

Corporate Headquarters: 33 Park Street
Canton, New York 13617

Maine Office: 386 Fore Street, 4th Floor Portland, Maine 04101

FINAL DATA COLLECTION REPORT

FOR

DEFENSE ENVIRONMENTAL RESTORATION PROGRAM FORMERLY USED DEFENSE SITES (DERP-FUDS)

DEAL TEST SITE
OCEAN TOWNSHIP, NEW JERSEY

Contract Number DACW51-97-D-0010 Delivery Order 0007

Prepared for:

U.S. Army Corps of Engineers New York District 26 Federal Plaza New York, New York 10278-0090

Prepared by:

Roy F. Weston, Inc. Northern Ecological Associates, Inc.

March 1998



Corporate Headquarters: 33 Park Street
Canton, New York 13617

Maine Office: 386 Fore Street, 4th Floor Portland, Maine 04101

FINAL DATA COLLECTION REPORT

FOR

DEFENSE ENVIRONMENTAL RESTORATION PROGRAM FORMERLY USED DEFENSE SITES (DERP-FUDS)

DEAL TEST SITE OCEAN TOWNSHIP, NEW JERSEY

Contract Number DACW51-97-D-0010 Delivery Order 0007

Prepared for:

U.S. Army Corps of Engineers New York District 26 Federal Plaza New York, New York 10278-0090

Prepared by:

Roy F. Weston, Inc. Northern Ecological Associates, Inc.

March 1998

TABLE OF CONTENTS

Section	Page
List of Tables	
List of Figures	V
Abbreviations and Acronyms	vi
Metric to English Conversion Table	vii
Executive Summary	I
1.0 INTRODUCTION	1
1.1 PROJECT AUTHORITY AND PURPOSE	1
1.2 SITE BACKGROUND	1
1.3 OBJECTIVES	3
2.0 METHODOLOGY	3
2.1 SAMPLING APPROACH	3
2.1.1 Soil Sampling	8
2.1.2 Grab Groundwater Sampling	9
2.1.3 Surface Water/Sediment Sampling	9
2.2 QUALITY ASSURANCE/QUALITY CONTROL SAMPLES	10
2.3 SAMPLE SHIPMENT	10
2.4 SAMPLING EQUIPMENT DECONTAMINATION	10
2.5 Data Interpretation	11
3.0 RESULTS	11
3.1 FIELD ACTIVITIES/OBSERVATIONS	11
3.1.1 Soil Samples	11
3.1.2 Groundwater Samples	13
3.1.3 Surface Water and Sediment Samples	13
3.2 ANALYTICAL RESULTS	13
3.2.1 Soil Results	13

TABLE OF CONTENTS (Continued)

Section	Page
3.2.2 Groundwater Results	19
3.2.3 Surface Water and Sediment Results	32
3.3 DATA QUALITY OBJECTIVES/DATA VALIDATION	32
3.4 NEARBY POPULATIONS	45
3.5 FATE AND TRANSPORT MECHANISMS	47
4.0 SUMMARY AND RECOMMENDATIONS	48
5.0 REFERENCES	50

TABLE OF CONTENTS (Continued)

Section

Page

APPENDICES

APPENDIX A - NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION SOIL CLEANUP

CRITERIA

APPENDIX B - PHOTODOCUMENTATION

APPENDIX C - DAILY QUALITY CONTROL REPORTS AND FIELD NOTES

APPENDIX D - LABORATORY ANALYTICAL RESULTS

APPENDIX E - DATA VALIDATION SUMMARY

LIST OF TABLES

Description		Page
Table 2-1	Summary of Field and QA/QC Samples	6
Table 2-2	Analytical Methods by Matrix (Soil, Sediment,	
	Groundwater, Surface Water)	7
Table 3-1	Soil Sampling Description	
Table 3-2	Summary of Volatile Organic Compound Results in Soil	14
Table 3-3	Summary of Semivolatile Organic Compound Results in Soil	16
Table 3-4	Summary of Pesticide/PCB Results in Soil	21
Table 3-5	Summary of Metals Results in Soil	
Table 3-6	Summary of Volatile Organic Compound Results in Groundwater	24
Table 3-7	Summary of Semivolatile Organic Compound Results in Groundwater	
Table 3-8	Summary of Pesticide/PCB Results in Groundwater	
Table 3-9	Summary of Metals Results in Groundwater	
Table 3-10	Summary of Volatile Organic Compound Results in Surface	
	Water and Sediment	33
Table 3-11	Summary of SVOC Results in Surface Water and Sediment	
Table 3-12	Summary of Pesticide/PCB Results in Surface Water and Sediment	
Table 3-13	Summary of Metals Results in Surface Water and Sediment	
Table 3-14	Summary of Volatile Organic Compound Results in Field Quality	
10010 1	Control Samples	39
Table 3-15	Summary of Semivolatile Organic Compound Results in Field	
	Quality Control Samples	41
Table 3-16	Summary of Pesticide/PCB Results in Field Quality Control Samples	
Table 3-17	Summary of Metals Results in Field Quality Control Samples	
	Summing of Material Actions of Sumples in Management	

LIST OF FIGURES

Description		Page
Figure 1-1	Site Location Map	2
Figure 2-1	Soil Sample Locations	4
Figure 2-2	Groundwater, Surface Water and Sediment Sample Locations	5
Figure 3-1	Arsenic Concentration in Soil	20

ABBREVIATIONS AND ACRONYMS

ATP Adenosine triphosphate
ATV All-Terrain Vehicle

BECR Biological, Environmental, and Cultural Resources

bgs Below ground surface

DERP Defense Environmental Restoration Program

DOD Department of Defense

DOT Department of Transportation

DQO Data Quality Objective ECOM Electronics Command

FUDS Formerly Used Defense Sites

HCl Hydrochloric Acid mg/kg Milligrams per kilogram

MS/MSD Matrix Spike/Matrix Spike Duplicate
NEA Northern Ecological Associates, Inc.
N.J.A.C. New Jersey Administrative Code

NJDEP New Jersey Department of Environmental Protection

NJGWQS New Jersey Groundwater Quality Standards

O.D. Outside Diameter

OVM Organic Vapor Monitor

PAHs Polycyclic Aromatic Hydrocarbons

PCBs Polychlorinated Biphenyls PID Photoionization Detector

QA/QC Quality Assurance/Quality Control

RCRA Resource Conservation and Recovery Act
RRSEP Relative Risk Site Evaluation Program

SOPs Standard Operating Procedures SVOCs Semivolatile organic compounds

 $\begin{array}{ll} \mu g/kg & \text{Micrograms per kilogram} \\ \mu g/L & \text{Micrograms per liter} \end{array}$

USACE United States Army Corps of Engineers

U.S. EPA United States Environmental Protection Agency

VOCs Volatile organic compounds

METRIC TO ENGLISH CONVERSION TABLE

TO CONVERT	MULTIPLY BY	TO OBTAIN			
Centimeters	3.937 x 10 ⁻¹	inches			
Meters	3.281	feet			
Kilometers	6.214 x 10 ⁻¹	miles (statute)			
Celsius (degrees)	9/5 + 32	Fahrenheit (degrees)			
Metric tons/day	1.102	tons (short)/day			
Cubic meter	1.308	cubic yards			
Cubic meters/second	3.531 x 10 ⁺¹	cubic feet/second			
kilograms	2.2046	pounds			
grams	3.527 x 10 ⁻²	ounces (avdp.)			
liters	2.642 x 10 ⁻¹	gallons (U.S. liquid)			

EXECUTIVE SUMMARY

The U.S. Army Corps of Engineers (USACE) investigates potential Department of Defense (DOD) related hazards under the Defense Environmental Restoration Program for Formerly Used Defense Sites (DERP-FUDS) program. USACE currently uses a software program known as the Relative Risk Site Evaluation Program (RRSEP) to evaluate relative human health and ecological risks posed by potential DOD-related hazardous, toxic, and radiological waste at these sites.

The former Deal Test Site (USACE Project No. CO2NJ078200), a sub-installation of Fort Monmouth, New Jersey, is located within Ocean Township, New Jersey. The site consists of an approximately 208-acre tract leased by DOD for use by the U.S. Army Electronics Command (ECOM) during the period from September 1953 to July 1973. At the request of the Huntsville Division, a site survey was conducted in 1987 by the USACE North Atlantic Division with the purpose of assessing the presence of unsafe debris, hazardous or toxic waste contamination, and/or unexploded ordnance at the former facility. The report proposed an investigation of the area identified as a former "lagoon" due to the possible presence of contamination. Subsequently, a 1990 report prepared by USACE under DERP-FUDS stated that the former lagoon area is barren of vegetation, and that the sandy soil is saturated with an unknown substance that may be indicative of contamination.

The primary objective of the present investigation was to collect sufficient analytical data for use in the RRSEP risk model for site evaluation. Data were collected to determine the presence of any soil or groundwater contamination within the shallow depression previously identified as a potential lagoon area, and to determine the presence of contamination in adjacent surface water and sediment. The USACE will use the RRSEP and the information from this report to categorize this site into a high, medium, or low relative risk group based on the contaminants, migration pathways, and receptors.

Five soil borings were installed at the Deal Test Site during the 2-day investigation. Samples were collected at each of the borings from two discrete intervals: 0 to 2 feet below the ground surface (bgs) (surface) and between 2 and 4 feet bgs (subsurface). Three of the borings (A, B, C) were advanced within the former lagoon area, and of the remaining two borings, one was advanced at an upgradient position, and one at a downgradient position. At four of the five soil boring locations, one grab groundwater sample was collected. Surface water and sediment samples were collected at two locations (one upstream and one downstream of the site) from a nearby tributary of Poplar Brook. Each sample was analyzed for volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), pesticides, polychlorinated biphenyls (PCBs), and Resource Conservation and Recovery Act (RCRA) metals.

The results of this investigation, including physical observations of the site and the analytical data, indicate that there is no significant evidence of a lagoon at this location.

The results indicated that the only contaminant of potential concern in surficial soils at the Deal Test Site is arsenic. Arsenic concentrations in surficial soil ranged from 129 to 504 milligrams per kilogram (mg/kg), and exceeded the New Jersey Department of Environmental Protection (NJDEP) soil cleanup criterion (20 mg/kg) at all locations sampled, including the upgradient location. Subsurface concentrations were considerably lower. The highest arsenic concentration detected was in surface soil from sample S-9 (504 mg/kg), collected at the downgradient location. The source of this contamination remains unknown.

Total recoverable groundwater concentrations of arsenic, chromium, and lead exceeded New Jersey Groundwater Quality Standards (NJGWQS) at all four locations sampled, including upgradient and downgradient locations. The soluble concentrations of arsenic in groundwater exceeded the NJGWQS at GW-2 and GW-4, located in the former lagoon area and downgradient, respectively. Soluble arsenic concentrations at these two locations were 55.9 $\mu g/L$ and 39.4 μ g/L, respectively, compared to the NJGWQS of 8 $\mu g/L$. Soluble concentrations of chromium and lead were not detected, indicating that the total metals concentrations are attributable to suspended solids in the samples.

The low concentrations of arsenic detected in the sediment (3.9 to 6.1 mg/kg) of the Poplar Brook tributary relative to surface soil at the Deal Site (129 to 504 mg/kg) suggests that substantial off-site migration of arsenic is not occurring via runoff. Arsenic was undetected (2.4U μ g/L) in the two surface water samples collected in the stream.

No significant contamination from VOCs, SVOCs, or pesticide/PCB compounds was detected in soil, groundwater, surface water, or sediment collected at the Deal Test Site.

It is recommended that a records review and interviews be conducted to determine whether arsenic-based compounds (e.g., herbicides) were utilized by any current or former owners of the Deal Test Site. Repeated usage of such products over a number of years may explain the concentrations of arsenic detected at the site. Secondly, it is recommended that additional sampling be conducted to confirm the prevalent detections of arsenic in the area, or to determine whether arsenic is limited to the general region of the former lagoon and adjacent areas. Due to recreational use of the Deal Test Site, it is important to determine whether arsenic is present in other areas of the park (e.g., along the dirt roads and in the open fields), as human exposures are possible.

1.0 INTRODUCTION

1.1 PROJECT AUTHORITY AND PURPOSE

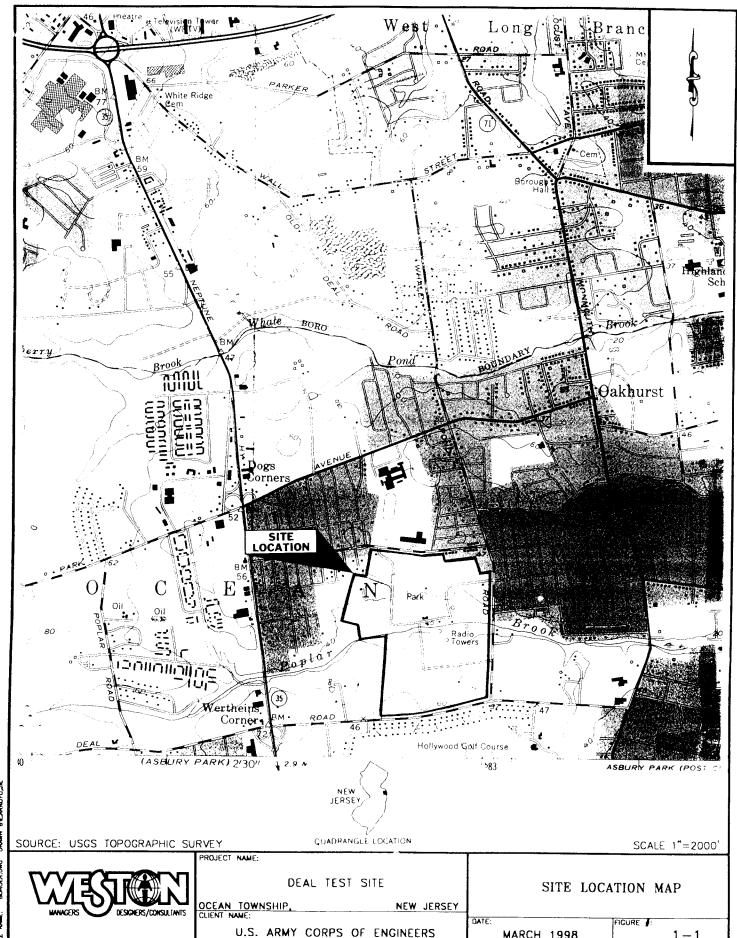
The U.S. Army Corps of Engineers (USACE) investigates potential Department of Defense (DOD) related hazards under the Defense Environmental Restoration Program for Formerly Used Defense Sites (DERP-FUDS) program. USACE currently uses a software program known as the Relative Risk Site Evaluation Program (RRSEP) to evaluate relative human health and ecological risks posed by potential DOD-related hazardous, toxic, and radiological waste at these sites. The Deal Test Site (USACE Project No. CO2NJ078200) is one of several sites for which analytical data are needed to evaluate relative risks. Since the focus of the field investigation is on the former lagoon area and its potential impacts to shallow groundwater and an adjacent stream, samples will be collected for analysis of surficial and subsurface soils, shallow groundwater, surface water, and sediment.

To provide sufficient data to evaluate potential site risks through use of this program, USACE New York District issued Delivery Order 0007 under the Biological, Environmental, and Cultural Resources (BECR) Contract to Northern Ecological Associates, Inc. (NEA) and its subcontractor Roy F. Weston, Inc. (WESTON), in July 1997 to provide technical support to the district. This report provides the results of that investigation, which was conducted in September - October 1997.

1.2 SITE BACKGROUND

The former Deal Test Site, a sub-installation of Fort Monmouth, New Jersey, is located within Ocean Township, New Jersey (Figure 1-1). The site consists of an approximately 208-acre tract leased by DOD for use by the U.S. Army Electronics Command (ECOM) during the period from September 1953 to July 1973. ECOM used the site for a variety of research studies involving radio wave propagation, experiments with waveguides and antennas, field testing of sophisticated communications and surveillance techniques, and other experiments/measurements for DOD agencies.

The site contained nine buildings with a total area of 20,282 square feet, as well as five 185-foothigh steel towers, one of which fell to the ground in 1987. The site also contained six additional storage buildings, a 50-foot-diameter radome, and an area identified in prior documents as a "lagoon" area, the purpose of which is unknown. All of the site buildings and steel towers were apparently constructed prior to DOD use of the site; prior to the DOD lease, the property was leased by Bell Laboratories. Also present on-site is a network of underground power cables and a copper grid network throughout the area for grounding of antennas. Miscellaneous wood poles also are present.



MARCH 1998

1 - 1

DATE: 03/05/98 DRAWN BYEARROYDUR

After DOD terminated its lease of the property in June 1973, the original owner, Walter Scott, sold the property to the Scott Printing Corporation (Walter Scott, Vice President). In July 1973, the property was sold to the Township of Ocean, which currently uses the property for both public recreational as well as nonpublic municipal activities. One of the five radio towers is presently being used by the Township for fire/police transmission activities, and many of the buildings are being used for storage (USACE, undated).

At the request of the Huntsville Division, a site survey was conducted in 1987 by the USACE North Atlantic Division with the purpose of assessing the presence of unsafe debris, hazardous or toxic waste contamination, and/or unexploded ordnance at the former facility. The report proposed an investigation of the area identified as a former lagoon due to the possible presence of contamination. Subsequently, a 1990 report prepared by USACE under DERP-FUDS stated that the former lagoon area is barren of vegetation, and that the sandy soil is saturated with an unknown substance that may be indicative of contamination.

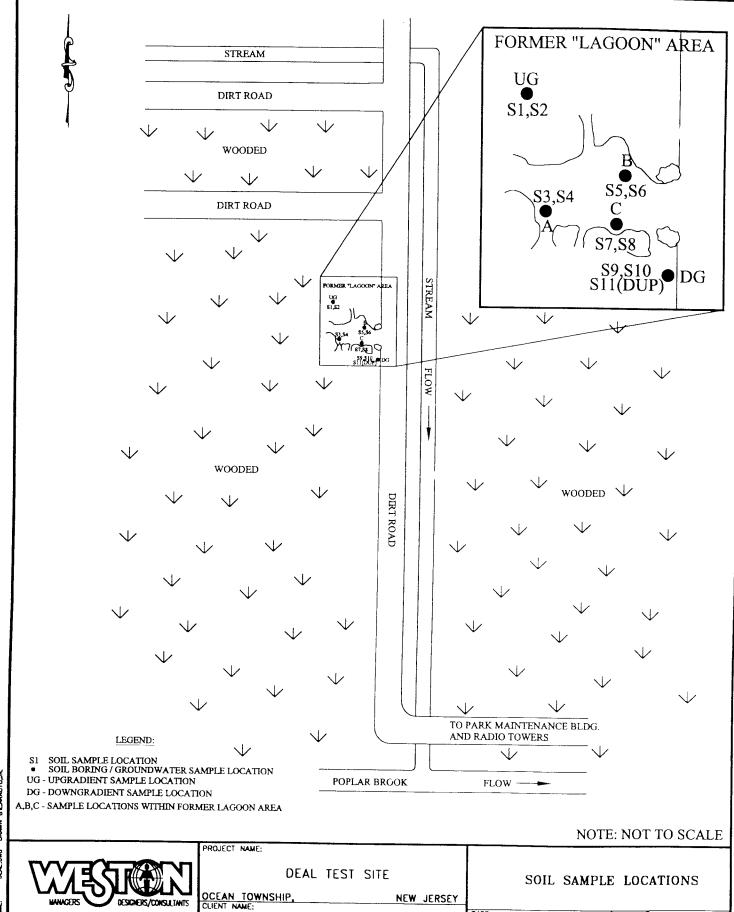
1.3 OBJECTIVES

The primary objective of the present investigation was to collect sufficient analytical data for use in the RRSEP risk model for site evaluation. Data were collected to determine the presence of any soil or groundwater contamination within the shallow depression previously identified as a potential lagoon area, and to determine the presence of contamination in adjacent surface water and sediment. The USACE will use the RRSEP and the information from this report to categorize this site into a high, medium, or low relative risk group based on the contaminants, migration pathways, and receptors.

2.0 METHODOLOGY

2.1 SAMPLING APPROACH

The focus of the field investigation was on the soils in a shallow depression identified previously as a former lagoon area and its potential impacts to shallow groundwater and an adjacent stream. Therefore, samples were collected for analysis of surficial and subsurface soils, shallow groundwater, surface water, and sediment. Figure 2-1 depicts the general site area and the locations of the soil borings and soil samples. Figure 2-2 shows the locations of the groundwater, surface water, and sediment samples. A summary of the samples collected and parameters analyzed by media is provided in Table 2-1. Table 2-2 provides a description of analytical methods used for each parameter analyzed. All sampling followed WESTON Standard Operating Procedures (SOPs). Full details of the Management Plan, Field Sampling Plan, and Quality Assurance Project Plan can be found in the Final Work Plan (WESTON, 1997).



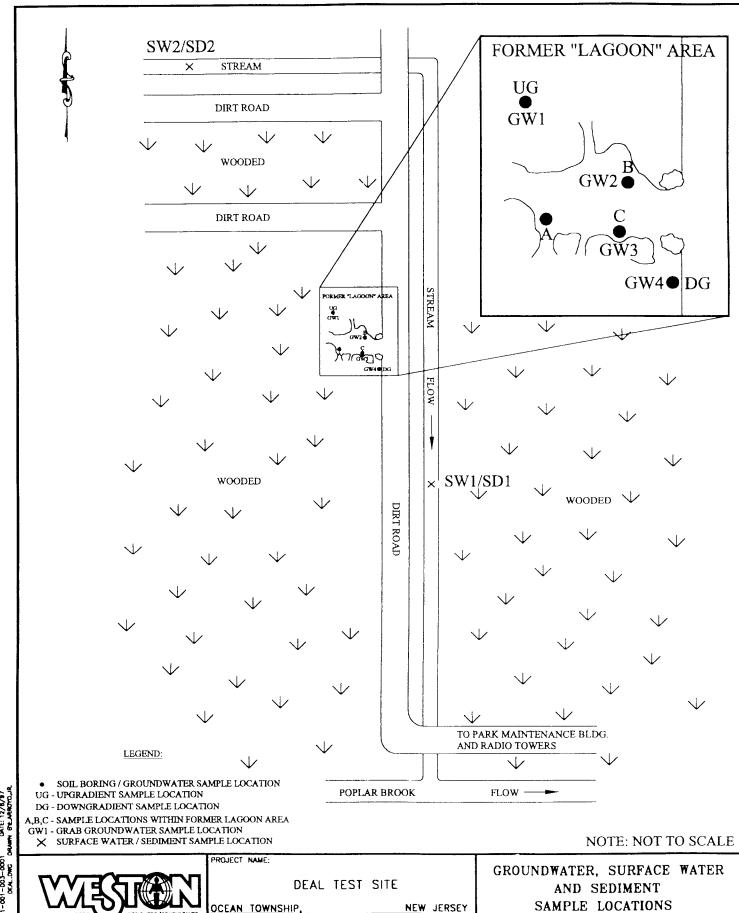
NEW JERSEY

U.S. ARMY CORPS OF ENGINEERS

FIGURE :

2 - 1

MARCH 1998



NEW JERSEY

DATE:

MARCH 1998

FIGURE :

2 - 2

OCEAN TOWNSHIP,

U.S. ARMY CORPS OF ENGINEERS

TABLE 2-1 SUMMARY OF FIELD AND QA/QC SAMPLES¹

Analytical Parameter		Investiga	tion Samples	QC Samples					
	Soil	Sediment	Groundwater	Surface Water	Field Duplicate ²	Field Blank ³	Trip Blank ⁴	MS/MSD ⁵	
Volatiles	10	2	4	2	2	3	2	2	
Semivolatiles	10	2	4	2	2	2		2	
Pesticides/PCBs	10	2	4	2	2	2		2	
RCRA Metals	10	2	4	2	2	1		2	
RCRA Metals (Dissolved)			4	2		1			

NOTES

- -- Not applicable
- QA/QC field samples were submitted for only those parameters presented in this table.
- Field duplicate samples were collected at 10% of the investigative samples for a given analytical parameter. Of the two field duplicate samples collected per parameter, one is for surface water/groundwater, the other for soil/sediment.
- Field blank samples were submitted at the rate of one per day for a given analytical parameter. One methanol field blank was also analyzed for volatiles.
- One trip blank was submitted for analysis per shipment of investigative samples containing at least one sample for volatiles.
- Extra Matrix Spike/Matrix Spike Duplicate (MS/MSD) analysis for organics and MS/MSD analysis for inorganics were performed at a frequency of 1 each per 20 investigative samples.

TABLE 2-2 ANALYTICAL METHODS BY MATRIX (SOIL, SEDIMENT, GROUNDWATER, SURFACE WATER)

PARAMETERS	MATRIX (1)	ANALYSIS METHOD	CONTAINER	PRESERVATION	HOLDING TIME	
TCL VOC + 15	S, SD	8260/8240	Two 125-mL amber glass with septum cap and no headspace	None, 4°C	14 days	
TCL SVOC/PAH	S, SD	8270	One 250-mL amber glass	None, 4°C	14 days to extract, 40 days to analyze	
TCL Pesticides/PCBs	S, SD	8081	One 250-mL amber glass	None, 4°C	14 days to extract, 40 days to analyze	
RCRA METALS	S, SD	6010	One 250-mL amber glass	None, 4°C	6 months; 28 days for Hg	
TCL VOCs + 15	GW, SW	8260/8240	Three 40-mL glass vial	HCl to pH<2, 4°C	7 days	
TCL SVOCs	GW, SW	8270	One 1-L amber glass	None, 4°C	7 days to extract, 40 days to analyze	
TCL Pesticides/PCBs	GW, SW	8081	One 1-L amber glass	None, 4°C	7 days to extract, 40 days to analyze	
RCRA METALS TOTAL	GW, SW	200.7	One 500-mL polyethylene bottle	HN0 ₃ to pH<2, 4°C	6 months; 28 days for Hg	
RCRA METALS FILTERED	GW, SW	200.7	One 500-mL polyethylene bottle	HN0 ₃ to pH<2, 4°C	6 months; 28 days for Hg	

NOTE:

(1) S - Soil; SD - Sediment; SW - Surface Water; GW - Groundwater

2.1.1 Soil Sampling

Five soil borings were installed at the Deal Test Site during the 2-day investigation (Figure 2-2). Samples were collected at each of the borings from two discrete intervals: 0 to 2 feet below the ground surface (bgs) (surface) and between 2 and 4 feet bgs (subsurface). Three of the borings (A, B, C) were advanced within the former lagoon area, and of the remaining two borings, one was advanced at an upgradient position, and one at a downgradient position. Surficial soil samples were identified with odd numbers; subsurface samples were identified with even numbers. Samples S1 and S2 were collected upgradient, samples S3 through S8 were collected within the former lagoon area, samples S9 and S10 were collected downgradient, and sample S11 is a duplicate of sample S9.

All of the soil borings were installed by TerraProbe, Inc. of Jamison, Pennsylvania. An all-terrain vehicle (ATV), track-mounted GeoprobeTM rig was used to advance a probe containing an acetate core sleeve, which enabled the collection of a relatively undisturbed 4-foot soil sample. In general, each of the soil borings was sampled continuously to 8 feet (*i.e.*, two 4-foot probes were advanced). This was done in part to observe the nature of the subsurface soil, and to provide an opening in the soil column to insert the slotted screen for grab groundwater samples. Due to the presence of a shallow water table, both the surface and subsurface soil samples were collected from the first (upper) 4-foot core sample. Each boring sample was logged and classified in the field logbook by a qualified geologist. Soil classification included characterization of soil/sediment texture (*i.e.*, gravel, sand, silt, and clay percentages); color; moisture content; and other pertinent information.

In addition to describing the physical characteristics of the soil samples, each sample was screened with an organic vapor monitor (OVM) photoionization detector (PID) for the presence of volatile organic compounds (VOCs). Each boring was also observed for indications of possible contamination such as staining, discoloration, sheen, or odor. Field observations indicating possible contamination were also noted in the field logbook. Upon completion of each soil boring, the boreholes were properly backfilled.

After logging the soil samples, an aliquot was collected and placed into the appropriate sample containers for chemical analysis. The Work Plan stated that samples would be collected from two discrete intervals at each boring location (total of 10 discrete samples). One sample was to be obtained from the surface soil interval (*i.e.*, 0 to 2 feet bgs), and a second subsurface sample (below 2 feet bgs) from the interval exhibiting the highest measurement on the OVM, or from the 6-inch interval above groundwater if no readings above background levels were obtained. However, groundwater was encountered at depths just below 2 feet bgs within the area in which borings were installed. This resulted in the subsurface soil sample being collected between 2 and 4 feet bgs (usually from 2 to 3 feet), with some of the subsurface samples being logged as wet. An attempt was made to collect the VOC aliquot from the driest portion of the subsurface interval sampled.

Each soil sample was analyzed for VOCs, SVOCs, pesticides, polychlorinated biphenyls (PCBs), and Resource Conservation and Recovery Act (RCRA) metals. The soil samples to be analyzed for VOCs were collected using the methanol preservation method recently adopted by the New Jersey Department of Environmental Protection (NJDEP) (New Jersey Administrative Code [N.J.A.C.] 7:26E-2.1(a)4). The portion of the sample for VOC analysis was collected directly from the acetate sleeve prior to homogenization of the remaining sample aliquot for other analytical parameters.

Each sample was identified with a label attached directly to the container. Sample designations identified the soil sample number (*i.e.*, S1 through S11). Sample labels clearly identified the individual sample and included the site name, date and time the sample was collected, preservative, and analyses requested. All of the analyses were performed at RECRA, Inc. laboratory in Lionville, Pennsylvania.

2.1.2 Grab Groundwater Sampling

At four of the five soil boring locations, a grab groundwater sample was collected (Figure 2-2). The four groundwater samples were collected at locations corresponding to the upgradient (GW-1) and downgradient (GW-4) boring locations, and at two of the three locations within the former lagoon area (GW-2 and GW-3). Grab groundwater samples were obtained subsequent to soil sampling using a 0.5-inch outside diameter (O.D.) bailer (for VOC samples), and dedicated, disposable tubing equipped with a check valve (for all other parameters). The sampling devices were lowered into a slotted screen (approximately 1-inch O.D.), which was installed from 4 to 8 feet bgs. Samples for analysis of VOCs were collected first.

The groundwater samples were analyzed for the same parameters as were the soil samples (Table 2-2) with the addition of a filtered sample for dissolved metals analysis. VOC samples were collected into pre-preserved sample vials in the field that contained hydrochloric acid (HCl) so that the pH was lowered to less than 2 units. Samples collected for metals analyses were also collected into pre-preserved sample bottles that contained nitric acid (HNO₃), so that the pH was less than 2.

2.1.3 Surface Water/Sediment Sampling

In addition to the soil and groundwater samples, surface water and sediment samples were collected at two locations (one upstream and one downstream of the site) from a nearby tributary of Poplar Brook. This tributary could potentially be impacted by the former lagoon if groundwater is contaminated. Sampling location SW-1/SD-1 was located approximately 185 feet south of the entrance to the lagoon area. SW-2/SD-2 was located approximately 250 feet west of the dirt road and 300 feet north of the entrance to the lagoon area. Samples were collected at the downstream location (SW-1/SD-1) first with surface water being sampled before sediment. Surface water samples were collected by direct immersion of sample containers while facing upstream, and sediment samples were collected using stainless steel trowels and bowls. All VOC samples were collected prior to the other parameters, and care was taken to avoid

introducing sediment or suspended particles into the surface water sample containers. Sediment was homogenized in the stainless steel bowls after the VOC containers were filled.

The surface water and sediment samples were analyzed for the same parameters as were the soil and groundwater samples, which included both RCRA total metals and dissolved metals for the surface water samples. The VOC and metals samples were collected into pre-preserved sample containers (containing HCl and HNO₃, respectively) to ensure a pH of less than 2 standard units.

2.2 QUALITY ASSURANCE/QUALITY CONTROL SAMPLES

A total of two duplicate samples (one soil sample and one groundwater sample) were collected. Extra volume was collected at the downgradient soil boring location by advancing a collocated sampling probe. Sample S11 was collected as a duplicate sample of surface soil sample S9. Groundwater sample GW-5 was collected at the same location as GW-3 from the southernmost soil boring within the former lagoon area. In addition to the environmental duplicate samples, two field blank (rinsate) samples were collected (one per day) to verify that field decontamination procedures were adequate, and one methanol field blank (ambient) sample was collected while sampling soil samples S7 and S8. A trip blank sample was also sent each day as part of the sample shipment. Extra volumes were also collected to conduct matrix spike/matrix spike duplicate (MS/MSD) analyses.

2.3 SAMPLE SHIPMENT

In summary, the outside of each of the sample bottles was wiped with a clean paper towel to remove excess sample material(s), and each sample container was sealed with a lid outfitted with a Teflon cap. The sample containers were placed in zip-lock plastic bags. They were stored in thermal chests containing ice and packaged in granular absorbent (vermiculite) to ensure sample preservation and integrity during shipment. The chain-of-custody documents were secured to the lid on the inside of the thermal chest. The lids of the thermal chests were secured with tape and sealed with custody seals. The coolers were transported to the laboratory using a common carrier (*i.e.*, Federal Express). Laboratory personnel acknowledged receipt of the shipped samples at the time of their arrival by signing the chain-of-custody form.

All shipping procedures were performed in compliance with Department of Transportation (DOT) regulations governing shipment of hazardous materials.

2.4 SAMPLING EQUIPMENT DECONTAMINATION

Equipment decontamination was conducted upon arrival at the site and subsequent to collecting samples. Decontamination was performed to minimize the potential for cross-contamination of samples caused by transfer of contaminants from sampling equipment. Any equipment used to collect samples that came into contact with the sample matrix was decontaminated in accordance with the NJDEP-approved procedures outlined in the *NJDEP Field Sampling Procedures Manual* (May 1992).

2.5 DATA INTERPRETATION

As a screening measure, contaminant data in soils, surface water, and groundwater were compared to NJDEP regulatory standards. Soil contaminant concentrations were compared to residential direct contact soil cleanup criteria (Appendix A). Surface water and groundwater concentrations were compared to NJDEP standards for those media.

3.0 RESULTS

3.1 FIELD ACTIVITIES/OBSERVATIONS

The former lagoon area was investigated on two occasions. A site reconnaissance was conducted on 31 July 1997, followed by the field sampling on 30 September and 1 October 1997. The former lagoon area was located based on past descriptions and discussions with USACE and Ocean Township employees. Field observations characterized the former lagoon area as a shallow, mostly unvegetated depression, bordered by undergrowth in a forested area. The approximate size of the lagoon area was 60 feet long by 30 feet wide at its longest axes. The general area appeared to be a forested wetland based on qualitative observations. There did not appear to be any conveyance points to this location for lagoon discharge (*i.e.*, no pipes or channels), and the area appears to be a natural depression. The lack of vegetation could, in part, be related to the ponding of water in the depression. Appendix B contains photographs of the lagoon area, as well as photodocumentation of sampling. Field notes and Daily Quality Control Reports are included in Appendix C.

3.1.1 Soil Samples

The soils observed during the investigation were generally consistent throughout the site (Table 3-1). The upper 2 feet consisted of dark brown, fine-grained sand and silt, with abundant organic matter (primarily decomposed leaves). The upgradient and downgradient boring locations (outside the boundaries of the shallow depression area) exhibited slightly more organic matter within this interval, including rootlets. This material had a natural organic odor and appeared indicative of floodplain-type, or wetland deposits comingled with organic matter. The surface of the soils in the lagoon area varied in color in some locations. Most of the surface soils in the area were dark brown in color with a portion of the lagoon area exhibiting shades of green (attributed to algae/plant material) and brownish purple (believed to be natural in origin).

Subsurface soil deposits consisted of blue-green, fine- to medium-grained sand with varying amounts of silt, clay, and coarse sand. The finer-grained material may have been derived from parent material rich in glauconite (a mineral with a blue-green color). Glauconite is a hydrous potassium, aluminum, iron, magnesium silicate found in sedimentary deposits. It is a mineral of marine origin, and is common in marine sands (Mottana et el., 1978). These blue-green sands extended from approximately 2 feet bgs to at least 15 feet bgs, based on observations of core samples collected to 15 feet at soil boring C. Measurements using the OVM did not indicate

TABLE 3-1 SOIL SAMPLING DESCRIPTION

SAMPLE ID	LOCATION	CORE DESCRIPTION	DATE COLLECTED	COLLECTION DEPTH (ft bgs)	SAMPLE DESCRIPTION
S1	Upgradient (surface)	UG	9/30/97	0-2	(0-4') Dark brown Silt*, some fine sand, moist, abundant organic matter (peat).
S2	Upgradient (subsurface)		9/30/97	2-4	(4'-8') Blue-green fine Sand, some silt, some clay, wet. Groundwater at approx. 2 feet bgs in borehole. Collected GW-1 at this location.
S3	SW corner in former lagoon (surface)	A	9/30/97	0-2	(0-2') Dark brown fine Sand and Silt, moist, abundant organic matter (peat).
S4	SW corner in former lagoon (subsurface)		9/30/97	3-4	(2'-8') Blue-green-black medium-fine Sand, little silt, little clay, wet at 3 feet bgs.
S5	NE corner in former lagoon (surface)	В	9/30/97	0-2	(0-1.5') Dark brown fine Sand and Silt, moist, abundant organic matter (peat).
S6	NE corner in former lagoon (subsurface)		9/30/97	2-3	(1.5'-8') Blue-green medium-fine Sand, little silt, trace clay. Saturated at 2.5 feet bgs. Groundwater rose nearly to surface in borehole. Collected GW-2 at this location.
S7	SE corner in former lagoon (surface)	С	10/1/97	0-2	(0-2') Dark brown fine Sand and silt, moist, abundant organic matter (peat).
S8	SE corner in former lagoon (subsurface)		10/1/97	2-3	(2'-13') Blue-green fine-medium Sand, little silt, trace clay. Saturated at 3 feet bgs. (13'-15') Blue-green-black fine-medium Sand, little silt, trace clay, saturated. Collected GW-3 (and duplicate GW-5) at this location.
S9	Downgradient (surface)	DG	10/1/97	0-2	(0-2') Dark brown fine Sand and Silt, trace clay, moist, abundant organic matter.
S10	Downgradient (subsurface)		10/1/97	2-3	(2'-8') Blue-green fine-medium Sand, little silt, trace clay, saturated. Collected GW-4 at this location.
S11	Downgradient (surface duplicate sample of S9)		10/1/97	0-2	(0-2') Dark brown fine Sand and Silt, trace clay, moist, abundant organic matter.

^{*} The most predominant lithologic type is capitalized, according to Burmeister's soil classification.

readings above background for any of the surface or subsurface intervals observed at any of the boring locations.

3.1.2 Groundwater Samples

Groundwater was present at a depth of approximately 2 to 2.5 feet bgs for all samples. The grab groundwater samples were collected from an interval extending 4 to 8 feet bgs. This interval corresponded to the blue-green sand, silt, and clay deposits. Due to the presence of fines in the formation, the lack of a filter pack, and development procedures, the groundwater samples were relatively turbid. At several locations (the upgradient location and GW-3 within the former lagoon), the water appeared to clear up as volume was removed for sample collection. No odors or readings above background on the OVM were noted while collecting the grab groundwater samples.

3.1.3 Surface Water and Sediment Samples

In general, the surface water samples were clear and odorless. Care was taken not to stir up the sediments and the algal-like, iron-oxide deposits that nearly covered the entire streambed. The iron-oxide deposits were rust colored and easily dislodged (into "feathery" clumps) when disturbed. The sediments consisted primarily of brown, fine- to coarse-grained sand with a trace amount of silt. Very little organic matter was observed, and the sediment samples were also odorless. No readings above background on the OVM were noted while collecting the surface water and sediment samples.

3.2 ANALYTICAL RESULTS

Analytical results for detected compounds are presented in Tables 3-2 through 3-13. Field blank and trip blank data (field quality control samples) are presented in Tables 3-14 through 3-17. Appendix D contains analytical results and additional data.

3.2.1 Soil Results

Analytical results indicated that no VOCs were detected (Table 3-2) in site samples. Three compounds were detected in blank samples (*i.e.*, chloromethane, methylene chloride, and acetone). The presence of these compounds in the site soil samples were considered blank contamination, and during data validation all of these compounds were considered not detected (Appendix E).

The following semivolatile organic compounds (SVOCs) were detected in soils: fluoranthene, pyrene, benzo(a)anthracene, chrysene, and phenol (Table 3-3). Detections of benzoic acid and bis(2-ethylhexyl)phthalate in the soil samples were considered laboratory contamination and labeled non-detect during data validation. Phenol was detected at one location (S5), but its concentration did not exceed NJDEP soil standards. The remaining compounds were polycyclic aromatic hydrocarbons (PAHs). These compounds were detected at location S1 only, at

TABLE 3-2
SUMMARY OF VOLATILE ORGANIC COMPOUND RESULTS IN SOIL
DEAL TEST SITE
OCEAN TOWNSHIP, NEW JERSEY

A-SAMPLE NO. A S	SI SI	S2	S3	* S4***	S5	S6	S7	S8	S9	S10	S11	NJDEP
SAMPLING DATE	9/30/97	9/30/97	9/30/97	9/30/97	9/30/97	9/30/97	10/1/97	10/1/97	10/1/97	10/1/97	10/1/97	RDCSCC)*
UNITS	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ng/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	(ug/kg)
Chloromethane	2500 UJ	1600 U	3600 UJ	1200 U	3500 UJ	1500 U	2900 UJ	1400 U	2500 UJ	1500 U	2000 U	520,000
Bromomethane	3300 UJ	1600 U	3600 UJ	1200 U	3500 UJ	1500 U	2900 UJ	1400 U	2500 UJ	1500 U	2000 U	79,000
Vinyl Chloride	3300 UJ	1600 U	3600 UJ	1200 U	3500 UJ	1500 U	2900 UJ	1400 U	2500 UJ	1500 U	2000 U	2,000
Chloroethane	3300 UJ	1600 U	3600 UJ	1200 U	3500 UJ	1500 U	2900 UJ	1400 U	2500 UJ	1500 U	2000 U	NLE
Methylene Chloride	1700 UJ	1200 U	1300 UJ	750 U	2400 UJ	1600 U	1500 UJ	510 U	1300 UJ	730 U	990 U	49,000
Acetone	3300 UJ	1600 U	3600 UJ	1200 U	3500 UJ	1500 U	2900 UJ	1000 U	2500 UJ	1500 U	2000 U	1,000,000
Carbon Disulfide	1600 UJ	790 U	1800 UJ	610 U	1800 UJ	770 U	1500 UJ	690 U	1300 UJ	730 U	990 U	NLE
1,1-Dichloroethene	1600 UJ	790 U	1800 UJ	610 U	1800 UJ	770 U	1500 UJ	690 U	1300 UJ	730 U	990 U	8,000
1,1-Dichloroethane	1600 UJ	790 U	1800 UJ	610 U	1800 UJ	770 U	1500 UJ	690 U	1300 UJ	730 U	990 U	570,000
1,2-Dichloroethene (total)	1600 UJ	790 U	1800 UJ	610 U	1800 UJ	770 U	1500 UJ	690 U	1300 UJ	730 U	990 U	79,000
Chloroform	1600 UJ	790 U	1800 UJ	610 U	1800 UJ	770 U	1500 UJ	690 U	1300 UJ	730 U	990 U	19,000
1,2-Dichloroethane	1600 UJ	790 U	1800 UJ	610 U	1800 UJ	770 U	1500 UJ	690 U	1300 UJ	730 U	990 U	6,000
2-Butanone	3300 UJ	1600 U	3600 UJ	1200 U	3500 UJ	1500 U	2900 UJ	1400 U	2500 UJ	1500 U	2000 U	1,000,000
1,1,1-Trichloroethane	1600 UJ	790 U	1800 UJ	610 U	1800 UJ	770 U	1500 UJ	690 U	1300 UJ	730 U	990 U	210,000
Carbon Tetrachloride	1600 UJ	790 U	1800 UJ	610 U	1800 UJ	770 U	1500 UJ	690 U	1300 UJ	730 U	990 U	2,000
Bromodichloromethane	1600 UJ	790 U	1800 UJ	610 U	1800 UJ	770 U	1500 UJ	690 U	1300 UJ	730 U	990 U	11,000
1,2-Dichloropropane	1600 UJ	790 U	1800 UJ	610 U	1800 UJ	770 U	1500 UJ	690 U	1300 UJ	730 U	990 U	10,000
cis-1,3-Dichloropropene	1600 UJ	790 U	1800 UJ	610 U	1800 UJ	770 U	1500 UJ	690 U	1300 UJ	730 U	990 U	4,000
Trichloroethene	1600 UJ	790 U	1800 UJ	610 U	1800 UJ	770 U	1500 UJ	690 U	1300 UJ	730 U	990 U	23,000
Dibromochloromethane	1600 UJ	790 U	1800 UJ	610 U	1800 UJ	770 U	1500 UJ	690 U	1300 UJ	730 U	990 U	110,000
1,1,2-Trichloroethane	1600 UJ	790 U	1800 UJ	610 U	1800 UJ	770 U	1500 UJ	690 U	1300 UJ	730 U	990 U	22,000
Benzene	1600 UJ	790 U	1800 UJ	610 U	1800 UJ	770 U	1500 UJ	690 U	1300 UJ	730 U	990 U	3,000
Trans-1,3-Dichloropropene	1600 UJ	790 U	1800 UJ	610 U	1800 UJ	770 U	1500 UJ	690 U	1300 UJ	730 U	990 U	4,000
Bromoform	1600 UJ	790 U	1800 UJ	610 U	1800 UJ	770 U	1500 UJ	690 U	1300 UJ	730 U	990 U	86,000
4-Methyl-2-pentanone	3300 UJ	1600 U	3600 UJ	1200 U	3500 UJ	1500 U	2900 UJ	1400 U	2500 UJ	1500 U	2000 U	1,000,000
2-Hexanone	3300 UJ	1600 U	3600 UJ	1200 U	3500 UJ	1500 U	2900 UJ	1400 U	2500 UJ	1500 U	2000 U	NLE

TABLE 3-2 (CONTINUED) SUMMARY OF VOLATILE ORGANIC COMPOUND RESULTS IN SOIL DEAL TEST SITE OCEAN TOWNSHIP, NEW JERSEY

SAMPLE NO.	\$ S1.	S2 S2	S3 %	\$ \$4	S & S5	S6	S7.	S8	S9	S10	S11	NJDEP
A SISAMPLING DATE.	9/30/97	9/30/97	9/30/97	9/30/97	9/30/97	9/30/97:	10/1/97	10/1/97	10/1/97	10/1/97	10/1/97	RDCSCC
SESSESSIENUN ALBERT	Sang/kg es	es ug/kg e	ang/kg at	ug/kg	e ug/kgæ	** ug/kg	e ug/kg 😕	ug/kg s.k	ug/kg	ug/kg	≠i úg/kg *	(ug/kg)
Tetrachloroethene	1600 UJ	790 U	1800 UJ	610 U	1800 UJ	770 U	1500 UJ	690 U	1300 UJ	730 U	990 U	4,000
1,1,2,2-Tetrachloroethane	1600 UJ	790 U	1800 UJ	610 U	1800 UJ	770 U	1500 UJ	690 U	1300 UJ	730 U	990 U	34,000
Toluene	1600 UJ	790 U	1800 UJ	610 U	1800 UJ	770 U	1500 UJ	690 U	1300 UJ	730 U	990 U	1,000,000
Chlorobenzene	1600 UJ	790 U	1800 UJ	610 U	1800 UJ	770 U	1500 UJ	690 U	1300 UJ	730 U	990 U	37,000
Ethylbenzene	1600 UJ	790 U	1800 UJ	610 U	1800 UJ	770 U	1500 UJ	690 U	1300 UJ	730 U	990 U	1,000,000
Styrene	1600 UJ	790 U	1800 UJ	610 U	1800 UJ	770 U	1500 UJ	690 U	1300 UJ	730 U	990 U	23,000
Xylene (total)	1600 UJ	790 U	1800 UJ	610 U	1800 UJ	770 U	1500 UJ	690 U	1300 UJ	730 U	990 U	410,000

NOTES:

U - Not detected at given quantitation limit

J - Estimated values

(1) S11 is a duplicate sample of S9

NLE - No level established

RDCSCC - Residential Direct Contact Soil Cleanup Criteria

TABLE 3-3 SUMMARY OF SEMIVOLATILE ORGANIC COMPOUND RESULTS IN SOIL DEAL TEST SITE OCEAN TOWNSHIP, NEW JERSEY

SAMPLE NO.		S2	S3	S4	S5	S6	: S7	S8	S9.	S10	S11	NJDEP RESIDENTIAL DIRECT CONTACT
SAMPLING DATE	9/30/97	9/30/97	9/30/97	9/30/97	9/30/97	9/30/97	9/30/97	10/1/97	10/1/97	10/1/97	10/1/97	SOIL CLEANUP
UNITS	ug/kg	CRITERIA (ug/kg)										
Phenol	810 UJ	440 U	970 UJ	420 U	150 J	470 U	910 UJ	430 U	810 UJ	420 U	620 U	10,000,000
bis(2-Chloroethyl)ether	810 UJ	440 U	970 UJ	420 U	1100 UJ	470 U	910 UJ	430 U	810 UJ	420 U	620 U	660
2-Chlorophenol	810 UJ	440 U	970 UJ	420 U	1100 UJ	470 U	910 UJ	430 U	810 UJ	420 U	620 U	280,000
1,3-Dichlorobenzene	810 UJ	440 U	970 UJ	420 U	1100 UJ	470 U	910 UJ	430 U	810 UJ	420 U	620 U	5,100,000
1,4-Dichlorobenzene	810 UJ	440 U	970 UJ	420 U	1100 UJ	470 U	910 UJ	430 U	810 UJ	420 U	620 U	570,000
Benzyl alcohol	810 UJ	440 U	970 UJ	420 U	1100 UJ	470 U	910 UJ	430 U	810 UJ	420 U	620 U	10,000,000
1,2-Dichlorobenzene	810 UJ	440 U	970 UJ	420 U	1100 UJ	470 U	910 UJ	430 U	810 UJ	420 U	620 U	5,100,000
2-Methylphenol	810 UJ	440 U	970 UJ	420 U	1100 UJ	470 U	910 UJ	430 U	810 UJ	420 U	620 U	2,800,000
bis(2-Chloroisopropyl)ether	810 UJ	440 U	970 UJ	420 U	1100 UJ	470 U	910 UJ	430 U	810 UJ	420 U	620 U	2,300,000
4-Methylphenol	810 UJ	440 U	970 UJ	420 U	1100 UJ	470 U	910 UJ	430 U	810 UJ	420 U	620 U	2,800,000
N-Nitroso-Di-n-propylamine	810 UJ	440 U	970 UJ	420 U	1100 UJ	470 U	910 UJ	430 U	810 UJ	420 U	620 U	660
Hexachloroethane	810 UJ	440 U	970 UJ	420 U	1100 UJ	470 U	910 UJ	430 U	810 UJ	420 U	620 U	6,000
Nitrobenzene	810 UJ	440 U	970 UJ	420 U	1100 UJ	470 U	910 UJ	430 U	810 UJ	420 U	620 U	28,000
Isophorone	810 UJ	440 U	970 UJ	420 U	1100 UJ	470 U	910 UJ	430 U	810 UJ	420 U	620 U	1,100,000
2-Nitrophenol	810 UJ	440 U	970 UJ	420 U	1100 UJ	470 U	910 UJ	430 U	810 UJ	420 U	620 U	NLE
2,4-Dimethylphenol	810 UJ	440 U	970 UJ	420 U	1100 UJ	470 U	910 UJ	430 U	810 UJ	420 U	620 U	1,100,000
Benzoic acid	4000 UJ	2200 U	4900 UJ	2100 U	5300 UJ	2400 U	4600 UJ	2100 U	4000 UJ	2100 U	3100 U	NLE
bis(2-Chloroethoxy)methane	810 UJ	440 U	970 UJ	420 U	1100 UJ	470 U	910 UJ	430 U	810 UJ	420 U	620 U	NLE
2,4-Dichlorophenol	810 UJ	440 U	970 UJ	420 U	1100 UJ	470 U	910 UJ	430 U	810 UJ	420 U	620 U	170,000
1,2,4-Trichlorobenzene	810 UJ	440 U	970 UJ	420 U	1100 UJ	470 U	910 UJ	430 U	810 UJ	420 U	620 U	68,000
Naphthalene	810 UJ	440 U	970 UJ	420 U	1100 UJ	470 U	910 UJ	430 U	810 UJ	420 U	620 U	230,000
4-Chloroaniline	810 UJ	440 U	970 UJ	420 U	1100 UJ	470 U	910 UJ	430 U	810 UJ	420 U	620 U	230,000
Hexachlorobutadiene	810 UJ	440 U	970 UJ	420 U	1100 UJ	470 U	910 UJ	430 U	810 UJ	420 U	620 U	1,000
4-Chloro-3-methylphenol	810 UJ	440 U	970 UJ	420 U	1100 UJ	470 U	910 UJ	430 U	810 UJ	420 U	620 U	10,000,000
2-Methylnaphthalene	810 UJ	440 U	970 UJ	420 U	1100 UJ	470 U	910 UJ	430 U	810 UJ	420 U	620 U	NLE
Hexachlorocyclopentadiene	810 UJ	440 U	970 UJ	420 U	1100 UJ	470 U	910 UJ	430 U	810 UJ	420 U	620 U	400,000
2,4,6-Trichlorophenol	810 UJ	440 U	970 UJ	420 U	1100 UJ	470 U	910 UJ	430 U	810 UJ	420 U	620 U	62,000
2,4,5-Trichlorophenol	4000 UJ	2200 U	4900 UJ	2100 U	5300 UJ	2400 U	4600 UJ	2100 U	4000 UJ	2100 U	3100 U	5,600,000

TABLE 3-3 (CONTINUED) SUMMARY OF SEMIVOLATILE ORGANIC COMPOUND RESULTS IN SOIL DEAL TEST SITE OCEAN TOWNSHIP, NEW JERSEY

SAMPLE NO.	S1	S2	S3	S4	S5	S6	S 7	S8	S 9	S10	.S11	NJDEP RESIDENTIAL DIRECT CONTACT
SAMPLING DATE UNITS	9/30/97 ug/kg	10/1/97 ug/kg	10/1/97 ug/kg	10/1/97 ug/kg	10/1/97 ug/kg	SOIL CLEANUP CRITERIA (ug/kg)						
2-Chloronaphthalene	810 UJ	440 U	970 UJ	420 U	1100 UJ	470 U	910 UJ	430 U	810 UJ	420 U	620 U	NLE
2-Nitroaniline	4000 UJ	2200 U	4900 UJ	2100	5300 UJ	2400 U	4600 UJ	2100 U	4000 UJ	2100 U	3100 U	NLE
Dimethylphthalate	810 UJ	440 U	970 UJ	420 U	1100 UJ	470 U	910 UJ	430 U	810 UJ	420 U	620 U	10,000,000
Acenaphthylene	810 UJ	440 U	970 UJ	420 U	1100 UJ	470 U	910 UJ	430 U	810 UJ	420 U	620 U	NLE
2,6-Dinitrotoluene	810 UJ	440 U	970 UJ	420 U	1100 UJ	470 U	910 UJ	430 U	810 UJ	420 U	620 U	1,000
3-Nitroaniline	4000 UJ	2200 U	4900 UJ	2100 U	5300 UJ	2400 U	4600 UJ	2100 U	4000 UJ	2100 U	3100 U	NLE
Acenaphthene	810 UJ	440 U	970 UJ	420 U	1100 UJ	470 U	910 UJ	430 U	810 UJ	420 U	620 U	3,400,000
2,4-Dinitrophenol	4000 UJ	2200 U	4900 UJ	2100 U	5300 UJ	2400 U	4600 UJ	2100 U	4000 UJ	2100 U	3100 U	110,000
4-Nitrophenol	4000 UJ	2200 U	4900 UJ	2100 U	5300 UJ	2400 U	4600 UJ	2100 U	4000 UJ	2100 U	3100 U	NLE
Dibenzofuran	810 UJ	440 U	970 UJ	420 U	1100 UJ	470 U	910 UJ	430 U	810 UJ	420 U	620 U	NLE
2,4-Dinitrotoluene	810 UJ	440 U	970 UJ	420 U	1100 UJ	470 U	910 UJ	430 U	810 UJ	420 U	620 U	1,000
Diethylphthalate	810 UJ	440 U	970 UJ	420 U	1100 UJ	470 U	910 UJ	430 U	810 UJ	420 U	620 U	10,000,000
4-Chlorophenyl-phenylether	810 UJ	440 U	970 UJ	420 U	1100 UJ	470 U	910 UJ	430 U	810 UJ	420 U	620 U	NLE
Fluorene	810 UJ	440 U	970 UJ	420 U	1100 UJ	470 U	910 UJ	430 U	810 UJ	420 U	620 U	2,300,000
4-Nitroaniline	4000 UJ	2200 U	4900 UJ	2100 U	5300 UJ	2400 U	4600 UJ	2100 U	4000 UJ	2100 U	3100 U	NLE
4,6-Dinitro-2-methylphenol	4000 UJ	2200 U	4900 UJ	2100 U	5300 UJ	2400 U	4600 UJ	2100 U	4000 UJ	2100 U	3100 U	NLE
N-Nitrosodiphenylamine	810 UJ	440 U	970 UJ	420 U	1100 UJ	470 U	910 UJ	430 U	810 UJ	420 U	620 U	140,000
4-Bromophenyl-phenylether	810 UJ	440 U	970 UJ	420 U	1100 UJ	470 U	910 UJ	430 U	810 UJ	420 U	620 U	NLE
Hexachlorobenzene	810 UJ	440 U	970 UJ	420 U	1100 UJ	470 U	910 UJ	430 U	810 UJ	420 U	620 U	660
Pentachlorophenol	4000 UJ	2200 U	4900 UJ	2100 U	5300 UJ	2400 U	4600 UJ	2100 U	4000 UJ	2100 U	3100 U	6,000
Phenanthrene	810 UJ	440 U	970 UJ	420 U	1100 UJ	470 U	910 UJ	430 U	810 UJ	420 U	620 U	NLE
Anthracene	810 UJ	440 U	970 UJ	420 U	1100 UJ	470 U	910 UJ	430 U	810 UJ	420 U	620 U	10,000,000
Di-n-Butylphthalate	810 UJ	440 U	970 UJ	420 U	1100 UJ	470 U	910 UJ	430 U	810 UJ	420 U	620 U	5,700,000
Fluoranthene	100 Ј	440 U	970 UJ	420 U	1100 UJ	470 U	910 UJ	430 U	810 UJ	420 U	620 U	2,300,000
Pyrene	160 J	440 U	970 UJ	420 U	1100 UJ	470 U	910 UJ	430 U	810 UJ	420 U	620 U	1,700,000
Butylbenzylphthalate	810 UJ	440 U	970 UJ	420 U	1100 UJ	470 U	910 UJ	430 U	810 UJ	420 U	620 U	1,100,000
3,3'-Dichlorobenzidine	1600 UJ	880 U	1900 UJ	840 U	2100 UJ	950 U	1800 UJ	860 U	1600 UJ	830 U	1200 U	2,000
Benzo(a)anthracene	110 J	440 U	970 UJ	420 U	1100 UJ	470 U	910 UJ	430 U	810 UJ	420 U	620 U	900
Chrysene	150 J	440 U	970 UJ	420 U	1100 UJ	470 U	910 UJ	430 U	810 UJ	420 U	620 U	9,000

TABLE 3-3 (CONTINUED) SUMMARY OF SEMIVOLATILE ORGANIC COMPOUND RESULTS IN SOIL DEAL TEST SITE OCEAN TOWNSHIP, NEW JERSEY

SAMPLE NO. SAMPLING DATE UNITS	S1 9/30/97 ug/kg	S2 9/30/97 ug/kg	S3 9/30/97 ug/kg	S4 9/30/97 ug/kg	S5 9/30/97 ug/kg	S6 9/30/97 ug/kg	S7 9/30/97 ug/kg	S8 10/1/97 ug/kg	S9 10/1/97 ug/kg	S10 10/1/97 ug/kg	S11 10/1/97 ug/kg	NJDEP RESIDENTIAL DIRECT CONTACT SOIL CLEANUP CRITERIA (ug/kg)
Bis(2-ethylhexyl)phthalate	810 UJ	440 U	970 UJ	420 U	1100 UJ	470 U	910 UJ	430 U	810 UJ	420 U	620 U	49,000
Di-n-octyl phthalate	810 UJ	440 U	970 UJ	420 U	1100 UJ	470 U	910 UJ	430 U	810 UJ	420 U	620 U	1,100,000
Benzo(b)fluoranthene	810 UJ	440 U	970 UJ	420 U	1100 UJ	470 U	910 UJ	430 U	810 UJ	420 U	620 U	900
Benzo(k)fluoranthene	810 UJ	440 U	970 UJ	420 U	1100 UJ	470 U	910 UJ	430 U	810 UJ	420 U	620 U	900
Benzo(a)pyrene	810 UJ	440 U	970 UJ	420 U	1100 UJ	470 U	910 UJ	430 U	810 UJ	420 U	620 U	660
Indeno(1,2,3-cd)pyrene	810 UJ	440 U	970 UJ	420 U	1100 UJ	470 U	910 UJ	430 U	810 UJ	420 U	620 U	900
Dibenzo(a,h)anthracene	810 UJ	440 U	970 UJ	420 U	1100 UJ	470 U	910 UJ	430 U	810 UJ	420 U	620 U	660
Benzo(g,h,i)perylene	810 UJ	440 U	970 UJ	420 U	1100 UJ	470 U	910 UJ	430 U	810 UJ	420 U	620 U	NLE
Carbazole	810 UJ	440 U	970 UJ	420 U	1100 UJ	470 U	910 UJ	430 U	810 UJ	420 U	620 U	NLE

NOTES:

U - Not detected at given quantitation limit

J - Estimated values

(1) S11 is a duplicate sample of S9

NLE - No Level Established

concentrations that did not exceed NJDEP soil cleanup criteria. No pesticide/PCB compounds were detected in any of the soil samples (Table 3-4).

Analysis for metals in soil revealed that arsenic, barium, cadmium, chromium, mercury, lead, and selenium were detected. Metals concentrations were significantly higher in surficial soils than in subsurface soils (Table 3-5). Arsenic was the only metal to exceed NJDEP soil cleanup criteria; concentrations ranged from 17.5 milligrams per kilogram (mg/kg) to 504 mg/kg, exceeding the NJDEP residential and non-residential direct contact soil cleanup criterion of 20 mg/kg in 10 of 11 samples collected. However, arsenic concentrations at the upgradient location (samples S1 and S2) were 129 mg/kg and 22 mg/kg, respectively, also exceeding the NJDEP criterion. The maximum concentration of 504 mg/kg was detected in sample S9, a surficial sample located downgradient of the former lagoon adjacent to the dirt road. However, the duplicate sample of S9 (S11) had an arsenic concentration of 157 mg/kg, indicating some arsenic variability in the soil. (The remaining metals were comparable in concentration between S9 and S11.) Generally, arsenic concentrations increased from the upgradient location towards the dirt road (Figure 3-1). One potential explanation for the arsenic concentrations could be the use of arsenic-containing herbicides for roadside spraying. If these types of herbicides were used in the past, arsenic concentrations would be expected to decrease with distance from the road.

Mean concentrations of arsenic in eastern United States soils have been reported as 7.4 mg/kg, with a range of <0.1 to 73 mg/kg (Shacklette and Boerngen, 1984). Therefore, arsenic concentrations in surface soil in the general former lagoon area appear to be elevated above expected background concentrations. In summary, arsenic appears to be the only contaminant of potential concern detected in the soils at this site.

3.2.2 Groundwater Results

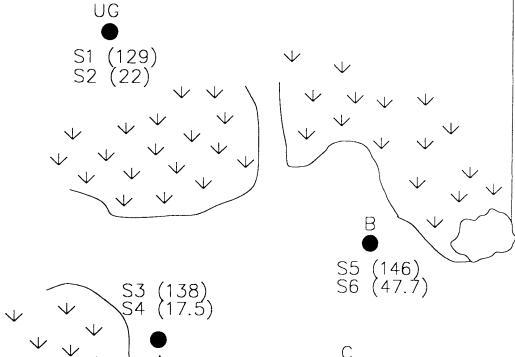
Analysis of VOCs in the four groundwater samples collected (Table 3-6) indicated that only carbon disulfide was detected. Carbon disulfide is a naturally occurring compound, but is also used in manufacturing and as a solvent. Methylene chloride and acetone were detected in the laboratory method blanks, and their presence in site samples was categorized as non-detect during data validation.

No SVOCs detected in groundwater exceeded the New Jersey Groundwater Quality Standards (NJGWQS; Table 3-7). Compounds detected were phenol, benzoic acid, and phthalate compounds, all at trace amounts. No pesticide/PCB compounds were detected in groundwater (Table 3-8).

Total recoverable metals detected in groundwater included arsenic, barium, cadmium, chromium, lead, and selenium. Of these, total recoverable concentrations of arsenic, cadmium, chromium, and lead exceeded their respective NJGWQS (Table 3-9). The soluble, or dissolved concentrations of these metals were generally an order of magnitude lower than the total concentrations. This can be attributed to the high suspended solids present in the total samples as compared to the filtered (dissolved) samples. Metals adsorb strongly to particulate matter (e.g.,



FORMER LAGOON AREA



C V + S7 (246) V V S8 (69.7) V V DG

S0 (504)

S9 (504) S10 (25.4) S11 (157)

S3 SOIL SAMPLE LOCATION (138) SOIL CONCENTRATION OF ARSENIC IN MG/KG

NOTE: NOT TO SCALE



PROJECT NAME:

DEAL TEST SITE

CEAN TOWNSHIP, NEW JERSEY

U.S. ARMY CORPS OF ENGINEERS

ARSENIC CONCENTRATION

JERSEY IN SOIL

MARCH 1998

FIGURE 1: 3-1

TABLE 3-4 SUMMARY OF PESTICIDE/PCB RESULTS IN SOIL DEAL TEST SITE OCEAN TOWNSHIP, NEW JERSEY

SAMPLE NO. SAMPLING DATE UNITS	S1 9/30/97 ug/kg	S2 9/30/97 ug/kg	S3 9/30/97 ug/kg	S4 9/30/97 ug/kg	S5 9/30/97 ug/kg	S6 9/30/97 ug/kg	S7 10/1/97 ug/kg	S8 10/1/97 ug/kg	S9 10/1/97 ug/kg	S10 10/1/97 ug/kg	\$11 (1) 10/1/97 ug/kg	NJDEP RESIDENTIAL DIRECT CONTACT SOIL CLEANUP CRITERIA (ug/kg)
Alpha-BHC	200 UJ	110 U	48 UJ	100 U	260 UJ	120 U	45 UJ	110 U	40 UJ	100 U	31 U	NLE
Beta-BHC	200 UJ	110 U	48 UJ	100 U	260 UJ	120 U	45 UJ	110 U	40 UJ	100 U	31 U	NLE
Delta-BHC	200 UJ	110 U	48 UJ	100 U	260 UJ	120 U	45 UJ	110 U	40 UJ	100 U	31 U	NLE
gamma-BHC (Lindane)	200 UJ	110 U	48 UJ	100 U	260 UJ	120 U	45 UJ	110 U	40 UJ	100 U	31 U	520
Heptachlor	200 UJ	110 U	48 UJ	100 U	260 UJ	120 U	45 UJ	110 U	40 UJ	100 U	31 U	150
Aldrin	200 UJ	110 U	48 UJ	100 U	260 UJ	120 U	45 UJ	110 U	40 UJ	100 U	31 U	40
Heptachlor epoxide	200 UJ	110 U	48 UJ	100 U	260 UJ	120 U	45 UJ	110 U	40 UJ	100 U	31 U	150
Endosulfan I	200 UJ	110 U	48 UJ	100 U	260 UJ	120 U	45 UJ	110 U	40 UJ	100 U	31 U	340,000
Dieldrin	400 UJ	220 U	96 UJ	210 U	530 UJ	240 U	90 UJ	210 U	81 UJ	210 U	62 U	42
4,4'-DDE	400 UJ	220 U	96 UJ	210 U	530 UJ	240 U	90 UJ	210 U	81 UJ	210 U	62 U	2,000
Endrin	400 UJ	220 U	96 UJ	210 U	530 UJ	240 U	90 UJ	210 U	81 UJ	210 U	62 U	17,000
Endosulfan II	400 UJ	220 U	96 UJ	210 U	530 UJ	240 U	90 UJ	210 U	81 UJ	210 U	62 U	340,000
4,4'-DDD	400 UJ	220 U	96 UJ	210 U	530 UJ	240 U	90 UJ	210 U	81 UJ	210 U	62 U	3,000
Endosulfan sulfate	400 UJ	220 U	96 UJ	210 U	530 UJ	240 U	90 UJ	210 U	81 UJ	210 U	62 U	340,000
4,4'-DDT	400 UJ	220 U	96 UJ	210 U	530 UJ	240 U	90 UJ	210 U	81 UJ	210 U	62 U	2,000
Methoxychlor	2000 UJ	1100 U	480 UJ	1000 U	2600 UJ	1200 U	450 UJ	1100 U	400 UJ	1000 U	310 U	280,000
Endrin ketone	400 UJ	220 U	96 UJ	210 U	530 UJ	240 U	90 UJ	210 U	81 UJ	210 U	62 U	17,000
Endrin aldehyde	400 UJ	220 U	96 UJ	210 U	530 UJ	240 U	90 UJ	210 U	81 UJ	210 U	62 U	17,000
alpha-Chlordane	200 UJ	110 U	48 UJ	100 U	260 UJ	120 U	45 UJ	110 U	40 UJ	100 U	31 U	NLE
gamma-Chlordane	200 UJ	110 U	48 UJ	100 U	260 UJ	120 U	45 UJ	110 U	40 UJ	100 U	31 U	NLE
Toxaphene	20000 UJ	11000 U	4800 UJ	10000 U	26000 UJ	12000 U	4500 UJ	11000 U	4000 UJ	10000 U	3100 U	100
Aroclor-1016	4000 UJ	2200 U	960 UJ	2100 U	5300 UJ	2400 U	900 UJ	2100 U	810 UJ	2100 U	620 U	490
Aroclor-1221	8000 UJ	4300 U	1900 UJ	4200 U	11000 UJ	4700 U	1800 UJ	4300 U	1600 UJ	4100 U	1200 U	490
Aroclor-1232	4000 UJ	2200 U	960 UJ	2100 U	5300 UJ	2400 U	900 UJ	2100 U	810 UJ	2100 U	620 U	490
Aroclor-1242	4000 UJ	2200 U	960 UJ	2100 U	5300 UJ	2400 U	900 UJ	2100 U	810 UJ	2100 U	620 U	490
Aroclor-1248	4000 UJ	2200 U	960 UJ	2100 U	5300 UJ	2400 U	900 UJ	2100 U	810 UJ	2100 U	620 U	490
Aroclor-1254	4000 UJ	2200 U	960 UJ	2100 U	5300 UJ	2400 U	900 UJ	2100 U	810 UJ	2100 U	620 U	490
Aroclor-1260	4000 UJ	2200 U	960 UJ	2100 U	5300 UJ	2400 U	900 UJ	2100 U	810 UJ	2100 U	620 U	490

NOTES:

- U Not detected at given quantitation limit
- J Estimated Value
- (1) S11 is a duplicate of sample S9
- NLE No level established

TABLE 3-5 SUMMARY OF METALS RESULTS IN SOIL DEAL TEST SITE OCEAN TOWNSHIP, NEW JERSEY

SAMPLE NO. SAMPLING DATE UNITS	S1 9/30/97 mg/kg	S2 9/30/97 mg/kg	S3 9/30/97 mg/kg	S4 9/30/97 mg/kg	S5 9/30/97 mg/kg	S6 9/30/97 mg/kg	S7 10/1/97 mg/kg	S8 10/1/97 mg/kg	S9 10/1/97 mg/kg	S10 10/1/97 mg/kg	\$11 10/1/97 mg/kg	NJDEP RESIDENTIAL DIRECT CONTACT SOIL CLEANUP CRITERIA (mg/L)
Silver, Total	0.19 UJ	0.10 UJ	0.23 UJ	0.10 UJ	0.25 UJ	0.11 UJ	0.22 UJ	0.10 UJ	0.19 UJ	0.10 UJ	0.15 UJ	110
Arsenic, Total	129 J	22	138 J	17.5	146 J	47.7	246 J	69.7 J	504 J	25.4 J	157 J	20
Barium, Total	64.9 J	20.5	72.4 J	17.6	88.4 J	23.2	92.7	35	102	18.6	114	700
Cadmium, Total	0.33 J	0.05	0.12 UJ	0.05 U	0.13 UJ	0.06 U	0.78	0.16	0.1 U	0.1	0.16	1
Chromium, Total	25.3 J	18.3	44.7 J	19.6	35.3 J	18.5	25	30.1	31.2	37	19.1	500
Mercury, Total	0.04 UJ	0.02 U	0.05 UJ	0.02 U	0.05 UJ	0.02 U	0.05 U	0.02 U	0.07	0.02 U	0.12	14
Lead, Total	51.6 J	4.2 J	6 R	3.2 J	27.2 J	2.4 R	24.4 J	3.9 J	26.3 J	4 J	28.9 J	400
Selenium, Total	5.1 J	1	3.8 J	0.68	6.2 J	1.4	6.6 J	0.78	4	0.55 U	3.2	63

NOTES:

- U Not detected at indicated instrument detection limit
- J Estimated value
- R Rejected, concentration less than 5 times the field blank concentration.

TABLE 3-6 SUMMARY OF VOLATILE ORGANIC COMPOUND RESULTS IN GROUNDWATER DEAL TEST SITE OCEAN TOWNSHIP, NEW JERSEY

SAMPLE NO. SAMPLING DATE UNITS	GW-1 9/30/97 ug/L	GW-2 9/30/97 ug/L	GW-3 10/1/97 ug/L	GW-4 10/1/97 ug/L	GW-5 10/1/97 ug/L	NJDEP APPROVED GROUNDWATER CLEANUP STANDARDS (1)ug/L
Chloromethane	10 UJ	30				
Bromomethane	10 UJ	10 UJ	10 U	10 U	10 UJ	10
Vinyl Chloride	10 UJ	10 UJ	10 U	10 U	10 UJ	5
Chloroethane	10 UJ	10 UJ	10 U	10 U	10 UJ	NLE
Methylene Chloride	5 UJ	5 UJ	9 U	9 U	18 UJ	2
Acetone	10 UJ	12 UJ	10 U	10 U	10 UJ	700
Carbon Disulfide	5 UJ	5 UJ	69	150	170	NLE
1,1-Dichloroethene	5 UJ	5 UJ	5 U	5 U	5 UJ	2
1,1-Dichloroethane	5 UJ	5 UJ	5 U	5 U	5 UJ	70
1,2-Dichloroethene (total)	5 UJ	5 UJ	5 U	5 U	5 UJ	10
Chloroform	5 UJ	5 UJ	5 U	5 U	5 UJ	6
1,2-Dichloroethane	5 UJ	5 UJ	5 U	5 U	5 UJ	2
2-Butanone	10 UJ	10 UJ	10 U	10 U	10 UJ	300
1,1,1-Trichloroethane	5 UJ	5 UJ	5 U	5 U	5 UJ	30
Carbon Tetrachloride	5 UJ	5 UJ	5 U	5 U	5 UJ	2
Bromodichloromethane	5 UJ	5 UJ	5 U	5 U	5 UJ	1
1,2-Dichloropropane	5 UJ	5 UJ	5 U	5 U	5 UJ	1
cis-1,3-Dichloropropene	5 UJ	5 UJ	5 U	5 U	5 UJ	0.2
Trichloroethene	5 UJ	5 UJ	5 U	2 J	5 UJ	1
Dibromochloromethane	5 UJ	5 UJ	5 U	5 U	5 UJ	10
1,1,2-Trichloroethane	5 UJ	5 UJ	5 U	5 U	5 UJ	3
Benzene	5 UJ	5 UJ	5 U	5 U	5 UJ	1
Trans-1,3-Dichloropropene	5 UJ	5 UJ	5 U	5 U	5 UJ	0.2
Bromoform	5 UJ	5 UJ	5 Ü	5 U	5 UJ	4
4-Methyl-2-pentanone	10 UJ	10 UJ	10 U	10 U	10 UJ	400
2-Hexanone	10 UJ	10 UJ	10 U	10 U	10 UJ	NLE

TABLE 3-6 (CONTINUED) SUMMARY OF VOLATILE ORGANIC COMPOUND RESULTS IN GROUNDWATER DEAL TEST SITE OCEAN TOWNSHIP, NEW JERSEY

SAMPLE NO. SAMPLING DATE UNITS	GW-1 9/30/97 ug/L	GW-2 9/30/97 ug/L	GW-3 10/1/97 ug/L	GW-4 10/1/97 ug/L	GW-5 10/1/97 ug/L	NJDEP APPROVED GROUNDWATER CLEANUP STANDARDS (1)ug/L
Tetrachloroethene	5 UJ	5 UJ	5 U	5 U	5 UJ	1
1,1,2,2-Tetrachloroethane	5 UJ	5 UJ	5 U	5 U	5 UJ	2
Toluene	5 UJ	5 UJ	5 U	5 U	5 UJ	1000
Chlorobenzene	5 UJ	5 UJ	5 U	5 U	5 UJ	4
Ethylbenzene	5 UJ	5 UJ	5 U	5 U	5 UJ	700
Styrene	5 UJ	5 UJ	5 U	5 U	5 UJ	100
Xylene (total)	5 UJ	5 UJ	5 U	5 U	5 UJ	40

NOTES:

- U Not detected above given quantitation limit
- J Estimated values
- B- Analyte detected in blank
- NLE No Level Established
- (1) Higher of Practical Quantitation Limit or Standard is used.

TABLE 3-7 SUMMARY OF SEMIVOLATILE ORGANIC COMPOUND RESULTS IN GROUNDWATER DEAL TEST SITE OCEAN TOWNSHIP, NEW JERSEY

SAMPLE NO.	GW-1	GW-2	GW-3	GW-4	GW-5	NJDEP APPROVED
SAMPLING DATE	9/30/97	9/30/97	10/1/97	10/1/97	10/1/97	GROUNDWATER CLEANUP
UNITS	ug/L	ug/L	ug/L	ug/L	ug/L	STANDARDS ug/L
Phenol	10 J	11 U	12 U	3 J	12 U	4000
bis(2-Chloroethyl)ether	11 U	11 U	12 U	12 U	12 U	10
2-Chlorophenol	11 U	11 U	12 U	12 U	12 U	40
1,3-Dichlorobenzene	11 U	11 U	12 U	12 U	12 U	600
1,4-Dichlorobenzene	11 U	11 U	12 U	12 U	12 U	75
Benzyl alcohol	11 U	11 U	12 U	12 U	12 U	2000
1,2-Dichlorobenzene	11 U	11 U	12 U	12 U	12 U	600
2-Methylphenol	11 U	11 U	12 U	12 U	12 U	NLE
bis(2-Chloroisopropyl)ether	11 U	11 U	12 U	12 U	12 U	300
4-Methylphenol	11 U	11 U	12 U	12 U	12 U	NLE
N-Nitroso-Di-n-propylamine	11 U	11 U	12 U	12 U	12 U	20
Hexachloroethane	11 U	11 U	12 U	12 U	12 U	10
Nitrobenzene	11 U	11 U	12 U	12 U	12 U	10
Isophorone	11 U	11 U	12 U	12 U	12 U	100
2-Nitrophenol	11 U	11 U	12 U	12 U	12 U	NLE
2,4-Dimethylphenol	11 U	11 U	12 U	12 U	12 U	100
Benzoic acid	55 U	2 J	60 U	1 J	60 U	NLE
bis(2-Chloroethoxy)methane	11 U	11 U	12 U	12 U	12 U	NLE
2,4-Dichlorophenol	11 U	11 U	12 U	12 U	12 U	20
1,2,4-Trichlorobenzene	11 U	11 U	12 U	12 U	12 U	9
Naphthalene	11 U	11 U	12 U	12 U	12 U	NLE
4-Chloroaniline	11 U	11 U	12 U	12 U	12 U	NLE
Hexachlorobutadiene	11 U	11 U	12 U	12 U	12 U	1
4-Chloro-3-methylphenol	11 U	11 U	12 U	12 U	12 U	NLE
2-Methylnaphthalene	11 U	11 U	12 U	12 U	12 U	NLE
Hexachlorocyclopentadiene	11 U	11 U	12 U	12 U	12 U	50
2,4,6-Trichlorophenol	11 U	11 U	12 U	12 U	12 U	20
2,4,5-Trichlorophenol	55 U	55 U	60 U	60 U	60 U	700
2-Chloronaphthalene	11 U	11 U	12 U	12 U	12 U	NLE

TABLE 3-7 (CONTINUED)

SUMMARY OF SEMIVOLATILE ORGANIC COMPOUND RESULTS IN GROUNDWATER DEAL TEST SITE

OCEAN TOWNSHIP, NEW JERSEY

SAMPLE NO. SAMPLING DATE UNITS	GW-1 9/30/97 ug/L	GW-2 9/30/97 ug/L	GW-3 10/1/97 ug/L	GW-4 10/1/97 ug/L	GW-5 10/1/97 ug/L	NJDEP APPROVED GROUNDWATER CLEANUP STANDARDS ug/L
2-Nitroaniline	55 U	55 U	60 U	60 U	60 U	NLE
Dimethylphthalate	11 U	11 U	12 U	12 U	12 U	NLE
Acenaphthylene	11 U	11 U	12 U	12 U	12 U	NLE
2,6-Dinitrotoluene	11 U	11 U	12 U	12 U	12 U	NLE
3-Nitroaniline	55 U	55 U	60 U	60 U	60 U	NLE
Acenaphthene	11 U	11 U	12 U	12 U	12 U	400
2,4-Dinitrophenol	55 U	55 U	60 U	60 U	60 U	40
4-Nitrophenol	55 U	55 U	60 U	60 U	60 U	NLE
Dibenzofuran	11 U	11 U	12 U	12 U	12 U	NLE
2,4-Dinitrotoluene	11 U	11 U	12 U	12 U	12 U	10
Diethylphthalate	1 J	11 U	12 U	1 J	12 U	5000
4-Chlorophenyl-phenylether	11 U	11 U	12 U	12 U	12 U	NLE
Fluorene	11 U	11 U	12 U	12 U	12 U	300
4-Nitroaniline	55 U	55 U	60 U	60 U	60 U	NLE
4,6-Dinitro-2-methylphenol	55 U	55 U	60 U	60 U	60 U	NLE
N-Nitrosodiphenylamine	11 U	11 U	12 U	12 U	12 U	20
4-Bromophenyl-phenylether	11 U	11 U	12 U	12 U	12 U	NLE
Hexachlorobenzene	11 U	11 U	12 U	12 U	12 U	10
Pentachlorophenol	55 U	55 U	60 U	60 U	60 U	1
Phenanthrene	11 U	11 U	12 U	12 U	12 U	NLE
Anthracene	11 U	11 U	12 U	12 U	12 U	2000
Di-n-Butylphthalate	1 J	11 U	12 U	12 U	12 U	900
Fluoranthene	11 U	11 U	12 U	12 U	12 U	300
Pyrene	11 U	11 U	12 U	12 U	12 U	200
Butylbenzylphthalate	11 U	11 U	12 U	12 U	12 U	100
3,3'-Dichlorobenzidine	22 U	22 U	24 U	24 U	24 U	60
Benzo(a)anthracene	11 U	11 U	12 U	12 U	12 U	NLE
Chrysene	11 U	11 U	12 U	12 U	12 U	NLE
bis(2-Ethylhexyl)phthalate	1 J	11 U	2 J	12 U	12 U	30

TABLE 3-7 (CONTINUED)

SUMMARY OF SEMIVOLATILE ORGANIC COMPOUND RESULTS IN GROUNDWATER DEAL TEST SITE

OCEAN TOWNSHIP, NEW JERSEY

SAMPLE NO. SAMPLING DATE UNITS	GW-1 9/30/97 ug/L	GW-2 9/30/97 ug/L	GW-3 10/1/97 ug/L	GW-4 10/1/97 ug/L	GW-5 10/1/97 ug/L	NJDEP APPROVED GROUNDWATER CLEANUP STANDARDS ug/L
Di-n-Octyl phthalate	11 U	11 U	12 U	12 U	12 U	100
Benzo(b)fluoranthene	11 U	11 U	12 U	12 U	12 U	NLE
Benzo(k)fluoranthene	11 U	11 U	12 U	12 U	12 U	NLE
Benzo(a)pyrene	11 U	11 U	12 U	12 U	12 U	NLE
Indeno(1,2,3-cd)pyrene	11 U	11 U	12 U	12 U	12 U	NLE
Dibenzo(a,h)anthracene	11 U	11 U	12 U	12 U	12 U	NLE
Benzo(g,h,i)perylene	11 U	11 U	12 U	12 U	12 U	NLE
Carbazole	11 U	11 U	12 U	12 U	12 U	NLE

NOTES:

- U Not detected above given quantitation limit
- J Estimated values below quantitation limit
- NLE No Level Established
- (1) Higher of practical quantitation limit or standard is used.

TABLE 3-8 SUMMARY OF PESTICIDE/PCB RESULTS IN GROUNDWATER DEAL TEST SITE OCEAN TOWNSHIP, NEW JERSEY

SAMPLE NO. SAMPLING DATE	GW-1 9/30/97	GW-2 9/30/97	GW-3 10/1/97	GW-4 10/1/97	GW-5 10/1/97	NJDEP APPROVED GROUNDWATER CLEANUP
UNITS	ug/L	ug/L	ug/L	ug/L	ug/L	STANDARDS ⁽¹⁾ ug/L
Alpha-BHC	0.05 U	0.25 U	0.057 U	0.064 U	0.057 U	0.02
Beta-BHC	0.05 U	0.25 U	0.057 U	0.064 U	0.057 U	0.2
Delta-BHC	0.05 U	0.25 U	0.057 U	0.064 U	0.057 U	NLE
gamma-BHC (Lindane)	0.05 U	0.25 U	0.057 U	0.064 U	0.057 U	0.2
Heptachlor	0.05 U	0.25 U	0.057 U	0.064 U	0.057 U	0.4
Aldrin	0.05 U	0.25 U	0.057 U	0.064 U	0.057 U	0.04
Heptachlor epoxide	0.05 U	0.25 U	0.057 U	0.064 U	0.057 U	0.2
Endosulfan I	0.05 U	0.25 U	0.057 U	0.064 U	0.057 U	0.4
Dieldrin	0.1 U	0.5 U	0.11 U	0.13 U	0.11 U	0.03
4,4'-DDE	0.1 U	0.5 U	0.11 U	0.13 U	0.11 U	0.1
Endrin	0.1 U	0.5 U	0.11 U	0.13 U	0.11 U	2
Endosulfan II	0.1 U	0.5 U	0.11 U	0.13 U	0.11 U	0.4
4,4'-DDD	0.1 U	0.5 U	0.11 U	0.13 U	0.11 U	0.1
Endosulfan sulfate	0.1 U	0.5 U	0.11 U	0.13 U	0.11 U	0.4
4,4'-DDT	0.1 U	0.5 U	0.11 U	0.13 U	0.11 U	0.1
Methoxychlor	0.5 U	2.5 U	0.57 U	0.64 U	0.57 U	40
Endrin ketone	0.1 U	0.5 U	0.11 U	0.13 U	0.11 U	2
Endrin aldehyde	0.1 U	0.5 U	0.11 U	0.13 U	0.11 U	2
alpha-Chlordane	0.05 U	0.25 U	0.057 U	0.064 U	0.057 U	0.5
gamma-Chlordane	0.05 U	0.25 U	0.057 U	0.064 U	0.057 U	0.5
Toxaphene	5 U	25 U	5.7 U	6.4 U	5.7 U	3
Aroclor-1016	1 U	5 U	1.1 U	1.3 U	1.1 U	0.5
Aroclor-1221	2 U	10 U	2.3 U	2.5 U	2.3 U	0.5
Aroclor-1232	1 U	5 U	1.1 U	1.3 U	1.1 U	0.5

TABLE 3-8 SUMMARY OF PESTICIDE/PCB RESULTS IN GROUNDWATER DEAL TEST SITE

OCEAN TOWNSHIP, NEW JERSEY

SAMPLE NO. SAMPLING DATE UNITS	GW-1 9/30/97 ug/L	GW-2 9/30/97 ug/L	GW-3 10/1/97 ug/L	GW-4 10/1/97 ug/L	GW-5 10/1/97 ug/L	NJDEP APPROVED GROUNDWATER CLEANUP STANDARDS ⁽¹⁾ ug/L
Aroclor-1242	1 U	5 U	1.1 U	1.3 U	1.1 U	0.5
Aroclor-1248	1 U	5 U	1.1 U	1.3 U	1.1 U	0.5
Aroclor-1254	1 U	5 U	1.1 U	1.3 U	1.1 U	0.5
Aroclor-1260	1 U	5 U	1.1 U	1.3 U	1.1 U	0.5

NOTES:

- U Not detected above given quantitation limit
- (1) Higher of practical quantitation limit or standard is used.

TABLE 3-9 SUMMARY OF METALS RESULTS IN GROUNDWATER DEAL TEST SITE OCEAN TOWNSHIP, NEW JERSEY

SAMPLE NO. SAMPLING DATE Units	9/3	W-1 0/97 <i>y</i> /L	GV 9/30 ug)/9 7 (4.3.6%)	GW-3 10/1/97 ug/L		GW-4 10/1/97 ug/L		GW-5 (1) 10/1/97 ug/L	NJDEP APPROVED GROUNDWATER CLEANUP STANDARDS (2) ug/L
	Total	Soluble	Total	Soluble	Total	Soluble	Total	Soluble	Total	Total
Silver	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	0.80 U	0.80 U	0.8 U	0.80 U	NLE
Arsenic	135	2.5	747	55.9	53.6	3.3	374	39.4	37.9	8
Barium	195	74.4	833	7.8	84.4	23.6	186	9.7	53.7	2,000
Cadmium	1.3	0.4 U	10.9	0.4 U	0.68	0.4 U	2.7	0.57	0.40 U	4
Chromium	650	0.6 U	1230	5.6 U	474	0.6 U	767	7.7 U	478	100
Mercury	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	2
Lead	53.2	2.9 U	222	2.9 U	17.7	2.9 U	81.1	2.9 U	12.2	10
Selenium	26.3	5.7	34.7	5.9 U	11.2	4.4 U	24.9	4.4 U	9.8	50

NOTES:

- U Not detected at given quantitation limit
- (1) GW-5 is a duplicate sample for GW-3 (total metals)
- (2) Higher of Practical Quantitation Limit or Standard is used
- NLE No Level Established

silts and clays), and their presence in the total samples is a reflection of the concentration in the soil. Nevertheless, the soluble concentrations of arsenic exceeded the NJGWQS at two locations (GW-2 and GW-4) within the former lagoon area, and downgradient, respectively. Concentrations at these locations were 55.9 (micrograms per liter) μ g/L and 39.4 μ g/L, respectively, compared to the NJGWQS of 8 μ g/L for arsenic. Soluble concentrations of lead and chromium were not detected.

3.2.3 Surface Water and Sediment Results

The stream adjacent to the site is a tributary to Poplar Brook, which discharges to the Atlantic Ocean. Based on New Jersey regulations (N.J.A.C. 7:9B-1.15), the tributary and Poplar Brook would be classified as FW2-NT (freshwater - nontrout). VOCs were not detected in the two surface water or sediment samples (Table 3-10) collected from the tributary. Acetone and methylene chloride were detected in blank samples resulting in non-detect designations for those compounds in samples in which they were detected.

SVOCs were not detected in the surface water samples (Table 3-11). Several SVOCs were detected in the two sediment samples. These compounds consisted primarily of PAHs, and one phthalate. Phenanthrene, fluoranthene, and pyrene were detected in both samples at comparable concentrations. Benzo(a)anthracene and chrysene were detected only at SD-2, the upgradient location, at concentrations below 100 μ g/kg. Di-n-butylphthalate was also detected only at the upgradient location.

No pesticide or PCB compounds were detected in the surface water or sediment samples (Table 3-12).

The two surface water samples were analyzed for both total recoverable metals and soluble metals (Table 3-13). Barium was the only metal detected, at concentrations well below the NJDEP FW-2 criterion of 2,000 μ g/L. However, the detection limit for arsenic exceeded the conservative NJDEP FW-2 criterion. The FW-2 arsenic criterion is based upon carcinogenic human health risks, and is very low (0.0017 μ g/L). This criterion is well below the method detection limit for arsenic.

Arsenic, barium, cadmium, chromium, and lead were detected in both sediment samples. Concentrations of each of these metals were comparable between SD-1 and SD-2, but were slightly higher in the downgradient location (SD1). Metals concentrations were well below concentrations expected in a more impacted environment (e.g., urban sediments), and were lower than metals concentrations in the site soils.

3.3 DATA QUALITY OBJECTIVES/DATA VALIDATION

The results from the laboratory analyses were compared to the data quality objectives (DQOs) for this investigation. Primarily this consisted of a comparison of the indicated laboratory reporting limits (e.g., quantitation or detection limits) against the method reporting limits. In

TABLE 3-10 SUMMARY OF VOLATILE ORGANIC COMPOUND RESULTS IN SURFACE WATER AND SEDIMENT DEAL TEST SITE OCEAN TOWNSHIP, NEW JERSEY

SAMPLE NO. Sampling Date Units	SW-1 10/1/97 ug/L	SW-2 10/1/97 ug/L	SD-1 10/1/97 ug/kg	SD-2 10/1/97 ug/kg	NJDEP SURFACE WATER STANDARDS FOR FW2 WATER (ug/L)
Chloromethane	10 U	10 U	12 U	13 U	NLE
Bromomethane	10 U	10 U	12 U	13 U	48.4
Vinyl Chloride	10 U	10 U	12 U	13 U	0.083
Chloroethane	10 U	10 U	12 U	13 U	NLE
Methylene Chloride	11 U	7 U	6 U	6 U	2.49
Acetone	10 U	10 U	12 U	13 U	NLE
Carbon Disulfide	5 U	5 U	6 U	6 U	NLE
1,1-Dichloroethene	5 U	5 U	6 U	6 U	4.81
1,1-Dichloroethane	5 U	5 U	6 U	6 U	NLE
1,2-Dichloroethene (total)	5 U	5 U	6 U	6 U	592
Chloroform	5 U	5 U	6 U	6 U	5.67
1,2-Dichloroethane	5 U	5 U	6 U	6 U	0.291
2-Butanone	10 U	10 U	12 U	13 U	NLE
1,1,1-Trichloroethane	5 U	5 U	6 U	6 U	127
Carbon Tetrachloride	5 U	5 U	6 U	6 U	0.363
Bromodichloromethane	5 U	5 U	6 U	6 U	0.266
1,2-Dichloropropane	5 U	5 U	6 U	6 U	NLE
cis-1,3-Dichloropropene	5 U	5 U	6 U	6 U	0.193
Trichloroethene	5 U	5 U	6 U	6 U	1.09
Dibromochloromethane	5 U	5 U	6 U	6 U	72.6
1,1,2-Trichloroethane	5 U	5 U	6 U	6 U	13.5
Benzene	5 U	5 U	6 U	6 U	0.15
Trans-1,3-Dichloropropene	5 U	5 U	6 U	6 U	0.193

TABLE 3-10 (CONTINUED)

SUMMARY OF VOLATILE ORGANIC COMPOUND RESULTS IN SURFACE WATER AND SEDIMENT DEAL TEST SITE

OCEAN TOWNSHIP, NEW JERSEY

SAMPLE NO. Sampling Date Units	SW-1 10/1/97 ug/L	SW-2 10/1/97 ug/L	SD-1 10/1/97 ug/kg	SD-2 10/1/97 ug/kg	NJDEP SURFACE WATER STANDARDS FOR FW2 WATER (ug/L)
Bromoform	5 U	5 U	6 U	6 U	4.38
4-Methyl-2-pentanone	10 U	10 U	12 U	13 U	NLE
2-Hexanone	10 U	10 U	12 U	13 U	NLE
Tetrachloroethene	5 U	5 U	6 U	6 U	0.388
1,1,2,2-Tetrachloroethane	5 U	5 U	6 U	6 U	1.72
Toluene	5 U	5 U	6 U	6 U	7,440
Chlorobenzene	5 U	5 U	6 U	6 U	22
Ethylbenzene	5 U	5 U	6 U	6 U	3030
Styrene	5 U	5 U	6 U	6 U	NLE
Xylene (total)	5 U	5 U	6 U	6 U	NLE

NOTES:

SW - Surface Water; SD - Sediment

U - Not detected above given quantitation limit

NLE - No level established

TABLE 3-11 SUMMARY OF SVOC RESULTS IN SURFACE WATER AND SEDIMENT DEAL TEST SITE OCEAN TOWNSHIP, NEW JERSEY

SAMPLE NO. SAMPLING DATE	SW-1 10/1/97	SW-2 10/1/97	SD-1 10/1/97	SD-2 10/1/97	NJDEP SURFACE WATER STANDARDS
UNITS	ug/L	ug/L -	ug/kg	ug/kg	FOR FW2 WATER (ug/L)
Phenol	11 U	11 U	440 U	420 U	20900
bis(2-Chloroethyl)ether	11 U	11 U	440 U	420 U	0.0311
2-Chlorophenol	11 U	11 U	440 U	420 U	122
1,3-Dichlorobenzene	11 U	11 U	440 U	420 U	2620
1,4-Dichlorobenzene	11 U	11 U	440 U	420 U	343
Benzyl alcohol	11 U	11 U	440 U	420 U	NLE
1,2-Dichlorobenzene	11 U	11 U	440 U	420 U	2520
2-Methylphenol	11 U	11 U	440 U	420 U	NLE
bis(2-Chloroisopropyl)	11 U	11 U	440 U	420 U	1250
4-Methylphenol	11 U	11 U	440 U	420 U	NLE
N-Nitroso-Di-n-propylamine	11 U	H U	440 U	420 U	NLE
Hexachloroethane	11 U	11 U	440 U	420 U	2.73
Nitrobenzene	11 U	11 U	440 U	420 U	16
Isophorone	11 U	11 U	440 U	420 U	552
2-Nitrophenol	11 U	11 U	440 U	420 U	NLE
2,4-Dimethylphenol	11 U	11 U	440 U	420 U	NLE
Benzoic acid	55 U	55 U	2200 U	2100 U	NLE
bis(2-Chloroethoxy)methane	11 U	11 U	440 U	420 U	NLE
2,4-Dichlorophenol	11 U	11 U	440 U	420 U	92.7
1,2,4-Trichlorobenzene	11 U	11 U	440 U	420 U	30.6
Naphthalene	11 U	11 U	440 U	420 U	NLE
4-Chloroaniline	11 U	11 U	440 U	420 U	NLE
Hexachlorobutadiene	11 U	11 U	440 U	420 U	6.94
4-Chloro-3-methylphenol	11 U	11 U	440 U	420 U	NLE
2-Methylnaphthalene	11 U	11 U	440 U	420 U	NLE
Hexachlorocyclopentadiene	11 U	11 U	440 U	420 U	245
2,4,6-Trichlorophenol	11 U	11 U	440 U	420 U	2.14
2,4,5-Trichlorophenol	55 U	55 U	2200 U	2100 U	2580
2-Chloronaphthalene	11 U	11 U	440 U	420 U	NLE
2-Nitroaniline	55 U	55 U	2200 U	2100 U	NLE
Dimethylphthalate	11 U	11 U	440 U	420 U	313000
Acenaphthylene	11 U	11 U	440 U	420 U	NLE
2,6-Dinitrotoluene	11 U	11 U	440 U	420 U	NLE
3-Nitroaniline	55 U	55 U	2200 U	2100 U	NLE
Acenaphthene	11 U	11 U	440 U	420 U	NLE
2,4-Dinitrophenol	55 U	55 U	2200 U	2100 U	69.7
4-Nitrophenol	55 U	55 U	2200 U	2100 U	NLE
Dibenzofuran	11 U	11 U	440 U	420 U	NLE
2,4-Dinitrotoluene	11 U	11 U	440 U	420 U	0.11
Diethylphthalate	11 U	11 U	440 U	420 U	21200

TABLE 3-11 (CONTINUED) SUMMARY OF SVOC RESULTS IN SURFACE WATER AND SEDIMENT DEAL TEST SITE OCEAN TOWNSHIP, NEW JERSEY

SAMPLE NO.	SW-1	SW-2	SD-1	SD-2	NJDEP SURFACE
SAMPLING DATE	10/1/97	10/1/97	10/1/97	10/1/97	WATER STANDARDS
UNITS	ug/L	ug/L	ug/kg	ug/kg	FOR FW2 WATER (ug/L)
4-Chlorophenyl-phenylether	11 U	11 U	440 U	420 U	NLE
Fluorene	11 U	11 U	440 U	420 U	2361834.75
4-Nitroaniline	55 U	55 U	2200 U	2100 U	NLE
4,6-Dinitro-2-methylphenol	55 U	55 U	2200 U	2100 U	NLE
N-Nitrosodiphenylamine	11 U	11 U	440 U	420 U	4.95
4-Bromophenyl-phenylether	11 U	11 U	440 U	420 U	NLE
Hexachlorobenzene	11 U	11 U	440 U	420 U	0.000748
Pentachlorophenol	55 U	55 U	2200 U	2100 U	0.282
Phenanthrene	11 U	11 U	94 J	55 J	NLE
Anthracene	11 U	11 U	440 U	420 U	9570
Di-n-Butylphthalate	11 U	11 U	440 U	320 J	3530
Fluoranthene	II U	11 U	150 J	140 J	310
Pyrene	11 U	11 U	130 J	92 J	797
Butylbenzylphthalate	11 U	11 U	440 U	420 U	239
3,3'-Dichlorobenzidine	22 U	22 U	870 U	850 U	0.0386
Benzo(a)anthracene	11 U	11 U	440 U	43 J	0.0028
Chrysene	11 U	11 U	440 U	72 J	0.0028
bis(2-Ethylhexyl)phthalate	11 U	11 U	440 U	420 U	1.76
Di-n-Octyl phthalate	11 U	11 U	440 U	420 U	NLE
Benzo(b)fluoranthene	11 U	11 U	440 U	420 U	NLE
Benzo(k)fluoranthene	11 U	11 U	440 U	420 U	0.0028
Benzo(a)pyrene	11 U	11 U	440 U	420 U	0.0028
Indeno(1,2,3-cd)pyrene	11 U	11 U	440 U	420 U	0.0028
Dibenz(a,h)anthracene	11 U	11 U	440 U	420 U	0.0028
Benzo(g,h,i)perylene	11 U	11 U	440 U	420 U	NLE
Carbazole	11 U	11 U	440 U	420 U	NLE

NOTES:

SW - Surface Water; SD - Sediment

U - Not detected above given quantitation limit

J - Estimated values below quantitation limit

NLE - No level established

TABLE 3-12 SUMMARY OF PESTICIDE/PCB RESULTS IN SURFACE WATER AND SEDIMENT DEAL TEST SITE OCEAN TOWNSHIP, NEW JERSEY

SAMPLE NO. SAMPLING DATE	SW-1 10/1/97	SW-2 10/1/97	SD-1 10/1/97	SD-2 10/1/97	NJDEP SURFACE WATER STANDARDS
UNITS	ug/L	ug/L	ug/kg	ug/kg	FOR FW2 WATER (ug/L)
Alpha-BHC	0.057 U	0.057 U	22 U	21 U	0.00391
Beta-BHC	0.057 U	0.057 U	22 U	21 U	0.137
Delta-BHC	0.057 U	0.057 U	22 U	21 U	NLE
gamma-BHC (Lindane)	0.057 U	0.057 U	22 U	21 U	2
Heptachlor	0.057 U	0.057 U	22 U	21 U	0.52
Aldrin	0.057 U	0.057 U	22 U	21 U	3
Heptachlor epoxide	0.057 U	0.057 U	22 U	21 U	0.52
Endosulfan I	0.057 U	0.057 U	22 U	21 U	0.22
Dieldrin	0.11 U	0.11 U	44 U	42 U	2.5
4,4'-DDE	0.11 U	0.11 U	44 U	42 U	0.000588
Endrin	0.11 U	0.11 U	44 U	42 U	0.629
Endosulfan II	0.11 U	0.11 U	44 U	42 U	0.056
4,4'-DDD	0.11 U	0.11 U	44 U	42 U	0.000832
Endosulfan sulfate	0.11 U	0.11 U	44 U	42 U	0.93
4,4'-DDT	0.11 U	0.11 U	44 U	42 U	1.1
Methoxychlor	0.57 U	0.57 U	220 U	210 U	40
Endrin ketone	0.11 U	0.11 U	44 U	42 U	NLE
Endrin aldehyde	0.11 U	0.11 U	44 U	42 U	0.76
alpha-Chlordane	0.057 U	0.057 U	22 U	21 U	2.4
gamma-Chlordane	0.057 U	0.057 U	22 U	21 U	2.4
Toxaphene	5.7 U	5.7 U	2200 U	2100 U	0.73
Aroclor-1016	1.1 U	1.1 U	440 U	420 U	0.014
Aroclor-1221	2.3 U	2.3 U	870 U	850 U	0.014
Aroclor-1232	1.1 U	1.1 U	440 U	420 U	0.014
Aroclor-1242	1.1 U	1.1 U	440 U	420 U	0.014
Aroclor-1248	1.1 U	1.1 U	440 U	420 U	0.014
Aroclor-1254	1.1 U	1.1 U	440 U	420 U	0.014
Aroclor-1260	1.1 U	1.1 U	440 U	420 U	0.014

NOTES:

SW - Surface Water; SD - Sediment

U - Not detected above given quantitation limit

TABLE 3-13 SUMMARY OF METALS RESULTS IN SURFACE WATER AND SEDIMENT DEAL TEST SITE OCEAN TOWNSHIP, NEW JERSEY

SAMPLE NO. SAMPLING DATE UNITS	SW-1 10/1/9 ug/L		SW-2 10/1/97 ug/L		SD-1 10/1/97 mg/kg	SD-2 10/1/97 mg/kg	NJDEP SURFACE WATER STANDARDS FOR FW2 WATER (ug/L)
	TOTAL	SOLUBLE	TOTAL	SOLUBLE	TOTAL	TOTAL	
Silver	0.8 U	0.8 U	0.8 U	0.8 U	0.09 U	0.1 U	164
Arsenic	2.4 U	2.4 U	2.4 U	2.4 U	6.1 J	3.9 J	0.017
Barium	30.9	28.9	42.8	41.1	30.3	20.4	2000
Cadmium	0.4 U	0.4 U	0.4 U	0.4 U	0.17	0.11	10
Chromium	0.6 U	0.6 U	0.62 U	0.64 U	8.5	5.8	160
Mercury	0.1 U	0.1 U	0.1 U	0.1 U	0.02 U	0.02 U	0.144
Lead	2.9 U	2.9 U	2.9 U	2.9 U	17.8	15.7	5
Selenium	4.4 U	4.4 U	4.4 U	4.4 U	0.52 U	0.56 U	10

NOTES:

SW - Surface Water

SD - Sediment

U - Not detected above given quantitation limit

TABLE 3-14
SUMMARY OF VOLATILE ORGANIC COMPOUND RESULTS IN FIELD QUALITY CONTROL SAMPLES
DEAL TEST SITE
OCEAN TOWNSHIP, NEW JERSEY

SAMPLE NO.	FB-01	FB-02	FB-03	TB-01	TB-02
Sampling Date Units	10/1/97 ug/L	10/1/97 ug/L	10/1/97	10/1/97	10/1/97
(4-14) 1-14 (4-14)			ug/Kg	ug/L	ug/L
Chloromethane	10 U	1200 U	10 U	10 U	10 U
Bromomethane	10 U	1200 U	10 U	10 U	10 U
Vinyl Chloride	10 U	1200 U	10 U	10 U	10 U
Chloroethane	10 U	1200 U	10 U	10 U	10 U
Methylene Chloride	6 B	680 BJ	10 B	9 B	10 B
Acetone	4 BJ	260 BJ	11 B	10 U	10 U
Carbon Disulfide	5 U	620 U	5 U	5 U	5 U
1,1-Dichloroethene	5 U	620 U	5 U	5 U	5 U
1,1-Dichloroethane	5 U	620 U	5 U	5 U	5 U
1,2-Dichloroethene (total)	5 U	620 U	5 U	5 U	5 U
Chloroform	5 U	620 U	5 U	5 U	5 U
1,2-Dichloroethane	5 U	620 U	5 U	5 U	5 U
2-Butanone	10 U	1200 U	10 U	10 U	10 U
1,1,1-Trichloroethane	5 U	620 U	5 U	5 U	5 U
Carbon Tetrachloride	5 U	620 U	5 U	5 U	5 U
Bromodichloromethane	5 U	620 U	5 U	5 U	5 U
1,2-Dichloropropane	5 U	620 U	5 U	5 U	5 U
cis-1,3-Dichloropropene	5 U	620 U	5 U	5 U	5 U
Trichloroethene	5 U	620 U	5 U	5 U	5 U
Dibromochloromethane	5 U	620 U	5 U	5 U	5 U
1,1,2-Trichloroethane	5 U	620 U	5 U	5 U	5 U
Benzene	5 U	620 U	5 U	5 U	5 U
Trans-1,3-Dichloropropene	5 U	620 U	5 U	5 U	5 U

TABLE 3-14 (CONTINUED) SUMMARY OF VOLATILE ORGANIC COMPOUND RESULTS IN FIELD QUALITY CONTROL SAMPLES DEAL TEST SITE OCEAN TOWNSHIP, NEW JERSEY

SAMPLE NO. Sampling Date Units	FB-01 10/1/97 ug/L	FB-02 10/1/97 ug/L	FB-03 10/1/97 ug/Kg	TB-01 10/1/97 ug/L	TB-02 10/1/97 ug/L
Bromoform	5 U	620 U	5 U	5 U	5 U
4-Methyl-2-pentanone	10 U	1200 U	10 U	10 U	10 U
2-Hexanone	10 U	1200 U	10 U	10 U	10 U
Tetrachloroethene	5 U	620 U	5 U	5 U	5 U
1,1,2,2-Tetrachloroethane	5 U	620 U	5 U	5 U	5 U
Toluene	5 U	620 U	5 U	5 U	5 U
Chlorobenzene	5 U	620 U	5 U	5 U	5 U
Ethylbenzene	5 U	620 U	5 U	5 U	5 U
Styrene	5 U	620 U	5 U	5 U	5 U
Xylene (total)	5 U	620 U	5 U	5 U	5 U

NOTES:

- U Not detected above given quantitation limit
- J Estimated values below quantitation limit
- B- Analyte detected in blank

TABLE 3-15 SUMMARY OF SEMIVOLATILE ORGANIC COMPOUND RESULTS IN FIELD QUALITY CONTROL SAMPLES DEAL TEST SITE

OCEAN TOWNSHIP, NEW JERSEY

SAMPLE NO.	FB-01	FB-03
SAMPLING DATE	9/30/97	9/30/97
UNITS	ug/L	ug/L
Phenol	10 U	12 U
bis(2-Chloroethyl)ether	10 U	12 U
2-Chlorophenol	10 U	12 U
1,3-Dichlorobenzene	10 U	12 U
1,4-Dichlorobenzene	10 U	12 U
Benzyl alcohol	10 U	12 U
1,2-Dichlorobenzene	10 U	12 U
2-Methylphenol	10 U	12 U
bis(2-Chloroisopropyl)ether	10 U	12 U
4-Methylphenol	10 U	12 U
N-Nitroso-Di-n-propylamine	10 U	12 U
Hexachloroethane	10 U	12 U
Nitrobenzene	10 U	12 U
Isophorone	10 U	12 U
2-Nitrophenol	10 U	12 U
2,4-Dimethylphenol	10 U	12 U
Benzoic acid	50 U	60 U
bis(2-Chloroethoxy)methane	10 U	12 U
2,4-Dichlorophenol	10 U	12 U
1,2,4-Trichlorobenzene	10 U	12 U
Naphthalene	10 U	12 U
4-Chloroaniline	10 U	12 U
Hexachlorobutadiene	10 U	12 U
4-Chloro-3-methylphenol	10 U	12 U
2-Methylnaphthalene	10 U	12 U
Hexachlorocyclopentadiene	10 U	12 U
2,4,6-Trichlorophenol	10 U	12 U
2,4,5-Trichlorophenol	50 U	60 U
2-Chloronaphthalene	10 U	12 U
2-Nitroaniline	50 U	60 U
Dimethylphthalate	10 U	12 U
Acenaphthylene	10 U	12 U
2,6-Dinitrotoluene	10 U	12 U
3-Nitroaniline	50 U	60 U
Acenaphthene	10 U	12 U
2,4-Dinitrophenol	50 U	60 U
4-Nitrophenol	50 U	60 U
Dibenzofuran	10 U	12 U

TABLE 3-15 (CONTINUED) SUMMARY OF SEMIVOLATILE ORGANIC COMPOUND RESULTS IN FIELD QUALITY CONTROL SAMPLES DEAL TEST SITE OCEAN TOWNSHIP, NEW JERSEY

SAMPLE NO. SAMPLING DATE UNITS	FB-01 9/30/97 ug/L	FB-03 9/30/97 ug/L
2,4-Dinitrotoluene	10 U	12 U
Diethylphthalate	10 U	12 U
4-Chlorophenyl-phenylether	10 U	12 U
Fluorene	10 U	12 U
4-Nitroaniline	50 U	60 U
4,6-Dinitro-2-methylphenol	50 U	60 U
N-Nitrosodiphenylamine (1)	10 U	12 U
4-Bromophenyl-phenylether	10 U	12 U
Hexachlorobenzene	10 U	12 U
Pentachlorophenol	50 U	60 U
Phenanthrene	10 U	12 U
Anthracene	10 U	12 U
Di-n-Butylphthalate	10 U	12 U
Fluoranthene	10 U	12 U
Pyrene	10 U	12 U
Butylbenzylphthalate	10 U	12 U
3,3'-Dichlorobenzidine	20 U	24 U
Benzo(a)anthracene	10 U	12 Ü
Chrysene	10 U	12 U
bis(2-Ethylhexyl)phthalate	10 U	2 Ј
Di-n-Octyl phthalate	10 U	12 U
Benzo(b)fluoranthene	10 U	12 U
Benzo(k)fluoranthene	10 U	12 U
Benzo(a)pyrene	10 U	12 U
Indeno(1,2,3-cd)pyrene	10 U	12 U
Dibenzo(a,h)anthracene	10 U	12 U
Benzo(g,h,i)perylene	10 U	12 U
Carbazole	10 U	12 U

NOTES:

U - Not detected at given quantitation limit

J - Estimated values

TABLE 3-16 SUMMARY OF PESTICIDE/PCB RESULTS IN FIELD QUALITY CONTROL SAMPLES DEAL TEST SITE OCEAN TOWNSHIP, NEW JERSEY

SAMPLE NO. SAMPLING DATE	FB-01 9/30/97	FB-03 9/30/97
UNITS	ug/kg	ug/kg
Alpha-BHC	0.050 U	0.051 U
Beta-BHC	0.050 U	0.051 U
Delta-BHC	0.050 U	0.051 U
gamma-BHC (Lindane)	0.050 U	0.051 U
Heptachlor	0.050 U	0.051 U
Aldrin	0.050 U	0.051 U
Heptachlor epoxide	0.050 U	0.051 U
Endosulfan I	0.050 U	0.051 U
Dieldrin	0.10 U	0.10 U
4,4'-DDE	0.10 U	0.10 U
Endrin	0.10 U	0.10 U
Endosulfan II	0.10 U	0.10 U
4,4'-DDD	0.10 U	0.10 U
Endosulfan sulfate	0.10 U	0.10 U
4,4'-DDT	0.10 U	0.10 U
Methoxychlor	0.50 U	0.51 U
Endrin ketone	0.10 U	0.10 U
Endrin aldehyde	0.10 U	0.10 U
alpha-Chlordane	0.050 U	0.051 U
gamma-Chlordane	0.050 U	0.051 U
Toxaphene	5.0 U	5.1 U
Aroclor-1016	1.0 U	1.0 U
Aroclor-1221	2.0 U	2.0 U
Aroclor-1232	1.0 U	1.0 U
Aroclor-1242	1.0 U	1.0 U
Aroclor-1248	1.0 U	1.0 U
Aroclor-1254	1.0 U	1.0 U
Aroclor-1260	1.0 U	1.0 U

NOTES:

U - Not detected at given quantitation limit

TABLE 3-17 SUMMARY OF METALS RESULTS IN FIELD QUALITY CONTROL SAMPLES DEAL TEST SITE OCEAN TOWNSHIP, NEW JERSEY

SAMPLE NO. SAMPLING DATE UNITS	FB-01 9/30/97 ug/L	FB-03 10/1/97 ug/L	
	TOTAL	SOLUBLE	
Silver	0.80 U	0.80 U	
Arsenic	2.4 U	2.4 U	
Barium	0.20 U	0.35	
Cadmium	0.40 U	0.40 U	
Chromium	0.96	1.0	
Mercury	0.10 U	0.10 U	
Lead	4.3	3.4	
Selenium	4.4 U	4.4	

NOTES:

U - Not detected at given quantitation limit

addition, the indicated reporting limits were examined in the light of regulatory standards (e.g., NJDEP Soil Cleanup Criteria).

The laboratory reporting limits met the DQOs for all of the metals analyses. The laboratory reporting limits also met the DQOs for SVOCs and VOCs for sediment, groundwater, and surface water. Due to the percent moisture content of some of the soil samples, the laboratory reporting limits were elevated for approximately one-half of the soil VOC and SVOC samples. Both the groundwater and surface water pesticide/PCB analyses met the DQO reporting limits. Sediment pesticide/PCB laboratory reporting limits were somewhat elevated above DQOs, while the soil reporting limits were significantly elevated above the DQOs due to laboratory dilutions of the samples. The laboratory diluted these samples from 10 times to 50 times due to chromatographic anomalies on the instrument.

A comparison of the analytical reporting limits to NJDEP standards (e.g., Soil Cleanup Criteria, Surface Water Standards) indicates that the vast majority of reporting limits were at or below the applicable standards. In some instances the reporting limits were higher than the relevant standard; however, this was usually due to the extremely low values in the standard (i.e., below practical quantitiation limits). This was particularly evident with the New Jersey Surface Water Standards, where some values are in the low part-per-trillion range. In a few cases (e.g., PCBs in soil), the reporting limits were elevated above residential soil cleanup criteria. Residential criteria were utilized for comparisons as a conservative measure. The non-residential soil cleanup criteria, in this case, was close to the reporting limits for PCBs in soil.

The laboratory data from this investigation were validated according to the United States Environmental Protection Agency (U.S. EPA) Region II Data Validation SOPs. A summary of the data validation is presented in Appendix E.

In conclusion, the data presented are sufficient to meet the DQOs identified in the project work plan.

3.4 NEARBY POPULATIONS

The site is presently undeveloped, and serves as a township park. It is surrounded mainly by suburban development, and there are residences on four sides of the park. The nearest residences (approximately 900 - 1,000 feet upgradient) are northwest of the former lagoon; additional homes are located to the east (>2,000 feet from the site). The nearest school is located immediately to the north, within 0.25 mile of the site. The principal exposure route for potential contaminants of concern (e.g., arsenic) would be from direct contact with soils and from inhalation of soil particulates by recreational users or maintenance workers, should portions of the site ever be excavated or developed.

According to a township representative (D. Kochel, Pers. Communication, 1997), the following is known about the Deal Test Site. The site is deed restricted to be open space/recreational in perpetuity as it was acquired under the State Green Acres program. The Township of Ocean

draws its water from the public water supply (New Jersey American Water Company), with most of its water coming from surface sources. There are some deep wells that are part of the water system, but none are located in Ocean Township. There is at least one well at the Deal Test Site that is used for irrigation. There are also residents in Ocean Township who draw from private wells (*i.e.*, not connected to the public water system). There may be public wells within a 4-mile radius of the site. Poplar Brook flows into the ocean adjacent to public bathing beaches. The township representative was not aware of any water supply uses of the brook, and it is generally not deep enough for swimming.

According to township employees at the park, a well used for irrigation is present in the northeast corner of the park. This well is located approximately 2,000 feet east-northeast of the former lagoon area, approximately 50-100 feet west of Whale Pond Road, and approximately 50-100 feet south of the residential properties along the northeast border of the park. This well was installed approximately 2 years ago and is used for watering two soccer fields in the direct vicinity of the well (one to the west and one to the south). All other fields (soccer, softball, general park) are irrigated using public supply water.

The workers had no knowledge of pesticide/herbicide use near the former lagoon area.

Township workers do not conduct routine maintenance near the former lagoon area. They do perform very infrequent (one or two times/year) brush clearing activities in the area to keep the roads/fire roads clear.

The area of the former lagoon receives heavy recreational use by the public, according to the workers. Local schools, Boy Scout packs, and Monmouth University all conduct field trips to the area for nature walks, fossil exploration, etc.

The New Jersey American Water Co. indicated that it supplies 100% of the potable water to the area around the park.

The Monmouth County Health Department (Personal Communication, 1998) indicated that some private wells do exist in Ocean Township, but most of the potable wells are located in the Wayside section of the Township. However, there are seven wells within a 0.5-mile radius of the site according to County records. The locations of the wells by type are listed below:

Domestic	<u>Irrigation</u>	Abandoned
18 Dover Street 150 Idlewood Road 2100 Picton Road	413 Deal Road 1903 Waverly Road	701 Deal Road 1626 Melville Road

All of these wells appear to be upgradient or sidegradient to the site area, assuming that the groundwater flow direction is east or east-southeast (*i.e.*, towards Poplar Brook and the Atlantic Ocean).

Should site groundwater be used as a potable source, the concentrations of arsenic, lead, and chromium could present a potential risk.

3.5 FATE AND TRANSPORT MECHANISMS

The primary contaminants of potential concern at this site are arsenic in soil and groundwater, and (possibly) chromium and lead in groundwater only. Thus, fate and transport mechanisms are only of potential concern for metals. Metals are persistent compounds (*i.e.*, do not degrade), and their fate is related to speciation and physical conditions, as well as adsorption sites (*e.g.*, silts, clays). The principal transport mechanisms of concern at the Deal Test Site for metals are leaching of metals from surficial soils into the groundwater, and transport of metals off-site into Poplar Brook and downstream via overland runoff carrying soil particles. Dust transport may also be a mechanism; however, it appears that the soils in the former lagoon area are wet for portions of the year. This would tend to reduce dust generation during those periods.

Arsenic present in groundwater is likely a result of leaching from surficial soils, since the subsurface soil concentrations were lower at all locations measured. Like many metals, arsenic can be expected to adsorb to clay and silt particles and organic matter in soil. Total recoverable arsenic concentrations were much greater than the soluble component measured in groundwater, indicating that most of the arsenic present in groundwater consists of suspended solids. Concentrations of total recoverable chromium and lead were also elevated in groundwater, but the soluble fraction was not detected.

Arsenic concentrations in sediment collected in the Poplar Brook tributary were significantly lower than concentrations in surficial soil measured at the Deal Test Site, suggesting that little off-site migration of soil particles has occurred via runoff. The concentrations detected in stream sediments (3.9 to 6.1 mg/kg) are far lower than the concentrations measured in surficial soils at the upgradient location S-1 (129 mg/kg). Arsenic was undetected in surface water in the brook. These results collectively indicate that arsenic-contaminated soil is not migrating from the site into the Poplar Brook tributary in significant amounts.

The following summary of fate and effects of arsenic contamination is summarized from Eisler (1988). Arsenic has four valence states (-3, 0, +3, and +5), rarely occurring in its free state in nature. It is usually a component of sulfidic ores, occurring as arsenides and arsenates, along with arsenic trioxide, which is a weathering product of arsenides. Biotransformations may occur, resulting in volatile arsenicals that normally are returned to land where soil adsorption, plant uptake, erosion, leaching, reduction to arsines, and other processes occur. Inorganic arsenic is more mobile than organic arsenic, and thus poses greater problems by leaching into surface waters and groundwater. The trivalent arsenic species (+3) are generally considered to be more toxic, more soluble, and more mobile than As (+5) species (Eisler 1988).

Arsenic in water exists primarily as a dissolved ionic species. Particulates account for less than 1 percent of the total measurable arsenic. Arsenates are more strongly adsorbed to sediments than are other arsenic forms (Eisler 1988).

Eisler (1988) reports that the following points are agreed upon by most investigators: (1) arsenic may be absorbed by ingestion, by inhalation, or through permeation of the skin or mucous membrane; (2) cells accumulate arsenic by using an active transport system normally used in phosphate transport; (3) arsenicals are readily absorbed after ingestion, most being rapidly excreted in the urine during the first few days; (4) the toxicity of arsenicals conforms to the following order from greatest to least toxicity: arsines > inorganic arsenites > organic trivalent compounds (arsenoxides) > inorganic arsenates > organic pentavalent compounds > arsonium compounds > elemental arsenic; (5) solubility in water and body fluids appears to be directly related to toxicity; and (6) the mechanisms of arsenical toxicity differ considerably among arsenic species, although signs of poisoning appear similar for all arsenicals.

The primary mechanism of inorganic trivalent arsenic toxicity is through reaction with sulfhydryl groups of proteins and subsequent enzyme inhibition; inorganic pentavalent arsenic does not react as readily with sulfhydryl groups. Inorganic trivalent arsenic interrupts oxidative metabolic pathways and sometimes cause morphological changes in liver mitochondria. Methylation greatly reduces the toxicity of inorganic arsenic (both trivalent and pentavalent) and is usually the major detoxification mechanism (Eisler 1988).

The mechanism of organic arsenic toxicity begins with its initial metabolism to the trivalent arsenoxide form, followed by its subsequent reaction with sulfhydryl groups of tissue proteins and enzymes, to form an arylblis (organylthio) arsine. This form inhibits oxidative degradation of carbohydrates and decreases cellular adenosine triphosphate (ATP) (Eisler 1988).

4.0 SUMMARY AND RECOMMENDATIONS

The following summary statements and conclusions can be drawn from the results of this investigation.

The results of this investigation, including physical observations of the site and the analytical data, indicate that there is no significant evidence of a lagoon at this location.

The only contaminant of potential concern in surficial soils at the Deal Test Site is arsenic. Arsenic concentrations in surficial soil ranged from 129 to 504 mg/kg, and exceeded the NJDEP soil cleanup criterion (20 mg/kg) at all locations sampled, including the upgradient reference location. Subsurface concentrations were significantly lower. The highest arsenic concentrations detected were in surface soil from sample S-9 (504 mg/kg), collected at the downgradient location. The source of this contamination remains unknown.

Total recoverable groundwater concentrations of arsenic, chromium, and lead exceeded NJGWQS at all four locations sampled, including upgradient and downgradient locations. The soluble concentrations of arsenic in groundwater exceeded the NJGWQS at GW-2 and GW-4, located in the former lagoon area and downgradient, respectively. Soluble arsenic concentrations at these two locations were 55.9 µg/L and 39.4 µg/L, respectively, compared to the NJGWQS of

 $8 \mu g/L$. Soluble concentrations of chromium and lead were not detected, indicating that the total metals concentrations are attributable to suspended solids in the samples.

The low concentrations of arsenic detected in the sediment (3.9 to 6.1 mg/kg) of the Poplar Brook tributary relative to surface soil at the Deal Site (129 to 504 mg/kg) suggests that significant off-site migration of arsenic is not occurring via runoff. Arsenic was undetected (2.4U μ g/L) in the two surface water samples collected in the stream.

No significant contamination from VOCs, SVOCs, or pesticide/PCB compounds was detected in soil, groundwater, surface water, or sediment collected at the Deal Test Site.

A review of nearby populations suggests that the primary potential exposure pathways for arsenic uptake would be from direct contact with soils and from inhalation of soil particulates by recreational users or maintenance workers. This pathway would also exist for contamination detected upgradient of the former lagoon. If groundwater from the site were used as a potable source, a potential risk would exist from ingestion of arsenic-contaminated groundwater pumped from below the former lagoon or immediately downgradient. However, it does not appear that any potable wells are located downgradient of the former lagoon.

It is recommended that a records review and interviews be conducted to determine whether arsenic-based compounds (e.g., herbicides) were utilized by any current or former owners of the Deal Test Site. Repeated usage of such products over a number of years may explain the concentrations of arsenic detected at the site. Secondly, it is recommended that additional sampling be conducted to confirm the prevalent detections of arsenic in the area, or to determine whether arsenic is limited to the general region of the former lagoon and adjacent areas. Due to the recreational use of the Deal Test Site, it is important to determine whether arsenic is present in other areas of the park (e.g., along the dirt roads and in the open fields), as human exposures are possible.

5.0 REFERENCES

- Army Corps of Engineers. Undated. Findings and Determination of Eligibility, Deal Test Site, Asbury Park, New Jersey. Defense Environmental Restoration Program for Formerly Used Sites. Project No. C02NJ078200.
- Army Corps of Engineers. 1990. *Inventory Project Report, Deal Test Site, Ocean Township, New Jersey*. Defense Environmental Restoration Program for Formerly Used Defense Sites. Project No. CO2NJ078200.
- Army Corps of Engineers, Environmental Quality. 1994. Requirements for the Preparation of Sampling and Analysis Plans. Engineer Manual EM 200-1-3.
- Eisler, R. 1988. Arsenic Hazards to Fish, Wildlife, and Invertebrates: A Synoptic Review. Biological Report 85 (1.12), Contaminant Hazard Reviews Report No. 12. Fish and Wildlife Service, U.S. Department of the Interior, 92 pp.
- Environmental Protection Agency, Region II. 1989. *CERCLA Quality Assurance Manual*. Final Copy, Revision 1. Document Control No. 4200-99-AALE.
- Kochel, D. 1997. Telephone communication on December 10 between D. Kochel, Ocean Township Manager, and S. Lenczyk, Roy F. Weston, Inc.
- Miscela, Lisa. 1998. Telephone communications between L. Miscela, Monmouth County Health Department, and R. Settino, Roy F. Weston, Inc., February and March 1998.
- Mottana, A., R. Crespi, and G. Liborio 1978. Simon & Schuster's Guide to Rocks & Minerals. M. Prinz, G. Harlow, and J. Peters, eds. The American Museum of Natural History.
- New Jersey Department of Environmental Protection. 1992. Field Sampling Procedures Manual. 364 pp.
- New Jersey American Water Company. 1998. Telephone communication between Customer Service Representative for New Jersey American Water Company and R. Settino, Roy F. Weston, Inc., 26 February 1998.
- Ocean Township. 1998. Telephone communication between Ocean Township Building Department and R Settino, Roy F. Weston, Inc., 26 February 1998.
- Ocean Township. 1998. Site visit and discussions with employees of the Ocean Township Department of Public Works and R. Settino, Roy F. Weston, Inc., 26 February 1998.
- Roy F. Weston, Inc. 1997. Final Work Plan for Data Collection at Defense Environmental Restoration Program-Formerly Used Defense Sites (DERP-FUDS), Deal Test Site,

Ocean Township, New Jersey. 0007, September 1997.	Contract Number DACW51-97-D-0010, Delivery Order

Appendix A

APPENDIX A

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION SOIL CLEANUP CRITERIA



State of New Jersey Department of Environmental Protection and Energy

Robert C. Shinn, jr. Commissioner

February 8, 1994

MEMORANDUM

TO:

Site Remediation Program Staff

FROM:

Lange Miller, Assistant Commissioner

Size Remediation Program

SUBJECT: Revised Soil Cleanup Criteria

Soil Cleanup Criteria (SCC) were initially distributed to Sits Remadiation Program Staff in January 1993. The SCC were revised in March 1993 and contained in the April 1993 issue of the Site Remediation News. Since that time, there have been toxicity factor changes as well as the identification of computational and typographical errors for several SCC compounds. These changes and corrections have been made resulting in a revised SCC list which is attached.

Thirty eight (38) criteria encompassing 31 compounds are affected. The majority of changes are to the impact to groundwater SCC. Sixteen (16) SCC have increased, 19 SCC have decreased and criteria for 2.4-/2.6-dinitrotoluene (mixture) have been added. Please refer to the footnotes contained in the SCC list for more detail.

It is important to note that SCC for eight (8) compounds have decreased by at least an order of magnitude. These compounds are:

acrylonitrile (impact to groundwater criterion) benzo(b) fluoranthene (impact to groundwater criterion) 1,2-dichloroethene (impact to groundwater criterion) (impact to groundwater criterion) heptachlor hexachlorobutadiene (residential and non-residential direct contact criteria) methoxychlor (impact to groundwater criterion) methylene chloride (impact to groundwater criterion) toxaphene (impact to groundwater criterion)

New Jersey is an Equal Opportunity Employer Recycled Paper

The purpose and function of the SCC remains the same - to provide guidance in establishing site-specific cleanup levels. Other factors such as environmental impacts, site-specific conditions and background levels may be considered which could result in a site-specific cleanup level which differs from the SCC.

If you have any questions regarding the above or other cleanup standards issues, please bring them to the attention of your Bureau or Element managers. Thank you for your cooperation.

attachment

Soli Cleanup Criteria (mg/kg) (Last Revised - 2/3/94)

This listing represents the combination of Tables 3-1 and 7-1 from the Department of Environmental Protection and Energy's Pebruary 3, 1992 proposed rule entitled <u>Cleanup Standards for Contaminated Sites</u>, N.J.A.C. 7:26D, with noted corrections based upon errors identified by the Department during or subsequent to the comment period as well as new toxicological information obtained since the rule proposal. Please refer to the respective footnotes for more detail. Notwithstanding, where the following criteria are based on human health impacts, the Department shall still consider environmental impacts when establishing site specific cleanup criteria. This along with other site specific factors including background conditions may result in site specific cleanup criteria which differ from the criteria listed below. Therefore, this list shall not be assumed to represent approval by the Department of any remedial action or to represent the Department's opinion that a site requires remediation.

Note: Haterial bracketed [thus] is deleted and material underlined thus is added

			Non	
		Residential	Residential	Impact to
		Direct Contact	Direct Contact	Ground water
· ·		Soil Cleanup	Soil Cleanup	Soil Cleanup
Coptaminant	CASRN	Criteria(a)(b)	Criteria(a)(b)	Criteria(b)
Acenaphthene	83-32-9	3400	10000(c)	100
Acetone	67-64-1	1000(d)	1000(a)	1501 100(1)
Acrylonitrile	107-13-1	1	5	$(100) \underline{1}(1)$
Aldrin	309-00-2	0.040	0.17	50
Anthracene '	120-12-7	10000(c)	10000(c)	[5 00] <u>100</u> (i)
Antimony	7440-36-0		340	(h)
Arsenic	7440-38-2	[2(f)] 20(e)	[2(1)] <u>20(</u> e)	(h)
Barium	7440-39-3	700	47000(n)	
Benzena	71-43-2		13	(h)
3,4-Benzofluoranthene (Benzo(b)fluoranthene)	205-99-2	0.9	4	1500) 1044
Benzo (a)anthracene	56-55-3		Ā	(50 0) 5 <u>0</u> (i)
Benzo(a)pyrene (BaP)	50-32-8		0.66(f)	
Benzo(k)fluoranthene	207-08-9	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	4.00(1)	100
Benzyl Alcohol	100-51-6		10000(c)	500
Beryllium	7440-41-7	1(f)		50
Bis(2-chloroethyl) ather	111-44-4		1(f) 3	(h)
Bis(2-chloroisopropyl) ether	39638-32-9	2300	10000(c)	[1] 10(j)
Bis(2-ethylhexyl) phthalate	117-81-7		210	10
Bromodichloromethane (Dichlorobromomethane)	75-27-4			100
Bronoform	75-25-2		[22] <u>46(g)</u> 370	1
Bromonethane	74-83-9		1000(9)	i
2-Butanone (MBK)	78-93-3	• •		1
Butylbenzyl phthalate	85-68-7		1 000(d) 1 00 00(c)	50
Cadmium	7440-43-9		1000(6)	100
		•	100	(h)

Soil Cleanup Criteria (mg/kg) (Last Revised - 2/3/94)

Carbon tetrachloride	56 33 5			
4-Chloroaniline	56-23-5	2(k)	4 (k)	1 .
Chlorobenzene	106-47-8 108-90-7	230	4200	(r)
Chloroform		37	680	1
4-Chloro-3-methyl phenol (p-Chloro-m-cresol)	67-66-3	19(k)	28(k)	1
Chloromethane		10000(c)	10000(c)	100
2-Chlorophenol	74-87-3	520	1000(d)	10
Chrysene	95-57-8	280	5200	(50) <u>10(j)</u>
Copper	218-01-9	9	40	500
Cyanide	7440-50-8	600 (m)	600 (m)	(h)
4,4'-DDD {p,p'-TDE}	57-12-5	1100	21000(0)	(h)
4,4'-DDE (P,P -102)	72-54-8	3	12	[100] 50(i)
4,4'-DDT	72-55-9	2	9	(100) 50(L)
Dibenz(a,h)anthracene	50-29-3	2	9	[100] 500(1)
	53-70-3	0.66(f)	0.66(f)	[500] <u>100</u> (j)
Dibromochloromethane (Chlorodibromomethane)	124-48-1	110	1000(4)	J [200] Töö())
Di-n-butyl phthalate	84-74-2	5700	10000(c)	100
Di-n-octyl phthalate	117-84-0	1100	10000(c)	100
1,2-Dichlorobenzene	95-50-1	5100	10000(c)	50
1,3-Dichlorobenzene	541-73-1	5100	10000(c)	100
1,4-Dichlorobenzene	106-46-7	570	10000(c)	
3,3'-Dichlorobenzidine	91-94-1	2	6	100
1,1-Dichloroethane	75-34-3	570	1000(4)	100
1,2-Dichloroethane	107-06-2	6	24	(r) 10(r)
1,1-Dichloroethene	75-35-4	8	150	1
1,2-Dichloroethene (trans)	156-60-5	1000(d)	1000(4)	10
1,2-Dichloroethene (cis)	156-59-2	79		50
2,4-Dichlorophenol	120-83-2	170	1000(a) 3100	[50]](i)
1,2-Dichloropropane	78-B7-5	10	–	10
1,3-Dichloropropene (cis and trans)	542-75-6	4	43	(r)
Dieldrin	60-57-1	0.042	5(k)	1
Diethyl phthalate	84-66-2	10000(c)	0.18	50
2,4-Dimethyl phenol	105-67-9	1100	10000(c)	50
Dimethyl phthalate	131-11-3	10000(c)	10000(c)	10
2,4-Dinitrophenol	51-28-5	110	10000(c)	50
Digitrotoluene (2,4-/2,6- mixture)	25321-14-6		2100	10
Bndosul fan	115-29-7	1(1)	4(1)	<u>10</u> (1)
Endrin	72-20-8	[3] <u>340</u> (9)	[52] <u>6200</u> (g)	50
8thylbenzene	100-41-4	17	310	50
Fluoranthene	206-44-0	1000(d)	1000(a)	100
fluorene	86-73-7	2300	10000(c)	[500] 100(i)
Reptachl or	76-44-8	2300	10000(c)	100
Hexachlorobenzene	118-74-1	0.15	0.65	(500) 50(j)
Hexachlorobutadiene	87-68-3	0.66(f)	2	(50) 100(i)
	61-80-1	[11] <u>1(g)</u>	[210] <u>21(g)</u>	(50) 100(9)
	*			1 1 4137

Soil Cleanup Criteria (mg/kg) (Last Revised - 2/3/94)

Hexachlorocyclopentadiene	77-47-4	400	7300	100	
Hexachloroethane	67-72-1	6	100	100	
Indeno(1,2,3-cd)pyrene	193-39-5	0.9	4	50Q	
Isophorone .	78-59-1	1100	10000(c)	[10]	50/11
Lead	7439-92-1	100(p)	600(q)		<u>50())</u>
Lindane	58-89-9	0.52	2.2	(h)	50 (1)
2-Hethylphenol	95-48-7	2800	10000{\$\varepsilon\$}	[1]	50(i)
4-Hethylphenol	106-44-5	2800	10000 (c)	(r)	
Methoxychlor	72-43-5	280	5200	(r)	1011.
Hercury	7439-97-6	14	270	[500]	<u>50(1)</u>
4-Methy1-2-pentanone(MIBK)	108-10-1	1000(d)	1000(d)	(h)	
Methylene chloride	75-09-2	49	210	50	
Naphthalene	91-20-3	230	4200	[10]	1())
Nickel	7440-02-0	250	2400(k) (n)	100	
Nitrobenzene	98-95-3	28	520	(h)	
N-Nitrosodiphenylamine	86-30-6	140	600	1501	10(i)
N-Nitrosodi-n-propylamine	621-64-7	0.66(f)		100	
PCBs (Polychlorinated biphenyls)	1336-36-3	0.49	0.66(1) 2	[1]	10(1)
Pentachlorophenol	87-86-5	6	24	[100]	50(i)
Phenol	103-95-2	10000(c)		100	
Pyrene	129-00-0	1700	10000(c)	50	
Selenium	7782-49-2	63	10000(c)		100())
Silver .	7440-22-4	110	3100(n)	(p)	
Styrene	100-42-5	23	4100(n)	(h)	
1,1,1,2-Tetrachloroethane	630-20-6	170	97	100	
1,1,2,2-Tetrachloroethane	79-34-5	34	310	1	
Tetrachloroethylene	127-18-4	4(k)	70(k)	1	
Thallium	7440-28-0	2(1)	6(k)	. 1	
Toluene	108-08-3	1000(d)	2(f)	(h)	
Toxaphene	8001-35-2		1000(d)	500	
1,2,4-Trichlorobeazene	120-82-1	0.10(k) 68	0.2(k)	[100]	<u>50(i)</u>
1,1,1-Trichloroethane	71-53-6	210	1200	100	
1,1,2-Trichloroethane	71-33-6		1000 (d)	50	
Trichloroethene (TCB)	79-01-6	22	420	1	
2,4,5-Trichlorophenol		23	54(k)	1	
2,4,6-Trichlorophenol	95-95-4	5600	10000(c)	50	
Vanadium	88-06-2	62	270	{50}	10(1)
Vinyl chloride	7440-62-2	370	7100 (n)	(h)	
Xylenes (Total)	75-01-4	2	· 7	[1]	19(1)
zinc	1330-29-7	410	1000(a)	joʻ	
	7440-66-6	1500 (m)	1500(m)	(h)	

Soil Cleanup Criteria (mg/kg) (Last Revised - 2/3/94)

Footnotes

(a) criteria are health based using an incidental ingestion exposure pathway except where noted below (b) criteria are subject to change based on site specific factors (e.g., aquifer classification, soil type,

3

- (c) health based criterion exceeds the 10000 mg/kg maximum for total organic contaminants
- (d) health based criterion exceeds the 1000 mg/kg maximum for total volatile organic contaminants (e) cleanup standard proposal was based on natural background
- [f] health based criterion is lower than analytical limits; cleanup criterion based on practical
- (g) criterion has been recalculated based on new toxicological data
- (h) the impact to ground water values for inorganics will be developed based upon site specific chemical and (i) original criterion was incorrectly calculated and has been recalculated
- (k) criterion based on inhalation exposure pathway which yielded a more stringent criterion than the
- (1) new criterion derived using methodology in the basis and background document
- (m) criterion based on ecological (phytotoxicity) effects
- (n) level of the human health based criterion is such that evaluation for potential environmental impacts on a site
- (o) level of the criterion is such that evaluation for potential acute exposure hazard is recommended
- (p) criterion based on the goal that children should be exposed to the minimal amount of lead that is practicable and is reflective of natural background as altered by diffuse anthropogenic pollution. Criterion corresponds to both a median value for urban land which has not been impacted by any local point source of lead
- (q) criteria was derived from a model developed by the Society for Environmental Geochemistry and Health (SEGH) and
- (r) Insufficient information available to calculate impact to ground water criteria

Appendix B

Appendix B

APPENDIX B

PHOTODOCUMENTATION





Photograph 1: Geoprobe sampling at upgradient location northwest of former lagoon area (facing south).



Photograph 2: Entrance into former lagoon area; facing west.

WESTER



Photograph 3: View of former lagoon area; facing west.



Photograph 4: Ground surface at westernmost portion of former lagoon area.

WESTER



Photograph 5: View of ATV Geoprobe unit entering former lagoon area (facing east).



Photograph 6: Ground surface in southwest portion of former lagoon area.

WESTERN



Photograph 7: Geogrobe sampling at downgradient location southeast of the former lagoon area (facing south).



Photograph 8: View of soil core (Core A) collected at westernmost location within the former lagoon area.





Photograph 9: View of soil sample collection for VOC analysis using methanol extraction procedure.

WESTERN



Photograph 10: View of downgradient surface water/sediment sample location (SW1/SD1).



Photograph 11: View of upgradient surface water/sediment sample location (SW2/SD2).

Appendix C

Appendix C

APPENDIX C DAILY QUALITY CONTROL REPORTS AND FIELD NOTES

ER 1110-1-263 1 August 1990

	DATE:	1 A	August 1990					
A-E DAILY QUALITY CONTROL REPORT	DAY:	S	М	, X	W Z	TH)	F	S

WEATHER Bright Clear Overcast Rain Snow then cleaned COE PROJECT MANAGER: Allen Roos Sun **TEMP** To 32 32-50 85 up PROJECT: Deal Text Site Moderate WIND High Report No. JOB NO .: 1/901-001-003-00-01-00 Moderate **HUMIDITY** Dry Humid CONTRACT NO .: DAC WS1-97-D-0010 **SUB-CONTRACTORS ON SITE:** Terrefrole, (Cupropesul): Frank Fendle **EQUIPMENT ON SITE** OVM vagnetometer, decon equip WORK PERFORMED (INCLUDING SAMPLING): I sed beogrobe operators to and tubing fitted w/a grab gu sample

Sargle collection and decon procedures were conducted in accordance of procedures outland with Cot-approved about Mendeted 9/97.

PROJECT: Deal Test Site	REPORT NO.:
JOB NO.: 11901-001-003-0001-00	DATE:
QUALITY CONTROL ACTIVITIES (INCLUDING FIELD CALIBRATI	ONS):
OVM calibrated	
One field blank semple a	ollected
HEALTH AND SAFETY LEVELS AND ACTIVITIES:	
All present signed AASP,	I uf personnel on site.
V	
PROBLEMS ENCOUNTERED/CORRECTIVE ACTION TAKEN:	
Gow was excountered a ven	bellow dest he
sesulting in subsurger so	il sanglesheing
· · · · · · · · · · · · · · · · · · ·	ver a se are - summe,
Aliquot for disolved witals a 6 to lat due to problem selected to turbide	trologging felter, Englishand
secured for overnight sattlement to for special notes:	Sterry can be performationer.
TOMORROWS'S EXPECTATIONS:	
Coopleto sevaining soil,	gw, sw, roed supling.

ER 1110-1-263 1 August 1990

	DATE:	10	1/1/97		i / lagal	
A-E DAILY QUALITY CONTROL REPORT	DAY:	S	M T	X	TH F	S
COE PROJECT MANAGER: Allen Roos	WEATHER	Bright Sun	Clear	Overcast	Rain	Snow
PROJECT: Deal Test Site	TEMP	To 32	32-50 Moderate	50-70 High	70-85 Repo	85 up rt No.
JOB NO.:	HUMIDITY	Dry	Moderate	Humid		
SUB-CONTRACTORS ON SITE: Terrafrole: Frenh Fendle						
WESTON: Mark Ellis, Ric EQUIPMENT ON SITE:	h Settin	o, Go	ryBuci	hann	-	
OVM, magnetometer, Geop	robe (+	sch-1	vounte	0) ta	ll sar,	plug
WORK PERFORMED (INCLUDING SAMPLING): Collected five soil	sample		lion	Two s	pest	les !
Collected three grow	muste te	- so	nples	front	two l	retin
Collected a surface or upgrafient for	water	nd sel	seline a dou	no so	lien	6
	partha		field	blank	Sany	le
Collected field blan	1 1-	0. 1		S8.	n g c	U
Sent cleated trip blan	L sang	le.				

PROJECT: _	Deal Test Site	REPORT NO.:
	11901-001-003-0001-00	
<u> </u>	ONTROL ACTIVITIES (INCLUDING FIELD CALIBRATI	
Cul	librated OVM prior to	ungling
Col	leted 2 field blank pa metheral ambient blank)	eaples /a sinsate -
	methanol ambient blank)	and a trip blank
- m		
a	diplicate sample for gw n	whice.
HEALTH A	ND SAFETY LEVELS AND ACTIVITIES:	
	Level D PPE	
PROBLEMS	S ENCOUNTERED/CORRECTIVE ACTION TAKEN:	
	None	
SPECIAL NO	OTFS:	
	Non a	
	7-6-0-	
TOMORROV	VS'S EXPECTATIONS:	
	NA	
4	•	

	CONTENTS		
PAGE NO.	REFERENCE		DATE
	·		
		-	
		_	
- 1000		L_	

Deal Test Sate (M. Ellis R. Settino) Drive to township garage Speck to Township employee regard of a formy lago us how to get there Says 1350: Arrive at Tan Pet "lacation, approx 14 m. NW of Township garages PS sets up HNU (HAZCO Plate) and Victorien 190 rad meter 711.70 (HAZCO 1478). Find a small area that appears to be on left (w) sike of access rook ME photographer area - 75 Foreens area with HNU - Victoren. No realings above background. BKGD = 0 puits on Holy 4-10 wither on Victorien

1400: Kecon area. Find small stream areas (roads) where vehicular that Lasts to the west mean traffic was prohibital. Most the Wend of access road crosses of the area is prainteened road to the E and flows (landscaped, powed) by the south along E side of township crew and used access road apposite side from for recreation, exercise Stations, etc. No evidence 1430. Will so back to Tup garage of any former lagor was to inquire further about area. observed, A poundation Mark suspect grea with a small of a former building was yellow tre (cutton tape) voted in a patch of 1500. Speak to Tup employees Claudscapers opergrown vegetation. They know of no other areas that holdably a former wilitary lack regetation. Inform us that Stream on topo is not the Small Stream we saw but * lote: The contact from the Stream just south of the the township/pashe grounds Tup buildings Stuttes for the crew stated that he had lilays were along the Stram up memory of an artical suderground A swamp wear lagoon or nearly building is located behind log 5005; howar on the vicinity that we the area is to overgrown to observed as being the potential visually diserve. Recorned Sation Historical 1530 Performed a complete drive - Thru recon including aerial photo study

Tuesday 9/30/97 R. Setting met Tom Morrow Core \$2 (4-8') Fall secover @ site and performed cleaning Bl-gra + Sand, somesill, some activities. clay Wet, Meanued water M. Ellis a office availing to be a = 2ft b95 anual of VOA sample continues Collected sample 51 from 0-2' and finished looding equipment 575 and 52 from 2-4, Called G Buchana to confero M Ellis departs office 1050 we should collect sample M. Ellis arrevel a set. Tourfishe from below water table. subcontractor + R. Setters (motor) He injoined we should on site particularly @ this location Commerced setting up exuganet serve top 2 ft is peat and positioned Geograbie 1405 Baga grownewsley samply approduent Cocation. process @ approlecut location Area was clearly a GWI. Using 2 ft (.5"OD.) barles magnetorieter prior to setting (stainless steel) to collect VOA sunles and tubing of check value for Finished labelly jack and Other parameters. Tubing is 0. 25" ID poly. setting up Began @ upgrachent location 1310 Finished gw sampling @ Gw/ * SI montoring of OVM (RFW 7528 Preparing to docon and nobilize Cove # (0-4) = 2 (ecovery to second location. Consisting a wanty of organic 1430 moved onto second location nat pat) u DN brn selt which was western nort some + send. location within former * GW pleame less perbed as volume was removed.

logoon area. Collected field blank prinsate 1440 Collected tayples \$3 of poul + bowl) and 54, We got = 3fx Agan core collection a of recovery for Core # 1. Totation #3 to collect samples Top aftonnisted OKbrn 5+6 and GWZ frankad silt af abundant 1540 Cose 1 retrieved, Approx, organic natter (peat), 3 recovery. 12-3' consisted of Bl-gra-0-1.5 DKbrh & Sand + selt up BIK M. f Sand, Prilt organics (peat). to clay, Sample was wet -1.5-3.0' Ditto toprevious saturated beginning @ 3ft spoons uf BI-gra sands. Wet@ 2.75' where it Collected 5/3 pour 0-25t, and 54 from 3.4 in sat, becomes very sandy. Water in hole rises to rearly 1450 Had duller continue to surface level, however peat deeper depthy to observe pratarial is dried (in sample) the stritiguage, from 1545 Collected sample 55 from within In former 0-2' Samle from 4-8' Litto to previous locate 1550 Collected Sample 56 growted) Samle 4-81 was similar 2-3' /95 (wit sands) Bl-grn (glassconite) f- Charl 1555 Began collecting GOV at ul 20-30% fires (siet clay) northern-wet location Small 2-3" Venses uf within legoon. Coarsey Sinds 1610 Finished Collection 6W2 sugies Water is very turbed Some

the feltered metals aliquot helbors were used (it miles for VOAS and tecting (new) of GWI setovernight and society collect a seeful sample + check value gerother parameters, toponous if the turbidity * Note: No realing above doesn't diminish. Therefore This aliquob (paremeter) for packyours were noted on GUI was not sent to the my of the soil cover or giv tangles collected thus laboratory tongto. 1630 Let volume og water to be Survey: filtered settle, but wery Three locations were sampled little of the suggested tolike settles out seganting to using a track mounted beggrove. Two intervals were sampled 1645 Filtering going extremely @ lack location for analysis of vox', and PAB & Refretate slow Have used 3 felter peta and only obtained - 50 ml in soil. The three locations Thus far. welled one approximate location May weed to let sample outside of the suspected form sit overnight & settle out lagoon and two locations were within the suspected The fenas, Workedon cleaning up the former logoon western wast proposed location + worthern wort rite ceres and packaging proposed location). VOA sayles tangles. were collected in accordance Decided well need to let 1 700

10/1/97 Wadnesday W recently mulated wood M. Elks + R. Settino (WESTON) metheral extraction field on site & preparing equipment procedures Inaltition and sample containers for to the sail samples, two surged water/sedevent sangely. locations were sayled for Collected downgralient sulsed SWI & SNI. grab que andyses Samplesven 0720 5W/ \$501. substill for same parameters Note Oum wanted the top as soil as wellow disolut during agrupment prop. netals. Only bull was and no values along blad Auccessfully filtered today notel@ swiftel 1. All deem procedure, werd 0740/045 Collected aggradient 5w2+502 Consulted in accordance samples. No realings about uf the word Plen and a byged on OUM. feld blank (reasele) was & Buchanan on site delivering Collected from a fromt to remining sample continers bowl after feel becaming that dila tarive yesterlay Tayler fachaged in two worning. coolers, properly preserved 0800 Tempobe ou site and uf ice of seeled, delivered setting exp agrigment for to Fed Ex for delivery to remaining sample locations. RECKA LOUS. Need to prepare the large - bore 172 Crew office to sampler to we can allengt to markeths collect cores past 8 At for street ID. Wate Observ dury 54/sal Samling: Streams contain abundant iron oxide descrito water war Clear Soliments were Bra f C Sand tr. selt.

0830 Began collecting 6W4 somple Went out to purchase coe @ downgrafient Starter and get water for deconcollecting a third wo A vial 0910 Preparing to begin Georolie for equeous sayles totas sampling a downgralient location. Soil sangles as per 6. Buchavan's request. 59,510,+511 (desplicate) and Still collecting GWY Haven being collected of the location some problems uf recharge Finished fellering CW 2 Check walne getting hunglif 0910 collected gesterley. Single in screened culery + therefore still has a yellow-born tint not sampling full length g internal = Cess recharge. Collected cover (2 colocated for ane uf 6 w 4. Wobilized & last location extra dup (311] volume from 0-4 b95. in lower logon area Cores (0-4'): = 3' secover, where soil samples 57+58 + GW 3 will be collected 0-2'-DK brn + Sand and self u abundant organics, roist Collected FB-03 (rinsate) 2-3' - Bl-gun f-M Sand, little on the boiler. Two colocated cores collected site tricky. -1100 0930 Collected SV9 sangle from The 6 location 57.58 in legion. O-2 interval. from 0-4ft, 0935 Collected duplicate sample 59 Collected sample 57 from (511) from same 0-2 intowns. 0-2. This interval is being 0945 Callected S/O from 2-3 designated the M5/H5D single unterval sands wet a Trobe was pushed to 8 for placement of screen. Ditto blyrn dende as in previous samples & Extra volume collected for

VOR analyses only (aviala) sample. naterial Cored & Education * Note: Collected wethers to other locations of field blank sample FBOS 0-2 being OK my peat while soil sample of & Soul + self 57+58 were being collected. 2-3' Bl-gen glavernite(?) - 440 Pregaring to collect GW 3 for sand of lettle selt, to day ad the diplicate GW5 1125 Collected 58 soil sample samples @ last location from the 2-3 interval within suspected former Had Begrobe subtry to Continue subsurface sampling 125 Still collecting diplicate @ The location to strewe que tample Gw 5 (less turbid). strategraphy. 1200 Finished collecting 6WS He was able to collect a Began feltering GW 3 sayle. san le @ 8-10' and also making field measurements @ 13-15'695. Conposition of meaning type and of samples was similar to began to package surples sand 10 2-3. + Chan up Equipmental 8-10'-B1-gu detto \$ 2-3' 13-15 - BI-gry-BIK f-u Soul 1330 Sub Temprobe (4 Cleaning up buttened trolog (slightly The 6 exproles unt. Makey durkeyin color Both final very energy interiols were faturated, 1355 Finished cleaning upsite and no reduce above + egginest. Crews offreto blyd observed on either dunen

Appendix D

APPENDIX D LABORATORY ANALYTICAL RESULTS



Virtual Laboratories Everywhere

Recra LabNet Philadelphia **Analytical Report**

W.O. #: 11901-001-003-0001-00 Client: USACE-DEAL TEST SITE

RFW#: 9710L600 Date Received: 10-02-97

GC/MS VOLATILE

The set of samples consisted of seven (7) water, six (6) methanol-preserved soil, and two (2) soil samples collected on 10-01-97.

The samples were analyzed according to criteria set forth in SW 846 Method 8260A for TCL Volatile target compounds on 10-13,14,15-97.

The following is a summary of the QC results accompanying these sample results and a description of any problems encountered during their analyses:

- 1. The cooler temperature upon receipt has been recorded on the chain-of-custody.
- 2. The required holding time for analysis was met.
- 3. Six (6) of the soil samples were methanol-preserved upon collection; consequently, they have been reported as medium level analyses.
- Non-target compounds were detected in these samples. 4.

- Four (4) of seventy-five (75) surrogate recoveries were within EPA QC limits. Samples 5. S9 and GW5 were diluted and/or re-analyzed on 10-14,15-97 and reported.
- 6. Matrix spike analyses are associated with RFW lot 9710L573. Soil matrix spikes were not collected, therefore they were not analyzed or reported. A Sample Discrepancy Report has been enclosed.
- 7. All blank spike recoveries were within EPA OC limits.
- 8. The method blanks contained the common contaminants Methylene Chloride and Acetone at levels less than 2x the CRQL. The blanks 97LVN335 and 97LVN337 also contained the contaminants chloromethane and bromomethane at levels less than the CRQL.

Vice President and Laboratory Manager

Lionville Analytical Laboratory

mmz/voa/10-600v.cn

Recra LabNet Philadelphia Sample Discrepancy Report (SDR) SDR #: 9017227
Initiator: B.Rubino RFW Batch: 97/04600 Parameter: MS VCA Date: 11 12 97 Samples: M5/M50 Matrix: 5014 Client: USACE-DEALTEST Method: SW846/MCAWW/CLP/ Prep Batch:
1. Reason for SDR a. COC Discrepancy Tech Profile Error Client Request Sampler Error on C-O-C Transcription Error Wrong Test Code Other b. General Discrepancy Missing Sample/Extract Container Broken Wrong Sample Pulled Label ID's Illegible Hold Time Exceeded Insufficient Sample Preservation Wrong Received Past Hold Improper Bottle Type Not Amenable to Analysis Note: Verified by [Log-In] or [Prep Group] (circle)signature/date: c. QC Problem (Include all relevant specific results; attach data if necessary) Specified Matrix GC on Sample (9710160-001) S7 Were not performed due to Sample being placed in the Incorrect VIAIS in the field. Som plus were supposed 2. Known or Probable Causes(s) to be placed in the VIAIS prepared with
Spike solution but were not.
3. Discussion and Proposed Action Re-log Entire Batch Following Samples: Re-leach Re-extract Re-digest Revise EDD Change Test Code to Place On/Take Off Hold (circle) Other Description: Approach: NOK IN Narratick, Approach: Parametric Approach: NOK IN Narratick, Approach:
4. Project Manager Instructionssignature/date: Concur with Proposed Action Disagree with Proposed Action; See Instruction Include in Case Narrative Client Contacted: Date/Person Add Cancel
5. Final Actionsignature/date: Verified re-[log][leach][extract][digest][analysis] (circle) Included in Case Narrative Hard Copy COC Revised Electronic COC Revised EDD Corrections Completed When Final Action has been recorded, forward original to QA Specialist for distribution and filing.
Route Distribution of Completed SDR X Initiator B. Lubino

GLOSSARY OF VOA DATA

DATA QUALIFIERS

- U = Compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit which is included and corrected for dilution and percent moisture.
- Indicates an estimated value. This flag is used under the following circumstances: 1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; or 2) when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. For example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
- B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.
- E = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
- D = Identifies all compounds identified in an analysis at a secondary dilution factor.
- I = Interference.
- NQ = Result qualitatively confirmed but not able to quantify.
- N = Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the N code is not used.
- This flag is used for a TIC compound which is quantified relative to a response factor generated from a daily calibration standard (rather than quantified relative to the closest internal standard).
- Y = Additional qualifiers used as required are explained in the case narrative.

mmz\10-94\gloss.voa



GLOSSARY OF VOA DATA

ABBREVIATIONS

BS = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spike solutions and carried through all the steps in the method. Spike recoveries are reported.

BSD = Indicates blank spike duplicate.

MS = Indicates matrix spike.

MSD = Indicates matrix spike duplicate.

DL = Suffix added to sample number to indicate that results are from a diluted analysis.

NA = Not Applicable.

DF = Dilution Factor.

NR = Not Required.

SP, Z = Indicates Spiked Compound.



mmz\10-94\gloss.voa

Recra LabNet - Lionville Laboratory

			latiles by			st		R	eport Dat	e: 11	/13/97 13	7:18
RFW Batch Number: 9710L600	Client:	USACI	E-DEAL TES	T SIT	E Wo	ork Ore	der: 1190	010010	03 Page:	1a	,,	1
							1.12					(
Cust ID:	S	7	S	3	SS)	์รร	9	S1 0	ı	S1 1	_ (
Sample RFW#:	001	L	002	2	003	}	003	3	004		005	
Information Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL	•	SOIL	,
D.F.:	0.86	52	0.85	55	0.83	3	0.33	3 3	0.93	14	0.84	. 7
Units:	UG/F	(G	UG/H	(G	UG/K		UG/I		UG/K		UG/F	
Level:	MED		MED		MED		MED		MED	.G	MED	G
							REPI	REP	FILD		PIED	
Toluene-d8	85	용	101	ક	80 *	ુ	71 *		90	8	90	왕
Surrogate Bromofluorobenzene	77	ક	90	ક	74	ક	69 4		90	٠ ٩	81	8
Recovery 1,2-Dichloroethane-d4	100	ક	118	용	91	ક	76	9	114	2	1.01	2
		==f1==	_======	=f1==	=======	=f1===	=======	==f1==:	=======	=fl==		=f1
Chloromethane		บ 🕽		U	2500	U 🥽	1000	Ū	1500	U	2000	U
Bromomethane	_ 2900	U	1400	U	2500	U	1000	U	1500	U	2000	Ū
Vinyl Chloride	_ 2900	U	1400	U	2500	U	1000	U	1500	U	2000	Ū
Chloroethane	_ 2900	U	1400	U	2500	U	1000	U	1500	U	2000	U
Methylene Chloride	1500 -970	DJ U	640 500	₽₹'/	13. 800	BU∵i	🖰 . 9 4 0	∄J į	© 570	₽J;;	∂/∋3 5 0	ਬਹ ਾ≀
Acetone	_ 2900 1000	BJ U	}4○` 380	BJ 🥖	,: 70 0	B∙J∵i	।9ऽऽ 59 0	- 2 J ∫	15003-20	₽J	440	BJ ∄
Carbon Disulfide	_ 1500	U	690	U	1300	U :	510	U	730	υ`	990	U
1,1-Dichloroethene	_ 1500	U	690	U	1300	U	510	U	730	Ū	990	U
1,1-Dichloroethane	1500	U	690	U	1300	U	510	U	730	U	990	U
1,2-Dichloroethene (total)	_ 1500	Ŭ į	690	U	1300	U	510	Ū	730	U	990	U
Chloroform		U	690	U	1300	U	510	U	730	U	990	U
1,2-Dichloroethane	_ 1500	Ŭ	690	U	1300	U	510	U	730	U	990	U
2-Butanone	_ 2900	U	1400	U	2500	U	1000	U	1500	U	2000	U
1,1,1-Trichloroethane	1500	U .	690	U	1300	U	510	U	730	U	990	U
Carbon Tetrachloride	_ 1500	U	690	U	1300	U	510	Ū	730	U	990	U
Bromodichloromethane	_ 1500	U ;	690	U	1300	U	510	U	730	U	990	U
1,2-Dichloropropane	1500	U	690	U	1300	U	510	U	730	U	990	U
cis-1,3-Dichloropropene		U	690	U	1300	U	510	U	730	U	990	U
Trichloroethene	_ 1500	Ū	690	U	1300	U	510	U	730	U	990	U
Dibromochloromethane		Ū	690	U	1300	U	510	U	730	U	990	U
1,1,2-Trichloroethane		U	690	U	1300	U	510	U	730	U	990	U
Benzene	1500	Ū		Ū	1300	U	510	U	730	U	990	U
Trans-1,3-Dichloropropene		U :			1300	U	510	U	730	Ū	990	Ū
Bromoform	_ 1500		690		1300		510	U	730	U	990	U
4-Methyl-2-pentanone				U	2500	U	1000	U	1500	U	2000	U
2-Hexanone	_ 2900		1400	U	2500	U	1000	U	1500		2000	U
Tetrachloroethene	_ 1500		690	U	1300	U	510	U	730		990	Ü
1,1,2,2-Tetrachloroethane		4.	690	U	1300	U	510	Ū		U	990	Ū
Toluene	_ 1500	U 🏌	690	U	1300	U	510	U	730	TT	990	Ū
*= Outside of EPA CLP QC limits.												

<u>I Batc umbe</u>	971 0 Cli Cust ID:	<u>us</u> <u>-de<i>1</i></u> s7	EST E	Worl der S9	90103	<u>~√e: </u>	s11 (C
	RFW#: Level:	001 MED	002 MED	003 MED	003 MED REPREP	004 MED	005 C
Chlorobenzene Ethylbenzene Styrene Xylene (total)		1500 U 1500 U 1500 U 1500 U	690 U 690 U 690 U 690 U	1300 U 1300 U 1300 U	510 U 510 U 510 U 510 U	730 U 730 U 730 U 730 U	990 U 990 U 990 U
*= Outside of EPA	CLP QC limits.	•	_		210 0	/30 U	990 U

.

Recra LabNet - Lionville Laboratory

Volatiles by GC/MS, HSL List

Report Date: 11/13/97 17:18 RFW Batch Number: 9710L600 Client: USACE-DEAL TEST SITE Work Order: 11901001003 Page: 2a Cust ID: GW3 GW4 GW4 GW5 GW5 FB02 Sample RFW#: 007 800 008 DL 009 009 DL 010 Information Matrix: WATER WATER WATER WATER WATER SOIL D.F. 1.00 1.00 2.00 1.00 2 00 1.00 Units: UG/L UG/L UG/L UG/L UG/L UG/KG Level: LOW LOW LOW LOW LOW MED Toluene-d8 98 욧 99 98 81 * % 98 욯 98 욯 Bromofluorobenzene 96 욯 Surrogate 94 욯 96 용 93 95 욯 96 욯 1,2-Dichloroethane-d4 110 ջ Recovery 102 103 108 101 115 욯 Chloromethane 10 U 10 U NA UI 10 NA 1200 U Bromomethane U 10 10 Ħ NΑ 10 U NA 1200 U Vinyl Chloride 10 IJ U 10 NA 10 U NΑ 1200 IJ Chloroethane 10 U 10 U NA 10 U NA 1200 IJ Methylene Chloride_____ 9 BU 9 BU 15 B (I 18 BUIL 16 -B ∪ 680 BJ Acetone IJ 10 10 IJ 20 16 BJ U UI 10 NA 260 BJ Carbon Disulfide 69 E 150 Ε 170 620 IJ 1.1-Dichloroethene U U 5 5 NA 5 UT NA 620 U 1,1-Dichloroethane 5 U 5 U NA 5 U NA 620 U 1,2-Dichloroethene (total)_____ U 5 IJ NA 5 U NA 620 IJ Chloroform U 5 NA 5 IJ NA 620 U 1,2-Dichloroethane 5 U U NA 5 IJ NA 620 U 2-Butanone 10 U 10 IJ NA 10 U NA 1200 U 1,1,1-Trichloroethane____ 5 IJ 5 U NA 5 U NA 620 U Carbon Tetrachloride 5 5 IJ NA 5 U NA 620 U Bromodichloromethane IJ 5 IJ NA 5 U NA 620 U 1.2-Dichloropropane _____ 5 U 5 NA 5 Ħ NA 620 IJ cis-1,3-Dichloropropene 5 U 5 IJ NA 5 Ħ NA 620 U Trichloroethene 5 U NΑ 5 U NA 620 U Dibromochloromethane 5 IJ U NA 5 IJ NA 620 U 1,1,2-Trichloroethane 5 U U NΑ 5 IJ NA 620 U Benzene 5 U U NA 5 IJ NA 620 U Trans-1,3-Dichloropropene U 5 5 U NA 5 U NA 620 IJ Bromoform 5 IJ 5 U NA 5 IJ NA 620 U 4-Methyl-2-pentanone 10 U 10 U NA 10 U NA 1200 U 2-Hexanone IJ 10 NA 10 U NA 1200 U Tetrachloroethene IJ U NΑ 5 U NA 620 U

U

U

NΑ

NA

U

NA

NA

U

620

620 U

IJ

ΤŤ

1,1,2,2-Tetrachloroethane

*= Outside of EPA CLP QC limits.

Toluene

<u>I</u> <u>Bat</u>	<u>umb</u>	<u>971</u>	0 <u>Cl</u>	<u>i : U£</u>	-DE	EST	E	Worder	. <u> 901</u>	raqe: Zp		
			Cust ID:	GW3		GW-	4	GW4	GW5	GW5	FB02	∞
			RFW#: Level:	007 LOW		00: LOW	8	LOW	009 LOW	009 DL LOW	010 MED	·
Chloroben:	zene			5	Ū	5	U	NA	5 U 1	NA	620	U (
Ethylbenze	ene			5	U	5	U	NA	5 U	NA NA		U ,
Styrene				5	U	5	U	NA	5 U	NA		U
Xylene (to	otal)			5	U	5	U	NA	5 U √	NA		U
*= Outside	e of EP	A CLP Q	C limits.						• •		020	U

Report Date: 11/13/97 17:18

Recra LabNet - Lionville Laboratory

Client: USACE-DEAL TEST SITE

RFW Batch Number: 9710L600

Volatiles by GC/MS, HSL List

Work Order: 11901001003 Page: 3a Cust ID: FB03 TB2 SW1 SW2 SD1 SD2 Sample RFW#: 011 012 013 014 015 016 Information Matrix: WATER WATER WATER WATER SOIL SOIL D.F.: 1.00 1.00 1.00 1.00 0.943 1.02 Units: UG/L UG/L UG/L UG/L UG/KG UG/KG Level: LOW LOW LOW LOW LOW LOW Toluene-d8 97 98 99 96 ջ 102 왕 95 용 Bromofluorobenzene Surrogate 92 욯 95 욯 93 92 왕 86 왕 83 ş Recovery 1,2-Dichloroethane-d4 ջ 100 102 と 102 99 身 108 104 왕 Chloromethane 10 U 10 TT 10 IJ 10 U 12 13 Bromomethane _____ U 10 10 IJ 10 U 10 Ū 12 U 13 U Vinyl Chloride_____ Ħ 10 10 U 10 IJ 10 U 12 U 13 U Chloroethane U 10 U 10 1.0 U 10 U 12 U 13 IJ Methylene Chloride В 10 10 В 11 BU 7 -B! (, -5 -5 .BJ BJ : Acetone В 11 10 U 10 U 10 -8 BUL 12 7 ₽J∵ 4 †BiT ∓ Carbon Disulfide U 5 U 5 U IJ 6 [] \ IJ 1,1-Dichloroethene IJ IJ 5 U 6 U 6 IJ 1.1-Dichloroethane U IJ 5 ΙŢ IJ Ħ IJ 1.2-Dichloroethene (total) IJ IJ 5 U IJ 6 U 6 U Chloroform IJ 5 IJ IJ U 6 U U 1,2-Dichloroethane Ħ 5 U 5 IJ 5 U 6 IJ 6 U 2-Butanone 10 IJ 10 U 10 10 U 12 13 IJ 1,1,1-Trichloroethane U 5 TT 5 IJ 5 U 6 6 IJ Carbon Tetrachloride____ Ħ 5 5 U IJ IJ U Bromodichloromethane____ U 5 IJ TI U 6 IJ 6 U 1.2-Dichloropropane_____ IJ 5 IJ ΤŢ 6 U 6 TT cis-1,3-Dichloropropene IJ 5 IJ 6 IJ 6 U Trichloroethene Ħ 5 IJ 11 U 6 U Dibromochloromethane IJ 5 IJ 17 U 6 U 1,1,2-Trichloroethane_____ IJ 5 IJ 5 U 5 IJ 11 6 U Benzene IJ 5 5 U 5 TT IJ 6 U Trans-1,3-Dichloropropene____ U 5 U 5 IJ 5 IJ 6 TI 6 IJ Bromoform 5 IJ 5 5 IJ 5 IJ IJ 6 IJ 4-Methyl-2-pentanone 10 IJ 10 IJ 10 IJ 10 TT 12 U 13 TT 2-Hexanone 10 U 10 IJ 10 U 10 U 12 IJ 13 IJ Tetrachloroethene U Ħ 5 TT 5 6 U 6 IJ 1,1,2,2-Tetrachloroethane 5 U 5 ŢŢ 5 U 5 IJ 6 IJ 6 U Toluene IJ 5 τı 5 U 5 U 6 U 6 IJ *= Outside of EPA CLP QC limits.

<u>I</u> <u>Bat</u> c	<u>amb</u>	<u>971</u>	0	<u>Cli</u>	UE	-DEI	EST	<u>3</u>	Wor.	der.	901	.J03 ,	عد :eye:	ı		
			Cust	ID:	FB03	}	TB2	?	SWI		SW2		SD1		SD2	2
				FW#: vel:	011 LOW	•	012 LOW	2	01 3	1	014 LOW	ł	015 LOW		01 6) I (
Chloroben	zene				5	U	5	U	5	U	5		6	ΙΙ	6	U
Ethylbenz	ene				5	U	5	U	5	U		U	6	_	_	Ū
Styrene					5	U	5	U	5	U	5	U	6			Ū
Xylene (te *= Outside		A CLP Q	C limit	cs.	5	Ŭ	5	U	5	U	5	U	6	Ū		Ü

Recra LabNet - Lionville Laboratory

Volatiles by GC/MS, HSL List

Report Date: 11/13/97 17:18 Client: USACE-DEAL TEST SITE Work Order: 11901001003 Page: 4a RFW Batch Number: 9710L600

	Cust ID:	VBLKFS		VBLKFS BS		VBLKCT		VBLKAI		VBLKAI BS		VBLKAZ	
Sample Information	RFW#: Matrix: D.F.:	97LVN335-N SOIL		97LVN335-N		97LVN337-N		97LVW209-1 WATER		97LVW209-N WATER	IB).	97LVW211-1 WATER	MB1
	Units:			1.0	-	1.0		1.0		1.0	0	1.0	00
	Level:	UG/F MED	(G	UG/k	(G	UG/F	(G	UG/I		UG/I	ı	UG/I	L
	Hevel.	MED		MED		MED		LOW		LOW		LOW	
	Toluene-d8	103	용	100	9	95	 왕	99		103		97	
Surrogate E	Bromofluorobenzene	100	용	96	કૃ	93	욯	96	ક	99	٥٠	95	o Se
	Dichloroethane-d4	116	욯	121	ક	94	ક	111	Q.	105			
=======================================	*************	========	==f1	========	==fl=	========	==f1	========	==f1	=========	=f1:	102	° ==f1
Cnioromethane		_ 260	J	270	JB	130	J	10	U	10	Ŭ	10	U
Bromomethane		_ 780	J	570	JВ	500	J	10	U	10	U	10	Ū
Vinyl Chloride_			U	1200	U	1200	Ū	10	U	10	U	10	Ū
Chloroethane		_ 1200	U	1200	U	1200	Ū	10	U	10	U	10	U
	Lde			810	В	440	J	5		10	В	. 13	_
Acetone		_ 340	J	370	JВ	200	J	3	J	10	U	31	
Carbon Disulfide		_ 620	U	620	U	620	U	5	U	5	υ,	5	U
1,1-Dichloroethe	ene	_ 620	U	109	ક	620	U	5	U	102	ક	5	Ū
1,1-Dichloroetha	ne	_ 620	U	620	U	620	U	5	U	5	U	5	Ū
	ene (total)		U	620	U	620	U	5	Ū	5	U	5	U
Chloroform		620	U	620	U	620	U	5	U	5	U	5	υ
	ine		U	620	U	620	U	5	U	5	U	5	U
2-Butanone		1200	U	1200	U	1200	U	10	U	10	U	10	U
	ethane		Ū	620	Ū	620	U	5	U	5	U	5	U
Carbon Tetrachlo		_ 620	U	620	U	620	U	5	U	5	U	5	U
	hane		U	620	U	620	U	5	U	5	U	5	U
1,2-Dichloroprop		620	Ū	620	Ŭ	620	U	5	Ū	5	U	5	บ
	propene		U	620	U	620	U	5	U	5	U	5	U
Trichloroethene		620	U	97	용	620	U	5	U	91	ક	5	U
Dibromochloromet	hane	_ 620	Ŭ	620	U	620	U	5	Ŭ	5	U	5	Ü
	ethane		U	620	U	620	U	5	U	5	U	5	Ū
Benzene		_ 620	U	111	용	620	U	5	U	117	ક	1	J
	propropene		U	620	U	620	U	5	U	5	Ū	5	U
Bromoform		620	U	620	U	620	U	5	U	5	U	5	U
	none		U	1200	U	1200	U	10	U	10	U	10	Ū
2-Hexanone		1200	U	1200	U	1200	U	10	U	10	U	10	U
Tetrachloroethen	ie	620	Ū	620	U	620	U	5	U	5	υ	5	Ū
	oroethane	-	U	620	U	620	U	5	U	5	ŢΪ	5	U
Toluene		620	U	106	용	620	U	5	U	109	왕	5	Ū
*= Outside of EP	PA CLP QC limits.												

RF" Patc! W mbe	^ <u>710</u> *	Cust ID:	VBLKFS	- ;	VBLKFS BS		Ork VBLKCT	<u>e</u>	r: 010 VBLKAI	<u>'3</u>	VBLKAI BS		VBLKAZ	C۱
		RFW#: Level:	97LVN335-MED	íB1	97LVN335-N MED	IB1	97LVN337-M MED	B1	97LVW209-M LOW	B1	97LVW209-ME LOW	31	97LVW211-M	в1 С
Chlorobenzene_			620	U	105	용	620	U	5	U	100	-	E	U
Ethylbenzene			620	U	620	U	620	U		U		Ū		U
Styrene			620	U	620	U	620	U		Ū	5	_	5	_
<pre>Xylene (total) *= Outside of EPA</pre>	CLP QC	limits.	_ 620	U	620	Ū	620	U	5	U	5	_	5	Ū

Recra LabNet - Lionville Laboratory

Volatiles by GC/MS, HSL List

Report Date: 11/13/97 17:18

Client: USACE-DEAL TEST SITE Work Order: 11901001003 Page: 5a RFW Batch Number: 9710L600 ()

Cust ID	: VBLKGB		
Sample RFW#	: 97LVN338-M	rp 1	
Information Matrix		mT	
D.F.			
Units			
Level	•	.G	
Devel	. LOW		
Toluene-d	3 95	१	
Surrogate Bromofluorobenzen	92	१	
Recovery 1,2-Dichloroethane-de	1 99	१	
	========	:=fl======fl======fl=====fl=====fl=====fl====	
Chioromethane	10	U	:======
Bromomethane	10	Ū	
Vinyl Chloride		Ū	
Chloroethane	10	U	
Methylene Chloride	 5	J	
Acetone	6	J	
Carbon Disulfide	 5	U ,	
1,1-Dichloroethene	 5	U	
1,1-Dichloroethane	5	U	
1,2-Dichloroethene (total)	 5	U	
Chloroform	5	U	
1,2-Dichloroethane	5	U	
2-Butanone	10	U	
1,1,1-Trichloroethane	5	Ŭ	
Carbon Tetrachloride	5	U	
Bromodichloromethane	5	U	
1,2-Dichloropropane	5	U	
cis-1,3-Dichloropropene	5	U	
Trichloroethene	5	U	
Dibromochloromethane	5	U	
1,1,2-Trichloroethane	5	U	
Benzene	5	U	
Trans-1,3-Dichloropropene	5	U .	
Bromoform		U	
4-Methyl-2-pentanone	10	U	
2-Hexanone	10	U	
Tetrachloroethene	5	U	
1,1,2,2-Tetrachloroethane	5	U	
Toluene		U	

I Bate umb 971	0 Cli Cust ID: VBL	aye: ياد	ų vil a				
RFW#: 97LVN338-MB1							-
	Level:	LOW					<u> </u>
Chlorobenzene		5 U					
Ethylbenzene		5 U					
Styrene		5 U					
Xylene (total)		5 U					
*= Outside of EPA CLP Q	C limits.						

2A
WATER VOLATILE SURROGATE RECOVERY

Lab Code: Recra Case No.: ____ SAS No.: ___ SDG No.: ___

	EPA		S1		S2	S3	OTHER	TOT
	SAMPLE 1	10.	(TOL)	#	(BFB)#	(DCE)#		OUT
			=====	==	======		======	====
01	GW3		98		96	110		0
02	GW4		99		94	102		0
03	GW4DL		98		96	103		0
04	GW5		81	*	93	108		1
05	GW5DL		98		95	101		0
06	FB03		97		92	100		0
07	TB2		98		95	102		0
08	SW1		99		93	102		0
09	SW2		96		92	99		0
10	VBLKAI		99		96	111		0
11	VBLKAI	BS	103		99	107		0
12	VBLKAZ		97		95	102		0
			İ					

QC LIMITS

S1	(TOL)	=	Toluene-d8	(88-110)
S2	(BFB)	=	Bromofluorobenzene	(86-115)
S3	(DCE)	=	1,2-Dichloroethane-d4	(76-114)

[#] Column to be used to flag recovery values

^{*} Values outside of contract required QC limits

D Surrogates diluted out

2B SOIL VOLATILE SURROGATE RECOVERY

Lab Code: Recra Case No.: ____ SAS No.: ___ SDG No.: ____

	EPA SAMPLE NO.	S1 (TOL)#	S2 (BFB)#	S3 (DCE)#	OTHER	TOT OUT
02	====================================	102 95 95	86 83 92	108 104 99		0 0 0

QC LIMITS

S1 (TOL) = Toluene-d8 (81-117) S2 (BFB) = Bromofluorobenzene (74-121) S3 (DCE) = 1,2-Dichloroethane-d4 (70-121)

- # Column to be used to flag recovery values
- * Values outside of contract required QC limits
- D Surrogates diluted out

2B SOIL VOLATILE SURROGATE RECOVERY

	EPA		S1		S2		S3	OTHER	TOT
	SAMPLE	NO.	(TOL)	#	(BFB)	#	(DCE)#		OUT
	=========	========	==	===		===	=====		====
01	S7		85		77		100		0
02	S8		101		90		118		0
03	S9		80	*	74		91		1
04	S9RE		71	*	69	*	76		2
05	S10		90		90		114		0
06	S11		90		81		101		0
07	FB02		98		96		115		0
08	VBLKFS		103		100		116		0
09	VBLKFS	BS	100		96		121		0
10	VBLKCT		95		93		94		0
			i					İ	

QC LIMITS

S1	(TOL)	= Toluene-d8	(81-117)
S2	(BFB)	= Bromofluorobenzene	(74-121)
S3	(DCE)	= 1.2-Dichloroethane-d4	(70-121)

- # Column to be used to flag recovery values
- * Values outside of contract required QC limits
- D Surrogates diluted out

3A WATER VOLATILE MATRIX SPIKE RECOVERY

Lab Code: Recra Case No.: ____ SDG No.: ____

MATRIX Spike - EPA Sample No.: <u>VBLKAI</u> Level: (low/med) <u>LOW</u>

COMPOUND	SPIKE ADDED UG/L	SAMPLE CONCENTRATION UG/L	MS CONCENTRATION UG/L	MS % REC #	QC LIMITS REC
1,1-Dichloroethene	50.0	0	51.0	102	61 -145
Trichloroethene	50.0	0	45.6	91	71 -120
Benzene	50.0	0	58.6	117	76 -127
Toluene	50.0	0	54.7	109	76 -125
Chlorobenzene	50.0	0	49.9	100	75 -130

 $[\]mbox{\tt\#}$ Column to be used to flag recovery value with an asterisk

Spike Recovery: 0 out of 5 outside limits

COMMENTS:

1/87 Rev.

^{*} Values outside of QC limits

3B SOIL VOLATILE MATRIX SPIKE RECOVERY

Lab Name: Recra.LabNet Contract: 1901-01-03

Lab Code: Recra Case No.: SAS No.: SDG No.:

MATRIX Spike - EPA Sample No.: <u>VBLKFS</u> Level: (low/med) <u>MED</u>

COMPOUND	SPIKE ADDED	SAMPLE CONCENTRATION UG/KG	MS CONCENTRATION UG/KG	MS % REC #	QC LIMITS REC
COMPOUND	UG/KG	UG/ KG	0G/KG	KEC #	REC
1,1-Dichloroethene	6250	0	6830	109	59 -172
Trichloroethene	6250	0	6070	97	62 -137
Benzene	6250	0	6960	111	66 -142
Toluene	6250	0	6600	106	59 -139
Chlorobenzene	6250	0	6580	105	60 -133

[#] Column to be used to flag recovery value with an asterisk

Spike Recovery: 0 out of 5 outside limits

COMMENTS:

1/87 Rev.

^{*} Values outside of QC limits

Lab Name: Recra.LabNet.Philadelphia Contract: 11901-001-003-0001-00

Lab Code: RECRA Case No.: SAS No.: SDG No.: 10L600

Lab File ID: W101305 Lab Sample ID: 97LVW209-MB1

Date Analyzed: 10/13/97 Time Analyzed: 1235

Matrix: (soil/water) WATER Level: (low/med) LOW

Instrument ID: 1050W

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

1	EPA	LAB	LAB	TIME
	SAMPLE NO.	SAMPLE ID	FILE ID	ANALYZED
- 1		==========	=========	========
	VBLKAIBS	97LVW209-MB1S	W101311	1635
	GW3	9710L600-007	W101313	1822
	GW4	9710L600-008	W101314	1900
	GW5	9710L600-009	W101315	1941
	FB03	9710L600-011	W101316	2021
	TB2	9710L600-012	W101317	2102
	SW1	9710L600-013	W101318	2145
08				
09				
10				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21 22				
23				
24				
25				
26				
27				
28				
29				
30				

COMMENTS:	

page 1 of 1

FORM IV VOA

Lab Name: Recra.LabNet.Philadelphia Contract: 11901-001-003-0001-00

Lab Code: RECRA Case No.: SAS No.: SDG No.: 10L600

Lab File ID: W101406 Lab Sample ID: 97LVW211-MB1

Date Analyzed: 10/14/97 Time Analyzed: 1423

Matrix: (soil/water) WATER Level:(low/med) LOW

Instrument ID: 1050W

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	EPA	LAB	LAB	TIME
	SAMPLE NO.	SAMPLE ID	FILE ID	ANALYZED
01	SW2	9710L600-014	=====================================	1733
02 03	GW4DL	9710L600-008	W101411	1815
03	GW5DL	9710L600-009	W101412	1857
05				
06				
07 08				
09				
10				
11 12				
13	Control of the Contro			
14				
15				
16 17				
18				
19				
20				
21 22	 			
23				
24				
25 26				
27				
28				
29 30				
20				

COMMENTS:	

page 1 of 1

FORM IV VOA

Lab Name: Recra.LabNet.Philadelphia Contract: 11901-001-003-0001-00

Lab Code: RECRA Case No.: SAS No.: SDG No.: 10L600

Lab File ID: N101508 Lab Sample ID: 97LVN337-MB1

Date Analyzed: 10/15/97 Time Analyzed: 1021

Matrix: (soil/water) SOIL Level: (low/med) MED

Instrument ID: 5972NN

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	EPA	LAB	LAB	TIME
	SAMPLE NO.	SAMPLE ID	FILE ID	ANALYZED
01	=====================================	9710L600-003	N101509	1114
02	BURL	77101000-003	MICIOUS	1114
03				
04				
05 06				
07				
08				
09				
10 11				
12				
13				
14				
15 16				
17				
18			-	
19 20				
20 21				
22				
23				
24				
25 26				
27				
28				
29				
30				

COMMENTS:		

page 1 of 1

FORM IV VOA

Lab Name: Recra.LabNet.Philadelphia Contract: 11901-001-003-0001-00

Lab Code: RECRA Case No.: SAS No.: SDG No.: 10L600

Lab File ID: N101405 Lab Sample ID: 97LVN335-MB1

Date Analyzed: 10/14/97 Time Analyzed: 1013

Matrix: (soil/water) SOIL Level: (low/med) MED

Instrument ID: 5972N

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	EPA	LAB	LAB	TIME
	SAMPLE NO.	SAMPLE ID	FILE ID	ANALYZED
				AWADIZED
01	S8	9710L600-002	N101411	1358
02	S7	9710L600-001	N101413	1512
03	S9	9710L600-003	N101413	1551
04	S10	9710L600-004	N101415	1630
05	SII	9710L600-005	N101416	1709
06	FB02	9710L600-010	N101417	1748
07	VBLKFSBS	97LVN335-MB1S	N101417 N101418	1827
08		J / EVIVOUS METE	14101410	1027
09				
10				
$\overline{11}$				
12				
13				
14				
15				
16				
17		77.44.4		
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28	4,0,48,000,000,000,000,000			
29				
30				

COMMENTS:	
	_

page 1 of 1

FORM IV VOA

Lab Name: Recra.LabNet.Philadelphia Contract: 11901-001-003-0001-00

Lab Code: RECRA Case No.: SAS No.: SDG No.: 10L600

Lab File ID: N101517 Lab Sample ID: 97LVN338-MB1

Date Analyzed: 10/15/97 Time Analyzed: 1628

Matrix: (soil/water) SOIL Level: (low/med) LOW

Instrument ID: 5972N

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	EPA	LAB	LAB	TIME
	SAMPLE NO.	SAMPLE ID	FILE ID	ANALYZED
				========
01	SD1	9710L600-015	N101518	1703
02	SD2	9710L600-016	N101519	1738
03		3,102000 010		1 7 7 7
04				
05				
06				
07				
08				
09				
10				
11				
12				
13				
14				
15				
16				
17		<u> </u>		
18				
19				
20				
21				
22			. - i	
23	<u> </u>			
24				
25			-	
26				
27				
28				
29			,	
30				

COMMENTS:		

page 1 of 1

FORM IV VOA

1EVOLATILE ORGANICS ANALYSIS SHEET TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

|S7

Lab Name: Recra.LabNet Work Order: 11901001003

Client: <u>USACE-DEAL TEST SITE</u>

Matrix:

SOIL

Lab Sample ID: <u>9710L600-001</u>

Sample wt/vol: 11.6 (g/mL) G

Lab File ID: <u>n101413</u>

Level: (low/med) MED

Date Received: <u>10/02/97</u>

% Moisture: not dec. 63

Date Analyzed: 10/14/97

Column: (pack/cap) CAP

Dilution Factor: 0.862

CONCENTRATION UNITS:

Number TICs found: 6

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	ALKANE	25.405		==== J
2.	ALKANE	25.622	•	J
3.	ALKANE	26.392	2000	J
4.	ALKANE	26.451	3000	J
5.	ALKANE	26.530	4000	J
6.	ALKANE	26.964	3000	J
				i

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

ĺ	S8

CLIENT SAMPLE NO.

Lab Name: Recra.LabNet

Work Order: <u>11901001003</u>

Client: <u>USACE-DEAL TEST SITE</u>

Matrix: SOIL Lab Sample ID: 9710L600-002

Sample wt/vol: $\underline{11.7}$ (g/mL) \underline{G} Lab File ID: $\underline{n101411}$

Level: (low/med) <u>MED</u> Date Received: $\underline{10/02/97}$

% Moisture: not dec. 22 Date Analyzed: 10/14/97

Column: (pack/cap) CAP Dilution Factor: 0.855

CONCENTRATION UNITS:

Number TICs found: 1 (ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
=======================================	=======================================	======		=====
1.	SILANE	12.431	900	NJ
				<u> </u>

VOLATILE ORGANICS ANALYSIS SHEET TENTATIVELY IDENTIFIED COMPOUNDS

	7.00	 	
S9			

Lab Name: Recra.LabNet Work Order: 11901001003

Client: <u>USACE-DEAL TEST SITE</u>

Matrix:

SOIL

Lab Sample ID: <u>9710L600-003</u>

CLIENT SAMPLE NO.

Sample wt/vol: $\underline{12.0}$ (g/mL) \underline{G}

Lab File ID: n101414

Level: (low/med) MED

Date Received: <u>10/02/97</u>

Date Analyzed: 10/14/97

Column: (pack/cap) CAP

Dilution Factor: 0.833

CONCENTRATION UNITS:

Number TICs found: 1

% Moisture: not dec. ___59

(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
===========	=======================================		==========	====
1. 79209	ACETIC ACID, METHYL ESTER	8.964	1000	NJ
				İ

VOLATILE ORGANICS ANALYSIS SHEET TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT	SAMPLE	NO.	

|S10

Lab Name: Recra.LabNet Work Order: 11901001003

Client: <u>USACE-DEAL TEST SITE</u>

Matrix:

SOIL

Lab Sample ID: <u>9710L600-004</u>

Sample wt/vol: $\underline{10.7}$ (g/mL) \underline{G} Lab File ID: $\underline{n101415}$

Date Received: 10/02/97

Level: (low/med) MED

% Moisture: not dec. 20

Date Analyzed: 10/14/97

Column: (pack/cap) CAP

Dilution Factor: 0.935

CONCENTRATION UNITS:

Number TICs found: 1

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
==============		======	==========	
1.	SILANE	12.435	800	NJ

VOLATILE ORGANICS ANALYSIS SHEET TENTATIVELY IDENTIFIED COMPOUNDS CLIENT SAMPLE NO.

S11			

Lab Name: Recra.LabNet Work Order: 11901001003

Client: <u>USACE-DEAL TEST SITE</u>

Matrix:

SOIL

Lab Sample ID: <u>9710L600-005</u>

Sample wt/vol: 11.8 (g/mL)

Lab File ID: <u>n101416</u>

Level: (low/med) MED

Date Received: 10/02/97

% Moisture: not dec. 47

Date Analyzed: 10/14/97

Column: (pack/cap) CAP

Dilution Factor: 0.847

CONCENTRATION UNITS:

Number TICs found: 1

(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
	=======================================	======	=======================================	=====
1.	UNKNOWN	5.812	2000	J
				İİ

VOLATILE ORGANICS ANALYSIS SHEET TENTATIVELY IDENTIFIED COMPOUNDS

	CLIENT	SAMPLE	NO.	
ı				
	GW3			

Lab Name: Recra.LabNet Work Order: 11901001003

Client: <u>USACE-DEAL TEST SITE</u>

Matrix: WATER___ Lab Sample ID: <u>9710L600-007</u>

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: W101313

Level: (low/med) LOW Date Received: <u>10/02/97</u>

% Moisture: not dec. _____ Date Analyzed: 10/13/97

Column: (pack/cap) CAP Dilution Factor: 1.00

CONCENTRATION UNITS:

Number TICs found: 0 (ug/L or ug/Kg) <u>UG/L</u>

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
=======================================	=======================================	======	=========	=====
1.				
				lI

1E VOLATILE ORGANICS ANALYSIS SHEET TENTATIVELY IDENTIFIED COMPOUNDS

- 1	1	
- 1	1	
- 1	GW4	
. !	1	
- 1		

Lab Name: Recra.LabNet Work Order: 11901001003

Client: <u>USACE-DEAL TEST SITE</u>

Matrix:

WATER

Lab Sample ID: <u>9710L600-008</u>

CLIENT SAMPLE NO.

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: W101314

Level: (low/med) LOW

Date Received: <u>10/02/97</u>

% Moisture: not dec. _____

Date Analyzed: 10/13/97

Column: (pack/cap) CAP

Dilution Factor: 1.00

CONCENTRATION UNITS:

Number TICs found: _0

CAS NUMBER	COMPOUND NA	AME RT	EST. CONC.	Q
=======================================	======================================		=======================================	=====
1.				

VOLATILE ORGANICS ANALYSIS SHEET TENTATIVELY IDENTIFIED COMPOUNDS

-	GW5			
1				

Lab Name: Recra.LabNet Work Order: 11901001003

Client: USACE-DEAL TEST SITE

Matrix:

WATER___

Lab Sample ID: <u>9710L600-009</u>

CLIENT SAMPLE NO.

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: W101315

Level: (low/med) LOW

Date Received: <u>10/02/97</u>

% Moisture: not dec. _____

Date Analyzed: 10/13/97

Column: (pack/cap) CAP

Dilution Factor: 1.00

CONCENTRATION UNITS:

Number TICs found: 0

CAS NUMBER	COMPOUND NAME	R T	 EST. CONC.	 Q
		======		====
1.		ĺ		1
				l

CLIENT SAMPLE NO.

VOLATILE ORGANICS ANALYSIS SHEET TENTATIVELY IDENTIFIED COMPOUNDS

FB02			

Lab Name: Recra.LabNet Work Order: 11901001003

Client: <u>USACE-DEAL TEST SITE</u>

Matrix:

SOIL

Lab Sample ID: <u>9710L600-010</u>

Sample wt/vol: $\underline{10.0}$ (g/mL) \underline{G} Lab File ID: $\underline{n101417}$

Date Received: 10/02/97

Level: (low/med) MED

% Moisture: not dec. 100

Date Analyzed: 10/14/97

Dilution Factor: 1.00

Column: (pack/cap) CAP

CONCENTRATION UNITS:

Number TICs found: 0

-						
	CAS NUMBER	COMPOUND	NAME	RT	EST. CONC.	Q
	=======================================	=======================================	=========		=========	====
	1.					
1						

VOLATILE ORGANICS ANALYSIS SHEET TENTATIVELY IDENTIFIED COMPOUNDS

1		
1		
CLIENT	SAMPLE	NO.

Lab Name: Recra.LabNet Work Order: 11901001003

	FB03		
1	1		

Client: <u>USACE-DEAL TEST SITE</u>

Matrix:

WATER

Lab Sample ID: <u>9710L600-011</u>

Sample wt/vol: $\underline{5.00}$ (g/mL) $\underline{\text{ML}}$ Lab File ID: $\underline{\text{W101316}}$

Date Received: 10/02/97

Level: (low/med) LOW

% Moisture: not dec. _____

Date Analyzed: 10/13/97

Column: (pack/cap) CAP

Dilution Factor: 1.00

CONCENTRATION UNITS:

Number TICs found: 0

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
===========	=======================================	======	=======================================	=====
1.			1	İ
				İİ

VOLATILE ORGANICS ANALYSIS SHEET TENTATIVELY IDENTIFIED COMPOUNDS

	CLIENT	SAMPLE	NO.	
1				
j	TB2			

Lab Name: Recra.LabNet Work Order: 11901001003

Client: <u>USACE-DEAL TEST SITE</u>

Matrix: WATER

Lab Sample ID: <u>9710L600-012</u>

Lab File ID: W101317

Level: (low/med) LOW

Date Received: 10/02/97

% Moisture: not dec. _____

Date Analyzed: 10/13/97

Column: (pack/cap) CAP

Dilution Factor: 1.00

CONCENTRATION UNITS:

Number TICs found: 0

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
==========	=======================================	======	==========	=====
1.		İ		i i
				İİ

VOLATILE ORGANICS ANALYSIS SHEET TENTATIVELY IDENTIFIED COMPOUNDS

l		
į	SW1	

Lab Name: Recra.LabNet Work Order: 11901001003

~ 7				
ויז	 en	+	•	
-1	 c_{11}	·	•	

USACE-DEAL TEST SITE

Matrix:

WATER

Lab Sample ID: <u>9710L600-013</u>

CLIENT SAMPLE NO.

Sample wt/vol: $\underline{5.00}$ (g/mL) $\underline{\text{ML}}$ Lab File ID: $\underline{\text{W101318}}$

Level: (low/med) <u>LOW</u>

Date Received: <u>10/02/97</u>

% Moisture: not dec. _____

Date Analyzed: 10/13/97

Column: (pack/cap) CAP

Dilution Factor: 1.00

CONCENTRATION UNITS:

Number TICs found: 0

CAC NUMBER	COMPOUND NAME	pm	ECE CONC	
CAS NUMBER	COMPOUND NAME	R T	EST. CONC.	l Q l
_==========		======	=========	====
1.				Ì

VOLATILE ORGANICS ANALYSIS SHEET TENTATIVELY IDENTIFIED COMPOUNDS

i	SW2
	SW2

Lab Name: Recra.LabNet Work Order: 11901001003

Client: <u>USACE-DEAL TEST SITE</u>

Matrix: WATER

Lab Sample ID: <u>9710L600-014</u>

CLIENT SAMPLE NO.

Sample wt/vol: <u>5.00</u> (g/mL) <u>ML</u> Lab File ID: <u>W101410</u>

Level: (low/med) LOW

Date Received: 10/02/97

% Moisture: not dec. _____

Date Analyzed: 10/14/97

Column: (pack/cap) CAP

Dilution Factor: 1.00

CONCENTRATION UNITS:

Number TICs found: 0

(ug/L o	r ug/Kg)	UG/L
---------	----------	------

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	0
===========	=======================================	======	=========	====
1.				i i
				İİ

VOLATILE ORGANICS ANALYSIS SHEET TENTATIVELY IDENTIFIED COMPOUNDS

	CLIENT	SAMPLE	NO.	
1				
	SD1			

Lab Name: Recra.LabNet Work Order: 11901001003

Client: <u>USACE-DEAL TEST SITE</u>

Matrix: <u>SOIL</u>

Lab Sample ID: <u>9710L60</u>0-015

Sample wt/vol: $\underline{5.30}$ (g/mL) \underline{G} Lab File ID: $\underline{n101518}$

Level: (low/med) LOW

Date Received: 10/02/97

% Moisture: not dec. ___24

Date Analyzed: <u>10/15/97</u>

Column: (pack/cap) CAP

Dilution Factor: 0.943

CONCENTRATION UNITS:

Number TICs found: 0

CAS NUMBER	COMPOUND NAI	ME RT	EST. CONC.	 Q
===========	=======================================			=====
1.				
]		

VOLATILE ORGANICS ANALYSIS SHEET TENTATIVELY IDENTIFIED COMPOUNDS

١			
!			
ı	SD2		
ï			

Lab Name: Recra.LabNet Work Order: 11901001003

Client: <u>USACE-DEAL TEST SITE</u>

Matrix:

SOIL

Lab Sample ID: <u>9710L600-016</u>

CLIENT SAMPLE NO.

Sample wt/vol: $\underline{4.90}$ (g/mL) \underline{G}

Lab File ID: <u>n101519</u>

Level: (low/med) LOW

Date Received: 10/02/97

% Moisture: not dec. ___21

Date Analyzed: 10/15/97

Column: (pack/cap) CAP

Dilution Factor: 1.02

CONCENTRATION UNITS:

Number TICs found: _0

(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
=======================================	=======================================		===========	=====
1.				
		<u> </u>		[]

VOLATILE ORGANICS ANALYSIS SHEET TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT	SAMPLE	NO.	
VBLKFS			

Lab Name: Recra.LabNet Work Order: 11901001003

Client: <u>USACE-DEAL TEST SITE</u>

Matrix: SOIL

Lab Sample ID: 97LVN335-MB1

Sample wt/vol: 10.0 (g/mL) G Lab File ID: n101405

Level: (low/med) MED

Date Received: 10/14/97

% Moisture: not dec. ____0

Date Analyzed: 10/14/97

Column: (pack/cap) CAP

Dilution Factor: 1.00

CONCENTRATION UNITS:

Number TICs found: 0

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	 Q
===========	=======================================	======	=========	=====
1.				
				ii

VOLATILE ORGANICS ANALYSIS SHEET TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT	SAMPLE	NO.	

1 711 111 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	TOURTELLED	COLLECOMOD	
			VBLKCT
Lab Name: <u>Recra.LabNet</u>	Work	Order: <u>11901001003</u>	

Client: <u>USACE-DEAL TEST SITE</u>

Matrix: SOIL Lab Sample ID: 97LVN337-MB1

Sample wt/vol: $\underline{4.00}$ (g/mL) \underline{G} Lab File ID: $\underline{n101508}$

Level: (low/med) <u>MED</u> Date Received: $\underline{10/15/97}$

% Moisture: not dec. 0 Date Analyzed: 10/15/97

Column: (pack/cap) CAP Dilution Factor: 1.00

CONCENTRATION UNITS:

Number TICs found: 0 (ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND	NAME	RT	EST. CONC.	Q
=======================================	=======================================	=========	======	==========	=====
1.					

VOLATILE ORGANICS ANALYSIS SHEET TENTATIVELY IDENTIFIED COMPOUNDS

VBLKAI		

Lab Name: Recra.LabNet Work Order: 11901001003

Client: <u>USACE-DEAL TEST SITE</u>

Matrix: WATER

Lab Sample ID: 97LVW209-MB1

CLIENT SAMPLE NO.

Sample wt/vol: $\underline{5.00}$ (g/mL) \underline{ML} Lab File ID: $\underline{W101305}$

Level: (low/med) LOW

Date Received: 10/13/97

% Moisture: not dec. _____

Date Analyzed: 10/13/97

Column: (pack/cap) CAP

Dilution Factor: 1.00

CONCENTRATION UNITS:

Number TICs found: 0

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
=======================================		== ======	==========	=====
1.				

1E VOLATILE ORGANICS ANALYSIS SHEET TENTATIVELY IDENTIFIED COMPOUNDS

	_
VBLKAZ	
VBLICAZ	

Lab Name: Recra.LabNet Work Order: 11901001003

Client: <u>USACE-DEAL TEST SITE</u>

Matrix:

WATER

Lab Sample ID: 97LVW211-MB1

CLIENT SAMPLE NO.

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: W101406

Level: (low/med) <u>LOW</u>

Date Received: <u>10/14/97</u>

% Moisture: not dec. _____

Date Analyzed: 10/14/97

Column: (pack/cap) CAP

Dilution Factor: 1.00

CONCENTRATION UNITS:

Number TICs found: 1

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
=======================================		======	========	=====
1.	SILOXANE	22.700	3	J
				j j

VOLATILE ORGANICS ANALYSIS SHEET TENTATIVELY IDENTIFIED COMPOUNDS

	CLIENT	SAMPLE	NO.	
 z	/BI.KGB			

Lab Name: Recra.LabNet Work Order: 11901001003

Client: <u>USACE-DEAL TEST SITE</u>

Matrix: SOIL Lab Sample ID: 97LVN338-MB1

Sample wt/vol: $\underline{5.00}$ (g/mL) \underline{G} Lab File ID: $\underline{n101517}$

Level: (low/med) LOW

Date Received: <u>10/15/97</u>

% Moisture: not dec. ____0

Date Analyzed: 10/15/97

Column: (pack/cap) CAP

Dilution Factor: 1.00

CONCENTRATION UNITS:

Number TICs found: 1

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
=======================================	=======================================	======	==========	====
1.	SILANE	12.435	10	NJ
	Part to the state of the state	l		lİ

Recra LabNet - Lionville Laboratory VOA ANALYTICAL DATA PACKAGE FOR USACE-DEAL TEST SITE

DATE RECEIVED: 10/02/97 RFW LOT # :9710L600

CLIENT ID	RFW #		MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
S7	001	M1	S	97LVN335	10/01/97	N/A	10/14/97
S8	002	M1	s	97LVN335	10/01/97	N/A	10/14/97
S9	003	M1	S	97LVN335	10/01/97	N/A	10/14/97
S9	003	N1	s	97LVN337	10/01/97	N/A	10/15/97
S10	004	M1	s	97LVN335	10/01/97	N/A	10/14/97
S11	005	M1	S	97LVN335	10/01/97	N/A	10/14/97
GW3	007		W	97 LVW 209	10/01/97	N/A	10/13/97
GW4	008		W	97 LVW209	10/01/97	N/A	10/13/97
GW4	008	D1	W	97LVW211	10/01/97	N/A	10/14/97
GW5	009		W	97LVW209	10/01/97	N/A	10/13/97
GW5	009	D1	W	97LVW211	10/01/97	N/A	10/14/97
FB02	010	M1	s	97LVN335	10/01/97	N/A	10/14/97
FB03	011		W	97LVW209	10/01/97	N/A	10/13/97
TB2	012		W	97LVW209	10/01/97	N/A	10/13/97
SW1	013		W	97LVW209	10/01/97	N/A	10/13/97
SW2	014		W	97LVW211	10/01/97	N/A	10/14/97
SD1	015		s	97LVN338	10/01/97	N/A	10/15/97
SD2	016		S	97LVN338	10/01/97	N/A	10/15/97
AB QC:							
VBLKFS	MB1		S	9 7LVN335	N/A	N/A	10/14/97
VBLKFS	MB1 BS		S	97LVN335	N/A	N/A	10/14/97
VBLKCT	MB1		S	97 LVN33 7	N/A	N/A	10/15/97
VBLKAI	MB1		W	97LVW209	N/A	N/A	10/13/97
VBLKAI	MB1 BS		W	97LVW209	N/A	N/A	10/13/97
VBLKAZ	MB1		W	97LVW211	N/A	N/A	10/14/97
VBLKGB	MB1		S	97 LVN338	N/A	N/A	10/15/97

RECRA LabNet Use Only

Custody Transfer Record/Lab Work Request

Client USA	cE-	DEAR TEST SITE			Refrige	rator #		Т 7	a	7									
Est. Final Pro	oj. Sam	pling Date		-	#/Type Container Li			Ba	110	100		+	12		-				
Project #	2300	164 -001-0008-0	ا) نهو	rg)	Solid				IAM				181		Per	\longrightarrow			
Project Conta	act/Pho	ne # 6. Buchtaltal - 583	а		Volume Liquid			40M	16	14		1	1/2		14				
RECRA Proje		Preserv	ativas	Solid	FOML	SOHL	<u>કા)ના</u>			802		1		-	-+				
OC SWAY	L De	I SPEC TAT 30 DA	IY		Freserv	auves		chfort Her	ORG/	ANIC			HNO		HNO				
		MIKERM			ANALY: REQUE		-	VOA		Pest PC6	Herb		A B	ORG Z	NETHES				
MATRIX			_			l				а и	+1-	4-1-1	DS NE		1.				
CODES:	Lab			trix IC		_		 		Ŧ.	- • -	RECRA			Onl ·		1		
S - Solt SE - Sediment	ID	Client ID/Description		osen /\	Matrix	Date Collected	Time Collected	OC 24H	X235H	CLOSH			1/5						
80 - Solid			(/)			Solveried Colle		3	3	3	3								
St Sludge W - Water	201	57	MS	MSD				2	8	0			MACA	IJ					
O - Oil	ού Γ		X	X_{\perp}	7	10-1-97	1105	X	X	X			TX						
A - Alr DS - Drum	007	58			5	j	1125	X	X	X			10	 		\rightarrow			
Solids DL - Drum	003	59			.5		0930					+	+	 	 	-		———	
Liquids	09	510			5				$\overline{\mathbf{C}}$			 	$+\times$	ļ					
L - EP/TCLP Leachate	m5			-			0945	$\langle \cdot \rangle$	<u>X</u>	X			$\perp \!\!\! \! \! \! \! \! \! \! \! \! \! \! \! \! \! \! \! \!$				a>		
WI - Wipe		5//				_X_	0935	X	Δ	X			$1\times$	'		加平	-		
X - Other F - Fish	α_{ζ}	GW2			W	9/30/97	1555	X	X	X	Mm /		TX	1	V				_
ļ	00/	GW3			W	10 1/27	1140	X	X	\overline{V}	10/2	7	10	+	2				
	QX	GW4			W	7/11	0955			\ominus		 	10	 	//				
ļ	200	6W5			W			$\langle \cdot \rangle$	\bigcirc	Θ			ĻŽ		X				
Ī	1						1150		$X \mid$	Δ			$\perp X$						
FIELD DEBSON	MEL CO	FBO2 MPLETE ONLY SHADED AREAS	1	, <u>i</u>	UX		1125	$X \perp$											
Special Instruct		MPLETE UNLY SHADED AREAS		j D	ATE/REVI	SIONS	T- 0	11	1.1	_		FON Sunf	<u> </u>						
•		Malen Prairie		-		ITCIVID.	line C	olle	131	01	VOAs	OV Sunt	Le_	İ	RECRA	LabN	let Use	Only	
_		MANUE BLANK		_										mples w	vere:	_ (COC Ta	ne was	
T.1.tt -	1190	1-001-003-001-				XX Roc	fa mo	ob. k	60	4),		ample	1)	Shipped	1 1/0r	r 1	1) Prese	η /⊅ο ς Οι	iler
100 H -	11 10	1-001-003-0001-	oυ			3/4-1/2	0 11	100	<u>. 100</u>	ЩС	tors	ample	Ha Air	ind Deliv	vered	1343	Packag	(Y) or okyannon (N
						016	RCC	WO	Kess				2)	Ambient	o Chill		2) Unbro Package	okaymon (Y)or	Outer N
				_		Mu	2 VOX	ViA	15 K	loca	1 For	Saults	3)		d in Goo	_		n on Sa	l l
•	۷١	Littered note		= 00/2 2 VOA VIALS Roid for Samples							- Co	ndition (Y of	N)		Y or			
Relinquished	$-\frac{Q}{R}$	ole 1 #0017-75", #0 131					WJ, L	10,0	710				- 4) Dr	Labels I	ndicate ecerved			ken on	
by	ne	by Date Time		quishe by	d	Received	٥	ate	Tim	ار	Discrenanc	ies Between		openy n	A) ot	NI C		Y or	\sim
But .	,			-,	+	by					Samples La	ables and	5)	_	ノ d Within	(JUC Re Jpon S∕ r	cord Pre	ec't
anu (1 A	10.1.97 1330									COC Recor	rd Y or N	Ho	lding Jic	1			or	t t
PAEX	A. 1	Talun 10-297/09301									,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	*			y) or	N			l
· - 1)	/						—— Į			JL									Ì

RECRA La	abNet	Use	Only
97m	16	~??	

Custody Transfer Record/Lab Work Request



Client V.SA	E-D	EM TE	ST 3/7	E			Refrige	rator #		17	T -3	T -								
Est. Final Pro	ol. Sami	olina Date	10-1-	97						300	TAM	1	 		13		2			
Project # 🕰	388/	184-0	W- 13	22-00	(A)	-L	#/Type Container Solid					1AM	 		1 721		1700			
Project Conta							Volume Liquid				14	14	\	 	140	 	14		\vdash	
RECRA Project Manager M. Young									Solid	Went.	3200	SOLM		1	802	 	14		 	
ac	De	_	1827	2 .	//		Preserv	atives		437	t T				HARZ		HUS		 	
Date Rec'd _			Date Due	5 DO	(-)		ANALY			en _{sch}	0.10				INC	RG	2 2			
Account #							REQUE	STED		V V	BNA	Pest/ PCB	He d		够	Z	\$ 6			
MATRIX					Mati	rix		T	1	1			1	PECDA	કાર્ટ્	abyve) Use Only (h				
CODES: S - Soil	Lab	CII	ent ID/Descri	m#!	QC			Date	Time	I	+	3	· ·	necha	Labyer	Use C		_ 		
SE - Sediment	ID	Cili	ant ib/Descri	ption	Chos		Matrix		Collected	06347	5		100		1 8	l	MENAX			
SO - Solid					MS	uen l				🧿	H5K90	H&090			13)	[일			
SL - Sludge W - Water	$\cap \mathcal{U}$	FBO	₹		1		, ,	-	70570	1.3	-9	6			13		18			
O - Oil A - Alr	217				+		ω_{-}	10-1-97		LX	X	X					X			
DS - Drum	US	TBQ	<u>'</u>		1		W		1320	X										
Solids DL - Drum	0/2	5W/					W		0715	X	X	X		T -	1			241		
Liquids L - EP/TCLP	09	SWa	2		1 1		W		0740	V	V	>		 	+		21	- -		
Leachate	P15	5DI					2	1	1	 	(``	$\overline{\mathbf{C}}$		 		ļ				
WI - Wipe X - Other	niz	< N -)		1			1	0720			X			$\perp X$					
F - Fish	ai	219	`		+		5,	V	0745	X	X	X			IX					
ď		- Chil	今	······································	1		44	10-1-91	1555								X			_
Į.		GW	<u> </u>				ω	l	1140	1					\dagger		$\langle \rangle$			
	219	GW	4				47.		094		$\neg \neg$			 	+	-				
k	270	5/11			1-1		1.		OF					+	-		\leftarrow			
FIELD PERSON	NEL: CO	MPLETE ON	LY SHADED	AREAS		DAT	F/REVI	SIONS	14/02	77							X			
Special Instruct	lons:								K dis	10t	Colon	ر در	all are	idua			RECRAI	abNet U	so Only	
	114	0/ - 1						C	7	1	<u> </u>	ر ته	crypic	UCIUME				.abivet U		
Job# =	1170	11-001-	-003~	0001-	-00			2. Ł.O /	Samp	e od	20.				San	nples w	ere:	COC	Tape was:	
	,						3- 16Al Socce in Volas Car Sun Dies							Han	onippea Id Delivi	ered	1) Prè Pa ⊀ ka	sent on Or	iter N	
									1-05 DO									CALLON	groken on t	Outer
_								TE/REVISIONS: MO2-77 - OALS did not receive sample volume 2 for sample 006 3- Kal space in Volume for samples 4 Ool-005, 010							2) A	2) Ambient or Chille ackage Y or N				
_								5							3) F	Received	yn 🗫		sent on Sa	
							ε	S							1 /	acous in	(0)	_ '	Y or	N
Relinquished	Red	celved	Det-	<u> </u>	Relinqu	uished	T	Receive							Pro	MW)	eserved	Sampl	oroken on le Y or	N
by		by	Date	Time	b			by	ا ا	ate	Tim	ne 📗	Discrepano	ies Between		No	Y or N		Record Pre	l l
Him	, 1		10/1/47	1330			Samples I						Samples La	es Lables and 5) Received Within Upon Sample Rec't						ec't
ZIE .	14	1	77		 -	····	+						NOTES:	O N	Hold		nes Yor N		Y or	И
ect x	-WY	me	(U-297	0930					L_											

																			0.7
9710			Custo	dy Tra	ansf	er R	ecor	d/L	_ab	W	'ork	Re	que	est			S		RECRA abNet
Client US	ACE	-Deal	Test Site			erator #			т-	Τ			-						
Est. Final Pr Project # Project Conf RECRA Proj	es lesson	10 All				Container	Liquid Solid Liquid Solid							1 <i>P</i> /					
Q&		7	_ TAT		rieser	vatives		 	OBC	ANIC				HNO					
Date Rec'd 70-2-91 Date Due						SES —	-	VOA	ANB ANB	Pest/ PCB	Herb			Weight Z	RG Z				
MATRIX CODES: S - Soil SE - Sediment SO - Solid	Lab ID	Clie	ent IC/Description	Matrix QC Chosen (🗸)	Matrix	Date Collected	Time Collected				Į.	RI	ECRA	ab ver	Use O	nly	+		
SL - Studge W - Water O - Oil A - Air	031	SW2		MS MSD	Ų	10197	0740							X					
DS - Drum Solids DL - Drum Liquids L - EP/TCLP																			
Leachate WI - Wipe X - Other F - Fish																			
						ļ <u></u>													
FIELD PERSO	NNEL: COI	MPLETE ON	LY SHADED AREAS		ATE/REV	I ISIONS:	<u> </u>							<u> </u>					
Special Instruc	ctions:					12								Sar	R nples we		LabNet U	se On Tape w	

*

•					1				HECHA La	DNet Use Only
				-	3				Samples werd: 1) Shipped or Hand Delivered	COC Tape was: N Present on Outer Package Y or N
					4	•			2) Ambient or Chilled	72) Unbroken on Outer Package Y or N
					5 6				3) Received in 36 th Condition Y by N	Yresent on Sample Y or N 4) Unbroken on
Relinquished by	Received	Date	Time	Relinquished by	Received by	Date	Time	Discrepancies Between	Propert Preserved Y or N	Sample Y or N COC Record Present
ed by	tolin	10-291	0445					Samples Lables and COC Record? Y of N NOTES:	Fielding Times Y or N	Upon Sample Rec't Y or N
		1	L]			<u></u>			<u> </u>	

Virtual Laboratories Everywhere

Recra LabNet Philadelphia Analytical Report

Client: USACE-DEAL TEST SITE

W.O. #: 11901-001-003-0001-00

RFW#: 9710L573

Date Received: 10-01-97

GC/MS VOLATILE

The set of samples consisted of four (4) water samples and six (6) soil samples collected on 09-30-97.

The samples were analyzed according to criteria set forth in SW 846 Method 8260A for TCL Volatile target compounds on 10-12,13,14-97.

The following is a summary of the QC results accompanying these sample results and a description of any problems encountered during their analyses:

- 1. The cooler temperature upon receipt has been recorded on the chain-of-custody.
- 2. The required holding time for analysis was met.
- 3. All soil samples were methanol-preserved upon collection; consequently, they have been reported as medium level analyses.
- 4. A non-target compound was detected in sample S4.
- 5. All surrogate recoveries were within EPA QC limits.
- 6. All matrix spike recoveries were within EPA QC limits.
- 7. All blank spike recoveries were within EPA QC limits.
- 8. The method blanks contained the common contaminants Methylene Chloride and Acetone at levels less than 2x the CRQL.
- 9. The pH of samples GW1 and GW2 exceeded 2.0, indicating that they may not have been properly preserved.

J. Michael Taylor

Vice President and Laboratory Manager

Lionville Analytical Laboratory

11-1391

Date

mmz/voa/10-573v.cn

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 41 pages.

GLOSSARY OF VOA DATA

Compound was analyzed for but not detected. The associated numerical value is the estimated

DATA QUALIFIERS

U

		sample quantitation limit which is included and corrected for dilution and percent moisture.
J		Indicates an estimated value. This flag is used under the following circumstances: 1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; or 2) when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. For example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
В	=	This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.
E	=	Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
Ð	=	Identifies all compounds identified in an analysis at a secondary dilution factor.
I	=	Interference.
NQ	=	Result qualitatively confirmed but not able to quantify.
N	=	Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the N code is not used.

This flag is used for a TIC compound which is quantified relative to a response factor generated

from a daily calibration standard (rather than quantified relative to the closest internal standard).

Additional qualifiers used as required are explained in the case narrative.

mmz\10-94\gloss.voa

 \mathbf{X}

Y

code is not used.



GLOSSARY OF VOA DATA

ABBREVIATIONS

BS Indicates blank spike in which reagent grade water is spiked with the CLP matrix spike solutions

and carried through all the steps in the method. Spike recoveries are reported.

BSD Indicates blank spike duplicate.

Indicates matrix spike. MS

MSD Indicates matrix spike duplicate.

DL Suffix added to sample number to indicate that results are from a diluted analysis. =

NANot Applicable.

DF Dilution Factor.

NR Not Required.

SP, Z Indicates Spiked Compound.



 $mmz\\10-94\\gloss.voa$

Re Lal - vil abo ry

Volatiles by GC/MS, HSL List Report Date: 11/13/97 08:37

Client: USACE-DEAL TEST SITE Work Order: 11901001003 Page: 1a

RFW Batch Number: 9710L573	Client:				IS, HSL Li 'E Wo		der. 1190		eport Dat 03 Paqe:		/13/97 08	3:37
						<u> </u>	<u>uci. 1190</u>	10010	<u>03 Paqe:</u>	<u></u>		
Cust ID:	S1	L	S2	!	S3	;	S4	Ŀ	S5		s6	5
Sample RFW#:	001	L	002	!	003	i	004	<u> </u>	005		006	7
Information Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
D.F.:	1.0	8	0.96	2	0.98	0	0.77	75	0.88	5	0.86	$_{52}$ \subset
Units:	UG/K	(G	UG/K	G	UG/K	G	UG/F		UG/K		UG/K	
Level:	MED		MED		MED		MED		MED	.0	MED	(G
Toluene-d8	83		96	ક	83		89	용	85	<u> </u>	86	
Surrogate Bromofluorobenzene	74	કૃ	88	કૃ	78	ક	79	8	76	e B	83	8
Recovery 1,2-Dichloroethane-d4	94	ક	106	ક	100	e S	103	8	95	e Se	85	ક
	=======	==fl===	=======	=fl==		=fl==		。 fl		-£3	65	75 -F 1
Chloromethane	2500	BUJ	1680	-Bi4	3600	U		U	3500	UJ	1500	.≕TT
Bromomethane	3300	U	1600	U	3600	U	1200	U	3500	ט י	1500	U
Vinyl Chloride	3300	ָּט !	1600	U	3600	Ū	1200	U	3500	ע	1500	U
Chloroethane	3300	U :	1600	U	3600	Ū	1200	U	3500	u /	1500	U
Methylene Chloride	1700	BU	1200	$\mathbf{z}_{\mathbf{J}}$	13/0 650 -	₽J\{	1	₩U	2400	-B	1600	BU
Acetone	3 3 00 800	BJ U	1600370	ВЭЦ	3,50 1300	DJ U	1		350 2000	BJ: 1	1500	
Carbon Disulfide	1600	υ	790	U	1800	U	610	n A	1800	U	770	U U
1,1-Dichloroethene	1600	U /	790	U	1800	U	610	IJ	1800	U	770	U
1,1-Dichloroethane	1600	U	790	Ū	1800	Ū	610	U	1800	U	770	Ü
1,2-Dichloroethene (total)	1600	ט	790	Ū	1800	υ	610	IJ	1800	U	770	U
Chloroform	1600	U	790	U	1800	U	610	IJ	1800	U	770	U
1,2-Dichloroethane	1600	υ	790	U	1800	υ	610	IJ	1800	U	770	U
2-Butanone	3300	υ [*]	1600	U	3600	υ	1200	IJ	3500	U	1500	U
1,1,1-Trichloroethane	1600	Ū .	790	Ü	1800	υ	610	U	1800	U	770	Ü
Carbon Tetrachloride	1600	Ū ·	790	U	1800	U	610	U	1800	U	770	Ū
Bromodichloromethane	1600	U	790	U	1800	U	610	U	1800	U	770	Ū
1,2-Dichloropropane	1600	U	790	U	1800	U	610	Ŭ	1800	U	770	Ŭ
cis-1,3-Dichloropropene	1600	U	790	U	1800	U	610	Ū	1800	U	770	Ū
Trichloroethene	1600	U	790	U	1800	U	610	Ū	1800	U	770	Ū
Dibromochloromethane	1600	U į	790	U	1800	U	610	Ū	1800	U	770	Ū
1,1,2-Trichloroethane	1600	U	790	U	1800	U	610	U	1800	U	770	Ū
Benzene	1600	U	790	U	1800	U	610	บ	1800	U	770	Ū
Trans-1,3-Dichloropropene	1600	U ·	790	Ū	1800	U	610	υ	1800			Ū
Bromoform	1600	U	790	U		U	610		1800		770	Ü
4-Methyl-2-pentanone	3300	U	1600	U	3600	U	1200		3500		1500	Ū
2-Hexanone	3300	U	1600	U	3600		1200		3500			Ū
Tetrachloroethene	1600	U	790	U	1800		610		1800		770	U
1,1,2,2-Tetrachloroethane	1600	U ,	790	U	1800	U	610		1800	υ [;]	770	Ū
Toluene	1600	U 📑	790	U	1800	υ,	(610		1800	υV	770	Ŭ

RFW Batch Number: 97	/10 L573 Clie	nt: USACE-DEAL	TEST SITE	Work Order: 1	1901001003 E	Page: 1b	
	Cust ID:	Sl	S2	S3	S4	S 5	S 6
	RFW#: Level:	001 MED	002 MED	003 MED	004 MED	005 MED	006 MED
Chlorobenzene		1600 U	790 U 790 U	1800 U	610 U 610 U	1800 U J 1800 U	770 U LO 770 U C
<pre>Styrene Xylene (total) *= Outside of EPA CI</pre>	LP QC limits.	1600 U	790 U 790 U	1800 U	610 U 610 U	1800 U V	770 U C

R∈ Lal - : vil abo ry

Report Date: 11/13/97 08:37

Volatiles by GC/MS, HSL List RFW Batch Number: 9710L573 Client: USACE-DEAL TEST SITE Work Order: 11901001003 Page: 2a

										oos rage.		<u>=</u>	
	Cust ID:	GW1		GW2		GW2	!	GW2		FB-1		TB -3	1
Sample	RFW#:	007	,	800	Ł	008 MS	!	008 MSD		0.00		0.1	o (co
Information	Matrix:	WATER		WATER	•	WATER	,	WATER	,	009 WATER	,	WATER	
	D.F.:	1.0	0	1.0	0	1.0	10	1.0	.0				$\tilde{\bigcirc}_{00}$
	Units:	UG/L		UG/I		UG/L		UG/L		1.0		UG/	
	Level:	LOW	-	LOW	•	LOW	•	LOW	,	UG/I	,		٠,
				20		LON		TOM		LOW		LOW	(
Т	oluene-d8	103	ક	107	કુ	101	용	100	용	106		99	
Surrogate Bromofluo	robenzene	99	ક	103	ક	97	왕	95	왕	101	8 8	96	&
Recovery 1,2-Dichloro	ethane-d4	106	ક	107	%	111	と	111	왕	112	e S	102	8
=======================================	========	=======	=fl==:	=======	==f1==	=======	=fl=	========	= f1 =	========	• f 1		fl
Chloromethane		10	U J	10	ט ブ	10	U	10	U	10	U	10	U
Bromomethane		10	U Į	10	υī	10	U	10	IJ	10	U	10	U
Vinyl Chloride		10	U	10	U	10	U	10	Ū	10	U	10	U
Chloroethane		10	U	10	U !	10	U	10	U	10	U	10	U
Methylene Chloride		5	BU	5	BU	1	ВJ	2	ВJ	6	В	9	В
Acetone		10-6	BJ U	12	Bul	12	В	13	В	4	BJ	_	U
Carbon Disulfide		5	U	5	U	5	U	5	U	5	U	5	Ū
1,1-Dichloroethene		5	U	5	ט	96	욯	93	8	5	Ū	5	Ū
1,1-Dichloroethane		5	U ,	5	U	5	U	5	U	5	Ū	5	Ū
1,2-Dichloroethene (tota	1)	5	Ū	5	ט	5	U	5	U	5	Ū	5	Ū
Chloroform		5	U	5	υ	5	U	5	U	5	Ū	5	Ū
1,2-Dichloroethane		5	U	5	U	5	U	5	U	5	Ū	5	U
2-Butanone		10	U	10	U	10	U	10	U	10	U	10	U
1,1,1-Trichloroethane		5	U	5	U .	5	U	5	U	5	U	5	U
Carbon Tetrachloride		5	U	5	U.	5	U	5	Ŭ	5	U	5	U
Bromodichloromethane		5	U	5	U	5	U	5	U	5	U	5	U
1,2-Dichloropropane		5	U	5	U	5	U	5	U	5	Ū	5	U
cis-1, 3-Dichloropropene_		5	U	5	ט :	5	U	5	U	5	U	5	U
Trichloroethene		5	U	5	U	105	ક	106	ક	5	U	5	U
		5	U	5	U	5	U	5	U	5	U	5	U
1,1,2-Trichloroethane		5	U	5	U :	5	U	5	Ŭ	5	U	5	U
Benzene		5	U	5	U .	107	왕	107	ક્ષ	5	U	5	U
Trans-1,3-Dichloropropen	.e	5	U	5	U	5	U	5	U	5	U	5	U
Bromoform		5	U,	5	U:	5	Ŭ	5	U	5	U	5	U
4-Methyl-2-pentanone		10	U .	10	U	10	U	10	U	10		10	U
2-Hexanone		10	U	10	U	10	U	10	U	10	U	10	U
2-Hexanone		5	U ,	5	U	5	U	5	U	5	U	5	
1,1,2,2-Tetrachloroethan	.e	5	U		U	5	U	5	υ	5	U	5	U
Toluene		5	U 😼	5	ਧ 🅢	111	왕	111	કૃ	5	U	5	U
*= Outside of EPA CLP QC	! limits.												

RFW Batch Number: 971	OL573 Clien	t: USACE-DEAL	TEST SITE	Work Order	: 11901001003	Page: 2b	
	Cust ID:	GW1	GW2	GW2	GW2	FB-1	TB-1
	RFW#: Level:	007 LOW	TOM 008	008 MS LOW	008 MSD LOW	009 LOW	010 LOW
Chlorobenzene		5 U J	5 ປີ້	106 %	106 %	5 Ŭ	5 Ų~
Ethylbenzene		5 U \	5 U }	5 Ŭ	5 U	5 U	5 Ū
Styrene		5 U	5 U	5 U	5 U	5 U	5 U
Xylene (total)		5 U 🐧	5 U 🗸	5 U	5 U	5 U	5 Ü
*= Outside of EPA CLP	QC limits.	·					•
							(

R La - wil Labo ory

Volatiles by GC/MS, HSL List

Report Date: 11/13/97 08:37 Client: USACE-DEAL TEST SITE Work Order: 11901001003 Page: 3a RFW Batch Number: 9710L573

Cust ID:	VBLKBO		VBLKBO BS		VBLKFS		VBLKFS BS		VBLKZY		VBLKZY BS	
Sample RFW#: Information Matrix: D.F.:	97LVN334-M SOIL		97LVN334-M		97LVN335-M		97LVN335-M	в1	97LVG207-M	в1	97LVG207-N WATER	0
Units:	1.0		1.0		1.0		1.0	-	1.0	-	1.0	0
Level:	UG/K	.G	UG/K	(G	UG/K	(G	UG/K	G	UG/L		UG/I	L,
Level:	MED		MED		MED		MED		LOW		LOW	r
Toluene-d8	103	ક	97	ક	103	ક	100		96		100	
Surrogate Bromofluorobenzene	100	용	98	ક	100	용	96	કૃ	102	용	98	કૃ
Recovery 1,2-Dichloroethane-d4	114	8 5	101	ક	116	ક	121	ક	107	કૃ	108	9
Chloromethane		J.	1200	:=fl: U	======== 260	==£l J	======== 270					
Bromomethane		U	1200	U	780	J	570	JB JB	10	U	10	U
Vinyl Chloride		Ŭ	1200	U	1200	U	1200	n nr	10	Ū	10	U
Chloroethane		U	1200	U	1200	U	1200	U	10	U	10	U
Methylene Chloride	610	J	1200	В	780	U	810	В	10 6	U	10 7	U B
Acetone	250	J	430	BJ	340	J	370	JВ	5	J	5	BJ
Carbon Disulfide	620	U	620	U	620	U	620	IJ	5	U	5	U
1,1-Dichloroethene	- 620	U	100	ક	620	U	109	િ ક	5	IJ	88	ુ ક
1,1-Dichloroethane	620	U	620	U	620	IJ	620	Ü	5	U	5	Ū
1,2-Dichloroethene (total)	620	U	620	Ū	620	IJ	620	U	5	Ū	5	U
Chloroform	<u>-</u>	U	620	U	620	Ū	620	U	5	Ū	5	U
1,2-Dichloroethane	620	U	620	U	620	Ū	620	U	5	U	5	U
2-Butanone	1200	U	1200	U	1200	U	1200	U	10	U	10	U
1,1,1-Trichloroethane	620	U	620	U	620	U	620	IJ	5	IJ	5	U
Carbon Tetrachloride	620	U	620	U	620	U	620	Ū	5	IJ	5	U
Bromodichloromethane	620	U	620	U	620	U	620	Ū	5	U	5	Ū
1,2-Dichloropropane	620	U	620	U	620	U	620	U	5	U	5	U
cis-1,3-Dichloropropene	620	U	620	U	620	U	620	Ū	5	U	5	IJ
Trichloroethene	620	U	100	ક	620	U	97	ş	5	U	96	ę.
Dibromochloromethane	620	U	620	U	620	U	620	U	5	Ū	5	Ū
1,1,2-Trichloroethane	620	U	620	U	620	U	620	U	5	Ū	5	Ū
Benzene	620	U	98	왕	620	U	111	કૃ	5	Ū	97	કૃ
Trans-1,3-Dichloropropene	620	U	620	U	620	U	620	U	5	U	5	Ū
Bromoform	620	U	620	U	620	U	620	U	5	U	5	Ū
4-Methyl-2-pentanone	_ 1200	U	1200	U	1200	U	1200	U	10	Ū	10	Ū
2-Hexanone	1200	U	1200	U	1200	U	1200	Ū	10	Ū	10	Ū
Tetrachloroethene	_ 620	U	620	U	620	U	620	U	5	Ū	5	Ū
1,1,2,2-Tetrachloroethane	620	U	620	U	620	U	620	U	5	Ū	5	Ū
Toluene	_ 620	U	93	કૃ	620	IJ	106	ક	5	IJ	100	કૃ

RFW Batch Number:		Cust ID:		-E-L	VBLKBO PS	. I.E.	VBLKFS	rae	r: 11901001 VBLKFS BS	003	Page: 3b VBLKZY	<u>)</u>	VBLKZY BS	
		RFW#: Level:	97LVN334-1 MED	MB1	97LVN334-M MED	в1	97LVN335-M MED	IB1	97LVN335-M	в1	97LVG207-M	IB1	97LVG207-M LOW	в1
Chlorobenzene			620	U	96	ક	620	U	105	કૃ	5	U	97	رعْ
Ethylbenzene			620	U	620	U	620	U	620	U	5	U	5	G.G.
Styrene			620	U	620	Ų	620	U	620	U	5	U	5	(
Xylene (total)			620	U	620	U	620	U	620	U	5	U	5	U
*= Outside of EPA	A CLP QC	limits.												•

Re Lal -: vil abo bry

Volatiles by GC/MS, HSL List

Report Date: 11/13/97 08:37 RFW Batch Number: 9710L573 Client: USACE-DEAL TEST SITE Work Order: 11901001003 Page: 4a

	Cust ID:	VBLKEW		VBLKEW BS		VBLKDZ		
Sample Information	RFW#: Matrix: D.F.: Units: Level:	97LVG211-M WATER 1.0 UG/I LOW	0	97LVG211-N WATER 1.0 UG/I LOW	00	97LVG209-M WATER 1.0 UG/L LOW	0	010
	Toluene-d8	100		98		98	<u>ુ</u>	
Surrogate Bromo	fluorobenzene		ક	94	8	95	8	
	loroethane-d4		&	108	e B	103	9	
Chlanenshops	=======================================	========	==fl	_=========	==fl			======fl======fl
Chloromethane		_ 10	Ū	10	U	10	U	
Bromomethane Vinyl Chloride		_ 10 10	U	10	U	10	_	
Chloroethane		_ 10	U	10		10		
Methylene Chloride		_ 10		10	_	10		
Acetone		_ 1	J	10	BJ U		J	
Carbon Disulfide		_ * 5	U	5	Ü	1 5	J U	
1,1-Dichloroethene_		5	U	95	ુ કૃ	5	n n	
1,1-Dichloroethane_		_ 5	U	5	Ū	5 5	Ω O	
1,2-Dichloroethene	total)	_ 5	U	5	U	5	IJ	
			U	5	Ü	5	IJ	
1,2-Dichloroethane		_ 5	U	5	U	5	U	
2-Butanone		10	Ū	10	IJ	10	U	
1,1,1-Trichloroethar	ie	 5	U	5	Ū	5	U	
Carbon Tetrachloride	<u></u>	5	U	5	Ū	5	Ü	
Bromodichloromethane	<u> </u>	5	U	5	U	5	U	
1,2-Dichloropropane		5	U	5	U	5	Ū	
cis-1,3-Dichloroprop	ene	5	U	5	U	5	Ū	
Trichloroethene		5	U	101	용	5	Ū	
Dibromochloromethane	<u> </u>	5	U	5	U	5	U	
1,1,2-Trichloroethar	ıe	5	Ū	5	U	5	Ū	
Benzene		_ 5	U	103	ક	5	U	
Trans-1,3-Dichlorop	copene	_ 5	U	5	Ŭ	5	U	
Bromoform		_ 5	U	5	U	5	U	
4-Methyl-2-pentanone	2	10	U	10	U	10	U	
2-Hexanone		_ 10	U	10	U	10	U	
Tetrachloroethene		5	U	5	U	5	U	
1,1,2,2-Tetrachloroe	ethane	5	U	5	U	5	U	
Toluene		_ 5	U	107	ક	5	U	
*= Outside of EPA CI	LP QC limits.							

RFW Batch Number: 9710L573 Client: USACE-DEAL TEST SITE Work Order: 11901001003 Page: 4b Cust ID: VBLKEW VBLKEW BS VBLKDZ RFW#: 97LVG211-MB1 97LVG211-MB1 97LVG209-MB1 LOW Level: LOW LOW 5 U 102 % 5 U Chlorobenzene Ethylbenzene____ 5 U 5 U 5 U 5 U Styrene____ 5 U 5 U Xylene (total) 5 U 5 U 5 U

*= Outside of EPA CLP QC limits.

/

1E ANICS ANALYSIS SHE

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

 s1	
	CDC No .

EPA SAMPLE NO.

Lab	Name:	<u>Recra.LabNet</u>	Contract:	11901001003
-----	-------	---------------------	-----------	-------------

Matrix: (soil/water) SOIL Lab Sample ID: 9710L573-001

Sample wt/vol: 9.23 (g/mL) G Lab File ID: n101309

Level: (low/med) MED Date Received: 10/01/97

% Moisture: not dec. <u>59</u> Date Analyzed: <u>10/13/97</u>

Column: (pack/cap) CAP Dilution Factor: 1.08

CONCENTRATION UNITS:

Number TICs found: 0 (ug/L or ug/Kg) 0 UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
=======================================		======	=========	=====
1.				

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

	EPA	SAMPLE	NO.
۱-			
5	2		

TENTATIVELY IDENTIFIED COMPONI	52
Lab Name: Recra.LabNet Contract: 11	1901001003
Lab Code: Recra Case No.:	SAS No.: SDG No.:
Matrix: (soil/water) <u>SOIL</u>	Lab Sample ID: <u>9710L573-002</u>
Sample wt/vol: 10.4 (g/mL) G	Lab File ID: <u>n101310</u>
Level: (low/med) MED	Date Received: <u>10/01/97</u>
% Moisture: not dec. <u>24</u>	Date Analyzed: 10/13/97
Column: (pack/cap) <u>CAP</u>	Dilution Factor: 0.962
	ONCENTRATION UNITS: ug/L or ug/Kg) <u>UG/KG</u>

1						
	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q	
i	===========	=======================================	======	========	=====	
İ	1.					İ
Ì			ļ		l	ĺ

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

1	
S3	
	SDG No.:

EPA SAMPLE NO.

Lab Name: Recra.LabNet Contract: 11901001003

Lab Code: Recra Case No.: ____ SAS No.: ___ SDG No.: ___

Matrix: (soil/water) SOIL Lab Sample ID: 9710L573-003

Sample wt/vol: $\underline{10.2}$ (g/mL) \underline{G} Lab File ID: $\underline{n101407}$

Level: (low/med) $\underline{\text{MED}}$ Date Received: $\underline{10/01/97}$

% Moisture: not dec. <u>66</u> Date Analyzed: <u>10/14/97</u>

Column: (pack/cap) CAP Dilution Factor: 0.980

CONCENTRATION UNITS:

Number TICs found: 0 (ug/L or ug/Kg) 0 UG/KG

CAS NUMBER	COMPOUND NAME	 RT	EST. CONC.	
======================================	=======================================	======	======================================	<u> </u>
1.				

EPA SAMPLE NO.

VOLATILE ORGANICS ANALYSIS SHEET TENTATIVELY IDENTIFIED COMPOUNDS

s	4	
	SDG No.:	
TD.	97101573-004	

Lab Name: Recra.LabNet Contract: 11901001003

Lab Code: Recra Case No.: ____ SAS No.: ___ SDG No.: ___

Matrix: (soil/water) SOIL Lab Sample ID: 9710L573-004

Sample wt/vol: $\underline{12.9}$ (g/mL) \underline{G} Lab File ID: $\underline{n101312}$

Level: (low/med) MED Date Received: 10/01/97

% Moisture: not dec. 21 Date Analyzed: 10/13/97

Column: (pack/cap) CAP Dilution Factor: 0.775

CONCENTRATION UNITS:

Number TICs found: 1 (ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
=======================================		======	=========	====
1.	UNKNOWN	12.432	700	J

VOLATILE ORGANICS ANALYSIS SHEET TENTATIVELY IDENTIFIED COMPOUNDS

EPA	SAMPLE	NO.	

IEMIRIIVEEL IDEMILI IDE	S5
Lab Name: Recra.LabNet Contract: 1	1901001003
Lab Code: <u>Recra</u> Case No.:	SAS No.: SDG No.:
Matrix: (soil/water) <u>SOIL</u>	Lab Sample ID: 9710L573-005
Sample wt/vol: 11.3 (g/mL) G	Lab File ID: n101313
Level: (low/med) MED	Date Received: <u>10/01/97</u>
% Moisture: not dec. <u>68</u>	Date Analyzed: 10/13/97
Column: (pack/cap) <u>CAP</u>	Dilution Factor: 0.885
	ONCENTRATION UNITS: ug/L or ug/Kg) <u>UG/KG</u>

CAS NUMBER	COMPOUND NAME	RT	 EST. CONC.	 Q
=======================================		======	=========	=====
1.		<u> </u> 		

EPA SAMPLE NO.

VOLATILE ORGANICS ANALYSIS SHEET

TENTATIVELY IDENTIFIED COMPOU	INDS S6
Lab Name: Recra.LabNet Contract: 1	1901001003
Lab Code: Recra Case No.:	SAS No.: SDG No.:
Matrix: (soil/water) <u>SOI</u>	Lab Sample ID: 9710L573-006
Sample wt/vol: <u>11.6</u> (g/mL) <u>G</u>	Lab File ID: n101316
Level: (low/med) <u>MED</u>	Date Received: <u>10/01/97</u>
% Moisture: not dec. 30	Date Analyzed: 10/13/97
Column: (pack/cap) <u>CAP</u>	Dilution Factor: 0.862
	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/KG</u>

CAS NUMBER	COMPOUND N	NAME	RT	EST.	CONC.	Q	
1.	= = = = = = = = = = = = = = = = = = =	 					

VOLATILE ORGANICS ANALYSIS SHEET TENTATIVELY IDENTIFIED COMPOUNDS

•	EPA SAMPLE NO.
G	W1
	SDG No.:
ID:	9710L573-007
D:	q101217
ved:	10/01/97

 Lab Name: Recra.LabNet
 Contract: 11901001003

 Lab Code: Recra
 Case No.:
 SAS No.:
 SDG No.:

 Matrix: (soil/water)
 WATER
 Lab Sample ID: 9710L573-007

 Sample wt/vol:
 5.00 (g/mL) ML
 Lab File ID: q101217

Level: (low/med) Low Date Received: low/med

% Moisture: not dec. ____ Date Analyzed: 10/12/97

Column: (pack/cap) CAP Dilution Factor: 1.00

CONCENTRATION UNITS:

Number TICs found: $\underline{0}$ (ug/L or ug/Kg) $\underline{\text{UG/L}}$

CAS NUMBER	COMPOUND NAME	RT	 EST. CONC.	Q
===========		======	=======================================	=====
1.				

1.

VOLATILE ORGANICS ANALYSIS SHEET

	EPA	SAMPLE	NO.
- ! .			

TENTATIVELY IDENTIF	IED COMPOUNDS		GW2	
Lab Name: Recra.LabNet C	ontract: <u>119010010</u>	*		
Lab Code: <u>Recra</u> Case No.:	SAS	No.:	_ SDG No	.:
Matrix: (soil/water) WATER	Lab	Sample ID:	9710L573-0	800
Sample wt/vol: 5.00 (g/m	L) <u>ML</u> Lab	File ID:	q101218	
Level: (low/med) <u>LOW</u>	Dat	e Received:	10/01/97	
Moisture: not dec.	Dat	e Analyzed:	10/12/97	
Column: (pack/cap) <u>CAP</u>	Dil	ution Facto	or: 1.00	
Number TICs found: <u>0</u>		TION UNITS: ug/Kg) <u>UG/I</u>		
	POUND NAME	!	ST. CONC.	
	_==========	====== ==	========	====

VOLATILE ORGANICS ANALYSIS SHEET TENTATIVELY IDENTIFIED COMPOUNDS

FB-1			
LD-T			
l	 	 	

EPA SAMPLE NO.

Lab Name	Recra.LabNet	 Contract:	11901001003	

Matrix: (soil/water) WATER Lab Sample ID: 9710L573-009

Sample wt/vol: 5.00 (g/mL) $\underline{\text{ML}}$ Lab File ID: $\underline{\text{q101219}}$

Level: (low/med) LOW Date Received: 10/01/97

% Moisture: not dec. ____ Date Analyzed: 10/12/97

Column: (pack/cap) CAP Dilution Factor: 1.00

CONCENTRATION UNITS:

Number TICs found: 0 (ug/L or ug/Kg) 0

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	
============	=======================================	======	=========	====
1.		1		
<u> </u>		. I		

VOLATILE ORGANICS ANALYSIS SHEET TENTATIVELY IDENTIFIED COMPOUNDS

1	
1	
TB-1	
1	
L .	

EPA SAMPLE NO.

	TB-1
Lab Name: Recra.LabNet Contract:	11901001003
-	
Lab Code: Recra Case No.:	SAS No.: SDG No.:
Matrix: (soil/water) WATER	Lab Sample ID: <u>9710L573-010</u>
Sample wt/vol: _5.00 (g/mL) ML	Lab File ID: q101309
Level: (low/med) LOW	Date Received: <u>10/01/97</u>
% Moisture: not dec	Date Analyzed: 10/13/97
Column: (pack/cap) <u>CAP</u>	Dilution Factor: 1.00
	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/L</u>

						1 †
CAS NUMBER	COMPOUND	NAME	RT	EST.	CONC.	Q
=	=		======	=====		====
1.						

VOLATILE ORGANICS ANALYSIS SHEET TENTATIVELY IDENTIFIED COMPOUNDS

F	EPA SAMPLE NO.
	BLKBO
	SDG No.:
Lab Sample ID:	97LVN334-MB1
Lab File ID:	<u>n101308</u>
Date Received:	10/13/97
Date Analyzed:	10/13/97
Dilution Factor	: 1.00

Lab Name: Recra.LabNet Contract: 11901001003

Lab Code: Recra Case No.: ____ SAS No.: __

Matrix: (soil/water) SOli

Sample wt/vol: $10.0 mtext{ (g/mL) } G$

Level: (low/med) MED

% Moisture: not dec. ____0

Column: (pack/cap) CAP

Dilution Fa

CONCENTRATION UNITS:

Number TICs found: 0

(ug/L or ug/Kg) <u>UG/KG</u>

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
=======================================	=======================================	======	=========	=====
1.				

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

	EPA SAMPLE NO.
	VBLKFS
	SDG No.:
ID	: <u>97LVN335-MB1</u>
D:	n101405
ved	: <u>10/14/97</u>
zed	: <u>10/14/97</u>
act	or: 1.00

Lab Name: Recra.LabNet Contract: 11901001003

Lab Code: Recra Case No.: ____ SAS No.: ___ SDG No.: ___

Matrix: (soil/water) SOIL Lab Sample ID: 97LVN335-MB1

Sample wt/vol: $\underline{10.0}$ (g/mL) \underline{G} Lab File ID: $\underline{n101405}$

Level: (low/med) MED Date Received: 10/14/97

% Moisture: not dec. ___0 Date Analyzed: 10/14/97

Column: (pack/cap) CAP Dilution Factor: 1.00

CONCENTRATION UNITS:

Number TICs found: 0 (ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Į Q Į
============	=======================================	======	=======================================	=====
1.				
				ll

Lab Name: Recra.LabNet Contract: 11901001003

VOLATILE ORGANICS ANALYSIS SHEET TENTATIVELY IDENTIFIED COMPOUNDS

	EPA SAMPLE NO.	
 V	BLKZY	
	SDG No.:	
ID:	97LVG207-MB1	
D:	g101204	
ved:	10/12/97	
zed:	10/12/97	
actor	: 1.00	
TMO		

Lab Code: Recra Case No.:	SAS No.:	SDG No.:
Matrix: (soil/water) WATER	Lab Sample ID:	97LVG207-MB1
Sample wt/vol: 5.00 (g/mL) ML	Lab File ID:	q101204
Level: (low/med) <u>LOW</u>	Date Received:	10/12/97

% Moisture: not dec. ____ Date Analyzed: 10/12/97

Column: (pack/cap) CAP Dilution Factor: 1.00

CONCENTRATION UNITS:

Number TICs found: $\underline{0}$ (ug/L or ug/Kg) $\underline{\text{UG/L}}$

CAS NUMBER	COMPOUND NAME	 RT	EST. CONC.	 Q
=======================================	= =====================================	======	=========	=====
1.				

Number TICs found: 0

VOLATILE ORGANICS ANALYSIS SHEET TENTATIVELY IDENTIFIED COMPOUNDS

]	PA SAMPLE NO.	
 VI 	BLKEW	
	SDG No.:	
ID:	97LVG211-MB1	
D:	g101404	
ved:	10/14/97	
zed:	10/14/97	
actor	1.00	

	VBLKEW
Lab Name: Recra.LabNet Contract: 11901	001003
Lab Code: Recra Case No.:	SAS No.: SDG No.:
Matrix: (soil/water) <u>WATER</u>	Lab Sample ID: 97LVG211-MB1
Sample wt/vol: 5.00 (g/mL) ML	Lab File ID: q101404
Level: (low/med) <u>LOW</u>	Date Received: <u>10/14/97</u>
% Moisture: not dec	Date Analyzed: 10/14/97
Column: (pack/cap) <u>CAP</u>	Dilution Factor: 1.00
CONCE	NTRATION UNITS:

			Addition to the second	1	1	 .	
	CAS	NUMBER	COMPOUND NAME	RT	EST. CONC.	Q	
ĺ	=====	=======		======	=========	=====	
Ì	1.						
ĺ							

(ug/L or ug/Kg) <u>UG/L</u>

VOLATILE ORGANICS ANALYSIS SHEET

VBLKDZ	
CDC No	

EPA SAMPLE NO.

TENTATIVELY IDENTIFIED COMPOUN	DS VBLKDZ
Lab Name: Recra.LabNet Contract: 11	
Lab Code: Recra Case No.:	SAS No.: SDG No.:
Matrix: (soil/water) <u>WATER</u>	Lab Sample ID: 97LVG209-MB1
Sample wt/vol: 5.00 (g/mL) ML	Lab File ID: q101305
Level: (low/med) <u>LOW</u>	Date Received: <u>10/13/97</u>
% Moisture: not dec.	Date Analyzed: 10/13/97
Column: (pack/cap) <u>CAP</u>	Dilution Factor: 1.00
	nCENTRATION UNITS: g/L or ug/Kg) <u>UG/L</u>

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
==========	=======================================	======	=======================================	====
1.				

2A WATER VOLATILE SURROGATE RECOVERY

	EPA		S1	S2	S3	OTHER	TOT
	SAMPLE N	10.	(TOL)#	(BFB)#	(DCE)#		OUT
		=======================================		======	.=====	======	====
01	GW1		103	99	106		0
02	GW2		107	103	107		0
03	GW2MS		101	97	111	1	0
04	GW2MSD		100	95	111	1	0
05	FB-1		106	101	112	1	0
06	TB-1		99	96	102		0
07	VBLKZY		96	102	107		0
80	VBLKZY	BS	100	98	108		0
09	VBLKEW		100	97	106		0
10	VBLKEW	BS	98	94	108		0
11	VBLKDZ		98	95	103		0

QC LIMITS

S1	(TOL)	=	Toluene-d8	(88-110)
S2	(BFB)	=	Bromofluorobenzene	(86-115)
S3	(DCE)	=	1,2-Dichloroethane-d4	(76-114)

[#] Column to be used to flag recovery values

^{*} Values outside of contract required QC limits

D Surrogates diluted out

2B SOIL VOLATILE SURROGATE RECOVERY

Lab Code: Recra Case No.: ____ SAS No.: ___ SDG No.: ____

Level: (low/med) MED

	EPA		S1	S2	S3	OTHER	TOT	
	SAMPLE NO.		(TOL)#	(BFB)#	(DCE)#		OUT	
		====	======	======	======	======	====	
01	sı		83	74	94		0	
02	S2		96	88	106		0	
03			83	78	100		0	
04	S4		89	79	103		0	
05	S5		85	76	95		0	
06	! •		86	83	85		0	
07	VBLKBO	İ	103	100	114		0	
08	VBLKBO	BS	97	98	101		0	
09	VBLKFS	į	103	100	116		0	
10		BS	100	96	121		0	
		i						

QC LIMITS
S1 (TOL) = Toluene-d8 (81-117)
S2 (BFB) = Bromofluorobenzene (74-121)
S3 (DCE) = 1,2-Dichloroethane-d4 (70-121)

- # Column to be used to flag recovery values
- * Values outside of contract required QC limits
- D Surrogates diluted out

3A WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: Recra.LabNet Cont

Contract: <u>1901-01-03</u>

Lab Code: Recra Case No.: ____ SAS No.: ___ SDG No.: ____

MATRIX Spike - EPA Sample No.: GW2 Level: (low/med) LOW

SAMPLE MS MS QC SPIKE | CONCENTRATION | CONCENTRATION | % | LIMITS ADDED UG/L UG/L REC # REC UG/L COMPOUND 50.0 47.8 96 | 61 -145 1,1-Dichloroethene___ 0 | 105 | 71 -120 52.4 50.0 Trichloroethene____ | 107 | 76 -127 50.0 53.5 0 Benzene____ | 111 | 76 -125 Toluene____ 0 55.4 _ 50.0 __| 50.0 106 75 -130 Chlorobenzene____ 0 53.2

COMPOUND	SPIKE ADDED UG/L	MSD CONCENTRATION UG/L	MSD % REC #	 % RPD #	-	LIMITS REC
1,1-Dichloroethene Trichloroethene Benzene Toluene Chlorobenzene	50.0 50.0 50.0 50.0 50.0	46.7 52.8 53.6 55.3 52.9	93 106 107 111 106	3 0 0 0 0	14 14 11 13	61 -145 71 -120 76 -127 76 -125 75 -130

[#] Column to be used to flag recovery and RPD values with an asterisk

RPD: <u>0</u> out of <u>5</u> outside limits

Spike Recovery: 0 out of 10 outside limits

COMMENTS:

FORM III VOA-1

1/87 Rev.

^{*} Values outside of QC limits

3A WATER VOLATILE MATRIX SPIKE RECOVERY

Lab Code: Recra Case No.: ____ SAS No.: ___ SDG No.: ___

MATRIX Spike - EPA Sample No.: <u>VBLKZY</u> Level: (low/med) <u>LOW</u>

	SPIKE	SAMPLE	MS	MS	QC
	ADDED	CONCENTRATION	CONCENTRATION	&	LIMITS
COMPOUND	UG/L	UG/L	UG/L	REC #	REC
=======================================	=========	=======================================	=======================================		
1,1-Dichloroethene	50.0	0	44.1	88	61 -145
Trichloroethene	50.0	0	47.8	96	71 -120
Benzene	50.0	0	48.5	97	76 -127
Toluene	50.0	0	50.2	100	76 -125
Chlorobenzene	50.0	0	48.6	97	75 -130
		l			

Column to be used to flag recovery value with an asterisk

* Values outside of QC limits

Spike Recovery: 0 out of 5 outside limits

COMMENTS:

FORM III VOA-1

1/87 Rev.

3A WATER VOLATILE MATRIX SPIKE RECOVERY

Lab Code: Recra Case No.: ____ SAS No.: ___ SDG No.: ___

MATRIX Spike - EPA Sample No.: <u>VBLKEW</u> Level:(low/med) <u>LOW</u>

COMPOUND	SPIKE ADDED UG/L	SAMPLE CONCENTRATION UG/L	MS CONCENTRATION UG/L	MS % REC #	QC LIMITS REC
1,1-Dichloroethene	50.0	0	47.6	95	61 -145
Trichloroethene	50.0	0	50.4	101	71 -120
Benzene	50.0	0	51.5	103	76 -127
Toluene	50.0	0	53.3	107	76 -125
Chlorobenzene	50.0	0	51.2	102	75 -130
		_			

 $\mbox{\tt\#}$ Column to be used to flag recovery value with an asterisk

Spike Recovery: 0 out of 5 outside limits

COMMENTS:

FORM III VOA-1

^{*} Values outside of QC limits

3B SOIL VOLATILE MATRIX SPIKE RECOVERY

Lab Code: Recra Case No.: ____ SDG No.: ____ SDG No.: ____

MATRIX Spike - EPA Sample No.: VBLKBO Level:(low/med) MED

COMPOUND	SPIKE ADDED UG/KG	SAMPLE CONCENTRATION UG/KG	MS CONCENTRATION UG/KG	MS % REC #	∠C LIMITS REC
1,1-Dichloroethene Trichloroethene Benzene Toluene Chlorobenzene	6250 6250 6250 6250 6250	0 0 0 0	6240 6260 6110 5820 5990	100 100 98 93 96	59 -172 62 -137 66 -142 59 -139 60 -133

[#] Column to be used to flag recovery value with an asterisk

Spike Recovery: $\underline{0}$ out of $\underline{5}$ outside limits

COMMENTS:

1/87 Rev.

^{*} Values outside of QC limits

3B SOIL VOLATILE MATRIX SPIKE RECOVERY

MATRIX Spike - EPA Sample No.: <u>VBLKFS</u> Level: (low/med) <u>MED</u>

	SPIKE	SAMPLE	MS	MS	QC
	ADDED	CONCENTRATION	CONCENTRATION	ક	LIMITS
COMPOUND	UG/KG	UG/KG	UG/KG	REC #	REC
=======================================	==========	=======================================			=======
1,1-Dichloroethene	6250	0	6830	109	59 -172
Trichloroethene	6250	0	6070	97	62 -137
Benzene	6250	0	6960	111	66 -142
Toluene	6250	0	6600	106	59 -139
Chlorobenzene	6250	0	6580	105	60 -133
			į	į	

Column to be used to flag recovery value with an asterisk

* Values outside of QC limits

Spike Recovery: 0 out of 5 outside limits

COMMENTS:

FORM III VOA-2

1/87 Rev.

Lab Name: Recra.LabNet-Philadelphia Contract: 11901-001-003-0001-00

Lab Code: RECRA Case No.: SAS No.: SDG No.: 10L573

Lab File ID: G101204 Lab Sample ID: 97LVG207-MB1

Date Analyzed: 10/12/97 Time Analyzed: 1347

Matrix: (soil/water) WATER Level:(low/med) LOW

Instrument ID: 5972G

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	EPA	LAB	LAB	TIME
	SAMPLE NO.	SAMPLE ID	FILE ID	ANALYZED
	=======================================		=========	=======
01	VBLKZYBS	97LVG207-MB1S	G101205	1424
02	GW1	9710L573-007	G101217	2142
03	GW2	9710L573-008	G101218	2219
04	FB-1	9710L573-009	G101219	2256
05 06	10.00			
07				
08		Was a second sec		
09				
10				
11				
12 13				[—
14				
15				
16				
17				
18 19				
20				
21				
22				
23				
24				
25 26				
27				
28				
29				
30				

COMMENTS:		

page 1 of 1

FORM IV VOA

MAC-SW846HF

Lab Name: Recra.LabNet-Philadelphia Contract: 11901-001-003-0001-00

Lab Code: RECRA Case No.: SAS No.: SDG No.: 10L573

Lab File ID: N101308 Lab Sample ID: 97LVN334-MB1

Date Analyzed: 10/13/97 Time Analyzed: 1106

Matrix: (soil/water) SOIL Level:(low/med) MED

Instrument ID: 5972N

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	EPA	LAB	LAB	TIME
	SAMPLE NO.	SAMPLE ID	FILE ID	ANALYZED
01	====================================	9710L573-001	N101309	1145
02	S2	9710L573-002	N101310	1224
03	S4	9710L573-004	N101312	1343
04 05	S5 VBLKBOBS	9710L573-005 97LVN334-MB1S	N101313 N101315	1422 1558
06	S6	9710L573-006	N101315 N101316	1638
07				
08 09		-		
10				
11				
12 13		***************************************		
14				
15				
16 17			7	
18				
19				
20				
22				
23				
24 25				
26				
27				
28				
30				

COMMENTS:	

page 1 of 1

FORM IV VOA

MAC-SW846HP-

Lab Name: Recra.LabNet-.Philadelphia Contract: 11901-001-003-0001-00

Lab Code: RECRA Case No.: SAS No.: SDG No.: 10L573

Lab File ID: G101305 Lab Sample ID: 97LVG209-MB1

Date Analyzed: 10/13/97 Time Analyzed: 1529

Matrix: (soil/water) WATER Level:(low/med) LOW

Instrument ID: 5972G

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

EPA	LAB	LAB	TIME
SAMPLE NO.	SAMPLE ID	FILE ID	ANALYZED
====================================	9710L573-010	G101309	1816
3 4 5			
7			
3 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			
-			

COMMENTS:		-

page 1 of 1

FORM IV VOA

MAC-SW846H -

Lab Name: Recra.LabNet-Philadelphia Contract: 11901-001-003-0001-00

Lab Code: RECRA Case No.: SAS No.: SDG No.: 10L573

Lab File ID: G101404 Lab Sample ID: 97LVG211-MB1

Date Analyzed: 10/14/97 Time Analyzed: 1154

Matrix: (soil/water) WATER Level:(low/med) LOW

Instrument ID: 5972G

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

EPA		LAB		LA	3	TIME
SAMPLE NO		SAMPLE	ID	FILE	ID	ANALYZED
========	=======	=======	=====	=======	======	========
01 VBLKEWBS		97LVG211-		G101406		1307
02 GW2MS		9710L573-	0085	G101407		1344
03 GW2MSD 04		9710L573-	0081	G101408		1420
05						
06						
07						
08					, , , , , , , , , , , , , , , , , , , ,	
09						
10						
12						
13						
14		WATER AND THE STREET				
15						
16						
17						
18		•				
20						
21						
22						
23						
24						
25 26					·	
27		•				
28						
29						
30						

COMMENTS:		

page 1 of 1

FORM IV VOA

MAC-SW846HP-

Lab Name: Recra.LabNet-Philadelphia Contract: 11901-001-003-0001-00

Lab Code: RECRA Case No.: SAS No.: SDG No.: 10L573

Lab File ID: N101405 Lab Sample ID: 97LVN335-MB1

Date Analyzed: 10/14/97 Time Analyzed: 1013

Matrix: (soil/water) SOIL Level:(low/med) MED

Instrument ID: 5972N

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	EPA	LAB		LAE		TIME
	SAMPLE NO.	SAMPLE	ID =====	FILE	ID ======	ANALYZED
01	S3	9710L573-	003	N101407		1130
02 03	VBLKFSBS	97LVN335-	MB1S	N101418		1827
04				****		
05 06					······································	
07						
08 09						
10						
11 12						
13						
14						
15 16						
17 18						
19						
20						
20 21 22 23						
23						
24 25 26 27						
26						-
28						
29						
30				-74 :		

,	 	 	
COMMENTS:			

page 1 of 1

FORM IV VOA

MAC-SW846HI

Recra LabNet - Lionville Laboratory VOA ANALYTICAL DATA PACKAGE FOR USACE-DEAL TEST SITE

DATE RECEIVED: 10/01/97 RFW LOT # :9710L573

CLIENT ID	RFW	#	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
S1	001	M1	s	97LVN334	09/30/97	N/A	10/13/97
S2	002	M1	S	97LVN334	09/30/97	N/A	10/13/97
S3	003	M1	s	97LVN335	09/30/97	N/A	10/14/97
S4	004	M1	S	97LVN334	09/30/97	N/A	10/13/97
S5	005	M1	s	97LVN334	09/30/97	N/A	10/13/97
S6	006	M1	S	97LVN334	09/30/97	N/A	10/13/97
GW1	007		W	97LVG207	09/30/97	N/A	10/12/97
GW2	008		W	97LVG207	09/30/97	N/A	10/12/97
GW2	008	MS	W	97LVG211	09/30/97	N/A	10/14/97
GW2	008	MSD	W	97LVG211	09/30/97	N/A	10/14/97
FB-1	009		W	97LVG207	09/30/97	N/A	10/12/97
TB-1	010		W	97LVG209	09/30/97	N/A	10/13/97
LAB QC:							
VBLKBO	MB1		s	97LVN334	N/A	N/A	10/13/97
VBLKBO	MB1	BS	S	97LVN334	N/A	N/A	10/13/97
VBLKFS	MB1		S	97LVN335	N/A	N/A	10/14/97
VBLKFS	MB1	BS	S	97LVN335	N/A	N/A	10/14/97
VBLKZY	MB1		W	97LVG207	N/A	N/A	10/12/97
VBLKZY	MB1	BS	W	97LVG207	N/A	N/A	10/12/97
VBLKEW	MB1		W	97LVG211	N/A	N/A	10/14/97
VBLKEW	MB1	BS	W	97LVG211	N/A	N/A	10/14/97
VBLKDZ	MB1		W	97LVG209	N/A	N/A	10/13/97

RECRA LabNet Use Only

97101573

304 3361 576 304 0187 805 Custody Transfer Record/Lab Work Request



Client	45	ACE	- Deal	Test	Site		Refrige	rator #			7	Г -			140							
Est. Final Pro	oj. Samp	oling Dat	te	_10119	7			Containe	Liquid	260	IAG	_			┼	PFS					·	
Project # 📈	[40]-	001-	003-000	21-00				Comanie	Solid	260	iæ				 -	110				\dashv		⊅
Project Conta	act/Phor	ne # <u>_</u> G	Aly Bu	CHANAN	•		Volume	,	Liquid	40	950				1	1000					- '	5 *
RECRA Proje	ect Mana	ger	m.y	lung			Preserv	atives	Solid Meo H	40 HCL	500											4-1
ac 3WY4	C Del	3/6	TAT _	301	DAY				VICO 1	mac	ORG	ANIC				MU3						
Date Rec'd Account #	(0 -7-	-47 m	Date Due	10-31	-47		ANALY REQUE			VOA	BNA	Pest/ PCB	Herb			Metal ONI	RG Z O					
MATRIX					Mat	rix	-						1	DE	CDA							
CODES:	Lab	c	Client ID/Descr	Intion	Chos	_	88.4.1	Date	Time	#	£	#		T	CRA L	ABNOB 다	Use O	nly		 		
SE - Sediment	ID			,p.i.o.ii	(7		Matrix		Collected	ト イ	अंद्र <u>न</u> ्ध	H&99X				MRGATO	1		1			
SO - Solid SL - Sludge	 				MS	MSD				श्रि	્ર્	Ř	İ			13						
W - Water O - Oil	001		51				5	8219	1340							13	-					
A - Air	202		1 2				1	1		1	/	Y										
DS - Drum Solids	003		3		1			\vdash	1350	V		Y		 		V						
DL - Drum Liquids L - EP/TCLP	004		4		1 1				1440		Y	/				1						
Leachate	005		.5		1			-	1545	7	✓	-/				V ,					_	
WI - Wipe X - Other	006		- 6			\neg	_			<u> </u>	/	4		 -		1			\perp			
F - Fish	08)	Gu	11		1-1	\dashv	W	-	1550	 	V	~				<u> </u>						
	08	I	Z		1-1	\dashv	1			4		-										
	009	FB	-1		╁╼╁	_	+-		1555	4	<u> </u>	0		<u> </u>		/						
	010	TB	-1			-		1	1510	1	~	<u> </u>				/						
FIELD PERSON		MPLETE (ONLY SHADE	AREAS	- 	DA	ATE/REVI	SIONS	1610	V												
Special Instruction MoTO: 5TA	NPAR	n Na	T METHA.	nol Fiel	<u>, </u>	_		1. <i>001-</i>	006 NO	A's L	N/H	ZAD	Space.				R	RECRA	LabNe	et Use (Only	
22	ו אות לי	MOOD	Due To	LACK	F			2 001-	008 V	AS	SeD	i Merl	TON	BOT 10	m		ples we		С	OC Tape	e was:	
BUTHICLENT FOR DAYS F AND 57651	Nun	1 BCR	o F SAMPI	C CONTA	ince.	>			004 500							1) SI	hipped	or 🚣	1)	Present	l on Oute	
FOI DAYS A	CTIVIT	res	CBUH	4 546 LAR JO	1 10 0 o				BOTTL					- 0 10	Ligo	Airbi	il Here	Fred Type	۳۰ در ۱۰ -	-	ý or 1 en on Ou	
400 596511 USUD FOI	8 LA!	Sema Seren	10 5	L CB1	أند	-										2) Ai	mbient	or Strille		ackage /	or 1	N
A RINSATE	731 AZ	uk uk		(100	but	, -		5 <i>QU</i>	is A	Dis	sall	JeD_	Merl	als.				in Goo	d 3)	Present	t on Sam	
A KINSII C	12-27.		4.3°	490	11/17	10 _{1_}		Con	tains a	fort	50	AL	/				abels In	or (Y or E)
Relinquished	Re	ceived	D=4-		Relina	الله الله		Do		X								eserved		l Unbroke ample	en on Yor (f	í, I
by /	 -	by	Date	Time	Relinq b	у	刀吊	65	IN		Tim	ne	Discrepan	cies Betv	een		C	Or 1	N		ord Prese	~ .
ted Ep	V.H	wy	10-1-97	0545									Samples L COC Reco	ables an ord? Y	d (i)		eceived ing Tim	Vothin		pon Sam	ngle Reci	1
		0	1			7		#R			N		NOTES:	•		iou	٠.	Y)or 1	N	,	Ø or 1	N
	<u> </u>			L							-][-				ŀ
					_		-	C,	, melen													

RECRA LabNet Use Only

Custody Transfer Record/Lab Work Request



Client	U	SACE					Refrige	arator #							104	u C	JL							
Est. Final Pro	oj. Sam	pling Date	2	7					Liquid		├	╁──-	┼	↓			入					· 1		
Project #			30	<u></u>	1		#/Type	Container	Solid	 	├	 	 				IPC						-	
Project Cont		,		(1)			Volume	•	Liquid			1	 		 -		-						4	
RECRA Proje	ect Man	ager							Solid				 	 	 -		1000				 		\Box	
QC	De		TAT				Preser	vatives									HUIS						\longrightarrow	
Date Rec'd			Date Due				ANALY	SES	_	 		ANIC					INO	RG						
Account #			Date Due				REQUE	STED	-	VOA	BNA	Pest/ PCB	Hert				etal	7						.
MATRIX					T			T	т — —			م م	I	<u> </u>		2	2 ≥	S						
CODES:	Lab					itrix IC						,	1		RECR	A La	blyet	Use O	nly		1	L		
S - Soll	ID	Clie	ent ID/Desc	ription	Cho	sen	Matrix	Date	Time				•			\Box	MRCANS					$\overline{}$		
SE - Sediment SO - Solid	ļ					()		Conected	Collected						- 1	- 1	131							ł
SL - Sludge W - Water	411	7.1	7		MS	MSD						1				- 17	8							- 1
O - Oil	011	GW.	1				W	F3V77	1405								\overline{a}						\rightarrow	
A - Air DS - Drum									145							 -	\triangleleft		\longrightarrow					
Solids					1-														. 1	1				
DL - Drum Liquids					+			ļ																\neg
L EP/TCLP	<u> </u>										1					\neg		$\overline{}$	$\overline{}$					
Leachate WI - Wipe																			\longrightarrow					
X - Other F - Fish																-		 						
r - 113n																								
					+																		_	
					1											_			\rightarrow	\rightarrow			-	
					1	1										-			\longrightarrow	\longrightarrow	\longrightarrow			
																								1
FIELD PERSON	INEL: CO	MPLETE ON	LY SHADE	AREAS		T DA	TE/REVI	SIGNIC																
Special instruct																			==		==			==
								1										Н	IECRA	LabN	let Us	e Only	1	
							2	2								ı	Sam	ples	₹re:		ос т	ape was	s:	
						_	:	3									1) \$1	ipped Delive	<u>)</u>		1) Prese	ent on (Outer	
																J	Airbi	i #	9-			e Y o		į
							4	1								/	2) Ar	mblent (or Chill	ed	2)/Unbri Packan	oken on e Y o	ı Outer	· 1
							5	5								-/1	3) Re	eceived	l in Goo			ent on S		.
								,								\mathcal{A}	Cond	fition \	007	Ŋ		Y o		ĺ
Relinquished	Re	ceived	<u> </u>		Dett.			S								[Prom	bels In	dicate		4) Unbr	oken on	1	ļ
by		by	Date	Time		quished by	a	Received	Da	ite	Tim	ا [[Discre	nancio	S Between		LION		served Y or	N S	Sample	Y o	r N	1
Fed Ed	In/	Q	2107				+-	by					Samp	les Lab	les and		5) Re		Within	(COC Re	ecord Pr ample F	resent	- 1
1-00 20	~ DL.	~	9197	5945								-	COC	Record'	? Y or	N		ng Tim	es	_	APOIT O	ampie r Y oi		- 1
													NOTE	:5:				Y	Y or	N				- 1
-												- 11												1



Virtual Laboratories Everywhere

Recra LabNet Philadelphia Analytical Report

Client: USACE-DEAL TEST SITE W.O. #: 11901-001-003-0001-00

RFW #: 9710L600 **Date Received**: 10-02-97

SEMIVOLATILE

The set of samples consisted of six (6) water samples and seven (7) soil samples collected on 10-01-97.

The samples and their associated QC samples were extracted on 10-04,06-97 and analyzed according to criteria set forth in SW 846 Method 8270 for TCL Semivolatile target compounds on 10-14,25,31-97 and 11-09-97.

The following is a summary of the QC results accompanying the sample results and a description of any problems encountered during their analyses:

- 1. The cooler temperatures upon receipt have been recorded on the chain-of-custody.
- 2. All required holding times for extraction and analysis were met.
- 3. Non-target compounds were detected in these samples.
- 4. One (1) of one-hundred-twenty (120) surrogate recoveries was outside EPA QC limits; however, EPA CLP surrogate recovery criteria were met (i.e., no more than one outlier per fraction {acid and base neutral} and no recoveries less than 10%).
- 5. All blank spike recoveries were within EPA QC limits.
- 6. All matrix spike recoveries were within EPA QC limits.

Alle unt leader

7. The soil method blank contained the common contaminant bis(2-Ethylhexyl)phthalate and the target compound Benzoic Acid at levels less than the CRQL.

J. Michael Taylor

Date

Vice President and Laboratory Manager

Lionville Analytical Laboratory

mmz\bna\10-600b.cn

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 37 pages.

GLOSSARY OF BNA DATA

DATA QUALIFIERS

U	=	Compound was analyzed for but not detected. The associated numerical value is the estimated
		sample quantitation limit which is included and corrected for dilution and percent moisture.

- J = Indicates an estimated value. This flag is used under the following circumstances: 1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; or 2) when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. For example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
- B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.
- E = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
- D = Identifies all compounds identified in an analysis at a secondary dilution factor.
- I = Interference.
- NQ = Result qualitatively confirmed but not able to quantify.
- A = Indicates that a TIC is a suspected aldol-condensation product.
- N = Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the N code is not used.
- This flag is used for a TIC compound which is quantified relative to a response factor generated from a daily calibration standard (rather than quantified relative to the closest internal standard).
- Y = Additional qualifiers used as required are explained in the case narrative.

mmz\10-94\gloss.bna



002

GLOSSARY OF BNA DATA

ABBREVIATIONS

BS = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spike solutions and carried through all the steps in the method. Spike recoveries are reported.

BSD = Indicates blank spike duplicate.

MS = Indicates matrix spike.

MSD = Indicates matrix spike duplicate.

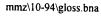
DL = Suffix added to sample number to indicate that results are from a diluted analysis.

NA = Not Applicable.

DF = Dilution Factor.

NR = Not Required.

SP, Z = Indicates Spiked Compound.





003

R . La : - wil Labo ory

Report Date: 11/13/97 14:40

Work Order: 11901001003 Page: 1a

Semivolatiles by GC/MS, HSL List

Client: USACE-DEAL TEST SITE

RFW Batch Number: 9710L600

Cust ID: **S7** S7 **S7 S8 S10** S9 001 Sample RFW#: 001 MS 001 MSD 002 003 004 SOIL SOIL Information Matrix: SOIL SOIL SOIL SOIL D.F.: 1.00 1.00 1.00 1.00 1.00 1.00 Units: UG/KG UG/KG UG/KG UG/KG UG/KG UG/KG Nitrobenzene-d5 욯 40 51 왕 48 왕 ¥ (욯 66 52 왐 75 2-Fluorobiphenyl 45 ક 58 욯 왕 Surrogate 54 69 કૃ 54 욯 76 કૃ p-Terphenyl-d14 Recovery 49 冬 61 왐 52 욯 85 64 욯 95 Phenol-d5 43 왕 53 욯 46 왐 71 욯 80 욯 74 왕 2-Fluorophenol 44 કૃ 54 욯 옫 49 70 73 ş 79 2,4,6-Tribromophenol 53 왐 66 왐 57 કૂ 92 76 85 910 U .: 52 욯 45 욧 430 U U Phenol 810 420 U bis(2-Chloroethyl)ether υ 910 910 U 910 U 430 U 810 U 420 U 910 U 53 2-Chlorophenol 욯 47 옿 430 U U 810 U 420 1,3-Dichlorobenzene____ 910 U U U 910 910 430 U 810 U 420 U 1,4-Dichlorobenzene 910 U 39 욯 34 욯 430 U 810 U 420 U Benzvl alcohol 910 IJ 910 IJ 910 U 430 IJ 810 U 420 U 1,2-Dichlorobenzene____ 910 U 910 U 910 U 430 U 810 IJ 420 U 2-Methylphenol 910 U 910 IJ 910 U 430 U 810 IJ 420 U bis(2-Chloroisopropyl)ether U 910 910 IJ 910 U 430 IJ 810 IJ 420 U 4-Methylphenol 910 IJ 910 IJ 910 U 430 U 810 U 420 U N-Nitroso-Di-n-propylamine IJ 910 54 ջ 46 왕 430 U 810 U 420 U Hexachloroethane____ U U 910 910 910 U 430 U U 810 U 420 Nitrobenzene _____ IJ U 910 910 910 U 430 U 810 U 420 U U Isophorone_____ 910 910 U 910 U 430 U 420 810 U U 2-Nitrophenol_____ 910 Ū 910 U 910 U 430 U 810 U 420 IJ 2,4-Dimethylphenol 910 U 910 U 910 U 430 U 420 IJ 810 U Benzoic acid_____ 4600 U 250 JB 140 JB 2100 IJ 750 -JB≒∈ 2100 IJ bis(2-Chloroethoxy)methane 910 U 910 U 910 U 430 U 810 IJ 420 U 2,4-Dichlorophenol_____ 910 U 910 U 910 U 430 U 810 IJ 420 U 1,2,4-Trichlorobenzene 910 U 50 용 45 욯 430 U 810 420 U U IJ U Naphthalene 910 910 910 U 430 U U 420 U 810 4-Chloroaniline 910 U 910 U 910 IJ 430 U 810 U 420 Ū Hexachlorobutadiene 910 U 910 IJ 910 U 430 U 420 U 810 IJ 4-Chloro-3-methylphenol 910 U 57 ş. 48 ક્ર 430 U 420 U 810 IJ 2-Methylnaphthalene U IJ U 910 910 910 U 430 U 810 U 420 910 U 🤄 Hexachlorocyclopentadiene 910 U 910 U 420 U 430 U 810 U \ *= Outside of EPA CLP QC limits.

S10

RFV	v#: 001		001 MS		001 MSD		002		003			004	:
2,4,6-Trichlorophenol	910	U ".	910	U	910	Ū	430	U	810	υĈ	4	20	U
2,4,5-Trichlorophenol	4600	U	4600	U	4600	U	2100	U	4000	U	21	.00	U.
2-Chloronaphthalene	910	Ŭ	910	U	910	U	430	U	810	U		20	U L
2-Nitroaniline		U	4600	U	4600	U	2100	U	4000	U		0.0	υ c
Dimethylphthalate	910	U :	910	U	910	U	430	U	810	บ		20	ָ ע
Acenaphthylene		U	910	U	910	U	430	U	810	U		120	U,
2,6-Dinitrotoluene	910	U	910	U	910	U	430	U	810	U		120	υí
3-Nitroaniline	4600	U	4600	U	4600	U	2100	U	4000	U		.00	Ū
Acenaphthene		U	57	ક	52	ક	430	บ	810	U		120	Ū
2,4-Dinitrophenol	4600	U	4600	U	4600	U	2100	U	4000	Ū		100	Ū
4-Nitrophenol	4600	U	59	કૃ	51	ક	2100	บ	4000	Ū		100	Ū
Dibenzofuran		U	910	U	910	U	430	U	810	Ū		120	Ū
2,4-Dinitrotoluene	910	U	56	કૃ	47	%	430	U	810	U		120	Ū
Diethylphthalate	910	U	910	U	910	U	430	U	810	U		120	Ū
4-Chlorophenyl-phenylether_	910	U	910	U	910	U	430	Ū	810	Ū		120	Ū
Fluorene		U	910	U	910	U	430	U	810	บ		120	Ū
4-Nitroaniline		U	4600	U	4600	U	2100	Ū	4000	U		L00	Ū
4,6-Dinitro-2-methylphenol	4600	U	4600	U	4600	U	2100	U	4000	บ		100	Ū
N-Nitrosodiphenylamine (1)		U	910	U	910	Ū	430	U	810	Ü		120	U
4-Bromophenyl-phenylether	910	U	910	U	910	U	430	U	810	U	4	120	U
Hexachlorobenzene	910	U	910	U	910	U	430	U	810	U	4	120	U
Pentachlorophenol		U	80	ક્ષ	70	용	2100	U	4000	Ū		L00	U
Phenanthrene		U	910	U	910	U	430	U	810	Ü		120	U
Anthracene	910	υ	910	U	910	U	430	U	810	บ	4	120	U
Di-n-Butylphthalate	910	υ	910	U	910	U	430	U	810	υ	4	120	U
Fluoranthene	910	U	910	U	910	U	430	U	810	U	4	120	U
Pyrene	910	U	55	&	50	ક	430	U	810	U	2	120	U
Butylbenzylphthalate	910	U	910	U	910	U	430	U	810	U	4	120	U
3,3'-Dichlorobenzidine	1800	Ŭ	1800	U	1800	U	860	บ	1600	U		330	U
Benzo(a)anthracene		U	910	U	910	U	430	U	810	υ		120	U
Chrysene	910	U	910	U	910	U	430	U	810	U		120	U
bis(2-Ethylhexyl)phthalate	26 0	JB \	370	JB	390	JB	230	∂ BU	√) 3 70	₽B((290	JB:
Di-n-Octyl phthalate		U	910	U	910	U	430	U	810	U		120	U
Benzo(b)fluoranthene	910	U	910	U	910	U	430	U	810	U		120	U
Benzo(k)fluoranthene	910	U	910	U	910	U	430	U	810	U		120	U
Benzo(a)pyrene	910	U	910	Ŭ	910	U	430	Ū	810			420	
Indeno(1,2,3-cd)pyrene	910	U	910	U	910	U	430	U	810			420	
Dibenzo(a,h)anthracene	910	U	910	U	910	U	430	Ū	810			420	
Benzo(g,h,i)perylene		U	910	U	910	U	430	Ū	810			420	
Carbazole		Ü	910	ΤT	910	TT		Ū	810				Ū

Re Lat -: vil abo ry

Semivolatiles by GC/MS, HSL List Report Date: 11/13/97 14:40

	Cust ID:	S11		GW3		GW4	ı	GW5					
	5455 12.	0		0,13		GNI	•	GWO		FB03)	SW1	-
Sample	RFW#:	005		007		008	3	009		011		013	ဆ
Information	Matrix:	SOIL		WATER		WATER		WATER		WATER		WATER	4
	D.F.:	1.0	0	1.0	0	1.0	00	1.0	0	1.0	0		$\widetilde{\varepsilon}$
	Units:	UG/K	G	UG/L		UG/I		UG/I	ı	UG/L		UG/I	
	Nitrobenzene-d5	55	ક	83	ક	57	~	66	ક	62		68	(g _g
Surrogate	2-Fluorobiphenyl	58	용	80	ક	51	કૃ	62	ą.	61	용	67	용
Recovery	p-Terphenyl-d14	64	ક	40	ક	17 *	ે ક	57	8	78	ę.	84	と
_	Phenol-d5	58	કૃ	86	ક	61	ક	68	ક	62	e S	65	ક
	2-Fluorophenol	60	કૃ	78	ક	54	용	58	용	51	e E	52	용
	2,4,6-Tribromophenol	64	왕	75	ક	62	ક	68	8	57	8	54	ક
=======================================		=======	=fl===	======	=fl==	=======	==fl==		=fl==	========	=fl==	=======	==f:
Phenol		620	U	12	U	3	J	12	U	12	Ū	11	U
bis(2-Chloroet	thyl)ether	620	U	12	U	12	U	12	U	12	Ū	11	Ū
2-Chloropheno	1	620	U	12	U	12	U	12	U	12	บ	11	Ū
1,3-Dichlorobe	enzene	620	U	12	U	12	U	12	U	12	Ū	11	Ū
1,4-Dichlorobe	enzene	620	U	12	Ū	12	U	12	U	12	U	11	U
Benzyl alcohol	1	620	U	12	U	12	U	12	U	12	U	11	U
1,2-Dichlorobe	enzene	620	U	12	U	12	υ	12	U	12	U	11	U
2-Methylpheno	1	620	U	12	U	12	U	12	Ū	12	U	11	U
bis(2-Chloroi	sopropyl)ether	620	U	12	U	12	U	12	U	12	Ū	11	Ū
4-Methylpheno		620	U	12	U	12	U	12	U	12	U	11	U
	n-propylamine		U	12	U	12	U	12	U	12	U	11	U
Hexachloroeth	ane	620	U	12	U	12	U	12	U	12	U	11	U
Nitrobenzene_		620	U	12	U	12	U	12	U	12	U	11	U
Isophorone		~~~	Ū	12	U	12	U	12	U	12	U	11	U
2-Nitrophenol		620	U	12	U	12	U	12	U	12	υ	11	U
2,4-Dimethylp	henol	620	U	12	U	12	U	12	U	12	U	11	U
Benzoic acid_		ે 240	₽₿Ų	60	U	1	J	60	U	60	U	55	U
	thoxy) methane	620	U	12	Ū	12	U	12	U	12	U	11	Ն
2,4-Dichlorop		620	U	12	U	12	U	12	U	12	U	11	U
	robenzene		U	12	U	12	U	12	U	12	U	11	U
Naphthalene		620	U	12	U	12	υ	12	U	12	U	11	U
4-Chloroanili		620	U	12	U	12	U	12	U	12	U	11	
Hexachlorobut		620		12	บ	12	U	12	Ü	12	Ū	11	U
4-Chloro-3-me		620		12	U	12	U	12	U	12	U	11	U
2-Methylnapht		620		12	บ	12	U	12	U	12	U	11	U
Heyachlorocyc	lopentadiene	620	ŢŢ	12	U	12	U	10	U	12	**	11	U

Cust ID:	S11		GM3		Work O		GW5		FB03		SW1	Ĺ
RFW#:	005		007		008		009		011		013	3
,4,6-Trichlorophenol	620	U	10	71	10							
,4,5-Trichlorophenol	3100	U	12	U	12	U	12	Ū	12	Ŭ	11	U
-Chloronaphthalene	620	U	60	U	60	Ŭ	60	U	60	U	55	Ū,
-Nitroaniline		U	12	U	12	U 	12	U	12	U	11	υ
-NICTOMITTINE	3100	=	60	U	60	Ŭ	60	Ū	60	U	55	U
imethylphthalate	620	U	12	Ŭ	12	Ū	12	U	12	Ū	11	U
cenaphthylene	620	U 	12	U	12	U	12	Ū	12	U	11	U
,6-Dinitrotoluene	620	บ 	12	Ü	12	U	12	U	12	U	11	U
-Nitroaniline	3100	Ŭ	60	Ū	60	U	60	U	60	U	55	U
cenaphthene/	620	Ŭ 	12	U	12	U	12	U	12	U	11	U
,4-Dinitrophenol	3100	U	60	U	60	U	60	U	60	U	55	U
-Nitrophenol	3100	Ŭ	60	U	60	U	60	U	60	U	55	U
Dibenzofuran	620	U	12	U	12	U	12	U	12	U	11	U
2,4-Dinitrotoluene		U	12	U	12	U	12	U	12	U	11	บ
Diethylphthalate	620	U	12	U	1	J	12	U	12	U	11	U
-Chlorophenyl-phenylether		U	12	U	12	U	12	U	12	U	11	U
Fluorene	620	U	12	U	12	U	12	U	12	U	11	U
-Nitroaniline	3100	U	60	U	60	U	60	U	60	U	55	U
,6-Dinitro-2-methylphenol	3100	U	60	U	60	U	60	U	60	U	55	U
N-Nitrosodiphenylamine (1)	620	Ū	12	U	12	U	12	Ū	12	U	11	U
-Bromophenyl-phenylether		U	12	U	3.2	U	12	U	12	Ū	11	U
Hexachlorobenzene	620	U	12	U	12	U	12	U	12	Ū	11	U
Pentachlorophenol	3100	U	60	U	60	U	60	U	60	Ū	55	Ū
Phenanthrene	620	U	12	U	12	U	12	U	12	Ū	11	Ū
Anthracene	620	U	12	U	12	U	12	U	12	บ	11	
Di-n-Butylphthalate	620	U	12	U	12	U	12	U	12	U	11	
Fluoranthene	620	U	12	Ū	12	U	12	U	12	Ū	11	บ
Pyrene	620	υ	12	U	12	U	12	U	12	U	11	Ū
Butylbenzylphthalate	620	U	12	U	12	U	12	U	12	U	11	Ū
3,3'-Dichlorobenzidine	1200	U	24	U	24	U	24	Ū	24	U	22	U
Benzo(a)anthracene		U	12	U	12	U	12	U	12	U	11	บ
Chrysene	620	U	12	U	12	υ	12	U	12	U	11	-
ois(2-Ethylhexyl)phthalate	626 360	JB U	2	J	12	Ū		บ	2	J		U
Di-n-Octyl phthalate	620		12	U	12	Ū	12	Ū	12	U		บ
Benzo(b)fluoranthene	620	Ŭ		U	12	Ū	12	Ū	12	Ū		บ
Benzo(k)fluoranthene	620	U	12		12	Ü	12	U	12	U		U
		υ	12		12	Ü	12	U	12	U		Ŭ
Senzo(a)pyreneIndeno(1,2,3-cd)pyrene	620	บ	12		12	U	12	U				
Dibenzo(a,h)anthracene	620	Ū	12		12	Ŭ	12		12	U		Ŭ
Benzo(g,h,i)perylene			12		12	Ū		Ŭ TT	12	U		Ŭ
Carbazole	620		12		12		12 12	U U	12 12	U U	11 11	Ū

Re Lal - vil abo ry

Semivolatiles by GC/MS, HSL List

Report Date: 11/13/97 14:40

RFW Batch Num	Client:	USAC	E-DEAL TES	T SI	TE	Worl	k (Order: 1190	100	1003 Page:		11/13/9/ 14: <u>a</u>	. 4.0		
	Cust ID:	SW2	!	SD1		S	D2		SBLKFZ		SBLKFZ BS		SBLKGO		
Sample	RFW#:	014	<u>.</u>	015		0	16		97LE1822-M	в1	97LE1822-M	в1	97LE1835-ME	31	
Information	Matrix:	WATER		SOIL		SOI	L		SOIL		SOIL		WATER		∞
	D.F.:	1.0	0	1.0	0	1	.00		1.0	0	1.0	0	1.00		
	Units:	UG/I		UG/K	:G	UG	/KG		UG/K	G	UG/K	.G	UG/L	Ç	\bigcirc
	Nitrobenzene-d5	60	ક	71	용	64		ક	87	ુ જ	86	-	60	~ ;	:
Surrogate	2-Fluorobiphenyl	58	8 ક	73	કૃ	71		કૃ	86	용	86	왕	50	કુ	1
Recovery	p-Terphenyl-d14	65	と	93	욯	78	;	ક	91	8	89	કૃ	68	કૃ	
	Phenol-d5	54	용	81	욯	73		욯	85	용	80	ક	58	કૃ	
	2-Fluorophenol	51	ક્ષ	80	욯	75	•	ક	85	욯	85	કૃ	59	옿	
	2,4,6-Tribromophenol		કૃ	86	કૃ	84		ક	86	왕	88	કૃ	44	કૃ	
==========		=======	==fl=		=f1=	======	===	fl	========	=f]	.=======	=f1	.========	=fl	
Phenol		11	U	440	U	42	0.	U	330	U	77	욯	10	U	
bis(2-Chloroe	ethyl)ether	11	U	440	U	42	0.5	U	330	U	330	U	10	U	
2-Chloropheno	ol	11	U	440	U	42	20	U	330	U	77	ક	10	U	
1,3-Dichloro	benzene	11	U	440	U	42	20	U	330	U	330	U	10	U	
1,4-Dichlorol	benzene	11	U	440	Ŭ	42	20	U	330	U	79	왕	10	U	
Benzyl alcoho	ol	11	U	440	Ŭ	42	20	U	330	U	330	U	10	U	
1,2-Dichloro	benzene	11	U	440	U	42	20	U	330	U	330	U	10	U	
2-Methylphen	ol	11	U	440	U	42	20	U	330	U	330	U	10	U	
bis(2-Chloro	isopropyl)ether	11	U	440	U	42	20	U	330	U	330	U	10	U	
4-Methylphen	ol	11	U	440	U	42	20	U	330	U	330	U	10	U	
	-n-propylamine	11	U	440	U	42	20	U	330	U	86	કૃ	10	U	
Hexachloroet	hane	11	U	440	U	42	20	U	330	U	330	U	10	U	
			Ŭ	440	U	42	20	U	330	Ū	330	U	10	U	
Isophorone		11	U	440	U	42	20	U	330	U	330	Ū	10	U	

440 U

440 U

440 U

440 U

440 U

440 U

440 U

440 U

440 U

2200 U

420 U

420 U

420 U

420 U

420 U

420 U

420 U

420 U

420 U

2100 U

330 U

330 U

200 ர

330 U

330 U

330 U

330 U

330 U

330 11

330 U

330 U

330 U

160 JB

330 U

330 U

330 U

330 U

330 U

330 U

330 U

욯

84

75

10 U

10 U

50 U

10 U

10 U

10 U

10 U

10 U

10 U

10 U

10 U

10 U

2-Methylnaphthalene_______ 11 U 440 U 420 U 330 U

Hexachlorocyclopentadiene_____ 11 U 440 U 420 U 330 U

*= Outside of EPA CLP QC limits.

11 U

11 U

55 U

11 U

11 U

11 U

11 U

11 U

11 U

11 U

2-Nitrophenol

2,4-Dimethylphenol

bis(2-Chloroethoxy)methane

1,2,4-Trichlorobenzene____

4-Chloro-3-methylphenol

Benzoic acid

Naphthalene

2,4-Dichlorophenol

4-Chloroaniline

Hexachlorobutadiene

RFW Batch Number: 9710L600 C	lient: USAC	E-DE	AL TEST SI	TE	Work O	rde	r: 11901001	003	Page: 3b			
Cust ID:	SW2		SD1	•	SD2		SBLKFZ		SBLKFZ BS		SBLKGO	
RFW#:	014		015	;	016		97LE1822-M	в1	97LE1822-ME	31	97LE1835-M	Œ1
2,4,6-Trichlorophenol	11	U	440	U	420	TT	330	TT	330	U	10	U
2,4,5-Trichlorophenol		U	2200	Ū	2100	Ū	1700	U		U	50	U
2-Chloronaphthalene	_ 11	Ū	440	U	420	U		Ü		U	10	υ υ ί-វ ີຖື
2-Nitroaniline		Ū	2200	Ū	2100	U	1700	U		U	50	U = X
Dimethylphthalate	11	Ū	440	U	420	U	330	U		U	10	تن
Acenaphthylene		Ū	440	Ū	420	U	330	Ū		U	10	U
2,6-Dinitrotoluene		Ū	440	Ū	420	U	330	U		U		บ [ี]
3-Nitroaniline	55	Ū	2200	U	2100	U	1700	Ū		-	10	-(
Acenaphthene		Ū	440	U	420	Ü	330	U		U	50	U
2,4-Dinitrophenol		U	2200	U	2100	Ū	1700	U	85	8 **	10	U
4-Nitrophenol	_ 55	U	2200	U	2100	Ü	1700	Ū		U	50	U
Dibenzofuran		U	440	U	420	U	330	U	91	용 ***	50	U
2,4-Dinitrotoluene		Ŭ	440	U	420	υ	330	U	330 83	U	10	U
Diethylphthalate		U	440	Ū	420	U	330	U		용 **	10	Ū
4-Chlorophenyl-phenylether	11	U	440	U	420	U	330	Ū		U	10	ŭ
Fluorene		U	440	Ü	420	U	330	U		U	10	Ŭ
4-Nitroaniline	55	U	2200	U	2100	บ	1700	U		U U	10	ŭ
4,6-Dinitro-2-methylphenol		U	2200	Ū	2100	บ	1700	U		U	50 50	U U
N-Nitrosodiphenylamine (1)	11	Ū	440	U	420	U	330	Ū		U	10	Ū
4-Bromophenyl-phenylether		Ū	440	Ū	420	U	330	U		U	10	U
Hexachlorobenzene		Ū	440	Ū	420	U	330	Ū		U	10	บ
Pentachlorophenol	55	Ū	2200	Ū	2100	U	1700	U	88	U %	50	U
Phenanthrene		Ū	94	J	55	J	330	U		ъ U	10	U
Anthracene		Ū	440	บ	420	U	330	Ū		Ū	10	Ū
Di-n-Butylphthalate		U	440	Ū	320	J	330	Ū		U	10	U
Fluoranthene		U	150	J	140	J	330	U		U	10	U
Pyrene		U	130	J	92	J	330	U	86	8	10	U
Butylbenzylphthalate		U	440	U	420	Ū	330	U		U	10	U
3,3'-Dichlorobenzidine		υ	870	Ū	850	Ū	670	U		Ū	20	U
Benzo(a) anthracene		U	440	U	43	J	330	U		Ū	10	U
Chrysene		U	440	U	72	J	330	U		U	10	U
bis(2-Ethylhexyl)phthalate		U	440 41 0	JB U	45 ~ 340	JP		-		_		U
Di-n-Octyl phthalate		U	440	U	420		330		330		10	Ü
Benzo(b) fluoranthene		U	440	U	420		330		330		10	Ū
Benzo(k)fluoranthene		U	440	U	420		330		330		10	U
Benzo(a)pyrene		U	440		420		330		330		10	U
Indeno(1,2,3-cd)pyrene		U	440	U	420		330		330		10	บ
Dibenzo(a,h)anthracene		Ū	440		420		330		330		10	Ū
Benzo(g,h,i)perylene			440		420		330		330		10	บ
Carbazole			440		420		330		330		10	
(1) - Cannot be separated from D							nits.	Ü	330	J	10	J
					~ -							

Re Lab - I rill abon ry

Semivolatiles by GC/MS, HSL List

Report Date: 11/13/97 14:40

RFW Batch Number: 9710L600 Client: USACE-DEAL TEST SITE Work Order: 11901001003 Page: 4a

	Cust ID:	SBLKGO BS		SBLKGO BSD)
Sample	RFW#:	97LE1835-M	ß1	97LE1835-M	в1
Information	Matrix:	WATER		WATER	
	D.F.:	1.0	0	1.0	0
	Units:	UG/L	_	UG/L	ı
	Nitrobenzene-d5	52	શ્રુ	47	ક
Surrogate	2-Fluorobiphenyl	48	۰ م	41 *	
Recovery	p-Terphenyl-d14		9	49	ક
Recovery	Phenol-d5		e Pe	43	8
	2-Fluorophenol		8	52	ું જ
2 4	6-Tribromophenol		9	52	8
2,4,					-
Phenol		69	1 왕	 74	LT-
bis(2-Chloroethyl) ether	_	Ū	10	Ü
2-Chlorophenol		72	ક	75	8
1,3-Dichlorobenze			Ü	10	Ü
1,4-Dichlorobenze			ę ę	59	ુ જ
_ , , , , ,		1.0		10	-
1,2-Dichlorobenze			U	10	Ū
2-Methylphenol		10	U	10	
bis (2-Chloroisopi			Ū	10	Ū
4-Methylphenol		_ 10	_		U
N-Nitroso-Di-n-pi	ropylamine		ક	68	કૃ
Hexachloroethane			Ū	10	Ü
Nitrobenzene				10	Ū
			U	10	Ū
			U	10	Ü
2,4-Dimethylpheno	ol		U	10	U
Benzoic acid		 50	Ū	50	U
	xy)methane		U	10	U
2,4-Dichlorophen			U	10	U
	enzene	 54	ક	61	કૃ
Naphthalene		 10	U	10	U
			U	10	U
	ene		υ	10	U
	lphenol		ક	72	કૃ
2-Methylnaphthal		10			
Hexachlorocyclop		10		10	_
	A CLP QC limits.				

RFW Batch Number: 9710L600 Client: USACE-DEAL TEST SITE Work Order: 11901001003 Page: 4b

Cust ID: SBLKGO BS

SBLKGO BSD

RFW#: 97LE1835-MB1 97LE1835-MB1

2,4,6-Trichlorophenol	10	U	10	U	
2,4,5-Trichlorophenol	50	U	50	U	
2-Chloronaphthalene	_ 10	U	10	U	
2-Nitroaniline	50	U	50	U	
Dimethylphthalate	10	U	10	U	
Acenaphthylene		U	10	U	
2,6-Dinitrotoluene		U	10	Ū	(
3-Nitroaniline	50	U	50	U	•
Acenaphthene	69	ક્ર	67	ક	
2,4-Dinitrophenol	50	U	50	U	
4-Nitrophenol		욯	64	ક	
Dibenzofuran		Ŭ	10	U	
2,4-Dinitrotoluene	70	용	57	용	
Diethylphthalate		U	10	U	
4-Chlorophenyl-phenylether	10	U	10	U	
Fluorene	10	U	10	U	
4-Nitroaniline		U	50	U	
4,6-Pinitro-2-methylphenol		U	50	U	
N-Nitrosodiphenylamine (1)	10	U	10	U	
4-Bromophenyl-phenylether	10	U	10	U	
Hexachlorobenzene	10	U	10	U	
Pentachlorophenol		욯	68	ક	
Phenanthrene	_ 10	Ŭ	10	U	
Anthracene	_ 10	U	10	U	
Di-n-Butylphthalate	10	U	10	U	
Fluoranthene	10	U	10	U	
Pyrene	88	ક્ષ	81	윻	
Butylbenzylphthalate	_ 10	U	10	U	
3,3'-Dichlorobenzidine	_ 20	U	20	U	
Benzo(a)anthracene	10	U	10	U	
Chrysene	10	U	10	U	
bis(2-Ethylhexyl)phthalate		U	10	U	
Di-n-Octyl phthalate		U	10	U	
Benzo(b)fluoranthene		U	10	U	
Benzo(k)fluoranthene	10	U	10	U	
Benzo(a)pyrene		U	10	U	
Indeno(1,2,3-cd)pyrene	10	U	10	U	
Dibenzo(a,h)anthracene		U	10	U	
Benzo(g,h,i)perylene	10	U	10	U	
Carbazole	10	U	10	U	
(1) - Cannot be separated from Di	phenylamin	∍.	*= Outside	of	EPA CLP QC limits.

SEMIVOLATILE ORGANICS ANALYSIS SHEET TENTATIVELY IDENTIFIED COMPOUNDS

S7			

CLIENT SAMPLE NO.

Lab Name: Recra.LabNet Work Order: 11901001003

Client: <u>USACE-DEAL TEST SITE</u>

Matrix:

SOIL

Lab Sample ID: <u>9710L600-001</u>

Sample wt/vol: 30.0 (g/mL) G Lab File ID: E102508

Date Received: <u>10/02/97</u>

Level: (low/med) LOW

% Moisture: not dec. 63 dec. Date Extracted: 10/04/97

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 10/25/97

GPC Cleanup: (Y/N) N pH: 2.6 Dilution Factor: 1.00

CONCENTRATION UNITS:

Number TICs found: $\underline{5}$

(ug/L or ug/Kg) <u>UG/KG</u>

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
_======================================	=======================================	======	=========	=====
1.	UNKNOWN	25.26	5000	J
2.	UNKNOWN	26.55	10000	J
3.	UNKNOWN	28.97	20000	J
4.	ALKANE	30.04	6000	J
5.	UNKNOWN	34.52	6000	J

SEMIVOLATILE ORGANICS ANALYSIS SHEET TENTATIVELY IDENTIFIED COMPOUNDS

S8			
-			

Lab Name: Recra.LabNet Work Order 11901001003

Client: <u>USACE-DEAL TEST SITE</u>

Matrix:

SOIL

Lab Sample ID: <u>9710L600-002</u>

Sample wt/vol: 30.0 (g/mL) G Lab File ID: E102511

Date Received: <u>10/02/97</u>

Level: (low/med) LOW

% Moisture: not dec. <u>22</u> dec. Date Extracted: <u>10/04/97</u>

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 10/25/97

GPC Cleanup: (Y/N) N pH: 4.0 Dilution Factor: 1.00

CONCENTRATION UNITS:

Number TICs found: _5

(ug/L or ug/Kg) <u>UG/KG</u>

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
=============	=======================================	======	========	=====
1.	ALKANE	27.19	2000	J
2.	UNKNOWN	27.96	1000	J
3.	UNKNOWN	28.90	2000	J
4.	ALKANE	30.03	1000	J
5.	UNKNOWN	30.55	1000	J

1F SEMIVOLATILE ORGANICS ANALYSIS SHEET TENTATIVELY IDENTIFIED COMPOUNDS

	 	 	 _
S9			

CLIENT SAMPLE NO.

Lab Name: Recra.LabNet Work Order: 11901001003

Client: USACE-DEAL TEST SITE

Lab Sample ID: 9710L600-003 SOIL Matrix:

Lab File ID: E102512 Sample wt/vol: 30.0 (g/mL)

Date Received: 10/02/97 Level: (low/med) LOW

% Moisture: not dec. 59 dec. Date Extracted: 10/04/97

Date Analyzed: <u>10/25/97</u> Extraction: (SepF/Cont/Sonc) SONC

GPC Cleanup: (Y/N) N pH: 2.6 Dilution Factor: 1.00

CONCENTRATION UNITS:

(ug/L or ug/Kg) UG/KG Number TICs found: 5

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
=======================================	=======================================	======	=========	=====
1.	ALKANE	27.20	7000	J
2.	ALKANE	30.04	20000	J
3.	UNKNOWN	30.57	9000	J
4.	ALKANE	34.16	10000	J
5.	UNKNOWN	34.51	9000	J

SEMIVOLATILE ORGANICS ANALYSIS SHEET TENTATIVELY IDENTIFIED COMPOUNDS

 S10			

Lab Name: Recra.LabNet Work Order: 11901001003

Client: USACE-DEAL TEST SITE

Matrix:

SOIL___

Lab Sample ID: <u>9710L600-004</u>

Sample wt/vol: 30.0 (g/mL) G Lab File ID: E102513

Level: (low/med) LOW

Date Received: <u>10/02/97</u>

% Moisture: not dec. <u>20</u> dec. Date Extracted: <u>10/04/97</u>

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 10/25/97

GPC Cleanup: (Y/N) <u>N</u> pH: 3.5 Dilution Factor: 1.00

CONCENTRATION UNITS:

Number TICs found: <u>5</u>

(ug/L or ug/Kg) <u>UG/KG</u>

	CAS NUMBER	 COMPOUND NAME 	 RT ======	 EST. CONC. =======	Q =====	
	1.	ALDOL CONDENSATE	9.13	500	JAB	K
i	2.	UNKNOWN	25.25	800	J	
i	3.	ALKANE	27.20	500	J	
İ	4.	UNKNOWN	27.95	1000	J	
İ	5.	ALKANE	30.02	700	J	
i					l	

CLIENT SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS SHEET TENTATIVELY IDENTIFIED COMPOUNDS

ļ			
	S11		
-			

Lab Name: Recra.LabNet Work Order: 11901001003

Client: USACE-DEAL TEST SITE

Matrix:

SOIL___

Lab Sample ID: <u>9710L600-005</u>

Sample wt/vol: $30.0 \text{ (g/mL)} \text{ } \underline{\text{G}}$ Lab File ID: $\underline{\text{E102514}}$

Date Received: <u>10/02/97</u>

Level: (low/med) LOW

% Moisture: not dec. <u>47</u> dec. Date Extracted: <u>10/04/97</u>

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 10/25/97

GPC Cleanup: (Y/N) N pH: $\underline{2.6}$ Dilution Factor: $\underline{1.00}$

CONCENTRATION UNITS:

Number TICs found: <u>5</u>

(ug/L or ug/Kg) <u>UG/KG</u>

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
	: =====================================	======	=========	=====
1.	UNKNOWN	25.25	4000	J
2.	ALKANE	30.03	6000	J
3.	ALKANE	34.15	4000	J
4.	UNKNOWN	34.51	3000	J
5.	UNKNOWN	35.79	3000	J

SEMIVOLATILE ORGANICS ANALYSIS SHEET TENTATIVELY IDENTIFIED COMPOUNDS

GW3			
i			

CLIENT SAMPLE NO.

Lab Name: Recra.LabNet Work Order: 11901001003

Client: <u>USACE-DEAL TEST SITE</u>

Lab Sample ID: 9710L600-007 Matrix: WATER ___

Sample wt/vol: 850 (g/mL) ML Lab File ID: E110819

Date Received: <u>10/02/97</u> Level: (low/med) LOW

Date Extracted: 10/06/97 % Moisture: not dec. ____ dec.

Extraction: (SepF/Cont/Sonc) <u>CONT</u> Date Analyzed: <u>11/09/97</u>

GPC Cleanup: (Y/N) N pH: $\underline{7.0}$ Dilution Factor: $\underline{1.00}$

CONCENTRATION UNITS:

(ug/L or ug/Kg) UG/L Number TICs found: 1

1					
i	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
=	=========		======	=========	=====
	1. 95-16-9	BENZOTHIAZOLE	14.72	20	JN
i					

SEMIVOLATILE ORGANICS ANALYSIS SHEET TENTATIVELY IDENTIFIED COMPOUNDS

	 <u></u>	 	
GW4			

CLIENT SAMPLE NO.

Lab Name: Recra.LabNet Work Orde: 11901001003

Client: <u>USACE-DEAL TEST SITE</u>

WATER Matrix:

Lab Sample ID: 9710L600-008

Sample wt/vol: $850 \text{ (g/mL)} \underline{\text{ML}}$

Lab File ID: <u>E110820</u>

Level: (low/med) LOW

Date Received: 10/02/97

% Moisture: not dec. ____ dec. Date Extracted: 10/06/97

Extraction: (SepF/Cont/Sonc) CONT

Date Analyzed: 11/09/97

GPC Cleanup: (Y/N) <u>N</u> pH: <u>7.0</u> Dilution Factor: <u>1.00</u>

CONCENTRATION UNITS:

Number TICs found: 4

(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	 RT ======	 EST. CONC. ========	Q =====
1.	UNKNOWN		10	J
2. 95-16-9	BENZOTHIAZOLE		8	JN
3. 149-30-4	2-MERCAPTOBENZOTHIAZOLE	22.44	6	JN
4.	UNKNOWN	24.60	20	J
İ				

SEMIVOLATILE ORGANICS ANALYSIS SHEET TENTATIVELY IDENTIFIED COMPOUNDS

- 1			
ı			
- 1	GW5		
1	GNO		
1			

CLIENT SAMPLE NO.

Lab Name: Recra.LabNet Work Order: 11901001003

Client: USACE-DEAL TEST SITE

Matrix: WATER Lab Sample ID: <u>9710L600-009</u>

Sample wt/vol: 850 (g/mL) ML Lab File ID: E110821

Level: (low/med) LOW

Date Received: <u>10/02/97</u>

% Moisture: not dec. ____ dec. Date Extracted: 10/06/97

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 11/09/97

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CONCENTRATION UNITS:

Number TICs found: 0

(ug/L or ug/Kg) <u>UG/L</u>

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
============	=======================================	======	=========	=====
1.				

SEMIVOLATILE ORGANICS ANALYSIS SHEET TENTATIVELY IDENTIFIED COMPOUNDS

1	
l	
FB03	
1	

CLIENT SAMPLE NO.

Lab Name: Recra.LabNet Work Order: 11901001003

Client: <u>USACE-DEAL TEST SITE</u>

Lab Sample ID: 9710L600-011 WATER Matrix:

Sample wt/vol: 850 (g/mL) MLLab File ID: <u>E110822</u>

Date Received: <u>10/02/97</u> Level: (low/med) LOW

% Moisture: not dec. ____ dec. Date Extracted: 10/06/97

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 11/09/97

GPC Cleanup: (Y/N) N pH: $\underline{7.0}$ Dilution Factor: $\underline{1.00}$

CONCENTRATION UNITS:

(ug/L or ug/Kg) UG/L Number TICs found: 3

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
===========	=======================================	======	==========	=====
1.	UNKNOWN	9.36	6	J
2.	UNKNOWN	10.99	9	J
3.	UNKNOWN	16.12	20	J

SEMIVOLATILE ORGANICS ANALYSIS SHEET TENTATIVELY IDENTIFIED COMPOUNDS

SW1			

T.ah	Name .	Recra.LabNet	
LaD	name:	RECTA. Habrice	

Lab Name: Recra.LabNet Work Order: 11901001003

Client: USACE-DEAL TEST SITE

Matrix:

WATER

Lab Sample ID: <u>9710L600-013</u>

CLIENT SAMPLE NO.

Sample wt/vol: 900 (g/mL) ML Lab File ID: E110823

Date Received: <u>10/02/97</u>

Level: (low/med) LOW

% Moisture: not dec. _____ dec.

Date Extracted: 10/06/97

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 11/09/97

GPC Cleanup: (Y/N) N pH: $\underline{7.0}$ Dilution Factor: $\underline{1.00}$

CONCENTRATION UNITS:

Number TICs found: 0

(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
=	=======================================	======	=======================================	=====
1.				
İ				

SEMIVOLATILE ORGANICS ANALYSIS SHEET TENTATIVELY IDENTIFIED COMPOUNDS

SW2		

CLIENT SAMPLE NO.

Lab Name: Recra.LabNet Work Order: 11901001003

Client: USACE-DEAL TEST SITE

Lab Sample ID: 9710L600-014 WATER Matrix:

Sample wt/vol: 950 (g/mL) ML Lab File ID: E110824

Date Received: 10/02/97Level: (low/med) LOW

% Moisture: not dec. ____ dec. Date Extracted: 10/06/97

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 11/09/97

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CONCENTRATION UNITS:

(ug/L or ug/Kg) UG/L Number TICs found: 1

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
=======================================		======	=======================================	=====
1.	UNKNOWN	9.46	5	J
İ				l <u></u>

SEMIVOLATILE ORGANICS ANALYSIS SHEET TENTATIVELY IDENTIFIED COMPOUNDS

SD1			

Lab Name: Recra.LabNet Work Order: 11901001003

Client: <u>USACE-DEAL TEST SITE</u>

Matrix:

SOIL

Lab Sample ID: 9710L600-015

Sample wt/vol: $30.0 \text{ (g/mL) } \underline{\text{G}}$ Lab File ID: $\underline{\text{E102515}}$

Level: (low/med) LOW

Date Received: <u>10/02/97</u>

% Moisture: not dec. <u>24</u> dec. Date Extracted: <u>10/04/97</u>

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 10/25/97

GPC Cleanup: (Y/N) N pH: 6.3 Dilution Factor: 1.00

CONCENTRATION UNITS:

Number TICs found: <u>5</u>

(ug/L or ug/Kg) <u>UG/KG</u>

CAS NUMBER	COMPOUND NAME	 RT 	 EST. CONC. 	Q Q
====================================	UNKNOWN ALDOL CONDENSATE	8.77	500 600	J AB
3. 4. 5.	UNKNOWN UNKNOWN UNKNOWN	25.26 27.96 28.92	700 1000 400	J J J
			İ	

SEMIVOLATILE ORGANICS ANALYSIS SHEET TENTATIVELY IDENTIFIED COMPOUNDS

	 	 	
SD2			

Lab Name: Recra.LabNet Work Order: 11901001003

Client: <u>USACE-DEAL TEST SITE</u>

Matrix:

SOIL

Lab Sample ID: 9710L600-016

CLIENT SAMPLE NO.

Sample wt/vol: $30.0 \text{ (g/mL)} \text{ } \underline{\text{G}}$

Lab File ID: E110825

Level: (low/med) LOW

Date Received: <u>10/02/97</u>

% Moisture: not dec. 21 dec. Date Extracted: 10/04/97

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 11/09/97

GPC Cleanup: (Y/N) <u>N</u> pH: <u>5.9</u>

Dilution Factor: 1.00

CONCENTRATION UNITS:

Number TICs found: $\underline{4}$

(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
======================================		======	==========	====
1.	UNKNOWN	9.05	400	ਗਲ 👯
2.	ALDOL CONDENSATE	9.42	800	Jab 🖺
3.	ALDOL CONDENSATE	10.60	300	JA
4.	UNKNOWN	25.60	400	J

SOIL

SEMIVOLATILE ORGANICS ANALYSIS SHEET TENTATIVELY IDENTIFIED COMPOUNDS

1		
1	SBLKFZ	
Т		

Number TICs found: 2

Lab Name: Recra.LabNet Work Order: 11001001003

Client: USACE-DEAL TEST SITE

Matrix:

Lab Sample ID: 97LE1822-MB1

CLIENT SAMPLE NO.

Sample wt/vol: 30.0 (g/mL) \underline{G} Lab File ID: $\underline{E101412}$

Level: (low/med) LOW

Date Received: <u>10/04/97</u>

% Moisture: not dec. ____0 dec.

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 10/14/97

GPC Cleanup: (Y/N) N pH: $\underline{7.0}$ Dilution Factor: $\underline{1.00}$

Date Extracted: 10/04/97

CONCENTRATION UNITS:

(ug/L or ug/Kg) <u>UG/KG</u>

CAS NUMBER	COMPOUND NAME	 RT	EST. CONC.	Q
=======================================				=====
1.	UNKNOWN	7.04	800	J
2.	ALDOL CONDENSATE	7.32	1000	JA

SEMIVOLATILE ORGANICS ANALYSIS SHEET TENTATIVELY IDENTIFIED COMPOUNDS

SBLKGO		

Lab Name: Recra.LabNet Work Order: 11901001003

Client: <u>USACE-DEAL TEST SITE</u>

Matrix:

WATER

Lab Sample ID: 97LE1835-MB1

CLIENT SAMPLE NO.

Sample wt/vol: $\underline{1000}$ (g/mL) $\underline{\text{ML}}$

Lab File ID: A103120

Level: (low/med) <u>LOW</u>

Date Received: <u>10/06/97</u>

% Moisture: not dec. ____ dec. Date Extracted: 10/06/97

Extraction: (SepF/Cont/Sonc) CONT

Date Analyzed: 10/31/97

GPC Cleanup: (Y/N) <u>N</u> pH: <u>7.0</u>

Dilution Factor: 1.00

CONCENTRATION UNITS:

Number TICs found: 2

(ug/L or ug/Kg) <u>UG/L</u>

CAS NUMBER	COMPOUND NAME	 RT	EST. CONC.	Q
	=======================================	======	=======================================	=====
1.	UNKNOWN	8.66	5	J
2.	UNKNOWN	8.98	10	J

2C WATER SEMIVOLATILE SURROGATE RECOVERY

Lab Name: Recra.LabNet Contract: 1901-01-03

Case No.: USACE-DEAL TEST SITE

RFW Lot No.: 9710L600

	CLIENT	S1	S2	S3	S4	S5	S6	OTHER	TOT
	SAMPLE NO.	(NBZ)#	(FBP)#	(TPH)#	(PHL)#	(2FP)#	(TBP)#		OUT
			======	-=====		======	======		====
01	GW3	83	80	40	86	78	75		0
	GW4	57	51	17 *	61	54	62		1
	GW5	66	62	57	68	58	68		0
	FB03	62	61	78	62	51	57		0
	SW1	68	67	84	65	52	54		0
	SW2	60	58	65	54	51	42		0
	SBLKGOLE1835-MB1	63	54	60	55	49	41		0
	SBLKGOLE1835-MB1 BS	52	52	57	53	45	44		0
	SBLKGOLE1835-MB1 BSD	48	44	42	45	47	40		0
3.2				İİ					

				QC LIMITS
S1	(NBZ)	=	Nitrobenzene-d5	(35-114)
S2	(FBP)	=	2-Fluorobiphenyl	(43-116)
S3	(TPH)	=	p-Terphenyl-d14	(33-141)
S4	(PHL)	=	Phenol-d5	(10- 94)
S5	(2FP)	=	2-Fluorophenol	(21-100)
S6	(TBP)	=	2,4,6-Tribromophenol	(10-123)

[#] Column to be used to flag recovery values

^{*} Values outside of QC limits

D Surrogates diluted out

2D SOIL SEMIVOLATILE SURROGATE RECOVERY

Contract: <u>1901-01-03</u> Lab Name: Recra.LabNet

Case No.: USACE-DEAL TEST SITE

RFW Lot No.: 9710L600

	CLIENT	S1	S2	S3	S4	S5	S6	OTHER	TOT
	SAMPLE NO.	(NBZ)#	(FBP)#	(TPH)#	(PHL)#	(2FP)#	(TBP)#		OUT
	=======================================		======		=	======	======		====
01	S7	40	45	49	43	44	53		0
02	S7MS	51	58	61	53	54	66		0
03	S7MSD	48	54	52	46	49	57		0
04	S8	66	69	85	71	70	92		0
05	 S9	52	54	64	80	73	76		0
06	S10	75	76	95	74	79	85		0
	S11	55	58	64	58	60	64		0
08	SD1	71	73	93	81	80	86		0
	SD2	64	71	78	73	75	84		0
10	SBLKFZLE1822-MB1	87	86	91	85	85	86		0
11	SBLKFZLE1822-MB1 BS	86	86	89	80	85	88		0

				QC LIMITS
S1	(NBZ)	=	Nitrobenzene-d5	(23-120)
S2	(FBP)	=	2-Fluorobiphenyl	(30-115)
S3	(TPH)	=	p-Terphenyl-d14	(18-137)
S4	(PHL)	=	Phenol-d5	(24-113)
S5	(2FP)	=	2-Fluorophenol	(25-121)
S6	(TBP)	=	2,4,6-Tribromophenol	(19-122)

[#] Column to be used to flag recovery values

^{*} Values outside of QC limits

D Surrogates diluted out

3 D

SOIL SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: Recra.LabNet Contract: 1901-01-03

Case No.: USACE-DEAL TEST SITE RFW Lot No.: 9710L600-001

MATRIX Spike - Sample No.: S7 Level: (low/med) LOW

SPIKE	SAMPLE	MS	MS	QC
ADDED	CONCENTRATION	CONCENTRATION	ક	LIMITS
UG/KG	UG/KG	UG/KG	REC #	REC
========	=======================================		======	
9110	0	4700	52	26 - 90
9110	0	4860	53	25 -102
4560	0	1780	39	28 -104
4560	0	2480	54	41 -126
4560	0	2260	50	38 -107
9110	0	5190	57	26 -103
4560	0	2600	57	31 -137
9110	0	5360	59	11 -114
4560	0	2530	56	28 - 89
9110	0	7320	80	17 -109
4560	0	2520	55	35 -142
	ADDED UG/KG 9110 9110 4560 4560 9110 4560 9110 4560	ADDED CONCENTRATION UG/KG UG/KG UG/KG UG/KG UG/KG 9110 0 0 0 0 0 0 0 0 0	ADDED CONCENTRATION CONCENTRATION UG/KG UG/K	ADDED CONCENTRATION CONCENTRATION % UG/KG UG/KG UG/KG REC #

	SPIKE	MSD	MSD			
	ADDED	CONCENTRATION	ક	용	QC :	LIMITS
COMPOUND	UG/KG	UG/KG	REC #	RPD #	RPD	REC
	========	=========	======			========
Phenol	9110	4060	45	14	35	26 - 90
2-Chlorophenol	9110	4320	47	12	50	25 -102
1,4-Dichlorobenzene	4560	1550	34	13	27	28 -104
N-Nitroso-Di-n-propylamine	4560	2110	46	16	38	41 -126
1,2,4-Trichlorobenzene	4560	2070	45	10	23	38 -107
4-Chloro-3-methylphenol	9110	4360	48	17	33	26 -103
Acenaphthene	4560	2350	52	9	19	31 -137
4-Nitrophenol	9110	4620	51	14	50	11 -114
2,4-Dinitrotoluene	4560	2130	47	17	47	28 - 89
Pentachlorophenol	9110	6340	70	13	47	17 -109
Pyrene	4560	2280	50	9	36	35 -142
		l[1			

[#] Column to be used to flag recovery and RPD values with an asterisk

RPD: 0 out of 11 outside limits

Spike Recovery: 0 out of 22 outside limits

COMMENTS:

5/88 Rev.

^{*} Values outside of QC limits

3D SOIL SEMIVOLATILE BLANK SPIKE RECOVERY

Lab Name: Recra.LabNet Contract: 1901-01-03

Case No.: USACE-DEAL TEST SITE RFW Lot No.: 9710L600

BLANK Spike - Sample No.: SBLKFZLE1822-MB1 Level: (low/med) LOW

	SPIKE	SAMPLE	BS	BS	QC
	ADDED	CONCENTRATION	CONCENTRATION	%	LIMITS
COMPOUND	UG/KG	UG/KG	UG/KG	REC #	REC
	3330	 0	======================================	====== 77	======== 26 - 90
Phenol2-Chlorophenol	3330	0	2570	77	25 -102
1,4-Dichlorobenzene	1660	j o	1320	79	28 -104
N-Nitroso-Di-n-propylamine	1660	0	1430	86	41 -126
1,2,4-Trichlorobenzene	1660	0	1400	84	38 -107
4-Chloro-3-methylphenol	3330	0	2510	75	26 -103
Acenaphthene	1660	0	1410	85	31 -137
4-Nitrophenol	3330	0	3040	91	11 -114
2,4-Dinitrotoluene	1660	0	1380	83	28 - 89
Pentachlorophenol	3330	0	2940	88	17 -109
Pyrene	1660	0	1430	86	35 -142

[#] Column to be used to flag recovery value with an asterisk

Spike Recovery: 0 out of 11 outside limits

COMMENTS:

FORM III SV-2

5/88 Rev.

^{*} Values outside of QC limits

WATER SEMIVOLATILE BLANK SPIKE/BLANK SPIKE DUPLICATE RECOVERY

Lab Name: Recra.LabNet

Contract: <u>1901-01-03</u>

Case No.: USACE-DEAL TEST SITE RFW Lot No.: 9710L600

BLANK Spike - Sample No.: SBLKGOLE1835-MB1

Level:(low/med) <u>LOW</u>

	SPIKE	SAMPLE	BS	BS	QC
	ADDED	CONCENTRATION	CONCENTRATION	ક	LIMITS
COMPOUND	UG/L	UG/L	UG/L	REC #	REC
=======================================	========				
Phenol	_ 100	0	66.9	67	12 - 89
2-Chlorophenol	_ 100	0	71.4	71	27 -123
1,4-Dichlorobenzene	_ 50.0	0	24.7	49	36 - 97
N-Nitroso-Di-n-propylamine	_ 50.0	0	41.9	84	41 -116
1,2,4-Trichlorobenzene	_ 50.0	0	23.8	48	39 - 98
4-Chloro-3-methylphenol	_ 100	0	58.7	59	23 - 97
Acenaphthene	_ 50.0	0	32.0	64	46 -118
4-Nitrophenol	_ 100	0	73.5	74	10 - 80
2,4-Dinitrotoluene	_ 50.0	0	35.3	71	24 - 96
Pentachlorophenol	_ 100	0	41.3	41	9 -103
Pyrene	_ 50.0	0	38.0	76	26 -127
	_				

	SPIKE	BSD	BSD			
	ADDED	CONCENTRATION	8	ક	QC :	LIMITS
COMPOUND	UG/L	UG/L	REC #	RPD #	RPD	REC
_======================================	========	=============	======	======	======	=======
Phenol	100	71.7	72	7	42	12 - 89
2-Chlorophenol	100	74.4	74	4	40	27 -123
1,4-Dichlorobenzene	50.0	28.5	57	15	28	36 - 97
N-Nitroso-Di-n-propylamine	50.0	34.6	69	19	38	41 -116
1,2,4-Trichlorobenzene	50.0	27.2	54	11	28	39 - 98
4-Chloro-3-methylphenol	100	68.9	69	15	42	23 - 97
Acenaphthene	50.0	31.1	62	3	31	46 -118
4-Nitrophenol	100	58.9	59	22	50	10 - 80
2,4-Dinitrotoluene	50.0	29.1	58	20	38	24 - 96
Pentachlorophenol	100	68.0	68	50	50	9 -103
Pyrene	50.0	35.0	70	8	31	26 -127
						ii

[#] Column to be used to flag recovery and RPD values with an asterisk

RPD: 0 out of 11 outside limits

Spike Recovery: 0 out of 22 outside limits

COMMENTS:

^{*} Values outside of QC limits

4B SEMIVOLATILE METHOD BLANK SUMMARY

Contract: <u>1901-01-03</u> Lab Name: Recra.LabNet

Case No.: USACE-DEAL TEST SITE

Lab Sample ID: 97LE1822-MB1 Lab File ID: E101412

Date Extracted: 10/04/97

Time Analyzed: 2039 Date Analyzed: 10/14/97

Level: (low/med) LOW Matrix: (Soil/Water) SOIL

Instrument ID: 5972e

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	CLIENT	LAB	LAB	DATE
	SAMPLE NO.	SAMPLE ID	FILE ID	ANALYZED
		=======================================	=======	========
01	SBLKFZLE1822-MB1 BS	97LE1822-MB1S	E101411	10/14/97
02	S7	9710L600-001	E102508	10/25/97
03	S7MS	9710L600-001S	E102509	10/25/97
04	S7MSD	9710L600-001T	E102510	10/25/97
05	S8	9710L600-002	E102511	10/25/97
06	S9	9710L600-003	E102512	10/25/97
07	S10	9710L600-004	E102513	10/25/97
08	S11	9710L600-005	E102514	10/25/97
09	SD1	9710L600-015	E102515	10/25/97
10	SD2	9710L600-016	E110825	11/09/97

COMMENTS:

4B SEMIVOLATILE METHOD BLANK SUMMARY

Lab Name: Recra.LabNet Contract: 1901-01-03

Case No.: <u>USACE-DEAL TEST SITE</u>

Lab File ID: <u>A103120</u> Lab Sample ID: <u>97LE1835-MB1</u>

Date Extracted: 10/06/97 Extraction: (SepF/Cont/Sonc) CONT

Date Analyzed: 10/31/97 Time Analyzed: 1615

Matrix: (Soil/Water) WATER Level: (low/med) LOW

Instrument ID: 5971a

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	CLIENT	LAB	LAB	DATE
	SAMPLE NO.	SAMPLE ID	FILE ID	ANALYZED
		===========	=======	=======
01	SBLKGOLE1835-MB1 BS	97LE1835-MB1S	A103107	10/31/97
02	SBLKGOLE1835-MB1 BSD	97LE1835-MB1T	A103108	10/31/97
03	GW3	9710L600-007	E110819	11/09/97
04	GW4	9710L600-008	E110820	11/09/97
05	GW5	9710L600-009	E110821	11/09/97
06	FB03	9710L600-011	E110822	11/09/97
07	SW1	9710L600-013	E110823	11/09/97
08	SW2	9710L600-014	E110824	11/09/97

COMMENTS:

Recra LabNet - Lionville Laboratory BNA ANALYTICAL DATA PACKAGE FOR USACE-DEAL TEST SITE

DATE RECEIVED: 10/02/97 RFW LOT # :9710L600

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
S7	001	S	97LE1822	10/01/97	10/04/97	10/25/97
S7	001 MS	s	97LE1822	10/01/97	10/04/97	10/25/97
S7	001 MSD	S	97LE1822	10/01/97	10/04/97	10/25/97
S8	002	S	97LE1822	10/01/97	10/04/97	10/25/97
S9	003	S	97LE1822	10/01/97	10/04/97	10/25/97
S10	004	S	97LE1822	10/01/97	10/04/97	10/25/97
S11	005	S	97LE1822	10/01/97	10/04/97	10/25/97
GW3	207	W	97LE1835	10/01/97	10/06/97	11/09/97
GW4	008	W	97LE1835	10/01/97	10/06/97	11/09/97
GW5	009	W	97LE1835	10/01/97	10/06/97	11/09/97
FB03	011	W	97LE1835	10/01/97	10/06/97	11/09/97
SW1	013	W	97LE1835	10/01/97	10/06/97	11/09/97
SW2	014	W	97LE1835	10/01/97	10/06/97	11/09/97
SD1	015	S	97LE1822	10/01/97	10/04/97	10/25/97
SD2	016	S	97LE1822	10/01/97	10/04/97	11/09/97
AB QC:						
SBLKFZ	MB1	s	97LE1822	N/A	10/04/97	10/14/97
SBLKFZ	MB1 BS	S	97LE1822	N/A	10/04/97	10/14/97
SBLKGO	MB1	W	97LE1835	N/A	10/06/97	10/31/97
SBLKGO	MB1 BS	W	97LE1835	N/A	10/06/97	10/31/97
SBLKGO	MB1 BSD	W	97LE1835	N/A	10/06/97	10/31/97

RECRA LabNet Use Only	_
77/0L600	_



Client USACE - DEAR TEST SITE	Refrigerator #	1 / 2 2	3	
Est. Final Proj. Sampling Date		Liquid Ba 1 AM		2 -
Project # 030% 164 001 0008 00 (4)	#/Type Container	Solid 24 1AM	IAM	/Aux /Pux
Project Contact/Phone # G. Bushtaltal - 5832	Volume	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	14	14 14 9
RECRA Project Manager M. Young		Solid 40ML SOML S	well	802
OC SLIGHE DOI SACC TAT 30 DAY	Preservatives	He chair		HNO2 HNO
	ANALYSES	ORGA		INORG 3 S
Date Rec'd 10-2-97 Date Due 11-1-97 Account # MIK COM	REQUESTED	VOA BNA	P CB P CB P CB P CB P CB P CB P CB P CB	INORG S S S S S S S S S S S S S S S S S S S
MATRIX Matrix				
CODES: Lab QC		_	→ RECRA La	bNet Use Onl
S - Soil ID Client ID/Description Chosen SE - Sediment ()	Matrix Date Collected (Time S S	18	191
SO - Solid	1 1	Time Collected 75%	Closert	MACARTO
SL - Sludge W - Water O/ 57 X X			0	(È)
0 - 011	5 11.1.97	1/05 X X X X	\times	X
A - Air DS - Drum 002 58	15 1	1125 X X		
Solids DL - Drum 003 59	3 1	2930 X X I		
Liquids 201 SID	 			X
L- CF/IOLF		2945 X X		$X \mid a \mid a$
WI - Wipe	12 X	0935 X X X	X	× No.7"
X - Other F - Fish OW - GW-2	W 18/30/97	1555 X X	X Asm	
00/6W3	W 10×1971	udo XXX	11/2/57	
00 GW4	1 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1		}	
009 GW5	1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -	2955 X X		
	W	1150 X X X		\times
FIELD DEDSONNEL COMPLETE ONLY	WX V	1125 X		
FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS Special Instructions:	DATE/REVISIONS	r. 01/ 1-1	en Vols for Simple	
CRo 2 of Manual R. A. H.	- ITO I	ime collected e	21 VOAs to Sonde	RECRA LabNet Use Only
FBO2 IS METHANOL BLANK	2004		, , ,	Samples were: COC Tape was:
Job#= 11901-001-003-0001-00	XX Rock	12 mate k Las	the for samples	1) Shipped Lor 1) Presence Outer
1004 - 11101-001-003-0001-00	3/4//	Call I	He tor samples	Hand Delivered Packag (Y) or N Airbill (3094223832) Unbroken on Outer
	4 016	per'd broken		2) Unbrokemon Outer 2) Ambient of Chilled Package Y or N
	-501/4 i	2 VOA VIAG R	old for Sounds	3) Received in Good 3) Present on Sample
1) Letterin nett in 100	m/2.	ME NO DIZ	The state of the s	Condition Y or N Y or N
Relinguished Received 7-75°, #19 131 - \$30°	6. 6.	(ns, uv 1010)	oid for samples	4) Labels Indicate 4) Unbroken on Properly Reserved Sample V or N
Relinquished Received Date Time Relinquish by	- Incocited	Date Time		(/ y) or N
	<u>by</u>		Samples Lables and	5) Received Within Upon Samue Rec't
10.1-97 1330			COC Record Y or N	Holding Times
Hes EX H. Staling 2970930				(y or N

RECRA LabNet Use Only

970 L600



Est. Final Proj. Sampling Date 1/2 - 1/3 2 2 2 2 2 2 2 2 2	Client USA	E-DEM TE	ST 3/78	2		Refrige	rator #	"	\prod	2	2			ו כו	737			
Project Contact/Phone & Butter/An - 583 a. Preservatives Volume Usual Solid & An Introduction	Est. Final Pro	j. Sampling Date	10-1-9	77		#/Type	Container	Liquid	3 (1	AM	HM			121	1700			49-1
Project Contact/Phones & Bushann - 583 & Volume Study	Project # 22	388-184-0	21-000	2-00	B	,		Solid			LAM			1	1/100)			까
RECRA Project Manager M. Jauk. OC Del The product Manager M. Jauk. Preservatives Sold Matrix Collected C						Volume									14			4-1
Dale Rec'd Dale Buc'd Dale Due Due Due Due Due Due Due Due Due Du						Proper	ativas	Solid			50mi			802				
Date Rec'd Account # Date Due Account # Date Due Account # Date Due Account # Date Due Account # Date Due Account # Date Due Account # Date Due Account # Date Due Due Due Due Due Due Due Due Due Du	1	_	MARY 2	2	1	rieser	alives				ANIC							,
Matrix Date Collected	I		5 (C	104	/)									INOR				1 1
MATRIX CODES Collected				/		HEQUE	STED		9	BN.	PCI	至			S & S	ŀ		1 1
S - Soll ID Client ID/Description	MATRIX				Matrix			ļ	 		l	1	PECDA	4 C 2 04	12			ᆜ
W. Water O. Oil A. Air DS. Drum DS. Dru		Lab			QC		Deta .	T:	1	*	7:		TIECHA I	I R		- + -		 -
W. Water O. Oil A. Air DS. Drum DS. Dru		I I I'IIA	nt ID/Descript	ion		Matrix			2	5	90			1 8	3	1		
W - Water O FB03	SO - Solid					ļ			<u> </u>	3	3			118				1 1
A. Air		all EROS	₹	·	M3 M3D	1,7		7050	10	$\frac{9}{1}$				13	18			
Solids D. During D. Duri	O - Oil				 	ω	10-1-97	4	LX	X	X							1 1
Leachate WI - Wipe Leachate WI - Wipe Leachate WI - Wipe Leachate WI - Wipe A - Other F. Fish OI GW2) ` .			W		1320	X									
L. Equids L. EpiTCLP Leachale M1. Wipe VI, Wipe VI, Wipe VI, Other F. Fish OI GW2 OID GW3 OID		015 5W/	<u>'</u>		1 1	W		0715	X	X	X					1.241		+
Leachate WI - Wipe WI - Wipe 1/6 5 D.2 5 0720 X X X X X X X X - Other F. Fish OI G. S.D.2 5 0745 X X X X X X X X X X X X X X X X X X X	Liquids	014 5002				111							 		2	-		
William Wile Wile Complete SD2 SIND 10-197 1555 SIND 10-197 1555 SIND 10-197 1555 SIND 10-197 1555 SIND 10-197 1555 SIND 10-197 1555 SIND 10-197 1555 SIND 10-197 1555 SIND 10-197 1555 SIND 10-197 1555 SIND 10-197 1555 SIND 10-197 SIND			<u> </u>		 	100	 			$\overrightarrow{\cdot}$	\bigcirc				_/X			
FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS Special instructions: John Sample were 1901-003-0001-00 Autility 2 Ambient or Chief Jackage Y or N N Autility 2 Ambient or Chief Jackage Y or N N N N N N N N N N N N N N N N N N	WI - Wipe	17 1 2 1			 	12	 			X	X			$\perp \times \mid$				
FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS DATE/REVISIONS: MO277 Special Instructions: 1 CALL State INVINS COF Sumple (Olume Instructions) 1 Sample were: 1) Shipped or 1) Presymbol Outer 1) Shipped or 1) Presymbol Outer 1) Presymbol Outer 1) Presymbol Outer 1) Presymbol Outer 1) Ambient or Child Tackage Y or N 3) Received in Vols Cof Sumple Ob 3 Received in Vols Conditions and 3 Present on Sample Conditions and 3 Present on Sample Conditions and 3 Present on Sample Conditions and 4 Large Professions Relinquished Received Date Time Discrepancies Relinquished Professions Sample Y or N Sample Y or		116 SDE	<u>}</u>	 	ļ	عدا	V	0745	X	X	X			X				
FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS DATE/REVISIONS: MO277 Special Instructions: 1 CALL State INVINS COF Sumple (Olume Instructions) 1 Sample were: 1) Shipped or 1) Presymbol Outer 1) Shipped or 1) Presymbol Outer 1) Presymbol Outer 1) Presymbol Outer 1) Presymbol Outer 1) Ambient or Child Tackage Y or N 3) Received in Vols Cof Sumple Ob 3 Received in Vols Conditions and 3 Present on Sample Conditions and 3 Present on Sample Conditions and 3 Present on Sample Conditions and 4 Large Professions Relinquished Received Date Time Discrepancies Relinquished Professions Sample Y or N Sample Y or		011 (712)	2			11.	10-1-97	1555							X			1
FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS DATE/REVISIONS: Special Instructions: Total = 1901-003-0001-00 2 Lot sample 000 3 Lot sample 000 4 Ol -005, 010 Samples were: 1) Shipped or 1) Présyndon Outer Parkage Y or N Airbill # Condition of Parkage Y or N Airbill # Condition of Parkage Y or N 3) Received of Sample Condition of Parkage Y or N 3) Received of Sample Condition of N 1 Discrepancies Returned Sample Y or N Sample Y or N Sample Y or N Sample News (A) Unbroken on N Sample Y or N Sample		0/6/6/1	3			7.7		1140					 	 		- 	 -	+-+
FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS DATE/REVISIONS: Special Instructions: Total = 1901-003-0001-00 2 Lot sample 000 3 Lot sample 000 4 Ol -005, 010 Samples were: 1) Shipped or 1) Présyndon Outer Parkage Y or N Airbill # Condition of Parkage Y or N Airbill # Condition of Parkage Y or N 3) Received of Sample Condition of Parkage Y or N 3) Received of Sample Condition of N 1 Discrepancies Returned Sample Y or N Sample Y or N Sample Y or N Sample News (A) Unbroken on N Sample Y or N Sample		019 611	U			77		0046						 				-
FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS DATE/REVISIONS: 11027 Special Instructions: 1 0Ath distant receive sample informe 2 for sample 000 3 1/2015 for Sample 5 Hand Delivered Parkage Y or N Airbill # Condition of Sample Y or N	ļ	200		· · · · · · · · · · · · · · · · · · ·	 	144	\vdash \leftarrow	073					 	4				
Relinquished Received Date Time Relinquished Received Date Time Discrepancies Relived Time Discrepancies Relived Time Relinquished Received Date Time Relinquished Received Date Time Discrepancies Relived Time Relinquished Received Date Time Discrepancies Relived T	EIEI D BERSOI	MEL COMPLETE ON	II V CHARER	10510	<u> </u>	IW		0/6										
Relinquished Received Date Time Relinquished Received Date Time Discrepancies Relived Time Discrepancies Relived Time Relinquished Received Date Time Relinquished Received Date Time Discrepancies Relived Time Relinquished Received Date Time Discrepancies Relived T			LT SHADED A	AHEAS		PATE/REV	ISIONS:	Mai	ant	Calas	ی زین		icolora		RECRA	LabNot III	o Only	
Relinquished Received Date Time Relinquished Received Date Time Discrepancies Relived Time Discrepancies Relived Time Relinquished Received Date Time Relinquished Received Date Time Discrepancies Relived Time Relinquished Received Date Time Discrepancies Relived T	1 .				-		1. 	9 414	101			somple	Willing	-	TEOTIA	Labitet Us	- Only	
Relinquished Received Date Time Relinquished Received Date Time Discrepancies Relived Time Discrepancies Relived Time Relinquished Received Date Time Relinquished Received Date Time Discrepancies Relived Time Relinquished Received Date Time Discrepancies Relived T	Tob# =	= 11901-001	-003-	-ו מחת	-(77)		2. £01_	Samp	le o	06				Samp		coc	ape was	
Relinquished Received Date Time Relinquished Received Date Time Discrepancies Relived Time Discrepancies Relived Time Relinquished Received Date Time Relinquished Received Date Time Discrepancies Relived Time Relinquished Received Date Time Discrepancies Relived T	()00	//					3- Kd	11 500	e i	n Vail	4 0	of Su	M DIPS	1) Sh Hand			ent on Out	ler N
Relinquished Received Date Time Relinquished Received Date Time Discrepancies Relived Time Discrepancies Relived Time Relinquished Received Date Time Relinquished Received Date Time Discrepancies Relived Time Relinquished Received Date Time Discrepancies Relived T					·		- 1	005		10	-		4/100	— Airbill				
Relinquished Received Date Time Relinquished Received Date Time Discrepancies Relived Time Discrepancies Relived Time Relinquished Received Date Time Relinquished Received Date Time Discrepancies Relived Time Relinquished Received Date Time Discrepancies Relived T							4 Oo L	-007	رس ر	\mathcal{O}_{-}				2) An	nbient or Chille	Packa	ge Y or	N
Relinquished Received Date Time Relinquished Received Date Time Discrepancies Returns Provided Received Sample Y or N					-		5							[3) He		(3) Pre:		
Relinquished Received Date Time Relinquished Received Date Time Discrepancies Between Provided Provide														1 /	WAR!	/ '		N
Date Time Relinquished Received Date Time Discrepancies Relinquished No. CO. D	Bellmeulebed	T 5	т				D											N
	by heimquisned	Heceived	Date	Time	Relinquisi by	ned	Received by	d c	Date	Tin	ne				1184			
Samples Lables and 5) Received Within Upon Sample Rec't	The state of the s	ļ	1.//	1700						 		Samples	Lables and	5) Re	•		Sample Red	c't
NOTES: Y or N	nim	111 1	19/1/97							<u> </u>		NOTES:	or N	Holdi	•	1	Y or	N
Fed = x Styling 10-0970930	Fedex	X-try line	10-097	0930														

RECRA LabNet Use Only



Client	ACE	-Deal	TOU	SHe			Refrige	rator #		Г	T	T	T		1			_					
Est. Final Pre	Samp	ling/pate	10	\ <u></u>				Container	Liquid		 	 	 			119	 	-				1	
Project#	-1	, pac	15-					Comamer	Solid				<u> </u>				 -			├	 - -	~	_
Project Conta	CO MOT	10	K	a7			Volume	:	Liquid							IL	+	 		\vdash	\rightarrow	\	_
RECRA Proje	ct Mana	99-180	100				Preserv	atives	Solid	 		 											\dashv
0¢	Jel Jel		_ TAT							 	ORG	ANIC	Ь			HNO							
Date Rec'd Z	2-2-9	7	Date Due _				ANALY REQUE		-	4			ф			3 4 1	ÓRG	ł					
Account #								3120	-	VOA	BNA	Pest/ PCB	Herb		1	1888	S						
MATRIX CODES:						trix						<u> </u>	1	<u></u>	RECRA	Labilio	Miss	Only	LJ	4			
S - Soil	Lab ID	Clie	nt ID/Descri	ption		C sen	Matrix	Date	Time									Jilly					
SE - Sediment SO - Solid			•	•	(~	()	Matrix	Collected	Collected							Manaher	/B						
St - Studge					MS	MSD										{ §							ı
W - Water O - Oil	031	Su	12				1.7	10-1-97	0740					-		-1/2	₩			-			
A - Air	'						-	fr. 1 - 1 - 1	0.70							\bot	 						
DS - Drum Solids					1								ļi							. 1			
DL - Drum Liquids																							
L - EP/TCLP					_																	_	\dashv
Leachate WI - Wipe																	+		-				\dashv
X - Other F - Fish																	┼						
1 - 1 1511				····																			
l					+																		
			·		-																		
}																	T						\dashv
					1 1											-	 						\dashv
FIELD PERSON		MPLETE ON	LY SHADED	AREAS		DA	ATE/REVI	SIONS:			1					ᆚᆖ							
Special Instruct	lions:							1								- 1		RECR	A Labi	Net Us	e Only		刁
								2												~		/ -	\dashv
																	mples v Shipped		or		ape was ent on C		ı
						_		3								Ha	nd Deliv	vered		Packag	Y or	N	
						_	4	1									bill #			2) Unbi	roken on	Ouler	1
								5								3)	Receive				je Y or enton S		
								,								I Co	ndition.	Y 15/	N L	O) Tes	or Y		ı
Delinevist			, 				(S								_ 0	N.	ndiction	ナ	、(4) Unbi	roken on		
Relinquished by		ceived by /	Date	Time		quishe	d	Received	n	ate	T		Disco			P(re ter e Y or	d N	Sample	Y or	Ν	
To For	11 //	-/			 	by		by			Tin		Samp	les Labl	Between	/ su	Receive				ecord Pr		ļ
Carr 1	-24	there	10-297	J445							ĺ		COC	Record?	YON	T _t	lding Tir	nes		opon S	Sample R Y or		
/												\dashv	NOTE	:S:	•	J		Y or	И				
				<u></u>	L									-									ļ



Virtual Laboratories Everywhere

Recra LabNet Philadelphia Analytical Report

Client: USACE-DEAL TEST SITE

W.O. #: 11901-001-003-0001-00

RFW #: 9710L573

Date Received: 10-01-97

SEMIVOLATILE

The set of samples consisted of three (3) water samples and six (6) soil samples collected on 09-30-97.

The samples and their associated QC samples were extracted on 10-03,04-97 and analyzed according to criteria set forth in SW 846 Method 8270 for TCL Semivolatile target compounds on 10-09,10,14,24,25-97.

The following is a summary of the QC results accompanying the sample results and a description of any problems encountered during their analyses:

- 1. The cooler temperatures upon receipt have been recorded on the chain-of-custody.
- 2. All required holding times for extraction and analysis were met.
- 3. Non-target compounds were detected in these samples.
- 4. Two (2) of eighty-four (84) surrogate recoveries were outside EPA QC limits; however, EPA CLP surrogate recovery criteria were met (i.e., no more than one outlier per fraction {acid and base neutral} and no recoveries less than 10%).
- 5. All blank spike recoveries were within EPA QC limits.
- 6. The soil method blank contained the common contaminant bis(2-Ethylhexyl)phthalate and the target compound Benzoic Acid at a level less than the CRQL.

J. Michael Taylor

71-73 97 Date

Vice President and Laboratory Manager

Lionville Analytical Laboratory

mmz\bna\10-573b.cn

GLOSSARY OF BNA DATA

DATA QUALIFIERS

U	=	Compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit which is included and corrected for dilution and percent moisture.
J	=	Indicates an estimated value. This flag is used under the following circumstances: 1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; or 2) when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. For example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
В	=	This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.
E	=	Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
D	=	Identifies all compounds identified in an analysis at a secondary dilution factor.
I	=	Interference.
NQ	=	Result qualitatively confirmed but not able to quantify.
A	=	Indicates that a TIC is a suspected aldol-condensation product.
N	=	Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the N code is not used.
X	=	This flag is used for a TIC compound which is quantified relative to a response factor generated from a daily calibration standard (rather than quantified relative to the closest internal standard).

= Additional qualifiers used as required are explained in the case narrative.

mmz\10-94\gloss.bna



11 002

GLOSSARY OF BNA DATA

ABBREVIATIONS

BS = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spike solutions and carried through all the steps in the method. Spike recoveries are reported.

BSD = Indicates blank spike duplicate.

MS = Indicates matrix spike.

MSD = Indicates matrix spike duplicate.

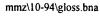
DL = Suffix added to sample number to indicate that results are from a diluted analysis.

NA = Not Applicable.

DF = Dilution Factor.

NR = Not Required.

SP, Z = Indicates Spiked Compound.





Record Lahvet - Timvil' Tabo 'ory

Semivolatiles by GC/MS, HSL List

Report Date: 11/10/97 14:57

DEM Datah Numb	or. 07101573	G1				GC/MS, HSL			:	Report Dat	te: 11/	10/97 14	1:57
RFW Batch Number	el: 9/10L5/3	Client:	USACE-L	EAL TES	ST SI	ITE Wo	ork Or	der: 1190	01001	003 Page	<u>: 1a</u>		
	Cust ID:	sı	L	s	2	S	3	S	1	s:	5	se	5
Sample	RFW#:	001	L	002	2	003	l	004	1	001	_	201	_
Information	Matrix:	SOIL	-	SOIL		SOIL	•	SOIL	•	005	•	006	•
	D.F.:	1.0	0	1.0	0.0	1.0	00	1.0		SOIL	20	SOIL	_
	Units:	UG/F		UG/I		UG/K		UG/I		1.0 UG/I		1.0	
				, -		00/1		00/1	\G	UG/ I	\G	UG/K	
	Nitrobenzene-d5	44	ક	60	ક	49	8	74	-	63	8	58	용
Surrogate	2-Fluorobiphenyl	49	8	61	왕	53	왕	75	%	70	8	61	۰ اج
Recovery	/p-Terphenyl-d14	50	ક્ર	82	કૃ	59	ે	85	と	84	8	79	8
	Phenol-d5	46	ક	65	કૃ	51	8 ક	73	용	74	8	65	° ४
	2-Fluorophenol	48	왕	65	કૃ	53	ક્ષ	74	8	72	8	65	° ४
	,4,6-Tribromophenol	58	ક	79	용	62	ષ્ઠ	98	ક	0.5	9.	75	0.
==========		========	=fl====	======	==fl=	========	=fl==:	=======	=fl=:	========	==fl===:		==fl
Phenol		810	UJ	440	U	970	บ 🦫	420	U	150	J	470	U
bis(2-Chloroet	hyl)ether	810	U	440	U	970	U :	420	U	1100	υT	470	U
2-Chlorophenol		810	U ¦	440	U	970	U .	420	U	1100	Ū	470	Ū
· 1,3-Dichtorope	nzene	810	U	440	U	970	Ū .	420	U	1100	U	470	Ū
1,4-Dichlorobe	nzene	810	υ	440	U	970	U ·	420	U	1100	Ü :	470	Ŭ
Benzyl alcohol		810	U	440	U	970	U	420	U	1100	U	470	Ū
1,2-Dichlorobe	nzene	810	Ū	440	U	970	Ū	420	U	1100	U	470	Ū
2-Methylphenol		810	U	440	U	970	U	420	U	1100	U	470	Ū
	opropyl)ether	810	U	440	U	970	U	420	U	1100	U	470	Ū
4-Methylphenol		810	U	440	U	970	U	420	U	1100	U	470	U
N-Nitroso-Di-n	-propylamine	810	U	440	U	970	U	420	U	1100	U	470	U
Hexachloroetha	ne	810	U	440	U	970	U	420	U	1100	U	470	U
Nitrobenzene			U	440	U	970	U	420	U	1100	U	470	U
			U	440	U	970	Ū	420	U	1100	U	470	U
2-Nitrophenol_		810	U	440	U	970	U	420	U	1100	U	470	U
2,4-Dimethylph	enol	810	Ŭ	440	Ŭ	970	Ū	420	U	1100	U	470	U
Benzoic acid		400560	JBU	2200	U	4/00 100	∂B ∤(2100	U	5300 430	JBU	2400	U
bis(2-Chloroet	hoxy) methane		Ū	440	U	970	U	420	U	1100	U	470	U
2,4-Dichloroph		810	U ;	440	U	970	Ū,	420	U	1100	U	470	U
	obenzene		U	440	U	970	Ū	420	U	1100	Ü	470	U
Naphthalene		810	U	440	Ū	970		420	U	1100	Ŭ	470	U
4-Chloroanilin		810	Ŭ	440	U	970	U	420	U	1100	U	470	Ū
Hexachlorobuta		810	U	440	U	970	Ū	420	U	1100	Ū	470	U
4-Chloro-3-met		810	U ·	440	U	970	U	420	U	1100	υ .	470	Ū
2-Methylnaphth		810	U	440	U	970	Ŭ ,	420	U	1100	Ŭ ·	470	Ū
Hexachlorocycl	-	810	U /	440	U	970	U 🗸	420	U	1100	υV	470	
*= Outside of	EPA CLP QC limits.										Ų		

Cust ID:	SI	•	SZ	2	S3	3	S4	:	S5	;	se	5
RFW#:	001	-	002	2	003	3	004	:	005	;	006	5
2,4,6-Trichlorophenol	810	Ū	1 440	U	970	U	420	U	1100	UT	470	U
2,4,5-Trichlorophenol	4000	U	2200	U	4900	U:	2100	U	5300	U	2400	Ū
2-Chloronaphthalene	810	U	440	U	970	U	420	U	1100	U	470	υLO
2-Nitroaniline	4000	U	2200	U	4900	U	2100	U	5300	U	2400	υĊ
Dimethylphthalate	810	U	440	U	970	U	420	U	1100	U	470	υÖ
Acenaphthylene	810	U	440	U	970	U	420	U	1100	U	470	Ū
2,6-Dinitrotoluene	810	U	440	U	970	U	420	U	1100	Ū	470	Ū
3-Nitroaniline	4000	U	2200	U	4900	υ	2100	Ū	5300	U	2400	Ū
Acenaphthene	810	U	440	U	970	ָּׁ ט	420	Ū	1100	U	470	บ
2,4-Dinitrophenol	4000	U	2200	U	4900	ָ ט	2100	Ū	5300	Ū :	2400	Ū
4-Nitrophenol	4000	U	2200	U	4900	Ū.	2100	Ū	5300	Ü :	2400	Ū
Dibenzofuran	810	U	440	U	970	U .	420	Ū	1100	U	470	U
2,4-Dinitrotoluene	810	U	440	U	970	U	420	Ū	1100	Ū	470	Ū
2,4-Dinitrotoluene Diethylphthalate	810	U	440	U	970	U	420	U	1100	Ū ⁱ	470	U
4-Chlorophenyl-phenylether	810	U	440	U	970	U	420	U	1100	Ū	470	Ū
Fluorene	810	U	440	U	970	U	420	Ū	1100	U	470	Ū
4-Nitroaniline	4000	U	2200	U	4900	U	2100	U	5300	Ū	2400	Ū
4,6-Dinitro-2-methylphenol	4000	U	2200	U	4900	U	2100	U	5300	Ū	2400	Ū
N-Nitrosodiphenylamine (1)	810	U	440	U	970	U	420	U	1100	ָ ט	470	Ū
4-Bromophenyl-phenylether		U	440	Ū	970	U	420	U	1100	U .	470	Ū
Hexachlorobenzene	810	U	440	U	970	U	420	U	1100	U	470	U
Pentachlorophenol	4000	U	2200	U	4900	U	2100	U	5300	U	2400	U
Phenanthrene	810	U	440	U	970	U	420	U	1100	U	470	U
Anthracene	810	U	440	U	970	U	420	U	1100	υ.	470	U
Di-n-Butylphthalate	810	U	440	U	970	U	420	U	1100	υ	470	U
Fluoranthene	100	J	440	U	970	U	420	U	1100	U	470	U
Pvrene	160	J	440	U	970	U	420	U	1100	U	470	U
Butylbenzylphthalate	810	U	440	U	970	U	420	U	1100	U	470	U
3,3'-Dichlorobenzidine	1600	U	3 880	U	1900	U	840	U	2100	U	950	U
Benzo(a)anthracene	110	J	440	U	970	U	420	U	1100	U	470	U
Chrysene	150	J	440	U	970	U	420	U	1100	U	470	U
bis(2-Ethylhexyl)phthalate		₹B	U 4 4 220	JB /	ი ი 370	JB'	∴, n. 25 0	JB!!	1100 550	JB U	470180	JBU
Di-n-Octyl phthalate		U	440	U	970	U	420	Ū	1100	U	470	U
Benzo(b)fluoranthene	810	U	440	U	970	U	420	U	1100	U	470	U
Benzo(k)fluoranthene	810	U	440	U	970	U	420	U	1100	U	470	U
Benzo(a)pyrene	810	U	440	U	970	U '	420	บ	1100	U	470	U
Indeno(1,2,3-cd)pyrene	810	U	440	U	970	U	420	Ū	1100	U	470	U
Dibenzo(a,h)anthracene	810	U	440	U	970	U	420	บ	1100	U	470	U
Benzo(g,h,i)perylene	810		440	U	970	U	420	U	1100	U	470	U
Carbazole	810			U	970	U 🔭	420	U	1100	U V	470	U
(1) - Cannot be separated from Di	phenylamine	∍.	*= Outside	of E	PA CLP QC	limi	ts.			·	♥	

Record Lahmot - Tionvill Tabo bry

Semivolatiles by GC/MS, HSL List

Report Date: 11/10/97 14:57 Client: USACE-DEAL TEST SITE Work Order: 11901001003 Page: 2a RFW Batch Number: 9710L573

						stoos rage. 2	<u>. a</u>
	Cust ID:	GW1	GW2	FB-1	SBLKFZ	SBLKFZ BS	SBLKGH
Sample	RFW#:	007	800	009	97LE1822-MB1	07771000 1001	077 71 01 7 17 1
Information	Matrix:	WATER	WATER	WATER	SOIL	97LE1822-MB1 SOIL	97LE1817-MEL
	D.F.:	1.00	1.00	1.00	1.00	1.00	WATER
	Units:	UG/L	UG/L	UG/L	UG/KG		1.0
		, -	33/ =	00/1	OG/ KG	UG/KG	UG/L
	Nitrobenzene-d5	79 %	83 %	87 %	87 왕	86 %	89 °%
Surrogate	2-Fluorobiphenyl	73 %	58 %	74 %	86 %	86 %	
Recovery	p-Terphenyl-d14	27 * %	13 * %	93 %	91 %	89 %	86 % 98 %
_	Phenol-d5	82 %	80 %	79 %	85 %	80 %	98 ° 80 °8
	2-Fluorophenol	79 %	77 %	75 %	85 %	80 °	80 8 76 %
	2,4,6-Tribromophenol	83 %	63 %	68 %	96 %	00 %	0.0
=======================================	· · · · · · · · · · · · · · · · · · ·	======fl=	=======fl===	:=======f	oo 5 ا ـــــــــــــــــــــــــــــــــــ	88 f	80 % E1
Phenol		10 Ј	11 U	10 U	330 U	.======11 77 %	10 U
bis(2-Chloro	ethyl)ether	11 U	11 U	10 U	330 U	330 U	10 U
2-Chlorophene	ol	11 U	11 U	10 U	330 U	77 %	10 U
1,3-Dichloro	benzene	11 U	11 U	10 U	330 U	330 U	10 U
1,4-Dichloro	benzene	11 U	11 U	10 U	330 U	79 %	10 U
Benzyl alcoho	ol	11 U	11 U	10 U	330 U	330 U	10 U
1,2-Dichloro	benzene	11 U	11 U	10 U	330 U	330 U	10 U
2-Methylphen	ol	11 U	11 U	10 U	330 U	330 U	10 U
bis(2-Chloro	isopropyl)ether	11 U	11 U	10 U	330 U	330 U	10 U
4-Methylphen	ol	11 U	11 U	10 U	330 U	330 U	10 U
N-Nitroso-Di	-n-propylamine	11 U	11 U	10 U	330 U	86 %	10 U
Hexachloroet	hane	11 U	11 U	10 U	330 U	330 U	10 U
Nitrobenzene		11 U	11 U	10 U	330 U	330 U	10 U
Isophorone		11 U	11 U	10 U	330 U	330 U	10 U
2-Nitropheno	1	11 U	11 U	10 U	330 U	330 U	10 U
2,4-Dimethyl	phenol	11 U	11 U	10 U	330 U	330 U	10 U
Benzoic acid		55 U	2 J	50 U	200 Л	160 JB	
bis(2-Chloro	ethoxy) methane	11 U	11 U	10 U	330 U	330 U	10 U
2,4-Dichloro		11 U	11 U	10 U	330 U	330 U	10 U
1,2,4-Trichl	orobenzene	11 U	11 U	10 U	330 U	84 %	10 U
Naphthalene_		11 U	11 U	10 U	330 U	330 U	10 U
4-Chloroanil	ine	11 U	11 U	10 U	330 U	330 U	10 U
Hexachlorobu	tadiene	11 U	11 U	10 U	330 U	330 U	10 U
4-Chloro-3-m	ethylphenol	11 U	11 ປັ	10 U	330 U	75 %	10 U
2-Methylnaph	thalene	11 U	11 U	10 U	330 U	330 U	10 U
Hexachlorocy	clopentadiene	11 U	11 U	10 U	330 U	330 U	10 U
*= Outside o	f EPA CLP QC limits.				220 0	330 0	10 0

Cust ID	: GW1	•	GW2	(FB-1		r: 1190100100 SBLKFZ	SBLKFZ BS	2	SBLKGH	
RFW#	: 007	•	008	009		97LE1822-MB1	97LE1822-1	MB1	97LE1817-1	MB1
2,4,6-Trichlorophenol	11	ΤŢ	11 U	10	TT					
2,4,5-Trichlorophenol		U	55 U	50	Ü	330 U	330	U	10	U
2-Chloronaphthalene	33	U	11 U	10	U	1700 U	1700	U	50	U
		U	55 T	50	U	330 U	330	U	10	U
2-Nitroaniline	33	Ū	11 U		U	1700 U	1700	U	50	Ü
Acananhthulana		Ū	11 U	10 10	Ū	330 U	330	U	10	Ü
Acenaphthylene		U	11 U		U	330 U	330	U	10	U
3-Nitroaniline	55	U	— ···· -	10	U	330 U	330	U	10	U
		Ū	55 U	50	U	1700 U	1700	Ū	50	U
	11	U	11 U	10	U	330 U	85	용	10	U
2,4-Dinitrophenol	55	U	55 Ŭ	50	U	1700 บ	1700	U	50	U
4-Nitrophenol Dibenzofuran		_	55 U	50	U	1700 ប	91	ક	50	U
	11	U	11 U	10	U	330 U	330	U	10	U
2,4-Dinitrotoluene	11	Ū	11 U	10	U	330 U	83	ક્ષ	10	U
Diethylphthalate	1	J	11 U	10	U	330 U	330	U	10	U
4-Chlorophenyl-phenylether		Ŭ	11 U	10	U	330 A	330	U	10	U
Fluorene	11	U	11 U	10	U	330 U	330	U	10	U
4-Nitroaniline	55	U	55 U	50	U	1700 ប	1700	U	50	U
4,6-Dinitro-2-methylphenol	55	U	55 U	50	U	1700 U	1700	U	50	U
N-Nitrosodiphenylamine (1)	11	U	11 U	10	U	330 U	330	U	10	U
4-Bromophenyl-phenylether	11	U	11 U	10	U	330 U	330	U	10	U
Hexachlorobenzene	11	U	11 U	10	U	330 U	330	U	10	U
Pentachlorophenol	55	Ŭ	55 U	50	U	1700 ប	88	ક	50	U
Phenanthrene	11	U	11 U	10	U	330 U	330	U	10	U
Anthracene	11	U	11 U	10	U	330 U	330	U	10	U
Di-n-Butylphthalate	1	J	11 U	10	U	330 U	330	U	10	U
Fluoranthene	11	U	11 U	10	U	330 U	330	U	10	Ŭ
Pyrene	11	U	11 U	10	U	330 U	86	ક	10	U
Butylbenzylphthalate	11	U	11 U	10	U	330 U	330	U	10	U
3,3'-Dichlorobenzidine	22	U	22 U	20	U	670 U	670	U	20	U
Benzo(a) anthracene	11	U	11 U	10	U	330 U	330	U	10	U
Chrysene	11	Ŭ	11 U	10	U	330 U	330	U	10	U
bis(2-Ethylhexyl)phthalate	1	J	11 U	10	U	220 J	190	JВ	10	U
Di-n-Octyl phthalate	11	U	11 U	10	U	330 U	330		10	
Benzo(b) fluoranthene	11	U	11 U	10	U	330 U	330	U	10	U
Benzo(k) fluoranthene	11	U	11 U	10	U	330 U	330		10	
Benzo(a) pyrene Indeno(1,2,3-cd) pyrene	11	U	11 U	10	U	330 U	330		10	
Indeno(1,2,3-cd)pyrene	11	U	11 U	10	U	330 U	330		10	
Dibenzo(a,h)anthracene	11	U	11 U	10	U	330 U		U	10	
Benzo(g,h,i)perylene		U	11 U	10	U	330 U	330	U	10	
Carbazole		U	11 U	10	TT	330 U	330		10	

Rooma Lahmat - "' avi?" Labo

Semivolatiles by GC/MS, HSL List

Report Date: 11/10/97 14:57 RFW Batch Number: 9710L573 Client: USACE-DEAL TEST SITE Work Order: 11901001003 Page: 3a

Cust ID: SBLKGH BS SBLKGH BSD

Sample Information	RFW#: Matrix:	97LE1817-N WATER	1B1	97LE1817-1 WATER	MB1	α
111101111101011	D.F.:	1.0	0.0	WAIER 1.(20	
	Units:	UG/I	-	UG/I		
	J. 1202 .	00/1	-	06/1	u	(
The state of the s	Nitrobenzene-d5	84	용	83	~~~	
Surrogate	2-Fluorobiphenyl	79	ક	80	ક	
Recovery	p-Terphenyl-d14	84	ક	82	ક	
	Phenol-d5	75	ક્ષ	73	ક	
	2-Fluorophenol	77	ક	70	ક	
	2,4,6-Tribromophenol	83	ક્ર	79	ક્ષ	
==========			==fl	========	==f1	l=======f1=======f1======f1======f1======
Phenol		72	용	67	용	
bis(2-Chloroe	ethyl)ether	10	U	10	U	
2-Chloropheno	01	73	용	71	욯	
1,3-Dichlorob	penzene	10	U	10	U	
1,4-Dichlorob	oenzene	64	કૃ	71	윻	
Benzyl alcoho	01	10	U	10	U	
1,2-Dichlorob	oenzene	10	U	10	U	
2-Methylpheno	01	10	U	10	U	
bis(2-Chloroi	sopropyl)ether	10	U	10	U	
4-Methylpheno	01	10	Ü	10	U	
N-Nitroso-Di-	-n-propylamine	78	કૃ	79	용	
Hexachloroeth	nane	10	U	10	U	
Nitrobenzene_		10	U	10	U	
Isophorone		_ 10	U	10	U	
2-Nitrophenol		_ 10	U	10	U	
2,4-Dimethylp	phenol	_ 10	U	10	U	
Benzoic acid_		50	U	50	U	
bis(2-Chloroe	ethoxy) methane	10	U	10	U	
2,4-Dichlorop	phenol	10	U	10	U	
1,2,4-Trichlo	orobenzene	68	જ	74	왕	
Naphthalene_			Ū	10	U	
4-Chloroanili	ine	10	U	10	U	
Hexachlorobut	cadiene	10	U	10	U	
4-Chloro-3-me	ethylphenol	- 72	કૃ	69	%	
2-Methylnapht		10	Ū	10	Ū	
	clopentadiene	10	U	10	Ū	
_	f EPA CLP QC limits.	-				

Cust ID: SBLKGH BS

SBLKGH BSD

RFW#: 97LE1817-MB1 97LE1817-MB1

2,4,6-Trichlorophenol	10	U	10	U	
2,4,5-Trichlorophenol	50	Ŭ	50	U	
2-Chloronaphthalene	10	U	10	υ	
2-Nitroaniline		U	50	U	<u></u>
Dimethylphthalate	10	U	10	U	Ú O
Acenaphthylene		U	10	U	
2,6-Dinitrotoluene	10	Ü	10	U	(
3-Nitroaniline	_ 50	U	50	U	,
Acenaphthene		왕	79	· S	
2,4-Dinitrophenol		U	50	U	
4-Nitrophenol ·	- 73	ક	75	ş	
Dibenzofuran	10	U	10	U	
2,4-Dinitrotoluene	74	ક્ષ	74	કુ	
Diethylphthalate	10	U	10	υ	
4-Chlorophenyl-phenylether		U	10	υ	
Fluorene	10	U	10	υ	
4-Nitroaniline	50	U	50	U	
4,6-Dinitro-2-methylphenol	50	U	50	υ	
N-Nitrosodiphenylamine (1)	_ 10	U	10	υ	
4-Bromophenyl-phenylether	10	U	10	U	
Hexachlorobenzene	10	U	10	U	
Pentachlorophenol		왐	67	કૃ	
Phenanthrene	10	U	10	U	
Anthracene	10	U	10	υ	
Di-n-Butylphthalate	_ 10	U	10	U	
Fluoranthene	_ 10	U	10	U	
Pyrene	72	용	77	१	
Butylbenzylphthalate	10	U	10	U	
3,3'-Dichlorobenzidine	_ 20	U	20	U	
Benzo(a)anthracene	10	U	10	U	
Chrysene	_ 10	U	10	U	
bis(2-Ethylhexyl)phthalate	_ 10	U	10	υ	
Di-n-Octyl phthalate	10	U	10	U	
Benzo(b)fluoranthene	10	U	10	U	
Benzo(k)fluoranthene	10	U	10	U	
Benzo(a)pyrene	_ 10	U	10	U	
Indeno(1,2,3-cd)pyrene	10	U	10	U	
Dibenzo(a,h)anthracene	_ 10	U	10	U	
Benzo(g,h,i)perylene	_ 10	U U	10 10	U U	

(1) - Cannot be separated from Diphenylamine. *= Outside of EPA CLP QC limits.

1F

SEMIVOLATILE ORGANICS ANALYSIS SHEET TENTATIVELY IDENTIFIED COMPOUNDS

S1						
----	--	--	--	--	--	--

Lab Name: Recra.LabNet Work Order: 11901001003

Client: <u>USACE-DEAL TEST SITE</u>

Matrix:

SOIL

Lab Sample ID: <u>9710L573-001</u>

CLIENT SAMPLE NO.

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: E102504

Level: (low/med) LOW

Date Received: <u>10/01/97</u>

% Moisture: not dec. 59 dec. Date Extracted: 10/04/97

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 10/25/97

GPC Cleanup: (Y/N) <u>N</u> pH: 2.7

Dilution Factor: 1.00

CONCENTRATION UNITS:

Number TICs found: <u>5</u>

(ug/L or ug/Kg) <u>UG/KG</u>

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	25.27	3000	==== J
2.	ALKANE	30.04	15000	J
3.	UNKNOWN	34.54	6000	J
4.	UNKNOWN	35.80	4000	J
5.	UNKNOWN	35.98	4000	J

1F

SEMIVOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

	CLIENT	SAMPLE	NO.	

S2

Lab Name: Recra.LabNet Work Order: 11901001003

Client: <u>USACE-DEAL TEST SITE</u>

Matrix: SOIL Lab Sample ID: 9710L573-002

Sample wt/vol: 30.0 (g/mL) G Lab File ID: E102422

Level: (low/med) LOW Date Received: low/med

% Moisture: not dec. $\underline{24}$ dec. Date Extracted: $\underline{10/04/97}$

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 10/24/97

GPC Cleanup: (Y/N) N pH: 4.3 Dilution Factor: 1.00

CONCENTRATION UNITS:

Number TICs found: $\underline{6}$ (ug/L or ug/Kg) $\underline{\text{UG/KG}}$

1					
CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q	
		======	=========	=====	}
1.	ALDOL CONDENSATE	9.12	600	JAB	IX
2.	UNKNOWN	21.70	400	J	
3.	UNKNOWN	25.25	700	J	
4.	UNKNOWN	26.54	500	J	
5.	ALKANE	27.19	400	J	
6.	UNKNOWN	29.96	600	J	1
					ĺ

SEMIVOLATILE ORGANICS ANALYSIS SHEET TENTATIVELY IDENTIFIED COMPOUNDS

S3			
1			

Lab Name: Recra.LabNet Work Order: 11901001003

Client: USACE-DEAL TEST SITE

Matrix: SOIL

Lab Sample ID: <u>9710L573-003</u>

Sample wt/vol: 30.0 (g/mL) \underline{G} Lab File ID: $\underline{E102505}$

Level: (low/med) <u>LOW</u>

Date Received: <u>10/01/97</u>

% Moisture: not dec. <u>66</u> dec. Date Extracted: 10/04/97

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 10/25/97

GPC Cleanup: (Y/N) N pH: 2.8 Dilution Factor: 1.00

CONCENTRATION UNITS:

Number TICs found: _5

(ug/L or ug/Kg) <u>UG/KG</u>

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
=========	=======================================		=======	=====
1 1.	UNKNOWN	25.25	4000	J
2.	ALKANE	27.19	4000	J
3.	UNKNOWN	29.93	6000	J
4.	ALKANE	34.12	6000	J
5.	UNKNOWN	34.49	6000	J

CLIENT SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS SHEET TENTATIVELY IDENTIFIED COMPOUNDS

S4

Lab Name: Recra.LabNet Work Order: 11901001003

Client: <u>USACE-DEAL TEST SITE</u>

Matrix:

SOIL___

Lab Sample ID: <u>9710L573-004</u>

Sample wt/vol: <u>30.0</u> (g/mL) <u>G</u> Lab File ID: <u>E102506</u>

Level: (low/med) LOW

Date Received: <u>10/01/97</u>

% Moisture: not dec. 21 dec. Date Extracted: 10/04/97

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 10/25/97

GPC Cleanup: (Y/N) N pH: 4.3 Dilution Factor: 1.00

CONCENTRATION UNITS:

Number TICs found: <u>5</u>

(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	 Q	
=======================================		======	=========	=====	
1.	ALDOL CONDENSATE	9.12	700	JAB	A
2.	UNKNOWN	25.24	1000	J	İ
3.	UNKNOWN	26.53	1000	J	İ
4.	ALKANE	27.18	700	J	İ
5.	UNKNOWN	28.90	3000	J	İ
					İ

SEMIVOLATILE ORGANICS ANALYSIS SHEET TENTATIVELY IDENTIFIED COMPOUNDS

S5			

Lab Name: Recra.LabNet Work Order: 11901001003

Client: <u>USACE-DEAL TEST SITE</u>

Matrix:

SOIL

Lab Sample ID: <u>9710L573-005</u>

Sample wt/vol: 30.0 (g/mL) G Lab File ID: E102507

Level: (low/med) <u>LOW</u>

Date Received: <u>10/01/97</u>

% Moisture: not dec. 68 dec. Date Extracted: 10/04/97

Date Analyzed: <u>10/25/97</u>

Extraction: (SepF/Cont/Sonc) SONC

GPC Cleanup: (Y/N) N pH: 2.7 Dilution Factor: 1.00

CONCENTRATION UNITS:

Number TICs found: 5

(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
=======================================		======	========	=====
1.	UNKNOWN	22.44	5000	J
2.	UNKNOWN	26.56	30000	J
3.	UNKNOWN	29.97	5000	J
4.	UNKNOWN	30.57	7000	J
5.	UNKNOWN	35.96	5000	J

1F

SEMIVOLATILE ORGANICS ANALYSIS SHEET TENTATIVELY IDENTIFIED COMPOUNDS

ı			
•			
1			
-1	0.0		
-	S6		
-1			
ŧ			
- 1			

Lab Name: Recra.LabNet Work Order: 11901001003

Client: <u>USACE-DEAL TEST SITE</u>

Matrix:

SOIL

Lab Sample ID: <u>9710L573-006</u>

CLIENT SAMPLE NO.

Sample wt/vol: 30.0 (g/mL) G Lab File ID: E102426

Date Received: <u>10/01/97</u>

Level: (low/med) <u>LOW</u>

% Moisture: not dec. 30 dec. Date Extracted: 10/04/97

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 10/25/97

GPC Cleanup: (Y/N) <u>N</u> pH: <u>5.3</u> Dilution Factor: <u>1.00</u>

CONCENTRATION UNITS:

Number TICs found: _5

(ug/L or ug/Kg) <u>UG/KG</u>

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
=======================================	=======================================	======	=========	=====
1.	UNKNOWN	25.25	1000	J
2.	UNKNOWN	26.55	4000	J
3.	UNKNOWN	26.93	1000	J
4.	UNKNOWN	29.96	1000	J
5.	UNKNOWN	30.56	1000	J
				I

1F

SEMIVOLATILE ORGANICS ANALYSIS SHEET TENTATIVELY IDENTIFIED COMPOUNDS

1		
ĺ	GW1	
- 1	31.1	

CLIENT SAMPLE NO.

Lab Name: Recra.LabNet Work Order: 11901001003

Client: <u>USACE-DEAL TEST SITE</u>

Matrix: WATER Lab Sample ID: 9710L573-007

Sample wt/vol: 920 (g/mL) ML Lab File ID: E101009

Level: (low/med) LOW

Date Received: <u>10/01/97</u>

% Moisture: not dec. ____ dec. Date Extracted: 10/03/97

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 10/10/97

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CONCENTRATION UNITS:

Number TICs found: 6

(ug/L or ug/Kg) <u>UG/L</u>

CAS NUMBER	 COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	7.85	======== 20	==== ਰੂ ਲ ਨਿੰ
2.	UNKNOWN	8.94	20 7	J
3.	UNKNOWN	10.31	10	J
4. 95-16-9	BENZOTHIAZOLE	12.55	8	JN
5.	UNKNOWN	12.65	9	J
6.	UNKNOWN	22.61	30	J

SEMIVOLATILE ORGANICS ANALYSIS SHEET TENTATIVELY IDENTIFIED COMPOUNDS

	GW2	
١		

Lab Name: Recra.LabNet Work Order: 11901001003

Client: USACE-DEAL TEST SITE

Matrix:

WATER

Lab Sample ID: <u>9710L573-008</u>

Sample wt/vol: $\underline{900}$ (g/mL) $\underline{\text{ML}}$ Lab File ID: $\underline{\text{E101010}}$

Date Received: <u>10/01/97</u>

Level: (low/med) LOW

% Moisture: not dec. ____ dec. Date Extracted: 10/03/97

Extraction: (SepF/Cont/Sonc) CONT

Date Analyzed: <u>10/10/97</u>

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CONCENTRATION UNITS:

Number TICs found: 7

(ug/L or ug/Kg) <u>UG/L</u>

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
=====================================		======	========	=====
1.	UNKNOWN	7.86	9	B K
2. 289-16-7	1,2,4-TRITHIOLANE	10.47	6	JN
3.	UNKNOWN	19.30	6	J
4.	UNKNOWN	21.09	10	J
5.	ALKANE	24.72	10	J
6.	ALKANE	26.58	10	J
7.	UNKNOWN	26.92	10	J
				i

1 F

SEMIVOLATILE ORGANICS ANALYSIS SHEET TENTATIVELY IDENTIFIED COMPOUNDS

FB-1			

CLIENT SAMPLE NO.

Lab Name: Recra.LabNet Work Order: 11901001003

Client: <u>USACE-DEAL TEST SITE</u>

WATER Lab Sample ID: <u>9710L573-009</u> Matrix:

Sample wt/vol: __960 (g/mL) ML Lab File ID: E101008

Date Received: <u>10/01/97</u> Level: (low/med) LOW

% Moisture: not dec. ____ dec. Date Extracted: 10/03/97

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 10/10/97

GPC Cleanup: (Y/N) <u>N</u> pH: $\underline{7.0}$ Dilution Factor: 1.00

CONCENTRATION UNITS:

Number TICs found: 0 (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
	=======================================	======	=========	====
1.				
			<u> </u>	

CLIENT SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS SHEET TENTATIVELY IDENTIFIED COMPOUNDS

SBLKFZ		

Lab Name: Recra.LabNet Work Order: 11901001003

Client: <u>USACE-DEAL TEST SITE</u>

Lab Sample ID: 97LE1822-MB1 SOIL Matrix:

Sample wt/vol: <u>30.0</u> (g/mL) <u>G</u> Lab File ID: <u>E101412</u>

Level: (low/med) <u>LOW</u> Date Received: <u>10/04/97</u>

% Moisture: not dec. ___0 dec. Date Extracted: 10/04/97

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 10/14/97

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CONCENTRATION UNITS:

Number TICs found: 2 (ug/L or ug/Kg) UG/KG

				1
CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
=======================================		======	==========	=====
1.	UNKNOWN	7.04	800	J
2.	ALDOL CONDENSATE	7.32	1000	JA
1				

1F

SEMIVOLATILE ORGANICS ANALYSIS SHEET TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT	SAMPLE	NO.
CRIKCH		

Lab	Name:	Recra.LabNet

<u>.LabNet</u> Work Order: <u>11901001003</u>

Client: USACE-DEAL TEST SITE

Matrix:

WATER

Lab Sample ID: 97LE1817-MB1

Sample wt/vol: 1000 (g/mL) ML

Lab File ID: <u>E100907</u>

Level: (low/med) LOW

Date Received: <u>10/03/97</u>

% Moisture: not dec. ____ dec. Date Extracted: 10/03/97

Extraction: (SepF/Cont/Sonc) CONT

Date Analyzed: 10/09/97

GPC Cleanup: (Y/N) <u>N</u> pH: __7.0

Dilution Factor: 1.00

CONCENTRATION UNITS:

Number TICs found: 1

(ug/L or ug/Kg) <u>UG/L</u>

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
=======================================	=======================================	======	==========	=====
1.	UNKNOWN	7.87	4	J

2C WATER SEMIVOLATILE SURROGATE RECOVERY

Lab Name: Recra.LabNet Contract: <u>1901-01-03</u>

Case No.: <u>USACE-DEAL TEST SITE</u>

RFW Lot No.: 9710L573

	CLIENT	S1	S2	S3	S4	S5	S6	OTHER	TOT
	SAMPLE NO.	(NBZ)#	(FBP)#	(TPH)#	(PHL)#	(2FP)#	(TBP)#	1	OUT
	=======================================	======		======			======:	======	====
01	GW1	79	73	27 *	82	79	83		1 1
02	GW2	83	58	13 *	80	77	63		1
03	FB-1	87	74	93	79	75	68		0
04	SBLKGHLE1817-MB1	89	86	98	80	76	80		0
05	SBLKGHLE1817-MB1 BS	84	79	84	75	77	83		0
06	SBLKGHLE1817-MB1 BSD	83	80	82	73	70	79		0
		<u> </u>							ii

				QC LIMITS
S1	(NBZ)	=	Nitrobenzene-d5	(35-114)
S2	(FBP)	=	2-Fluorobiphenyl	(43-116)
S3	(TPH)	=	p-Terphenyl-d14	(33-141)
S4	(PHL)	=	Phenol-d5	(10- 94)
S5	(2FP)	=	2-Fluorophenol	(21-100)
S6	(TBP)	=	2,4,6-Tribromophenol	(10-123)

[#] Column to be used to flag recovery values

^{*} Values outside of QC limits

D Surrogates diluted out

2D SOIL SEMIVOLATILE SURROGATE RECOVERY

Lab Name: Recra.LabNet Contract: 1901-01-03

Case No.: <u>USACE-DEAL TEST SITE</u>

RFW Lot No.: <u>9710L573</u>

	CLIENT	S1	S2	S3	S4	S5	S6	OTHER	TOT
	SAMPLE NO.	(NBZ)#	(FBP)#	(TPH)#	(PHL)#	(2FP)#	(TBP)#		OUT
		======		======	======	======	======	======	====
01	Sl	44	49	50	46	48	58		0
02	S2	60	61	82	65	65	79		0
03	S3	49	53	59	51	53	62		0
04	S4	74	75	85	73	74	98		0
05	S5	63	70	84	74	72	95		0
06	S6	58	61	79	65	65	75		0
07	SBLKFZLE1822-MB1	87	86	91	85	85	86		0
08	SBLKFZLE1822-MB1 BS	86	86	89	80	85	88		0
ĺ						i			j

				QC LIMITS
S1	(NBZ)	=	Nitrobenzene-d5	(23-120)
S2	(FBP)	=	2-Fluorobiphenyl	(30-115)
S3	(TPH)	=	p-Terphenyl-d14	(18-137)
S4	(PHL)	=	Phenol-d5	(24-113)
S5	(2FP)	=	2-Fluorophenol	(25-121)
S6	(TBP)	=	2,4,6-Tribromophenol	(19-122)

[#] Column to be used to flag recovery values

^{*} Values outside of QC limits

D Surrogates diluted out

3D SOIL SEMIVOLATILE BLANK SPIKE RECOVERY

Lab Name: Recra.LabNet Contract: 1901-01-03

Case No.: USACE-DEAL TEST SITE RFW Lot No.: 9710L573

BLANK Spike - Sample No.: SBLKFZLE1822-MB1 Level: (low/med) LOW

	SPIKE	SAMPLE	BS	BS	QC
	ADDED	CONCENTRATION		ક	LIMITS
COMPOUND	UG/KG	UG/KG	UG/KG	REC #	REC
=======================================	========	=======================================		======	=======
Phenol	3330	0	2570	77	26 - 90
2-Chlorophenol	3330	0	2570	77	25 -102
1,4-Dichlorobenzene	1660	0	1320	79	28 -104
N-Nitroso-Di-n-propylamine	1660	0	1430	86	41 -126
1,2,4-Trichlorobenzene	1660	0	1400	84	38 -107
4-Chloro-3-methylphenol	3330	0	2510	75	26 -103
Acenaphthene	1660	0	1410	85	31 -137
4-Nitrophenol	3330	0	3040	91	11 -114
2,4-Dinitrotoluene	1660	0	1380	83	28 - 89
Pentachlorophenol	3330	0	2940	88	17 -109
Pyrene	1660	0	1430	86	35 -142
		İ	j	j	

 $[\]ensuremath{\text{\#}}$ Column to be used to flag recovery value with an asterisk

Spike Recovery: 0 out of 11 outside limits

COMMENTS:

FORM III SV-2

5/88 Rev.

^{*} Values outside of QC limits

Lab Name: Recra.LabNet Contract: 1901-01-03

Case No.: USACE-DEAL TEST SITE RFW Lot No.: 9710L573

BLANK Spike - Sample No.: SBLKGHLE1817-MB1 Level: (low/med) LOW

	SPIKE	SAMPLE	BS	BS	QC
	ADDED	CONCENTRATION	CONCENTRATION	ક	LIMITS
COMPOUND	UG/L	UG/L	UG/L	REC #	REC
=======================================	==========				=======:
Phenol	100	0	71.6	72	12 - 89
2-Chlorophenol	100	0	73.4	73	27 -123
1,4-Dichlorobenzene	50.0	0	32.2	64	36 - 97
N-Nitroso-Di-n-propylamine	50.0	0	39.2	78	41 -116
1,2,4-Trichlorobenzene	50.0	0	33.8	68	39 - 98
4-Chloro-3-methylphenol	100	0	72.4	72	23 - 97
Acenaphthene	50.0	0	38.3	77	46 -118
4-Nitrophenol	100	0	73.3	73	10 - 80
2,4-Dinitrotoluene	50.0	0	36.8	74	24 - 96
Pentachlorophenol	100	0	78.7	79	9 -103
Pyrene	50.0	0	36.2	72	26 -127
			İ	j	

	SPIKE ADDED	BSD CONCENTRATION	BSD %	ક	 QC :	LIMITS
COMPOUND	UG/L	UG/L	REC #	RPD #	RPD	REC
	100	======================================	67	 7	====== 42	======== 12 - 89
2-Chlorophenol_	100	70.9	71	2	40	27 -123
1,4-Dichlorobenzene	50.0	35.6	71	10	28	36 - 97
N-Nitroso-Di-n-propylamine	50.0	39.4	79	1	38	41 -116
1,2,4-Trichlorobenzene	50.0	37.1	74	8	28	39 - 98
4-Chloro-3-methylphenol	100	69.1	69	4	42	23 - 97
Acenaphthene	50.0	39.6	79	2	31	46 -118
4-Nitrophenol	100	75.3	75	2	50	10 - 80
2,4-Dinitrotoluene	50.0	37.1	74	0	38	24 - 96
Pentachlorophenol	100	67.0	67	16	50	9 ~103
Pyrene	50.0	38.7	77	6	31	26 -127
	.					

[#] Column to be used to flag recovery and RPD values with an asterisk

RPD: 0 out of 11 outside limits

Spike Recovery: $\underline{0}$ out of $\underline{22}$ outside limits

COMMENTS:

FORM III SV-1

5/88 Rev.

^{*} Values outside of QC limits

4B SEMIVOLATILE METHOD BLANK SUMMARY

Contract: 1901-01-03 Lab Name: Recra.LabNet

Case No.: <u>USACE-DEAL TEST SITE</u>

Lab Sample ID: 97LE1817-MB1 Lab File ID: E100907

Date Extracted: 10/03/97

Time Analyzed: 2218 Date Analyzed: 10/09/97

Matrix: (Soil/Water) WATER Level: (low/med) LOW

Instrument ID: 5972e

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	CLIENT	LAB	LAB	DATE
	SAMPLE NO.	SAMPLE ID	FILE ID	ANALYZED
		==========	=======	========
01	SBLKGHLE1817-MB1 BS	97LE1817-MB1S	E100917	10/10/97
02	SBLKGHLE1817-MB1 BSD	97LE1817-MB1T	E100918	10/10/97
03	FB-1	9710L573-009	E101008	10/10/97
04	GW1	9710L573-007	E101009	10/10/97
05	GW2	9710L573-008	E101010	10/10/97

COMMENTS:

4B SEMIVOLATILE METHOD BLANK SUMMARY

Lab Name: Recra.LabNet Contract: 1901-01-03

Case No.: <u>USACE-DEAL TEST SITE</u>

Lab File ID: E101412 Lab Sample ID: 97LE1822-MB1

Date Extracted: 10/04/97 Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 10/14/97 Time Analyzed: 2039

Matrix: (Soil/Water) SOIL Level: (low/med) LOW

Instrument ID: 5972e

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	CLIENT	LAB	LAB	DATE
	SAMPLE NO.	SAMPLE ID	FILE ID	ANALYZED
	=======================================			
01	SBLKFZLE1822-MB1 BS	97LE1822-MB1S	E101411	10/14/97
02	S2	9710L573-002	E102422	10/24/97
03	S6	9710L573-006	E102426	10/25/97
04	S1	9710L573-001	E102504	10/25/97
05	S3	9710L573-003	E102505	10/25/97
06	S4	9710L573-004	E102506	10/25/97
07	S5	9710L573-005	E102507	10/25/97
		j		

COMMENTS:

Recra LabNet - Lionville Laboratory BNA ANALYTICAL DATA PACKAGE FOR USACE-DEAL TEST SITE

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
Sl	001	s	97LE1822	09/30/97	10/04/97	10/25/97
S2	002	s	97LE1822	09/30/97	10/04/97	10/24/97
S3	003	s	97LE1822	09/30/97	10/04/97	10/25/97
S4	004	S	97LE1822	09/30/97	10/04/97	10/25/97
S5	005	S	97LE1822	09/30/97	10/04/97	10/25/97
S6	006	s	97LE1822	09/30/97	10/04/97	10/25/97
GW1	007	W	97LE1817	09/30/97	10/03/97	10/10/97
GW2	800	W	97LE1817	09/30/97	10/03/97	10/10/97
FB-1	009	W	97LE1817	09/30/97	10/03/97	10/10/97
LAB QC:						
SBLKFZ	MB1	S	97LE1822	N/A	10/04/97	10/14/97
SBLKFZ	MB1 BS	S	97LE1822	N/A	10/04/97	10/14/97
SBLKGH	MB1	W	97LE1817	N/A	10/03/97	10/09/97
SBLKGH	MB1 BS	W	97LE1817	N/A	10/03/97	10/10/97
SBLKGH	MB1 BSD	W	97LE1817	N/A	10/03/97	10/10/97

RECRA LabNet Use Only

97101573



Client	45	ACE - Deal Text 5	: Le	Refriger	rator #		Т ,	,			7						
Est. Final Pr	oj. Samp	oling Date)			Liquid	260	IA				12					
Project #	1921=	001-003-0001-00		#/Type Container Solid			240					PPO			4	<u> </u>	
Project Cont	act/Phor	10 # GALY BUCHANAN		Volume		Liquid	40	950				1000				5	-
RECRA Proje	ect Mana	ager M. Your		Preserv		Solid	40	500				<u> </u>		_	+		
ac SWRY	6 Del	SPECTAT 300	AY	Preserv	atives	Meo 4	HCC	·—	1110			1403					_
		MIKBAN		ANALY: REQUE		-	VOA	ORG ANB	Pest/ PCB CINA Herb			Metal ONI	RG N			₹	
MATRIX			Matrix							<u></u>	250544	 			لبل		
CODES:	Lab	Client ID/December	QC		Date	Time a	7	T	1	<u> </u>	RECRA L	ADNOB.	Use Onl	<u>y</u>	, 		
S - Soll SE - Sediment	ID	Client ID/Description	Chosen (✔)	Matrix	Collected	Time Collected	74	062SA	H&5			1	!		1 1		
SO - Solid			MS MSD				8	3	20		į	13	'	ŀ	ŀ		
SL - Sludge W - Water	001	<1	M3 M3D				2	او ـــا	2			18					
O - Oil A - Air	1			5	9-30-97	1340	1	~	V								
DS - Drum Solids	002					1350	V	\checkmark	\checkmark			1					
DL - Drum	003	3				1440	/	V				1			1		
Liquids	004	4				1450	1/	/	1			1			+-+		+
Leachate WI - Wipe	005	5				1545	./	/	/			17			+		
X - Other	006	16					,	V	<u> </u>			1			4		
F - Fish	00)	GW 1		W	_	1405	Y	1	<u> </u>			1			1		
	08	12		1			<i>V</i>								\perp		
	09	FB-1		-{		1555	4	<u> </u>	<i>J</i>								
		70-3		-		1510	V	~	√								
FIELD BERSON	0/0	78-1			<u> </u>	1610	V				-						
		MPLETE ONLY SHADED AREAS		ATE/REVI	SIONS:	.2/ .4			_			┖┌──┴					
NATE STA	NDAR	D NA METHANOL Fiel	<i>\(\)</i>		001-0	OG VOI	45 (אאע	ZAD SPA	ce			RE	CRA Lat	oNet Us	e Only	
BLANK NO.	TINCL	luded due to lack of	<u>-</u>	2	001-6	108 VV	A'S	SeD	i Men To	N Boi	TOM	Sam	ples were	 3:	COC I	ape was:	
1	8 0111 0	A ZUD . F CAMPIA ALUTA	i.Je15						e For B			- 1) S	hipped	Z or	1) Pres	sent on Out	er
FOI DAYS A	activit	ries Von Vials 5967 Beled Famil LAB wer	770 -								icsi rod	- Hand	Delivere	pro		ge 🕢 or	
AND 59651	8 LA	Beled Fourthbourh Samples 56, FB1	Ze , _		one	GOTTL	c for	Bo	TH TEST	ś.		2) A	mbient or	and led	2) Unbi Packar	roken on Oi ge 🗥 or	uter N
usen for	3016	<i>/</i> /		011	is A	Dis	-5 d/ 1	JeD Ma	rals		1	eceived in	_		sent on San		
A RINSATE	A RINSATE BLANK. 4.30 4.90 Milis						1 -	/				Cond	dition 💋	or N	,	Y or	
Relinquished Received Relinquished Received					cone	und o	Tou	76	TIME				abels Indic erly Prese			roken on	
by	He	DRIGINA						_, 1,10p		or N		3 Y or (\sim				
Est.	1011	Relinquis by				Samples Lables and				COC Record Prese 5) Received Within Upon Sample Rec							
1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-	10.197 0545						1 1 000 0 1 1 1 1 1 1 1					ing Times	5	,	1 0 or		
				I A				IA					6	or N			
	_							<u> </u>									

RECRA LabNet Use Only



Client	u	SACE					Refrige	rator #			1		· · ·		104	uc	JL		1					
Est. Final Pro		pling Date		7					Liquid	├	 	├	-	<u> </u>		\Box	ユ							
Project #			300	\leq	_/_		#/Type	Container	Solid	 	 	 	├	-			IPC							
Project Contact/Phone #							Volume		Liquid	 		 	 		\vdash		1000		<u>'</u>		—		-	
RECRA Project Manager							Solid							†	1		1000							
ac			TAT				Preserv	atives									HUIS				 			
Date Rec'd _			Date Due				ANALY	SES	_	-		ANIC						RG					-	
Account #			Date Due				REQUE	STED	-	۷OV	BNA	Pest/ PCB	Herb				Metal Metal	N O			i İ	ľ		
MATRIX									T	-	ш.	4	I	<u> </u>]				1		
CODES:	Lab					itrix IC							, +		RECF	RA La	blye	Use C	Only		1			
S - Soll SE - Sediment	ID	CII	lent ID/Descr	iption		sen	Matrix	Date	Time Collected								\3 1							
SO - Solid								Journal	CONSCISO								MRGARE					į	İ	
SL - Sludge W - Water	() (1	11	4		MS	MSD											[2]				.			
O - Oil	011	GW	<u>.† </u>				W	F3V77	1405							_	*							
A - Alr DS - Drum									-															
Solids																							1	
DL - Drum Liquids																								
L - EP/TCLP																						-		
Leachate WI - Wipe			·													-								{
X - Other F - Fish																						\longrightarrow		
F - FISH			······································																			Ì		ı
j				·													ł							
																								-
																-	\dashv							—
																						\longrightarrow		
FIELD PERSON	NEL: CO	MPLETE OF	NLY SHADE	AREAS		D/	TE/REVI	SIONS:	l															ŀ
Special Instruct	tions:					-												F	RECR	A Labi	Net Us			一
																	<u> </u>						, 	
							:	2									Sam	ples	ere:	,	дос та	ape wa	s:	l
							;	3								i	Han	hipped d Deliv	ered ered	iC	1) Presi Packag	enton (Outer	1
																	V Airbi	ill # <u> </u>			2) Unbr			. 1
																_/		mblent		led	Packag	e Y c	or N	
							5	5								()	3) R	leceived	in Go	8 ½ /	3) Presi	ent on !	Sample	.
								S								-		dition		792			or N	
Relinquished	Re	ceived	Τ		Relin	nuicha											Prop	abels In erly Pa	oserve		4) Unbr	oken or	n 	
by		by	Date	Time		by by Date Time Discrepancies Between						•		Y or	N	Sample COC Re			I					
Fed Ed	121	S	9197	0945									Samp	les Lab	les and			eceived			Upon S.			
1	** *	0	7/7/	2747]	NOTE	Hecord S:	?Y or	N		ling Tim	nes				or N	l
																			Y or	14				İ



Virtual Laboratories Everywhere

Recra LabNet Philadelphia Analytical Report

Client: USACE-DEAL TEST SITE

W.O. #: 11901-001-003-0001-00

RFW#: 9710L573 **Date Received**: 10-01-97

PESTICIDE/PCB

1. The set of samples consisted of three (3) water samples and six (6) soil samples collected on 09-30-97.

- 2. The samples and their associated QC samples were extracted on 10-06-97 and analyzed based on SW846, 3rd Edition, procedures on 10-12,13,17,21,22,23,24-97. The extraction procedure used was based on Methods 3520 and 3540 and the extracts were analyzed based on Method 8081.
- 3. The cooler temperatures upon receipt have been recorded on the chain-of-custody.
- 4. All required holding times for extraction and analysis were met.
- 5. The soil samples and their associated QC samples received a sulfur cleanup for sulfur.
- 6. The method blank was below the reporting limits for all target compounds.
- 7. All obtainable surrogate recoveries were within acceptance.
- 8. All blank spike recoveries were within acceptance criteria.
- 9. All matrix spike recoveries were within acceptance criteria.
- 10. The following samples required instrument dilutions due to chromatographic anomalies:

Sample ID	<u>Dilution Factor</u>
<u>S1</u>	50
S2	50
S3	10
S4	50
S4MS	50
S4MSD	50
S5	50
S6	50
GW2	5

Reporting limits have been adjusted to reflect the necessary dilutions. A copy of the Sample Discrepancy Report (SDR) has been enclosed.

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 18 pages.

- 9. All initial calibrations associated with this data set were within acceptance criteria.
- 10. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria, with the exception of target compound delta-BHC analyzed on 10-20-97 @ 0910 on the primary and secondary columns. The data reflected an increase in instrument response, so the ability to identify delta-BHC was not impaired. Since quantitation was not required, the data should not be impacted. A copy of the Sample Discrepancy Report (SDR) has been enclosed.

J. Michael Taylor

Vice President and Laboratory Manager

Lionville Analytical Laboratory

jeh\pcb\10-573.608

11- 13 91 Date



GLOSSARY OF PESTICIDE/PCB DATA

DATA QUALIFIERS

U = Indicates that the compound was analyzed for but not detected. The minimum detection limit for the sample (not the method detection limit) is reported with the U (e.g., 10U).

Indicates an estimated value. This flag is used in cases where a target analyte is detected at a level less than the lower quantification level. If the limit of quantification is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.

B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination.

E = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.

I = Interference.

ABBREVIATIONS

BS = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking solutions and carried through all the steps in the method. Spike recoveries are reported.

BSD = Indicates blank spike duplicate.

MS = Indicates matrix spike.

MSD = Indicates matrix spike duplicate.

DL = Indicates that recoveries were not obtained because the extract had to be diluted for analysis.

NA = Not Applicable.

DF = Dilution Factor.

NR = Not Required.

SP = Indicates Spiked Compound.

GLOSSARY OF PESTICIDE/PCB DATA

- P = This flag is used for a pesticide/Aroclor target analyte when there is greater than 25% difference for detected concentrations between the two GC columns (see Form X). The lower of the two values is reported on Form I and flagged with a "P".
- D = This flag identifies all compounds identified in an analysis at a secondary dilution factor.
- C = This flag applies to a compound that has been confirmed by GC/MS.

RFW #21-21-035/A-03/97

Recra LabNet Philadelphia Sample Discrepancy Report (SDR) SDR #: 9/6(27)
Initiator: Deb Kasamo RFW Batch: 97101573,600 Date: 1012797 Samples: Samples: Matrix: SW846MCAWW/CLP/ Prep Batch: 97101832
1. Reason for SDR a. COC Discrepancy Tech Profile Error Client Request Sampler Error on C-O-C Transcription Error Wrong Test Code Other b. General Discrepancy Missing Sample/Extract Container Broken Wrong Sample Pulled Label ID's Illegible Hold Time Exceeded Insufficient Sample Preservation Wrong Received Past nold Improper Bottle Type Not Amenable to Analysis Note: Verified by [Log-In] or [Prep Group] (circle)signature/date: c. QC Problem (Include all relevant specific results; attach data if necessary) FYI - Samples
2. Known or Probable Causes(s)
3. Discussion and Proposed Action Re-log Entire Batch Following Samples: Re-leach Re-extract Re-digest Revise EDD Change Test Code to Place On/Take Off Hold (circle) Other Description: Other Description:
4. Project Manager Instructionssignature/date: Concur with Proposed Action Disagree with Proposed Action; See Instruction Include in Case Narrative Client Contacted: Date/Person Add Cancel
5. Final Actionsignature/date: OLUGUMU KONTUS Other Explanation: Verified re-[log][leach][extract][digest][analysis] (circle) (OLUGUMU) Included in Case Narrative Hard Copy COC Revised Electronic COC Revised EDD Corrections Completed When Final Action has been recorded forward existing to CA Secretarist for the circle and the content of the
When Final Action has been recorded, forward original to QA Specialist for distribution and filing.
Route Distribution of Completed SDR X Initiator De Mode Metals: Doughty Lab Manager: J. Michael Taylor Inorganic: Perrone/Leonards GC/LC: Jarvis/Skrzat/Schnell Section Mgr: Siery/Durke/Daniels GC/LC: Jarvis/Skrzat/Schnell A QA File: Feldman/Racioppi/Basuthakur Data Management: Miller Log-in: Dodson Admin: Brewer/Keehn/Shafer Other:

Rear Lab - I vil' abo ry

Pesticide/PCBs by GC, CLP List

Report Date: 10/28/97 13:12

210

210

210

210

D

1000

210

210

100

100

10000

2100

4200

2100

2100

2100

2100

2100 U

D

U

IJ

IJ

U

욯

U

U

U

U

U

U

IJ

U

U

Ū

RFW Batch Number: 9710L573 Client: USACE-DEAL TEST SITE Work Order: 11901001003 Page: 1 Cust ID: S1 S2 S3 S4 S4 Sample RFW#: 001 002 003 004 004 MS 004 MSD Information Matrix: SOIL SOIL SOIL SOIL SOIL SOIL D.F.: 50.0 50.0 10.0 50.0 50.0 50.0 Units: UG/KG UG/KG UG/KG UG/KG UG/KG UG/KG Decachlorobiphenyl Surrogate: D 욯 D 왕 D 욯 D ક્ D 옿 D 용 Tetrachloro-m-xylene D 왕 D 왕 D કૃ D と D 욯 D 욯 Alpha-BHC ี ซ 🖫 200 110 U 48 u 🗓 100 U 100 U 100 U Beta-BHC U 200 110 U 48 U 100 IJ 100 U 100 U Delta-BHC 200 U 110 U 48 U 100 100 U 100 U gamma-BHC (Lindane)____ 200 IJ 110 U 48 U 100 U D 용 D કૃ Heptachlor____ 200 U 110 U 48 U 100 IJ D 용 D 왕 Aldrin 200 IJ 110 U 48 U 100 IJ D 욧 D 욯 Heptachlor epoxide____ 200 U 110 U 48 U 100 IJ 100 U 100 U Endosulfan I_____ 200 U 110 U 48 U 100 U 100 IJ 100 U Dieldrin 400 U 220 U 96 IJ 210 U D D 왐 4,4'-DDE____ U 400 220 IJ 96 U 210 U 210 U

220

220

220

220

220

220

220

110

110

11000

2200

4300

2200

2200

2200

2200

2200 U

1100

IJ

U

U

U

IJ

IJ

U

U

U

U

U

U

U

U

U

U

96 U

96 U

96 IJ

96 U

96

96 IJ

96 U

48

48

4800

1900

960

960

960

960

960 U

960 U√

480

IJ

U

U

U

U

U

IJ

IJ

Ū

U

210

210

210

210

210

1000

210

210

100

100

10000

2100

4200

2100

2100

2100

2100

2100 U

IJ

U

IJ

U

U

U

U

U

U

U

IJ

IJ

U

U

D

210

210

210

D

1000

210

210

100

100

10000

2100

4200

2100

2100

2100

2100

2100

IJ

U

U

U

U

IJ

U

U

IJ

U

U

U

U

U

IJ

U

U

U

U

U

IJ

Ū

IJ

U

U

U

IJ

U

U

U

IJ

4000 U

400

400

400

400

400

400

400

200

200

20000

4000

8000

4000

4000

4000

4000

2000

Endrin

4,4'-DDD

4,4'-DDT

Toxaphene

Aroclor-1016

Endosulfan II_____

Endosulfan sulfate _____

Methoxychlor ____

Endrin ketone

Endrin aldehyde_____

alpha-Chlordane____

gamma-Chlordane____

Aroclor-1221

Aroclor-1232

Aroclor-1242

Aroclor-1248

Aroclor-1254

Aroclor-1260____

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked. %= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

Recra LabNet - Lionville Laboratory

Pesticide/PCBs by GC, CLP List

Report Date: 10/28/97 13:12 RFW Batch Number: 9710L573 Client: USACE-DEAL TEST SITE Work Order: 11901001003 Page: 2

													
	Cust ID:	S	5	S	5	GW1	L	GW2	2	FB-1	-	PBLKBD	20
Sample	RFW#:	005	5	000	5	007	7	008	5	009		97LE1832-N	_
Information	Matrix:	SOIL		SOIL		WATER		WATER	,	WATER	,	SOIL	JBI —
	D.F.:	50.	. 0	50	. 0	1.0	00	5.0	0.0	1.0		1.0	١٨
	Units:	UG/F	ζG	UG/I	(G	UG/I		UG/I	_	UG/I	-	UG/F	
						,		00/1	-	00/1	,	OG/ F	\G
	ecachlorobiphenyl	D	%	D	ક	77	96	D	કૃ	92	왕	94	ુ
Teti	rachloro-m-xylene	D	용	D	8 8	80	%	D	ş		•		_
=======================================		=======	==fl===	=======	==fl=	=======	==fl=	========	==fl=	========	=f1	=========	==fl
Alpha-BhC		260	υŢ	120	Ŭ	0.050	U	0.25	U	0.050	U	1.7	U
Beta-BHC		260	U	120	U	0.050	U	0.25	U	0.050	Ū	1.7	Ū
Delta-BHC		260	U	120	U	0.050	U	0.25	Ū	0.050	U	1.7	IJ
gamma-BHC (Lindar	ne)	260	U	120	U	0.050	U	0.25	U	0.050	U	1.7	IJ
Heptachlor		260	U	120	U	0.050	U	0.25	U	0.050	Ū	1.7	IJ
Aldrin		260	υ	120	U	0.050	U	0.25	Ū	0.050	U	1.7	U
Heptachlor epoxic	de	260	U	120	U	0.050	U	0.25	U	0.050	U	1.7	IJ
Endosulfan I		260	Ŭ '	120	U	0.050	U	0.25	U	0.050	U	1.7	IJ
Dieldrin		530	U :	240	U	0.10	U	0.50	U	0.10	IJ	3.3	U
4,4'-DDE		530	U	240	U	0.10	U	0.50	U	0.10	Ū	3.3	U
Endrin		530	U	240	U	0.10	U	0.50	U	0.10	IJ	3.3	Ū
Endosulfan II		530	U .	240	U	0.10	U	0.50	Ū	0.10	IJ	3.3	U
4,4'-DDD		530	U	240	U	0.10	U	0.50	U	0.10	U	3.3	U
	te	530	U	240	U	0.10	U	0.50	U	0.10	IJ	3.3	U
4,4'-DDT		530	U	240	U	0.10	U	0.50	U	0.10	11	3.3	U
Methoxychlor		2600	U	1200	U	0.50	U	2.5	Ū	0.50	U	17	U
Endrin ketone		530	U	240	U	0.10	U	0.50	บ	0.10	IJ	3.3	IJ
Endrin aldehyde_		530	U	240	U	0.10	U	0.50	υ	0.10	U	3.3	Ū
alpha-Chlordane_		260	U	120	U	0.050	Ū	0.25	υ	0.050	IJ	1.7	IJ
gamma-Chlordane		260	U	120	U	0.050	U	0.25	U	0.050	U	1.7	IJ
Toxaphene		26000	U	12000	U	5.0	U	25	Ū	5.0	U	170	IJ
Aroclor-1016		5300	U	2400	U	1.0	U	5.0	Ū	1.0	IJ	33	Ū
Aroclor-1221		11000	U	4700	U	2.0	U	10	U	2.0	U	67	U
Aroclor-1232		5300	U	2400	U	1.0	U	5.0	U	1.0	U	33	U
Aroclor-1242		5300	U ,	2400	U	1.0	U	5.0	Ū	1.0	U	33	U
Aroclor-1248		5300	U	2400	U	1.0	U	5.0	U	1.0	IJ	33	ָ ט ט
Aroclor-1254		5300	U	2400	U	1.0	U	5.0	U	1.0	IJ	33	IJ
Aroclor-1260		5300	υV	2400	U	1.0	U	5.0	U	1.0	IJ	33	IJ
								5.0	•	1.0	U	33	J

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked. %= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

Re≀ Lab - L rill abo:

Pesticide/PCBs by GC, CLP List

Report Date: 10/28/97 13:12 Client: USACE-DEAL TEST SITE Work Order: 11901001003 Page: 3 RFW Batch Number: 9710L573

	Cust ID:	PBLKBD BS		PBLKAA		PBLKAA BS		PBLKAA BSI)	∞
Sample	RFW#:	97LE1832-M	IB1	97LE1828-M	ш1	97LE1828-M	MB1	97LE1828-M	IB1	
Information	Matrix:	SOIL		WATER		WATER		WATER		
	D.F.:	1.0	00	1.0	0	1.0	00	1.0	0	
	Units:	UG/F	(G	UG/L	ı	UG/I		UG/I		
Surrogate: Decach	lorobiphenyl	99	왕	88	왕	99	ૄ	98	- %	75746
	oro-m-xylene		왕	65	કૃ	55	9	68	왕	
	=======================================	========	==fl	_========	=f1	========	==f1	.========	=f1	========f1========f1
Alpha-BHC		_ 1.7	U	0.050	U	0.050	U	0.050		
			U	0.050	U	0.050	U	0.050		
Delta-BHC		_ 1.7	U	0.050	U	0.050	U	0.050	Ū	
gamma-BHC (Lindane)		95	% જ	0.050	U	90	8	90	8	
Heptachlor		100	용	0.050	U	80	왕	75	상	
Aldrin		100	ક	0.050	U	80	용	85	ક	
Heptachlor epoxide		_ 1.7	U	0.050	U	0.050	U	0.050	U	
Endosulfan I		_ 1.7	U	0.050	U	0.050	U	0.050	U	
Dieldrin		_ 102	%	0.10	U	96	%	96	앙	
4,4'-DDE		_ 3.3	U	0.10	U	0.10	U	0.10	U	
Enarin_		_ 106	ક	0.10	U	96	상	96	કુ	
Endosulfan II		_ 3.3	U	0.10	U	0.10	U	0.10	Ū	
4,4'-DDD		3.3	U	0.10	U	0.10	U	0.10	U	
Endosulfan sulfate		_ 3.3	U	0.10	U	0.10	U	0.10	U	
4,4'-DDT		_ 102	ક	0.10	U	94	상	94	ક	
Methoxychlor		_ 17	U	0.50	U	0.50	U	0.50	Ü	
Endrin ketone		3.3	U	0.10	U	0.10	U	0.10	U	
Endrin aldehyde		3.3	U	0.10	U	0.10	U	0.10	Ū	
alpha-Chlordane		1.7	U	0.050	U	0.050	U	0.050	U	
gamma-Chlordane		_ 1.7	U	0.050	U	0.050	U	0.050	U	
Toxaphene		_ 170	U	5.0	U	5.0	U	5.0	U	
Aroclor-1016		_ 33	U	1.0	U	1.0	U	1.0	U	
Aroclor-1221		67	U	2.0	U	2.0	Ū	2.0	U	
Aroclor-1232		_ 33	U	1.0	U	1.0	U	1.0	Ū	
Aroclor-1242		_ 33	U	1.0	U	1.0	U	1.0	U	
Aroclor-1248		33	U	1.0	U	1.0	U		U	
			U	1.0	U	1.0	U	1.0	Ū	
Aroclor-1260		33	U	1.0	U	1.0	U	1.0	Ū	

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked. %= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

gan 11/2/97

Recra LabNet - Lionville Laboratory PEST/PCB ANALYTICAL DATA PACKAGE FOR USACE-DEAL TEST SITE

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
				00/20/05	/ /	
S1	001	S	97LE1832	09/30/97	10/06/97	10/23/97
S2	002	S	97LE1832	09/30/97	10/06/97	10/23/97
S3	003	S	97LE1832	09/30/97	10/06/97	10/22/97
S4	004	S	97LE1832	09/30/97	10/06/97	10/23/97
S4	004 MS	S	97LE1832	09/30/97	10/06/97	10/23/97
S4	004 MSD	S	97LE1832	09/30/97	10/06/97	10/23/97
S5	005	S	97LE1832	09/30/97	10/06/97	10/23/97
S6	006	s	97LE1832	09/30/97	10/06/97	10/24/97
GW1	007	W	97LE1828	09/30/97	10/05/97	10/13/97
GW2	800	W	97LE1828	09/30/97	10/05/97	10/17/97
FB-1	009	W	97LE1828	09/30/97	10/05/97	10/13/97
AB QC:						
PBLKBD	MB1	s	97LE1832	N/A	10/06/97	10/21/97
PBLKBD	MB1 BS	S	97LE1832	N/A	10/06/97	10/21/97
PBLKAA	MB1	W	97LE1828	N/A	10/05/97	10/12/97
PBLKAA	MB1 BS	W	97LE1828	N/A	10/05/97	10/12/97
PBLKAA	MB1 BSD	W	97LE1828	N/A	10/05/97	10/12/97

Su 12/11

RECRA LabNet Use Only

Custody Transfer Record/Lab Work Request

	(A)	RECRA + C
Т		.

Client	45	ACE	- Dea	u Test	3:te		Refrige	erator (17	7											
Est. Final Pro	oj. Samp	oling Da	te	10119	77					Liquid	260	ÍÂG		 			12	ļ					
Project #	140/-	001-	003-0	001-00			#/Type	Conta	iner	Solid	240	iAG		 			PPO	\	 				
Project Conta	act/Phor	1e # <u></u>	ALI B	UCHANAI	,		Volume	е		Liquid	40	950					100	4-					
RECRA Proje	ect Mana	ager	mi	Your			Preser			Solid	40	500					 	†	 		-	<u>-</u>	
ac Swyy	C Del	3/6	<u></u> TAT _	> U	OA	7	rieser	valives	-	Meo H	HCL		4440				ANO3	4					
Date Rec'd	10-1-	-47	Date Due	· /O-3	1-63	,	ANALY			_	-	ORG			1			ORG					
Date Rec'd Account #	,	m	IKBP	M			REQUE	STED			VOA	BNA	Pest/ PCB	Herb		İ	Metal	S					
MATRIX	1 1				Ma	atrix		Г			ļ—					DECDA		<u> L</u>	<u>L</u>	L1			
CODES: S - Soll	Lab	•	Client ID/Des	erintia.		C Dsen		Da		Time	3	J.	七	_		RECRA	LabNe	h Use (Only	т	+ +	·	
SE - Sediment	^{ID}	`		cription		/)	Matrix			Collected	7.4	5	38,			J	/ §]					
SO - Solid SL - Sludge					MS	MSD					શ્ર	S6257	H&SOT			l	MRC	1					
W - Water O - Oil	001	4	51.				5	211	<u></u>	4 4 4 4 4 4	-2		-3				15						
A - Air	002		1 2				<u> </u>	V-20		1340	V	<u> </u>	Y,				1						
DS - Drum Solids	003		3			-		╂┈╂		1350	¥.	✓	_				1						
DL - Drum Liquids	1 		3						_	1440	4	_/_	/				V						
L - EP/TCLP	004		_4_							1450	1	/	1				1					_	
Leachate WI - Wipe	005	\	_5_						ŀ	1545		/	./				17	 					
X - Other F - Fish	006	لمہ	- 6				I			1550	,	V	·/		$\overline{}$		14		_	<u> </u>			
	00)	Gu	ノ 士				W			1405	1	1	~		+		1	-					
ī	08	I	2				1				V		-				1						
	009	FB	-1			 	+	-		1555	4	<u> </u>	U				1/						
	010	TR	-1		+					1510	V	~	✓				/						
FIELD PERSON		MPLETE (ONLY SHAD	ED ADEAS		<u> </u>	<u> </u>	<u> </u>		1610	V]								
					/ ^] DA	TE/REV	ISIONS	5: 31 11	06 VOI	o'c .	111	- 0 0						DEAD	• • • •			
Special Instruction MoTC: 5TA	NPAR) N	METH	ANCE PIC	ביי			1. 👱	<i>-</i>	- yor	7 7 6	o / He	ZHU	SPAC	<u>r</u>		_		HECH	A Labi	vet Us	Only	
BLANK NOT	PINCL	wee	oue n	KACK O	. P			2 00	71-0	08 10	13	SeDi	<i>Mer</i>	17 01	u Bo	TOM		mples w			COC Ta	pe was:	
SUFFICIENT	Num	1 BCR	or SAM	ple Conti	アルベ	'> 		3. 00	<i>t-00</i>	4 500	ML A	MBY	c Fa	n Bu	A	Pest B	1) S		t 🚣 c		1) Prese	ent on O	uter
FOR DAYS A AND 576519	CTIVIT	les	CAN'S	LAR WA	7/0					_						19/10	Airt	nd Deliv Dill 美華	Apr	V		e 🕢 or oken on	
AND 576519 USED FOI	8 LAIC	Somo	1-5	G. CB1	أسكم					30176							2) /	Ambient	or 📶			or (7) exemple	
A RINSATE	731 AA	JAMP UK	247 7	V · F V 3		-		5. <i>Q1</i>	Li	5 A	Dis	-sall	1eD	Me	TAL	خ ٠			ed in Go	ood		ent on Sa	ample
ARINSII	13-27;	• • •	4.3°C	. +4.9°				6. L'a	nta	م من	fort	50	AL	/					O or			no Y	~
Relinquished	Red	ceived	Data	7,	Relin	quis		Bod		BILL	ă I								ndicate reserve			oken on Y or	
by	<u> </u>	by	Date	Time		by E	7 -	6	Z	NA	₩ []	Tim	ie	Discre	pancies	Between		(\bigcirc or	N		cord Pre	~
LAXCA	1																						
Ju Lp	V.H.	wy.	10.197	0545		R						<u> </u>		COC F	es Labl Record?	es and (Receive ding Tir		n	Upon Sa	ample Re	

RECRA LabNet Use Only

Custody Transfer Record/Lab Work Request



Client	U	SACE				Retrice	erator #							icqu	COL							_
Est. Final Pro	oj. Sam	pling Date	27	1				Liquid	 	├	┼	┼			12	I	T	T	7	· 1		
Project #		13	CE	_/_		#/Type	Container	Solid			┼				192							
Project Conta	act/Pho	ne #	-61			Volume		Liquid		†	├	┼	 		-		'					
RECRA Proje			1)	1/				Solid				 	1		1000	 			 			
ac			At			Preser	vatives								HU	3		├	igsquare			·
Date Rec'd _						ANALY	SES	_			ANIC					ORG	_		\vdash			
Account # _		Date	Due			REQUE	STED	-	VOA	BNA	Pest/ PCB	He de				T	1				İ	
MATRIX					===		Т			<u> </u>	مَم	Ī			Metal Metal	S	İ				l	
CODES:	Lab				etrix 2C		l					+		RECRA	LabNe	Use (Only		<u> </u>			
8 - Soll SE - Sediment	ID	Client II	D/Description	Ch	osen	Matrix	Date	Time Collected	ı						MRGAR							_
80 - Solid		•			<u>')</u>		Conecied	Collected							13				1 1			
SL - Sludge W - Water	() (1	1111		MS	MSD										18			1	i 1		İ	
O - Oil	011	GW.1				W	F3V77	1405							+**							_
A - Air DS - Drum								112				-			K							
Solids																		L. Î	. [
DL - Drum Liquids					╂╼╼┼																	\exists
L - EP/TCLP																				-+		-
Leachate WI - Wipe															╅							\dashv
X - Other F - Fish															_							
7 - 11511					 																	
					┞╼╾┼																	ᅥ
ł									İ											-		ᅱ
				1 1											┼							┙
													\longrightarrow								- 1	
FIELD PERSON	NEL: CO	MPLETE ONLY S	HADED AREAS		T DA	TE/REVI	SIONE								Ì							٦
Special Instruct					-																	닉
																	HECR	1 Labi	vet Us	e Only		
						2	2	· - ·							Sar	npies	еге:		бос т	ape was:	:	٦
						;	3									hipped nd Deliv	<u>)</u> _a	I.	1) Presi	ent on O	Outer	-
															Airt Airt	oill# 🟒		_		e Y or		ł
						4		·							∠ 2) A	Ambient	or Chill	led '	Packao	oken on e Y or	Outer	1
						5	i							i	3) F	Received	d in Go		, -	ent on S		ı
							i								v	dition		1	•	Y or	N	-
Relinqu' 1	Re	ceived		D-II-											- PIN	abels in perly Pa	ndicate			oken on		ł
		by	Date Time		quished by	d	Received by	Da	ite	Tim		Discre	nancies	Between			A ou	N Ì		Y or		ı
-	7	S 191.	07 100	—	-/	- - -	<u> Uy</u>					Sampl	les Labi	es and	5) F	Received		•		ecord Pro ample Ri		
		5 17	97 5945								- 11	COC I	Record?	Y or N		ding Tim	nes	,	Spon 3	or Y		1
				[7	14012	J.			,	Y or	N				1
][

2E WATER PESTICIDE SURROGATE RECOVERY

Lab Name: Recra.LabNet Contract: 1901-01-03

Case No.: USACE-DEAL TEST SITE

RFW Lot No.: 9710L573

- 1	CLIENT	S1	OTHER
j	SAMPLE NO.	(DCB)#	TCX
1	=======================================	=======	======
01	GW1	77	80
02	GW2	D	D
03	FB-1	92	88
04	PBLKAALE1828-MB1	88	65
05	PBLKAALE1828-MB1 BS	99	55
06	PBLKAALE1828-MB1 BSD	98	68
i			

ADVISORY QC LIMITS

S1 (DCB) = Decachlorobiphenyl (22-126) S2 (TCX) = Tetrachloro-m-xylene (27-129)

Column to be used to flag recovery values

* Values outside of QC limits

D Surrogates diluted out

J112/97

2F SOIL PESTICIDE SURROGATE RECOVERY

Lab Name: Recra.LabNet Contract: 1901-01-03

Case No.: USACE-DEAL TEST SITE

RFW Lot No.: 9710L573

	CLIENT	S1	OTHER
	SAMPLE NO.	(DCB)#	TCX
	=======================================	======	======
01	S1	D	D
02	S2	D	D
03	S3	D	D
04	S4	D	D
05	S4MS	D	D
06	S4MSD	D	D
07	S5	D	D
08	S6	D	D
09	PBLKBDLE1832-MB1	94	80
10	PBLKBDLE1832-MB1 BS	99	85
			!

ADVISORY QC LIMITS

S1 (DCB) = Decachlorobiphenyl (38-122) S2 (TCX) = Tetrachloro-m-xylene (28-118)

- # Column to be used to flag recovery values
- * Values outside of QC limits
- D Surrogates diluted out

gen par

page 1 of 1

FORM II PEST-2

01/89 Rev.

3F

SOIL PESTICIDE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: Recra.LabNet Contract: 1901-01-03

Case No.: USACE-DEAL TEST SITE RFW Lot No.: 9710L573-004

MATRIX Spike - Sample No.: S4 Level: (low/med) LOW

	SPIKE	SAMPLE	MS	MS	QC
	ADDED	CONCENTRATION	CONCENTRATION	ક	LIMITS
COMPOUND	UG/KG	UG/KG	UG/KG	REC #	REC
=======================================				======	
gamma-BHC (Lindane)	8.39	0	25.00	D	30 -125
Heptachlor	8.39	0	13-80	D	37 -126
Aldrin	8.39	0	ا 🔀 ٥ ومبدد 2	D	27 -133
Dieldrin	21.0	0	2-130	D	40 -125
Endrin	21.0	0	1 0 L W	D	45 -130
4,4'-DDT	21.0	0	35-6 b 1 J	D	33 -123
)	j	

COMPOUND	SPIKE ADDED UG/KG	MSD CONCENTRATION UG/KG	MSD % REC #	 % RPD #	! ~	LIMITS REC
gamma-BHC (Lindane) Heptachlor Aldrin Dieldrin Endrin 4,4'-DDT	8.31 8.31 8.31 20.8 20.8 20.8	27-0 0 6/8/11 12-13 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	D D D D D		50 31 43 38 45 50	30 -125 37 -126 27 -133 40 -125 45 -130 33 -123

[#] Column to be used to flag recovery and RPD values with an asterisk

RPD: 0 out of 6 outside limits

Spike Recovery: 0 out of 12 outside limits

COMMENTS:

2 10/2/4)

FORM III PEST-2

5/88 Rev.

^{*} Values outside of QC limits

3**F** SOIL PESTICIDE MATRIX SPIKE RECOVERY

Lab Name: Recra.LabNet

Contract: <u>1901-01-03</u>

Case No.: USACE-DEAL TEST SITE RFW Lot No.: 9710L573

MATRIX Spike - Sample No.: PBLKBDLE1832-MB1 Level: (low/med) LOW

COMPOUND	SPIKE ADDED UG/KG	SAMPLE CONCENTRATION UG/KG	MS CONCENTRATION UG/KG	MS % REC #	QC LIMITS REC
======================================	========= 6.67	0		-====:	
Heptachlor	6.67	0	6.67	95 100	30 -125 37 -126
Aldrin	6.67		6.67	100	27 -133
Dieldrin	16.7	0	17.0	102	40 -125
Endrin	16.7	0	17.7	106	45 -130
4,4'-DDT	16.7	0	17.0	102	33 -123

[#] Column to be used to flag recovery value with an asterisk

Spike Recovery: 0 out of 6 outside limits

COMMENTS:

^{*} Values outside of QC limits

WATER PESTICIDE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: Recra.LabNet

Contract: <u>1901-01-03</u>

Case No.: USACE-DEAL TEST SITE RFW Lot No.: 9710L573

MATRIX Spike - Sample No.: PBLKAALE1828-MB1 Level: (low/med) LOW

COMPOUND	SPIKE ADDED UG/L	SAMPLE CONCENTRATION UG/L	MS CONCENTRATION UG/L	MS % REC #	QC LIMITS REC
COMPOUND	007 H ========	00/E	00/E =========		KEC
gamma-BHC (Lindane)	_ 0.200	0	0.180	90	56 -127
Heptachlor	0.200	0	0.160	80	50 -129
Aldrin	_ 0.200	0	0.160	80	48 -133
Dieldrin	_ 0.500	0	0.480	96	57 -131
Endrin	_ 0.500	0	0.480	96	46 -150
4,4'-DDT	_ 0.500	0	0.470	94	38 -138
		_			

COMPOUND	SPIKE ADDED UG/L	MSD CONCENTRATION UG/L	MSD % REC #	% RPD #		LIMITS REC
gamma-BHC (Lindane)	0.200	0.180	90	====== 	===== 15	======== 56 -127
Heptachlor	0.200	0.150	75	6	20	50 -129
Aldrin	_ 0.200	0.170	85	6	22	48 -133
Dieldrin	0.500	0.480	96	0	18	57 -131
Endrin	0.500	0.480	96	0	21	46 -150
4,4'-DDT	_ 0.500	0.470	94	0	27	38 -138
						İ

[#] Column to be used to flag recovery and RPD values with an asterisk

RPD: 0 out of 6 outside limits

Spike Recovery: 0 out of 12 outside limits

COMMENTS:

FORM III PEST-1

5/88 Rev.

^{*} Values outside of QC limits

4C PESTICIDE METHOD BLANK SUMMARY

Tame: Recra.LabNet Cont

Contract: <u>1901-01-03</u>

e No.: <u>USACE-DEAL TEST SITE</u>

Lab File ID: <u>97LE1832-MB1</u> Lab File ID: <u>10209709</u> .32

Matrix: (Soil/Water) SOIL Level: (low/med) LOW

Date Extracted: 10/06/97 Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed (1): 10/21/97 Date Analyzed (2): 10/21/97

Time Analyzed (1): $\underline{1526}$ Time Analyzed (2): $\underline{1526}$

Instrument ID (1): 09 Instrument ID (2): 10

GC Column ID (1): <u>DB608</u> GC Column ID (2): <u>RTX1701</u>

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	CLIENT	LAB	DATE	DATE
	SAMPLE NO.	SAMPLE ID	ANALYZED 1	ANALYZED 2
	=======================================	==========	========	=======
01	S1	9710L573-001	10/23/97	10/23/97
02	S2	9710L573-002	10/23/97	10/23/97
03	S3	9710L573-003	10/22/97	10/22/97
04	S4	9710L573-004	10/23/97	10/23/97
05	S4MS	9710L573-004S	10/23/97	10/23/97
06	S4MSD	9710L573-004T	10/23/97	10/23/97
07	S5	9710L573-005	10/23/97	10/23/97
08	S6	9710L573-006	10/24/97	10/24/97
09	PBLKBDLE1832-MB1 BS	97LE1832-MB1S	10/21/97	10/21/97
		ĺ	ļ	

COMMENTS:

Jul My W

4C PESTICIDE METHOD BLANK SUMMARY

Lab Name: Recra.LabNet Contract: 1901-01-03

Case No.: <u>USACE-DEAL TEST SITE</u>

Lab Sample ID: <u>97LE1828-MB1</u> Lab File ID: <u>10119709</u> .35

Matrix: (Soil/Water) WATER Level: (low/med) LOW

Date Extracted: 10/05/97 Extraction: (SepF/Cont/Sonc) CONT

Date Analyzed (1): 10/12/97 Date Analyzed (2): 10/12/97

Time Analyzed (1): 1705 Time Analyzed (2): 1705

Instrument ID (1): 09 Instrument ID (2): 10

GC Column ID (1): <u>DB608</u> GC Column ID (2): <u>RTX1701</u>

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	CLIENT	LAB	DATE	DATE
	SAMPLE NO.	SAMPLE ID	ANALYZED 1	ANALYZED 2
	=======================================		========	=========
01	GW1	9710L573-007	10/13/97	10/13/97
02	GW2	9710L573-008	10/17/97	10/17/97
03	FB-1	9710L573-009	10/13/97	10/13/97
04	PBLKAALE1828-MB1 BS	97LE1828-MB1S	10/12/97	10/12/97
05	PBLKAALE1828-MB1 BSD	97LE1828-MB1T	10/12/97	10/12/97

COMMENTS:

m,1/2/97



Virtual Laboratories Everywhere

Recra LabNet Philadelphia Analytical Report

Client: USACE-DEAL TEST SITE W.O. #: 11901-001-003-0001-00

RFW#: 9710L600 **Date Received**: 10-02-97

PESTICIDE/PCB

1. The set of samples consisted of six (6) water samples and seven (7) soil samples collected on 10-01-97.

- 2. The samples and their associated QC samples were extracted on 10-06,07-97 and analyzed based on SW846, 3rd Edition, procedures on 10-21,22,24,28-97. The extraction procedure used was based on Methods 3520 and 3540 and the extracts were analyzed based on Method 8081.
- 3. The cooler temperature upon receipt has been recorded on the chain-of-custody.
- 4. All required holding times for extraction and analysis were met.
- 5. The soil samples and their associated QC samples received a sulfur cleanup.
- 6. The method blank was below the reporting limits for all target compounds.
- 7. One (1) of twenty-two (22) obtainable surrogate recoveries were outside QC limits; however, the surrogate recovery acceptance criteria were met (i.e., no more than one outlier per sample).
- 8. All blank spike recoveries were within acceptance criteria.
- 9. Matrix spike analyses for the soil samples are associated with RFW lot 9710L573. Matrix spike recoveries were unobtainable for these samples, due to the dilutions required for analyses. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
- 10. The following samples required instrument dilutions due to chromatographic anomalies:

Sample ID	<u>Dilution Factor</u>
$\overline{S7}$	10
S8	50
S9	10
S10	50
S11	10
SD1	10
SD2	10

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 19 pages.

001

- 9. All initial calibrations associated with this data set were within acceptance criteria.
- 10. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria, with the exception of target compound delta-BHC analyzed on 10-21,24-97 on the primary and secondary columns. The data reflected an increase in instrument response, so the ability to identify delta-BHC was not impaired. Since quantitation was not required, the data should not be impacted. A copy of the Sample Discrepancy Report (SDR) has been enclosed.

Muce C Mille unit leader Michael Taylor

Vice President and Laboratory Manager

Lionville Analytical Laboratory

jeh\pcb\10-600.608



Date

GLOSSARY OF PESTICIDE/PCB DATA

DATA QUALIFIERS

- U = Indicates that the compound was analyzed for but not detected. The minimum detection limit for the sample (not the method detection limit) is reported with the U (e.g., 10U).
- Indicates an estimated value. This flag is used in cases where a target analyte is detected at a level less than the lower quantification level. If the limit of quantification is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
- B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination.
- E = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
- I = Interference.

ABBREVIATIONS

- BS = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking solutions and carried through all the steps in the method. Spike recoveries are reported.
- **BSD** = Indicates blank spike duplicate.
- MS = Indicates matrix spike.
- MSD = Indicates matrix spike duplicate.
- **DL** = Indicates that recoveries were not obtained because the extract had to be diluted for analysis.
- NA = Not Applicable.
- **DF** = Dilution Factor.
- NR = Not Required.
- SP = Indicates Spiked Compound.

RFW 21-21-035/A-02/96

GLOSSARY OF PESTICIDE/PCB DATA

- P = This flag is used for a pesticide/Aroclor target analyte when there is greater than 25% difference for detected concentrations between the two GC columns (see Form X). The lower of the two values is reported on Form I and flagged with a "P".
- D = This flag identifies all compounds identified in an analysis at a secondary dilution factor.
- C = This flag applies to a compound that has been confirmed by GC/MS.

RFW #21-21-035/A-03/97

Recra LabNet Philadelphia Sample Discrepancy Report (SDR) SDR #: 476C27
Initiator: Deb Kasdas RFW Batch: 97101573,600 Date: 102797 Samples: -101 5005 Matrix: SW849MCAWW/CLP/ Client: USACE-Deal Method: SW849MCAWW/CLP/ Parameter: 0608 H Matrix: SW849MCAWW/CLP/ Prep Batch: 97161832
1. Reason for SDR a. COC Discrepancy Tech Profile Error Client Request Sampler Error on C-O-C Transcription Error Wrong Test Code Other b. General Discrepancy Missing Sample/Extract Container Broken Wrong Sample Pulled Label ID's Illegible Hold Time Exceeded Insufficient Sample Preservation Wrong Received Past nold Improper Bottle Type Not Amenable to Analysis Note: Verified by [Log-In] or [Prep Group] (circle)signature/date: c. QC Problem (Include all relevant specific results; attach data if necessary) FYI - Samples Mad to Wrong Sample Pulled Label ID's Illegible Preservation Wrong Received Past nold
3. Discussion and Proposed Action Re-log Entire Batch Following Samples: Re-leach Re-extract Re-digest Revise EDD Change Test Code to Place On/Take Off Hold (circle) Other Description: Other Description: Author Other Description:
4. Project Manager Instructionssignature/date: Concur with Proposed Action Disagree with Proposed Action; See Instruction Include in Case Narrative Client Contacted: Date/Person Add Cancel
5. Final Actionsignature/date: OLUTION FORMS Other Explanation: Verified re-[log][leach][extract][digest][analysis] (circle) (O) (O) (O) (O) (O) (O) (O) (O) (O) (O
Route Distribution of Completed SDR X Initiator Deb Adda Metals: Doughty Lab Manager: J. Michael Taylor Inorganic: Perrone/Leonards Completed SDR Metals: Doughty Inorganic: Perrone/Leonards

Recra LabNet Philadelphia Sample Discrepancy Report (SDR) SDR #:
Initiator: Obb Hosdyds RFW Batch: 9710U00 Date: 103197 Samples: -001 Client: USACE-Old Method: SWEARMCAWW/CLP/ Prep Batch: 9710U00 Parameter: 0008H Matrix: 801 Prep Batch: 9710E1832
1. Reason for SDR a. COC Discrepancy Tech Profile Error Client Request Sampler Error on C-O-C Transcription Error Wrong Test Code Other
b. General Discrepancy Missing Sample/Extract Container Broken Wrong Sample Pulled Label ID's Illegible Hold Time Exceeded Insufficient Sample Preservation Wrong Received Past Hol Improper Bottle Type Not Amenable to Analysis Note: Verified by [Log-In] or [Prep Group] (circle)signature/date:
c. QC Problem (Include all relevant specific results; attach data if necessary) The client splicified their there was to be an MS, MSD on sample -001 and none was entracted
2. Known or Probable Causes(s) Scheduling and.
3. Discussion and Proposed Action Re-log Entire Batch Following Samples: Re-each Re-extract Re-digest Revise EDD Change Test Code to Place On/Take Off Hold (circle) Other Description: NOTE in national activative no useful have NOTE in national activative no useful have NOTE in national activative no useful have NOTE in national activative no useful have NOTE in national activative no useful have NOTE in national activative no useful have NOTE in national activative no useful have NOTE in national activative no useful have NOTE in national activative no useful have NOTE in national activative no useful have NOTE in national activative no useful have NOTE in national activative no useful have NOTE in national activative no useful have NOTE in national activative no useful have NOTE in national activation with have NOTE in national activation in national activation activation in national act
4. Project Manager Instructionssignature/date: Concur with Proposed Action Disagree with Proposed Action; See Instruction Include in Case Narrative Client Contacted: Date/Person Add Cancel
5. Final Actionsignature/date: Debt Control
Route Distribution of Completed SDR X Initiator Delegation Special Sp

RFW 21-21-006/E-05/97

Recra LabNet - Lionville Laboratory

RFW Batch Number: 9710L600

Pesticide/PCBs by GC, CLP List Client: USACE-DEAL TEST SITE Work Order: 11901001003 Page: 1

Cust ID: **S7** S8 S 9 S10 S11 GW3 Sample RFW#: 001 002 003 004 005 007 Information Matrix: SOIL SOIL SOIL SOIL SOIL WATER D.F.: 10.0 50.0 10.0 50.0 10.0 1.00 Units: UG/KG UG/KG UG/KG UG/KG UG/KG UG/L Decachlorobiphenyl Surrogate: D 왐 D 왕 D 왕 D ջ D 옷 옿 49 Tetrachloro-m-xvlene D ջ D કૃ D ջ D 욧 ח ջ 38 કૃ Alpha-BHC U 45 110 U 40 TT = 100 U 31 U 0.057 Beta-BHC 45 U 110 U 40 U 100 U 31 TT 0.057 U Delta-BHC 45 IJ 110 U 4.0 U 100 U IJ 31 0.057 TT gamma-BHC (Lindane)____ 110 IJ 40 U 100 U 31 IJ 0.057 Heptachlor____ IJ 110 U 40 U 1.00 Ħ 31 IJ 0.057 U Aldrin 45 U 110 IJ 40 IJ 100 IJ 31 IJ 0.057 U Heptachlor epoxide____ 45 U 110 U 40 IJ 100 IJ 31 TI 0.057 U Endosulfan I 45 U 110 U 40 U IJ 100 31 IJ 0.057 U Dieldrin _____ 90 U 210 U 81 IJ 210 IJ 62 IJ 0.11 U 4,4'-DDE_____ 90 IJ 210 IJ 81 IJ 210 IJ 62 IJ 0.11 U Endrin____ 90 U 210 U 81 IJ 210 IJ 62 ίJ 0.11 U Endosulfan II____ 90 U 210 IJ IJ 81 210 IJ 62 U 0.11 U 4,4'-DDD 90 U 210 TT 81 IJ 210 U U 0.11 U 62 Endosulfan sulfate____ 90 U 210 IJ 81 IJ 210 U 62 U 0.11 U 4,4'-DDT 90 IJ 210 IJ 81 U 210 U 62 U 0.11 U Methoxychlor____ 450 IJ 1100 U 400 IJ 1000 U 310 IJ 0.57 U Endrin ketone IJ 90 210 U 81 U 210 U 62 IJ 0.11 U Endrin aldehyde_____ 90 IJ 210 U TT 210 IJ U 62 0.11 U alpha-Chlordane_____ 45 U 110 U 40 U 100 IJ 31 U 0.057 U gamma-Chlordane_____ 45 110 U 40 IJ 100 IJ U 31 0.057 U Toxaphene 4500 U 11000 U 4000 IJ 10000 U 3100 IJ 5.7 U Aroclor-1016 900 U 2100 U 810 IJ 2100 IJ U 620 1.1 U Aroclor-1221 1800 U 4300 U 1600 IJ 4100 U 1200 IJ 2.3 U Aroclor-1232 900 IJ 2100 810 U 2100 IJ 620 U 1.1 U Aroclor-1242 900 IJ 2100 U 810 IJ 2100 ti 620 IJ 1.1 U Aroclor-1248 900 IJ 2100 Ū 810 IJ 2100 IJ 620 IJ 1.1 U Aroclor-1254 _____ 900 IJ 2100 U 810 U 2100 U 620 IJ 1.1 U Aroclor-1260 900 IJ., 2100 U 810 U 🎲 2100 II 620 1.1 U

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked. %= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

Report Date: 10/31/97 11:23

Re Lab - I vil: abo: __ry

Pesticide/PCBs by GC, CLP List

Report Date: 10/31/97 11:23 RFW Batch Number: 9710L600 Client: USACE-DEAL TEST SITE Work Order: 11901001003 Page: 2

	Cust ID:	GW4 GW5		FB03	3	SWI	L	SW2	SW2						
Sample	RFW#:	008	3	009	9	011	011		013		013		4 0		_
Information	Matrix:	WATER		WATER		WATER		WATER	,	014 WATER					
	D.F.:	1.0	00	1.0	0.0	1.0	00	1.0	0.0	1.		SOIL 10			
	Units:	UG/I		UG/I			UG/L			UG/L	-	UG/I			
				·		,		UG/I	-	OG/ L	ı	UG/I	N.G		
Surrogate:	Decachlorobiphenyl	52	ુ	58	%	61	ે	76		78	ક	D	용		
	Tetrachloro-m-xylene	22 *	는 왕	42	ઇ	58	항	35	ર્ક		_				
Alaba DUG	-	========	==fl=	========	==fl=	========	==fl=	========	==fl=	=======	=f1	========	==fl		
ATPRIA BRC		0.064	U	0.057	U	0.051	U	0.057	U	0.057	U	22	U		
Beta-BHC		0.064	U	0.057	U	0.051	U	0.057	U	0.057	Ū	22	U		
Delta-BHC		0.064	U	0.057	U	0.051	U	0.057	U	0.057	U	22	U		
gamma-BHC (L	indane)	0.064	U	0.057	U	0.051	U	0.057	U	0.057	U	22	U		
		0.064	U	0.057	U	0.051	U	0.057	U	0.057	U	22	U		
Aldrin		0.064	U	0.057	U	0.051	U	0.057	U	0.057	U	22	U		
Heptachior e	poxide	0.064	U	0.057	U	0.051	U	0.057	U	0.057	U	22	IJ		
Endosulfan I	-	0.064	U	0.057	U	0.051	U	0.057	U	0.057	Ū	22	Ū		
Dieldrin		0.13	U	0.11	U	0.10	U	0.11	U	0.11	U	44	U		
4,4'-DDE		0.13	U	0.11	U	0.10	U	0.11	U	0.11	IJ	44	U		
Endrin		0.13	U	0.11	U	0.10	U	0.11	U	0.11	U	44	Ū		
Endosulfan I	I	0.13	U	0.11	U	0.10	U	0.11	Ū	0.11	U	44	IJ		
4,4'-DDD		0.13	U	0.11	U	0.10	U	0.11	Ū	0.11	IJ	44	U		
Endosulfan s	ulfate	0.13	U	0.11	Ū	0.10	U	0.11	U	0.11	U	44	U		
4,4'-DDT		0.13	U	0.11	U	0.10	Ū	0.11	U	0.11	U	44	U		
Methoxychlor		0.64	U	0.57	U	0.51	U	0.57	U	0.57	U	220	U		
Endrin keton	e	0.13	U	0.11	U	0.10	U	0.11	-	0.11	IJ	44	U		
Endrin aldeh	yde	0.13	U	0.11	U	0.10	U	0.11	IJ	0.11	U	44	U		
alpha-Chlord	ane	0.064	U	0.057	U	0.051	U	0.057	U	0.057	IJ	22	U		
gamma-Chlord	ane	0.064	U	0.057	U	0.051	U	0.057	U	0.057	U	22	IJ		
Toxaphene		6.4	U	5.7	U	5.1	U	5.7	IJ	5.7	U	2200	U		
Aroclor-1016		1.3	U	1.1	U	1.0	Ū	1.1	IJ	1.1	IJ	440	IJ		
Aroclor-1221		2.5	U	2.3	U	2.0	U	2.3	IJ	2.3	U		IJ		
Aroclor-1232		1.3	U	1.1	Ū	1.0	U	1.1	IJ	1.1	נז	870	•		
Aroclor-1242		1.3	U	1.1	Ū	1.0	U	1.1	IJ	1.1	IJ	440	U		
Aroclor-1248		1.3	U	1.1	Ū	1.0	Ū	1.1	•	1.1	U	440	U		
Aroclor-1254		1.3	Ū	1.1	U	1.0	IJ	1.1	-		-	440	U		
Aroclor-1260		1.3	U	1.1	U	1.0	U	1.1	•	1.1	Ü	440	U		
			-		9	. .0	U	1.1	U	1.1	U	440	U		

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked. %= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

Recra LabNet - Lionville Laboratory

Pesticide/PCBs by GC, CLP List

Report Date: 10/31/97 11:23 RFW Batch Number: 9710L600

Client: USACE-DEAL TEST SITE Work Order: 11901001003 Page: 3

	Cust ID:	SD	2	PBLKBD		PBLKBD BS	PBLKBD BS P			PBLKAN BS		PBLKAN BSD		
Sample	RFW#:	016	5	97LE1832-1	MB1	97LE1832-1			Æ1	97LE1851-N	no 1	97LE1851-1	MD 1	
Information	Matrix:	SOIL		SOIL		SOIL				WATER	тот	WATER	MDI	
	D.F.:	10.		1.0	0.0	1.0	0.0	1.0	00	1.0	0.0	1.0	0.0	
	Units:	UG/F	ζG	UG/H	ζG	UG/I	KG	UG/I		UG/I		UG/L		
Cumpagata								,		33, 2	-	00/1	_	
	cachlorobiphenyl	D	elo e	94	9	99	용	76	ક	73	ક	75	8	
tecre	achloro-m-xylene	D	%	80	8	85	왕	40	ક	42	કૃ	45	&	
Alpha-BHC	=======================================		==I1		==fl	========	==f1	=========	==f1		=f1=		==f1	
Beta-BHC		21	U	1.7	U	1.7	U	0.050	U	0.050	U	0.050	IJ	
Delta-BHC		21	-	1.7	U	1.7	Ū	0.050	U	0.050	U	0.050	U	
gamma-BHC (Lindan	e)	21	Ü	1.7	Ŭ	1.7	U	0.050	U	0.050	U	0.050	U	
Hentachlor	C/	21	U	1.7	U	95	ક	0.050	U	85	용	85	ક	
Aldrin		21	IJ	1.7	Ŭ	100	ક	0.050	U	65	કૃ	65	용	
Heptachlor epoxide	Δ	21	IJ	1.7	U	100	કુ	0.050	U	60	冬	60	એ	
Endosulfan T		21	IJ	1.7	Ŭ	1.7	U	0.050	U	0.050	U	0.050	U	
Dieldrik		21 42	U	1.7	U	1.7	U	0.050	U	0.050	U	0.050	U	
4.4'-DDE			U	3.3	U	102	앙	0.10	U	92	ક	92	8	
Endrin		42 42	Ū	3.3	U	3.3	U	0.10	U	0.10	U	0.10	U	
Endosulfan II		42	IJ	3.3	U	106	ક	0.10	U	96	용	92	ક	
4,4'-DDD		42	IJ	3.3	U	3.3	U	0.10	U	0.10	U	0.10	U	
Endosulfan sulfate	Α	42	U	3.3	U	3.3	Ü	0.10	U	0.10	U	0.10	U	
		42	Ū	3.3	U	3.3	U	0.10	U	0.10	U	0.10	U	
Methoxychlor		210	U	3.3	U U	102	ક	0.10	U	100	용	90	ક	
Endrin ketone		42	U	3.3	U	17	U	0.50	U	0.50	U	0.50	U	
Endrin aldehyde		42	U	3.3	U	3.3	U	0.10	U	0.10	U	0.10	U	
alpha-Chlordane		21	U	1.7	Ū	3.3	U	0.10	U	0.10	U	0.10	U	
gamma-Chlordane		21	U	1.7	U	1.7	Ū	0.050	U	0.050	U	0.050	U	
		2100	U	1.7	U	1.7	U	0.050	U	0.050	U	0.050	U	
Aroclor-1016		420	U	33	IJ	170	U	5.0	U	5.0	U	5.0	U	
Aroclor-1221		850	IJ	53 67	U	33	U	1.0	U	1.0	U	1.0	Ŭ	
Aroclor-1232		420	IJ	33	U	67	U	2.0	U	2.0	U	2.0	U	
		420	U	33	Ū	33	Ü	1.0	U	1.0	U	1.0	U	
7		420	Ū	33	U	33	U	1.0	Ŭ	1.0	U	1.0	U	
Amoralam 1054		420	U	33	נז	33 33	U	1.0	Ŭ	1.0	U	1.0	U	
		420	U	33	Ū		U	1.0	U	1.0	U	1.0	Ū	
		420	U	33	U	. 33	U	1.0	U	1.0	U	1.0	U	

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked. %= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

Recra LabNet - Lionville Laboratory PEST/PCB ANALYTICAL DATA PACKAGE FOR USACE-DEAL TEST SITE

DATE RECEIVED: 10/02/97 RFW LOT # :9710L600

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
S7	001	S	97LE1832	10/01/97	10/06/97	10/22/97
S8	002	S	97LE1832	10/01/97	10/06/97	10/24/97
S9	003	S	97LE1832	10/01/97	10/06/97	10/22/97
S10	004	S	97LE1832	10/01/97	10/06/97	10/28/97
S11	005	S	97LE1832	10/01/97	10/06/97	10/22/97
GW3	007	W	97LE1851	10/01/97	10/07/97	10/22/97
GW4	800	W	97LE1851	10/01/97	10/07/97	10/22/97
GW5	009	W	97LE1851	10/01/97	10/07/97	10/22/97
FB03	011	W	97LE1851	10/01/97	10/07/97	10/22/97
SW1	013	W	97LE1851	10/01/97	10/07/97	10/22/97
SW2	014	W	97LE1851	10/01/97	10/07/97	10/22/97
SD1	015	S	97LE1832	10/01/97	10/06/97	10/22/97
SD2	016	S	97LE1832	10/01/97	10/06/97	10/22/97
AB QC:						
PBLKBD	MB1	s	97LE1832	N/A	10/06/97	10/21/97
PBLKBD	MB1 BS	S	97LE1832	N/A	10/06/97	10/21/97
PBLKAN	MB1	W	97LE1851	N/A	10/07/97	10/22/97
PBLKAN	MB1 BS	W	97LE1851	N/A	10/07/97	10/22/97
PBLKAN	MB1 BSD	W	97LE1851	N/A	10/07/97	10/22/97

7/1.05 m

RECRA LabNet Use Only

Custody Transfer Record/Lab Work Request



Client US	AcE -	DEAR TEST SITE		1						JIK I	ricque	35 1					/11 C [
Est. Final Pr	oi Sami	pling Date		Refrige	rator #			2	ス			10	 				
Project #	0397	164 001 0008 0	1	#/Type Container Liquid			10	1 AM	1114			/Ru	, 	Peur			 -
Project Cont	act/Dho	ne # G. Butulatalital - 583	2000	Solid Liquid			40M	IAM				100		40			
RECRA Proje	ect Man	ager M. YOUNG	<u> </u>	voiume				SOHL	14			14		12			+
QC 54 192	OC SLIGHE DOI SPEC TAT 30 DAY			Preserv	atives		45.24	WH.	TUPL .		+	802					1-
Date Resid	Date Rec'd 10-2-97 Date Due 11-1-97 Account # 1152pm				ere -	-		ORG	ANIC		 	HADE	ORG IV	INO			
Account # _	10-1	MIKERUS	17	REQUE		-	۷٥	BNA	Pest/ PCB	He d		K _m	14	METHUS			
MATRIX			 	 			Š	80	9 9	Ĭ	1	Ų žė	S	Z			
CODES:	1		Matrix QC							Ţ	RECRA L	4.4.			╼┶╼╌		
8 - Soll	Lab ID	Client ID/Description	Chosen	Matrix	Date	Time	OC 24H	74	Ŧ						*		
SE - Sediment SO - Solid	1		(√)		Collected	Collected	3	25	8							-	
SL - Sludge W - Water			MS MSD				8	X235H	CLOSH			MACAKTE					
O - Oil	00/	57	X X	7	10-1-97	1105	Y	V	V		 	2/-					
A - Air DS - Drum	002	58		5			\(\)	$\frac{C}{C}$	-		 	X					
Solids	003	59	 	5		1125	$\dot{\wedge}$	\sim	\mathbf{X}			X					
DL - Drum Liquids	24					2930	X	X	$X \perp$			V					+
L - EP/TCLP	0.0	510		5		0945	X	X	X								
Leachate WI - Wipe	∞	S//		5	V	0935	X	V			 	\leftarrow			42		
X - Other F - Fish	006	GW2		W	9/30/97			()	$\Diamond +$	Ann .		X		200			
. (131)	00)	6W3			7 7 7 1	1535				14/21	57	X	ر ا	1			
	COX.				10/1/97	1140	X	X_{\perp}	$X \perp$			X	X				1
	20	GW4		W		0955	X	X	X			V	12	} 	+		
	004	6W5		W	17	1150	X	X	V			Θ		- -			
	010	FBO2		2×	77	1125	()		\sim			A					
		MPLETE ONLY SHADED AREAS				4	$\Delta \perp$										
Special instruc				í	XNO 1	ino Co	dbc	tal.	01	VA (W Single		D.C.	<u> </u>			
FB02 15	METT	HANKE BLANK			mi				<u> </u>	VCF13 T	DA JAWA	<u>'</u>	ne.	CHA LE	abNet Use	Only	
- 446-	110			2	WY.							Sam	ples were	: /	COC Tap	e was:	
JOGH -	11901	1-001-003-0001-	07) -	3	XX Nec	ame	tab	bo	Hle f	nr s	andlok	1) S Han	hipped £ d Delivere	d	D- 1	Outer	
				4	016	Coll	book	600		-	AMP ICS	Airbi	11 3093	(225Y	36) Unbrok	Y or N	.]
			_		~ Al.	7 1/64	11:1	1 /) 11	0		2) A	mbient of	Chilled	Package	ypron Oute Y or N	er
				—— <u>, - 5</u>	crug	or vom	VIT	(S_A	pcd	401 5	amples	3) A	eceived in	Good	3) Presen	on Sample	le .
·	$\underline{C}\alpha$	nle1#0017-75" #0131	-43%	<u> </u>	002	005,0	10,6	ル			,		dition (Y abels Indic		\ <i>/</i> \	Y or (N)	
Relinquished	Red	ceived Date Time	Relinquishe		Received	- , '			7			Prop	erly Prese	ate 🤝 🗀	4) Unbrok	ren on	7 l
- 12 ° -		by Date Time	by		by	De	ate	Time	e Di	iscrepancie	s Between	-	(y)	or N	Sample COC Bec	Y or W	
	110	10-1-97 1330								amples Lat	oles and I Y or N	5) R	eceived W	ithin	Upon San	in Recit	"
-	1	11: 10.2920030							NO	OTES	Y 101 N	Hold	ing Times	or N		N 10 K	
	~	- 101 SU		l							•			J. 14			
																	- 1

RECRA LabNet Use Only													4		1 _	RI	ECR/	٨
9710L600 C	ustody Tra	ansf	er R	ecor	d/L	.ab	W	ork	Rea	ue	st		ł				abNe	
Client USACE - DEM. TEST 317	E	Refrigerator #									_		_					+
Est. Final Proj. Sampling Date 10-1-	77	#/Typo	Container	Liquid	3 4	TAM	TAM						3					
Project # 0384-184-001-000-001		- wrighe	Container	Solid	14	IAM					1 Pay		1 Pary]
Project Contact/Phone # G. Buchanta	-5832	Volum	e	Liquid	done	14	14				140		14					_
RECRA Project Manager M. YOUNG		Preser	vatives	Solid	12 See	570,00	50 ml				802		100					ᅥ
QC DelTAT	2 041	11000	valives	L	en, ch	ORG	ANIC				HARZ		HUS					
Date Rec'd N-297 Date Due		ANALY		-	4						INO	RG	Samo					7
Account #		, nedoc	29150		VOA	BNA	Pest/ PCB	Herb		(g		N N	35				- 1	
MATRIX	Matrix					<u> </u>		<u> </u>	BEC		BPNé/		2	<u> </u>				_
CODES: Lab Client ID/Descrip	QC otlon Chosen		Date	Time	I	±	77	<u> </u>	1120	na L	1 El	Use (_	+	-			_
SE - Sediment	(√)	Matrix		Collected	0634H	D625H	H&090	ĺ			1 23		O) ACMAS	41				İ
SO - Solid SL - Sludge	MS MSD	1			। प्र)	્ર્ક	l			13		15					
W. Water Oll FB03		W	10-1-97	1050	V	$\overline{\mathcal{A}}$	7		++		12		10	/				_
A. Alr 012 TR2		1,1	10-1-11				_						X					
Solids DI SW I		W	 	1320	X													7
DC - DIGITI		u	1-1-1	0715	K	X	X				X		X	0.2	7			1
L EP/TCLP		W		0740	X	X	X				∇		X			-+		\dashv
WI - Wipe		15		0720	X	X	X		1		\Box			\vdash				-
X - Other 0/6 502		3.	1 1/ 1	0745	V				╌┼		()			┝╼┤		_		4
01) 612		71	10-1-97	1555		\sim	$\triangle +$				Δ							
0/8/61/3		4/	10-1 //	(22)									X					
0/9 (1)//		$ \psi_{r} $		1170		[∇					1
011 9 6 9		44		0955			_						X			$\neg \vdash$		-
1020 201		W		075									\tag{\tau}		-+			4
FIELD PERSONNEL: COMPLETE ONLY SHADED	AREAS	ATE/REV	ISIONS:	AN 102	77								\triangle					╛
Special Instructions:			- OM	g did	not i	CCI	12 Su	mple	wolve	ne		1	RECR	A Labi	Net Use	e Only		4
Job# = 11901-001-003-	A-13/> -		2 for 3	Sampl	le or	26		,			Sam	ples w	1010:		COC T-		/	\dashv
900 - 11101 - 01 003-	0001-00		- HA	1500	P :	1/01		- (N.	·	1) S	hipped	0	or	COC Ta	en y on Oi	uter	
			ى <i>تى) ي</i>	s yr	المال	TANA	15_k	OF Sou	MPIE:		Hand	d Deiiv ill #	ered _		Package	Y or	N	1
	_		ISIONS: 1 OAL 2 COL	-005,	, 01	0_					2) A			<u>~</u> ~0	E) Onbro	oken on (e Y or	Outer	
	_		5		•						3) R					error enton Sa		
		:									Cong	ditigrn(Ye 1	47	.,1,	Y or		1

					5 6				Condition (* 4)	(3) Present on Sample Y or N 4) Unbroken on
Relinquished by	Received by	Date	Time	Relinquished by	Received by	Date	Time	Discrepancies Between Samples Lables and	Property Pleserved	Sample Y or N COC Record Present
Fed Ex	1 / // //	10/1/97	1000					COC Record? Y or N	5) R sc eived Within Holding Times Y or N	Upon Sample Rec1 Y or N
, , , , , , , , , , , , , , , , , , ,						<u> </u>	<u></u> j			

RECRA LabNet Use Only

Custody Transfer Record/Lab Work Request



					•			· · · ·		W/ L	.uv	* *	UI	u u	equ	iest						
Client/_5	ACE	-Dea	TOY	SHe			Refrige		······································	1	1			T T								
Est. Final Pr	Samp	Ing/Pate	20	\overline{Z}				Container	Liquid	 			 -	-		1.77						
Project	71-	, MA	15!					Contamer	Solid				1	 		119	-		\vdash		$-\!$	
Project Cont	COMMON	10 4	Y.	22			Volume	•	Liquid							- //-	+	┼─	<u> </u>			
RECRA Proje	ct Mans	galate	100	71			Preserv	د مالاده	Solid	<u> </u>						-/-	+-	 	\vdash			_+
O&		1	TAT				rieser	atives			OPC	Min	<u> </u>			HNO		1				
Date Rec'd Z	0-2-9	1	Date Due				ANALY	SES		-	ORG		T	1		3N	ORG					
Account #							REQUE	STED		δ V	BNA	Pest/ PCB	I ed				S					-
MATRIX	i i				Ma	itrix				 			-				a	<u></u>	<u> </u>			
CODES:	Lab	CII	land ID/Dass			C		D-1-	<u> </u>					Т	HECR/	A Labile		Only		 		
S - Soil SE - Sediment	ID	CII	lent ID/Descr	iption		osen /)	Matrix	Date Collected	Time Collected							118	₹\'					
SO - Solid SL - Sludge						MSD			1							Makake	3)					
W - Water	031	Su	10		1 110	MOD	7.7	10.4	-701	<u> </u>						1/3						
O - Oil A - Air	1 CO 1		74		╂—		h/_	10197	0140							\mathbf{X}	1					
DS - Drum				•.			•													-+	_	
Solids DL - Drum																						
Liquids L - EP/TCLP														-			 					
Leachate					1										-							
WI - 'Vipe X - Other					+			**														
F - Fish											1							 			-+	
																	_	-			$-\!$	
																	ļ					
					1																	
			· · · · · · · · · · · · · · · · · · ·		+-				-							ļ .						
FIELD PERSON	INEL CO	MOLETE O																				
Special Instruc		MPLETE OF	NLY SHADE	AREAS] D	ATE/REVI	SIONS:								┵┌═						
Special illistruc	uons:					-		1										RECR	A Labi	Vet Use	Only	/
						_		2								Sa	mples v	VO1		COC Tap		/
													-			1)	Shipped	J o	r	N Prese	ກ¥on O∟	ıter
								3								— Ha	nd Deli bill #	vered _		Pickage	Y or	N
						_	'	1											- (2)	2) Unbro Package	ken on (Duter
								5								2)	Dagaire	.a :1 X	Σ	r-ackage €)Presei	Y Of	N
																Co	ndition) v 1	FIL.		Y or	
Relinquished			, 					S				-				_ 🐠		ndickle	ト、		ken on	l
by		ceived by _	Date	Time		quishe	d	Received	n	ate	Tim		Disco	none:	<u> </u>	°g	W.	reference Y or	j N	Sample		N
ed by	<i>// //</i>	- //	1 0 00			by		by			1110		Samp	les Lable	Between	/ }}		O.		COC Red		
Carr 1	1.049	MM	10-291	JY45					_				COC	Record?	YOF	i lidi	ding Tir	nes	' '	Upon Sai	mple Re Y or	
/													NOTE	.s /		V		no Y	N			
				ـــــــا								إلــ	<									Ĭ

2E

WATER PESTICIDE SURROGATE RECOVERY

Lab Name: Recra.LabNet Contract: 1901-01-03

Case No.: <u>USACE-DEAL TEST SITE</u>

RFW Lot No.: 9710L600

CLIENT	S1	OTHER
SAMPLE NO.	(DCB)#	TCX
=======================================		======
01 GW3	49	38
02 GW4	52	22 *
03 GW5	58	42
04 FB03	61	58
05 SW1	76	35
06 SW2	78	27
07 PBLKANLE1851-MB1	76	40
08 PBLKANLE1851-MB1 BS	73	42
09 PBLKANLE1851-MB1 BSD	75	45

ADVISORY

QC LIMITS

S1 (DCB) = Decachlorobiphenyl (22-126) S2 (TCX) = Tetrachloro-m-xylene (27-129)

Column to be used to flag recovery values

* Values outside of QC limits

D Surrogates diluted out

m/1-05-77

page 1 of 1

FORM II PEST-1

01/89 Rev.

2F SOIL PESTICIDE SURROGATE RECOVERY

Lab Name: Recra.LabNet Contract: 1901-01-03

Case No.: <u>USACE-DEAL TEST SITE</u>

RFW Lot No.: 9710L600

	CLIENT SAMPLE NO.	S1 (DCB)#	OTHER TCX
		=====:	=====
01	S7	D	D
02	S8	D	D
03	S9	D	D
04	S10	D	D
05	S11	D	D
06	SD1	D .	D
07	SD2	D	D
80	PBLKBDLE1832-MB1	94	80
09	PBLKBDLE1832-MB1 BS	99	85
	<u> </u>		i

ADVISORY QC LIMITS

S1 (DCB) = Decachlorobiphenyl (38-122) S2 (TCX) = Tetrachloro-m-xylene (28-118)

Column to be used to flag recovery values

- * Values outside of QC limits
- D Surrogates diluted out

9/11/05/97

3F SOIL PESTICIDE MATRIX SPIKE RECOVERY

Lab Name: Recra.LabNet Contract: 1901-01-03

Case No.: <u>USACE-DEAL TEST SITE</u> RFW Lot No.: <u>9710L600</u>

MATRIX Spike - Sample No.: PBLKBDLE1832-MB1 Level: (low/med) LOW

	SPIKE	SAMPLE	MS	MS	QC
	ADDED	CONCENTRATION	CONCENTRATION	8	LIMITS
COMPOUND	UG/KG	UG/KG	UG/KG	REC #	REC
	=======================================			======	=======================================
gamma-BHC (Lindane)	6.67	0	6.33	95	30 -125
Heptachlor	6.67	0	6.67	100	37 -126
Aldrin	6.67	0	6.67	100	27 -133
Dieldrin	16.7	0	17.0	102	40 -125
Endrin	16.7	0	17.7	106	45 -130
4,4'-DDT	16.7	0	17.0	102	33 -123
		_			

[#] Column to be used to flag recovery value with an asterisk

Spike Recovery: <u>0</u> out of <u>6</u> outside limits

COMMENTS:

N11-05-57

^{*} Values outside of QC limits

3E WATER PESTICIDE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

me: Recra.LabNet

Contract: <u>1901-01-03</u>

e No.: USACE-DEAL TEST SITE

RFW Lot No.: <u>9710L600</u>

MATRIX Spike - Sample No.: PBLKANLE1851-MB1 Level: (low/med) LOW

COMPOUND	SPIKE ADDED UG/L	SAMPLE CONCENTRATION UG/L	MS CONCENTRATION UG/L	MS % REC #	QC LIMITS REC
gamma-BHC (Lindane)	0.200	0	0.170	85	56 -127
Heptachlor	0.200	0	0.130	65	50 -129
Aldrin	0.200	0	0.120	60	48 -133
Dieldrin	0.500	0	0.460	92	57 -131
Endrin	0.500	0	0.480	96	46 -150
4,4'-DDT	0.500	0	0.500	100	38 -138
		_			

	SPIKE ADDED	MSD CONCENTRATION	MSD %	 %	 oc	LIMITS	
COMPOUND	UG/L	UG/L	REC #	RPD #	! ~	REC	į
gamma-BHC (Lindane)	0.200	0.170	85	== <i>-</i> ===== 0	====== 15	======================================	=== 27
Heptachlor	0.200	0.130	65	Ö	20	50 -12	29
Aldrin	0.200	0.120	60	0	22	48 -13	33
Dieldrin	0.500	0.460	92	0	18	57 -13	31
Endrin	0.500	0.460	92	4	21	46 -15	50
4,4'-DDT	0.500	0.450	90	10	27	38 -13	88

[#] Column to be used to flag recovery and RPD values with an asterisk

RPD: <u>0</u> out of <u>6</u> outside limits

Spike Recovery: _0 out of 12 outside limits

COMMENTS:

FORM III PEST-1

5/88 Rev.

^{*} Values outside of QC limits

4C PESTICIDE METHOD BLANK SUMMARY

Lab Name: Recra.LabNet Contract: 1901-01-03

Case No.: <u>USACE-DEAL TEST SITE</u>

Lab Sample ID: <u>97LE1832-MB1</u> Lab File ID: <u>10209709</u> .32

Matrix: (Soil/Water) SOIL Level: (low/med) LOW

Date Extracted: 10/06/97 Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed (1): 10/21/97 Date Analyzed (2): 10/21/97

Time Analyzed (1): $\underline{1526}$ Time Analyzed (2): $\underline{1526}$

Instrument ID (1): 09 Instrument ID (2): 10

GC Column ID (1): <u>DB608</u> GC Column ID (2): <u>RTX1701</u>

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	CLIENT	LAB	DATE	DATE
	SAMPLE NO.	SAMPLE ID	ANALYZED 1	ANALYZED 2
	=======================================	==========	========	
01	S7	9710L600-001	10/22/97	10/22/97
02	S8	9710L600-002	10/24/97	10/24/97
03	S9	9710L600-003	10/22/97	10/22/97
04	S10	9710L600-004	10/28/97	10/28/97
05	S11	9710L600-005	10/22/97	10/22/97
06	SD1	9710L600-015	10/22/97	10/22/97
07	SD2	9710L600-016	10/22/97	10/22/97
08	PBLKBDLE1832-MB1 BS	97LE1832-MB1S	10/21/97	10/21/97

COMMENTS:

W11-05-47

4C PESTICIDE METHOD BLANK SUMMARY

Lab Name: Recra.LabNet Contract: 1901-01-03

Case No.: <u>USACE-DEAL TEST SITE</u>

Lab Sample ID: 97LE1851-MB1 Lab File ID: 10209735 .47

Matrix: (Soil/Water) WATER Level: (low/med) LOW

Date Extracted: 10/07/97 Extraction: (SepF/Cont/Sonc) CONT

Date Analyzed (1): 10/22/97 Date Analyzed (2): 10/22/97

Time Analyzed (1): 0120 Time Analyzed (2): 0120

GC Column ID (1): <u>B608</u> GC Column ID (2): <u>TX1701</u>

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	CLIENT	LAB	DATE	DATE
	SAMPLE NO.	SAMPLE ID	ANALYZED 1	ANALYZED 2
	=======================================	==========	========	=======
01	GW3	9710L600-007	10/22/97	10/22/97
02	GW4	9710L600-008	10/22/97	10/22/97
03	GW5	9710L600-009	10/22/97	10/22/97
04	FB03	9710L600-011	10/22/97	10/22/97
05	SW1	9710L600-013	10/22/97	10/22/97
06	SW2	9710L600-014	10/22/97	10/22/97
07	PBLKANLE1851-MB1 BS	97LE1851-MB1S	10/22/97	10/22/97
80	PBLKANLE1851-MB1 BSD	97LE1851-MB1T	10/22/97	10/22/97

COMMENTS:

m/ 05/97



Virtual Laboratories Everywhere

Recra LabNet Philadelphia Analytical Report

Client: USACE-DEAL TEST SITE W.O.#: 11901-001-003-0001-00

RFW#: 9710L600 **Date Received**: 10-02-97

METALS CASE NARRATIVE

- 1. This narrative covers the analyses of 7 soil and 11 water samples.
- 2. Samples were prepared and analyzed in accordance with methods checked on the attached glossary.
- 3. All analyses were performed within the required holding times.
- 4. The cooler temperatures have been recorded on the Chain of Custody.
- 5. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within control limits.
- 6. All Initial and Continuing Calibration Blanks (ICB/CCBs) were within control limits.
- 7. All preparation/method blanks were within method criteria. Refer to the Inorganics Method Blank Data Summary.
- 8. All ICP Interference Check Standards were within control limits.
- 9. All laboratory control samples (LCS) were within the laboratory control limits with the exception of 97L2146-LC1 for Silver at 92.8% (range 93.6-106.4%) and Lead at 91.1% (range 92.2-107.1%). The soil sample results could be biased low for Silver and Lead. Refer to the Inorganics Laboratory Control Standards Report.
- 10. All matrix spike (MS) and matrix spike duplicate (MSD) recoveries (sample SW1) were within the 80-120% control limits. The MS and MSD recoveries (sample S7) for 1 analyte were outside the 80-120% control limits. Refer to the Inorganics Accuracy Report.

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 16 pages. 001

11. For analytes where the ICP MS is out-of-control, a post-digestion MS (PDS) and serial dilution are performed. An interference test is performed on GFAA analytes. A PDS was prepared at meaningful concentration levels, due to high concentrations of the following analyte:

		<u>PDS</u>	<u>PDS</u>
Sample ID	<u>Element</u>	Concentration (ppb)	% Recovery
S7	Silver	200	96.1

- 11. All MSs and MSDs were within the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Matrix Spike Duplicate Report.
- 12. The duplicate analyses for 1 analyte (sample SW1) and 5 analytes (sample S7) were outside the 20% RPD control limits. Refer to the Inorganics Precision Report.
- 13. For the purposes of this report, the data has been reported to the Instrument Detection Limit (IDL). Values between the IDL and the Practical Quantitation Limit (PQL) are acquired in a region of less-certain quantification.

J. Michael Taylor

Vice President and Laboratory Manager

Lionville Analytical Laboratory

skl\m10-600



002

METALS METHODS GLOSSARY

The following RFW Lot#:	methods are used as refe	erence for the digestio	n and analysis	of samples	contained within t
Leaching Proce	edure:13101311 _	_1312Other:			
	Digestion and Analys		3.0 ILM04.	0	
	on Methods:			3051	_200.7 SS17
	_Other:				_200./SS1/
		Metals Analysis M	ethods		
	SW846	la in a		EPA	
Aluminum	6010A	EPA	STD MTD	OSWR	USATHAM
Antimony	6010A 7041 ⁵	200.7			99
Arsenic	$\frac{5010A}{6010A} - \frac{7041}{7060A}$				99
Barium	6010A		3113B		99
Beryllium	<u>∨_</u> 6010A 6010A	200.7			 99
Bismuth	6010A	200.7			<u> </u>
Boron		200.7 1		1620	— 99
Cadmium	_6010A 1	200.7			99
Calcium	<u>√6010A</u> _7131A				99
Chromium	_6010A	200.7			99
Cobalt	<u>√6010A</u> _7191 ⁵	$_{200.7}$ $_{218.2}$			SS17
Copper	_6010A	200.7			
Iron	6010A7211 ⁵	200.7 220.2			
Lead	_6010A	200.7			
Lithium	√6010A _7421 ⁵	200.7239.2	3113B		<u></u>
	_6010A _7430 ⁴	200.7		1620	
Magnesium	_6010A	200.7			
Manganese	_6010A	200.7			99
Mercury		³ 245.1 ² 245.5 ²			99
Molybdenum	6010A	200.7			 99
Nickel	6010A	200.7			99 99
Potassium	_6010A _7610 ⁴	200.7 258.1 4			99 99
Rare Earths	_6010A 1	200.7 1		1620	
Selenium Siliaa	∠6010A _7740 ⁵	200.7270.2	3113B	1020	99 99
Silicon	_6010A ¹	200.7		1620	
Silica Silica	6010A ¹	200.7		1620 1620	99
Silver	∠6010A _7761 ⁵	200.7 272.2		1020	99 99
Sodium	_6010A _7770 ⁴	200.7273.1 4			
Strontium	6010A	200.7			99
Thallium S	_6010A _7841 ⁵	200.7279.2 20	0.9		99
rin Pir	6010A ¹				99
litanium	6010A ¹	200.7			99
Jranium	6010A ¹	200.7 1		1/20	99
/anadium	6010A	200.7		1620	99
Cinc	6010A	200.7			99
Circonium	6010A ¹	200.7 1		1/20	_99
Other:	. .		-	1620	99
	Method	d:			003
FW 21-21-033/M-01/97					0

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

- U = Indicates that the parameter was not detected at or above the reported limit. T' a associated numerical value is the sample detection limit.
- * = Indicates that the original sample result is greater than 4x the spike amount added.

ABBREVIATIONS

MB = Method or Preparation Blank.

MS = Matrix Spike.

MSD = Matrix Spike Duplicate.

REP = Sample Replicate

LCS = Laboratory Control Sample.

NC = Not calculated.

ANALYTICAL METAL METHODS

- 1. Not included in the method element list.
- 2. Modified Hg: Hg1 and Hg2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionately scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, 0.1 grams of sample is taken to a final volume of 50 mL (including all reagents).
- 3. Modified Hg: Hg1 and Hg2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionately scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, three 0.1 gram of sample is taken to a final volume of 50 mL (including all reagents).
- 4. Flame AA.
- 5. Graphite Furnace AA.

RFW 21-21L-033/N-10/96

INORGANICS DATA SUMMARY REPORT 11/07/97

CLIENT: USACE-DEAL TEST SITE RECRA LOT #: 9710L600

WORK ORD	ER: 11901-001-003-0001-	-00			REPORTING	DILUTION
SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	LIMIT	FACTOR
======			=======	=====	========	=======
-001	S7	Silver, Total	0.22 u	MG/KG	0.22	1.0
		Arsenic, Total	246 J	MG/KG	0.66	1.0
		Barium, Total	92.7	MG/KG	0.05	1.0
		Cadmium, Total	0.78	MG/KG	0.11	1.0
		Chromium, Total	25.0	MG/KG	0.16	1.0
		Mercury, Total	0.05 u	MG/KG	0.05	1.0
		Lead, Total	24.4 🏅	MG/KG	0.79	1.0
		Selenium, Total	6.6 J	MG/KG	1.2	1.0
-002	S8	Silver, Total	0.10 u	MG/KG	0.10	1.0
		Arsenic, Total	69.7 🖔	MG/KG	0.31	1.0
		Barium, Total	35.0	MG/KG	0.03	1.0
		Cadmium, Total	0.16	MG/KG	0.05	1.0
		Chromium, Total	30.1	MG/KG	0.08	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Lead, Total	3.9 J	MG/KG	0.37	1.0
		Selenium, Total	0.78	MG/KG	0.56	1.0
-003	S9	Silver, Total	0.19 u	MG/KG	0.19	1.0
		Arsenic, Total	504	MG/KG	0.57	1.0
		Barium, Total	102	MG/KG	0.05	1.0
		Cadmium, Total	0.1 u	MG/KG	0.1	1.0
		Chromium, Total	31.2	MG/KG	0.14	1.0
		Mercury, Total	0.07	MG/KG	0.04	1.0
		Lead, Total	26.3	MG/KG	0.69	1.0
		Selenium, Total	4.0	MG/KG	1.0	1.0

INORGANICS DATA SUMMARY REPORT 11/07/97

CLIENT: USACE-DEAL TEST SITE RECRA LOT #: 9710L600

					REPORTING	DILUTION
SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	LIMIT	FACTOR
======	=======================================		=======			
-004	S10	Silver, Total	0.1 u	MG/KG	0.1	1.0
		Arsenic, Total	25.4	MG/KG	0.30	1.0
		Barium, Total	18.6	MG/KG	0.02	1.0
		Cadmium, Total	0.1	MG/KG	0.05	1.0
		Chromium, Total	37.0	MG/KG	0.07	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Lead, Total	4.0 J	MG/KG	0.36	1.0
		Selenium, Total	0.55 u	MG/KG	0.55	1.0
-005	S11	Silver, Total	0.15 u″	MG/KG	0.15	1.0
		Arsenic, Total	157 J	MG/KG	0.44	1.0
		Barium, Total	114	MG/KG	0.04	1.0
		Cadmium, Total	0.16	MG/KG	0.07	1.0
		Chromium, Total	19.1	MG/KG	0.11	1.0
		Mercury, Total	0.12	MG/KG	0.03	1.0
		Lead, Total	28.9	MG/KG	0.53	1.0
		Selenium, Total	3.2	MG/KG	0.81	1.0
-007	GW3	Silver, Total	0.80 u	UG/L	0.80	1.0
		Arsenic, Total	53.6	UG/L	2.4	1.0
		Barium, Total	84.4	UG/L	0.20	1.0
		Cadmium, Total	0.68	UG/L	0.40	1.0
	•	Chromium, Total	474	UG/L	0.60	1.0
		Mercury, Total	0.10 u	UG/L	0.10	1.0
		Lead, Total	17.7 ື້	UG/L	2.9	1.0
		Selenium, Total	11.2	UG/L	4.4	1.0

INORGANICS DATA SUMMARY REPORT 11/07/97

CLIENT: USACE-DEAL TEST SITE RECRA LOT #: 9710L600

					REPORTING	DILUTION	
SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	LIMIT	FACTOR	
			=======	=====			
-008	GW4	Silver, Total	0.80 u	UG/L	0.80	1.0	
		Arsenic, Total	374	UG/L	2.4	1.0	
		Barium, Total	186	UG/L	0.20	1.0	
		Cadmium, Total	2.7	UG/L	0.40	1.0	
		Chromium, Total	767 👃	UG/L	0.60	1.0	
		Mercury, Total	0.10 u	UG/L	0.10	1.0	
		Lead, Total	81.1 🖔	UG/L	2.9	1.0	
		Selenium, Total	24.95	UG/L	4.4	1.0	
-009	GW5	Silver, Total	0.80 u	UG/L	0.80	1.0	
		Arsenic, Total	37.9	UG/L	2.4	1.0	
		Barium, Total	53.7	UG/L	0.20	1.0	
		Cadmium, Total	0. 4 0 u	UG/L	0.40	1.0	
		Chromium, Total	478	UG/L	0.60	1.0	
		Mercury, Total	0.10 u	UG/L	0.10	1.0	
		Lead, Total	12.2	UG/L	2.9	1.0	
		Selenium, Total	9.8	UG/L	4.4	1.0	
-011	FB03	Silver, Soluble	0.80 u	UG/L	0.80	1.0	
		Arsenic, Soluble	2.4 u	UG/L	2.4	1.0	
		Barium, Soluble	0.35	UG/L	0.20	1.0	
		Cadmium, Soluble	0.40 u	UG/L	0.40	1.0	
		Chromium, Soluble	1.0	UG/L	0.60	1.0	
		Mercury, Soluble	0.10 u	UG/L	0.10	1.0	
		Lead, Soluble	3.4	UG/L	2.9	1.0	
		Selenium, Soluble	4.4	UG/L	4.4	1.0	

INORGANICS DATA SUMMARY REPORT 11/07/97

(C) USACE-DEAL TEST SITE

RECRA LOT #: 9710L600

					REPORTING	DILUTION
SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	LIMIT	FACTOR
======			******	=====		=======
-013	SW1	Silver, Total	0.80 u	UG/L	0.80	1.0
		Arsenic, Total	2.4 u	UG/L	2.4	1.0
		Barium, Total	30.9	UG/L	0.20	1.0
		Cadmium, Total	0.40 u	UG/L	0.40	1.0
		Chromium, Total	0.60 u	UG/L	0.60	1.0
		Mercury, Total	0.10 u	UG/L	0.10	1.0
		Lead, Total	2.9 u	UG/L	2.9	1.0
		Selenium, Total	4.4 u	UG/L	4.4	1.0
-014	SW2	Silver, Total	0.80 u	UG/L	0.80	1.0
		Arsenic, Total	2.4 u	UG/L	2.4	1.0
		Barium, Total	42.8	UG/L	0.20	1.0
		Cadmium, Total	0. 4 0 u	UG/L	0.40	1.0
		Chromium, Total	0.62 U	UG/L	0.60	1.0
		Mercury, Total	0.10 u	UG/L	0.10	1.0
		Lead, Total	2.9 u	UG/L	2.9	1.0
		Selenium, Total	4.4 u	UG/L	4.4	1.0
-015	SD1	Silver, Total	0.09 u	MG/KG	0.09	1.0
		Arsenic, Total	6.1	MG/KG	0.28	1.0
		Barium, Total	30.3	MG/KG	0.02	1.0
		Cadmium, Total	0.17	MG/KG	0.05	1.0
		Chromium, Total	8.5	MG/KG	0.07	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Lead, Total	17.8	MG/KG	0.34	1.0
		Selenium, Total	0.52 u	MG/KG	0.52	1.0

INORGANICS DATA SUMMARY REPORT 11/07/97

CLIENT: USACE-DEAL TEST SITE RECRA LOT #: 9710L600

					REPORTING	DILUTION
SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	LIMIT	FACTOR
======	=======================================			=====	========	=======
-016	SD2	Silver, Total	0.10 u	MG/KG	0.10	1.0
		Arsenic, Total	3.9 🍑	MG/KG	0.31	1.0
		Barium, Total	20.4	MG/KG	0.03	1.0
		Cadmium, Total	0.11	MG/KG	0.05	1.0
		Chromium, Total	5.8	MG/KG	0.08	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Lead, Total	15.7	MG/KG	0.37	1.0
		Selenium, Total	0.56 u	MG/KG	0.56	1.0
-017	GW2	Silver, Soluble	0.80 u	UG/L	0.80	1.0
		Arsenic, Soluble	55.9 J	UG/L	2.4	1.0
		Barium, Soluble	7.8	UG/L	0.20	1.0
		Cadmium, Soluble	0.40 u	UG/L	0.40	1.0
		Chromium, Soluble	5.6 UJ	UG/L	0.60	1.0
		Mercury, Soluble	0.10 u	UG/L	0.10	1.0
		Lead, Soluble	2.9 u	UG/L	2.9	1.0
		Selenium, Soluble	5.9 Ui	UG/L	4.4	1.0
-018	GW3	Silver, Soluble	0.80 u	UG/L	0.80	1.0
		Arsenic, Soluble	3.3	UG/L	2.4	1.0
		Barium, Soluble	يًا 23.6	UG/L	0.20	1.0
		Cadmium, Soluble	0.40 u ^	UG/L	0.40	1.0
		Chromium, Soluble	0.60 u "	UG/L	0.60	1.0
		Mercury, Soluble	0.10 u	UG/L	0.10	1.0
		Lead, Soluble	2.9 u .	UG/L	2.9	1.0
		Selenium, Soluble	4.4 u 🖫	UG/L	4.4	1.0

INORGANICS DATA SUMMARY REPORT 11/07/97

CLIENT: USACE-DEAL TEST SITE RECRA LOT #: 9710L600

WORK ORDE	ER: 11901-001-003-0001-	.00			REPORTING	DILUTION
SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	LIMIT	FACTOR
======				=====		=======
-019	GW4	Silver, Soluble	0.80 u	UG/L	0.80	1.0
		Arsenic, Soluble	39.4 🍑	UG/L	2.4	1.0
		Barium, Soluble	9.7	UG/L	0.20	1.0
		Cadmium, Soluble	0.57	UG/L	0.40	1.0
		Chromium, Soluble	7.74	UG/L	0.60	1.0
		Mercury, Soluble	0.10 u	UG/L	0.10	1.0
		Lead, Soluble	2.9 u _. "	UG/L	2.9	1.0
		Selenium, Soluble	4.4 u	UG/L	4.4	1.0
-020	SW1	Silver, Soluble	0.80 u	UG/L	0.80	1.0
		Arsenic, Soluble	2.4 u	UG/L	2.4	1.0
		Barium, Soluble	28.9	UG/L	0.20	1.0
		Cadmium, Soluble	0. 4 0 u	UG/L	0.40	1.0
		Chromium, Soluble	0.60 u	UG/L	0.60	1.0
		Mercury, Soluble	0.10 u	UG/L	0.10	1.0
		Lead, Soluble	2.9 u	UG/L	2.9	1.0
		Selenium, Soluble	4.4 u	UG/L	4.4	1.0
-021	SW2	Silver, Soluble	0.80 u	UG/L	0.80	1.0
		Arsenic, Soluble	2.4 u	UG/L	2.4	1.0
		Barium, Soluble	41.1	UG/L	0.20	1.0
		Cadmium, Soluble	0.40 u	UG/L	0.40	1.0
		Chromium, Soluble	0.64 1	UG/L	0.60	1.0
		Mercury, Soluble	0.10 u		0.10	1.0
		Lead, Soluble	2.9 u	UG/L	2.9	1.0
		Selenium, Soluble	4.4 u	UG/L	4.4	1.0

INORGANICS METHOD BLANK DATA SUMMARY PAGE 11/07/97

CLIENT: USACE-DEAL TEST SITE RECRA LOT #: 9710L600

,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	SR: 11901-001-003-0001-				REPORTING	DILUTION
SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	LIMIT	FACTOR
======				=====	========	
BLANK1	97L2146-MB1	Silver, Total	0.08 u	MG/KG	0.08	1.0
		Arsenic, Total	0.24 u	MG/KG	0.24	1.0
		Barium, Total	0.02 u	MG/KG	0.02	1.0
		Cadmium, Total	0.04 u	MG/KG	0.04	1.0
		Chromium, Total	0.26	MG/KG	0.06	1.0
		Lead, Total	0.29 u	MG/KG	0.29	1.0
		Selenium, Total	0. 44 u	MG/KG	0.44	1.0
BLANK1	97C0799-MB1	Mercury, Total	0.02 u	MG/KG	0.02	1.0
BL AN K1	97L2144-MB1	Silver, Total	0.80 u	UG/L	0.80	1.0
		Arsenic, Total	2.4 u	UG/L	2.4	1.0
		Barium, Total	0.20 u	UG/L	0.20	1.0
		Cadmium, Total	0.40 u	UG/L	0.40	1.0
		Chromium, Total	1.1	UG/L	0.60	1.0
		Lead, Total	2.9 u	UG/L	2.9	1.0
		Selenium, Total	4.4 u	UG/L	4.4	1.0
BLANK1	97C0793-MB1	Mercury, Total	0.10 u	UG/L	0.10	1.0

INORGANICS ACCURACY REPORT 11/07/97

CLIENT: USACE-DEAL TEST SITE
WORK ORDER: 11901-001-003-0001-00

RECRA LOT #: 9710L600

			SPIKED	INITIAL	SPIKED		DILUTION
SAMPLE	SITE ID	ANALYTE	SAMPLE	RESULT	AMOUNT	%RECOV	FACTOR (SPK)
======			======	======	=====	======	
-001	S7	Silver, Total	12.1	0.22u	13.1	92.4	1.0
		Silver, Total MSD	12.5	0.22u	13.5	92.6	1.0
		Arsenic, Total	589	246	525	65.2	1.0
		Arsenic, Total MSD	614	246	541	67.9	1.0
		Barium, Total	552	92.7	525	87.3	1.0
		Barium, Total MSD	572	92.7	541	88.7	1.0
		Cadmium, Total	12.1	0.78	13.1	86.4	1.0
		Cadmium, Total MSD	12.4	0.78	13.5	86.0	1.0
		Chromium, Total	82.5	25.0	52.5	109.5	1.0
		Chromium, Total MSD	75.4	25.0	54.1	93.2	1.0
		Mercury, Total	0.41	0.05u	0.46	91.0	1.0
		Mercury, Total MSD	0.42	0.05u	0.46	92.3	1.0
		Lead, Total	142	24.4	131	89.3	1.0
		Lead, Total MSD	146	24.4	135	89.9	1.0
		Selenium, Total	482	6.6	525	90.4	1.0
		Selenium, Total MSD	495	6.6	541	90.3	1.0
-013	SW1	Silver, Total	48.6	0.80 u	50.0	97.2	1.0
		Silver, Total MSD	49.5	0.80u	50.0	99.0	1.0
		Arsenic, Total	1940	2.4 u	2000	96.8	1.0
		Arsenic, Total MSD	1940	2.4 u	2000	96.8	1.0
		Barium, Total	2000	30.9	2000	98.4	1.0
		Barium, Total MSD	1990	30.9	2000	98.1	1.0
	*	Cadmium, Total	48.7	0.40u	50.0	97.4	1.0
		Cadmium, Total MSD	48.2	0.40u	50.0	96.4	1.0
		Chromium, Total	192	0.60u	200	96.0	1.0
		Chromium, Total MSD	192	0.60u	200	95.8	1.0
		Lead, Total	476	2.9 u	500	95.1	1.0
		Lead, Total MSD	472	2.9 u	500	94.4	1.0
		Selenium, Total	1910	4.4 u	2000	95.6	1.0
		Selenium, Total MSD	1920	4.4 u	2000	96.1	1.0

INORGANICS DUPLICATE SPIKE REPORT 11/07/97

CLIENT: USACE-DEAL TEST SITE RECRA LOT #: 9710L600

		SPIKE#1	SPIKE#2	2
SITE ID	ANALYTE	%RECOV	*RECOV	%DIFF
********	******			=====
S7	Silver, Total	92.4	92.6	0.24
	Arsenic, Total	65.2	67.9	4.0
	Barium, Total	87.3	88.7	1.5
	Cadmium, Total	86.4	86.0	0.39
	Chromium, Total	109.5	93.2	16.1
	Mercury, Total	91.0	92.3	1.4
	Lead, Total	89.3	89.9	0.76
	Selenium, Total	90.4	90.3	0.12
SW1	Silver, Total	97.2	99.0	1.8
	Arsenic, Total	96. 8	96.8	0.098
	Barium, Total	98.4	98.1	0.29
	Cadmium, Total	97.4	96.4	1.0
	Chromium, Total	96.0	95.8	0.21
	Lead, Total	95.1	94.4	0.70
	Selenium, Total	95.6	96.1	0.56
	S7	Silver, Total Arsenic, Total Barium, Total Cadmium, Total Chromium, Total Mercury, Total Lead, Total Selenium, Total Selenium, Total Arsenic, Total Barium, Total Cadmium, Total Cadmium, Total Chromium, Total Lead, Total	### SITE ID ANALYTE ####################################	Silver, Total 92.4 92.6 Arsenic, Total 65.2 67.9 Barium, Total 87.3 88.7 Cadmium, Total 86.4 86.0 Chromium, Total 109.5 93.2 Mercury, Total 91.0 92.3 Lead, Total 89.3 89.9 Selenium, Total 90.4 90.3 Silver, Total 97.2 99.0 Arsenic, Total 96.8 96.8 Barium, Total 98.4 98.1 Cadmium, Total 97.4 96.4 Chromium, Total 96.0 95.8 Lead, Total 96.0 95.8

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 11/07/97

USACE-DEAL TEST SITE

RECRA LOT #: 9710L600

!	
ORDER:	11901-001-003-0001-00

. ORDE	R: 11901-001-003-0001-	00	INITIAL			DIL	UTION
SAMPLE	SITE ID	ANALYTE	RESULT	REPLICATE	RPD	FAC*	TOR (REP)
======	=======================================		=======	=======	======	===	
-001REP	S7	Silver, Total	0.22u	0.22u	NC		1.0
		Arsenic, Total	246	116	72.1		1.0
		Barium, Total	92 .7	66.2	33.4		1.0
		Cadmium, Total	0.78	0.12	(147.9)		1.0
		Chromium, Total	25.0	34.9	33.1	2	1.0
		Mercury, Total	0.05u	0.05u	NC		1.0
		Lead, Total	24.4	22.5	8.1		1.0
		Selenium, Total	6.6	4.5	37.8		1.0
-013REP	SW1	Silver, Total	0. 80 u	0.80u	NC		1.0
		Arsenic, Total	2. 4 u	2.4 u	NC		1.0
		Barium, Total	30. 9	30.3	2.0		1.0
		Cadmium, Total	0. 40u	0.40u	NC A		1.0
		Chromium, Total	0. 60u	0.95	x€ 200		1.0
		Lead, Total	2.9 u	2.9 u	NC		1.0
		Selenium, Total	4.4 u	4.4 u	NC	1	1.0
					consecution	197	

INORGANICS LABORATORY CONTROL STANDARDS REPORT 11/07/97

CLIENT: USACE-DEAL TEST SITE RECRA LOT #: 9710L600

morar oras.	22702 002 000 0002	• •				
			SPIKED	SPIKED		
SAMPLE	SITE ID	ANALYTE	SAMPLE	AMOUNT	UNITS	%RECOV
======	=======================================		======	=====		
LCS1	97L2146-LC1	Silver, LCS	46. 4	50.0	MG/KG	92.8
		Arsenic, LCS	890	1000	MG/KG	89.0
		Barium, LCS	456	500	MG/KG	91.2
		Cadmium, LCS	22.8	25.0	MG/KG	91.2
		Chromium, LCS	46.1	50.0	MG/KG	92.2
		Lead, LCS	228	250	MG/KG	91.1
		Selenium, LCS	871	1000	MG/KG	87.1
LCS1	97C0799-LC1	Mercury, LCS	3.0	2.9	MG/KG	103.6
LCS1	97L2144-LC1	Silver, LCS	497	500	UG/L	99.4
		Arsenic, LCS	9740	10000	UG/L	97.4
		Barium, LCS	4790	5000	UG/L	95.8
		Cadmium, LCS	247	250	UG/L	98.7
		Chromium, LCS	489	500	UG/L	97.8
		Lead, LCS	2450	2500	UG/L	98.0
		Selenium, LCS	9720	10000	UG/L	97.2
LCS1	97C0793-LC1	Mercury, LCS	5.5	5.0	UG/L	109.6

CLIENT ID /ANALYSIS	T ID /ANALYSIS RFW #		PREP #	COLLECTION	EXTR/PREP	ANALYSIS
S7						
SILVER, TOTAL	001	s	97L2146	10/01/97	10/28/97	10/29/97
SILVER, TOTAL	001 REP	S	97L2146	10/01/97	10/28/97	10/29/97
SILVER, TOTAL	001 MS	S	97L2146	10/01/97	10/28/97	10/29/97
SILVER, TOTAL	001 MSD	S	97L2146	10/01/97	10/28/97	10/29/97
ARSENIC, TOTAL	001	S	97L2146	10/01/97	10/28/97	10/29/97
ARSENIC, TOTAL	001 REP	S	97L2146	10/01/97	10/28/97	10/29/97
ARSENIC, TOTAL	001 MS	S	97L2146	10/01/97	10/28/97	10/29/97
ARSENIC, TOTAL	001 MSD	S	97L2146	10/01/97	10/28/97	10/29/97
BARIUM, TOTAL	001	S	97L2146	10/01/97	10/28/97	10/29/97
BARIUM, TOTAL	001 REP	S	97L2146	10/01/97	10/28/97	10/29/97
BARIUM, TOTAL	001 MS	S	97L21 46	10/01/97	10/28/97	10/29/97
BARIUM, TOTAL	001 MSD	S	97L2146	10/01/97	10/28/97	10/29/97
CADMIUM, TOTAL	001	S	97L2146	10/01/97	10/28/97	10/29/97
CADMIUM, TOTAL	001 REP	S	97L2146	10/01/97	10/28/97	10/29/97
CADMIUM, TOTAL	001 MS	S	97L2146	10/01/97	10/28/97	10/29/97
CADMIUM, TOTAL	001 MSD	S	97L2146	10/01/97	10/28/97	10/29/97
CHROMIUM, TOTAL	001	S	97L21 46	10/01/97	10/28/97	10/29/97
CHROMIUM, TOTAL	001 REP	S	97L2146	10/01/97	10/28/97	10/29/97
CHROMIUM, TOTAL	001 MS	S	97L2146	10/01/97	10/28/97	10/29/97
CHROMIUM, TOTAL	001 MSD	S	97L2146	10/01/97	10/28/97	10/29/97
MERCURY, TOTAL	001	S	97C0799	10/01/97	10/21/97	10/22/97
MERCURY, TOTAL	001 REP	S	97C0799	10/01/97	10/21/97	10/22/97
MERCURY, TOTAL	001 MS	S	97C0799	10/01/97	10/21/97	10/22/97
MERCURY, TOTAL	001 MSD	S	97C0799	10/01/97	10/21/97	10/22/97
LEAD, TOTAL	001	S	97L2146	10/01/97	10/28/97	10/29/97
LEAD, TOTAL	001 REP	S	97L2146	10/01/97	10/28/97	10/29/97
LEAD, TOTAL	001 MS	S	97L2146	10/01/97	10/28/97	10/29/97
LEAD, TOTAL	001 MSD	S	97L2146	10/01/97	10/28/97	10/29/97
SELENIUM, TOTAL	001	S	97L2146	10/01/97	10/28/97	10/29/97
SELENIUM, TOTAL	001 REP	S	97L2146	10/01/97	10/28/97	10/29/97
SELENIUM, TOTAL	001 MS	S	97L2146	10/01/97	10/28/97	10/29/97
SELENIUM, TOTAL	001 MSD	S	97L2146	10/01/97	10/28/97	10/29/97
S8						
SILVER, TOTAL	002	S	97L2146	10/01/97	10/28/97	10/29/97

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
ARSENIC, TOTAL	002	s	97L2146	10/01/97	10/28/97	10/29/97
BARIUM, TOTAL	002	s	97L2146	10/01/97	10/28/97	10/29/97
CADMIUM, TOTAL	002	s	97L2146	10/01/97	10/28/97	10/29/97
CHROMIUM, TOTAL	002	s	97L2146	10/01/97	10/28/97	10/29/97
MERCURY, TOTAL	002	s	97C0799	10/01/97	10/21/97	10/22/97
LEAD, TOTAL	002	s	97L2146	10/01/97	10/28/97	10/29/97
SELENIUM, TOTAL	002	S	97L21 46	10/01/97	10/28/97	10/29/97
S9						
SILVER, TOTAL	003	S	97L2146	10/01/97	10/28/97	10/29/97
ARSENIC, TOTAL	003	s	97L2146	10/01/97	10/28/97	10/29/97
BARIUM, TOTAL	003	S	97L2146	10/01/97	10/28/97	10/29/97
CADMIUM, TOTAL	003	S	97L2146	10/01/97	10/28/97	10/29/97
CHROMIUM, TOTAL	003	S	97L2146	10/01/97	10/28/97	10/29/97
MERCURY, TOTAL	003	S	97C0799	10/01/97	10/21/97	10/22/97
LEAD, TOTAL	003	s	97L2146	10/01/97	10/28/97	10/29/97
SELENIUM, TOTAL	003	S	97L2146	10/01/97	10/28/97	10/29/97
S10						
SILVER, TOTAL	004	s	97L2146	10/01/97	10/28/97	10/29/97
ARSENIC, TOTAL	004	s	97L2146	10/01/97	10/28/97	10/29/97
BARIUM, TOTAL	004	S	97L2146	10/01/97	10/28/97	10/29/97
CADMIUM, TOTAL	004	s	97L2146	10/01/97	10/28/97	10/29/97
CHROMIUM, TOTAL	004	S	97L2146	10/01/97	10/28/97	10/29/97
MERCURY, TOTAL	004	S	97C079 9	10/01/97	10/21/97	10/22/97
LEAD, TOTAL	004	S	97L21 46	10/01/97	10/28/97	10/29/97
SELENIUM, TOTAL	004	S	97L2146	10/01/97	10/28/97	10/29/97
S11						
SILVER, TOTAL	005	S	97L2146	10/01/97	10/28/97	10/29/97
ARSENIC, TOTAL	005	S	97L2146	10/01/97	10/28/97	10/29/97
BARIUM, TOTAL	005	S	97L2146	10/01/97	10/28/97	10/29/97
CADMIUM, TOTAL	005	s	97L2146	10/01/97	10/28/97	10/29/97
CHROMIUM, TOTAL	005	S	97L2146	10/01/97	10/28/97	10/29/97
MERCURY, TOTAL	005	S	97C0799	10/01/97	10/21/97	10/22/97

CLIENT ID /ANALYSI	S RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
LEAD, TOTAL	005	s	97L2146	10/01/97	10/28/97	10/29/97
SELENIUM, TOTAL	005	S	97L2146	10/01/97	10/28/97	10/29/97
GW3						
SILVER, TOTAL	007	W	97L214 4	10/01/97	10/28/97	10/28/97
ARSENIC, TOTAL	007	W	97L2144	10/01/97	10/28/97	10/28/97
BARIUM, TOTAL	007	W	97L21 44	10/01/97	10/28/97	10/28/97
CADMIUM, TOTAL	007	W	97L2144	10/01/97	10/28/97	10/28/97
CHROMIUM, TOTAL	007	W	97L2144	10/01/97	10/28/97	10/28/97
MERCURY, TOTAL	007	W	97C0793	10/01/97	10/21/97	10/22/97
LEAD, TOTAL	007	W	97L2144	10/01/97	10/28/97	10/28/97
SELENIUM, TOTAL	007	W	97L2144	10/01/97	10/28/97	10/28/97
GW4						
SILVER, TOTAL	008	W	97L2144	10/01/97	10/28/97	10/28/97
ARSENIC, TOTAL	008	W	97L2144	10/01/97	10/28/97	10/28/97
BARIUM, TOTAL	008	W	97L2144	10/01/97	10/28/97	10/28/97
CADMIUM, TOTAL	008	W	97L2144	10/01/97	10/28/97	10/28/97
CHROMIUM, TOTAL	800	W	97L2144	10/01/97	10/28/97	10/28/97
MERCURY, TOTAL	008	W	97C0793	10/01/97	10/21/97	10/22/97
LEAD, TOTAL	800	W	97L2144	10/01/97	10/28/97	10/28/97
SELENIUM, TOTAL	008	W	97L2144	10/01/97	10/28/97	10/28/97
GW5						
SILVER, TOTAL	009	W	97L2144	10/01/97	10/28/97	10/28/97
ARSENIC, TOTAL	009	W	97L2144	10/01/97	10/28/97	10/28/97
BARIUM, TOTAL	009	W	97L2144	10/01/97	10/28/97	10/28/97
CADMIUM, TOTAL	009	W	97L2144	10/01/97	10/28/97	10/28/97
CHROMIUM, TOTAL	009	W	97L2144	10/01/97	10/28/97	10/28/97
MERCURY, TOTAL	009	W	9700793	10/01/97	10/21/97	10/22/97
LEAD, TOTAL	009	W	97L2144	10/01/97	10/28/97	10/28/97
SELENIUM, TOTAL	009	W	97L2144	10/01/97	10/28/97	10/28/97
FB03						
SILVER, SOLUBLE	011	W	97L2144	10/01/97	10/28/97	10/28/97

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
ARSENIC, SOLUBLE	011	W	97L2144	10/01/97	10/28/97	10/28/97
BARIUM, SOLUBLE	011	W	97L2144	10/01/97	10/28/97	10/28/97
CADMIUM, SOLUBLE	011	W	97L2144	10/01/97	10/28/97	10/28/97
CHROMIUM, SOLUBLE	011	W	97L2144	10/01/97	10/28/97	10/28/97
MERCURY, SOLUBLE	011	W	97C0793	10/01/97	10/21/97	10/22/97
LEAD, SOLUBLE	011	W	97L2144	10/01/97	10/28/97	10/28/97
SELENIUM, SOLUBLE	011	W	97L214 4	10/01/97	10/28/97	10/28/97
SW1						
SILVER, TOTAL	013	W	97L21 44	10/01/97	10/28/97	10/28/97
SILVER, TOTAL	013 REP	W	97L2144	10/01/97	10/28/97	10/28/97
SILVER, TOTAL	013 MS	M	97L214 4	10/01/97	10/28/97	10/28/97
SILVER, TOTAL	013 MSD	W	97L2144	10/01/97	10/28/97	10/28/97
ARSENIC, TOTAL	013	W	97L2144	10/01/97	10/28/97	10/28/97
ARSENIC, TOTAL	013 REP	W	97L21 44	10/01/97	10/28/97	10/28/97
ARSENIC, TOTAL	013 MS	W	97L2144	10/01/97	10/28/97	10/28/97
ARSENIC, TOTAL	013 MSD	W	97L214 4	10/01/97	10/28/97	10/28/97
BARIUM, TOTAL	013	W	97L2144	10/01/97	10/28/97	10/28/97
BARIUM, TOTAL	013 REP	W	97L2144	10/01/97	10/28/97	10/28/97
BARIUM, TOTAL	013 MS	W	97L2144	10/01/97	10/28/97	10/28/97
BARIUM, TOTAL	013 MSD	W	97L2144	10/01/97	10/28/97	10/28/97
CADMIUM, TOTAL	013	W	97L2144	10/01/97	10/28/97	10/28/97
CADMIUM, TOTAL	013 REP	W	97L2144	10/01/97	10/28/97	10/28/97
CADMIUM, TOTAL	013 MS	W	97L2144	10/01/97	10/28/97	10/28/97
CADMIUM, TOTAL	013 MSD	W	97L2144	10/01/97	10/28/97	10/28/97
CHROMIUM, TOTAL	013	W	97L2144	10/01/97	10/28/97	10/28/97
CHROMIUM, TOTAL	013 REP	W	97L2144	10/01/97	10/28/97	10/28/97
CHROMIUM, TOTAL	013 MS	W	97L2144	10/01/97	10/28/97	10/28/97
CHROMIUM, TOTAL	013 MSD	W	97L2144	10/01/97	10/28/97	10/28/97
MERCURY, TOTAL	013	W	97C0793	10/01/97	10/21/97	10/22/97
LEAD, TOTAL	013	W	97L2144	10/01/97	10/28/97	10/28/97
LEAD, TOTAL	013 REP	W	97L2144	10/01/97	10/28/97	10/28/97
LEAD, TOTAL	013 MS	W	97L2144	10/01/97	10/28/97	10/28/97
LEAD, TOTAL	013 MSD		97L2144	10/01/97	10/28/97	10/28/97
SELENIUM, TOTAL	013		97L2144	10/01/97	10/28/97	10/28/97
SELENIUM, TOTAL	013 REP		97L2144	10/01/97	10/28/97	10/28/97
SELENIUM, TOTAL	013 MS	W	97L2144	10/01/97	10/28/97	10/28/97

LENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
SELENIUM, TOTAL	013 MSD	W	97L2144	10/01/97	10/28/97	10/28/97
SW2						
SILVER, TOTAL	014	W	97L2144	10/01/97	10/28/97	10/28/97
ARSENIC, TOTAL	014	W	97L2144	10/01/97	10/28/97	10/28/97
BARIUM, TOTAL	014	W	97L2144	10/01/97	10/28/97	10/28/97
CADMIUM, TOTAL	014	W	97L2144	10/01/97	10/28/97	10/28/97
CHROMIUM, TOTAL	014	W	97L2144	10/01/97	10/28/97	10/28/97
MERCURY, TOTAL	014	W	97C0793	10/01/97	10/21/97	10/22/97
LEAD, TOTAL	014	W	97L2144	10/01/97	10/28/97	10/28/97
SELENIUM, TOTAL	014	W	97L2144	10/01/97	10/28/97	10/28/97
SD1						
SILVER, TOTAL	015	s	97L2146	10/01/97	10/28/97	10/29/97
ARSENIC, TOTAL	015	S	97L2146	10/01/97	10/28/97	10/29/97
BARIUM, TOTAL	015	S	97L2146	10/01/97	10/28/97	10/29/97
CADMIUM, TOTAL	015	S	97L2146	10/01/97	10/28/97	10/29/97
CHROMIUM, TOTAL	015	S	97L2146	10/01/97	10/28/97	10/29/97
MERCURY, TOTAL	015	S	97C0799	10/01/97	10/21/97	10/22/97
LEAD, TOTAL	015	S	97L2146	10/01/97	10/28/97	10/29/97
SELENIUM, TOTAL	015	S	97L2146	10/01/97	10/28/97	10/29/97
SD2						
SILVER, TOTAL	016	s	97L2146	10/01/97	10/28/97	10/29/97
ARSENIC, TOTAL	016	S	97L2146	10/01/97	10/28/97	10/29/97
BARIUM, TOTAL	016	S	97L2146	10/01/97	10/28/97	10/29/97
CADMIUM, TOTAL	016	S	97L2146	10/01/97	10/28/97	10/29/97
CHROMIUM, TOTAL	016	s	97L21 46	10/01/97	10/28/97	10/29/97
MERCURY, TOTAL	016	S	97C0799	10/01/97	10/21/97	10/22/97
LEAD, TOTAL	016	S	97L2146	10/01/97	10/28/97	10/29/97
SELENIUM, TOTAL	016	S	97L2146	10/01/97	10/28/97	10/29/97
GW2						
SILVER, SOLUBLE	017	W	97L2144	10/01/97	10/28/97	10/28/37

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
ARSENIC, SOLUBLE	017	w	97L2144	10/01/97	10/28/97	10/28/97
BARIUM, SOLUBLE	017	W	97L2144	10/01/97	10/28/97	10/28/97
CADMIUM, SOLUBLE	017	W	97L2144	10/01/97	10/28/97	10/28/97
CHROMIUM, SOLUBLE	017	W	97L2144	10/01/97	10/28/97	10/28/97
MERCURY, SOLUBLE	017	W	97C0793	10/01/97	10/21/97	10/22/97
LEAD, SOLUBLE	017	W	97L2144	10/01/97	10/28/97	10/28/97
SELENIUM, SOLUBLE	017	W	97L2144	10/01/97	10/28/97	10/28/97
GW3						
SILVER, SOLUBLE	018	W	97L214 4	10/01/97	10/28/97	10/28/97
ARSENIC, SOLUBLE	018	W	97L2144	10/01/97	10/28/97	10/28/97
BARIUM, SOLUBLE	018	W	97L2144	10/01/97	10/28/97	10/28/97
CADMIUM, SOLUBLE	018	W	97L2144	10/01/97	10/28/97	10/28/97
CHROMIUM, SOLUBLE	018	W	97L2144	10/01/97	10/28/97	10/28/97
MERCURY, SOLUBLE	018	W	97C0793	10/01/97	10/21/97	10/22/97
LEAD, SOLUBLE	018	W	97L2144	10/01/97	10/28/97	10/28/97
SELENIUM, SOLUBLE	018	W	97L2144	10/01/97	10/28/97	10/28/97
GW4						
SILVER, SOLUBLE	019	W	97L2144	10/01/97	10/28/97	10/28/97
ARSENIC, SOLUBLE	019	W	97L214 4	10/01/97	10/28/97	10/28/97
BARIUM, SOLUBLE	019	W	97L2144	10/01/97	10/28/97	10/28/97
CADMIUM, SOLUBLE	019	W	97L2144	10/01/97	10/28/97	10/28/97
CHROMIUM, SOLUBLE	019	W	97L2144	10/01/97	10/28/97	10/28/97
MERCURY, SOLUBLE	019	W	97C0793	10/01/97	10/21/97	10/22/97
LEAD, SOLUBLE	019		97L2144	10/01/97	10/28/97	10/28/97
SELENIUM, SOLUBLE	019	W	97L2144	10/01/97	10/28/97	10/28/97
SW1						
SILVER, SOLUBLE	020	W	97L2144	10/01/97	10/28/97	10/28/97
ARSENIC, SOLUBLE	020		97L2144	10/01/97	10/28/97	10/28/97
BARIUM, SOLUBLE	020		97L2144	10/01/97	10/28/97	10/28/97
CADMIUM, SOLUBLE	020		97L2144	10/01/97	10/28/97	10/28/97
CHROMIUM, SOLUBLE	020		97L2144	10/01/97	10/28/97	10/28/97
MERCURY, SOLUBLE	020	W	97C0793	10/01/97	10/21/97	10/22/97

DATE RECEIVED: 10/0	2/97			1	RFW LOT # :9	710L600
CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
LEAD, SOLUBLE	020	w	97L2144	10/01/97	10/28/97	10/28/97
SELENIUM, SOLUBLE	020	M	97L2144	10/01/97	10/28/97	10/28/97
SW2						
SILVER, SOLUBLE	021	W	97L2144	10/01/97	10/28/97	10/28/97
ARSENIC, SOLUBLE	021	W	97L21 44	10/01/97	10/28/97	10/28/97
BARIUM, SOLUBLE	021	W	97L2144	10/01/97	10/28/97	10/28/97
CADMIUM, SOLUBLE	021	W	97L2144	10/01/97	10/28/97	10/28/97
CHROMIUM, SOLUBLE	021	W	97L2144	10/01/97	10/28/97	10/28/97
MERCURY, SOLUBLE	021	W	97C079 3	10/01/97	10/21/97	10/22/97
LEAD, SOLUBLE	021	W	97L2144	10/01/97	10/28/97	10/28/97
SELENIUM, SOLUBLE	021	W	97L2144	10/01/97	10/28/97	10/28/97
LAB QC:						
SILVER LABORATORY	LC1 BS	s	97L2146	N/A	10/28/97	10/29/97
SILVER, TOTAL	MB1	S	97L2146	N/A	10/28/97	10/29/97
ARSENIC LABORATORY	LC1 BS	S	97L2146	N/A	10/28/97	10/29/97
ARSENIC, TOTAL	MB1	S	97L2146	N/A	10/28/97	10/29/97
BARIUM LABORATORY	LC1 BS	S	97L2146	N/A	10/28/97	10/29/97
BARIUM, TOTAL	MB1	S	97L2146	N/A	10/28/97	10/29/97
CADMIUM LABORATORY	LC1 BS	S	97L2146	N/A	10/28/97	10/29/97
CADMIUM, TOTAL	MB1	S	97L2146	N/A	10/28/97	10/29/97
CHROMIUM LABORATORY	LC1 BS	S	97L2146	N/A	10/28/97	10/29/97
CHROMIUM, TOTAL	MB1	S	97L2146	N/A	10/28/97	10/29/97
MERCURY LABORATORY	LC1 BS	S	97C0799	N/A	10/21/97	10/22/97
MERCURY, TOTAL	MB1	S	97C0799	N/A	10/21/97	10/22/97
	T 01 D 0	~	0770146	37 / B	10/20/07	10/20/07

S 97L2146

S 97L2146

S 97L2146

S 97L2146

W 97L2144

W 97L2144

W 97L2144

W 97L2144

W 97L2144

W 97L2144

N/A

N/A

N/A

N/A

N/A

N/A

N/A

N/A

N/A

N/A

10/28/97

10/28/97

10/28/97

10/28/97

10/28/97

10/28/97

10/28/97

10/28/97

10/28/97

10/28/97

10/29/97

10/29/97

10/29/97

10/29/97

10/28/97

10/28/97

10/28/97

10/28/97

10/28/97

10/28/97

LEAD LABORATORY

SELENIUM, TOTAL

ARSENIC, TOTAL

BARIUM, TOTAL

SILVER LABORATORY SILVER, TOTAL

ARSENIC LABORATORY

BARIUM LABORATORY

SELENIUM LABORATORY

LEAD, TOTAL

LC1 BS

LC1 BS

LC1 BS

LC1 BS

MB1

LC1 BS

MB1

MB1

MB1

MB1

022

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
CADMIUM LABORATORY	LC1 BS	W	97L21 44	N/A	10/28/97	10/28/97
CADMIUM, TOTAL	MB1	W	97L2144	N/A	10/28/97	10/28/97
CHROMIUM LABORATORY	LC1 BS	W	97L2144	N/A	10/28/97	10/28/97
CHROMIUM, TOTAL	MB1	W	97L2144	N/A	10/28/97	10/28/97
MERCURY LABORATORY	LC1 BS	W	97C0793	N/A	10/21/97	10/22/97
MERCURY, TOTAL	MB1	W	97C0793	N/A	10/21/97	10/22/97
LEAD LABORATORY	LC1 BS	W	97L2144	N/A	10/28/97	10/28/97
LEAD, TOTAL	MB1	W	97L2144	N/A	10/28/97	10/28/97
SELENIUM LABORATORY	LC1 BS	W	97L2144	N/A	10/28/97	10/28/97
SELENIUM, TOTAL	MB1	W	97L2144	N/A	10/28/97	10/28/97

R	ECR	A Lat	Net	Use	Only
7	7/	JL	60	<u></u>	

Custody Transfer Record/Lab Work Request



				•			-						-1	•			-		
Client US	et-i	EAR TEST S		Refrig	erator #		17	2	ス				21		-	T			
Est. Final Pro	oj. Samp	oling Date	1-97	-	#/Type	Container	Liquid	Ba	111	100				/ Rey	/B	u			
Project # =)3986	164-001-0	000-0	Ser Carlo		COMMINE	Solid		IAM	IM				111					
		no # G. Bernstown			Volum	•	Liquid	1,000		16				14	/1				
RECRA Prok	et Man	ger M. YOUNG	,		1	vatives	Solid	FOAL	SOM	SOAL				802			\longrightarrow		
OC 54194	(G. Del	Spec TAT	BODA	LY	Presen	ASTIAGS		Hear	ÓRG	ANIC	-			HAD2 INOF	C C		+		
					ANAL			4				1			176 4	3	1 1		
Account #	10 7	MIKEAW	(1=4-		REQU	ESTED		VOA	A B	Pest/	Herb		B		S				ļ
MATRIX				Matrix				1			1	F	RECRA L	التسانا	Jse Only	-1	 		
CODES:	Lab	08		QC	1	Date	Time	E	7,	Ŧ							T		
8 - Soli 8E - Sediment	ID	Client ID/Descrip	KION	Chosen (🗸)	Matrix		Collected	X24H	X25H	CLOSH				MACAKTO		ŀ			
80 - Solid				MS MSD	1			1 %	افذ	8				12					
SL - Słudge W - Water	∞	57		VV	7	4, 197	110	1	$\overline{\mathbf{C}}$	$\overline{\mathbf{x}}$				**		+	┿		
O - Oil A - Air	20	58			12	10-1-97	1	.(\c)	X	X.							+		
DR - Drum	WA			 	5	 -	1125	 	X	X				$ \mathbf{X} $			4		
Solids DL - Drum	003	59			5		0930	IX	X	X			1	X					i
Liquids L - EP/TCLP	001	510			15	1.7	0945	1X	X	X				X					
Leachate	025	511	, L	1	V	0935	TX	V				-			120	**			
Wi - Wipe X - Other	006	GW2			1.1	0/2/	100	乜		\Diamond	Ann	9,				/	-		
F - Fish	<u> </u>			 	14	1/3///	1/333	10	÷	4	7	445				-			
	00/	GW3		 	14	10/1/27	1140	 	X	X.	 		_	X	X				
	COD	GWY			W		0955	\mathbf{X}	\boldsymbol{X}	\boldsymbol{X}				X					
	009	6W5			W		1150	X	X	X				IXI					
	0/0	FBO2			3	17	1125	X											
FIELD PERSO	NNEL: CO	MPLETE ONLY SHADED	AREAS		DATE/RE			123	•		L	-							
Special Instru		-				visions; 1 X NO 2 0 04	Time	de	ctod	01	_Val	12-10	1 Sunf	2	RE	CRA L	abNet U	se Only	<i>y</i>
FBO2 15	MET	MANUE BLANK				2004	i					•	,	San	nples were	: /	COC	Tape wa	IS:
- 44 -	110														Shipped	_	1) Pre	esentaen	Outer
JOG# -	1190	1-001-003	-0001-	-00	'	3XX Re	407	CRI	2_6	2 <i>ITI</i> C	10	500	Apres	Airb	nd Delivere bill 1307	(22)	536, Lin	age(Y) c	on Outer
						4.016	PEC	bro	Kel	7				_ 2) A	Ambient of	Chilled	> Packs	age Y	or N
					4	5.014	2 V	A Vil	46	Rose	12 G	1 52	u des		Received In		3) Pro	asom on	
			4111	_		. 0 		No	0/2	4 4 			7	1	dition (Y	()	**		or (v)
	Co	nk1#0017-75	F/013	11-423	<u></u>	6.00%	COO,	UQ,	UI	<u> </u>					.abels Indi perly 1949			broken o	
Relinquished	Re	Date Date	Time	Relinquie	hed	Receive	d	Date	71.	me	Diecra	pancies	Retugen			or N		ole Y d Record F	•
by	 	бу		by		by			'"		Samp	les Labig	Cand	5) F	Received V	Vithin		Semple	
Allew	110	10.1-97	1330				[Y br N	Hol	ding Times		•		or N
Tol For		tali-19-297	,	······································		7 1 1			1		NOTE	:5: 4	K			or N			

PECRA LabNet Use Only

Custody Transfer Record/Lab Work Request



Client <u>U.S.A.</u>	CE-DEM TO	ST SITE		Refrige	rator #		17	7 7	~ ~ ~					· · · · · · · · · · · · · · · · · · ·	
Est. Final Pr	oj. Sampling Date	10-1-97				Liquid	3/1	Tara lan	} 			3			
Project # 75	388/-184-	101-000-00	(JQ)	#/Type	Container	Solid	14	IAM IAP		 	1 721	1704			
Project Cont	act/Phone # 6.	BULLANAN - 58	32	Volume		Liquid	Due				1AM	1/2		+	
RECRA Proj	ect Manager	1. Youks				Solid	Mark.	50 M 601	u I		802	11	 	+	\dashv
QC		MAY 2 0		Preserv	/atives		22 5 pm				HARZ	AMB			\neg
Date Rec'd	10-2-97	Date Due		ANALY	SES						INORG	3 2			
Account #	7	Date Due		REQUE	STED		Š	BNA Pest/			E 3	DISSERE			
MATRIX							 ←	_ m a u	<u> </u>	6	15-44				
CODES:	Lab		Matrix QC		i [T =	_ 	RECRA L	abyve Use	Onl;'()	<u> </u>		
8 - Soll	ID CI	ient ID/Description	Chosen	Matrix	Date	Time	06344	0625H			1 8	3			
SE - Sediment SO - Solid			(1)		Collected	Collected	3	। स्य ६	Heono		1131	ACARS			- 1
8L - Sludge W - Water	011 63	2	MS MSD				Q	2 3		1 1	MACARTE	12			
0 - ON	Oll FBa			W	10-1-97	020	X	XX			9			+	_
A - Air DS - Drum	al TBS	2		41		1320			 	 		 		+	
Solids	013 5W	/		(1)	 		1		 			-44		\bot	_
DL - Drum Liquids	019 SW	7	╌╂╼╌╌┨	u		0715	X	XX			X	XIO	7		
L - EP/TCLP Leachate		<u> </u>	+	W		0740	X	XX			X	X			
WI - Wipe	0/3 SD		<u>.l</u> . i l	5	1 / T	0720	X	XX					+		
X - Other F - Fish	0/6 SD6	2		۲.		0745			 	+	 () -	 			\dashv
	01) (41)	ス	1 1	71	10-197	1555		$\Delta \Delta$	 			-			
	0/4 61	3	╅╼┵	44	10-17/	ביבי/		_	 _ 			$X \perp$			
	200	71	╂┈┼	ψ		HAU				1 1		$ \mathcal{Y} $			
	VI GW	4		4		0955						X		1	\dashv
	030 511			W	}	075				 			+		\dashv
		NLY SHADED AREAS	D/	TE/REV	SIONS:	1102	77		 	whes	<u> </u>			<u></u>	
Special Instruc						3 did	aat i	ecine !	Tem Cle	inlumo	l	RECRA L	abNet Use C	Only	\supset
T/# -	11901-001	1-003-0001-	_		Cark	- 44 0	100	2/2	7	0010-71	-				_
10011 -		-1003-0001-	-00 -		2. %.CU	D-vipi	EXX)()			Samples 1) Shippe	were: ed or	COC Jape 1) Present	Was:	1
				 3	- ICA	15p2	ei	avons.	for Su	u Des	Hand Del	livered	Parkage	Y or N	
				4	1001-	200	0	0	•	4	Airbill # _		divanbroke	n on Outer	- 1
						7	, —	<u> </u>			2) Ambiei		ackage		
				5	i						- Condition	ed in Gard	(3) Present	on Sample Yor N	1
	¥ · · · · · · · · · · · · · · · · · · ·			6	S						4) Catyon		- * 4) Unbroke		
Relinquished	Received	Date Time	Relinquishe	d	Received						ProffW	Pereived	Sample '		
- UY	Бу	 	by		by	Q	ate	Time		cies Between	- II'	T OF N	COC Reco	rd Present	
Min		10/1/97 1330							COC Reco	ables and ord? Y or 1	5) Rojčeiv Holding T	ed Within	Upon Sam	•	
ESF	14.11						NOTES:	/ " "	riowing I	Y or N	· ·	Y or N			
TOKA (- whime	10-2470930													

RECRA LabNet Use Only

Custody Transfer Record/Lab Work Request



abNe

1100					J										,						_
Client	ACE	Deal	Tast S	SHE		Refrige	rator #							- 277		\sqcup					4
Est. Final Pre	i. Semb	Ing/Date		<u> </u>		#/Type	Container	Liquid			}			_\{P}	 						4
Project #		ivagi	ابع	<i></i>			<u></u>	Solid								 					-
Project Conta	Allendo			7		Volume	•	Liquid Solid		-					 	\longrightarrow					┨
RECRA Proje			WFX	7/		Preserv	estives.	Solid						HNO.		 			_	_	1
	Ct Walla	1	TAT			riesei	AGUAGE			ORG	ANIC			30					_		7
06				***************************************		ANALY		_	V			Ð		हेन	7					1	١
Date Rec'd Z	2-2-7	<i> </i>	ate Due			REQUE	STED		δ V	BNA	Pest/	E E		188	S		1	1			
	T					<u> </u>	1					Ţ	RECF	A Labile	1/Vse	Only	-	T			
MATRIX CODES:	1 1				Matrix QC	l													T		\neg
S - Soil	Lab ID	Clier	nt ID/Descript	tion	Chosen	Matrix	Date Collected	Time Collected					1 1			\				i	l
SE - Sediment					(1)				[i			1 1			1	1				l
SO - Solid SL - Sludge					MS MSD	٠,,,	ļ	74.	ļ			<u></u>		- - - - - - - - - - 	} -	+	-				ᅥ
W - Water	0311	SW	2			16/	104-97	0140	<u> </u>					$\perp \!\!\! \! \! \! \! \! \! \! \! \! \! \! \! \! \! \! \! \!$	_	 				-	4
O - Oil A - Air	'			•.		•			ł		\ '			į	1						
DS - Drum Solids					11																
DL - Drum					 	 			├	 	-					+	1		-		ᅱ
Liquids L - EP/TCLP					<u> </u>		<u> </u>		ļ				_								긕
Leachate									1		l	ll									_
WI - Wipe X - Other																		1		1	- 1
F - Fish	1		 	· · · · · · · · · · · · · · · · · · ·	 	 	 		+-	 	 	 	- - 		_	+	+				
					 			ļ	├ ──	 	 	 -					+	 			
																	 				
						1						1			-				1		
			<u>, =</u>	· · · · · · · · · · · · · · · · · · ·		 	1	 	1		1				1	1	1				
	<u> </u>	MAIN ETE ON	- CUADED	ADEAC		1	VISIONS:	<u> </u>	ــــــــــــــــــــــــــــــــــــــ	1		<u> </u>						نـــــــــــــــــــــــــــــــــــــ			
FIELD PERSO		MPLETE UN	LT SHADED	AHEAS										ì		REC	RA Lat	Net U	se Onl	y /	
Special Instru	ctions:						_ 1								Cample	s were:		COC	Tape w	_	
<u> </u>							_ 2									ped		N) Pre	sen on	Outer	
							_ 3									elivered			ge Y		
							_ 3													on Ouler	
							_ 4								2) Amb	ient or C	Chilled	Packa	ige Y	or N Sample or N	
							_ 5								3) Rece Conditie	eived in	20% t) All lies	ent on Y	or N	
						-	_ J								K Q	$Y_{\mathcal{L}}$		1 1	broken :		
j							_ 6								Proper		ed	•	ole Y		
Relinguished	R	ecelved	Date	Time	Relinquis	hed	Receive	ed	Date	Τ,	lme	Discret	pancies Betv	veen -	#I	火 /'	or N	•		Present	
by	سما	1 by	Date	Time	by		by		Date		11110	Sample	es Lables an	10		eived W		Upon	Sample		
Fed Gor	W 6	win	1229	MUS								COC F	Record? Y	of N	Hollding	Times	or N		Y	or N	
1000	A	TYNN	1000	Y CZ						\dashv						•	J. 14				



Virtual Laboratories Everywhere

Recra LabNet Philadelphia **Analytical Report**

Client: USACE-DEAL TEST SITE

W.O.#: 11901-001-003-0001-00

RFW#: 9710L573

Date Received: 10-01-97

METALS CASE NARRATIVE

This narrative covers the analyses of 6 soil and 4 water samples. 1.

- Samples were prepared and analyzed in accordance with methods checked on the attached 2.. glossary.
- All analyses were performed within the required holding times. 3.
- The cooler temperature has been recorded on the Chain of Custody. 4.
- All Initial and Continuing Calibration Verifications (ICV/CCVs) were within control 5. limits.
- All Initial and Continuing Calibration Blanks (ICB/CCBs) were within control limits. 6.
- All preparation/method blanks were within method criteria. Refer to the Inorganics 7. Method Blank Data Summary.
- All ICP Interference Check Standards were within control limits. 8.
- All laboratory control samples (LCS) were within the laboratory control limits with the 9. exception of 97L2146-LC1 for Silver at 92.8% (range 93.6-106.4%) and Lead at 91.1% (range 92.2-107.1%). The soil sample results could be biased low for Silver and Lead. Refer to the Inorganics Laboratory Control Standards Report.
- The Mercury matrix spike (MS) and matrix spike duplicate (MSD) recoveries were within 10. the 80-120% control limits. Refer to the Inorganics Accuracy Report.
- The Mercury MSs and MSDs were within the 20% Relative Percent Difference (RPD) 11. control limits. Refer to the Inorganics Matrix Spike Duplicate Report.
- The duplicate Mercury analyses were within the 20% RPD control limits. Refer to the 12. Inorganics Precision Report.
- For the purposes of this report, the data has been reported to the Instrument Detection 13. Limit (IDL). Values between the IDL and the Practical Quantitation Limit (PQL) are acquired in a region of less-certain quantification.

J. Michael Taylor (

Vice President and Laboratory Manager

Lionville Analytical Laboratory

skl\m10-573

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 19 pages.

METALS METHODS GLOSSARY

The following RFW Lot#: 0	methods are used as refer 3710レ573	rence for the digestic	on and analysis	of samples	contained withir
	edure:13101311	1312 Other:			
	Digestion and Analysis)3.0 ILM04.	.0	
Metals Digestion	on Methods: 3005A	3010A _ 3015 3	— 020A /3050A	3051	_200.7 SS17
	_Other:			3031 _	_200./551/
	ľ	Metals Analysis M	lethods		
	SW846	EPA	CTTD A COUR	EPA	
Aluminum	6010A	200.7	STD MTD	OSWR	USATHA
Antimony	_6010A 7041 ⁵	- 			99
Arsenic	$\sqrt{6010A} - 7060A^{-5}$		21100		99
Barium	6010A	200.7206.2	_3113B		99
Beryllium	6010A	200.7			99
Bismuth	6010A ¹	200.7			99
Boron	6010A ¹	200.7		1620	99
Cadmium	√6010A 7131A ⁵				99
Calcium	6010A				99
Chromium	Z6010A 7191 5				99
Cobalt	6010A	200.7218.2 200.7			SS17
Copper	6010A 7211 5				99
Iron	6010A	$ \begin{array}{ccccccccccccccccccccccccccccccccc$			99
Lead	✓6010A 7421 ⁵				99
Lithium	_6010A 7430 4	200.7239.2 200.7	3113B		99
Magnesium		200.7		1620	99
Manganese	6010A	200.7			
Mercury	$\sqrt{7470}$ A $\sqrt{7471}$ A $\sqrt{3}$	245.1 ² 245.5 ²			99
Molybdenum	6010A	200.7			99
Nickel	6010A	200.7			99
Potassium	6010A 7610 4				99
Rare Earths	6010A 1	200.7258.1 ⁴			99
Selenium	6010A7740 ⁵	 _		1620	99
Silicon	6010A ¹	200.7	3113B		99
Silica	6010A ¹	200.7 200.7		1620	99
Silver	6010A 7761 ⁵	_		1620	
Sodium	6010A7770 4	—			
Strontium		200.7273.1 4			
Thallium	6010A 7841 5	_200.7			 99
Tin	6010A 1 - 7841	200.7	0.9		99
Titanium	6010A 1	_200.7			99
Uranium	6010A 1 -	_200.7			99
Vanadium	6010A	_200.7 1		1620	99
Zinc	6010A 6010A	_200.7	_		
Zirconium	6010A -	_200.7			99
	UUIUA -	_200.7 ¹		1620	99 99
Other:	Method:		-		
RFW 21-21-033/M-01/97					0.00

002

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

- U = Indicates that the parameter was not detected at or above the reported limit. The associated numerical value is the sample detection limit.
- * = Indicates that the original sample result is greater than 4x the spike amount added.

ABBREVIATIONS

MB = Method or Preparation Blank.

MS = Matrix Spike.

MSD = Matrix Spike Duplicate.

REP = Sample Replicate

LCS = Laboratory Control Sample.

NC = Not calculated.

ANALYTICAL METAL METHODS

- 1. Not included in the method element list.
- 2. Modified Hg: Hg1 and Hg2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionately scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, 0.1 grams of sample is taken to a final volume of 50 mL (including all reagents).
- 3. Modified Hg: Hg1 and Hg2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionately scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, three 0.1 gram of sample is taken to a final volume of 50 mL (including all reagents).
- 4. Flame AA.
- 5. Graphite Furnace AA.

RFW 21-21L-033/N-10/96

INORGANICS DATA SUMMARY REPORT 11/07/97

CLIENT: USACE-DEAL TEST SITE RECRA LOT #: 9710L573

					REPORTING	DILUTION
SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	LIMIT	FACTOR
		**=====================================	======= ~~		=======	
-001	S1	Silver, Total	0.19 u		0.19	1.0
		Arsenic, Total		MG/KG	0.58	1.0
		Barium, Total	64.9	MG/KG	0.05	1.0
		Cadmium, Total	0.33	MG/KG	0.1	1.0
		Chromium, Total	25.3 🕏	MG/KG	0.15	1.0
		Mercury, Total	0.04 uJ	MG/KG	0.04	1.0
		Lead, Total	51.6	MG/KG	0.70	1.0
		Selenium, Total	5.1 🧻	MG/KG	1.1	1.0
-002	S2	Silver, Total	0.10 uT	MG/KG	0.10	1.0
		Arsenic, Total	22.0	MG/KG	0.31	1.0
		Barium, Total	20.5	MG/KG	0.03	1.0
		Cadmium, Total	0.05	MG/KG	0.05	1.0
		Chromium, Total	18.3	MG/KG	0.08	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Lead, Total	4.2	MG/KG	0.37	1.0
		Selenium, Total	1.0	MG/KG	0.57	1.0
-003	S3	Silver, Total	0.23 u T	MG/KG	0.23	1.0
		Arsenic, Total	138	MG/KG	0.69	1.0
		Barium, Total	72.4	MG/KG	0.06	1.0
		Cadmium, Total	0.12 u l	MG/KG	0.12	1.0
		Chromium, Total	44.7	MG/KG	0.17	1.0
		Mercury, Total	0.05 u~!	MG/KG	0.05	1.0
		Lead, Total	- 6 :0	MG/KG	0.84	1.0
		Selenium, Total	3.8	MG/KG	1.3	1.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 11/07/97

T: USACE-DEAL TEST SITE
.A ORDER: 11901-001-003-0001-00

: USACE-DEAL TEST SITE RECRA LOT #: 9710L573

. CORDI	ER: 11901-001-003-0001-	-00			REPORTING	DILUTION
SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	LIMIT	FACTOR
======	=======================================		=======	=====	=======================================	=======
-004	S4	Silver, Total	0.1 u	MG/KG	0.1	1.0
		Arsenic, Total	17.5	MG/KG	0.30	1.0
		Barium, Total	17.6	MG/KG	0.02	1.0
		Cadmium, Total	0.05 u	MG/KG	0.05	1.0
		Chromium, Total	19.6	MG/KG	0.07	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Lead, Total	3.2 J	MG/KG	0.36	1.0
		Selenium, Total	0.68	MG/KG	0.54	1.0
-005	S5	Silver, Total	0.25 uJ	MG/KG	0.25	1.0
		Arsenic, Total	146	MG/KG	0.76	1.0
		Barium, Total	88.4 🟃	MG/KG	0.06	1.0
		Cadmium, Total	0.13 u j	MG/KG	0.13	1.0
		Chromium, Total	35.3 📑	MG/KG	0.19	1.0
		Mercury, Total	0. 05 u ੍ਹੈ l	MG/KG	0.05	1.0
		Lead, Total	27.2	MG/KG	0.92	1.0
		Selenium, Total	6.2	MG/KG	1.4	1.0
-006	S6	Silver, Total	0.11 u	MG/KG	0.11	1.0
		Arsenic, Total	47.7	MG/KG	0.34	1.0
		Barium, Total	23.2	MG/KG	0.03	1.0
		Cadmium, Total	0.06 u	MG/KG	0.06	1.0
		Chromium, Total	18.5 I	MG/KG	0.08	1.0
		Mercury, Total	0.02 u l	MG/KG	0.02	1.0
		Lead, Total	-2.4 ∤ 1	MG/KG	0.41	1.0
		Selenium, Total	1.4	MG/KG	0.62	1.0

INORGANICS DATA SUMMARY REPORT 11/07/97

CLIENT: USACE-DEAL TEST SITE RECRA LOT #: 9710L573

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
				=====	========	=======
-007	GW1	Silver, Total	0.80 u	UG/L	0.80	1.0
		Arsenic, Total	135 🦷	UG/L	2.4	1.0
		Barium, Total	195	UG/L	0.20	1.0
		Cadmium, Total	1.3	UG/L	0.40	1.0
		Chromium, Total	650 🖖	UG/L	0.60	1.0
		Mercury, Total	0.10 u	UG/L	0.10	1.0
		Lead, Total	53.2 🗍	UG/L	2.9	1.0
		Selenium, Total	26.3 🛫	UG/L	4.4	1.0
-008	GW2	Silver, Total	0.80 u	UG/L	0.80	1.0
		Arsenic, Total	747	UG/L	2.4	1.0
		Barium, Total	833	UG/L	0.20	1.0
		Cadmium, Total	10.9	UG/L	0.40	1.0
		Chromium, Total	1230	UG/L	0.60	1.0
		Mercury, Total	0.10 u	UG/L	0.10	1.0
		Lead, Total	222 ***	UG/L	2.9	1.0
		Selenium, Total	34.7-	UG/L	4.4	1.0
-009	FB-1	Silver, Total	0.80 u	UG/L	0.80	1.0
		Arsenic, Total	2.4 u	UG/L	2.4	1.0
		Barium, Total	0.20 u	UG/L	0.20	1.0
		Cadmium, Total	0. 4 0 u	UG/L	0.40	1.0
		Chromium, Total	0.96	UG/L	0.60	1.0
	Tr.	Mercury, Total	0.10 u	UG/L	0.10	1.0
		Lead, Total	4.3	UG/L	2.9	1.0
		Selenium, Total	4.4 u	UG/L	4.4	1.0

INORGANICS DATA SUMMARY REPORT 11/07/97

CLIENT: USACE-DEAL TEST SITE RECRA LOT #: 9710L573

					REPORTING	DILUTION
SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	LIMIT	FACTOR
			=======	=====		
-011	GW1	Silver, Soluble	0.80 u	UG/L	0.80	1.0
		Arsenic, Soluble	2.5	UG/L	2.4	1.0
		Barium, Soluble	74.4	UG/L	0.20	1.0
		Cadmium, Soluble	0.40 u	UG/L	0.40	1.0
		Chromium, Soluble	0.60 u	UG/L	0.60	1.0
		Mercury, Soluble	0.10 u	UG/L	0.10	1.0
		Lead, Soluble	2.9 u	UG/L	2.9	1.0
		Selenium, Soluble	5.7	UG/L	4.4	1.0

INORGANICS METHOD BLANK DATA SUMMARY PAGE 11/07/97

CLIENT: USACE-DEAL TEST SITE RECRA LOT #: 9710L573

0334DT =	0.7mm 7.5				REPORTING	DILUTION
SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	LIMIT	FACTOR
======	Z=====================================			=====		
BLANK1	97L2146-MB1	Silver, Total	0.08 u	MG/KG	0.08	1.0
		Arsenic, Total	0.24 u	MG/KG	0.24	1.0
		Barium, Total	0.02 u	MG/KG	0.02	1.0
		Cadmium, Total	0.04 u	MG/KG	0.04	1.0
		Chromium, Total	0.26	MG/KG	0.06	1.0
		Lead, Total	0.29 u	MG/KG	0.29	1.0
		Selenium, Total	0.44 u	MG/KG	0.44	1.0
BLANK1	97C0799-MB1	Mercury, Total	0.02 u	MG/KG	0.02	1.0
BLANK1	97L2144-MB1	Silver, Total	0.80 u	UG/L	0.80	1.0
		Arsenic, Total	2.4 u	UG/L	2.4	1.0
		Barium, Total	. 0.20 u	UG/L	0.20	1.0
		Cadmium, Total	0.40 u	UG/L	0.40	1.0
		Chromium, Total	1.1	UG/L	0.60	1.0
		Lead, Total	2.9 u	UG/L	2.9	1.0
		Selenium, Total	4.4 u	UG/L	4.4	1.0
BLANK1	97C0778-MB1	Mercury, Total	0.10 u	UG/L	0.10	1.0
BLANK1	97C0793-MB1	Mercury, Total	0.10 u	UG/L	0.10	1.0

INORGANICS ACCURACY REPORT 11/07/97

CLIENT: USACE-DEAL TEST SITE RECRA LOT #: 9710L573

			SPIKED	INITIAL	SPIKED		DILUTION
SAMPLE	SITE ID	ANALYTE	SAMPLE	RESULT	AMOUNT	%RECOV	FACTOR (SPK)
				======		======	
-007	GW1	Mercury, Total	1.1	0.10u	1.0	109.8	1.0
		Mercury, Total MSD	1.1	0.10u	1.0	111.8	1.0
-011	GW1	Mercury, Soluble	1.0	0.10u	1.0	104.1	1.0
		Mercury, Soluble MSD	1.0	0.10u	1.0	101.6	1.0

INORGANICS DUPLICATE SPIKE REPORT 11/07/97

CLIENT: USACE-DEAL TEST SITE RECRA LOT #: 9710L573

			SPIKE#1	L SPIKE#2	2
SAMPLE	SITE ID	ANALYTE	%RECOV	*RECOV	%DIFF
======		======================================		=====	
-007	GW1	Mercury, Total	109.8	111.8	1.8
-011	GW1	Mercury, Soluble	104.1	101.6	2.4

INORGANICS PRECISION REPORT 11/07/97

...T: USACE-DEAL TEST SITE

RECRA LOT #: 9710L573

ORDE	K. 11301 001 003	• •			
			INITIAL		DILUTION
SAMPLE	SITE ID	ANALYTE	RESUL T	REPLICATE RPD	FACTOR (REP)
		=======================================	=== == =	######## ######	
-007REP	GW1	Mercury, Total	0.1 0 u	0.10u NC	1.0
-011REP	GW1	Mercury, Soluble	0.10u	0.10u NC	1.0

INORGANICS LABORATORY CONTROL STANDARDS REPORT 11/07/97

CLIENT: USACE-DEAL TEST SITE RECRA LOT #: 9710L573

			SPIKED	SPIKED		
SAMPLE	SITE ID	ANALYTE	SAMPLE	AMOUNT	UNITS	%RECOV
======		=======================================	=====			
LCS1	97L2146-LC1	Silver, LCS	46.4	50.0	MG/KG	92.8
		Arsenic, LCS	890	1000	MG/KG	89.0
		Barium, LCS	456	500	MG/KG	91.2
		Cadmium, LCS	22.8	25.0	MG/KG	91.2
		Chromium, LCS	46.1	50.0	MG/KG	92.2
		Lead, LCS	228	250	MG/KG	91.1
		Selenium, LCS	871	1000	MG/KG	87.1
LCS1	97C0799-LC1	Mercury, LCS	3.0	2.9	MG/KG	103.6
LCS1	97L2144-LC1	Silver, LCS	497	500	UG/L	99.4
		Arsenic, LCS	9740	10000	UG/L	97.4
		Barium, LCS	4790	5000	UG/L	95.8
		Cadmium, LCS	247	250	UG/L	98.7
		Chromium, LCS	489	500	UG/L	97.8
		Lead, LCS	2450	2500	UG/L	98.0
		Selenium, LCS	9720	10000	UG/L	97.2
LCS1	97C0778-LC1	Mercury, LCS	5.1	5.0	UG/L	101.7
LCS1	97C0793-LC1	Mercury, LCS	5 . 5	5.0	UG/L	109.6

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
S1						
SILVER, TOTAL	001	s	97L2146	09/30/97	10/28/97	10/29/97
ARSENIC, TOTAL	001	S	97L2146	09/30/97	10/28/97	10/29/97
BARIUM, TOTAL	001	S	97L2146	09/30/97	10/28/97	10/29/97
CADMIUM, TOTAL	001	s	97L21 46	09/30/97	10/28/97	10/29/97
CHROMIUM, TOTAL	001	S	97L2146	09/30/97	10/28/97	10/29/97
MERCURY, TOTAL	001	S	97C0799	09/30/97	10/21/97	10/22/97
LEAD, TOTAL	001	s	97L2146	09/30/97	10/28/97	10/29/97
SELENIUM, TOTAL	001	S	97L2146	09/30/97	10/28/97	10/29/97
S2						
SILVER, TOTAL	002	s	97L2146	09/30/97	10/28/97	10/29/97
ARSENIC, TOTAL	002	s	97L2146	09/30/97	10/28/97	10/29/97
BARIUM, TOTAL	002	S	97L2146	09/30/97	10/28/97	10/29/97
CADMIUM, TOTAL	002	s	97L2146	09/30/97	10/28/97	10/29/97
CHROMIUM, TOTAL	002	S	97L2146	09/30/97	10/28/97	10/29/97
MERCURY, TOTAL	002	S	97C0799	09/30/97	10/21/97	10/22/97
LEAD, TOTAL	002	s	97L2146	09/30/97	10/28/97	10/29/97
SELENIUM, TOTAL	002	S	97L2146	09/30/97	10/28/97	10/29/97
S3						
SILVER, TOTAL	003	s	97L2146	09/30/97	10/28/97	10/29/97
ARSENIC, TOTAL	003	S	97L21 46	09/30/97	10/28/97	10/29/97
BARIUM, TOTAL	003	S	97L2146	09/30/97	10/28/97	10/29/97
CADMIUM, TOTAL	003	S	97L2146	09/30/97	10/28/97	10/29/97
CHROMIUM, TOTAL	003	S	97L2146	09/30/97	10/28/97	10/29/97
MERCURY, TOTAL	003	S	97C0799	09/30/97	10/21/97	10/22/97
LEAD, TOTAL	003	S	97L2146	09/30/97	10/28/97	10/29/97
SELENIUM, TOTAL	003	S	97L2146	09/30/97	10/28/97	10/29/97
S4						
SILVER, TOTAL	004	s	97L2146	09/30/97	10/28/97	10/29/97
ARSENIC, TOTAL	004	S	97L2146	09/30/97	10/28/97	10/29/97

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
BARIUM, TOTAL	004	s	97L2146	09/30/97	10/28/97	10/29/97
CADMIUM, TOTAL	004	S	97L21 46	09/30/97	10/28/97	10/29/97
CHROMIUM, TOTAL	004	S	97L2146	09/30/97	10/28/97	10/29/97
MERCURY, TOTAL	004	S	97C0799	09/30/97	10/21/97	10/22/97
LEAD, TOTAL	004	S	97L21 46	09/30/97	10/28/97	10/29/97
SELENIUM, TOTAL	004	S	97L214 6	09/30/97	10/28/97	10/29/97
S5						
SILVER, TOTAL	005	S	97L2146	09/30/97	10/28/97	10/29/97
ARSENIC, TOTAL	005	S	97L2146	09/30/97	10/28/97	10/29/97
BARIUM, TOTAL	005	S	97L21 46	09/30/97	10/28/97	10/29/97
CADMIUM, TOTAL	005	S	97L2146	09/30/97	10/28/97	10/29/97
CHROMIUM, TOTAL	005	S	97L21 46	09/30/97	10/28/97	10/29/97
MERCURY, TOTAL	005	S	97C079 9	09/30/97	10/21/97	10/22/97
LEAD, TOTAL	005	S	97L21 46	09/30/97	10/28/97	10/29/97
SELENIUM, TOTAL	005	S	97L2146	09/30/97	10/28/97	10/29/97
S6						
SILVER, TOTAL	006	s	97L2146	09/30/97	10/28/97	10/29/97
ARSENIC, TOTAL	006	S	97L2146	09/30/97	10/28/97	10/29/97
BARIUM, TOTAL	006	S	97L2146	09/30/97	10/28/97	10/29/97
CADMIUM, TOTAL	006	S	97L2146	09/30/97	10/28/97	10/29/97
CHROMIUM, TOTAL	006	S	97L2146	09/30/97	10/28/97	10/29/97
MERCURY, TOTAL	006	S	97C079 9	09/30/97	10/21/97	10/22/97
LEAD, TOTAL	006	S	97L2146	09/30/97	10/28/97	10/29/97
SELENIUM, TOTAL	006	S	97L2146	09/30/97	10/28/97	10/29/97
GW1						
SILVER, TOTAL	007	W	97L2144	09/30/97	10/28/97	10/28/97
ARSENIC, TOTAL	007	W	97L2144	09/30/97	10/28/97	10/28/97
BARIUM, TOTAL	007	W	97L2144	09/30/97	10/28/97	10/28/97
CADMIUM, TOTAL	007	W	97L21 44	09/30/97	10/28/97	10/28/97
CHROMIUM, TOTAL	007	W	97L2144	09/30/97	10/28/97	10/28/97
MERCURY, TOTAL	007	W	97C0778	09/30/97	10/14/97	10/15/97
MERCURY, TOTAL	007 REP	W	97C077 8	09/30/97	10/14/97	10/15/97

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
MERCURY, TOTAL	007 MS	w	97C0778	09/30/97	10/14/97	10/15/97
MERCURY, TOTAL	007 MSD	W	97C0778	09/30/97	10/14/97	10/15/97
LEAD, TOTAL	007	W	97L2144	09/30/97	10/28/97	10/28/97
SELENIUM, TOTAL	007	W	97L2144	09/30/97	10/28/97	10/28/97
GW2						
SILVER, TOTAL	008	W	97L2144	09/30/97	10/28/97	10/28/97
ARSENIC, TOTAL	800	W	97L2144	09/30/97	10/28/97	10/28/97
BARIUM, TOTAL	800	W	97L214 4	09/30/97	10/28/97	10/28/97
CADMIUM, TOTAL	008	W	97L2144	09/30/97	10/28/97	10/28/97
CHROMIUM, TOTAL	800	W	97L2144	09/30/97	10/28/97	10/28/97
MERCURY, TOTAL	008	W	97C0778	09/30/97	10/14/97	10/15/97
LEAD, TOTAL	008	W	97L2144	09/30/97	10/28/97	10/28/97
SELENIUM, TOTAL	008	W	97L2144	09/30/97	10/28/97	10/28/97
FB-1						
SILVER, TOTAL	009	W	97L2144	09/30/97	10/28/97	10/28/97
ARSENIC, TOTAL	009	W	97L2144	09/30/97	10/28/97	10/28/97
BARIUM, TOTAL	009	W	97L2144	09/30/97	10/28/97	10/28/97
CADMIUM, TOTAL	009	W	97L2144	09/30/97	10/28/97	10/28/97
CHROMIUM, TOTAL	009	W	97L2144	09/30/97	10/28/97	10/28/97
MERCURY, TOTAL	009	W	97C0778	09/30/97	10/14/97	10/15/97
LEAD, TOTAL	009	W	97L2144	09/30/97	10/28/97	10/28/97
SELENIUM, TOTAL	009	W	97L2144	09/30/97	10/28/97	10/28/97
GW1						
SILVER, SOLUBLE	011	W	97L2144	09/30/97	10/28/97	10/28/97
ARSENIC, SOLUBLE	011	W	97L2144	09/30/97	10/28/97	10/28/97
BARIUM, SOLUBLE	011	W	97L2144	09/30/97	10/28/97	10/28/97
CADMIUM, SOLUBLE	011	W	97L2144	09/30/97	10/28/97	10/28/97
CHROMIUM, SOLUBLE	011	W	97L2144	09/30/97	10/28/97	10/28/97
MERCURY, SOLUBLE	011	W	97C0793	09/30/97	10/21/97	10/22/97
MERCURY, SOLUBLE	011 REP	W	9700793	09/30/97	10/21/97	10/22/97
MERCURY, SOLUBLE	011 MS	W	9700793	09/30/97	10/21/97	10/22/97
MERCURY, SOLUBLE	011 MSD	W	97C0793	09/30/97	10/21/97	10/22/97

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS	
LEAD, SOLUBLE SELENIUM, SOLUBLE	011 011	w w	97L2144 97L2144	09/30/97 09/30/97	10/28/97 10/28/97	10/28/9 10/28/9	
LAB QC:							
SILVER LABORATORY	LC1 BS	S	97L2146	N/A	10/28/97	10/29/97	
SILVER, TOTAL	MB1	S	97L2146	N/A	10/28/97	10/29/97	
ARSENIC LABORATORY	LC1 BS	S	97L2146	N/A	10/28/97	10/29/97	
ARSENIC, TOTAL	MB1	S	97L2146	N/A	10/28/97	10/29/97	
BARIUM LABORATORY	LC1 BS	s	97L2146	N/A	10/28/97	10/29/97	
BARIUM, TOTAL	MB1	s	97L2146	N/A	10/28/97	10/29/97	
CADMIUM LABORATORY	LC1 BS	S	97L2146	N/A	10/28/97	10/29/97	
CADMIUM, TOTAL	MB1	S	97L2146	N/A	10/28/97	10/29/97	
CHROMIUM LABORATORY	LC1 BS	S	97L2146	N/A	10/28/97	10/29/97	
CHROMIUM, TOTAL	MB1	S	97L2146	N/A	10/28/97	10/29/97	
MERCURY LABORATORY	LC1 BS	S	97C0799	N/A	10/21/97	10/22/97	
MERCURY, TOTAL	MB1	S	97C0799	N/A	10/21/97	10/22/97	
LEAD LABORATORY	LC1 BS	S	97L2146	N/A	10/28/97	10/29/97	
LEAD, TOTAL	MB1	S	97L2146	N/A	10/28/97	10/29/97	
SELENIUM LABORATORY	LC1 BS	S	97L2146	N/A	10/28/97	10/29/97	
SELENIUM, TOTAL	MB1	S	97L2146	N/A	10/28/97	10/29/97	
SILVER LABORATORY	LC1 BS	W	97L2144	N/A	10/28/97	10/28/97	
SILVER, TOTAL	MB1	W	97L2144	N/A	10/28/97	10/28/97	
ARSENIC LABORATORY	LC1 BS	W	97L2144	N/A	10/28/97	10/28/97	
ARSENIC, TOTAL	MB1	W	97L2144	N/A	10/28/97	10/28/97	
BARIUM LABORATORY	LC1 BS	W	97L2144	N/A	10/28/97	10/28/97	
BARIUM, TOTAL	MB1	W	97L2144	N/A	10/28/97	10/28/97	
CADMIUM LABORATORY	LC1 BS	W	97L2144	N/A	10/28/97	10/28/97	
CADMIUM, TOTAL	MB1	W	97L2144	N/A	10/28/97	10/28/97	
CHROMIUM LABORATORY	LC1 BS	W	97L2144	N/A	10/28/97	10/28/97	
CHROMIUM, TOTAL	MB1	W	97L2144	N/A	10/28/97	10/28/97	
MERCURY LABORATORY	LC1 BS	W	97C0778	N/A	10/14/97	10/15/97	
MERCURY, TOTAL	MB1	W	97C0778	N/A	10/14/97	10/15/97	
LEAD LABORATORY	LC1 BS	W	97L2144	N/A	10/28/97	10/28/97	
LEAD, TOTAL	MB1	W	97L2144	N/A	10/28/97	10/28/97	
SELENIUM LABORATORY	LC1 BS	W	97L214 4	N/A	10/28/97	10/28/97	
SELENIUM, TOTAL	MB1	W	97L2144	N/A	10/28/97	10/28/97	
MERCURY LABORATORY	LC1 BS	W	9700793	N/A	10/21/97	10/22/97	

RECEIVED: 10/01/97

RFW LOT # :9710L573

ENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
·						
MERCURY, TOTAL	MB1	W	97C0793	N/A	10/21/97	10/22/97

RECRA LabNet

RECRA LabNet Use Only

97101573

Custody Transfer Record/Lab Work Request

Client	<u>us</u>	ACE - Den Text 3	ite	Refrige	rator #	······································	- 7	7	Г 1			-	١ ٦ ١							
Est. Final Pro	oi. Samı	pling Date 101.107)	#///	#/Type Container		260	IAG				 	PPS				- $+$			
Project # _/	/ 40/-	1001-103-MI		#/Type	Container	Solid		IAG				 	1110							
Project Conta	act/Phor	no # GALA BUCHANAN		Volume			40	950					1000				-+			
Project Contact/Phone # GAL BUCHANAN RECRA Project Manager M. Yanap QC SWRYG Del SPECTAT 200AY		<u> </u>			40	200														
00 50084	6 De	SPECTAT BOC	AY	Preserv	atives	Meo H	HCL	OBC				16103								
Date Rec'd	Date Rec'd 10-7-97 Date Due 10-31-97 Account # MIKBPM			ANALY REQUE	SES			ORG		_	.		INO	RG						
Account #	Account # MIKBPM						δ V	BNA	Pest/ PCB	E B			Metal	z						
MATRIX					T T		<u> </u>						ليبيا							
CODES:	Lab		Matrix QC				7	7	4	*	HE	CRA L	abNot	Use On	<u>ly</u>	, 				
8 - Soli 8E - Sediment	ID	Client ID/Description	Chosen	Matrix	Date Collected (Time Collected	イナベ	DEASH	H&09X				Meckano							
80 - Solid	Solid Sludge					0	9	3	2				3							
SL - Sludge W - Water		<i>e 1</i>	MS MSD				8	Ď	V 21				1							
O - OH	00/	<u> </u>		5	93097	1340	1	✓	V				٣							
A - Air DS - Drum	002					1350	1	1	./				1							
Solids DL - Drum	003	3					*/		' ,				Y ,							
Liquids	400	4				1440		~	~				V							
L - EP/TCLP Leachate	005	+ 3				1450	1	<u> </u>												
Wi - Wipe						1545														
X - Other F - Fish	006	16	, []			1550	./	V					7							
, , , , ,	as)	GW 1		W	1 - 1 -		7	` ,	- / /				 							
	08	7 7		-		1405	1	~			_	<u> </u>								
ŀ		<u> </u>		-		1555	4	<u> </u>	0	l			/							
	009	FB-1				1510	/	1		T			7							
	010	TB-1			(1610	7		<u> </u>				-							
FIELD PERSON	INFL . CO	MPI ETE ONI V CHARED AREAS				7010		1			- 1		l 1	j	1		. 1	1		

Special instructions:

NOTE: STANDARD NJ METHANOL FICLD

BLANK NOT INCLUDED DUE TO LACK OF

SUFFICIENT NUMBER OF SAMPLE CONTRINCAS

FOO DAYS ACTIVITIES , VOA VIALS 596 770

AND 596718 LABELED FOUNT LAB WERE

USED FOO SOIL SAMPLES 56, FB1 M

A RINSATE BLANK.

Date

Time

Received

DATE/REVISIONS:

1 OUI-OUG VOA'S W/HEAD SPACE 2 001-008 UDA'S SEDIMENT ON BOTTOM

3 OUT OOK SOOM AMBER FOR BNA and PEST RO

4 one Dottle for BOTH Tests.

5 OIL IS A DISSOLVED METALS.

6. Contains chart soral

Relinquio RICINAL Time

Discrepancies Between Samples Lables and COC Record? Y or NOTES:

Samples were:

1) Shipped
or

Hand Delivered

RECRA LabNet Use Only

2) Ambient or Coulled

3) Received in Good Condition of or N

4) Labels Indicate Properly Pre arved (Y) or N

5) Received Within Holding Times

(*) or N

COC Tape was:

1) Present on Outer Package (Y or N

2) Unbroken on Outer Package (Y or N

3) Present on Sample Y or M

4) Unbroken on Sample Y or N COC Record Present

COC Record Present Upon Sample Rec't or N

Relinguished

RECRA LabNet Use Only

Custody Transfer Record/Lab Work Request



Client	77.	Ace				-										, •			•	_				
							Refrigerator #										文						\top	
Est. Final Proj. Sampling Pate						#/Type Container Liquid			<u> </u>							iPl					$\overline{}$	$\neg \uparrow$		
Project #			55.	<u> </u>			Solid												1					
Project Contact/Phone #							Volume	•	Llquid		<u> </u>						1000						\neg	
RECRA Proje	ct Man	ader			ノ				Solid	<u> </u>													\neg	
QC DelTAT							Preserv	atives									HUS					$\overline{}$		
<u> </u>							ANALY	eee		 -		ANIC					INC	RG	7					
Date Rec'd Date Due						REQUE	STED	→	V V V	BNA	P.CB	Herb				Metai Metai	S							
MATRIX CODES:						etrix							→ RECRA Lat					Use (Only		- -			
8 - Soll	Lab ID	Cite	ent iD/Desci	ription		C Deen	Matrix	Date	Time							Mesas								
SE - Sediment	ן ייי	-		· · · · · · · · · · · · · · · · · · ·	Chosen (🗸)		Matrix	Collected C							18]								
80 - Solid						MSD										l	ાસ	[
8L - Sludge W - Water	011	111	1		MS	MSD											8]
0 - O#	011	GW.	7				W	F2V77	1405								1							
A - Air DS - Drum					1												<u> </u>		-				-+	
Solida					1																			
DL - Drum					╂													,]					
Liquids L - EP/TCLP																							$\neg \uparrow$	
Leachate																								
WI - Wipe X - Other					┪—-																			
F - Fish		 ,						Ł																
					1																			-
					1										-									
					-	 										1						. 1	ı	- 1
		-					j																	
	[\longrightarrow	
FIELD PERSON	NEL: CO	MPLETE ON	LY SHADE	DARFAS	ــــــــــــــــــــــــــــــــــــــ	┰	ATC DOLL											<u> </u>						
Special Instruct				- AILLAG		ים נ	ATE/REV												DE :D	A 1 - b	Man 11			
			•					1											neun	A LBD	Net U	se Only	<i>y</i>	
						_		2									Sar	mples	ere:		DOC 1	Гаре wa	S:	
																	1) (SHipped	1 <u>)_</u> a	eil.	1) R re:	sent on	Outer	
						-		3									Mai	nd Deliv	vered -	_	,	ge Y d		
								4											l or Ch	te		oroken o		er
								•-			**					/					/	ge Y		ļ
						_		5											ed in Go		73) Pre:	sent on Y		e
								6								`	J		Indicate					
Relinquished Received - Relinquished																Pro	gerly P	reserve	d d		orokeno e Yo			
by		by	Date	Time		quish	Pd	Received	ם ו	ate	Tin	ne T	Discr	epancia	es Betw	een	-		Y or			Record F		,]
Fed Ed	int	Ò	4.03	 		by	-+	by			<u> </u>		Discrepancies Between Samples Lables and			5) F	Receive	d Withi	in		sample		•	
put by	4 H	2	9197	0945			i		- 1				coc	Record	d?Yo	r N		ding Ti	mes				or N	
•						****							NOT	ES:					Y or	Ν				
			<u> </u>						1		l	1	l											

Appendix E

APPENDIX E DATA VALIDATION SUMMARY

DATA VALIDATION SUMMARY Deal Test Site, Ocean Township, New Jersey

Laboratory Lot #9710L573

VOA Analysis

- 1. All holding times were met with the exceptions of samples GW1 and GW2. These two samples had pH > 2.0, indicating the samples were not properly preserved. The analysis holding time was reduced to 7 days as a result. Both samples were analyzed outside the 7-day holding time. All results were qualified as estimated (J).
- 2. MS/MSD were analyzed on sample GW2.
- 3. The moisture contents of samples S1, S3, and S5 are >50%; therefore the results of these samples were qualified as estimated (J).
- 4. The presence of chloromethane, methylene chloride, and acetone were qualified as non-detected (U) for blank contamination.

BNA Analysis

- 1. All holding times were met.
- 2. All results of samples S1, S3, and S5 were qualified as estimated for percent moisture being >50%.
- 3. The aldol condensation product were rejected [R] in soil samples S2 and S4. The TIC retention time (Rt) at 7.85 in sample GW1 and the TIC Rt= 7.86 in sample GW2 were rejected for blank contamination.
- 4. The detections of benzoic acid and bis(2-ethylhexyl)phthalate were qualified as non-detect (U) for blank contamination.

Pesticides/PCBs Analysis

- 1. All holding times were met.
- 2. The results of soil samples S1, S3, and S5 were qualified as estimated for percent moisture being >50%.
- 3. All soil samples and water sample GW2 were analyzed at various dilutions. As a result, the reporting limits were elevated. None of the target compounds were detected. No surrogate compounds were recovered.

Metals Analysis

- 1. All holding times were met.
- 2. The results of lead reported for samples S3 and S5 were rejected [R] for their concentrations less than 5x the field blank concentration.
- 3. The soil LCS recoveries for silver and lead were outside the QC limits established by the lab. The results of silver and lead were qualified as estimated for all soil samples.
- 4. For sample GW1, total and dissolved metals were analyzed. The RPDs were >10% for As, Ba, Cd, Cr, Pb, and Se. As a result, these results were qualified as estimated for both analyses.
- 5. MS/MSD were performed for mercury.
- 6. The results of soil samples S1, S3, and S5 were qualified as estimated for percent moisture >50%.

Laboratory Lot #9710L600

VOA Analysis

- 1. All holding times were met.
- 2. The results of S7 and S9 were qualified as estimated for percent moisture >50%.
- 3. Sample S9 was also qualified for surrogate recovery out of QC limit.
- 4. For sample GW5, all compounds but carbon disulfide were qualified as estimated for surrogate recovery out of QC limit. The carbon disulfide result should be reported from the dilution analysis, which had all surrogate recoveries within the QC limits.
- 5. Sample S7 was designated for MS/MSD analysis but was not placed in the vials labeled for such purposes. These vials contained matrix spike solution. As a result, MS/MSD were not analyzed by the lab. MS/MSD was performed for sample GW2 (for both lots: 9710L573 and 9710L600).
- 6. The presence of methylene chloride and acetone in the samples were qualified as non-detect (U) due to blank contamination.

BNA Analysis

- 1. All holding times were met.
- 2. The results of S7 and S9 were qualified as estimated for percent moisture >50%.
- 3. Some TICs were rejected for blank contamination.

4. The presence of benzoic acid and bis(2-ethylhexyl)phthalate in the samples were qualified as non-detect (U) for blank contamination.

Pesticides/PCBs Analysis

- 1. All holding times were met.
- 2. The results of samples S7 and S9 were qualified as estimated for percent moisture >50.
- 3. All soil samples were analyzed at various dilution due to matrix interference. No surrogate compounds were recovered. No target compounds were detected at elevated reporting limits.
- 4. Sample S7 was designated for MS/MSD but was not extracted. A MS/MSD was run on lot #9710L573.

Metals Analysis

- 1. All holding time were met.
- 2. The field blank (of the filter apparatus) was collected for dissolved metals only; therefore it was only used for qualifying water samples for dissolved metal analysis.
- 3. Soil LCS recoveries were lower than the QC limits for silver and lead. The results of silver and lead were qualified as estimated for all soil samples.
- 4. The arsenic recoveries in the soil MS/MSD were less than the QC limit. All soil arsenic results were qualified as estimated.
- 5. The lab duplicate analysis was performed on soil sample S7. The RPD of selenium was outside the QC limit. The selenium result of S7 was qualified as estimated.
- 6. The water method blank contained chromium at concentration greater than IDL but less than the CRDL. The chromium results in the following samples were qualified as non-detect (U) for their concentrations < 10x blank concentration: SW2 (total), GW2 (dissolved), GW4 (dissolved), and SW2 (dissolved).
- 7. The field blank FB03 contained barium, chromium, and selenium at concentrations less than the CRDL but above the IDL. It also contained lead at a concentration above the CRDL. The detections of these analytes in some water samples (dissolved analysis) were qualified as non-detect for their concentrations being less than 5x the field blank concentrations.
- 8. The differences between total and dissolved analyses in some samples exceeded the 10% limit. The affected sample results (from both total and dissolved analyses) were qualified as estimated.