	U	410.	U	410.	U	420.	U	
77-47-4 Hexachlorocyclopentadiene	400.	U	410.	U	410.	U	420.	U	
88-06-2 2,4,6-Trichlorophenol	400.	U	410.	U	410.	U	420.	U	
95-95-4 2,4,5-Trichlorophenol	400.	U	410.	U	410.	U	420.	U	
91-58-7 2-Chloronaphthalene	400.	U	410.	U	410.	U	420.	U	
88-74-4 2-Nitroaniline	2100.	U	2100.	U	2100.	U	2200.	U	
131-11-3 Dimethylphthalate	400	U	410.	U	410.	U	420.	U	
208-96-8 Acenaphthylene	400.	U	410.	U	410.	U	420.	U	
606-20-2 2,6-Dinitrotoluene	400.	U	410.	U	410.	U	420.	U	
99-09-2 3-Nitroaniline	2100.	U	2100.	U	2100.	U	2200.	U	
83-32-9 Acenaphthene	400.	U	410.	U	410.	U	420.	U	
51-28-5 2,4-Dinitrophenol	2100.	U	2100.	U	2100.	U	2200.	U	
100-02-7 4-Nitrophenol	2100.	U	2100.	U	2100.	U	2200.	U	
132-64-9 Dibenzofuran	400.	U	410.	U	410.	U	420.	U	

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 47 ANALYTICAL SOIL RESULTS

SW846-SVOA									
	SAMPLE ID ------->	047-S-0006-01		047-C-0006-01		047-S-0006-04		047-C-0006-04	
	ORIGINAL ID ----->	047S000601		047C000601		047S000602		047C000602	
	LAB SAMPLE ID --->	S777001*1		S777001A*1		S777001*4		S777001A*3	
	ID FROM REPORT -->	047S000601		047C000601		047S000602		047C000602	
	SAMPLE DATE ----->	12/10/97		12/10/97		12/10/97		12/10/97	
	DATE EXTRACTED -->	12/15/97		12/15/97		12/15/97		12/15/97	
	DATE ANALYZED --->	01/06/98		01/06/98		01/03/98		01/03/98	
	MATRIX ---------->	Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	EM1H01	VAL	EM1H02	VAL	EM1H01	VAL	EM1H02	VAL
121-14-2	2,4-Dinitrotoluene	400.	U	410.	U	410.	U	420.	U
84-66-2	Diethylphthalate	93.	J	100.	J	95.	J	420.	U
7005-72-3	4-Chlorophenylphenyl ether	400.	U	410.	U	410.	U	420.	U
86-73-7	Fluorene	400.	U	410.	U	410.	U	420.	U
100-01-6	4-Nitroaniline	2100.	U	2100.	U	2100.	U	2200.	U
534-52-1	2-Methyl-4,6-Dinitrophenol	2100.	U	2100.	U	2100.	U	2200.	U
86-30-6	N-Nitrosodiphenylamine	400.	U	410.	U	410.	U	420.	U
101-55-3	4-Bromophenyl-phenylether	400.	U	410.	U	410.	U	420.	U
118-74-1	Hexachlorobenzene	400.	U	410.	U	410.	U	420.	U
87-86-5	Pentachlorophenol	2100.	U	2100.	U	2100.	U	2200.	U
85-01-8	Phenanthrene	31.	J	51.	J	30.	J	420.	U
120-12-7	Anthracene	400.	U	410.	U	410.	U	420.	U
86-74-8	Carbazole	400.	U	410.	U	410.	U	420.	U
84-74-2	Di-n-butylphthalate	400.	U	410.	U	410.	U	420.	U
206-44-0	Fluoranthene	80.	J	96.	J	45.	J	30.	J
129-00-0	Pyrene	110.	J	140.	J	55.	J	32.	J
85-68-7	Butylbenzylphthalate	400.	U	410.	U	410.	U	420.	U
91-94-1	3,3'-Dichlorobenzidine	800.	U	810.	U	820.	U	840.	U
56-55-3	Benzo(a)anthracene	65.	J	60.	J	410.	U	420.	U
218-01-9	Chrysene	88.	J	82.	J	410.	U	420.	U
117-81-7	bis(2-Ethylhexyl)phthalate (BEHP)	89.	J	410.	U	410.	U	420.	U
117-84-0	Di-n-octylphthalate	400.	U	410.	U	410.	U	420.	U
205-99-2	Benzo(b)fluoranthene	150.	J	410.	U	410.	U	420.	U
207-08-9	Benzo(k)fluoranthene	400.	U	410.	U	410.	U	420.	U
50-32-8	Benzo(a)pyrene	83.	J	410.	U	410.	U	420.	U
193-39-5	Indeno(1,2,3-cd)pyrene	400.	U	410.	U	410.	U	420.	U
53-70-3	Dibenz(a,h)anthracene	400.	U	410.	U	410.	U	420.	U
191-24-2	Benzo(g,h,i)perylene	400.	U	410.	U	410.	U	420.	U
122-39-4	Diphenylamine	NR		NR		NR		NR	

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 47 ANALYTICAL SOIL RESULTS

SW846-VOA													
	SAMPLE ID ------->	047-S-0002-01		047-S-0002-04		047-S-0006-01		047-C-0006-01		047-S-0006-04		047-C-0006-04	
	ORIGINAL ID ----->	047S000201		047S000202		047S000601		047C000601		047S000602		047C000602	
	LAB SAMPLE ID --->	S777001*2		S777001*5		S777001*1		S777001A*1		S777001*4		S777001A*3	
	ID FROM REPORT -->	047S000201		047S000202		047S000601		047C000601		047S000602		047C000602	
	SAMPLE DATE ----->	12/10/97		12/10/97		12/10/97		12/10/97		12/10/97		12/10/97	
	DATE ANALYZED --->	12/17/97		12/17/97		12/17/97		12/17/97		12/17/97		12/17/97	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	EM1H01	VAL	EM1H01	VAL	EM1H01	VAL	EM1H02	VAL	EM1H01	VAL	EM1H02	VAL
74-87-3	Chloromethane	12.	U	12.	U	12.	U	12.	U	12.	U	13.	U
75-01-4	Vinyl chloride	12.	U	12.	U	12.	U	12.	U	12.	U	13.	U
74-83-9	Bromomethane	12.	U	12.	U	12.	U	12.	U	12.	U	13.	U
75-00-3	Chloroethane	12.	U	12.	U	12.	U	12.	U	12.	U	13.	U
75-35-4	1,1-Dichloroethene	5.8	U	6.	U	6.1	U	6.2	U	6.2	U	6.3	U
75-09-2	Methylene chloride	5.8	U	6.	U	6.1	U	6.2	U	6.2	U	6.3	U
75-34-3	1,1-Dichloroethane	5.8	U	6.	U	6.1	U	6.2	U	6.2	U	6.3	U
67-66-3	Chloroform	5.8	U	6.	U	6.1	U	6.2	U	6.2	U	6.3	U
71-55-6	1,1,1-Trichloroethane	5.8	U	6.	U	6.1	U	6.2	U	6.2	U	6.3	U
56-23-5	Carbon tetrachloride	5.8	U	6.	U	6.1	U	6.2	U	6.2	U	6.3	U
71-43-2	Benzene	2.	J	6.	U	2.	J	6.2	U	6.2	U	6.3	U
107-06-2	1,2-Dichloroethane	5.8	U	6.	U	6.1	U	6.2	U	6.2	U	6.3	U
79-01-6	Trichloroethene	5.8	U	6.	U	6.1	U	6.2	U	6.2	U	6.3	U
78-87-5	1,2-Dichloropropane	5.8	U	6.	U	6.1	U	6.2	U	6.2	U	6.3	U
75-27-4	Bromodichloromethane	5.8	U	6.	U	6.1	U	6.2	U	6.2	U	6.3	U
108-88-3	Toluene	5.8	U	6.	U	6.1	U	1.5	J	6.2	U	6.3	U
79-00-5	1,1,2-Trichloroethane	5.8	U	6.	U	6.1	U	6.2	U	6.2	U	6.3	U
127-18-4	Tetrachloroethene	5.8	U	6.	U	6.1	U	6.2	U	6.2	U	6.3	U
124-48-1	Dibromochloromethane	5.8	U	6.	U	6.1	U	6.2	U	6.2	U	6.3	U
108-90-7	Chlorobenzene	5.8	U	6.	U	6.1	U	6.2	U	6.2	U	6.3	U
100-41-4	Ethylbenzene	5.8	U	6.	U	1.4	J	6.2	U	6.2	U	6.3	U
100-42-5	Styrene	5.8	U	6.	U	6.1	U	6.2	U	6.2	U	6.3	U
75-25-2	Bromoform	5.8	U	6.	U	6.1	U	6.2	U	6.2	U	6.3	U
79-34-5	1,1,2,2-Tetrachloroethane	5.8	U	6.	U	6.1	U	6.2	U	6.2	U	6.3	U
67-64-1	Acetone	58.	U	76.		61.	U	62.	U	62.	U	63.	U
75-15-0	Carbon disulfide	5.8	U	6.	U	6.1	U	6.2	U	6.2	U	6.3	U
78-93-3	2-Butanone (MEK)	29.	U	7.3	J	30.	U	31.	U	31.	U	32.	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	29.	U	30.	U	30.	U	31.	U	31.	U	32.	U
10061-01-5	cis-1,3-Dichloropropene	5.8	U	6.	U	6.1	U	6.2	U	6.2	U	6.3	U
10061-02-6	trans-1,3-Dichloropropene	5.8	U	6.	U	6.1	U	6.2	U	6.2	U	6.3	U
591-78-6	2-Hexanone	29.	U	30.	U	30.	U	31.	U	31.	U	32.	U
1330-20-7	Xylene (Total)	2.3	J	6.	U	5.5	J	2.6	J	6.2	U	6.3	U
540-59-0	1,2-Dichloroethene (total)	5.8	U	6.	U	6.1	U	6.2	U	6.2	U	6.3	U
1330-20-7	Xylene (Total)	NR		NR		NR		NR		NR		NR	
9999000-44-2	XYLENES	NR		NR		NR		NR		NR		NR	

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 47 ANALYTICAL SOIL RESULTS

TPH												
	SAMPLE ID ------->	047-S-0002-01		047-S-0002-04		047-S-0006-01		047-C-0006-01		047-S-0006-04		047-C-0006-04
	ORIGINAL ID ----->	047S000201		047S000202		047S000601		047C000601		047S000602		047C000602
	LAB SAMPLE ID --->	S777001 2		S777001*5		S777001*1		S777001A*1		S777001*4		S777001A*3
	ID FROM REPORT -->	047S000201		047S000202		047S000601		047C000601		047S000602		047C000602
	SAMPLE DATE ----->	12/10/97		12/10/97		12/10/97		12/10/97		12/10/97		12/10/97
	DATE EXTRACTED -->	12/31/97		12/31/97		12/31/97		12/30/97		12/31/97		12/30/97
	DATE ANALYZED --->	01/02/98		01/02/98		01/02/98		12/31/97		01/02/98		12/31/97
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil
	UNITS ---------->	MG/KG		MG/KG		MG/KG		MG/KG		MG/KG		MG/KG
CAS #	Parameter	EM1H01	VAL	EM1H01	VAL	EM1H01	VAL	EM1H02	VAL	EM1H01	VAL	EM1H02	VAL
9999900-02-4	Petroleum Hydrocarbons, TPH	320.		14.		340.		NR		86.		NR	
9999000-83-9	TOTAL RECOVERABLE PETROLEUM HYDROCARBONS	NR		NR		NR		410.		NR		140.	

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 47 ANALYTICAL SOIL RESULTS

TPH-DRO						
SAMPLE ID ------->	047-S-0002-01	047-S-0002-04	047-S-0003-01	047-S-0004-01	047-S-0004-04	047-S-0005-01
ORIGINAL ID ----->	047S000201	047S000202	047S000301	047S000401	047S000402	047S000501
LAB SAMPLE ID --->	S777001*2	S777001*5	76981-1	76981-2	76981-3	76981-4
ID FROM REPORT -->	047S000201	047S000202	047S000301	047S000401	047S000402	047S000501
SAMPLE DATE ----->	12/10/97	12/10/97	12/09/97	12/09/97	12/09/97	12/09/97
DATE EXTRACTED -->	12/17/97	12/17/97	12/17/97	12/17/97	12/17/97	12/17/97
DATE ANALYZED --->	12/20/97	12/20/97	12/19/97	12/20/97	12/20/97	12/20/97
MATRIX ---------->	Soil	Soil	Soil	Soil	Soil	Soil
UNITS ---------->	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG

CAS #	Parameter	EM1H01	VAL	EM1H01	VAL	EM1H01	VAL	EM1H01	VAL	EM1H01	VAL	EM1H01	VAL
9999900-02-6	TPH - Diesel Range Organics	14.		28.		5.	U	7.6		7.9		16.	

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 47 ANALYTICAL SOIL RESULTS

TPH-DRO	SAMPLE ID ------->	047-S-0006-01		047-C-0006-01		047-S-0006-04		047-C-0006-04			
	ORIGINAL ID ----->	047S000601		047C000601		047S000602		047C000602			
	LAB SAMPLE ID --->	S777001*1		S777001A*1		S777001*4		S777001A*3			
	ID FROM REPORT -->	047S000601		047C000601		047S000602		047C000602			
	SAMPLE DATE ----->	12/10/97		12/10/97		12/10/97		12/10/97			
	DATE EXTRACTED -->	12/17/97		12/17/97		12/17/97		12/17/97			
	DATE ANALYZED --->	12/20/97		12/20/97		12/20/97		12/19/97			
	MATRIX ---------->	Soil		Soil		Soil		Soil			
	UNITS ---------->	MG/KG		MG/KG		MG/KG		MG/KG			
CAS #	Parameter	EM1H01	VAL	EM1H02	VAL	EM1H01	VAL	EM1H02	VAL		
9999900-02-6	TPH - Diesel Range Organics	21.		25.		9.9		5.1	UJ		

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 47 ANALYTICAL SOIL RESULTS

TPH-GRO																	
	SAMPLE ID ------->	047-S-0002-01		047-S-0002-04		047-S-0003-01		047-S-0004-01		047-S-0004-04		047-S-0005-01	
	ORIGINAL ID ----->	047S000201		047S000202		047S000301		047S000401		047S000402		047S000501	
	LAB SAMPLE ID --->	S777001*2		S777001*5		76981-1		76981-2		76981-3		76981-4	
	ID FROM REPORT -->	047S000201		047S000202		047S000301		047S000401		047S000402		047S000501	
	SAMPLE DATE ----->	12/10/97		12/10/97		12/09/97		12/09/97		12/09/97		12/09/97	
	DATE ANALYZED --->	12/12/97		12/12/97		12/11/97		12/11/97		12/11/97		12/11/97	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	MG/KG		MG/KG		MG/KG		MG/KG		MG/KG		MG/KG	
CAS #	Parameter	EM1H01	VAL	EM1H01	VAL	EM1H01	VAL	EM1H01	VAL	EM1H01	VAL	EM1H01	VAL
9999900-02-5	TPH - Gasoline Range Organics	0.21	U	0.22	U	0.22	U	0.22	U	0.22	U	0.2	U

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 47 ANALYTICAL SOIL RESULTS

TPH-GRO	SAMPLE ID ------->	047-S-0006-01		047-C-0006-01		047-S-0006-04		047-C-0006-04			
	ORIGINAL ID ----->	047S000601		047C000601		047S000602		047C000602			
	LAB SAMPLE ID --->	S777001*1		S777001A*1		S777001*4		S777001A*3			
	ID FROM REPORT -->	047S000601		047C000601		047S000602		047C000602			
	SAMPLE DATE ----->	12/10/97		12/10/97		12/10/97		12/10/97			
	DATE ANALYZED --->	12/12/97		12/12/97		12/12/97		12/15/97			
	MATRIX ---------->	Soil		Soil		Soil		Soil			
	UNITS ---------->	MG/KG		MG/KG		MG/KG		MG/KG			
CAS #	Parameter	EM1H01	VAL	EM1H02	VAL	EM1H01	VAL	EM1H02	VAL		
9999900-02-5	TPH - Gasoline Range Organics	0.22	U	0.22	U	0.22	U	0.23	U		

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 48 ANALYTICAL SOIL RESULTS

APX9-METAL													
	SAMPLE ID ------->	048-S-0001-01		048-S-0001-04		048-S-0002-01		048-C-0002-01		048-S-0002-04		048-S-0003-01	
	ORIGINAL ID ----->	048S000101		048S000104		048S000201		048C000201		048S000204		048S000301	
	LAB SAMPLE ID --->	S880049*1		S880049*4		S880049*2		S880049A*2		S880049*3		S880049*5	
	ID FROM REPORT -->	048S000101		048S000104		048S000201		048C000201		048S000204		048S000301	
	SAMPLE DATE ----->	01/05/98		01/05/98		01/05/98		01/05/98		01/05/98		01/05/98	
	DATE EXTRACTED -->	01/09/98		01/09/98		01/09/98		01/21/98		01/09/98		01/09/98	
	DATE ANALYZED --->	01/13/98		01/13/98		01/13/98		01/22/98		01/13/98		01/13/98	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	MG/KG		MG/KG		MG/KG		MG/KG		MG/KG		MG/KG	
CAS #	Parameter	EM1H03	VAL	EM1H03	VAL	EM1H03	VAL	EM1H04	VAL	EM1H03	VAL	EM1H03	VAL
7439-97-6	Mercury	0.02	J	0.03	J	0.02	J	0.03	J	0.03	J	0.03	J
7440-36-0	Antimony	0.4	UR	0.63	J	0.39	UR	0.4	UR	0.41	UR	0.39	UR
7440-38-2	Arsenic	3.9		11.3		6.7		5.5		12.6		8.1	
7440-39-3	Barium	48.2		83.8		86.9		93.9		96.7		118.	
7440-41-7	Beryllium	0.39	U	0.44	U	0.54	J	0.65	U	0.45	U	0.49	U
7440-43-9	Cadmium	0.04	U	0.04	U	0.03	U	0.04	U	0.04	U	0.03	U
7440-47-3	Chromium	20.6	J	16.	J	9.8	J	12.2		18.1	J	12.5	J
7440-48-4	Cobalt	6.8		7.5		23.6	J	41.	J	8.8		11.6	
7440-50-8	Copper	7.5		17.4		11.9		11.5		18.3		14.	
7439-92-1	Lead	13.7	J	14.7	J	16.4	J	11.	J	13.7	J	13.4	J
7440-02-0	Nickel	13.2	J	15.1	J	14.	J	18.7	J	15.8	J	14.7	J
7782-49-2	Selenium	0.39	UJ	0.74	J	0.42	J	0.43	J	0.42	J	0.38	UJ
7440-22-4	Silver	0.22	J	0.13	U	0.21	J	0.12	U	0.12	U	0.11	U
7440-28-0	Thallium	0.72	UJ	0.79	UJ	0.69	UJ	0.71	U	0.73	UJ	0.7	UJ
7440-62-2	Vanadium	12 6		31.		21.		22.8		29.2		24.5	
7440-66-6	Zinc	20.3	J	47.8	J	36.1	J	37.1	J	49.8	J	46.2	J
7440-31-5	Tin	1.1	U	1.7	U	1.2	U	1.4	U	1.3	U	1.3	U

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 48 ANALYTICAL SOIL RESULTS

APK9-METAL													
		SAMPLE ID ------->	048-S-0003-04		048-S-0004-01		048-S-0004-04						
		ORIGINAL ID ----->	048S000304		048S000401		048S000404						
		LAB SAMPLE ID --->	S880049*6		S880049*7		S880049*8						
		ID FROM REPORT -->	048S000304		048S000401		048S000404						
		SAMPLE DATE ----->	01/05/98		01/05/98		01/05/98						
		DATE EXTRACTED -->	01/09/98		01/09/98		01/09/98						
		DATE ANALYZED --->	01/13/98		01/13/98		01/13/98						
		MATRIX ---------->	Soil		Soil		Soil						
		UNITS ---------->	MG/KG		MG/KG		MG/KG						
CAS #	Parameter		EM1H03	VAL	EM1H03	VAL	EM1H03	VAL					
7439-97-6	Mercury		0.02	J	0.01	J	0.01	J					
7440-36-0	Antimony		0.4	UR	0.43	J	0.41	UR					
7440-38-2	Arsenic		13.		6.9		11.9						
7440-39-3	Barium		80.9		71.7		183.						
7440-41-7	Beryllium		0.49	U	0.33	U	0.84						
7440-43-9	Cadmium		0.04	U	0.05	U	0.05	U					
7440-47-3	Chromium		13.2	J	9.7	J	14.6	J					
7440-48-4	Cobalt		14.4		12.6		12.3						
7440-50-8	Copper		18.6		9.4		18.4						
7439-92-1	Lead		18.1	J	7.8	J	13.8	J					
7440-02-0	Nickel		16.3	J	10.9	J	19.2	J					
7782-49-2	Selenium		0.39	UJ	0.38	UJ	0.4	UJ					
7440-22-4	Silver		0.12	U	0.11	U	0.12	U					
7440-28-0	Thallium		0.72	UJ	0.75	J	0.73	UJ					
7440-62-2	Vanadium		28.1		17.2		24.4						
7440-66-6	Zinc		55.7	J	28.3	J	68.5	J					
7440-31-5	Tin		1.2	U	0.98	U	0.77	U					

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 48 ANALYTICAL SOIL RESULTS

SW846-VOA	SAMPLE ID ------->	048-S-0001-01		048-S-0001-04		048-S-0002-01		048-C-0002-01		048-S-0002-04		048-S-0003-01	
	ORIGINAL ID ----->	048S000101		048S000104		048S000201		048C000201		048S000204		048S000301	
	LAB SAMPLE ID --->	S880049*1		S880049*4		S880049*2		S880049A*2		S880049*3		S880049*5	
	ID FROM REPORT -->	048S000101		048S000104		048S000201		048C000201		048S000204		048S000301	
	SAMPLE DATE ----->	01/05/98		01/05/98		01/05/98		01/05/98		01/05/98		01/05/98	
	DATE ANALYZED --->	01/07/98		01/07/98		01/07/98		01/15/98		01/07/98		01/07/98	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	EM1H03	VAL	EM1H03	VAL	EM1H03	VAL	EM1H04	VAL	EM1H03	VAL	EM1H03	VAL
74-87-3	Chloromethane	12.	U	14.	U	12.	U	12.	U	12.	U	12.	U
75-01-4	Vinyl chloride	12.	U	14.	U	12.	U	12.	U	12.	U	12.	U
74-83-9	Bromomethane	12.	U	14.	U	12.	U	12.	U	12.	U	12.	U
75-00-3	Chloroethane	12.	U	14.	U	12.	U	12.	U	12.	U	12.	U
75-35-4	1,1-Dichloroethene	6.2	U	6.8	U	6.	U	6.1	U	6.2	U	6.	U
75-09-2	Methylene chloride	6.2	U	6.8	U	6.	U	6.1	U	6.2	U	6.	U
75-34-3	1,1-Dichloroethane	6.2	U	6.8	U	6.	U	6.1	U	6.2	U	6.	U
67-66-3	Chloroform	6.2	U	6.8	U	6.	U	6.1	U	6.2	U	6.	U
71-55-6	1,1,1-Trichloroethane	6.2	U	6.8	U	6.	U	6.1	U	6.2	U	6.	U
56-23-5	Carbon tetrachloride	6.2	U	6.8	U	6.	U	6.1	U	6.2	U	6.	U
71-43-2	Benzene	6.2	U	6.8	U	6.	U	1.5	J	6.2	U	6.	U
107-06-2	1,2-Dichloroethane	6.2	U	6.8	U	6.	U	6.1	U	6.2	U	6.	U
79-01-6	Trichloroethene	6.2	U	6.8	U	6.	U	6.1	U	6.2	U	6.	U
78-87-5	1,2-Dichloropropane	6.2	U	6.8	U	6.	U	6.1	U	6.2	U	6.	U
75-27-4	Bromodichloromethane	6.2	U	6.8	U	6.	U	6.1	U	6.2	U	6.	U
108-88-3	Toluene	6.2	U	6.8	U	6.	U	6.1	U	6.2	U	6.	U
79-00-5	1,1,2-Trichloroethane	6.2	U	6.8	U	6.	U	6.1	U	6.2	U	6.	U
127-18-4	Tetrachloroethene	6.2	U	6.8	U	6.	U	6.1	U	6.2	U	6.	U
124-48-1	Dibromochloromethane	6.2	U	6.8	U	6.	U	6.1	U	6.2	U	6.	U
108-90-7	Chlorobenzene	6.2	U	6.8	U	6.	U	6.1	U	6.2	U	6.	U
100-41-4	Ethylbenzene	6.2	U	6.8	U	6.	U	6.1	U	6.2	U	6.	U
100-42-5	Styrene	6.2	U	6.8	U	6.	U	6.1	U	6.2	U	6.	U
75-25-2	Bromoform	6.2	U	6.8	U	6.	U	6.1	U	6.2	U	6.	U
79-34-5	1,1,2,2-Tetrachloroethane	6.2	U	6.8	U	6.	U	6.1	U	6.2	U	6.	U
67-64-1	Acetone	43.	J	48.	J	90.		100.	U	16.	J	110.	
75-15-0	Carbon disulfide	6.2	U	6.8	U	6.	U	6.1	U	6.2	U	6.	U
78-93-3	2-Butanone (MEK)	31.	U	34.	U	30.	U	30.	U	31.	U	30.	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	31.	U	34.	U	30.	U	30.	U	31.	U	30.	U
10061-01-5	cis-1,3-Dichloropropene	6.2	U	6.8	U	6.	U	6.1	U	6.2	U	6.	U
10061-02-6	trans-1,3-Dichloropropene	6.2	U	6.8	U	6.	U	6.1	U	6.2	U	6.	U
591-78-6	2-Hexanone	31.	U	34.	U	30.	U	30.	U	31.	U	30.	U
1330-20-7	Xylene (Total)	6.2	U	6.8	U	6.	U	6.1	U	6.2	U	6.	U
540-59-0	1,2-Dichloroethene (total)	6.2	U	6.8	U	6.	U	6.1	U	6.2	U	6.	U
1330-20-7	Xylene (Total)	NR		NR		NR		NR		NR		NR	
9999000-44-2	XYLENES	NR		NR		NR		NR		NR		NR	

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 48 ANALYTICAL SOIL RESULTS

SW846-VOA											
		SAMPLE ID ------->	048-S-0003-04		048-S-0004-01		048-S-0004-04				
		ORIGINAL ID ----->	048S000304		048S000401		048S000404				
		LAB SAMPLE ID --->	S880049*6		S880049*7		S880049*8				
		ID FROM REPORT -->	048S000304		048S000401		048S000404				
		SAMPLE DATE ----->	01/05/98		01/05/98		01/05/98				
		DATE ANALYZED --->	01/07/98		01/07/98		01/07/98				
		MATRIX ---------->	Soil		Soil		Soil				
		UNITS ---------->	UG/KG		UG/KG		UG/KG				
CAS #	Parameter		EM1H03	VAL	EM1H03	VAL	EM1H03	VAL			
74-87-3	Chloromethane		12.	U	12.	U	12.	U			
75-01-4	Vinyl chloride		12.	U	12.	U	12.	U			
74-83-9	Bromomethane		12.	U	12.	U	12.	U			
75-00-3	Chloroethane		12.	U	12.	U	12.	U			
75-35-4	1,1-Dichloroethene		6.2	U	6.	U	6.2	U			
75-09-2	Methylene chloride		6.2	U	6.	U	6.2	U			
75-34-3	1,1-Dichloroethane		6.2	U	6.	U	6.2	U			
67-66-3	Chloroform		6.2	U	6.	U	6.2	U			
71-55-6	1,1,1-Trichloroethane		6.2	U	6.	U	6.2	U			
56-23-5	Carbon tetrachloride		6.2	U	6.	U	6.2	U			
71-43-2	Benzene		6.2	U	6.	U	6.2	U			
107-06-2	1,2-Dichloroethane		6.2	U	6.	U	6.2	U			
79-01-6	Trichloroethene		6.2	U	6.	U	6.2	U			
78-87-5	1,2-Dichloropropane		6.2	U	6.	U	6.2	U			
75-27-4	Bromodichloromethane		6.2	U	6.	U	6.2	U			
108-88-3	Toluene		6.2	U	6.	U	6.2	U			
79-00-5	1,1,2-Trichloroethane		6.2	U	6.	U	6.2	U			
127-18-4	Tetrachloroethene		6.2	U	6.	U	6.2	U			
124-48-1	Dibromochloromethane		6.2	U	6.	U	6.2	U			
108-90-7	Chlorobenzene		6.2	U	6.	U	6.2	U			
100-41-4	Ethylbenzene		6.2	U	6.	U	6.2	U			
100-42-5	Styrene		6.2	U	6.	U	6.2	U			
75-25-2	Bromoform		6.2	U	6.	U	6.2	U			
79-34-5	1,1,2,2-Tetrachloroethane		6.2	U	6.	U	6.2	U			
67-64-1	Acetone		110.		70.		15.	J			
75-15-0	Carbon disulfide		6.2	U	6.	U	6.2	U			
78-93-3	2-Butanone (MEK)		31.	U	30.	U	31.	U			
108-10-1	4-Methyl-2-Pentanone (MIBK)		31.	U	30.	U	31.	U			
10061-01-5	cis-1,3-Dichloropropene		6.2	U	6.	U	6.2	U			
10061-02-6	trans-1,3-Dichloropropene		6.2	U	6.	U	6.2	U			
591-78-6	2-Hexanone		31.	U	30.	U	31.	U			
1330-20-7	Xylene (Total)		6.2	U	6.	U	6.2	U			
540-59-0	1,2-Dichloroethene (total)		6.2	U	6.	U	6.2	U			
1330-20-7	Xylene (Total)		NR		NR		NR				
9999000-44-2	XYLENES		NR		NR		NR				

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 48 ANALYTICAL SOIL RESULTS

TPH													
	SAMPLE ID ------->	048-S-0001-01		048-S-0001-04		048-S-0002-01		048-C-0002-01		048-S-0002-04		048-S-0003-01	
	ORIGINAL ID ----->	048S000101		048S000104		048S000201		048C000201		048S000204		048S000301	
	LAB SAMPLE ID --->	S880049*1		S880049*4		S880049*2		S880049A*2		S880049*3		S880049*5	
	ID FROM REPORT -->	048S000101		048S000104		048S000201		048C000201		048S000204		048S000301	
	SAMPLE DATE ----->	01/05/98		01/05/98		01/05/98		01/05/98		01/05/98		01/05/98	
	DATE EXTRACTED -->	01/14/98		01/14/98		01/14/98		01/29/98		01/14/98		01/14/98	
	DATE ANALYZED --->	01/14/98		01/14/98		01/14/98		01/29/98		01/14/98		01/14/98	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	MG/KG		MG/KG		MG/KG		MG/KG		MG/KG		MG/KG	
CAS #	Parameter	EM1H03	VAL	EM1H03	VAL	EM1H03	VAL	EM1H04	VAL	EM1H03	VAL	EM1H03	VAL
9999900-02-4	Petroleum Hydrocarbons, TPH	NR		NR		NR		NR		NR		NR	
9999000-83-9	TOTAL RECOVERABLE PETROLEUM HYDROCARBONS	160.	J	120.	J	200.	J	140.	J	150.	J	230.	J

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 48 ANALYTICAL SOIL RESULTS

TPH								
	SAMPLE ID ------->	048-S-0003-04		048-S-0004-01		048-S-0004-04		
	ORIGINAL ID ----->	048S000304		048S000401		048S000404		
	LAB SAMPLE ID --->	S880049*6		S880049*7		S880049*8		
	ID FROM REPORT -->	048S000304		048S000401		048S000404		
	SAMPLE DATE ----->	01/05/98		01/05/98		01/05/98		
	DATE EXTRACTED -->	01/14/98		01/14/98		01/14/98		
	DATE ANALYZED --->	01/14/98		01/14/98		01/14/98		
	MATRIX ---------->	Soil		Soil		Soil		
	UNITS ---------->	MG/KG		MG/KG		MG/KG		
CAS #	Parameter	EM1H03	VAL	EM1H03	VAL	EM1H03	VAL	
9999900-02-4	Petroleum Hydrocarbons, TPH	NR		NR		NR		
9999000-83-9	TOTAL RECOVERABLE PETROLEUM HYDROCARBONS	84.	J	140.	J	140.	J	

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 48 ANALYTICAL SOIL RESULTS

TPH-DRO													
	SAMPLE ID ------->	048-S-0001-01		048-S-0001-04		048-S-0002-01		048-C-0002-01		048-S-0002-04		048-S-0003-01	
	ORIGINAL ID ----->	048S000101		048S000104		048S000201		048C000201		048S000204		048S000301	
	LAB SAMPLE ID --->	S880049*1		S880049*4		S880049*2		S880049A*2		S880049*3		S880049*5	
	ID FROM REPORT -->	048S000101		048S000104		048S000201		048C000201		048S000204		048S000301	
	SAMPLE DATE ----->	01/05/98		01/05/98		01/05/98		01/05/98		01/05/98		01/05/98	
	DATE EXTRACTED -->	01/12/98		01/12/98		01/12/98		01/13/98		01/12/98		01/12/98	
	DATE ANALYZED --->	01/16/98		01/16/98		01/16/98		01/17/98		01/15/98		01/16/98	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	MG/KG		MG/KG		MG/KG		MG/KG		MG/KG		MG/KG	
CAS #	Parameter	EM1H03	VAL	EM1H03	VAL	EM1H03	VAL	EM1H04	VAL	EM1H03	VAL	EM1H03	VAL
9999900-02-6	TPH - Diesel Range Organics	4.9	U	5.4	U	4.8	U	4.9	U	5.	U	4.7	J

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 48 ANALYTICAL SOIL RESULTS

TPH-DRO											
	SAMPLE ID ------->	048-S-0003-04		048-S-0004-01		048-S-0004-04					
	ORIGINAL ID ----->	048S000304		048S000401		048S000404					
	LAB SAMPLE ID --->	S880049*6		S880049*7		S880049*8					
	ID FROM REPORT -->	048S000304		048S000401		048S000404					
	SAMPLE DATE ----->	01/05/98		01/05/98		01/05/98					
	DATE EXTRACTED -->	01/12/98		01/12/98		01/12/98					
	DATE ANALYZED --->	01/16/98		01/16/98		01/15/98					
	MATRIX ---------->	Soil		Soil		Soil					
	UNITS ---------->	MG/KG		MG/KG		MG/KG					
CAS #	Parameter	EM1H03	VAL	EM1H03	VAL	EM1H03	VAL				
9999900-02-6	TPH - Diesel Range Organics	4.9	U	0.96	J	5.	U				

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 48 ANALYTICAL SOIL RESULTS

TPH-GRO	SAMPLE ID ------->	048-S-0001-01		048-S-0001-04		048-S-0002-01		048-C-0002-01		048-S-0002-04		048-S-0003-01	
	ORIGINAL ID ----->	048S000101		048S000104		048S000201		048C000201		048S000204		048S000301	
	LAB SAMPLE ID --->	S880049*1		S880049*4		S880049*2		S880049A*2		S880049*3		S880049*5	
	ID FROM REPORT -->	048S000101		048S000104		048S000201		048C000201		048S000204		048S000301	
	SAMPLE DATE ----->	01/05/98		01/05/98		01/05/98		01/05/98		01/05/98		01/05/98	
	DATE ANALYZED --->	01/08/98		01/08/98		01/08/98		01/08/98		01/08/98		01/08/98	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	MG/KG		MG/KG		MG/KG		MG/KG		MG/KG		MG/KG	
CAS #	Parameter	EM1H03	VAL	EM1H03	VAL	EM1H03	VAL	EM1H04	VAL	EM1H03	VAL	EM1H03	VAL
9999900-02-5	TPH - Gasoline Range Organics	0.22	U	0.24	U	0.21	U	0.22	U	0.61		0.22	U

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 48 ANALYTICAL SOIL RESULTS

TPH-GRO								
	SAMPLE ID ------->	048-S-0003-04		048-S-0004-01		048-S-0004-04		
	ORIGINAL ID ----->	048S000304		048S000401		048S000404		
	LAB SAMPLE ID --->	S880049*6		S880049*7		S880049*8		
	ID FROM REPORT -->	048S000304		048S000401		048S000404		
	SAMPLE DATE ----->	01/05/98		01/05/98		01/05/98		
	DATE ANALYZED --->	01/08/98		01/08/98		01/08/98		
	MATRIX ---------->	Soil		Soil		Soil		
	UNITS ---------->	MG/KG		MG/KG		MG/KG		
CAS #	Parameter	EM1H03	VAL	EM1H03	VAL	EM1H03	VAL	
9999900-02-5	TPH - Gasoline Range Organics	0.22	U	0.22	U	0.22	U	

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 49 ANALYTICAL SOIL RESULTS

APX9-METAL												
	SAMPLE ID ------->	049-S-0001-01		049-C-0001-01		049-S-0001-04						
	ORIGINAL ID ----->	049S000101		049C000101		049S000104						
	LAB SAMPLE ID --->	S880103*3		S880103A*1		S880103*4						
	ID FROM REPORT -->	049S000101		049C000101		049S000104						
	SAMPLE DATE ----->	01/07/98		01/07/98		01/07/98						
	DATE EXTRACTED -->	01/21/98		01/21/98		01/21/98						
	DATE ANALYZED --->	01/22/98		01/22/98		01/22/98						
	MATRIX ---------->	Soil		Soil		Soil						
	UNITS ---------->	MG/KG		MG/KG		MG/KG						
CAS #	Parameter	EM1H06	VAL	EM1H04	VAL	EM1H06	VAL					
7439-97-6	Mercury	0.05		0.04	J	0.05						
7440-36-0	Antimony	0.49	UR	0.39	UR	0.53	UR					
7440-38-2	Arsenic	7.2		6.7		5.6	J					
7440-39-3	Barium	84.2		102.		143.						
7440-41-7	Beryllium	0.38	J	0.39	U	0.63	J					
7440-43-9	Cadmium	0.03	UJ	0.03	U	0.04	UJ					
7440-47-3	Chromium	9.3	J	10.5		14.8	J					
7440-48-4	Cobalt	3.9		8.8		5.8						
7440-50-8	Copper	8.4	J	9.9		11.6	J					
7439-92-1	Lead	48.7	J	32.6	J	10.3	J					
7440-02-0	Nickel	7.8		9.	J	14.6						
7782-49-2	Selenium	0.37	U	0.38	U	0.64	J					
7440-22-4	Silver	0.11	U	0.11	U	0.12	U					
7440-28-0	Thallium	0.68	UJ	0.7	U	0.77	UJ					
7440-62-2	Vanadium	16.5		20.8		26.						
7440-66-6	Zinc	46.6	J	51.2	J	47.6	J					
7440-31-5	Tin	0.83	U	1.2	U	0.92	U					

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 49 ANALYTICAL SOIL RESULTS

METAL-CN								
	SAMPLE ID ------->	049-S-0001-01		049-C-0001-01				
	ORIGINAL ID ----->	049S000101		049C000101				
	LAB SAMPLE ID --->	S880103*3		S880103A*1				
	ID FROM REPORT -->	049S000101		049C000101				
	SAMPLE DATE ----->	01/07/98		01/07/98				
	DATE EXTRACTED -->	01/19/98		01/19/98				
	DATE ANALYZED --->	01/20/98		01/20/98				
	MATRIX ---------->	Soil		Soil				
	UNITS ---------->	MG/KG		MG/KG				
CAS #	Parameter	EM1H06	VAL	EM1H04	VAL			
57-12-5	Cyanide (CN)	1.2	UJ	1.2	U			

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 49 ANALYTICAL SOIL RESULTS

SW846-MERB								
	SAMPLE ID ------->	049-S-0001-01		049-C-0001-01				
	ORIGINAL ID ----->	049S000101		049C000101				
	LAB SAMPLE ID --->	S880103*3		S880103A*1				
	ID FROM REPORT -->	049S000101		049C000101				
	SAMPLE DATE ----->	01/07/98		01/07/98				
	DATE EXTRACTED -->	01/09/98		01/14/98				
	DATE ANALYZED --->	01/13/98		01/27/98				
	MATRIX ---------->	Soil		Soil				
	UNITS ---------->	UG/KG		UG/KG				
CAS #	Parameter	EM1H06	VAL	EM1H04	VAL			
75-99-0	Dalapon	2300.	U	2400.	U			
93-65-2	MCPP	2300.	U	2400.	U			
1918-00-9	Dicamba	23.	U	24.	U			
94-74-6	MCPA	2300.	U	2400.	U			
120-36-5	Dichlorprop	120.	U	120.	U			
94-75-7	2,4-D	9.6	U	10.	U			
93-72-1	2,4,5-TP (Silvex)	9.6	U	10.	U			
93-76-5	2,4,5-T	9.6	U	10.	U			
88-85-7	Dinoseb	120.	U	120.	U			
94-82-6	2,4-DB	9.6	U	10.	U			

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 49 ANALYTICAL SOIL RESULTS

SW846-OP P

SAMPLE ID ------->	049-S-0001-01		049-C-0001-01					
ORIGINAL ID ----->	049S000101		049C000101					
LAB SAMPLE ID --->	S880103*3		S880103A*1					
ID FROM REPORT -->	049S000101		049C000101					
SAMPLE DATE ----->	01/07/98		01/07/98					
DATE EXTRACTED -->	01/12/98		01/13/98					
DATE ANALYZED --->	02/01/98		02/03/98					
MATRIX ---------->	Soil		Soil					
UNITS ---------->	UG/KG		UG/KG					
CAS # Parameter	EM1H06	VAL	EM1H04	VAL				
86-50-0 Azinphos methyl	77.	U	80.	U				
35400-43-2 Sulprofos (Bolstar)	38.	U	40.	U				
2921-88-2 Chloropyrifos	38.	U	40.	U				
56-72-4 Coumaphos	380.	U	400.	U				
8065-48-3 Demeton,O	96.	U	100.	U				
126-75-0 Demeton,S	96.	U	100.	U				
333-41-5 Diazinon	38.	U	40.	U				
62-73-7 Dichlorvos	77.	U	80.	U				
298-04-4 Disulfoton	77.	U	80.	U				
13194-48-4 Ethoprop	20.	U	20.	U				
115-90-2 Fensulfothion	380.	U	400.	U				
55-38-9 Fenthion	38.	U	40.	U				
7786-34-7 Mevinphos, Alpha	77.	U	80.	U				
300-76-5 Naled	380.	U	400.	U				
298-00-0 Methyl parathion	20.	U	20.	U				
298-02-2 Phorate	38.	U	40.	U				
299-84-3 Ronnel	38.	U	40.	U				
22248-79-9 Stirophos (Tetrachlorovinphos)	38.	U	40.	U				
327-98-0 Trichloronate	380.	U	400.	U				
150-50-5 Merphos	38.	U	40.	U				
34643-46-4 Tokuthion	38.	U	40.	U				
60-51-5 Dimethoate	77.	U	80.	U				
121-75-5 Malathion	38.	U	40.	U				
2157-98-4 Monocrotophos	380.	U	400.	U				
56-38-2 Parathion	38.	U	40.	U				
3689-24-5 Sulfotep	20.	U	20.	U				
2104-64-5 EPN	38.	U	40.	U				

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 49 ANALYTICAL SOIL RESULTS

SW846-PEST											
	SAMPLE ID ------->	049-C-0001-01		049-S-0001-01		049-S-0001-04					
	ORIGINAL ID ----->	049C000101		049S000101		049S000104					
	LAB SAMPLE ID --->	S880103A*1		S880103*3		S880103*4					
	ID FROM REPORT -->	049C000101		049S000101		049S000104					
	SAMPLE DATE ----->	01/07/98		01/07/98		01/07/98					
	DATE EXTRACTED -->	01/13/98		01/12/98		01/13/98					
	DATE ANALYZED --->	01/22/98		01/23/98		01/23/98					
	MATRIX ---------->	Soil		Soil		Soil					
	UNITS ---------->	UG/KG		UG/KG		UG/KG					
CAS #	Parameter	EM1H04	VAL	EM1H06	VAL	EM1H06	VAL				
319-84-6	alpha-BHC	4.1	U	20.	U	2.2	U				
319-85-7	beta-BHC	4.1	U	20.	U	2.2	U				
319-86-8	delta-BHC	4 1	U	20.	U	2.2	U				
58-89-9	gamma-BHC (Lindane)	4.1	U	20.	U	2.2	U				
76-44-8	Heptachlor	4.1	U	20.	U	2.2	U				
309-00-2	Aldrin	4.1	U	20.	U	2.2	U				
1024-57-3	Heptachlor epoxide	4.1	U	20.	U	2.2	U				
959-98-8	Endosulfan I	4.1	U	20.	U	2.2	U				
60-57-1	Dieldrin	23.	J	46.	J	4.3	U				
72-55-9	4,4'-DDE	8.	U	38.	U	4.3	U				
72-20-8	Endrin	8.	U	38.	U	4.3	U				
33213-65-9	Endosulfan II	8.	U	38.	U	4.3	U				
72-54-8	4,4'-DDD	8.	U	38.	U	4.3	U				
1031-07-8	Endosulfan sulfate	8.	U	38.	U	4.3	U				
50-29-3	4,4'-DDT	1.8	J	38.	U	4.3	U				
72-43-5	Methoxychlor	41.	U	200.	U	22.	U				
7421-93-4	Endrin aldehyde	0.85	J	38.	U	4.3	U				
8001-35-2	Toxaphene	410.	U	2000.	U	220.	U				
12674-11-2	Aroclor-1016	80.	U	380.	U	43.	U				
11104-28-2	Aroclor-1221	160.	U	780.	U	88.	U				
11141-16-5	Aroclor-1232	80.	U	380.	U	43.	U				
53469-21-9	Aroclor-1242	80.	U	380.	U	43.	U				
12672-29-6	Aroclor-1248	80.	U	380.	U	43.	U				
11097-69-1	Aroclor-1254	80.	U	380.	U	43.	U				
11096-82-5	Aroclor-1260	80.	U	380.	U	43.	U				
57-74-9	Chlordane	41.	U	200.	U	22.	U				

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 49 ANALYTICAL SOIL RESULTS

SW846-SVOA

SAMPLE ID ------->	049-S-0001-01		049-C-0001-01		049-S-0001-04			
ORIGINAL ID ----->	049S000101		049C000101		049S000104			
LAB SAMPLE ID --->	S880103*3		S880103A*1		S880103*4			
ID FROM REPORT -->	049S000101		049C000101		049S000104			
SAMPLE DATE ----->	01/07/98		01/07/98		01/07/98			
DATE EXTRACTED -->	01/12/98		01/13/98		01/13/98			
DATE ANALYZED --->	01/29/98		02/02/98		02/03/98			
MATRIX ---------->	Soil		Soil		Soil			
UNITS ---------->	UG/KG		UG/KG		UG/KG			
CAS # Parameter	EM1H06	VAL	EM1H04	VAL	EM1H06	VAL		
108-95-2 Phenol	380.	U	400.	U	430.	U		
111-44-4 bis(2-Chloroethyl)ether	380.	U	400.	U	430.	U		
95-57-8 2-Chlorophenol	380.	U	400.	U	430.	U		
541-73-1 1,3-Dichlorobenzene	380.	U	400.	U	430.	U		
106-46-7 1,4-Dichlorobenzene	380.	U	400.	U	430.	U		
95-50-1 1,2-Dichlorobenzene	380.	U	400.	U	430.	U		
95-48-7 2-Methylphenol (o-Cresol)	380.	U	400.	U	430.	U		
108-60-1 2,2'-oxybis(1-Chloropropane)	380.	U	400.	U	430.	U		
9999900-32-2 3-Methylphenol/4-Methylphenol	380.	U	400.	U	430.	U		
621-64-7 N-Nitroso-di-n-propylamine	380.	U	400.	U	430.	U		
67-72-1 Hexachloroethane	380.	U	400.	U	430.	U		
98-95-3 Nitrobenzene	380.	U	400.	U	430.	U		
78-59-1 Isophorone	380.	U	400.	U	430.	U		
88-75-5 2-Nitrophenol	380.	U	400.	U	430.	U		
105-67-9 2,4-Dimethylphenol	380.	U	400.	U	430.	U		
120-83-2 2,4-Dichlorophenol	380.	U	400.	U	430.	U		
120-82-1 1,2,4-Trichlorobenzene	380.	U	400.	U	430.	U		
91-20-3 Naphthalene	380.	U	400.	U	430.	U		
106-47-8 4-Chloroaniline	770.	U	800.	U	870.	U		
87-68-3 Hexachlorobutadiene	380.	U	400.	U	430.	U		
111-91-1 bis(2-Chloroethoxy)methane	380.	U	400.	U	430.	U		
59-50-7 4-Chloro-3-methylphenol	380.	U	400.	U	430.	U		
91-57-6 2-Methylnaphthalene	380.	U	400.	U	430.	U		
77-47-4 Hexachlorocyclopentadiene	380.	U	400.	U	430.	U		
88-06-2 2,4,6-Trichlorophenol	380.	U	400.	U	430.	U		
95-95-4 2,4,5-Trichlorophenol	380.	U	400.	U	430.	U		
91-58-7 2-Chloronaphthalene	380.	U	400.	U	430.	U		
88-74-4 2-Nitroaniline	2000.	U	2000.	U	2200.	U		
131-11-3 Dimethylphthalate	380.	U	400.	U	430.	U		
208-96-8 Acenaphthylene	380.	U	400.	U	430.	U		
606-20-2 2,6-Dinitrotoluene	380.	U	400.	U	430.	U		
99-09-2 3-Nitroaniline	2000.	U	2000.	U	2200.	U		
83-32-9 Acenaphthene	380.	U	400.	U	430.	U		
51-28-5 2,4-Dinitrophenol	2000.	U	2000.	U	2200.	U		
100-02-7 4-Nitrophenol	2000.	U	2000.	U	2200.	U		
132-64-9 Dibenzofuran	380.	U	400.	U	430.	U		

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 49 ANALYTICAL SOIL RESULTS

SW846-SVOA									
	SAMPLE ID ------->	049-S-0001-01		049-C-0001-01		049-S-0001-04			
	ORIGINAL ID ----->	049S000101		049C000101		049S000104			
	LAB SAMPLE ID --->	S880103*3		S880103A*1		S880103*4			
	ID FROM REPORT -->	049S000101		049C000101		049S000104			
	SAMPLE DATE ----->	01/07/98		01/07/98		01/07/98			
	DATE EXTRACTED -->	01/12/98		01/13/98		01/13/98			
	DATE ANALYZED --->	01/29/98		02/02/98		02/03/98			
	MATRIX ---------->	Soil		Soil		Soil			
	UNITS ---------->	UG/KG		UG/KG		UG/KG			
CAS #	Parameter	EM1H06	VAL	EM1H04	VAL	EM1H06	VAL		
121-14-2	2,4-Dinitrotoluene	380.	U	400.	U	430.	U		
84-66-2	Diethylphthalate	51.	J	400.	U	430.	U		
7005-72-3	4-Chlorophenylphenyl ether	380.	U	400.	U	430.	U		
86-73-7	Fluorene	380.	U	400.	U	430.	U		
100-01-6	4-Nitroaniline	2000.	U	2000.	U	2200.	U		
534-52-1	2-Methyl-4,6-Dinitrophenol	2000.	U	2000.	U	2200.	U		
86-30-6	N-Nitrosodiphenylamine	NR		NR		NR			
101-55-3	4-Bromophenyl-phenylether	380.	U	400.	U	430.	U		
118-74-1	Hexachlorobenzene	380.	U	400.	U	430.	U		
87-86-5	Pentachlorophenol	2000.	U	2000.	U	2200.	U		
85-01-8	Phenanthrene	380.	U	110.	J	430.	U		
120-12-7	Anthracene	380.	U	10.	J	430.	U		
86-74-8	Carbazole	380.	U	400.	U	430.	U		
84-74-2	Di-n-butylphthalate	380.	U	400.	U	430.	U		
206-44-0	Fluoranthene	16.	J	290.	J	430.	U		
129-00-0	Pyrene	11.	J	260.	J	430.	U		
85-68-7	Butylbenzylphthalate	380.	U	400.	U	430.	U		
91-94-1	3,3'-Dichlorobenzidine	770.	U	800.	U	870.	U		
56-55-3	Benzo(a)anthracene	380.	U	110.	J	430.	U		
218-01-9	Chrysene	380.	U	170.	J	430.	U		
117-81-7	bis(2-Ethylhexyl)phthalate (BEHP)	200.	J	400.	UJ	430.	U		
117-84-0	Di-n-octylphthalate	380.	U	400.	U	430.	U		
205-99-2	Benzo(b)fluoranthene	13.	J	180.	J	430.	U		
207-08-9	Benzo(k)fluoranthene	380.	U	68.	J	430.	U		
50-32-8	Benzo(a)pyrene	8.8	J	130.	J	430.	U		
193-39-5	Indeno(1,2,3-cd)pyrene	380.	U	82.	J	430.	U		
53-70-3	Dibenz(a,h)anthracene	380.	U	400.	U	430.	U		
191-24-2	Benzo(g,h,i)perylene	380.	U	83.	J	430.	U		
122-39-4	Diphenylamine	380.	U	400.	U	430.	U		

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 49 ANALYTICAL SOIL RESULTS

SUB46-VOA

	SAMPLE ID ------->	049-S-0001-01		049-C-0001-01		049-S-0001-04					
	ORIGINAL ID ----->	049S000101		049C000101		049S000104					
	LAB SAMPLE ID --->	S880103*3		S880103A*1		S880103*4					
	ID FROM REPORT -->	049S000101		049C000101		049S000104					
	SAMPLE DATE ----->	01/07/98		01/07/98		01/07/98					
	DATE ANALYZED --->	01/17/98		01/15/98		01/16/98					
	MATRIX ---------->	Soil		Soil		Soil					
	UNITS ----------->	UG/KG		UG/KG		UG/KG					
CAS #	Parameter	EM1H06	VAL	EM1H04	VAL	EM1H06	VAL				
74-87-3	Chloromethane	12.	U	12.	U	13.	U				
75-01-4	Vinyl chloride	12.	U	12.	U	13.	U				
74-83-9	Bromomethane	12.	U	12.	U	13.	U				
75-00-3	Chloroethane	12.	U	12.	U	13.	U				
75-35-4	1,1-Dichloroethene	5.8	U	6.	U	6.6	U				
75-09-2	Methylene chloride	5.8	U	6.	U	6.6	U				
75-34-3	1,1-Dichloroethane	5.8	U	6.	U	6.6	U				
67-66-3	Chloroform	5.8	U	6.	U	6.6	U				
71-55-6	1,1,1-Trichloroethane	5.8	U	6.	U	6.6	U				
56-23-5	Carbon tetrachloride	5.8	U	6.	U	6.6	U				
71-43-2	Benzene	5.8	U	6.	U	6.6	U				
107-06-2	1,2-Dichloroethane	5.8	U	6.	U	6.6	U				
79-01-6	Trichloroethene	5.8	U	6.	U	6.6	U				
78-87-5	1,2-Dichloropropane	5.8	U	6.	U	6.6	U				
75-27-4	Bromodichloromethane	5.8	U	6.	U	6.6	U				
108-88-3	Toluene	5.8	U	6.	U	6.6	U				
79-00-5	1,1,2-Trichloroethane	5.8	U	6.	U	6.6	U				
127-18-4	Tetrachloroethene	5.8	U	2.	J	6.6	U				
124-48-1	Dibromochloromethane	5.8	U	6.	U	6.6	U				
108-90-7	Chlorobenzene	5.8	U	6.	U	6.6	U				
100-41-4	Ethylbenzene	5.8	U	1.1	J	6.6	U				
100-42-5	Styrene	5.8	U	6.	U	6.6	U				
75-25-2	Bromoform	5.8	U	6.	U	6.6	U				
79-34-5	1,1,2,2-Tetrachloroethane	5.8	U	6.	U	6.6	U				
67-64-1	Acetone	58.	U	60.	U	66.	U				
75-15-0	Carbon disulfide	5.8	U	6.	U	6.6	U				
78-93-3	2-Butanone (MEK)	29.	U	30.	U	33.	U				
108-10-1	4-Methyl-2-Pentanone (MIBK)	29.	U	30.	U	33.	U				
10061-01-5	cis-1,3-Dichloropropene	5.8	U	6.	U	6.6	U				
10061-02-6	trans-1,3-Dichloropropene	5.8	U	6.	U	6.6	U				
591-78-6	2-Hexanone	29.	U	30.	U	33.	U				
1330-20-7	Xylene (Total)	5.8	U	3.6	J	6.6	U				
540-59-0	1,2-Dichloroethene (total)	5.8	U	6.	U	6.6	U				
1330-20-7	Xylene (Total)	NR		NR		NR					
9999000-44-2	XYLENES	NR		NR		NR					

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 49 ANALYTICAL SOIL RESULTS

TPH								
	SAMPLE ID ------->	049-S-0001-01		049-C-0001-01		049-S-0001-04		
	ORIGINAL ID ----->	049S000101		049C000101		049S000104		
	LAB SAMPLE ID --->	S880103*3		S880103A*1		S880103*4		
	ID FROM REPORT -->	049S000101		049C000101		049S000104		
	SAMPLE DATE ----->	01/07/98		01/07/98		01/07/98		
	DATE EXTRACTED -->	02/04/98		01/29/98		02/04/98		
	DATE ANALYZED --->	02/05/98		01/29/98		02/05/98		
	MATRIX ---------->	Soil		Soil		Soil		
	UNITS ---------->	MG/KG		MG/KG		MG/KG		
CAS #	Parameter	EM1H06	VAL	EM1H04	VAL	EM1H06	VAL	
9999900-02-4	Petroleum Hydrocarbons, TPH	NR		NR		NR		
9999000-83-9	TOTAL RECOVERABLE PETROLEUM HYDROCARBONS	280.	J	150.	J	24.	J	

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 49 ANALYTICAL SOIL RESULTS

TPH-DRO								
	SAMPLE ID ------->	049-S-0001-01		049-C-0001-01				
	ORIGINAL ID ----->	049S000101		049C000101				
	LAB SAMPLE ID --->	S880103*3		S880103A*1				
	ID FROM REPORT -->	049S000101		049C000101				
	SAMPLE DATE ----->	01/07/98		01/07/98				
	DATE EXTRACTED -->	01/12/98		01/13/98				
	DATE ANALYZED --->	01/16/98		01/16/98				
	MATRIX ---------->	Soil		Soil				
	UNITS ----------->	MG/KG		MG/KG				
CAS #	Parameter	EM1H06	VAL	EM1H04	VAL			
9999900-02-6	TPH - Diesel Range Organics	4.6	U	1.4	J			

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 49 ANALYTICAL SOIL RESULTS

TPH-GRO								
	SAMPLE ID ------->	049-S-0001-01		049-C-0001-01				
	ORIGINAL ID ----->	049S000101		049C000101				
	LAB SAMPLE ID --->	S880103*3		S880103A*1				
	ID FROM REPORT -->	049S000101		049C000101				
	SAMPLE DATE ----->	01/07/98		01/07/98				
	DATE ANALYZED --->	01/11/98		01/12/98				
	MATRIX ---------->	Soil		Soil				
	UNITS ----------->	MG/KG		MG/KG				
CAS #	Parameter	EM1H06	VAL	EM1H04	VAL			
9999900-02-5	TPH - Gasoline Range Organics	0.21	U	0.22	U			

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 61 ANALYTICAL SOIL RESULTS

APX9-METAL													
	SAMPLE ID ------->	061-S-0001-01		061-S-0001-04		061-S-0002-01		061-S-0002-04		061-S-0003-01		061-S-0003-04	
	ORIGINAL ID ----->	061S000101		061S000104		061S000201		061S000204		061S000301		061S000304	
	LAB SAMPLE ID --->	S771296*2		S771296*5		S771296*6		S771296*7		S771296*8		S771296*9	
	ID FROM REPORT -->	061S000101		061S000104		061S000201		061S000204		061S000301		061S000304	
	SAMPLE DATE ----->	03/04/97		03/04/97		03/04/97		03/04/97		03/04/97		03/04/97	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ----------->	MG/KG		MG/KG		MG/KG		MG/KG		MG/KG		MG/KG	
CAS #	Parameter	MEG01	VAL	MEG01	VAL	MEG01	VAL	MEG01	VAL	MEG01	VAL	MEG01	VAL
7439-97-6	Mercury	0.04		0.06		0.06		0.03		0.32		0.06	
7440-36-0	Antimony	1.3	UJ	0.68	UJ	0.82	UJ	0.59	UJ	0.66	UJ	0.83	UJ
7440-38-2	Arsenic	8.8		11.6		11.4		9.6		7.4		12.6	
7440-39-3	Barium	134.		118.		143.		122.		124.		146.	
7440-41-7	Beryllium	0.48	J	0.56	J	0.45	J	0.33	J	0.58	J	0.67	J
7440-43-9	Cadmium	0.04	U	0.04	U	0.44	J	0.04	U	1.3		0.04	U
7440-47-3	Chromium	12.3		14.6		18.7		12.2		12.3		18.5	
7440-48-4	Cobalt	7.9	J	7.3	J	8.4	J	9.5	J	7.1	J	15.4	J
7440-50-8	Copper	13.1		17.3		21.4		14.7		66.3		22.8	
7439-92-1	Lead	246.	J	152.	J	403.	J	20.9	J	115.	J	25.5	J
7440-02-0	Nickel	13.6		15.6		13.5		13.		13.7		18.2	
7782-49-2	Selenium	0.39	UJ	0.42	UJ	0.48	J	0.81	J	0.6	J	0.5	J
7440-22-4	Silver	0.3	U	0.32	U	0.3	U	0.32	U	0.52	J	0.32	U
7440-28-0	Thallium	0.67	J	0.65	U	0.8	J	0.64	U	0.64	U	1.	J
7440-62-2	Vanadium	23.8		27.8		20.6		25.6		24.4		38.5	
7440-66-6	Zinc	80.5	J	71.6	J	271.	J	59.2	J	689.	J	89.4	J
7440-31-5	Tin	1.9	U	1.4	U	2.6	U	1.4	U	1.6	U	1.5	U

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 61 ANALYTICAL SOIL RESULTS

APX9-METAL													
	SAMPLE ID ------->	061-S-0004-01		061-C-0004-01		061-S-0005-01		061-S-0005-04		061-S-0006-01		061-S-0006-04	
	ORIGINAL ID ----->	061S000401		061C000401		061S000501		061S000504		061S000601		061S000604	
	LAB SAMPLE ID --->	S771296*3		S771296*1		S771296*10		S771296*11		S771296*4		S771296*12	
	ID FROM REPORT -->	061S000401		061C000401		061S000501		061S000504		061S000601		061S000604	
	SAMPLE DATE ----->	03/04/97		03/04/97		03/05/97		03/05/97		03/05/97		03/05/97	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	MG/KG		MG/KG		MG/KG		MG/KG		MG/KG		MG/KG	
CAS #	Parameter	MEG01	VAL	MEG01	VAL	MEG01	VAL	MEG01	VAL	MEG01	VAL	MEG01	VAL
7439-97-6	Mercury	0.08		0.06		0.04		0.03		0.05		0.05	
7440-36-0	Antimony	0.99	UJ	0.56	UJ	0.74	UJ	0.8	UJ	0.65	UJ	0.37	UJ
7440-38-2	Arsenic	5.2		5.6		11.8		10.		7.7		9.8	
7440-39-3	Barium	106.		101.		162.		135.		133.		145.	
7440-41-7	Beryllium	0.42	J	0.46	J	0.56	J	0.56	J	0.55	J	0.64	J
7440-43-9	Cadmium	0.04	U	0.03	U	0.04	U	0.04	U	0.04	U	0.04	U
7440-47-3	Chromium	9.2		12.3		15.8		12.2		12.8		14.8	
7440-48-4	Cobalt	7.4	J	5.5	J	9.8	J	8.1	J	4.9	J	8.2	J
7440-50-8	Copper	8.7		9.4		22.9		17.1		13.4		15.9	
7439-92-1	Lead	12.6	J	14.2	J	22.5	J	11.9	J	11.9	J	12.8	J
7440-02-0	Nickel	11.1		11.6		20.7		16.6		12.7		15.4	
7782-49-2	Selenium	0.39	UJ	0.38	UJ	0.52	J	0.55	J	0.46	J	0.57	J
7440-22-4	Silver	0.3	U	0.3	U	0.31	U	0.32	U	0.48	J	0.43	J
7440-28-0	Thallium	0.61	U	0.6	U	0.64	U	0.65	U	0.65	U	0.65	U
7440-62-2	Vanadium	17.7		21.8		32.4		26.		25.2		27.6	
7440-66-6	Zinc	32.7	J	37.6	J	90.5	J	52.4	J	45.9	J	52.1	J
7440-31-5	Tin	0.94	U	1.1	U	1.5	U	1.2	U	1.2	U	1.1	U

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 61 ANALYTICAL SOIL RESULTS

METAL-CN													
	SAMPLE ID ------->	061-S-0001-01		061-S-0001-04		061-S-0002-01		061-S-0002-04		061-S-0003-01		061-S-0003-04	
	ORIGINAL ID ----->	061S000101		061S000104		061S000201		061S000204		061S000301		061S000304	
	LAB SAMPLE ID --->	S771296*2		S771296*5		S771296*6		S771296*7		S771296*8		S771296*9	
	ID FROM REPORT -->	061S000101		061S000104		061S000201		061S000204		061S000301		061S000304	
	SAMPLE DATE ----->	03/04/97		03/04/97		03/04/97		03/04/97		03/04/97		03/04/97	
	DATE EXTRACTED -->	03/11/97		03/11/97		03/11/97		03/11/97		03/11/97		03/11/97	
	DATE ANALYZED --->	03/11/97		03/11/97		03/11/97		03/11/97		03/11/97		03/11/97	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	MG/KG		MG/KG		MG/KG		MG/KG		MG/KG		MG/KG	
CAS #	Parameter	MEG01	VAL	MEG01	VAL	MEG01	VAL	MEG01	VAL	MEG01	VAL	MEG01	VAL
57-12-5	Cyanide (CN)	1.2	U	1.3	U	1.2	U	1.3	U	1.3	U	1.3	U

*** Validati Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 61 ANALYTICAL SOIL RESULTS

METAL-CN													
	SAMPLE ID ------->	061-S-0004-01		061-C-0004-01		061-S-0005-01		061-S-0005-04		061-S-0006-01		061-S-0006-04	
	ORIGINAL ID ----->	061S000401		061C000401		061S000501		061S000504		061S000601		061S000604	
	LAB SAMPLE ID --->	S771296*3		S771296*1		S771296*10		S771296*11		S771296*4		S771296*12	
	ID FROM REPORT -->	061S000401		061C000401		061S000501		061S000504		061S000601		061S000604	
	SAMPLE DATE ----->	03/04/97		03/04/97		03/05/97		03/05/97		03/05/97		03/05/97	
	DATE EXTRACTED -->	03/11/97		03/11/97		03/11/97		03/11/97		03/11/97		03/11/97	
	DATE ANALYZED --->	03/11/97		03/11/97		03/11/97		03/11/97		03/11/97		03/11/97	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	MG/KG		MG/KG		MG/KG		MG/KG		MG/KG		MG/KG	
CAS #	Parameter	MEG01	VAL	MEG01	VAL	MEG01	VAL	MEG01	VAL	MEG01	VAL	MEG01	VAL
57-12-5	Cyanide (CN)	1.2	U	1.2	U	1.3	U	1.3	U	1.3	U	1.3	U

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 61 ANALYTICAL SOIL RESULTS

SW846-8RB											
		SAMPLE ID ------->	061-S-0001-01		061-S-0004-01		061-C-0004-01		061-S-0006-01		
		ORIGINAL ID ----->	061S000101		061S000401		061C000401		061S000601		
		LAB SAMPLE ID --->	S771296*2		S771296*3		S771296*1		S771296*4		
		ID FROM REPORT -->	061S000101		061S000401		061C000401		061S000601		
		SAMPLE DATE ----->	03/04/97		03/04/97		03/04/97		03/05/97		
		DATE EXTRACTED -->	03/07/97		03/07/97		03/07/97		03/07/97		
		DATE ANALYZED --->	03/13/97		03/13/97		03/13/97		03/13/97		
		MATRIX ---------->	Soil		Soil		Soil		Soil		
		UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		
CAS #	Parameter		MEG01	VAL	MEG01	VAL	MEG01	VAL	MEG01	VAL	
75-99-0	Dalapon		2500.	U	2500.	U	2400.	U	2600.	U	
93-65-2	MCPP		2500.	U	2500.	U	2400.	U	2600.	U	
1918-00-9	Dicamba		5.	U	25.	U	24.	U	26.	U	
94-74-6	MCPA		2500.	U	2500.	U	2400.	U	2600.	U	
120-36-5	Dichlorprop		120.	U	120.	U	120.	U	130.	U	
94-75-7	2,4-D		10.	U	10.	U	10.	U	11.	U	
93-72-1	2,4,5-TP (Silvex)		10.	U	10.	U	10.	U	11.	U	
93-76-5	2,4,5-T		10.	U	10.	U	10.	U	11.	U	
88-85-7	Dinoseb		120.	U	120.	U	120.	U	130.	U	
94-82-6	2,4-DB		10.	U	10.	U	10.	U	11.	U	

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 61 ANALYTICAL SOIL RESULTS

SW846-OP P									
	SAMPLE ID ------->	061-S-0001-01		061-S-0004-01		061-C-0004-01		061-S-0006-01	
	ORIGINAL ID ----->	061S000101		061S000401		061C000401		061S000601	
	LAB SAMPLE ID --->	S771296*2		S771296*3		S771296*1		S771296*4	
	ID FROM REPORT -->	061S000101		061S000401		061C000401		061S000601	
	SAMPLE DATE ----->	03/04/97		03/04/97		03/04/97		03/05/97	
	DATE EXTRACTED -->	03/07/97		03/07/97		03/07/97		03/07/97	
	DATE ANALYZED --->	03/14/97		03/14/97		03/14/97		03/14/97	
	MATRIX ---------->	Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	MEG01	VAL	MEG01	VAL	MEG01	VAL	MEG01	VAL
86-50-0	Azinphos methyl	81.	U	81.	U	80.	U	87.	U
35400-43-2	Sulprofos (Bolstar)	41.	U	41.	U	40.	U	43.	U
2921-88-2	Chloropyrifos	41.	U	41.	U	40.	U	43.	U
56-72-4	Coumaphos	410.	U	410.	U	400.	U	430.	U
8065-48-3	Demeton,O	100.	U	100.	U	100.	U	110.	U
126-75-0	Demeton,S	100.	U	100.	U	100.	U	110.	U
333-41-5	Diazinon	41.	U	41.	U	40.	U	43.	U
62-73-7	Dichlorvos	81.	U	81.	U	80.	U	87.	U
298-04-4	Disulfoton	81.	U	81.	U	80.	U	87.	U
13194-48-4	Ethoprop	21.	U	21.	U	20.	U	22.	U
115-90-2	Fensulfothion	410.	U	410.	U	400.	U	430.	U
55-38-9	Fenthion	41.	U	41.	U	40.	U	43.	U
7786-34-7	Mevinphos, Alpha	81.	U	81.	U	80.	U	87.	U
300-76-5	Naled	410.	U	410.	U	400.	U	430.	U
298-00-0	Methyl parathion	21.	U	21.	U	20.	U	22.	U
298-02-2	Phorate	41.	U	41.	U	40.	U	43.	U
299-84-3	Ronnel	41.	U	41.	U	40.	U	43.	U
22248-79-9	Stirophos (Tetrachlorovinphos)	41.	U	41.	U	40.	U	43.	U
327-98-0	Trichloronate	410.	U	410.	U	400.	U	430.	U
150-50-5	Merphos	41.	U	41.	U	40.	U	43.	U
34643-46-4	Tokuthion	41.	U	41.	U	40.	U	43.	U
60-51-5	Dimethoate	NR		NR		NR		NR	
121-75-5	Malathion	NR		NR		NR		NR	
2157-98-4	Monocrotophos	NR		NR		NR		NR	
56-38-2	Parathion	NR		NR		NR		NR	
3689-24-5	Sulfotep	NR		NR		NR		NR	
2104-64-5	EPN	NR		NR		NR		NR	

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 61 ANALYTICAL SOIL RESULTS

SW846-PEST											
	SAMPLE ID ------->	061-S-0001-01		061-S-0004-01		061-C-0004-01		061-S-0006-01			
	ORIGINAL ID ----->	061S000101		061S000401		061C000401		061S000601			
	LAB SAMPLE ID --->	S771296*2		S771296*3		S771296*1		S771296*4			
	ID FROM REPORT -->	061S000101		061S000401		061C000401		061S000601			
	SAMPLE DATE ----->	03/04/97		03/04/97		03/04/97		03/05/97			
	DATE EXTRACTED -->	03/07/97		03/07/97		03/07/97		03/07/97			
	DATE ANALYZED --->	03/11/97		03/11/97		03/11/97		03/11/97			
	MATRIX ---------->	Soil		Soil		Soil		Soil			
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG			
CAS #	Parameter	MEG01	VAL	MEG01	VAL	MEG01	VAL	MEG01	VAL		
319-84-6	alpha-BHC	4.2	U	2.1	U	2.	U	2.2	U		
319-85-7	beta-BHC	0.33	J	2.1	U	2.	U	2.2	U		
319-86-8	delta-BHC	4.2	U	2.1	U	2.	U	2.2	U		
58-89-9	gamma-BHC (Lindane)	4.2	U	2.1	U	2.	U	2.2	U		
76-44-8	Heptachlor	4.2	U	2.1	U	2.	U	2.2	U		
309-00-2	Aldrin	4.2	U	2.1	U	2.	U	2.2	U		
1024-57-3	Heptachlor epoxide	4.2	U	2.1	U	2.	U	2.2	U		
959-98-8	Endosulfan I	4.2	U	2.1	U	2.	U	2.2	U		
60-57-1	Dieldrin	21.		0.39	U	0.33	U	0.15	U		
72-55-9	4,4'-DDE	10.		4.1	U	4.	U	0.42	J		
72-20-8	Endrin	8.1	U	4.1	U	4.	U	4.3	U		
33213-65-9	Endosulfan II	8.1	U	4.1	U	4.	U	4.3	U		
72-54-8	4,4'-DDD	0.67	U	4.1	U	0.24	J	0.11	U		
1031-07-8	Endosulfan sulfate	8.1	U	4.1	U	4.	U	4.3	U		
50-29-3	4,4'-DDT	19.		2.4	J	2.5	J	1.8	J		
72-43-5	Methoxychlor	42.	U	21.	U	20.	U	22.	U		
7421-93-4	Endrin aldehyde	8.1	U	4.1	U	4.	U	4.3	U		
8001-35-2	Toxaphene	420.	U	210.	U	200.	U	220.	U		
12674-11-2	Aroclor-1016	81.	U	41.	U	40.	U	43.	U		
11104-28-2	Aroclor-1221	160.	U	83.	U	81.	U	88.	U		
11141-16-5	Aroclor-1232	81.	U	41.	U	40.	U	43.	U		
53469-21-9	Aroclor-1242	81.	U	41.	U	40.	U	43.	U		
12672-29-6	Aroclor-1248	81.	U	41.	U	40.	U	43.	U		
11097-69-1	Aroclor-1254	81.	U	41.	U	40.	U	43.	U		
11096-82-5	Aroclor-1260	81.	U	41.	U	40.	U	43.	U		
57-74-9	Chlordane	42.	U	21.	U	20.	U	13.	J		

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 61 ANALYTICAL SOIL RESULTS

SW846-SVOA																	
	SAMPLE ID ------->	061-S-0001-01		061-S-0001-04		061-S-0002-01		061-S-0002-04		061-S-0003-01		061-S-0003-04	
	ORIGINAL ID ----->	061S000101		061S000104		061S000201		061S000204		061S000301		061S000304	
	LAB SAMPLE ID --->	S771296*2		S771296*5		S771296*6		S771296*7		S771296*8		S771296*9	
	ID FROM REPORT -->	061S000101		061S000104		061S000201		061S000204		061S000301		061S000304	
	SAMPLE DATE ----->	03/04/97		03/04/97		03/04/97		03/04/97		03/04/97		03/04/97	
	DATE EXTRACTED -->	03/07/97		03/07/97		03/07/97		03/07/97		03/07/97		03/07/97	
	DATE ANALYZED --->	03/10/97		03/10/97		03/10/97		03/10/97		03/11/97		03/10/97	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	MEG01	VAL	MEG01	VAL	MEG01	VAL	MEG01	VAL	MEG01	VAL	MEG01	VAL
108-95-2	Phenol	410.	U	430.	U	400.	U	430.	U	430.	U	430.	U
111-44-4	bis(2-Chloroethyl)ether	410.	U	430.	U	400.	U	430.	U	430.	U	430.	U
95-57-8	2-Chlorophenol	410.	U	430.	U	400.	U	430.	U	430.	U	430.	U
541-73-1	1,3-Dichlorobenzene	410.	U	430.	U	400.	U	430.	U	430.	U	430.	U
106-46-7	1,4-Dichlorobenzene	410.	U	430.	U	400.	U	430.	U	430.	U	430.	U
95-50-1	1,2-Dichlorobenzene	410.	U	430.	U	400.	U	430.	U	430.	U	430.	U
95-48-7	2-Methylphenol (o-Cresol)	410.	U	430.	U	400.	U	430.	U	430.	U	430.	U
108-60-1	2,2'-oxybis(1-Chloropropane)	410.	U	430.	U	400.	U	430.	U	430.	U	430.	U
9999900-32-2	3-Methylphenol/4-Methylphenol	410.	U	430.	U	400.	U	430.	U	430.	U	430.	U
621-64-7	N-Nitroso-di-n-propylamine	410.	U	430.	U	400.	U	430.	U	430.	U	430.	U
67-72-1	Hexachloroethane	410.	U	430.	U	400.	U	430.	U	430.	U	430.	U
98-95-3	Nitrobenzene	410.	U	430.	U	400.	U	430.	U	430.	U	430.	U
78-59-1	Isophorone	410.	U	430.	U	400.	U	430.	U	430.	U	430.	U
88-75-5	2-Nitrophenol	410.	U	430.	U	400.	U	430.	U	430.	U	430.	U
105-67-9	2,4-Dimethylphenol	410.	U	430.	U	400.	U	430.	U	430.	U	430.	U
120-83-2	2,4-Dichlorophenol	410.	U	430.	U	400.	U	430.	U	430.	U	430.	U
120-82-1	1,2,4-Trichlorobenzene	410.	U	430.	U	400.	U	430.	U	430.	U	430.	U
91-20-3	Naphthalene	410.	U	430.	U	400.	U	430.	U	430.	U	430.	U
106-47-8	4-Chloroaniline	810.	U	870.	U	800.	U	860.	U	860.	U	860.	U
87-68-3	Hexachlorobutadiene	410.	U	430.	U	400.	U	430.	U	430.	U	430.	U
111-91-1	bis(2-Chloroethoxy)methane	410.	U	430.	U	400.	U	430.	U	430.	U	430.	U
59-50-7	4-Chloro-3-methylphenol	410.	U	430.	U	400.	U	430.	U	430.	U	430.	U
91-57-6	2-Methylnaphthalene	410.	U	430.	U	400.	U	430.	U	430.	U	430.	U
77-47-4	Hexachlorocyclopentadiene	410.	U	430.	U	400.	U	430.	U	430.	U	430.	U
88-06-2	2,4,6-Trichlorophenol	410.	U	430.	U	400.	U	430.	U	430.	U	430.	U
95-95-4	2,4,5-Trichlorophenol	410.	U	430.	U	400.	U	430.	U	430.	U	430.	U
91-58-7	2-Chloronaphthalene	410.	U	430.	U	400.	U	430.	U	430.	U	430.	U
88-74-4	2-Nitroaniline	2100.	U	2200.	U	2100.	U	2200.	U	2200.	U	2200.	U
131-11-3	Dimethylphthalate	410.	U	430.	U	400.	U	430.	U	430.	U	430.	U
208-96-8	Acenaphthylene	410.	U	430.	U	400.	U	16.	J	430.	U	430.	U
606-20-2	2,6-Dinitrotoluene	410.	U	430.	U	400.	U	430.	U	430.	U	430.	U
99-09-2	3-Nitroaniline	2100.	U	2200.	U	2100.	U	2200.	U	2200.	U	2200.	U
83-32-9	Acenaphthene	48.	J	430.	U	14.	J	20.	J	10.	J	430.	U
51-28-5	2,4-Dinitrophenol	2100.	U	2200.	U	2100.	U	2200.	U	2200.	U	2200.	U
100-02-7	4-Nitrophenol	2100.	U	2200.	U	2100.	U	2200.	U	2200.	U	2200.	U
132-64-9	Dibenzofuran	410.	U	430.	U	400.	U	430.	U	430.	U	430.	U

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 61 ANALYTICAL SOIL RESULTS

SW846-SVOA													
	SAMPLE ID ------->	061-S-0001-01		061-S-0001-04		061-S-0002-01		061-S-0002-04		061-S-0003-01		061-S-0003-04	
	ORIGINAL ID ----->	061S000101		061S000104		061S000201		061S000204		061S000301		061S000304	
	LAB SAMPLE ID --->	S771296*2		S771296*5		S771296*6		S771296*7		S771296*8		S771296*9	
	ID FROM REPORT -->	061S000101		061S000104		061S000201		061S000204		061S000301		061S000304	
	SAMPLE DATE ----->	03/04/97		03/04/97		03/04/97		03/04/97		03/04/97		03/04/97	
	DATE EXTRACTED -->	03/07/97		03/07/97		03/07/97		03/07/97		03/07/97		03/07/97	
	DATE ANALYZED --->	03/10/97		03/10/97		03/10/97		03/10/97		03/11/97		03/10/97	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	MEG01	VAL	MEG01	VAL	MEG01	VAL	MEG01	VAL	MEG01	VAL	MEG01	VAL
121-14-2	2,4-Dinitrotoluene	410.	U	430.	U	400.	U	430.	U	430.	U	430.	U
84-66-2	Diethylphthalate	410.	U	430.	U	400.	U	430.	U	430.	U	430.	U
7005-72-3	4-Chlorophenylphenyl ether	410.	U	430.	U	400.	U	430.	U	430.	U	430.	U
86-73-7	Fluorene	58.	J	430.	U	20.	J	100.	J	430.	U	430.	U
100-01-6	4-Nitroaniline	2100.	U	2200.	U	2100.	U	2200.	U	2200.	UJ	2200.	U
534-52-1	2-Methyl-4,6-Dinitrophenol	2100.	U	2200.	U	2100.	U	2200.	U	2200.	U	2200.	U
86-30-6	N-Nitrosodiphenylamine	410.	U	430.	U	400.	U	430.	U	430.	U	430.	U
101-55-3	4-Bromophenyl-phenylether	410.	U	430.	U	400.	U	430.	U	430.	U	430.	U
118-74-1	Hexachlorobenzene	410.	U	430.	U	400.	U	430.	U	430.	U	430.	U
87-86-5	Pentachlorophenol	2100.	U	2200.	U	2100.	U	2200.	U	2200.	U	2200.	U
85-01-8	Phenanthrene	730.		430.	U	190.	J	1600.		140.	J	430.	U
120-12-7	Anthracene	170.	J	430.	U	38.	J	340.	J	23.	J	430.	U
86-74-8	Carbazole	130.	J	430.	U	44.	J	430.		430.	U	430.	U
84-74-2	Di-n-butylphthalate	410.	U	430.	U	400.	U	430.	U	430.	U	430.	U
206-44-0	Fluoranthene	1000.		430.	U	320.	J	2200.		270.	J	430.	U
129-00-0	Pyrene	790.		430.	U	260.	J	1800.		180.	J	11.	J
85-68-7	Butylbenzylphthalate	410.	U	430.	U	400.	U	430.	U	430.	U	430.	U
91-94-1	3,3'-Dichlorobenzidine	810.	U	870.	U	800.	U	860.	U	860.	U	860.	U
56-55-3	Benzo(a)anthracene	450.		430.	U	140.	J	830.		94.	J	430.	U
218-01-9	Chrysene	490.		430.	U	160.	J	850.		130.	J	430.	U
117-81-7	bis(2-Ethylhexyl)phthalate (BEHP)	410.	U	430.	U	400.	U	430.	U	430.	U	430.	U
117-84-0	Di-n-octylphthalate	410.	U	430.	U	400.	U	430.	U	430.	U	430.	U
205-99-2	Benzo(b)fluoranthene	310.	J	430.	U	160.	J	550.		120.	J	430.	U
207-08-9	Benzo(k)fluoranthene	430.		430.	U	140.	J	560.		130.	J	430.	U
50-32-8	Benzo(a)pyrene	370.	J	430.	U	160.	J	550.		110.	J	430.	U
193-39-5	Indeno(1,2,3-cd)pyrene	180.	J	430.	U	110.	J	230.	J	60.	J	430.	U
53-70-3	Dibenz(a,h)anthracene	410.	U	430.	U	400.	U	430.	U	430.	U	430.	U
191-24-2	Benzo(g,h,i)perylene	180.	J	430.	U	150.	J	230.	J	64.	J	430.	U
122-39-4	Diphenylamine	NR		NR		NR		NR		NR		NR	

*** Validati . Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 61 ANALYTICAL SOIL RESULTS

SW846-SVOA													
	SAMPLE ID ------->	061-S-0004-01		061-C-0004-01		061-S-0005-01		061-S-0005-04		061-S-0006-01		061-S-0006-04	
	ORIGINAL ID ----->	061S000401		061C000401		061S000501		061S000504		061S000601		061S000604	
	LAB SAMPLE ID --->	S771296*3		S771296*1		S771296*10		S771296*11		S771296*4		S771296*12	
	ID FROM REPORT -->	061S000401		061C000401		061S000501		061S000504		061S000601		061S000604	
	SAMPLE DATE ----->	03/04/97		03/04/97		03/05/97		03/05/97		03/05/97		03/05/97	
	DATE EXTRACTED -->	03/07/97		03/07/97		03/07/97		03/07/97		03/07/97		03/07/97	
	DATE ANALYZED --->	03/11/97		03/10/97		03/10/97		03/10/97		03/10/97		03/10/97	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	MEG01	VAL	MEG01	VAL	MEG01	VAL	MEG01	VAL	MEG01	VAL	MEG01	VAL
108-95-2	Phenol	410.	U	400.	U	420.	U	430.	U	430.	U	430.	U
111-44-4	bis(2-Chloroethyl)ether	410.	U	400.	U	420.	U	430.	U	430.	U	430.	U
95-57-8	2-Chlorophenol	410.	U	400.	U	420.	U	430.	U	430.	U	430.	U
541-73-1	1,3-Dichlorobenzene	410.	U	400.	U	420.	U	430.	U	430.	U	430.	U
106-46-7	1,4-Dichlorobenzene	410.	U	400.	U	420.	U	430.	U	430.	U	430.	U
95-50-1	1,2-Dichlorobenzene	410.	U	400.	U	420.	U	430.	U	430.	U	430.	U
95-48-7	2-Methylphenol (o-Cresol)	410.	U	400.	U	420.	U	430.	U	430.	U	430.	U
108-60-1	2,2'-oxybis(1-Chloropropane)	410.	U	400.	U	420.	U	430.	U	430.	U	430.	U
9999900-32-2	3-Methylphenol/4-Methylphenol	410.	U	400.	U	420.	U	430.	U	430.	U	430.	U
621-64-7	N-Nitroso-di-n-propylamine	410.	U	400.	U	420.	U	430.	U	430.	U	430.	U
67-72-1	Hexachloroethane	410.	U	400.	U	420.	U	430.	U	430.	U	430.	U
98-95-3	Nitrobenzene	410.	U	400.	U	420.	U	430.	U	430.	U	430.	U
78-59-1	Isophorone	410.	U	400.	U	420.	U	430.	U	430.	U	430.	U
88-75-5	2-Nitrophenol	410.	U	400.	U	420.	U	430.	U	430.	U	430.	U
105-67-9	2,4-Dimethylphenol	410.	U	400.	U	420.	U	430.	U	430.	U	430.	U
120-83-2	2,4-Dichlorophenol	410.	U	400.	U	420.	U	430.	U	430.	U	430.	U
120-82-1	1,2,4-Trichlorobenzene	410.	U	400.	U	420.	U	430.	U	430.	U	430.	U
91-20-3	Naphthalene	410.	U	400.	U	420.	U	430.	U	430.	U	430.	U
106-47-8	4-Chloroaniline	810.	U	800.	U	850.	U	870.	U	870.	U	870.	U
87-68-3	Hexachlorobutadiene	410.	U	400.	U	420.	U	430.	U	430.	U	430.	U
111-91-1	bis(2-Chloroethoxy)methane	410.	U	400.	U	420.	U	430.	U	430.	U	430.	U
59-50-7	4-Chloro-3-methylphenol	410.	U	400.	U	420.	U	430.	U	430.	U	430.	U
91-57-6	2-Methylnaphthalene	410.	U	400.	U	420.	U	430.	U	430.	U	430.	U
77-47-4	Hexachlorocyclopentadiene	410.	U	400.	U	420.	U	430.	U	430.	U	430.	U
88-06-2	2,4,6-Trichlorophenol	410.	U	400.	U	420.	U	430.	U	430.	U	430.	U
95-95-4	2,4,5-Trichlorophenol	410.	U	400.	U	420.	U	430.	U	430.	U	430.	U
91-58-7	2-Chloronaphthalene	410.	U	400.	U	420.	U	430.	U	430.	U	430.	U
88-74-4	2-Nitroaniline	2100.	U	2000.	U	2200.	U	2200.	U	2200.	U	2200.	U
131-11-3	Dimethylphthalate	410.	U	400.	U	420.	U	430.	U	430.	U	430.	U
208-96-8	Acenaphthylene	410.	U	400.	U	420.	U	430.	U	430.	U	430.	U
606-20-2	2,6-Dinitrotoluene	410.	U	400.	U	420.	U	430.	U	430.	U	430.	U
99-09-2	3-Nitroaniline	2100.	U	2000.	U	2200.	U	2200.	U	2200.	U	2200.	U
83-32-9	Acenaphthene	410.	U	400.	U	14.	J	430.	U	430.	U	430.	U
51-28-5	2,4-Dinitrophenol	2100.	U	2000.	U	2200.	U	2200.	U	2200.	U	2200.	U
100-02-7	4-Nitrophenol	2100.	U	2000.	U	2200.	U	2200.	U	2200.	U	2200.	U
132-64-9	Dibenzofuran	410.	U	400.	U	420.	U	430.	U	430.	U	430.	U

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 61 ANALYTICAL SOIL RESULTS

SW846-SVOA													
	SAMPLE ID ------->	061-S-0004-01		061-C-0004-01		061-S-0005-01		061-S-0005-04		061-S-0006-01		061-S-0006-04	
	ORIGINAL ID ----->	061S000401		061C000401		061S000501		061S000504		061S000601		061S000604	
	LAB SAMPLE ID --->	S771296*3		S771296*1		S771296*10		S771296*11		S771296*4		S771296*12	
	ID FROM REPORT -->	061S000401		061C000401		061S000501		061S000504		061S000601		061S000604	
	SAMPLE DATE ----->	03/04/97		03/04/97		03/05/97		03/05/97		03/05/97		03/05/97	
	DATE EXTRACTED -->	03/07/97		03/07/97		03/07/97		03/07/97		03/07/97		03/07/97	
	DATE ANALYZED --->	03/11/97		03/10/97		03/10/97		03/10/97		03/10/97		03/10/97	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	MEG01	VAL	MEG01	VAL	MEG01	VAL	MEG01	VAL	MEG01	VAL	MEG01	VAL
121-14-2	2,4-Dinitrotoluene	410.	U	400.	U	420.	U	430.	U	430.	U	430.	U
84-66-2	Diethylphthalate	410.	U	400.	U	420.	U	430.	U	430.	U	430.	U
7005-72-3	4-Chlorophenylphenyl ether	410.	U	400.	U	420.	U	430.	U	430.	U	430.	U
86-73-7	Fluorene	410	U	400.	U	420.	U	430.	U	430.	U	430.	U
100-01-6	4-Nitroaniline	2100.	U	2000.	U	2200.	U	2200.	U	2200.	U	2200.	U
534-52-1	2-Methyl-4,6-Dinitrophenol	2100.	U	2000.	U	2200.	U	2200.	U	2200.	U	2200.	U
86-30-6	N-Nitrosodiphenylamine	410.	U	400.	U	420.	U	430.	U	430.	U	430.	U
101-55-3	4-Bromophenyl-phenylether	410.	U	400.	U	420.	U	430.	U	430.	U	430.	U
118-74-1	Hexachlorobenzene	410.	U	400.	U	420.	U	430.	U	430.	U	430.	U
87-86-5	Pentachlorophenol	2100.	U	2000.	U	2200.	U	2200.	U	2200.	U	2200.	U
85-01-8	Phenanthrene	9.4	J	10.	J	170.	J	24.	J	430.	U	430.	U
120-12-7	Anthracene	410.	U	400.	U	46.	J	430.	U	430.	U	430.	U
86-74-8	Carbazole	410.	U	400.	U	420.	U	430.	U	430.	U	430.	U
84-74-2	Di-n-butylphthalate	410.	U	400.	U	420.	U	430.	U	430.	U	430.	U
206-44-0	Fluoranthene	23.	J	21.	J	250.	J	35.	J	45.	J	430.	U
129-00-0	Pyrene	20.	J	21.	J	310.	J	25.	J	37.	J	430.	U
85-68-7	Butylbenzylphthalate	410.	U	400.	U	420.	U	430.	U	170.	J	430.	U
91-94-1	3,3'-Dichlorobenzidine	810.	U	800.	U	850.	U	870.	U	870.	U	870.	U
56-55-3	Benzo(a)anthracene	13.	J	14.	J	210.	J	430.	U	430.	U	430.	U
218-01-9	Chrysene	410.	U	14.	J	230.	J	430.	U	430.	U	430.	U
117-81-7	bis(2-Ethylhexyl)phthalate (BEHP)	410.	U	400.	U	420.	U	430.	U	430.	U	430.	U
117-84-0	Di-n-octylphthalate	410.	U	400.	U	420.	U	430.	U	430.	U	430.	U
205-99-2	Benzo(b)fluoranthene	410.	U	7.8	J	220.	J	430.	U	430.	U	430.	U
207-08-9	Benzo(k)fluoranthene	410.	U	7.5	J	200.	J	430.	U	430.	U	430.	U
50-32-8	Benzo(a)pyrene	410.	U	18.	J	190.	J	430.	U	430.	U	430.	U
193-39-5	Indeno(1,2,3-cd)pyrene	410.	U	400.	U	81.	J	430.	U	430.	U	430.	U
53-70-3	Dibenz(a,h)anthracene	410.	U	400.	U	420.	U	430.	U	430.	U	430.	U
191-24-2	Benzo(g,h,i)perylene	26.	J	20.	J	75.	J	430.	U	430.	U	430.	U
122-39-4	Diphenylamine	NR		NR		NR		NR		NR		NR	

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 61 ANALYTICAL SOIL RESULTS

SW846-VOA													
	SAMPLE ID ------->	061-S-0001-01		061-S-0001-04		061-S-0002-01		061-S-0002-04		061-S-0003-01		061-S-0003-04	
	ORIGINAL ID ----->	061S000101		061S000104		061S000201		061S000204		061S000301		061S000304	
	LAB SAMPLE ID --->	S771296*2		S771296*5		S771296*6		S771296*7		S771296*8		S771296*9	
	ID FROM REPORT -->	061S000101		061S000104		061S000201		061S000204		061S000301		061S000304	
	SAMPLE DATE ----->	03/04/97		03/04/97		03/04/97		03/04/97		03/04/97		03/04/97	
	DATE ANALYZED --->	03/11/97		03/11/97		03/11/97		03/11/97		03/11/97		03/12/97	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	MEG01	VAL	MEG01	VAL	MEG01	VAL	MEG01	VAL	MEG01	VAL	MEG01	VAL
74-87-3	Chloromethane	12.	U	13.	U	12.	U	13.	U	13.	U	13.	U
75-01-4	Vinyl chloride	12.	U	13.	U	12.	U	13.	U	13.	U	13.	U
74-83-9	Bromomethane	12.	U	13.	U	12.	U	13.	U	13.	U	13.	U
75-00-3	Chloroethane	12.	U	13.	U	12.	U	13.	U	13.	U	13.	U
75-35-4	1,1-Dichloroethene	6.2	U	6.6	U	6.1	U	6.5	U	6.5	U	6.5	U
75-09-2	Methylene chloride	6.2	U	6.6	U	6.1	U	6.5	U	6.5	U	6.5	U
75-34-3	1,1-Dichloroethane	6.2	U	6.6	U	6.1	U	6.5	U	6.5	U	6.5	U
67-66-3	Chloroform	6.2	U	6.6	U	6.1	U	6.5	U	6.5	U	6.5	U
71-55-6	1,1,1-Trichloroethane	6.2	U	6.6	U	6.1	U	6.5	U	6.5	U	6.5	U
56-23-5	Carbon tetrachloride	6.2	U	6.6	U	6.1	U	6.5	U	6.5	U	6.5	U
71-43-2	Benzene	6.2	U	6.6	U	6.1	U	6.5	U	6.5	U	6.5	U
107-06-2	1,2-Dichloroethane	6.2	U	6.6	U	6.1	U	6.5	U	6.5	U	6.5	U
79-01-6	Trichloroethene	6.2	U	6.6	U	6.1	U	6.5	U	6.5	U	6.5	U
78-87-5	1,2-Dichloropropane	6.2	U	6.6	U	6.1	U	6.5	U	6.5	U	6.5	U
75-27-4	Bromodichloromethane	6.2	U	6.6	U	6.1	U	6.5	U	6.5	U	6.5	U
108-88-3	Toluene	6.2	U	6.6	U	6.1	U	6.5	U	6.5	U	6.5	U
79-00-5	1,1,2-Trichloroethane	6.2	U	6.6	U	6.1	U	6.5	U	6.5	U	6.5	U
127-18-4	Tetrachloroethene	6.2	U	6.6	U	6.1	U	6.5	U	6.5	U	6.5	U
124-48-1	Dibromochloromethane	6.2	U	6.6	U	6.1	U	6.5	U	6.5	U	6.5	U
108-90-7	Chlorobenzene	6.2	U	6.6	U	6.1	U	6.5	U	6.5	U	6.5	U
100-41-4	Ethylbenzene	6.2	U	6.6	U	6.1	U	6.5	U	6.5	U	6.5	U
100-42-5	Styrene	6.2	U	6.6	U	6.1	U	6.5	U	6.5	U	6.5	U
75-25-2	Bromoform	6.2	U	6.6	U	6.1	U	6.5	U	6.5	U	6.5	U
79-34-5	1,1,2,2-Tetrachloroethane	6.2	U	6.6	U	6.1	U	6.5	U	6.5	U	6.5	U
67-64-1	Acetone	62.	U	66.	U	61.	U	32.	U	65.	U	65.	U
75-15-0	Carbon disulfide	6.2	U	6.6	U	6.1	U	6.5	U	6.5	U	6.5	U
78-93-3	2-Butanone (MEK)	31.	U	33.	U	30.	U	32.	U	32.	U	32.	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	31.	U	33.	U	30.	U	32.	U	32.	U	32.	U
10061-01-5	cis-1,3-Dichloropropene	6.2	U	6.6	U	6.1	U	6.5	U	6.5	U	6.5	U
10061-02-6	trans-1,3-Dichloropropene	6.2	U	6.6	U	6.1	U	6.5	U	6.5	U	6.5	U
591-78-6	2-Hexanone	31.	U	33.	U	30.	U	32.	U	32.	U	32.	U
1330-20-7	Xylene (Total)	6.2	U	6.6	U	6.1	U	6.5	U	6.5	U	6.5	U
540-59-0	1,2-Dichloroethene (total)	6.2	U	6.6	U	6.1	U	6.5	U	6.5	U	6.5	U
1330-20-7	Xylene (Total)	NR		NR		NR		NR		NR		NR	
9999000-44-2	XYLENES	NR		NR		NR		NR		NR		NR	

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 61 ANALYTICAL SOIL RESULTS

SW846-VOA													
	SAMPLE ID ------->	061-S-0004-01		061-C-0004-01		061-S-0005-01		061-S-0005-04		061-S-0006-01		061-S-0006-04	
	ORIGINAL ID ----->	061S000401		061C000401		061S000501		061S000504		061S000601		061S000604	
	LAB SAMPLE ID --->	S771296*3		S771296*1		S771296*10		S771296*11		S771296*4		S771296*12	
	ID FROM REPORT -->	061S000401		061C000401		061S000501		061S000504		061S000601		061S000604	
	SAMPLE DATE ----->	03/04/97		03/04/97		03/05/97		03/05/97		03/05/97		03/05/97	
	DATE ANALYZED --->	03/11/97		03/11/97		03/12/97		03/12/97		03/11/97		03/12/97	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	MEG01	VAL	MEG01	VAL	MEG01	VAL	MEG01	VAL	MEG01	VAL	MEG01	VAL
74-87-3	Chloromethane	12.	U	12.	U	13.	U	13.	U	13.	U	13.	U
75-01-4	Vinyl chloride	12.	U	12.	U	13.	U	13.	U	13.	U	13.	U
74-83-9	Bromomethane	12.	U	12.	U	13.	U	13.	U	13.	U	13.	U
75-00-3	Chloroethane	12.	U	12.	U	13.	U	13.	U	13.	U	13.	U
75-35-4	1,1-Dichloroethene	6.2	U	6.	U	6.4	U	6.6	U	6.6	U	6.6	U
75-09-2	Methylene chloride	6.2	U	6.	U	6.4	U	6.6	U	6.6	U	6.6	U
75-34-3	1,1-Dichloroethane	6.2	U	6.	U	6.4	U	6.6	U	6.6	U	6.6	U
67-66-3	Chloroform	6.2	U	6.	U	6.4	U	6.6	U	6.6	U	6.6	U
71-55-6	1,1,1-Trichloroethane	6.2	U	6.	U	6.4	U	6.6	U	6.6	U	6.6	U
56-23-5	Carbon tetrachloride	6.2	U	6.	U	6.4	U	6.6	U	6.6	U	6.6	U
71-43-2	Benzene	6.2	U	6.	U	6.4	U	6.6	U	6.6	U	6.6	U
107-06-2	1,2-Dichloroethane	6.2	U	6.	U	6.4	U	6.6	U	6.6	U	6.6	U
79-01-6	Trichloroethene	6.2	U	6.	U	6.4	U	6.6	U	6.6	U	6.6	U
78-87-5	1,2-Dichloropropane	6.2	U	6.	U	6.4	U	6.6	U	6.6	U	6.6	U
75-27-4	Bromodichloromethane	6.2	U	6.	U	6.4	U	6.6	U	6.6	U	6.6	U
108-88-3	Toluene	6.2	U	6.	U	6.4	U	6.6	U	6.6	U	6.6	U
79-00-5	1,1,2-Trichloroethane	6.2	U	6.	U	6.4	U	6.6	U	6.6	U	6.6	U
127-18-4	Tetrachloroethene	6.2	U	6.	U	6.4	U	6.6	U	6.6	U	6.6	U
124-48-1	Dibromochloromethane	6.2	U	6.	U	6.4	U	6.6	U	6.6	U	6.6	U
108-90-7	Chlorobenzene	6.2	U	6.	U	6.4	U	6.6	U	6.6	U	6.6	U
100-41-4	Ethylbenzene	6.2	U	6.	U	6.4	U	6.6	U	6.6	U	6.6	U
100-42-5	Styrene	6.2	U	6.	U	6.4	U	6.6	U	6.6	U	6.6	U
75-25-2	Bromoform	6.2	U	6.	U	6.4	U	6.6	U	6.6	U	6.6	U
79-34-5	1,1,2,2-Tetrachloroethane	6.2	U	6.	U	6.4	U	6.6	U	6.6	U	6.6	U
67-64-1	Acetone	31.	U	60.	U	64.	U	33.	U	33.	U	33.	U
75-15-0	Carbon disulfide	6.2	U	6.	U	6.4	U	6.6	U	6.6	U	6.6	U
78-93-3	2-Butanone (MEK)	31.	U	30.	U	32.	U	33.	U	33.	U	33.	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	31.	U	30.	U	32.	U	33.	U	33.	U	33.	U
10061-01-5	cis-1,3-Dichloropropene	6.2	U	6.	U	6.4	U	6.6	U	6.6	U	6.6	U
10061-02-6	trans-1,3-Dichloropropene	6.2	U	6.	U	6.4	U	6.6	U	6.6	U	6.6	U
591-78-6	2-Hexanone	31.	U	30.	U	32.	U	33.	U	33.	U	33.	U
1330-20-7	Xylene (Total)	6.2	U	6.	U	6.4	U	6.6	U	6.6	U	6.6	U
540-59-0	1,2-Dichloroethene (total)	6.2	U	6.	U	6.4	U	6.6	U	6.6	U	6.6	U
1330-20-7	Xylene (Total)	NR		NR		NR		NR		NR		NR	
9999000-44-2	XYLENES	NR		NR		NR		NR		NR		NR	

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 61 ANALYTICAL SOIL RESULTS

TPH							
	SAMPLE ID ------->	061-S-0001-01	061-S-0004-01	061-C-0004-01	061-S-0006-01		
	ORIGINAL ID ----->	061S000101	061S000401	061C000401	061S000601		
	LAB SAMPLE ID --->	S771296*2	S771296*3	S771296*1	S771296*4		
	ID FROM REPORT -->	061S000101	061S000401	061C000401	061S000601		
	SAMPLE DATE ----->	03/04/97	03/04/97	03/04/97	03/05/97		
	DATE EXTRACTED -->	03/07/97	03/07/97	03/07/97	03/07/97		
	DATE ANALYZED --->	03/10/97	03/10/97	03/10/97	03/10/97		
	MATRIX ---------->	Soil	Soil	Soil	Soil		
	UNITS ---------->	MG/KG	MG/KG	MG/KG	MG/KG		
CAS #	Parameter	MEG01 VAL	MEG01 VAL	MEG01 VAL	MEG01 VAL		
9999900-02-4	Petroleum Hydrocarbons, TPH	3600. J	88. J	890. J	15. J		
9999000-83-9	TOTAL RECOVERABLE PETROLEUM HYDROCARBONS	NR	NR	NR	NR		

*** Validation Complete ***

NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 61 ANALYTICAL SOIL RESULTS

TPH-DRO	SAMPLE ID ------->	061-S-0001-01		061-S-0004-01		061-C-0004-01		061-S-0006-01			
	ORIGINAL ID ----->	061S000101		061S000401		061C000401		061S000601			
	LAB SAMPLE ID --->	S771296*2		S771296*3		S771296*1		S771296*4			
	ID FROM REPORT -->	061S000101		061S000401		061C000401		061S000601			
	SAMPLE DATE ----->	03/04/97		03/04/97		03/04/97		03/05/97			
	DATE EXTRACTED -->	03/07/97		03/07/97		03/07/97		03/07/97			
	DATE ANALYZED --->	03/12/97		03/12/97		03/12/97		03/12/97			
	MATRIX ---------->	Soil		Soil		Soil		Soil			
	UNITS ---------->	MG/KG		MG/KG		MG/KG		MG/KG			
CAS #	Parameter	MEG01	VAL	MEG01	VAL	MEG01	VAL	MEG01	VAL		
9999900-02-6	TPH - Diesel Range Organics	5.	U	5.	U	5.	U	5.	U		

*** Validation Complete ***

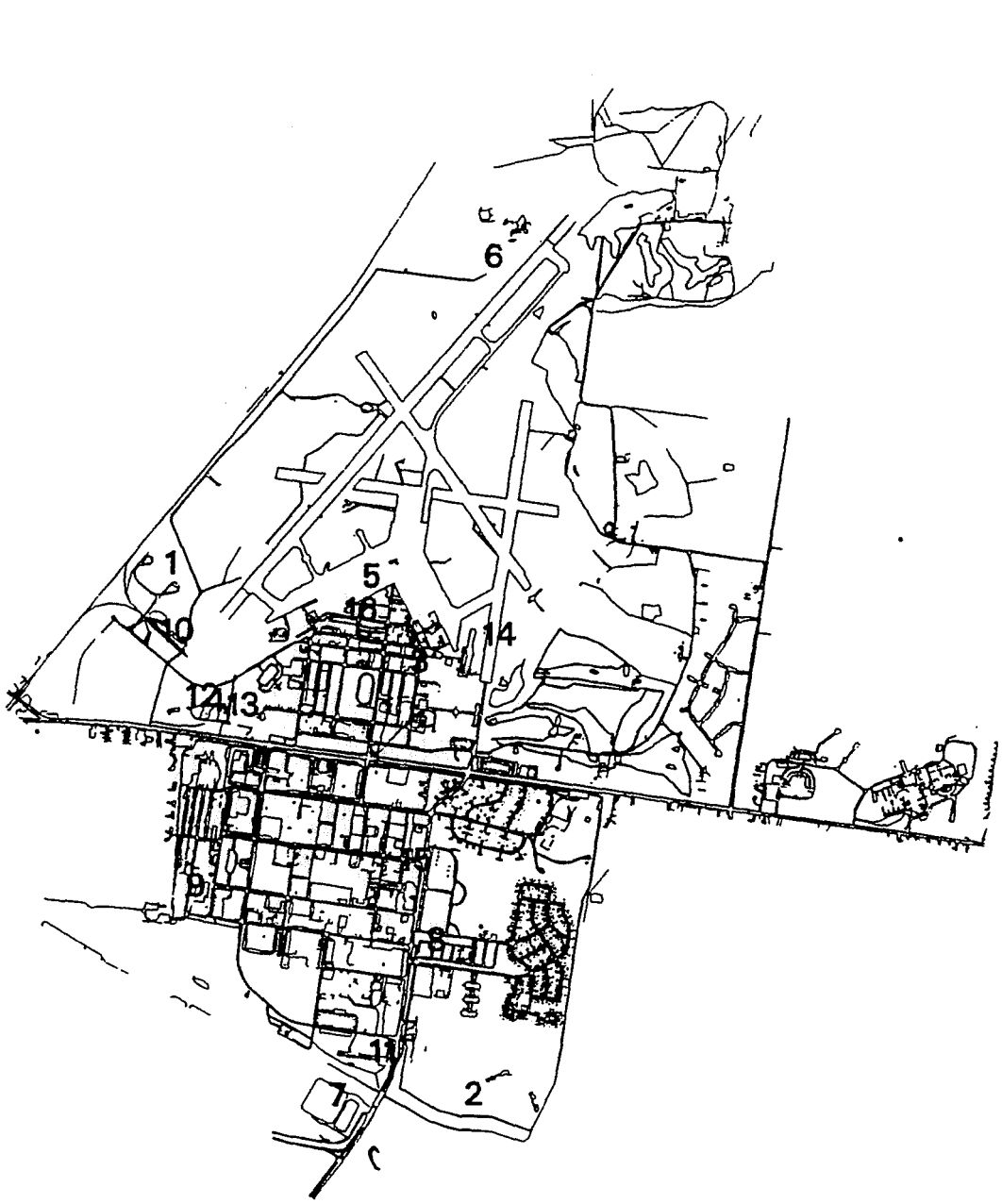
NSA MEMPHIS
ASSEMBLIES G & H CSI REPORT
SWMU 61 ANALYTICAL SOIL RESULTS

TPH-GRO	SAMPLE ID ------->	061-S-0001-01		061-S-0004-01		061-C-0004-01		061-S-0006-01			
	ORIGINAL ID ----->	061S000101		061S000401		061C000401		061S000601			
	LAB SAMPLE ID --->	S771296*2		S771296*3		S771296*1		S771296*4			
	ID FROM REPORT -->	061S000101		061S000401		061C000401		061S000601			
	SAMPLE DATE ----->	03/04/97		03/04/97		03/04/97		03/05/97			
	DATE ANALYZED --->	03/12/97		03/12/97		03/12/97		03/12/97			
	MATRIX ---------->	Soil		Soil		Soil		Soil			
	UNITS ---------->	MG/KG		MG/KG		MG/KG		MG/KG			
CAS #	Parameter	MEG01	VAL	MEG01	VAL	MEG01	VAL	MEG01	VAL		
9999900-02-5	TPH - Gasoline Range Organics	0.22	U	0.22	U	0.22	U	0.24	U		

*** Validation Complete ***

Appendix B

Permeability Data



LEGEND

1 SITE REFERENCE NUMBER

0 feet 6000

RCRA FACILITY
INVESTIGATION
NSA MEMPHIS
MILLINGTON, TENNESSEE

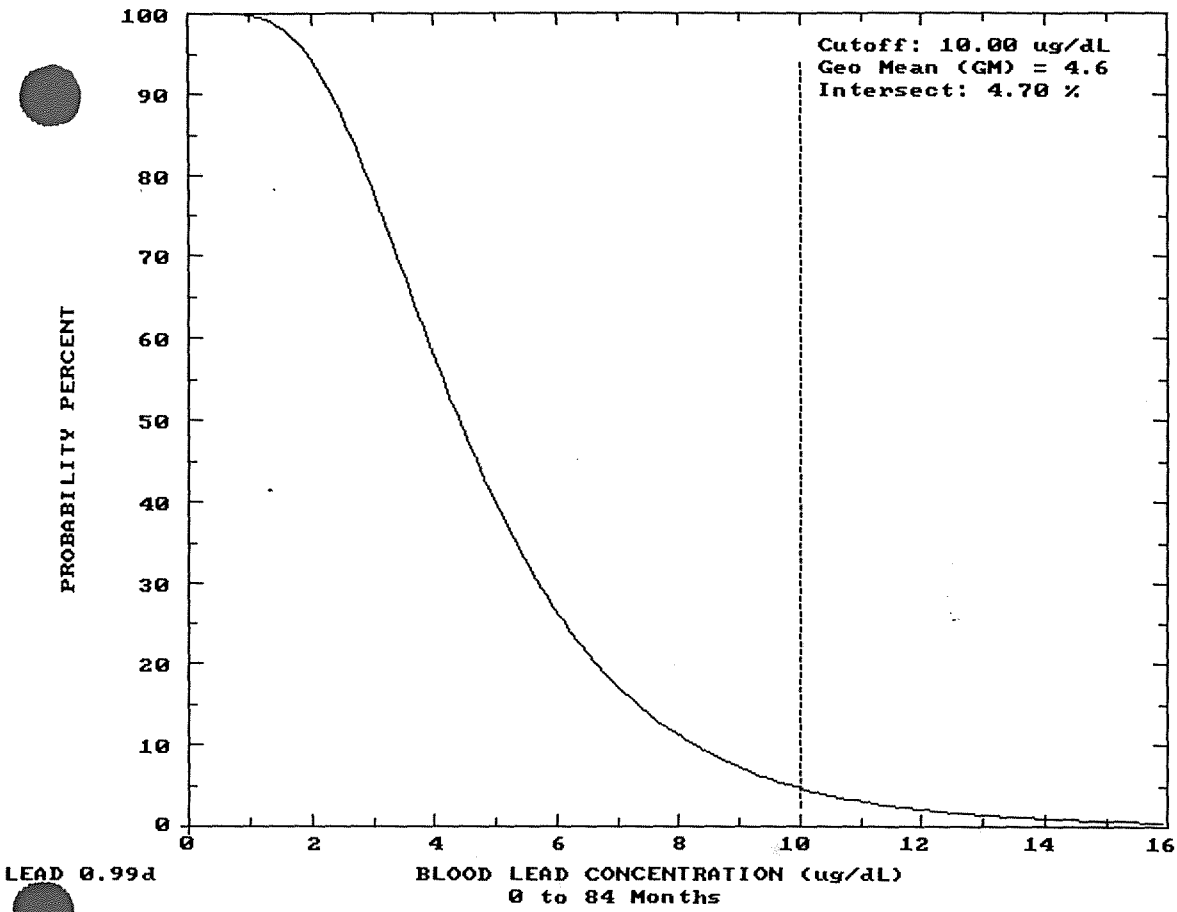
FIGURE 1
SITE LOCATION AND
REFERENCE

Table A.1
Loess/Shallow Alluvium Permeability Data Summary
NSA Memphis

Reference No.	Sample ID	Site	Depth	Date	Coefficient of Permeability (cm/sec)
1	NFFS005517	North Fuel Farm	[illegible]	03/17/97	2.20e-06
2	002S003019	002	19	02/26/96	2.30e-06
	002S002919	002	19	02/28/96	6.80e-07
3	003S000420	003	20	02/27/95	1.40e-07
4	005S000620	005	20	02/27/95	1.40e-07
5	007S000922	007	22	03/13/95	9.50e-07
6	008G02FL05	008	05	03/13/95	3.00e-08
7	009S01DA18	009	18	02/29/96	9.60e-07
8	014S01LF10	014	10	02/22/96	4.20e-07
9	059S03UF15	059	15	03/22/96	5.70e-07
10	060S003022	060	22	02/27/95	1.70e-07
11	065S06DA16	065	16	03/01/96	4.80e-06
12	MW-02	UST 1508	7	10/92	8.40e-08
	MW-02	UST 1508	11	10/92	8.60e-07
13	MW-11	UST 1489	7	10/92	6.30e-08
	MW-11	UST 1489	11	10/92	5.50e-08
14	SB-8	Former Flying Club	10	6/93	1.10e-06
15	SB-5	Bldg. S-50	8.5	8/93	3.80e-08
	SB-5	Bldg. S-50	13	8/93	1.30e-05
16	—	UST 304/1239		2/95	8.30e-06
		Minimum Value			3.00e-08
		Maximum Value			1.30e-05
		Average Value			1.84e-06

Appendix C

Lead Model Parameters


Cutoff: 10.00 ug/dL
Geo Mean (GM) = 4.6
Intersect: 4.70 %
PROBABILITY PERCENT
100
90
80
70
60
50
40
30
20
10
0
0
2
4
6
8
10
12
14
16
LEAD 0.99d
BLOOD LEAD CONCENTRATION (ug/dL)
0 to 84 Months

Calculated Blood Lead and Lead Uptake Values

Year	Blood Level (μg/dL)	Total Uptake (μg/day)	Soil+Dust Uptake (μg/day)	Diet Uptake (μg/day)	Water Uptake (μg/day)	Air Uptake (μg/day)
0.5 - 1	5.1	9.52	6.66	2.48	0.36	0.02
1 - 2	5.7	13.91	10.43	2.56	0.88	0.03
2 - 3	5.4	14.49	10.59	2.91	0.93	0.06
3 - 4	5.1	14.62	10.75	2.84	0.97	0.07
4 - 5	4.3	12.09	8.18	2.81	1.03	0.07
5 - 6	3.7	11.62	7.44	3.00	1.10	0.09
6 - 7	3.3	11.60	7.06	3.32	1.12	0.09

Notes:

Assumptions:

Air Concentration:

0.100 μg Pb/m3 (indoor air concentration assumed to be 30% of outdoor concentration)

Drinking Water Concentration:

4.00 μg Pb/L

Soil & Dust Concentration:

Soil — 403.0 μg Pb/g (constant)
House Dust — 200.0 μg Pb/g (constant)

Maternal Contribution (Infant Model):

Maternal Blood Concentration — 2.50 μg Pb/dL

Abbreviations:

g — grams
μg — micrograms
Pb — lead
m3 — cubic meters
L — liter
dL — deciliter