U.S. Army Corps of Engineers
Louisville District

Defense Environmental Restoration Program
For
Formerly Used Defense Sites

Limited Site Investigation

Final Report

for
the former

Plum Brook Ordnance Works

Ash Pits Numbers 1 and 3

Sandusky, Ohio
Project Number G05OH001821

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List of Acronyms

AST	Above Ground Storage Tank
BTEX	benzene, toluene, ethylbenzene, xylene
bgs	below ground surface
CELRH	Corps of Engineers, Great Lakes and Ohio River Division, Huntington District
CELRL	Corps of Engineers, Great Lakes and Ohio River Division, Louisville District
CERCLA	Comprehensive Environmental Response, Compensation, Liability Act of 1980
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System
COC	chain of custody
D&D	decontamination & decommissioning
DERP	Defense Environmental Restoration Program
DNT	dinitrotoluene
DOD	U.S. Department of Defense
ERIIS	Environmental Risk Information & Imaging Services
ERNS	Emergency Response Notification System
FUDS	Formerly Used Defense Sites
gpm	gallons per minute
GSA	General Services Administration
HTRW	Hazardous, Toxic, and Radiological Waste

RCRIS_CA	Resource Conservation and Recovery Information System- TSD's Subject to Corrective Action
RCRIS_LG	Resource Conservation and Recovery Information System- Large Quantity Generators
RCRIS_SG	Resource Conservation and Recovery Information System- Small Quantity Generators
RCRIS_TS	Resource Conservation and Recovery Information System- NON-Corrective Action TSD Facility
RST	Ohio Underground Storage Tank Report
SAP	sampling and analysis plan
SI	site investigation
SWF	Ohio Solid Waste Facility List
TAL	target analyte list
TOC	Total Organic Carbon
TNT	trinitrotoluene
V-J Day	Victory over Japan day (September 2, 1945)
USACE	U.S. Army Corp of Engineers
USCS	Unified Soil Classification System
USEPA	U.S. Environmental Protection Agency

1.0 INTRODUCTION

Located near Sandusky Ohio, the former Plum Brook Ordnance Works (PBOW) was operated from 1941 to 1945 by the Department of Defense (DOD) as a manufacturing plant for trinitrotoluene (TNT), dinitrotoluene (DNT), and pentolite. Contamination detected at the installation by several studies has been related to past activities and is being addressed by the DOD under the Defense Environmental Restoration Program (DERP), Formerly Used Defense Sites (FUDS).

A limited Site Investigation (SI) of ash pits 1 and 3 was conducted and is reported herein. The potential for contamination of the tank area was identified in an Inventory Project Request (INPR) (Huntington District U.S. Army Corps of Engineers USACE, 1998). The purpose of this limited Site Investigation (SI) was to evaluate the potential for contamination of the former ash pit areas that may have resulted from past Department of Defense (DOD) activities. The Reference sections of this report identifies the guidance documents and information used to complete this investigation. Historical information was reviewed to identify the environmental media and locations most likely affected. Field sampling, a visual survey, and chemical analyses were performed to evaluate the environmental media and site conditions. Results of the laboratory analyses were then compared to risk-based, media specific screening criteria. United States Environmental Protection Agency (USEPA) Region 9 Preliminary Remediation Goals (PRGs) were used for the screening criteria.

This project is one of several limited SI projects simultaneously undertaken by the US Army Corps of Engineers to be executed by the Louisville District (CELRL) under the direction of the Huntington District (CELRH).

The sampling and chemical laboratory analyses were performed in accordance with the Quality Assurance Project Plan (QAPP) prepared by the U. S. Army Corps of Engineers, Louisville District, dated June 1999.

1.1 Site Description/History

1.1.1 Installation

Land for the original PBOW facility was acquired by the Department of War in 1938 and consisted of approximately 9,010 acres of land. In the early 1940s, the U.S. Army contracted with Trojan Powder Company to manufacture 2,4,6-TNT, dinitrotoluene and pentolite at PBOW. Production began on December 16, 1941 and continued through late 1945, ceasing two weeks after V-J Day (September 2, 1945). After operations ceased,

1.1.2 Site Specific

The locations of the subject ash pits are shown in Figures 3-1 and 3-2. During the period when PBOW was operational, DOD constructed and utilized three power stations corresponding to the Power and Maintenance areas 1, 2, and 3. Each power station consisted of a main powerhouse, a coal storage area, and a diked area containing fuel oil above ground storage tanks (ASTs). Each power house building consisted of a boiler house, compressor room, electrical room, filter room, and locker room. The buildings also contained two to four large coal-burning boilers, a turboelectric generator, a feed water treatment system, and several steam driven or electric air compressors. The generated steam was used for space heating, driving compressors, and generating electrical power. Coal ash generated from each of the boilers in the powerhouse was collected in pits. Water was added to the ash and the water/ash slurry flowed through a sluice trench to the ash sump located at the end of the building. From the ash sump, the ash traveled through a pipeline to a nearby surface water impoundment (ash pit) (D&M, 1997). Information concerning the status and/or use of the ash pits following the war is limited. During the 1960's, the power plant facility at Power, and Maintenance Area 3 was remodeled to become the K Site Test Facility (NASA-PBS) (MK, 1994).

Based on topographical quadrangles (dated 1959 & 1969), aerial photographs, and the visual site survey (section 3.1, herein), the ash pit areas have essentially remained unchanged. Exceptions to this are that ash pit 1 has become overgrown with thick vegetation. Powerhouse 3 area has been reconfigured by NASA and is now a research facility (K-site). The K-site research facility is in operation and is currently supplying non-contact cooling water to the former ash pit, which is now holding water. The depth of the water in the pit has not been ascertained. A pipe at the northeastern corner of the pit is supplying the cooling water. It is possible that this is the original pipe that once supplied the ash slurry to the pit. The boundaries of the pit appear to be the same as the original boundaries, with the exception of an indention to the west on the eastern boundary. Figures 1-5 through 1-7 are aerial photographs taken of the two areas in 1997 & 1950. Appendix B provides historical topographic quadrangles dated 1959 and 1969.

Environmental Information and Imaging Services (ERIIS) performed a database search of the PBOW vicinity. The data base search included those sites within close proximity to the PBOW that are currently listed under the following database records:

- National Priorities List (NPL)
- Resource Conservation and Recovery Information System- TSD's: Subject to Corrective Action (RCRIS_CA)
- Resource Conservation and Recovery Information System- Non-Corrective Action TSD Facilities (RCRIS_TS)
- Comprehensive Environmental Response, Compensation and liability Information System (CERCLIS)
- No Further Remedial Action Planned Sites (NFRAP)
- Resource conservation and Recovery Information System-Large Quantity Generators (RCRIS_LG)

Ash pit 3 is primarily located on a flat grassland area at an elevation of approximately 635 feet msl. The ash pit is located west of Ransom Road and south of Maintenance Road within the boundaries of the NASA K-site research facility (formerly Powerhouse 3). The surrounding area around the ash pit is at an elevation of 640 feet msl. Railroad tracks running in a north-south direction are present at the site, but have been abandoned. The pit is partially surrounded by thick vegetation, mature and smaller trees. The original surface water impoundment (ash pit) is still intact and is currently holding water supplied by NASA's K-site research facility. The water is discharged from the former ash pit by means of an east-west trending drainage ditch that eventually discharges into Pipe Creek.

1.4 Geology

Two formations of the Devonian Age underlay both ash pits 1 and 3. The oldest formation is the Delaware Limestone, which is characterized as a hard, dense, finely crystalline limestone and dolomite. Dissolution of this unit has produced solution channels along bedding planes and joints, and even producing caverns in some areas. The unit is typically buff colored and is fossiliferous. Overlaying the Delaware Limestone is the Olentangy Formation. This formation is made up of two members, the Plum Brook Shale and the overlying Prout Limestone. Only the Plum Brook Shale member should be encountered at the ash pits. The Plum Brook Shale is interpreted to consist of approximately 35 feet of bluish gray, soft, fossiliferous shale containing thin layers of dark, hard, fossiliferous limestone. The Olentangy formation is the first natural boundary beneath the ash pits at an approximate depth of 25 feet below ground surface. (IT, 1999)

The overburden soils at both ash pits is predominately composed of glacial till, outwash, or lacustrine (lake) deposits. It is assumed that the overburden at both pits is approximately 25 feet thick (IT, 1999). The surface soil at both sites is of the Kibbie-Elnora-Tuscola-Colwood Association (ODNR, 1994). This association is described as nearly level to gently sloping. The soil is described as somewhat poorly drained, moderately well drained, and very poorly drained formed in outwash, lucrastine, and deltaic sediments. Based on review of soil boring logs advanced in the vicinity of the former ash pits (IT,1999), overburden soils generally consists of an upper layer of silty fine sand and silt of low plasticity. These materials typically are classified as SM and ML, respectively, in accordance with the Unified Soil Classification System (USCS). This upper layer is generally underlain by silty clay of low to high plasticity extending to bedrock. This material was typically classified as CL or CH in accordance with the USCS.

1.5 Hydrogeology

Based on a review of the site wide groundwater study, ground water is encountered in the bedrock units underlying the ash pit sites (IT, 1999). Generally the groundwater flows northward toward Lake Erie. Groundwater in the overburden soils is generally expected to be perched or trapped water. Perched water occurs in irregular, discontinuous granular zones within the soil overburden. Perch water sources contain widely varying quantities of water depending on recent precipitation and other site-specific factors. No

- Ash pit 1 was over grown with thick vegetation and a thicket of small trees ranging from 3 to 8 feet tall.

- NASA personnel informed the field team that there was an underground, high-voltage, utility line running through ash pit 1 in a north - south direction. NASA personnel cleared a path running in a north and south direction through ash pit 1, and staked the utility line. The field team was informed that no borings should be advance within 10 feet of the utility line. An additional path was cleared in an east west direction. These paths improved access to the ash pit. NASA personnel also informed the field team of an underground telephone line running approximately 5 feet to the south of Maintenance Road in an east west direction.

- A culvert and associated drainage ditch was located approximately 5 feet due north of ash pit 1. The culvert runs directly under Maintenance Road. The culvert did not contain any water. The drainage ditch on the northern side of Maintenance Road was over grown and access was limited. It did not appear that this ditch contained any water.

- A larger drainage ditch located northwest of ash pit 1 was located. This larger ditch did contain water and was flowing in a northeastern direction.

- Powerhouse 3 was located and is now NASA's K site research facility. This building is an active research facility. The abandoned railroad tracks were also located.

- Ash pit 3 was located. It is currently holding water being supplied by the K-site research facility. A steel pipe supplying the water to the former ash pit appears to be original. Thick vegetation and mature trees surround the ash pit. The depth of the water was not ascertained.

- A drainage ditch was located to the west of ash pit 3. The water in the ditch was being supplied by ash pit 3. There appeared to be a drop in elevation from the ash pit to the ditch. The water in the ditch was flowing to the west.

- The site features appeared consistent with what was anticipated to be found at both ash pit areas.

3.2 Surface and Subsurface Soil Sampling

A total of 4 borings were advanced at ash pit 1. One surface soil sample was also collected. The locations of the borings are displayed in Figure 3-1. The following is a description of the ash pit 1boring and surface soil sample locations:

3.3 Surface Water and Sediment Sampling

A total of four surface water samples and three sediment samples were collected. All surface water and sediment samples were co-located. One surface water and one sediment sample was collected in the drainage ditch north west of ash pit 1. The second surface water and sediment sample was collected at the northeast corner of ash pit 3. This location is where NASA is presently releasing non-contact cooling water into the former ash pit. The third surface water and sediment sample was collected where water is discharged from ash pit 3. The fourth surface water sample was collected approximately 100 feet down gradient of ash pit 3 in the drainage ditch. A sediment sample was not collected at this location. The locations of these samples are depicted in Figure 3-1. All surface water and sediment samples were collected following decontamination and sampling procedures documented in the QAPP dated May 1999.

3.4 Surveying

All of the borings and sample locations were surveyed to the nearest 0.01 foot and referenced to the Ohio State Plane Coordinate System. Table 3-2 displays the Ohio State Plane Coordinates (Northing, Easting) and surface elevations of the boring and sampling locations.

4.0 ANALYTICAL RESULTS

Six soil samples, three sediment samples, four surface water samples, and associated field duplicates were collected from ash pits 1 and 3 and submitted for laboratory analyses. These samples were analyzed for metals and SVOCs. The analytical report from the laboratory is located in Appendix F. The analytical results are summarized below.

4.1 Semivolatile Analysis

SVOC analysis was performed in accordance with guidelines in the United States Environmental Protection Agency (USEPA) document entitled *Test Methods for Evaluating Solid Waste, Physical and Chemical Methods (SW-846)* method 8270C (USEPA, 1996). SVOCs were not detected in any of the samples collected. None of the SVOCs concentrations exceeded the media specific-screening criteria (USEPA Region 9 preliminary remediation goals (PRGs)). However, reporting limits for several compounds were higher than the PRGs used for comparison (see Variance Report Appendix H and Table 4-4). The required reporting limits could not be obtained by using the selected analytical method.

6.0 VARIANCES/NONCONFORMANCES

For the purpose of this investigation, variances are defined as necessary changes or modifications to the planned activities as specified by the Quality Assurance Project Plan (QAPP), or Field Sampling Plan (FSP). Variances do not significantly affect the quality of the data or process being modified. However, nonconformances are defined as malfunctions, deficiencies, or deviations that may render the quality of information or data unacceptable or indeterminate. There were no nonconformances during this site investigation. The variances during this site investigation (SI) are listed in Appendix H.

7.0 SUMMARY AND CONCLUSIONS

The site investigation of the ash 1 and 3 areas attempted to gather data necessary to evaluate the site for contamination due to past DOD activities. The referenced information was reviewed and soil, sediment, and surface water samples were collected and analyzed to assess the environmental media at both sites. Activities included document research, a visual site survey, sample collection, and chemical laboratory analysis.

- The ash pit areas are located within the PBS. PBS is a large NASA research and testing facility surrounded by residential, agricultural, and commercial development. The ash pit 1 area is currently abandoned and overgrown with thick vegetation. Ash pit 3 is located near an active research facility (K-site) operated by NASA, and is currently holding water.

- At the time of DOD occupancy, the ash pits were used to store ash created by coal burning power plants that supplied power for the original PBOW. Since DOD occupancy, it appears the surrounding area of the ash pits has essentially remained unchanged.

- No previous investigations have taken place at the ash pit areas.

- Six soil samples (some containing ash/cinders), three sediment samples, four surface water samples, and associated field duplicates were collected from ash pits 1 and 3 and submitted for laboratory analyses. SVOCs were not detected in any of the samples. Several metals detected exceeded the screening criteria (USEPA Region 9 PRGs)

8.0 RECOMMENDATIONS

Based on the results of this SI, it is possible that past DOD activities at the ash pit areas have negatively impacted the environment. However, it is also possible that the metal concentrations that exceed the screening criteria are consistent with background metal concentrations. Metal concentrations at the ash pit areas are significant enough to require further investigation. Therefore, the U.S. Army Corps of Engineers, Louisville District

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Trojan Powder Company, June 6, 1945, "Plat Showing Proposed Drainage Power House Number 1 Ash Pit and Relocated Ash Sluice Discharge Line," Drawing No. 1664-T-401-2-2/2.

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TABLES

TABLE 3-1 Samples Collected for SI investigation

Sample Identification	Date Collected	Analyses
PBOW99SBA101A	11 June 1999	Metals, SVOCs
PBOW99SBA101A-DUP	11 June 1999	Metals, SVOCs
PBOW99SBA102A	10 June 1999	Metals, SVOCs, TOC, Geotechnical
PBOW99SBA103A	10 June 1999	Metals, SVOCs
PBOW99SBA103B	10 June 1999	Metals, SVOCs, TOC, Geotechnical
PBOW99SBA104B	10 June 1999	Metals, SVOCs
PBOW99SSA101	10 June 1999	Metals, SVOCs
PBOW99SWA101	11 June 1999	Metals, SVOCs
PBOW99SDA101	11 June 1999	Metals, SVOCs
PBOW99SWA301	11 June 1999	Metals, SVOCs
PBOW99SWA302	11 June 1999	Metals, SVOCs
PBOW99SDA302	11 June 1999	Metals, SVOCs
PBOW99SWA303	11 June 1999	Metals, SVOCs
PBOW99SWA303-DUP	11 June 1999	Metals, SVOCs
PBOW99SDA303	11 June 1999	Metals, SVOCs
PBOW99SDA303-DUP	11 June 1999	Metals, SVOCs

Table 3-2 Coordinates and Surface Elevations of Sample Locations

Boring Number	Northing	Easting	Ground Surface Elevation (msl)*
PBOW99SBA101A	623635.45	1918798.83	634.1
PBOW99SBA102A	623542.08	1918825.71	636.1
PBOW99SBA103A	623534.98	1918913.22	636.2
PBOW99SBA104B	623532.10	1918823.77	636.0
PBOW99SSA101	623583.46	1918868.92	634.7
PBOW99SWA101**	623831.20	1918762.19	628.0
PBOW99SWA301	622893.71	1914172.32	634.3
PBOW99SWA302**	622891.83	1914320.26	635.0
PBOW99SWA303**	623092.77	1914581.03	634.9

* = (msl) mean sea level

** = Surface water and Sediment samples collocated

TABLE 4-1: Summary of Frequency, Minimum, and Maximum Metal Detection in Soil Samples

Metals	Frequency of Detection	Minimum Detected Concentration		Maximum Detected Concentration	
		mg/kg	Location/Depth	mg/kg	Location/Depth
Aluminum	6 / 6	7360	SBA101A, 1 ft	16600	SSA101, 0 ft
Arsenic	6 / 6	6.2	SBA101A, 1 ft	31.2	SSA101, 0 ft
Barium	6 / 6	41.3	SBA103A, 1 ft	163	SBA102A, 1 ft
Beryllium	1 / 6	ND	- -	1.5	SSA101, 0 ft
Chromium	6 / 6	10.5	SBA104B, 1 ft	20.7	SBA103B, 4 ft
Cobalt	5 / 6	ND	SBA103A, 1 ft	26.0	SSA101, 0 ft
Copper	6 / 6	13.5	SBA103A, 1 ft	34.2	SSA101, 0 ft
Iron	6 / 6	18,500	SBA101A, 1 ft	95,100	SBA102A, 1 ft
Lead	6 / 6	4.9	SBA104B, 1 ft	10.9	SBA103B, 4 ft
Manganese	6 / 6	125	SBA103A, 1 ft	1370	SSA101, 0 ft
Nickel	6 / 6	16.1	SBA102A, 1 ft	79.2	SSA101, 0 ft
Selenium	4 / 6	0.97	SBA103B, 4 ft	2.7	SBA104B, 1 ft
Vanadium	6 / 6	14.4	SBA104B, 1 ft	39.2	SBA103A, 1 ft
Zinc	6 / 6	10.7	SBA102A, 1 ft	95.8	SSA101, 0 ft

ND = Non Detect
- - = More than one location exhibited the detection indicated

TABLE 4-2: Summary of Frequency, Minimum, and Maximum Metal Detection in Sediment Samples

Metals	Frequency of Detection	Minimum Detected Concentration		Maximum Detected Concentration	
		mg/kg	Location	mg/kg	Location
Aluminum	3 / 3	1800	SDA303	11,400	SDA101
Arsenic	3 / 3	3.6	SDA303	41.5	SDA101
Barium	2 / 3	47.8	SDA302	135	SDA101
Beryllium	1 / 3	ND	- -	0.9	SDA101
Chromium	3 / 3	5.6	SDA303	21.6	SDA101
Cobalt	1 / 3	ND	- -	41.4	SDA101
Copper	3 / 3	14.4	SDA302	71.8	SDA303
Iron	3 / 3	5880	SDA303	80,900	SDA101
Lead	3 / 3	5.1	SDA303	17.3	SDA101
Manganese	3 / 3	122	SDA303	1730	SDA101
Nickel	3 / 3	6.3	SDA303	47	SDA101
Selenium	1 / 3	ND	- -	1.1	SDA302
Vanadium	2 / 3	19.3	SDA302	73.5	SDA101
Zinc	3 / 3	24.4	SDA303	145	SDA101

ND = Non Detect
- - = More than one location exhibited the detection indicated

TABLE 4-3: Summary of Frequency, Minimum, and Maximum Metal Detection in Surface Water Samples

Metals	Frequency of Detection	Minimum Detected Concentration		Maximum Detected Concentration	
		µg/L	Location	µg/L	Location
Aluminum	1 / 4	ND	- -	652	SWA101
Iron	4 / 4	429	SWA302	1390	SWA101
Manganese	4 / 4	48.4	SWA303	195	SWA301

ND = Non Detect
- - = More than one location exhibited the detection indicated

TABLE 4-4: SVOCs with Reporting Limits > USEPA Region 9 PRGs

Analyte	PRG Value (mg/kg)
Benzo(a)pyrene	0.056 **
bis(2-chloroethyl)ether	0.004 *
Dibenz(a,h)anthracene	0.056 **
3,3'-Dichlorobenzidine	0.07 *
2,4-Dinitrophenol	0.3 *
2,4-Dinitrotoluene	0.0008 *
2,6-Dinitrotoluene	0.0007 *
Hexachlorobenzene	0.28 **
Hexachloroethane	0.5 *
Isohporone	0.5 *
Nitrobenzene	0.1 *
N-Nitrosodi-n-propyl-amine	0.063 **
Pentachlorophenol	0.03 *

PRG = Preliminary Remediation Goal
* = Migration to Ground Water with a dilution attenuation factor of 20
** = Residential Soil

TABLE 4-5
ASH PIT 1 and 3 - METALS ANALYSIS

Sample ID				PBOW99SBA101A	PBOW99SBA101A-DUP	PBOW99SBA102A	PB0W99SBA103A
Matrix				SOIL	SOIL	SOIL	SOIL
Depth				1'	1'	1'	1'
Collection Date				11-Jun-99	11-Jun-99	10-Jun-99	10-Jun-99
METALS	Units	PRG	1/10th				
Aluminum	mg/kg	75000	7500	7360	**7740**	**12700**	**8310**
Antimony	mg/kg	5.0*	0.50	ND(1.3)	ND(1.5)	ND(2.6)	ND(1.7)
Arsenic	mg/kg	0.38	0.038	**6.2**	**10**	**19.6**	**9.4**
Barium	mg/kg	1600*	160	49.1	36.9	**163**	41.3
Berylium	mg/kg	63*	6.3	ND(.66)	ND(.76)	ND(.65)	ND(.84)
Cadmium	mg/kg	8.0*	0.8	ND(.26)	ND(.30)	ND(.52)	ND(.33)
Calcium	mg/kg	-	-	4260	3420	6600	5590
Chromium	mg/kg	38*	3.8	**12.1**	**14.3**	**12.2**	**18.1**
Cobalt	mg/kg	3300	330	7.7	ND(7.6)	6.8	ND(8.4)
Copper	mg/kg	2800	280	13.8	16.7	32.1	13.5
Iron	mg/kg	22000	2200	**18500**	**24700**	**95100**	**29000**
Lead	mg/kg	400	40	7.0	9.6	5.9	8.1
Magnesium	mg/kg	-	-	1520	1800	ND(654)	1470
Manganese	mg/kg	3100	310	**1170**	**480**	199	125
Mercury	mg/kg	22	2.2	ND(.13)	ND(.15)	ND(.13)	ND(.17)
Nickel	mg/kg	130*	13	**26.0**	**31.4**	**16.1**	**21.1**
Potassium	mg/kg	-	-	763	984	1090	ND(835)
Selenium	mg/kg	5.0*	0.5	ND(.66)	**1.0**	ND(1.3)	**1.2**
Silver	mg/kg	34*	3.4	ND(.66)	ND(.76)	ND(.65)	ND(.84)
Sodium	mg/kg	-	-	ND(656)	ND(758)	ND(654)	ND(835)
Thallium	mg/kg	-	-	ND(1.3)	ND(1.5)	ND(2.6)	ND(1.7)
Vanadium	mg/kg	520	52	16.5	24.0	17.8	39.2
Zinc	mg/kg	12000*	1200	56.2	70.1	10.7	43.5

All USEPA Region 9 PRG were selected from Residential values except where noted.
ND = Non-Detect
( ) = Reporting limit
* = USF^A region 9 Preliminary Remediation Goals Migration to Groundwat^ ^AF 20 (Dilution Attenuation Factor 20)

TABLE 4-5
ASH PIT 1 and 3 - METALS ANALYSIS

Sample ID				PB0W99SBA103B	PBOW99SBA104B	PBOWSSA101
Matrix				SOIL	SOIL	SOIL
Depth				4'	1'	SURFACE
Collection Date				10-Jun-99	10-Jun-99	10-Jun-99
METALS	Units	PRG	1/10th			
Aluminum	mg/kg	75000	7500	**12600**	**8820**	**16600**
Antimony	mg/kg	5.0*	0.50	ND(1.3)	ND(1.3)	ND(2.4)
Arsenic	mg/kg	0.38	0.038	**15.8**	**14.0**	**31.2**
Barium	mg/kg	1600*	160	78.9	160	132
Berylium	mg/kg	63*	6.3	ND(6.3)	ND(.65)	1.5
Cadmium	mg/kg	8.0*	0.8	ND(.25)	ND(.26)	ND(.49)
Calcium	mg/kg	-	-	3770	6080	59100
Chromium	mg/kg	38*	3.8	**20.7**	**10.5**	**13.5**
Cobalt	mg/kg	3300	330	14.8	8.6	26.0
Copper	mg/kg	2800	280	27.9	24.0	34.2
Iron	mg/kg	22000	2200	**45500**	**70300**	**73200**
Lead	mg/kg	400	40	10.9	4.9	5.6
Magnesium	mg/kg	-	-	4910	651	3770
Manganese	mg/kg	3100	310	**409**	181	**1370**
Mercury	mg/kg	22	2.2	ND(.13)	ND(.13)	ND(.24)
Nickel	mg/kg	130*	13	**44.3**	**16.7**	**79.2**
Potassium	mg/kg	-	-	1720	781	ND(1220)
Selenium	mg/kg	5.0*	0.5	**0.97**	**2.7**	**2.6**
Silver	mg/kg	34*	3.4	ND(.63)	ND(.65)	ND(1.2)
Sodium	mg/kg	-	-	ND(632)	ND(648)	ND(1220)
Thallium	mg/kg	-	-	ND(1.3)	ND(1.3)	ND(2.4)
Vanadium	mg/kg	520	52	26.8	14.4	23.0
Zinc	mg/kg	12000*	1200	74.5	11.9	95.8

All USEPA Region 9 PRG were selected from Residential values except where noted.
ND = Non-Detect
( ) = Reporting limit
* = USEPA region 9 Preliminary Remediation Goals Migration to Groundwater DAF 20 (Dilution Attenuation Factor 20)

TABLE 4-5
ASH PIT 1 and 3 - METALS ANALYSIS

Sample ID				PBOW99SDA101	PBOW99SDA302	PBOW99SDA303	BOW99SDA303-DUP
Matrix				SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
Depth				-	-	-	-
Collection Date				11-Jun-99	11-Jun-99	11-Jun-99	11-Jun-99
METALS	Units	PRG	1/10th				
Aluminum	mg/kg	75000	7500	**11400**	**7750**	1800	3150
Antimony	mg/kg	5.0*	0.50	ND(2.6)	ND(1.7)	ND(1.5)	ND(1.5)
Arsenic	mg/kg	0.38	0.038	**41.5**	**5.9**	**3.6**	**3.8**
Barium	mg/kg	1600*	160	135	47.8	ND(29.8)	ND(30.9)
Berylium	mg/kg	63*	6.3	0.9	ND(0.83)	ND(0.74)	ND(0.77)
Cadmium	mg/kg	8.0*	0.8	ND(0.53)	ND(0.33)	ND(0.30)	ND(0.31)
Calcium	mg/kg	-	-	5190	18100	4560	5620
Chromium	mg/kg	38*	3.8	**21.6**	**10.8**	**5.6**	**5.2**
Cobalt	mg/kg	3300	330	41.4	ND(8.3)	ND(7.4)	ND(7.7)
Copper	mg/kg	2800	280	20	14.4	71.8	76.2
Iron	mg/kg	22000	2200	**80900**	**12800**	**5880**	**7540**
Lead	mg/kg	400	40	17.3	11.9	5.1	8.3
Magnesium	mg/kg	-	-	2240	5670	2220	2920
Manganese	mg/kg	3100	310	**1730**	**318**	122	159
Mercury	mg/kg	22	2.2	ND(0.13)	ND(0.17)	ND(0.15)	ND(0.15)
Nickel	mg/kg	130*	13	**47**	**12.5**	6.3	6.8
Potassium	mg/kg	-	-	1310	1270	ND(744)	ND(773)
Selenium	mg/kg	5.0*	0.5	ND(1.3)	**1.1**	ND(0.74)	ND(0.77)
Silver	mg/kg	34*	3.4	ND(0.66)	ND(0.83)	ND(0.74)	ND(0.77)
Sodium	mg/kg	-	-	ND(657)	ND(828)	ND(744)	ND(773)
Thallium	mg/kg	-	-	ND(2.6)	ND(1.7)	ND(1.5)	ND(1.5)
Vanadium	mg/kg	520	52	**73.5**	19.3	ND(7.4)	9.4
Zinc	mg/kg	12000*	1200	145	48.3	24.4	28.2

All USEPA Region 9 PRG were selected from Residential values except where noted.
ND = Non-Detect
( ) = Reporting limit
* = USEPA region 9 Preliminary Remediation Goals Migration to Groundwater DAF 20 (Dilution Attenuation Factor 20)

TABLE 4-5
ASH PIT 1 and 3 - METALS ANALYSIS

Sample ID				PBOW99SWA101	PBOW99SWA301	PBOW99SWA302	PBOW99SWA303
Matrix				WATER	WATER	WATER	WATER
Depth				SURFACE	SURFACE	SURFACE	SURFACE
Collection Date				11-Jun-99	11-Jun-99	11-Jun-99	11-Jun-99
METALS	Units	PRG	1/10th				
Aluminum	ug/L	3700	370	**652**	ND(200)	ND(200)	ND(200)
Antimony	ug/L	15	1.5	ND(10.0)	ND(10.0)	ND(10.0)	ND(10.0)
Arsenic	ug/L	0.05	0.005	ND(10.0)	ND(10.0)	ND(10.0)	ND(10.0)
Barium	ug/L	2600	260	ND(200)	ND(200)	ND(200)	ND(200)
Berylium	ug/L	73	7.3	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)
Cadmium	ug/L	18	1.8	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)
Calcium	ug/L	-	-	36100	27900	27700	24400
Chromium	ug/L	-	-	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)
Cobalt	ug/L	2200	220	ND(50.0)	ND(50.0)	ND(50.0)	ND(50.0)
Copper	ug/L	1400	140	ND(25.0)	ND(25.0)	ND(25.0)	ND(25.0)
Iron	ug/L	11000	1100	**1390**	687	429	431
Lead	ug/L	4.0	0.40	ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)
Magnesium	ug/L	-	-	16800	9410	9470	8940
Manganese	ug/L	1700	170	78.8	**195**	153	48.4
Mercury	ug/L	11	1.1	ND(.20)	ND(.20)	ND(.20)	ND(.20)
Nickel	ug/L	730	73	ND(40.0)	ND(40.0)	ND(40.0)	ND(40.0)
Potassium	ug/L	-	-	ND(5000)	ND(5000)	ND(5000)	ND(5000)
Selenium	ug/L	180	18	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)
Silver	ug/L	180	18	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)
Sodium	ug/L	-	-	26900	9740	9840	10200
Thallium	ug/L	-	-	ND(10.0)	ND(10.0)	ND(10.0)	ND(10.0)
Vanadium	ug/L	260	26	ND(50.0)	ND(50.0)	ND(50.0)	ND(50.0)
Zinc	ug/L	11000	1100	ND(20.0)	ND(20.0)	ND(20.0)	ND(20.0)

All USEPA Region 9 PRG were selected from Residential values except where noted.
ND = Non-Detect
( ) = Reporting limit
* = USEPA region 9 Preliminary Remediation Goals Migration to Groundwater DAF 20 (Dilution Attenuation Factor 20)

TABLE 4-5
ASH PIT 1 and 3 - METALS ANALYSIS

Sample ID				PBOW99SWA303-DUP
Matrix				WATER
Depth				SURFACE
Collection Date				11-Jun-99
METALS	Units	PRG	1/10th	
Aluminum	ug/L	3700	370	ND(200)
Antimony	ug/L	15	1.5	ND(10.0)
Arsenic	ug/L	0.05	0.005	ND(10.0)
Barium	ug/L	2600	260	ND(200)
Berylium	ug/L	73	7.3	ND(5.0)
Cadmium	ug/L	18	1.8	ND(2.0)
Calcium	ug/L	-	-	24500
Chromium	ug/L	-	-	ND(5.0)
Cobalt	ug/L	2200	220	ND(50.0)
Copper	ug/L	1400	140	ND(25.0)
Iron	ug/L	11000	1100	251
Lead	ug/L	4.0	0.40	ND(3.0)
Magnesium	ug/L	-	-	9040
Manganese	ug/L	1700	170	34.9
Mercury	ug/L	11	1.1	ND(.20)
Nickel	ug/L	730	73	ND(40.0)
Potassium	ug/L	-	-	ND(5000)
Selenium	ug/L	180	18	ND(5.0)
Silver	ug/L	180	18	ND(5.0)
Sodium	ug/L	-	-	10500
Thallium	ug/L	-	-	ND(10.0)
Vanadium	ug/L	260	26	ND(50.0)
Zinc	ug/L	11000	1100	ND(20.0)

All USEPA Region 9 PRG were selected from Residential values except where noted.
ND = Non-Detect
( ) = Reporting limit
* = US[illegible] region 9 Preliminary Remediation Goals Migration to Groundwat [illegible]F 20 (Dilution Attenuation Factor 20)

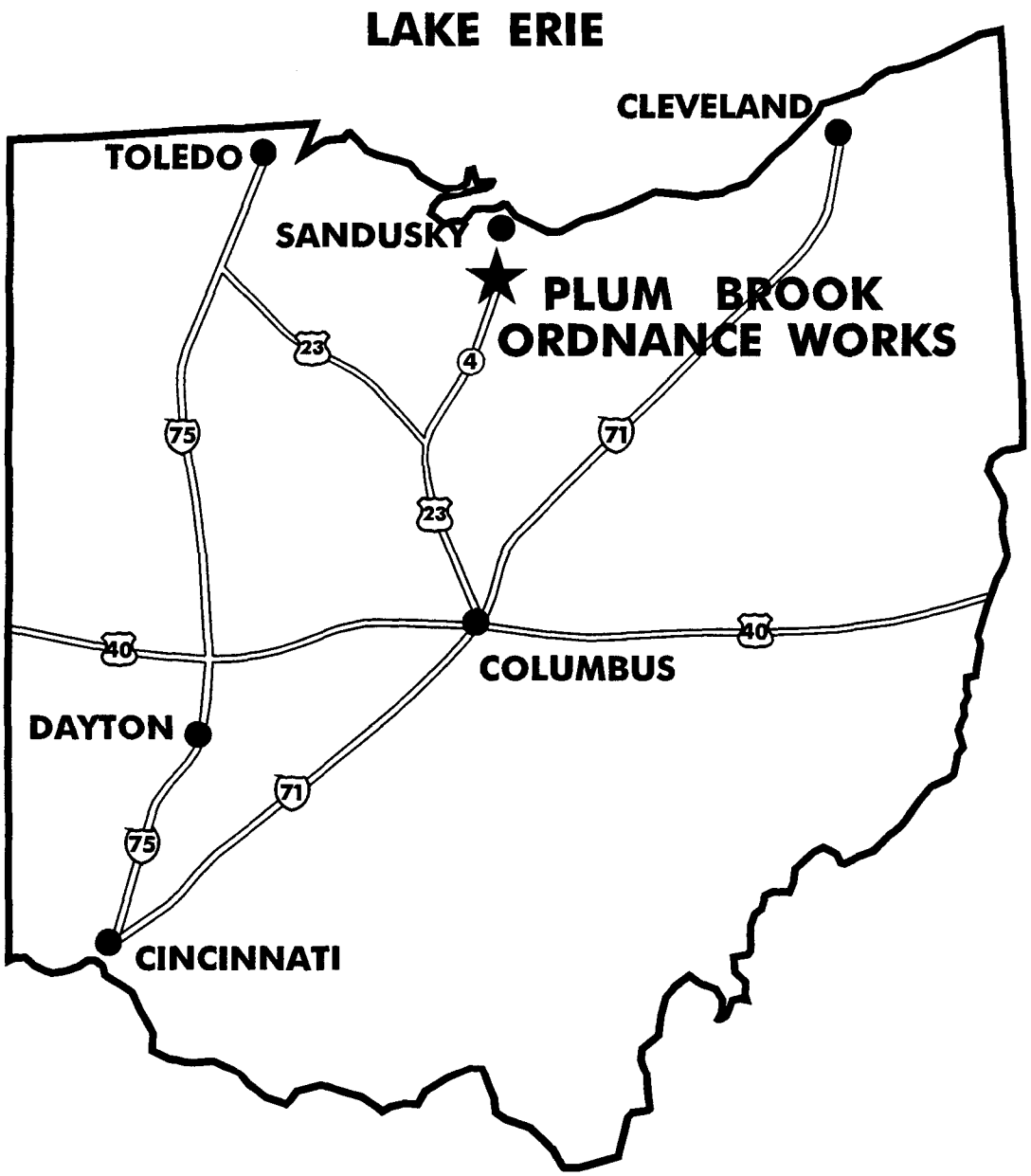
FIGURES

Design By:	Drawn By:	Checked By:	US Army Corps of Engineers
Reviewed By:	Approved By:		
Date:	Scale:		
Drawing Code:	Sheet Ref. No.		FIGURE 3-2a

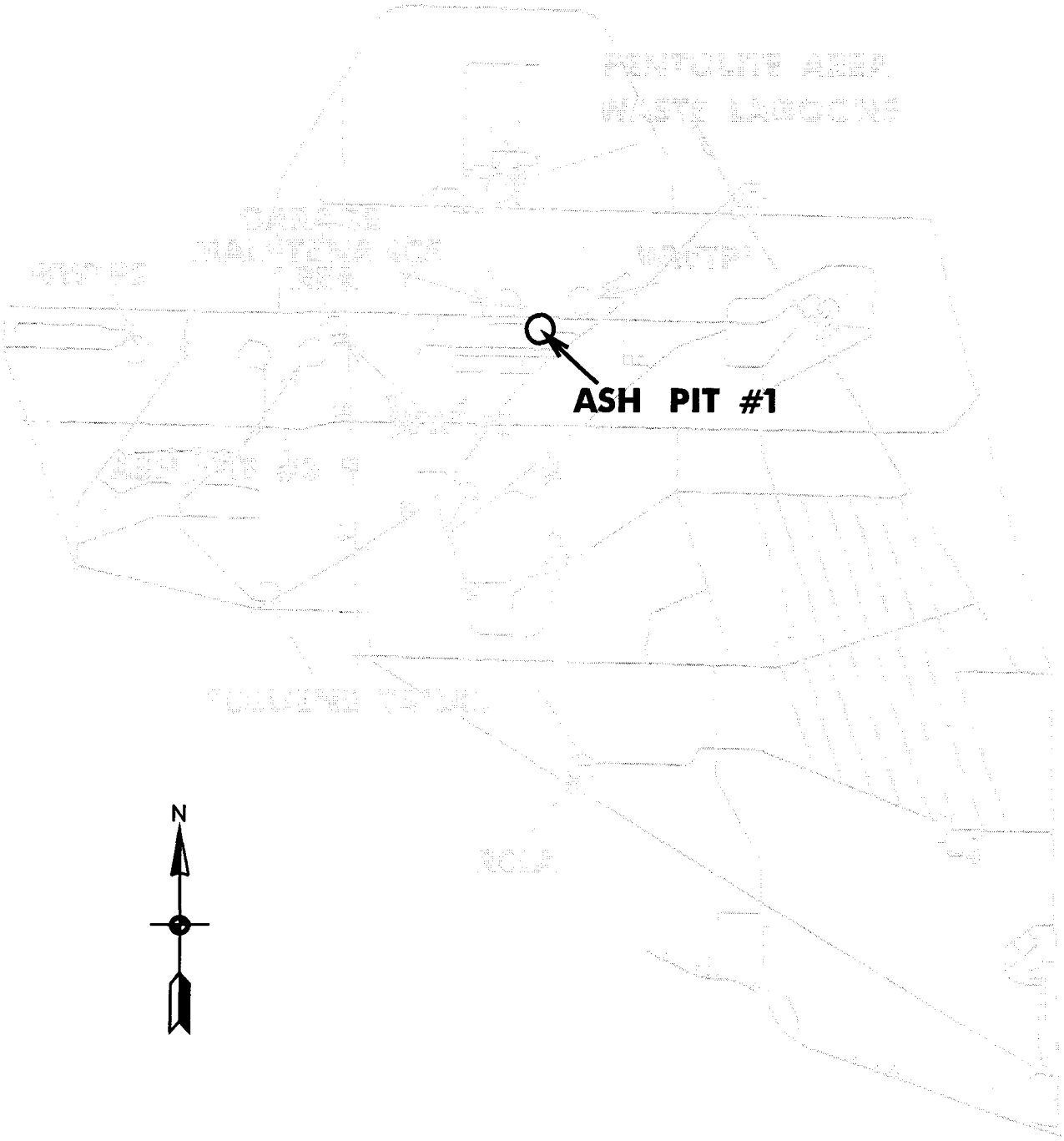
Design By:	Drawn By:	Checked By:	US Army Corps of Engineers
Reviewed By:	Approved By:		
Date:	Scale:	Drawing Code:	Sheet Ref. No.
			FIGURE 3-1b

Design By:	Drawn By:	Checked By:	US Army Corps of Engineers
Reviewed By:	Approved By:		
Date:	Scale:	Drawing Code:	Sheet Ref. No.

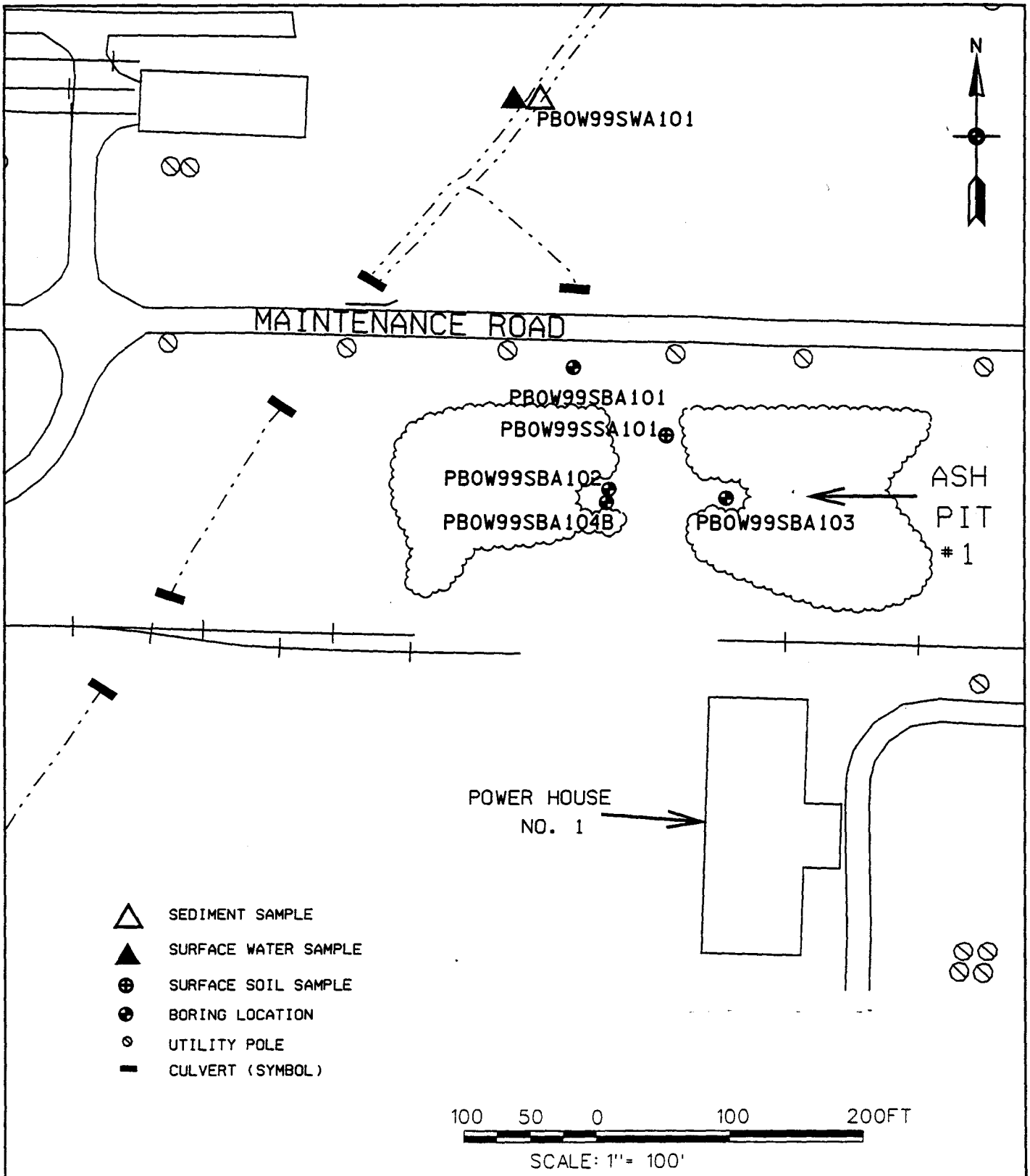
FIGURE 3-1a



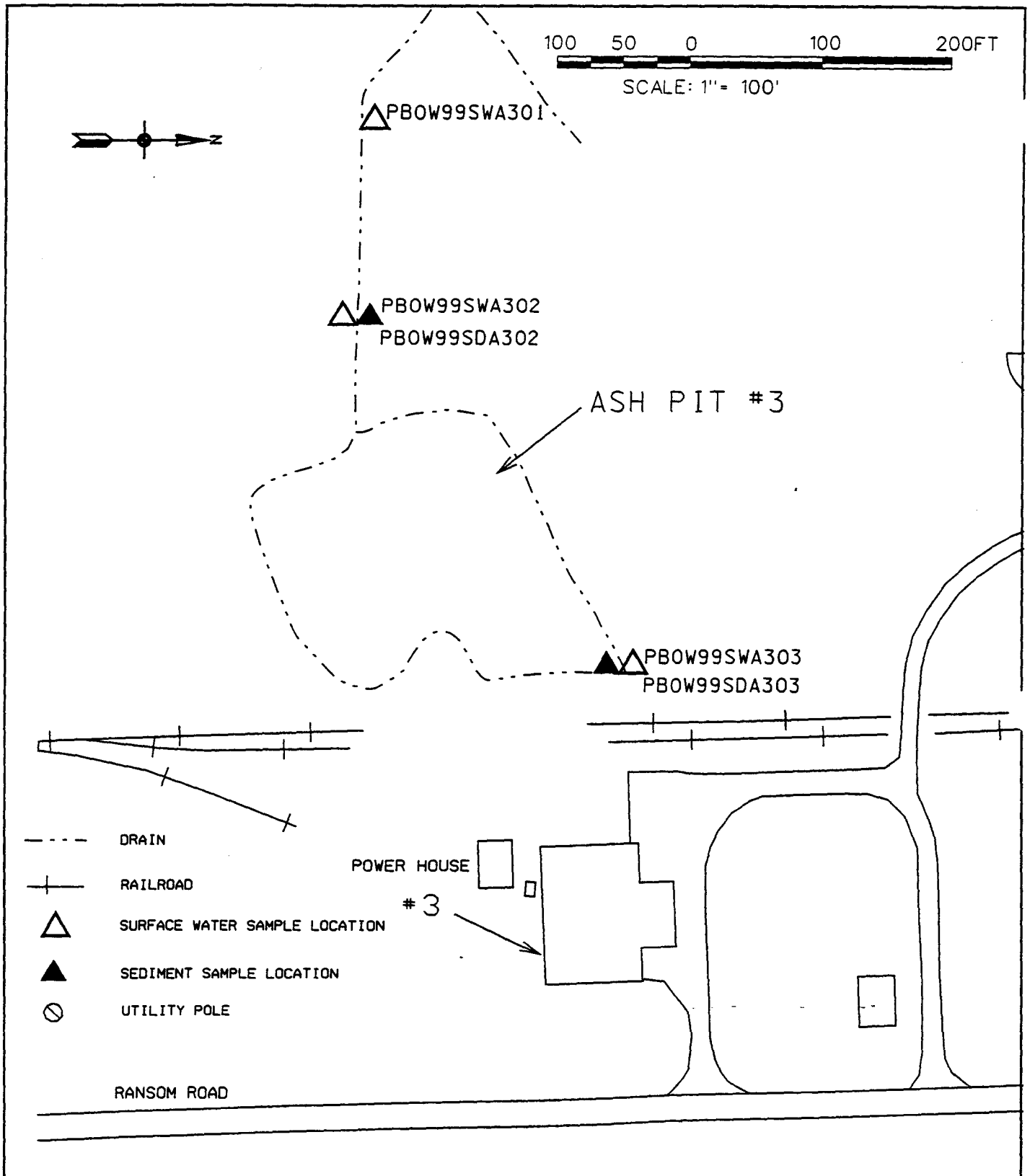
Design By:	Drawn By: WDB	Checked By:	US Army Corps of Engineers	VICINITY LOCATION PLAN PLUM BROOK ORDNANCE WORKS SANDUSKY, OHIO	
Reviewed By:	Approved By:				
Date: AUG 1999	Scale: NONE		Drawing Code:	Sheet Ref. No.	FIGURE 1-1



Design By:	Drawn By: WDB	Checked By:	US Army Corps of Engineers	SITE LOCATION PLAN ASH PIT NUMBER ONE PLUM BROOK ORDNANCE WORKS SANDUSKY, OHIO	
Reviewed By:	Approved By:				
Date: AUG 1999	Scale: NONE		Drawing Code:	Sheet Ref. No.	FIGURE 1-3



Design By:	Drawn By: WDB	Checked By:	US Army Corps of Engineers	SAMPLE LOCATION PLAN ASH PIT NUMBER ONE PLUM BROOK ORDNANCE WORKS SANDUSKY, OHIO
Reviewed By:	Approved By:			
Date: AUG 1999	Scale: 1" = 100'	Drawing Code:	Sheet Ref. No.	FIGURE 3-1

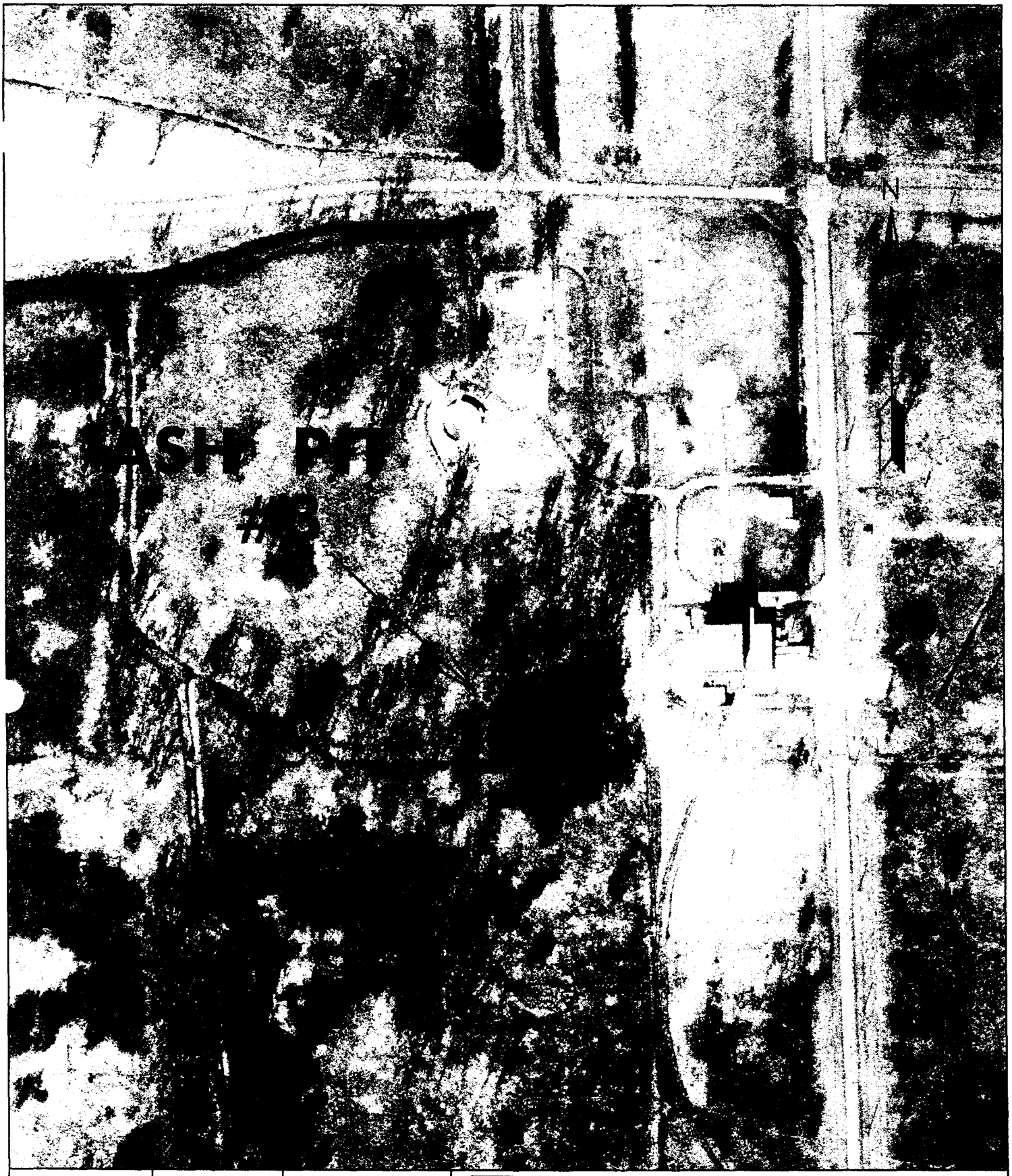


Design By:	Drawn By: WDB	Checked By:	US Army Corps of Engineers	SURFACE WATER LOCATION PLAN ASH PIT NUMBER 3 PLUM BROOK ORDNANCE WORKS SANDUSKY, OHIO		
Reviewed By:	Approved By:					
Date: AUG 1999	Scale: 1" = 100'		Drawing Code:		Sheet Ref. No.	FIGURE 3-2

Design By:	Drawn By: WDB	Checked By:	US Army Corps of Engineers	ASH PIT NUMBER ONE ILLUSTRATED ON 1997 AERIAL PHOTOGRAPH PLUM BROOK ORDANCE WORKS SANDUSKY, OHIO
Reviewed By:	Approved By:			
Date: AUG 1999	Scale: 1" = 200'	Drawing Code:	Sheet Ref. No.	FIGURE 1-5

Design By:	Drawn By: WDB	Checked By:	US Army Corps of Engineers	ASH PIT NUMBER ONE FROM c. 1950 AERIAL PHOTOGRAPH PLIM BROOK ORDNANCE WORKS SANDUSKY, OHIO	
Reviewed By:	Approved By:				
Date: AUG 1999	Scale: 1" = 300'		Drawing Code:	Sheet Ref. No.	FIGURE 1-6

Design By:	Drawn By: WDB	Checked By:	US Army Corps of Engineers	ASH PIT NUMBER 3 FROM c. 1950 AERIAL PHOTOGRAPH PLUM BROOK ORDNANCE WORKS SANDUSKY, OHIO	
eviewed By:	Approved By:				
Date: AUG 1999	Scale: 1" = 300'		Drawing Code:	Sheet Ref. No.	FIGURE 1-7



Design By:	Drawn By: WDB	Checked By:	US Army Corps of Engineers	ASH PIT NUMBER 3 ILLUSTRATED ON 1997 AERIAL PHOTOGRAPH PLUM BROOK ORDNANCE WORKS SANDUSKY, OHIO	
.eviewed By:	Approved By:				
Date: AUG 1999	Scale: 1" = 200'		Drawing Code:	Sheet Ref. No.	FIGURE 1-8

Appendix A - Land Use Map / Historic Ownership Map

LAND USE AND LAND COVER

1 URBAN OR BUILT-UP LAND

11 Residential
12 Commercial and Services
13 Industrial
14 Transportation, Communications and Utilities
15 Industrial and Commercial Complexes
16 Mixed Urban or Built-up Land
17 Other Urban or Built-up Land

2 AGRICULTURAL LAND

21 Cropland and Pasture
22 Orchards, Groves, Vineyards, Nurseries, and Ornamental Horticultural Areas
23 Confined Feeding Operations
24 Other Agricultural Land

3 RANGELAND

31 Herbaceous Rangeland
32 Shrub and Brush Rangeland
33 Mixed Rangeland

4 FOREST LAND

41 Deciduous Forest Land
42 Evergreen Forest Land
43 Mixed Forest Land

5 WATER

51 Streams and Canals
52 Lakes
53 Reservoirs
54 Bays and Estuaries

6 WETLAND

61 Forested Wetland
62 Nonforested Wetland

7 BARREN LAND

71 Dry Salt Flats
72 Beaches
73 Sandy Areas Other than Beaches
74 Bare Exposed Rock
75 Strip Mines, Quarries, and Gravel Pits
76 Transitional Areas
77 Mixed Barren Land

8 TUNDRA

81 Shrub and Brush Tundra
82 Herbaceous Tundra
83 Bare Ground Tundra
84 Wet Tundra
85 Mixed Tundra

For definitions of Level I and Level II categories see U.S. Geological Survey Professional Paper 964, *A Land Use and Land Cover Classification System for Use With Remote Sensor Data, 1976*, by Anderson, J. R., E. E. Hardy, J. T. Roach, and R. E. Witmer. Minimum mapping units are: 4 hectares (10 acres) for Level II categories 11–17, 23–24, 51–54, 75, and urban occurrences of 76; and 16 hectares (40 acres) for all other Level II categories.

SCALE 1:250 000

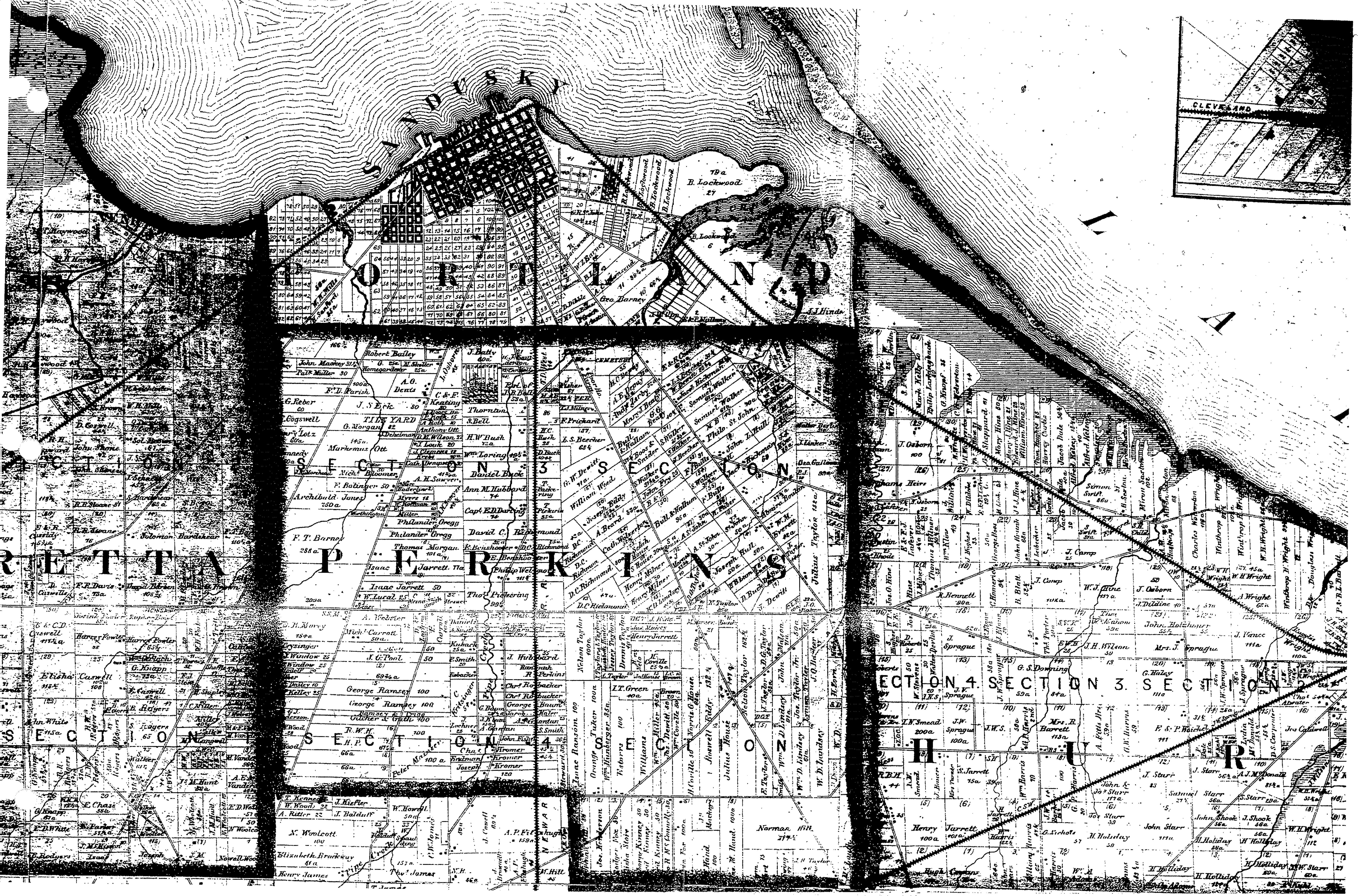
5 0 5
KILOMETERS

5 0 5
MILES

Land use and land cover information compiled from source materials dated 1980 and 1983

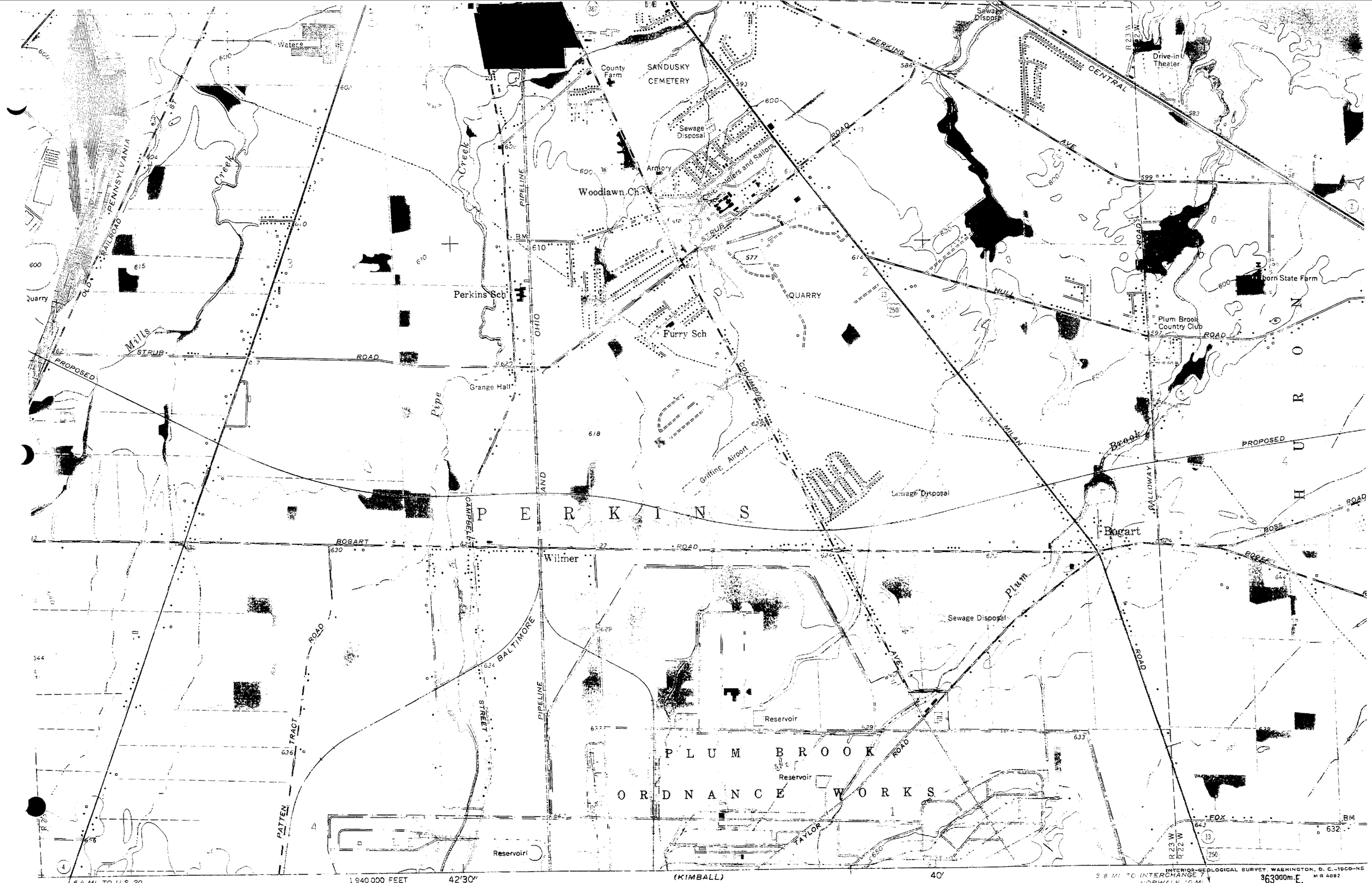
UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

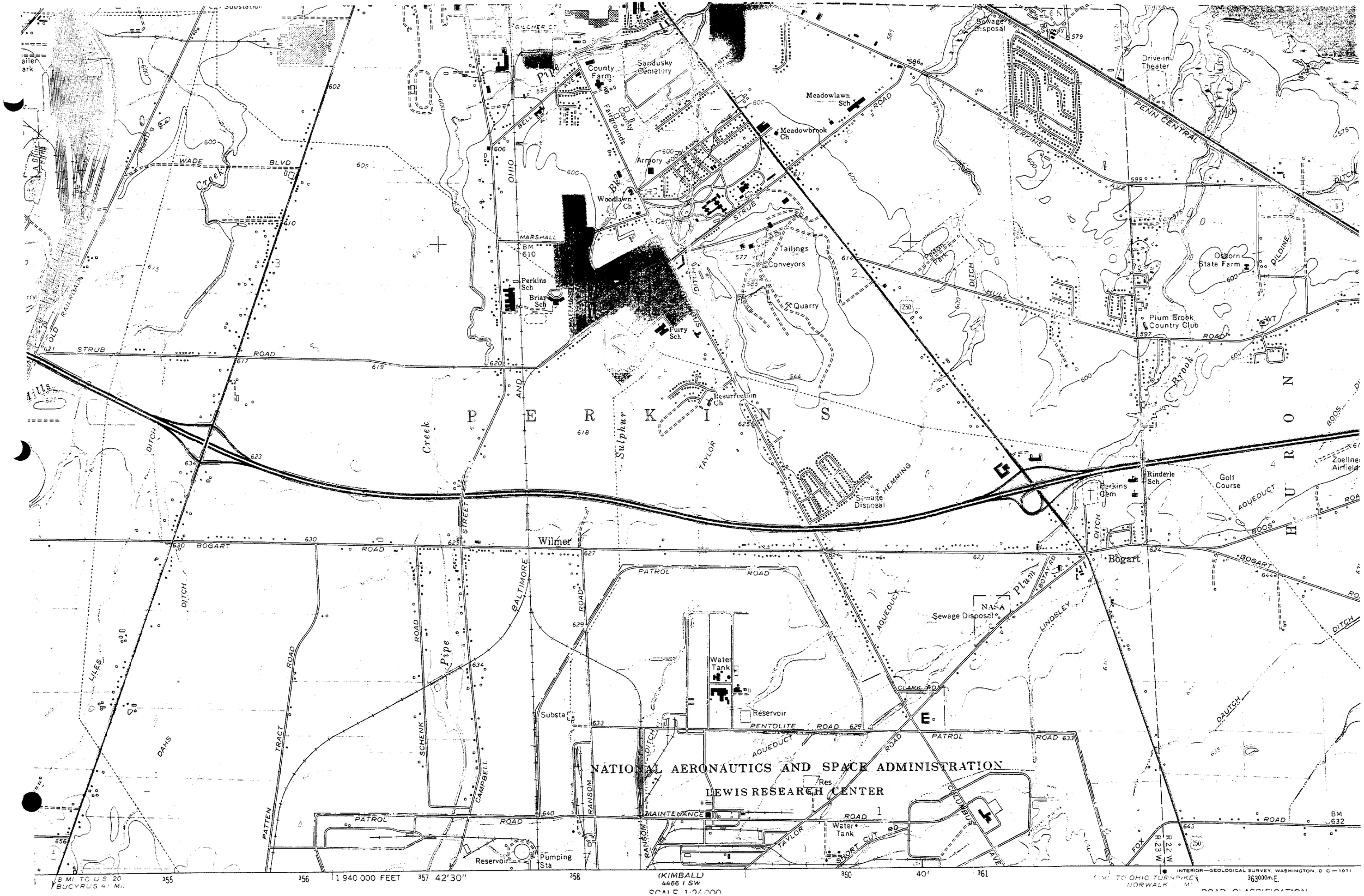
54



SANDUSKY
PORTLAND
PERKINS
SECTION 3
SECTION
SECTION 4
SECTION 4. SECTION 3. SECTION
CLEVELAND
B. Lockwood
Robert Bailey
John Mackey
A. G. Dents
J. S. Eck
TILE YARD
Markemus Ott
Archibald Jones
F. T. Barney
Thornton
H. W. Bush
Wm. Loring
Daniel Buck
Ann M. Hubbard
Capt. E. D. Darling
David C. Richmond
Philander Gregg
Thomas Morgan
Isaac Jarrett
Philip Wetmore
Thos. Pickering
William Wood
Joseph Hull
Julius Taylor
CEMETERY
George Ramsey
J. C. Pool
Isaac Ransom
Nelson Taylor
Julius House
Normas Hill
N. Woolcott
Elizabeth Bradway
Henry James
J. Osborn
Simon Swift
Charles Wainman
Winthrop H. Wright
J. Camp
R. Hennett
J. Sprague
G. S. Downing
J. H. Wilson
Mrs. R. Barrett
Henry Jarrett
John Starr
Samuel Starr
J. Shook
H. Holliday
Elisha Caswell
Solomon Bardshear
F. R. Davis
John White
E. Chase

Appendix B - Historic Topographical Maps 1959/1969


Water
County Farm
SANDUSKY CEMETERY
Sewage Disposal
Sewage Disposal
Drive-in Theater
PERKINS
CENTRAL
AVE
ROAD
Armory
Civic Soldiers and Sailors
Woodlawn Ch
PIPELINE
OHIO
Creek
Creek
PENNSYLVANIA
RAILROAD
OLD
Quarry
Mills
STRUB
ROAD
PROPOSED
Perkins Sch
Furry Sch
QUARRY
HULL
ROAD
Plum Brook Country Club
Horn State Farm
Grange Hall
Pipe
COLUMBUS
Griffing Airport
MILAN
Brook
PROPOSED
Sewage Disposal
BALLOWAY
P E R K I N S
BOGART
ROAD
Wilmer
Bogart
BOSS
ROAD
CAMPBELL
BALTIMORE
STREET
PIPELINE
Plum
Sewage Disposal
ROAD
AVE
ROAD
TRACT
PATTEN
Reservoir
Reservoir
P L U M B R O O K
O R D N A N C E W O R K S
TAYLOR
ROAD
Reservoir
FOX
BM
632
R 23 W
R 22 W
6.4 MI. TO U.S. 20
BUCYRUS 39 MI.
1 940 000 FEET
42'30"
(KIMBALL)
40'
2.8 MI. TO INTERCHANGE 7
NORWALK 10 MI.
363000m.E.
INTERIOR—GEOLOGICAL SURVEY, WASHINGTON, D. C.—1960—NS
M R 4082


NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
LEWIS RESEARCH CENTER
P E R K I N S
H U R O N
Wilmer
Bogart
Sandusky Cemetery
County Farm
County Fairgrounds
Armory
Woodlawn Ch
Meadowlawn Sch
Meadowbrook Ch
Tailings
Conveyors
Quarry
Perkins Sch
Briar Sch
Furry Sch
Resurrection Ch
Sewage Disposal
Drive-in Theater
Osborn State Farm
Plum Brook Country Club
Perkins Gem
Rinderle Sch
Golf Course
Zoellner Airfield
Water Tank
Reservoir
Substa
Pumping Sta
Res
MAINTENANCE
NASA
STRUB ROAD
BOGART ROAD
PATROL ROAD
PENTOLITE ROAD
PENN CENTRAL
OHIO TURNPIKE
AQUEDUCT
BALTIMORE
PATTEN TRACT ROAD
SCHENK ROAD
CAMPBELL STREET
RANSOM
TAYLOR
HEMMING AVE
COLUMBUS AVE
SHORT CUT RD
CLARK RD
LINDSLEY
ROTARY RD
DAUTCH
FOX
BOOS
PILDINE
HULL
PERKINS AVE
WADE BLVD
BELL AVE
MARSHALL
OLD RAILROAD
DITCH
Pipe Creek
Sulphur Creek
Plum Brook
BM 610
BM 632
1 940 000 FEET
42'30"
(KIMBALL)
4466 I SW
SCALE 1:24 000
INTERIOR—GEOLOGICAL SURVEY, WASHINGTON, D C—1971
ROAD CLASSIFICATION

SANDUSKY (CH) 5.5 MI
356000m.E.
42'30"
(SANDUSKY)
40'
R 23 W
1 360 000 FEET
SANDUSKY (CH) 6.9 MI
BOGART 1.5 MI.
R 22 W
FOX ROAD
CAMPBELL ST
P E R K I N S
TAYLOR ROAD
Plum Brook
P L U M B R O O K
O R D N A N C E W O R K S
COLUMBUS AVE
H U R O
MEMORIAL HY
WRIGHT BROS
Creek
Sand Hill
SCHEID ROAD
Gravel Pits
St Johns Ch
MASON RD
Bloomingville
PIPELINE
BALTIMORE AND OHIO
RANSOM ROAD
PORTLAND RD
HARRIS ROAD
PALLEN TRACT ROAD
St Johns Ch
PIPELINE
2 LANE
OHIO TURNPIKE
TOLL ROAD
MASON ROAD
WOOD ROAD
THOMAS ROAD
O X F O R D
STRECKER ROAD
St Johns Ch
Town Hall
ST LOUIS
M L A
1959

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
LEWIS RESEARCH CENTER
P E R K I N S
H U R O
O X F O R D
M I L A
Bloomingville
Sand Hill
Water Tank
Radio Tower
Prout
St Johns Ch
Ehove Joint Vocational Sch
FOX ROAD
CARGELL ROAD
TAYLOR ROAD
BOX FACTORY ROAD
NORTH BROOK
MAGAZINE ROAD
COLUMBUS AVE
SCHLESSMAN
PATROL
DITCH
SCHEID ROAD
KUEBELAR ROAD
TAFT ROAD
OLEMACHER
SHERER
MASON ROAD
PATTEN TRACT
RANSOM ROAD
BALTIMORE AND OHIO
PORTLAND RD
HARRIS
PIPELINES
OHIO TURNPIKE
TOLL ROAD
WOOD ROAD
THOMAS ROAD
BEUTAL ROAD
ZORN
STRECKER ROAD
NORFOLK AND WESTERN
Pipe Creek
1969

Appendix C - Groundwater Resources, Erie County, 1986

LEGEND

AREAS IN WHICH YIELDS OF 100 TO 500 GALLONS PER MINUTE MAY BE DEVELOPED.

Yields of more than 500 gallons per minute have been developed at depths of less than 200 feet in cavernous limestone and dolomite. Domestic supplies are generally obtained at depths of around 100 feet.

Hydrogen sulfide, in varying amounts, may be encountered in the bedrock.

Areas in which there is a potential concentration of contamination due to the underground disposal of storm wastes from Bellevue.

Municipal and industrial water supplies are available from wells drilled into permeable sand and gravel deposits in ancient buried valley.

AREAS IN WHICH YIELDS OF 25 TO 100 GALLONS PER MINUTE MAY BE DEVELOPED.

Buried valley containing more than 150 feet of unconsolidated deposits. Much of the valley fill consists of clay and fine sand. Extensive test drilling may be needed to locate coarse materials capable of supplying larger yields to drilled wells.

AREAS IN WHICH YIELDS OF 5 TO 25 GALLONS PER MINUTE MAY BE DEVELOPED.

Yields of 15, or less, gallons per minute are developed from wells drilled into the limestone. Hydrogen sulfide may be present in varying amounts.

AREAS IN WHICH YIELDS OF 3 TO 10 GALLONS PER MINUTE MAY BE DEVELOPED.

Ground water obtained from the Berea sandstone. Although this formation covers a larger area than shown, its thickness and recharge potential limit productivity to isolated zones.

AREAS IN WHICH YIELDS SELDOM EXCEED 3 GALLONS PER MINUTE

Limited quantities of ground water are obtained from thin, discontinuous sand and gravel deposits interbedded in fine, sandy clay or from the underlying shale. Drilling deeper than 30 feet into the shale is not recommended. Occasional gas or salt noted in the eastern half of the county.

Larger yields may be obtained in western Huron and Oxford townships and southeastern Perkins Township. Wells may encounter water-bearing limestone beneath as much as 60 feet of impervious shale.

Thick deposits (as much as 90 feet) of clay, sand and gravel cover the shale bedrock. Where permeable sands and gravels are present, adequate domestic supplies are obtained.

The ground-water characteristics of Erie County have been mapped regionally, based upon interpretations of 2100 water well records and the area's geology and hydrology. Well log data on the map were selected as typical for the areas shown.

Information regarding specific sites may be obtained from the Division of Water.

Chemical Analysis Table

Well site	A	B	C	D	E	F
Depth (ft.)	168	60	146	100	69	30
Aquifer	LS	LS	SG	SS	Sh	Sh
Iron (Fe)	0.33	0.02	1.3	0.92	1.1	0.39
Calcium (Ca)	536.	130.	82.	86.	8.2	4.0
Sodium (Na)	6.5	29.	30.	21.	479.	100.
Chloride (Cl)	12.0	49.	0.6	10.	134.	10.
Fluoride (F)	1.0	0.3	0.43	0.2	0.8	0.2
Sulfate (SO_4)	1224.	232.	68.	72.	188.	16.0
Hydrogen Sulfide (H_2S)	0.5	—	—	—	Trace	Trace
Hardness as $CaCO_3$	1537.	472.	282.	301.	32.0	14.0
Dissolved Solids	2150.	630.	—	328.	1230.	267.
pH	7.3	6.9	7.5	6.8	8.0	6.7

Chemical Constituents as Mg/1

Depth (ft.) - Water-bearing Formation - Yield (gpm)

154-LS-15
110

Depth to Bedrock (ft.)

Domestic Well

Municipal—Industrial Well

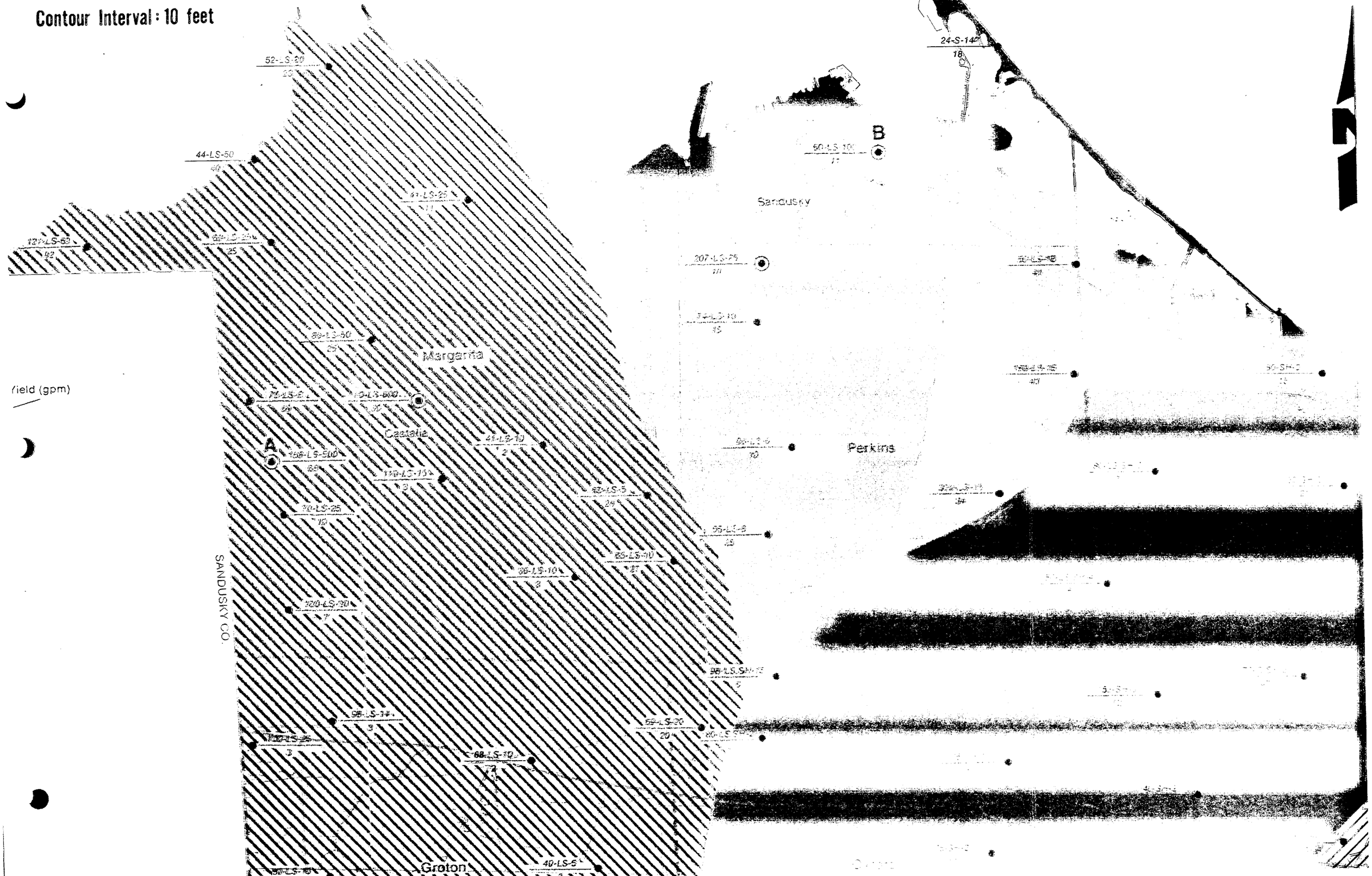
A Chemical Analyses

Formations

SS - Sandstone
SH - Shale
LS - Limestone
SG - Sand and Gravel

Contour Interval : 10 feet

Yield (gpm)



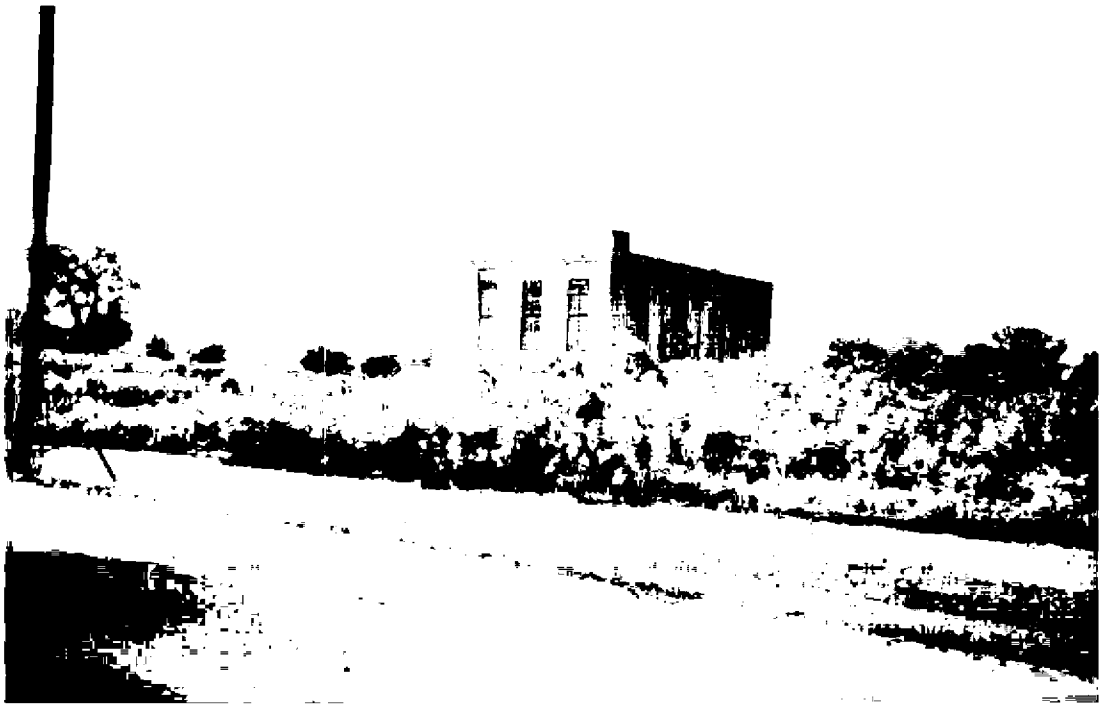
Appendix D - Visual Survey Photographs

Standing on Maintenance Road looking south across Ash Pit 1. Powerhouse 1 is in background.

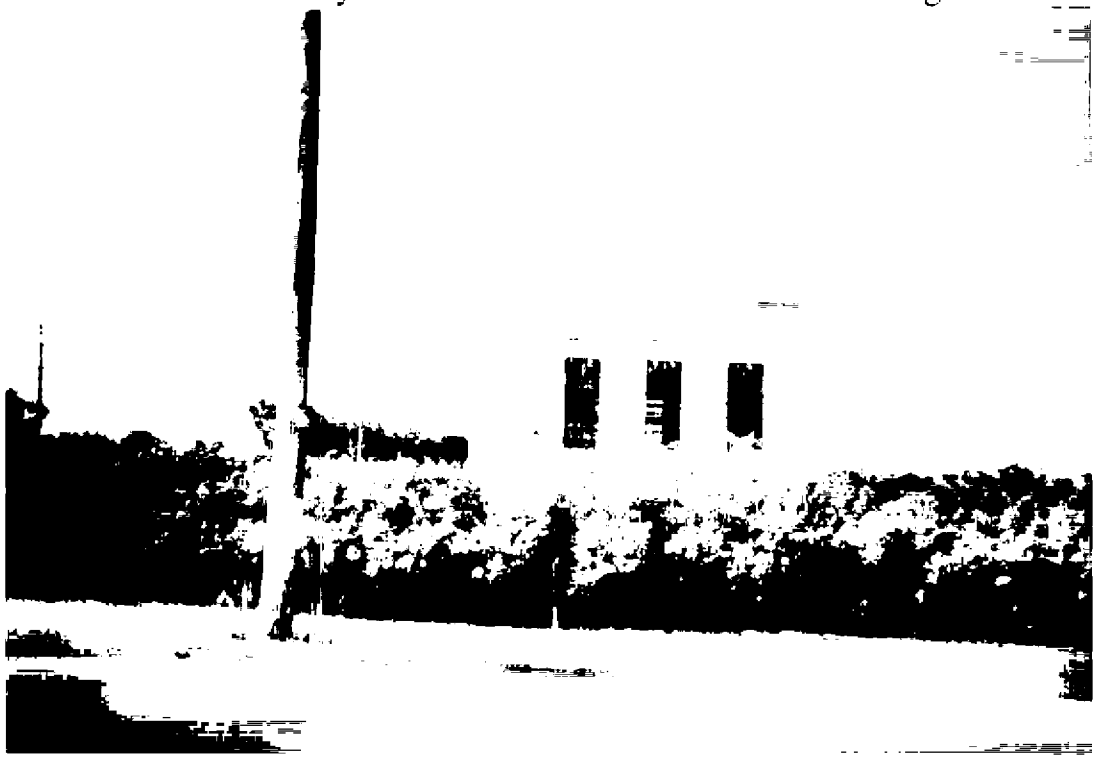
Standing on abandoned railroad tracks looking north across ash pit 1. Maintenance Road is in background. Red flags mark underground utility line.

Looking north at culvert running underneath Maintenance Road. Location of boring PBOWSBA101.

Looking west at approximate center of Ash Pit 1 (orange stake). Location of soil borings PBOWSBA102 and PBOWSBA104 left of center stake.

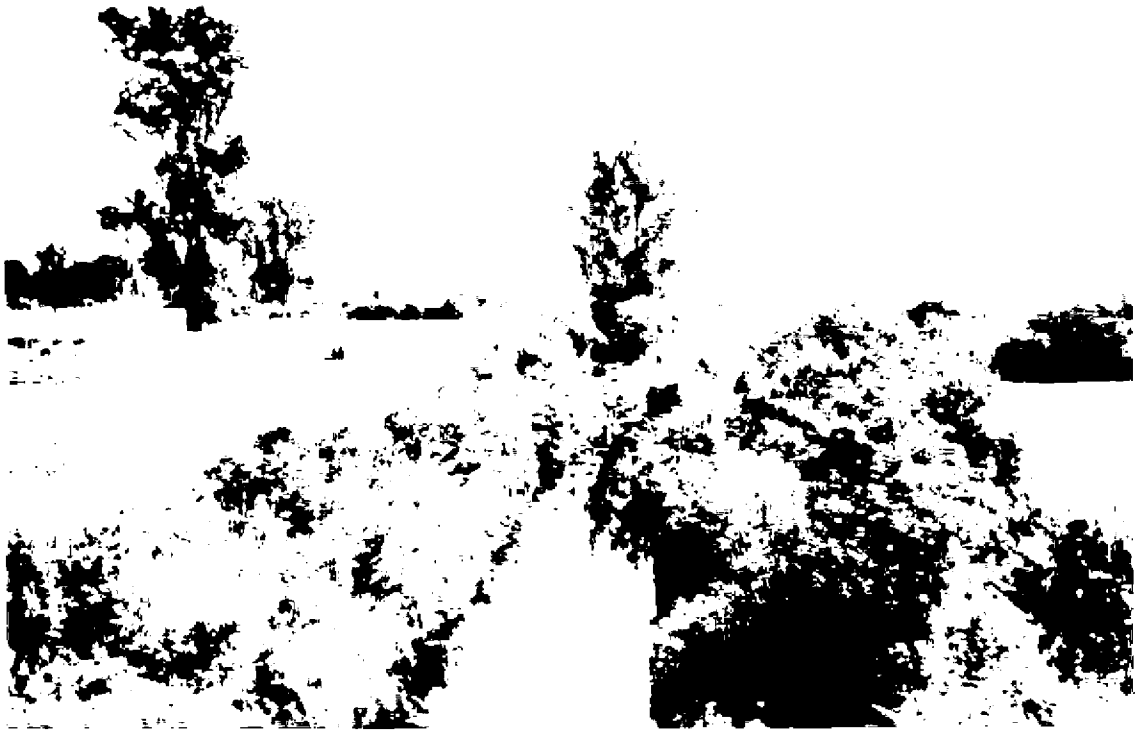


Looking southeast across Maintenance Road. Orange stake represents northwest boundary of Ash Pit 1. Powerhouse 1 is in background.



Looking south across Maintenance Road. Orange stake represents northeast boundary of Ash Pit 1. Powerhouse 1 is in background.

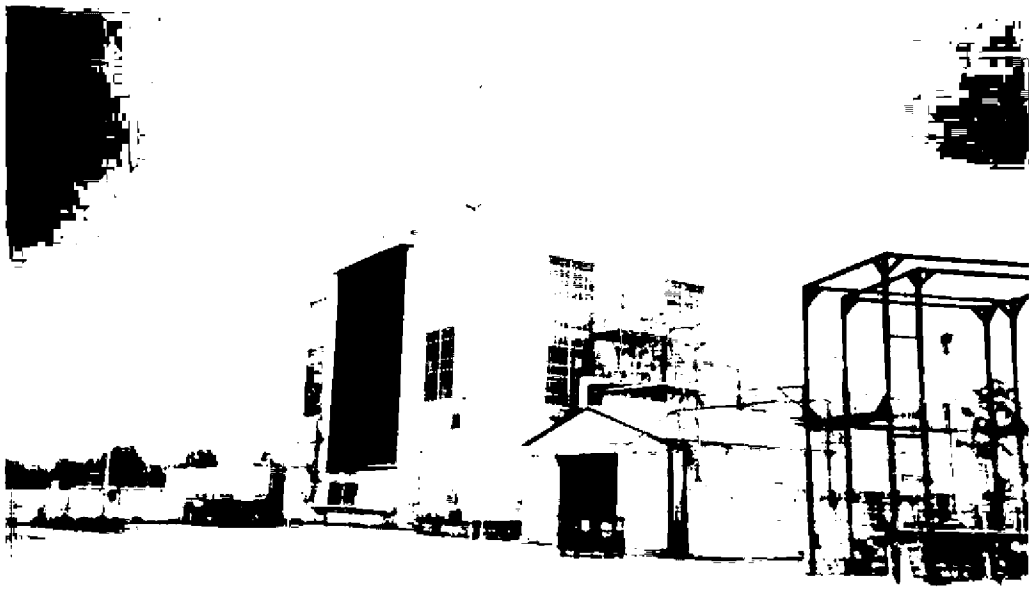
Looking west across Ash Pit 1.



View from Maintenance Road looking northeast at drainage ditch. Drainage ditch from Ash Pit 1 enters this ditch from the east.

Looking southeast at the location where two drainage ditches connect.

View of drainage ditch looking South toward Maintenance Road. Orange stake is the sample location for PBOWA1SD01 and PBOWA1SW01.



View of Former Power House 3 structure.
This is currently NASA "K" Site.
The site is West of Ransom Road.

View of Ash Pit 3looking Northeast.
The NASA "K" Site is located in the background.

View looking East along pooled water channel toward NASA "K" Site..

View where Sample PBOW99SWA302 and Sample PBOW99SDA302 were collected.

View where Sample PBOW99SWA3303 was collected.

Appendix E - Boring Logs

HTRW DRILLING LOG

DISTRICT	CELRL
HOLE NUMBER	SBA1Ø1
1. COMPANY NAME	N/A
2. DRILL SUBCONTRACTOR	N/A
SHEET / SHEETS	1 OF 2
3. PROJECT	ASH PIT #1 - PBOW
4. LOCATION	SANDUSKY OH
5. NAME OF DRILLER	DARRELL R. DAVIS
6. MANUFACTURER'S DESIGNATION OF DRILL	HAND AUGER
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	3 1/4" STAINLESS STEEL
8. HOLE LOCATION	
9. SURFACE ELEVATION	
10. DATE STARTED	6-11-99
11. DATE COMPLETED	6-11-99
12. OVERBURDEN THICKNESS	
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
13. DEPTH DRILLED INTO ROCK	
16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

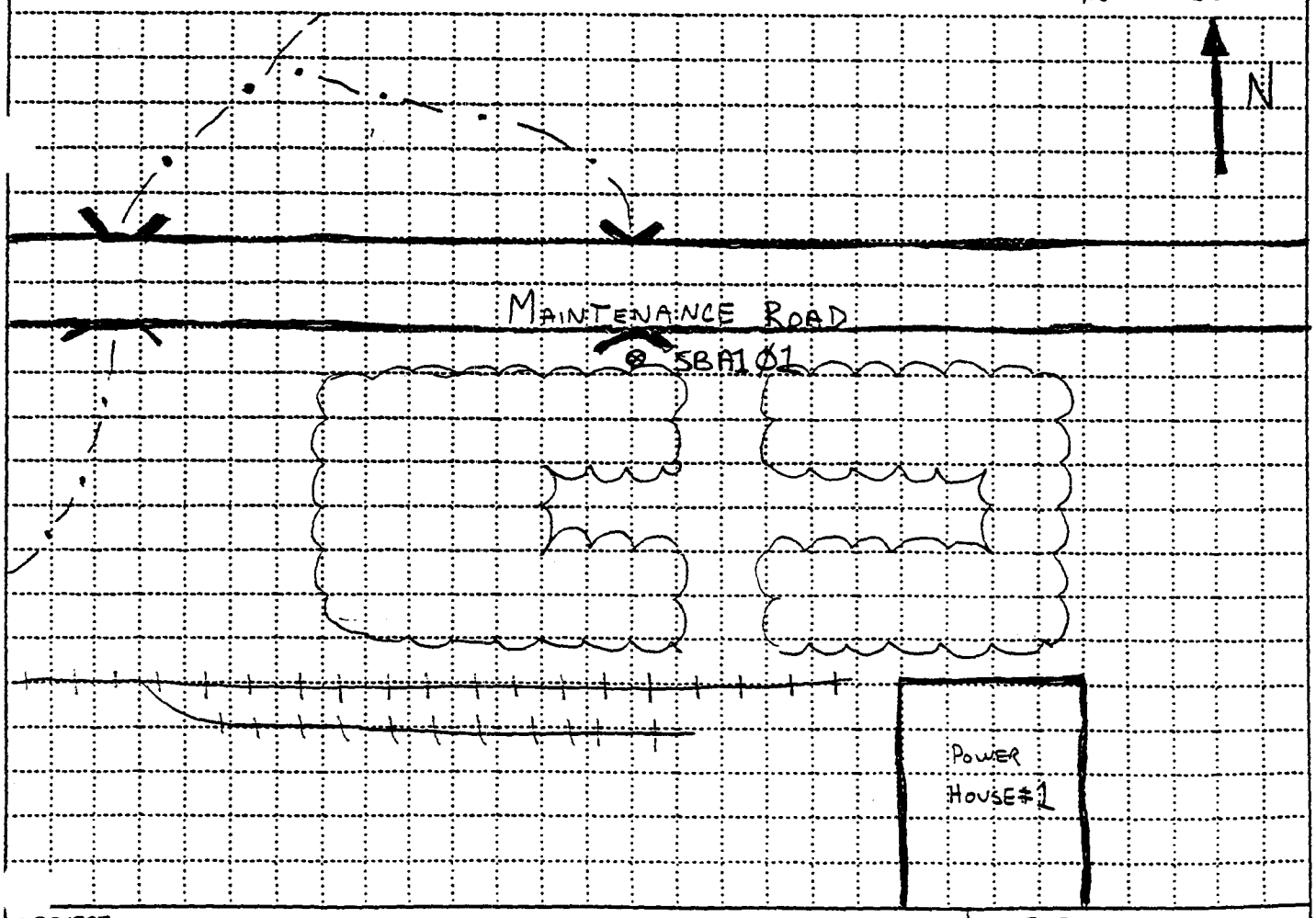
18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	X		

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY %
		X	SVOC			

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
	X			

LOCATION SKETCH/COMMENTS

SCALE: NOT TO SCALE



PROJECT	HOLE NO.
ASH PIT #1	SBA1Ø1

ENG FORM 5056-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER: SBA1Ø1

PROJECT: Ash Pit #1 - PBOW

INSPECTOR:

SHEET 2 OF 2 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
		VEGETATION	N/A	N/A	A		collected DUP
		DARK BROWN CLAEY SILT ML-CL					
	.5	Light Brown SILTY CLAY					HAD TO AVOID Phone Line
		TERMINATION @.5'					
		~~HAD~~ Phone Line PRESENT AT 4' (per NASA)					
	1'						

PROJECT: Ash Pit #1

HOLE NO. SBA1Ø1

ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG

DISTRICT: CELRL		HOLE NUMBER: SBA1Ø2
1. COMPANY NAME: N/A	2. DRILL SUBCONTRACTOR: N/A	SHEET 1 OF 2 SHEETS
3. PROJECT: ASH PIT #1 - PBOW	4. LOCATION: SANDUSKY OH	
5. NAME OF DRILLER: DARRELL R. DAVIS	6. MANUFACTURER'S DESIGNATION OF DRILL: HAND AUGER	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 3 1/4" STAINLESS STEEL	8. HOLE LOCATION	
	9. SURFACE ELEVATION	
	10. DATE STARTED: 6-10-99	11. DATE COMPLETED: 6-10-99
12. OVERBURDEN THICKNESS	15. DEPTH GROUNDWATER ENCOUNTERED: N/A	
13. DEPTH DRILLED INTO ROCK	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: N/A	
14. TOTAL DEPTH OF HOLE	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY): N/A	

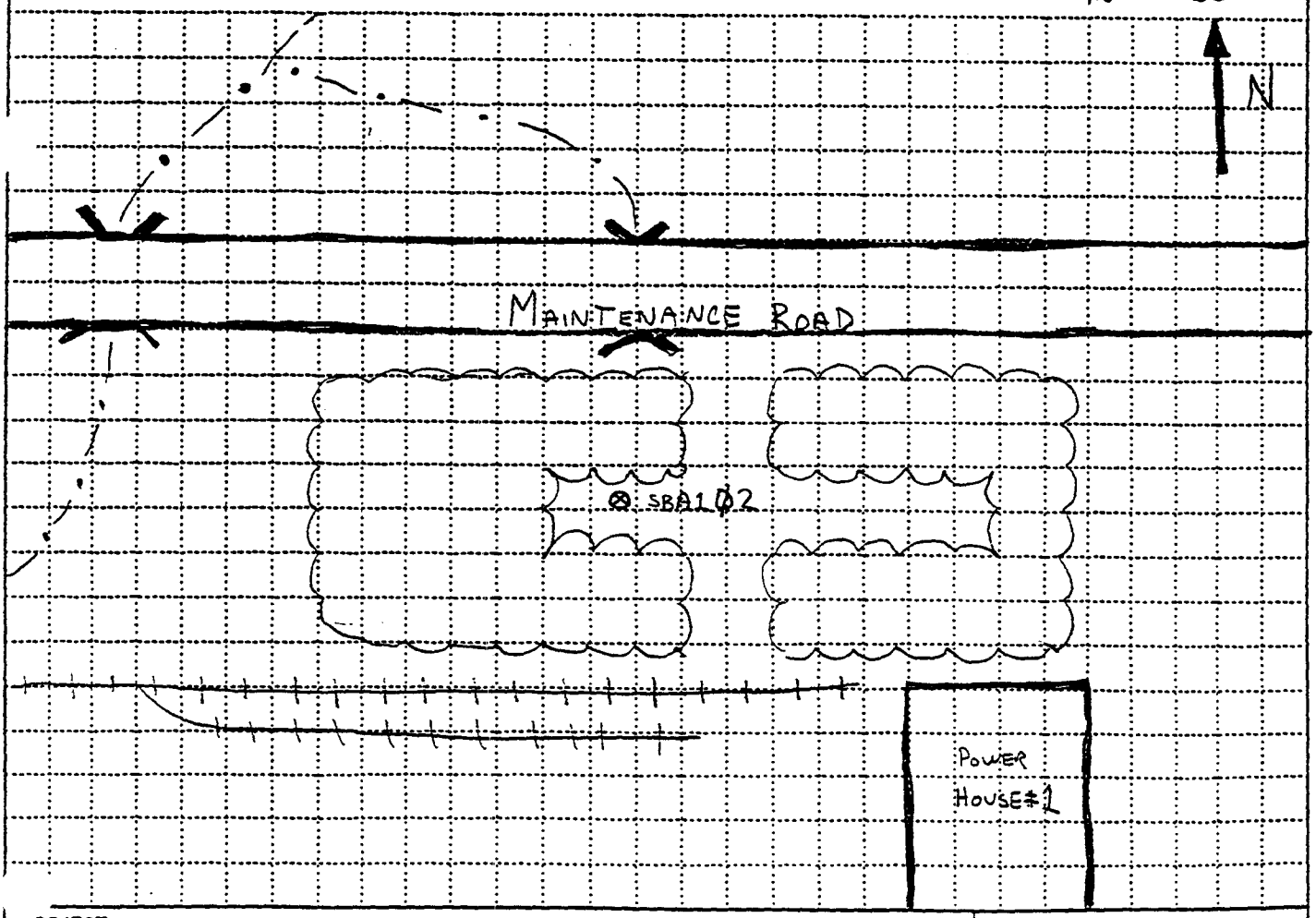
18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	X		

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY %
		X	SVOC			

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
	X			

LOCATION SKETCH/COMMENTS

SCALE: NOT TO SCALE



PROJECT	HOLE NO.
ASH PIT #1	SBA1Ø2

ENG FORM 5056-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER: SBA1Ø2

PROJECT: Ash Pit #1-PBOW

INSPECTOR: N/A

SHEET 2 OF 2 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
		VEGETATION					
	1'	LOOSE, BLACK, SILTY ASH, fine to coarse grain, cobble size [GP-GM] (Ash)	N/A	GEOTECH.	A		VERY HARD TO AUGER
		- refusal (could not advance auger) @ 1'					

PROJECT: Ash Pit #1

HOLE NO. SBA1Ø2

ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG

DISTRICT: CELRL		HOLE NUMBER: SBA1Ø3
1. COMPANY NAME: N/A	2. DRILL SUBCONTRACTOR: N/A	SHEET 1 OF 2 SHEETS
3. PROJECT: ASH PIT #1 - PBOW	4. LOCATION: SANDUSKY OH	
5. NAME OF DRILLER: DARRELL R. DAVIS	6. MANUFACTURER'S DESIGNATION OF DRILL: HAND AUGER	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 3 1/4 STAINLESS STEEL	8. HOLE LOCATION	
	9. SURFACE ELEVATION	
	10. DATE STARTED: 6-10-99	11. DATE COMPLETED: 6-10-99
12. OVERBURDEN THICKNESS	15. DEPTH GROUNDWATER ENCOUNTERED: N/A	
13. DEPTH DRILLED INTO ROCK	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: N/A	
14. TOTAL DEPTH OF HOLE	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY): N/A	

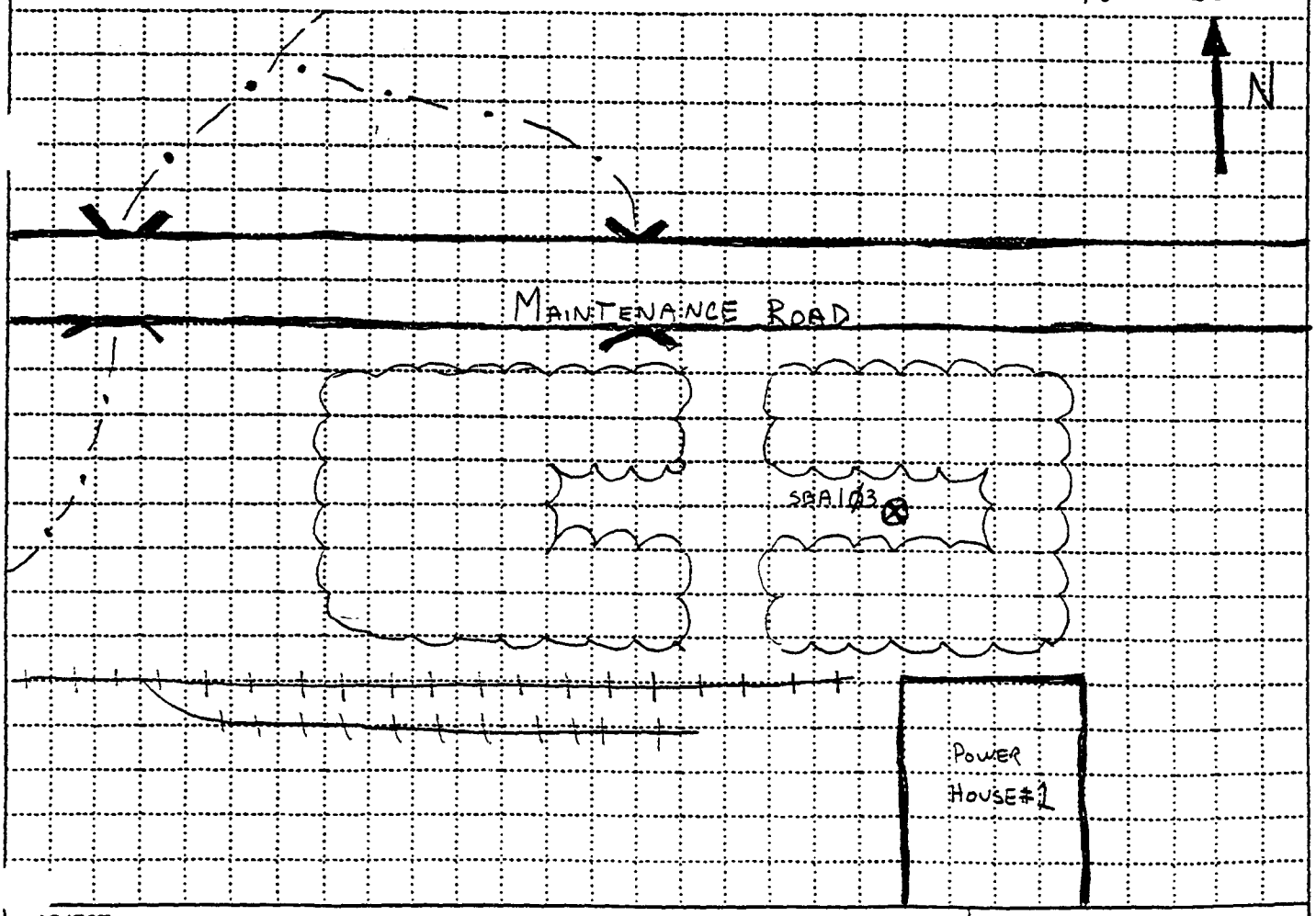
18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	X		

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY %
		X	SVOC			

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
	X			

LOCATION SKETCH/COMMENTS

SCALE: NOT TO SCALE



PROJECT: ASH PIT #1	HOLE NO.: SBA1Ø3

ENG FORM 5056-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER: SBA1Ø3

PROJECT: Ash Pit #1 - PBOW

INSPECTOR:

SHEET 2 OF 2 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
		VEGETATION	N/A				
	1'	BLACK, MOIST, CLAEY SILTY SAND, mottled with Light Brown CLAEY SAND. GM-SC			A		Some ASH PRESENT
	2'	DARK BROWN, MOIST, SILTY SANDY ~~SOME~~ GRAVEL w/GRAY CLAY GM ~~SM~~ CL					
	3'	GRAY CLAY with SOME SILTY SAND (TIGHT CLAY) CL		B	B		HARD TO AUGER THROUGH CLAY
	4'	- TERMINATION @ 4'					

PROJECT: Ash Pit #1

HOLE NO. SBA1Ø3

ENG FORM 5056A-R, AUG 94 (Proponent: CECW-EG)

HTRW DRILLING LOG

DISTRICT: CELRL		HOLE NUMBER: SBA1Ø4
1. COMPANY NAME: N/A	2. DRILL SUBCONTRACTOR: N/A	SHEET 1 OF 2 SHEETS
3. PROJECT: ASH PIT #1 - PBOW	4. LOCATION: SANDUSKY OH	
5. NAME OF DRILLER: DARRELL R. DAVIS	6. MANUFACTURER'S DESIGNATION OF DRILL: HAND AUGER	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 3 1/4" STAINLESS STEEL	8. HOLE LOCATION	
	9. SURFACE ELEVATION	
	10. DATE STARTED: 6-10-99	11. DATE COMPLETED: 6-10-99
12. OVERBURDEN THICKNESS	15. DEPTH GROUNDWATER ENCOUNTERED: N/A	
13. DEPTH DRILLED INTO ROCK	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: N/A	
14. TOTAL DEPTH OF HOLE	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY): N/A	

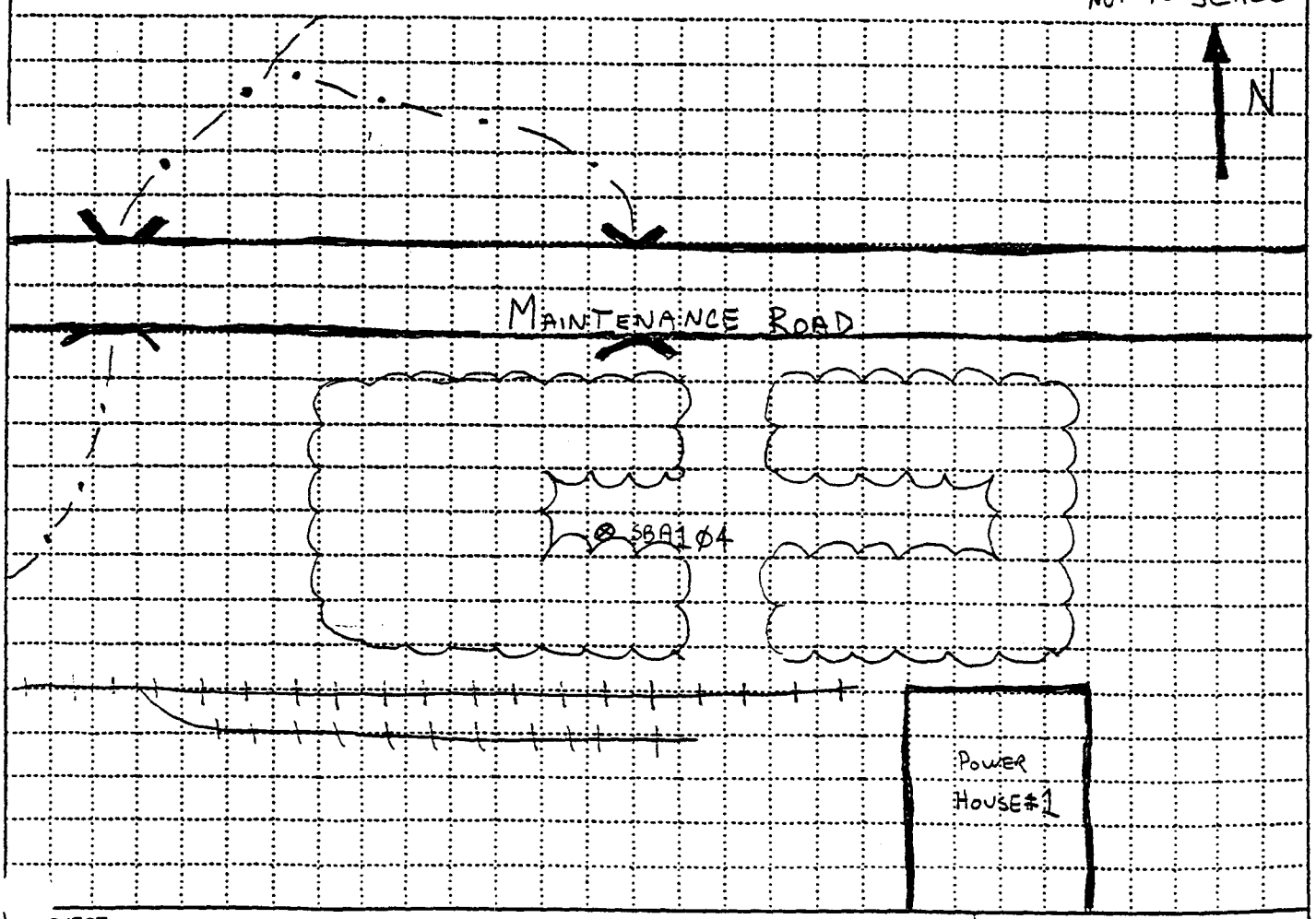
18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	X		

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY %
		X	SVOC			

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
	X			

LOCATION SKETCH/COMMENTS

SCALE: NOT TO SCALE



PROJECT: ASH PITS #1	HOLE NO. SBA1Ø4

ENG FORM 5056-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER: SBA1Ø4

PROJECT: Ash Pit #1 - PBOW

INSPECTOR:

SHEET 2 OF 2 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
		VEGETATION					
		LOOSE, BLACK, SILTY ASH fine to coarse grain, cobble size chunks of Ash (Ash)	N/A		B-		SIMILAR TO BORING SBA1Ø2
		TERMINATION @ 6" (~.5')					
	1'						

PROJECT: Ash Pits #1

HOLE NO. SBA1Ø4

ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

Appendix F - Laboratory Analytical Data

Quanterra Incorporated
4101 Shuffel Drive, NW
North Canton, Ohio 44720

330 497-9396 Telephone
330 497-0772 Fax

ANALYTICAL REPORT

ASH PIT #1-PBOW

Lot #: A9F150184

U.S. Army Corps of Engineers

QUANTERRA INCORPORATED

Debora A. Hula
Project Manager

July 22, 1999

ANALYTICAL METHODS SUMMARY

A9F150184

PARAMETER	ANALYTICAL METHOD
Inductively Coupled Plasma (ICP) Metals	SW846 6010B
Mercury in Liquid Waste (Manual Cold-Vapor)	SW846 7470A
Mercury in Solid Waste (Manual Cold-Vapor)	SW846 7471A
Semivolatile Organic Compounds by GC/MS	SW846 8270C
Total Organic Carbon	SMCA WALKLEY-BLACK
Total Residue as Percent Solids	MCAWW 160.3 MOD
Trace Inductively Coupled Plasma (ICP) Metals	SW846 6010B

References:

MCAWW "Methods for Chemical Analysis of Water and Wastes", EPA-600/4-79-020, March 1983 and subsequent revisions.

SMCA 90-3, Standard Methods of Chemical Analysis, 6th Edition, D. Van Nostrand Co., Princeton, N.J., 1963.

SW846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 and its updates.

CASE NARRATIVE
A9F150184

The following report contains the analytical results for eleven solid samples and six water samples submitted to Quanterra-North Canton by the U.S. Army Corps of Engineers from the Ash Pit #1-PBOW Site. The samples were received June 12 and 14, 1999, according to documented sample acceptance procedures.

Quanterra-North Canton utilizes USEPA approved methods in all analytical work. The samples presented in this report were analyzed for the parameters listed on the Analytical Methods Summary page in accordance with the method indicated.

The results included in this report have been reviewed for compliance with the laboratory QA/QC plan. All data have been found to be compliant with laboratory protocol.

The Geotechnical analysis was subcontracted to ACT Laboratories in Cleveland, Ohio.

SUPPLEMENTAL QC INFORMATION

SAMPLE RECEIVING

The coolers were received at the laboratory at temperatures of 13.1, 10.1 and 1.0° C.

GC/MS SEMIVOLATILES

Sample "PBOW99SSA101" exhibited surrogate recoveries outside acceptance limits. Upon re-extraction and re-analysis, surrogates were again outside the acceptance limits demonstration matrix effect.

The matrix spike/matrix spike duplicate associated with sample "PBOW99SDA101' in batch 9172112 failed recovery criteria. The laboratory control sample associated with this batch was in control. This is believed to be a matrix effect; therefore, no further corrective action was taken.

Sample "PBOW99SBA103A" had one acid surrogate outside the acceptance limits. However, since the recovery was greater than 10% and all associated QC met criteria, no corrective action was taken.

METALS

Serial dilution of a sample in this lot indicates that physical and chemical interferences are present. See the sample report pages for the affected analytes, which have been flagged with "L".

Dilutions were performed on sample(s) due to high non-target constituent concentrations; therefore, affected results have been flagged with "G".

Dilutions were performed on sample(s) due to high target constituent concentrations. See the sample report pages for the dilutions performed on each element.

CASE NARRATIVE (continued)

METALS continued

Method blank contamination occurred.

- All affected analytes which were not detected in the sample at levels greater than the reporting limits are flagged with "MBE".
- Where blank contamination was a common laboratory contaminant, and was less than two times the reporting limit, affected analytes are flagged with "MBD".

Matrix spike recovery and relative percent difference (RPD) data were not calculated for some analytes due to the sample concentration readings greater than four times the spike amount. See the Matrix Spike Report for the affected analytes, which have been flagged with "NC, MSB". Matrix spike/spike duplicate recovery was outside the acceptance limits for some analytes. The acceptable LCS analysis data indicated that the analytical system was operating within control and this condition is most likely due to matrix interference. See the Matrix Spike Report for the affected analyte, which have been flagged with "N".

Matrix spike/spike duplicate relative percent difference (RPD) exceeded the acceptance limits for some analytes. The imprecision may be attributed to sample heterogeneity. See the Matrix Spike Report for the affected analytes, which have been flagged with "*".

SAMPLE SUMMARY

A9F150184

WO #	SAMPLE#	CLIENT SAMPLE ID	DATE	TIME
CWWCL	001	PBOW99SBA101A	06/11/99	08:43
CWWCN	002	PBOW99SBA101A-DUP	06/11/99	08:43
CWWCQ	003	PBOW99SBA102A	06/10/99	16:22
CWWCT	004	PBOW99SBA103A	06/10/99	17:07
CWWCW	005	PBOW99SBA103B	06/10/99	17:24
CWWCX	006	PBOW99SBA104B	06/10/99	16:38
CWWD4	007	PBOW99SSA101	06/10/99	18:08
CWWD7	008	PBOW99SWA301	06/11/99	12:40
CWWD8	009	PBOW99SWA302	06/11/99	12:55
CWWDA	010	PBOW99SDA302	06/11/99	12:55
CWWDC	011	PBOW99SWA303	06/11/99	13:10
CWWDE	012	PBOW99SDA303	06/11/99	13:10
CWWDH	013	PBOW99SWA303DUP	06/11/99	13:10
CWWDJ	014	PBOW99SDA303DUP	06/11/99	13:10
CWWDK	015	PBOW99SWA101 (MS/MSD)	06/11/99	14:20
CWWDR	016	PBOW99SDA101 (MS/MSD)	06/11/99	14:20
CWWDX	017	FIELD BLANK	06/11/99	10:00

NOTE(S):

- The analytical results of the samples listed above are presented on the following pages.
  All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

U.S. ARMY CORPS OF ENGINEERS

Client Sample ID: PBOW99SBA101A

GC/MS Semivolatiles

Lot-Sample #...: A9F150184-001 **Work Order #...:** CWWCL101 **Matrix.....:** SOLID
Date Sampled...: 06/11/99 08:43 **Date Received..:** 06/12/99
Prep Date.....: 06/21/99 **Analysis Date..:** 06/26/99
Prep Batch #...: 9172112
Dilution Factor: 1
% Moisture.....: 24 **Method.....:** SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	430	ug/kg
Acenaphthylene	ND	430	ug/kg
Anthracene	ND	430	ug/kg
Benzo(a)anthracene	ND	430	ug/kg
Benzo(b)fluoranthene	ND	430	ug/kg
Benzo(k)fluoranthene	ND	430	ug/kg
Benzo(ghi)perylene	ND	430	ug/kg
Benzo(a)pyrene	ND	430	ug/kg
bis(2-Chloroethoxy) methane	ND	430	ug/kg
bis(2-Chloroethyl)-ether	ND	430	ug/kg
bis(2-Ethylhexyl) phthalate	ND	430	ug/kg
4-Bromophenyl phenyl ether	ND	430	ug/kg
Butyl benzyl phthalate	ND	430	ug/kg
4-Chloroaniline	ND	430	ug/kg
4-Chloro-3-methylphenol	ND	430	ug/kg
2-Chloronaphthalene	ND	430	ug/kg
2-Chlorophenol	ND	430	ug/kg
4-Chlorophenyl phenyl ether	ND	430	ug/kg
Chrysene	ND	430	ug/kg
Dibenz(a,h)anthracene	ND	430	ug/kg
Dibenzofuran	ND	430	ug/kg
Di-n-butyl phthalate	ND	430	ug/kg
1,2-Dichlorobenzene	ND	430	ug/kg
1,3-Dichlorobenzene	ND	430	ug/kg
1,4-Dichlorobenzene	ND	430	ug/kg
3,3'-Dichlorobenzidine	ND	430	ug/kg
2,4-Dichlorophenol	ND	430	ug/kg
Diethyl phthalate	ND	430	ug/kg
2,4-Dimethylphenol	ND	430	ug/kg
Dimethyl phthalate	ND	430	ug/kg
Di-n-octyl phthalate	ND	430	ug/kg
4,6-Dinitro-2-methylphenol	ND	1000	ug/kg

(Continued on next page)

U.S. ARMY CORPS OF ENGINEERS

Client Sample ID: PBOW99SBA101A

GC/MS Semivolatiles

Lot-Sample #...: A9F150184-001 **Work Order #...:** CWWCL101 **Matrix.....:** SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS
2,4-Dinitrophenol	ND	1000	ug/kg
2,4-Dinitrotoluene	ND	430	ug/kg
2,6-Dinitrotoluene	ND	430	ug/kg
Fluoranthene	ND	430	ug/kg
Fluorene	ND	430	ug/kg
Hexachlorobenzene	ND	430	ug/kg
Hexachlorobutadiene	ND	430	ug/kg
Hexachlorocyclopenta-diene	ND	430	ug/kg
Hexachloroethane	ND	430	ug/kg
Indeno(1,2,3-cd)pyrene	ND	430	ug/kg
Isophorone	ND	430	ug/kg
2-Methylnaphthalene	ND	430	ug/kg
2-Methylphenol	ND	430	ug/kg
Naphthalene	ND	430	ug/kg
2-Nitroaniline	ND	1000	ug/kg
3-Nitroaniline	ND	1000	ug/kg
4-Nitroaniline	ND	1000	ug/kg
itrobenzene	ND	430	ug/kg
2-Nitrophenol	ND	430	ug/kg
4-Nitrophenol	ND	1000	ug/kg
N-Nitrosodi-n-propyl-amine	ND	430	ug/kg
N-Nitrosodiphenylamine	ND	430	ug/kg
Pentachlorophenol	ND	1000	ug/kg
Phenanthrene	ND	430	ug/kg
Phenol	ND	430	ug/kg
Pyrene	ND	430	ug/kg
1,2,4-Trichlorobenzene	ND	430	ug/kg
2,4,5-Trichlorophenol	ND	430	ug/kg
2,4,6-Trichlorophenol	ND	430	ug/kg
Carbazole	ND	430	ug/kg
4-Methylphenol	ND	430	ug/kg
bis(2-Chloroisopropyl) ether	ND	430	ug/kg

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Nitrobenzene-d5	60	(23 - 120)
Terphenyl-d14	74	(18 - 137)
2-Fluorobiphenyl	68	(30 - 115)
2-Fluorophenol	49	(30 - 115)
Phenol-d5	42	(24 - 113)
2,4,6-Tribromophenol	71	(19 - 122)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

U.S. ARMY CORPS OF ENGINEERS

Client Sample ID: PBOW99SBA101A

TOTAL Metals

Lot-Sample #...: A9F150184-001 **Matrix.....:** SOLID
Date Sampled...: 06/11/99 08:43 **Date Received..:** 06/12/99
% Moisture.....: 24

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 9174305						
Silver	ND	0.66 Dilution Factor: 1	mg/kg	SW846 6010B	06/24-07/16/99	CWWCL10H
Aluminum	**7360**	**26.2** Dilution Factor: 1	**mg/kg**	**SW846 6010B**	**06/24-07/15/99**	**CWWCL102**
Arsenic	**6.2**	**1.3** Dilution Factor: 1	**mg/kg**	**SW846 6010B**	**06/24-07/16/99**	**CWWCL10J**
Barium	**49.1**	**26.2** Dilution Factor: 1	**mg/kg**	**SW846 6010B**	**06/24-07/16/99**	**CWWCL103**
Beryllium	ND	0.66 Dilution Factor: 1	mg/kg	SW846 6010B	06/24-07/16/99	CWWCL104
Cadmium	ND	0.26 Dilution Factor: 1	mg/kg	SW846 6010B	06/24-07/16/99	CWWCL
Calcium	**4260**	**656** Dilution Factor: 1	**mg/kg**	**SW846 6010B**	**06/24-07/15/99**	**CWWCL105**
Chromium	**12.1**	**0.66** Dilution Factor: 1	**mg/kg**	**SW846 6010B**	**06/24-07/16/99**	**CWWCL10L**
Cobalt	**7.7**	**6.6** Dilution Factor: 1	**mg/kg**	**SW846 6010B**	**06/24-07/16/99**	**CWWCL106**
Lead	**7.0**	**0.39** Dilution Factor: 1	**mg/kg**	**SW846 6010B**	**06/24-07/16/99**	**CWWCL10M**
Copper	**13.8**	**3.3** Dilution Factor: 1	**mg/kg**	**SW846 6010B**	**06/24-07/16/99**	**CWWCL107**
Antimony	ND	1.3 Dilution Factor: 1	mg/kg	SW846 6010B	06/24-07/16/99	CWWCL10N
Iron	**18500**	**13.1** Dilution Factor: 1	**mg/kg**	**SW846 6010B**	**06/24-07/16/99**	**CWWCL108**
Selenium	ND	0.66 Dilution Factor: 1	mg/kg	SW846 6010B	06/24-07/16/99	CWWCL10P

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U.S. ARMY CORPS OF ENGINEERS

Client Sample ID: PBOW99SBA101A

TOTAL Metals

Lot-Sample #...: A9F150184-001 **Matrix.....:** SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Mercury	ND	0.13	mg/kg	SW846 7471A	06/24-06/28/99	CWWCL10R
		Dilution Factor: 1				
Potassium	**763**	**656**	**mg/kg**	**SW846 6010B**	**06/24-07/15/99**	**CWWCL109**
		Dilution Factor: 1				
Thallium	ND	1.3	mg/kg	SW846 6010B	06/24-07/16/99	CWWCL10Q
		Dilution Factor: 1				
Magnesium	**1520**	**656**	**mg/kg**	**SW846 6010B**	**06/24-07/15/99**	**CWWCL10A**
		Dilution Factor: 1				
Manganese	**1170**	**2.0**	**mg/kg**	**SW846 6010B**	**06/24-07/16/99**	**CWWCL10C**
		Dilution Factor: 1				
Sodium	ND	656	mg/kg	SW846 6010B	06/24-07/15/99	CWWCL10D
		Dilution Factor: 1				
ckel	**26.0**	**5.2**	**mg/kg**	**SW846 6010B**	**06/24-07/16/99**	**CWWCL10E**
		Dilution Factor: 1				
Vanadium	**16.5**	**6.6**	**mg/kg**	**SW846 6010B**	**06/24-07/16/99**	**CWWCL10F**
		Dilution Factor: 1				
Zinc	**56.2 MBD**	**2.6**	**mg/kg**	**SW846 6010B**	**06/24-07/16/99**	**CWWCL10G**
		Dilution Factor: 1				

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

MBD This analyte is present in the associated method blank at an amount that is less than two times the reporting limit.

U.S. ARMY CORPS OF ENGINEERS

Client Sample ID: PBOW99SBA101A-DUP

GC/MS Semivolatiles

Lot-Sample #...: A9F150184-002 **Work Order #...:** CWWCN101 **Matrix.....:** SOLID
Date Sampled...: 06/11/99 08:43 **Date Received..:** 06/12/99
Prep Date.....: 06/21/99 **Analysis Date..:** 06/25/99
Prep Batch #...: 9172112
Dilution Factor: 1
% Moisture.....: 34 **Method.....:** SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	500	ug/kg
Acenaphthylene	ND	500	ug/kg
Anthracene	ND	500	ug/kg
Benzo(a)anthracene	ND	500	ug/kg
Benzo(b)fluoranthene	ND	500	ug/kg
Benzo(k)fluoranthene	ND	500	ug/kg
Benzo(ghi)perylene	ND	500	ug/kg
Benzo(a)pyrene	ND	500	ug/kg
bis(2-Chloroethoxy) methane	ND	500	ug/kg
bis(2-Chloroethyl)-ether	ND	500	ug/kg
bis(2-Ethylhexyl) phthalate	ND	500	ug/kg
4-Bromophenyl phenyl ether	ND	500	ug/kg
Butyl benzyl phthalate	ND	500	ug/kg
4-Chloroaniline	ND	500	ug/kg
4-Chloro-3-methylphenol	ND	500	ug/kg
2-Chloronaphthalene	ND	500	ug/kg
2-Chlorophenol	ND	500	ug/kg
4-Chlorophenyl phenyl ether	ND	500	ug/kg
Chrysene	ND	500	ug/kg
Dibenz(a,h)anthracene	ND	500	ug/kg
Dibenzofuran	ND	500	ug/kg
Di-n-butyl phthalate	ND	500	ug/kg
1,2-Dichlorobenzene	ND	500	ug/kg
1,3-Dichlorobenzene	ND	500	ug/kg
1,4-Dichlorobenzene	ND	500	ug/kg
3,3'-Dichlorobenzidine	ND	500	ug/kg
2,4-Dichlorophenol	ND	500	ug/kg
Diethyl phthalate	ND	500	ug/kg
2,4-Dimethylphenol	ND	500	ug/kg
Dimethyl phthalate	ND	500	ug/kg
Di-n-octyl phthalate	ND	500	ug/kg
4,6-Dinitro-2-methylphenol	ND	1200	ug/kg

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U.S. ARMY CORPS OF ENGINEERS

Client Sample ID: PBOW99SBA101A-DUP

GC/MS Semivolatiles

Lot-Sample #...: A9F150184-002 **Work Order #...:** CWWCN101 **Matrix.....:** SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS
2,4-Dinitrophenol	ND	1200	ug/kg
2,4-Dinitrotoluene	ND	500	ug/kg
2,6-Dinitrotoluene	ND	500	ug/kg
Fluoranthene	ND	500	ug/kg
Fluorene	ND	500	ug/kg
Hexachlorobenzene	ND	500	ug/kg
Hexachlorobutadiene	ND	500	ug/kg
Hexachlorocyclopenta-diene	ND	500	ug/kg
Hexachloroethane	ND	500	ug/kg
Indeno(1,2,3-cd)pyrene	ND	500	ug/kg
Isophorone	ND	500	ug/kg
2-Methylnaphthalene	ND	500	ug/kg
2-Methylphenol	ND	500	ug/kg
Naphthalene	ND	500	ug/kg
2-Nitroaniline	ND	1200	ug/kg
3-Nitroaniline	ND	1200	ug/kg
4-Nitroaniline	ND	1200	ug/kg
itrobenzene	ND	500	ug/kg
2-Nitrophenol	ND	500	ug/kg
4-Nitrophenol	ND	1200	ug/kg
N-Nitrosodi-n-propyl-amine	ND	500	ug/kg
N-Nitrosodiphenylamine	ND	500	ug/kg
Pentachlorophenol	ND	1200	ug/kg
Phenanthrene	ND	500	ug/kg
Phenol	ND	500	ug/kg
Pyrene	ND	500	ug/kg
1,2,4-Trichlorobenzene	ND	500	ug/kg
2,4,5-Trichlorophenol	ND	500	ug/kg
2,4,6-Trichlorophenol	ND	500	ug/kg
Carbazole	ND	500	ug/kg
4-Methylphenol	ND	500	ug/kg
bis(2-Chloroisopropyl) ether	ND	500	ug/kg

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Nitrobenzene-d5	51	(23 - 120)
Terphenyl-d14	80	(18 - 137)
2-Fluorobiphenyl	60	(30 - 115)
2-Fluorophenol	44	(30 - 115)
Phenol-d5	43	(24 - 113)
,4,6-Tribromophenol	43	(19 - 122)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

U.S. ARMY CORPS OF ENGINEERS

Client Sample ID: PBOW99SBA101A-DUP

TOTAL Metals

Lot-Sample #...: A9F150184-002 **Matrix.....:** SOLID
Date Sampled...: 06/11/99 08:43 **Date Received..:** 06/12/99
% Moisture.....: 34

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 9174305						
Silver	ND	0.76 Dilution Factor: 1	mg/kg	SW846 6010B	06/24-07/16/99	CWWC[illegible]10H
Aluminum	**7740**	**30.3** Dilution Factor: 1	**mg/kg**	**SW846 6010B**	**06/24-07/15/99**	**CWWC[illegible]102**
Arsenic	**10**	**1.5** Dilution Factor: 1	**mg/kg**	**SW846 6010B**	**06/24-07/16/99**	**CWWC[illegible]10J**
Barium	**36.9**	**30.3** Dilution Factor: 1	**mg/kg**	**SW846 6010B**	**06/24-07/16/99**	**CWWC[illegible]103**
Beryllium	ND	0.76 Dilution Factor: 1	mg/kg	SW846 6010B	06/24-07/16/99	CWWC[illegible]104
admium	ND	0.30 Dilution Factor: 1	mg/kg	SW846 6010B	06/24-07/16/99	CWWC[illegible]
Calcium	**3420**	**758** Dilution Factor: 1	**mg/kg**	**SW846 6010B**	**06/24-07/15/99**	**CWWC[illegible]105**
Chromium	**14.3**	**0.76** Dilution Factor: 1	**mg/kg**	**SW846 6010B**	**06/24-07/16/99**	**CWWC[illegible]10L**
Cobalt	ND	7.6 Dilution Factor: 1	mg/kg	SW846 6010B	06/24-07/16/99	CWWC[illegible]106
Lead	**9.6**	**0.45** Dilution Factor: 1	**mg/kg**	**SW846 6010B**	**06/24-07/16/99**	**CWWC[illegible]10M**
Copper	**16.7**	**3.8** Dilution Factor: 1	**mg/kg**	**SW846 6010B**	**06/24-07/16/99**	**CWWC[illegible]107**
Antimony	ND	1.5 Dilution Factor: 1	mg/kg	SW846 6010B	06/24-07/16/99	CWWC[illegible]10N
Iron	**24700**	**15.2** Dilution Factor: 1	**mg/kg**	**SW846 6010B**	**06/24-07/16/99**	**CWWC[illegible]108**
Selenium	**1.0**	**0.76** Dilution Factor: 1	**mg/kg**	**SW846 6010B**	**06/24-07/16/99**	**CWWC[illegible]10P**

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U.S. ARMY CORPS OF ENGINEERS

Client Sample ID: PBOW99SBA101A-DUP

TOTAL Metals

Lot-Sample #...: A9F150184-002 **Matrix.....:** SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Mercury	ND	0.15	mg/kg	SW846 7471A	06/24-06/28/99	CWWCN10R
		Dilution Factor: 1				
Potassium	**984**	**758**	**mg/kg**	**SW846 6010B**	**06/24-07/15/99**	**CWWCN109**
		Dilution Factor: 1				
Thallium	ND	1.5	mg/kg	SW846 6010B	06/24-07/16/99	CWWCN10Q
		Dilution Factor: 1				
Magnesium	**1800**	**758**	**mg/kg**	**SW846 6010B**	**06/24-07/15/99**	**CWWCN10A**
		Dilution Factor: 1				
Manganese	**480**	**2.3**	**mg/kg**	**SW846 6010B**	**06/24-07/16/99**	**CWWCN10C**
		Dilution Factor: 1				
Sodium	ND	758	mg/kg	SW846 6010B	06/24-07/15/99	CWWCN10D
		Dilution Factor: 1				
ckel	**31.4**	**6.1**	**mg/kg**	**SW846 6010B**	**06/24-07/16/99**	**CWWCN10E**
		Dilution Factor: 1				
Vanadium	**24.0**	**7.6**	**mg/kg**	**SW846 6010B**	**06/24-07/16/99**	**CWWCN10F**
		Dilution Factor: 1				
Zinc	**70.1 MBD**	**3.0**	**mg/kg**	**SW846 6010B**	**06/24-07/16/99**	**CWWCN10G**
		Dilution Factor: 1				

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

MBD This analyte is present in the associated method blank at an amount that is less than two times the reporting limit.

U.S. ARMY CORPS OF ENGINEERS

Client Sample ID: PBOW99SBA102A

GC/MS Semivolatiles

Lot-Sample #...: A9F150184-003 **Work Order #...:** CWWCQ101 **Matrix.....:** SOLID
Date Sampled...: 06/10/99 16:22 **Date Received..:** 06/12/99
Prep Date.....: 06/21/99 **Analysis Date..:** 06/26/99
Prep Batch #...: 9172112
Dilution Factor: 1
% Moisture.....: 24 **Method.....:** SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	430	ug/kg
Acenaphthylene	ND	430	ug/kg
Anthracene	ND	430	ug/kg
Benzo(a)anthracene	ND	430	ug/kg
Benzo(b)fluoranthene	ND	430	ug/kg
Benzo(k)fluoranthene	ND	430	ug/kg
Benzo(ghi)perylene	ND	430	ug/kg
Benzo(a)pyrene	ND	430	ug/kg
bis(2-Chloroethoxy) methane	ND	430	ug/kg
bis(2-Chloroethyl)-ether	ND	430	ug/kg
bis(2-Ethylhexyl) phthalate	ND	430	ug/kg
4-Bromophenyl phenyl ether	ND	430	ug/kg
Butyl benzyl phthalate	ND	430	ug/kg
4-Chloroaniline	ND	430	ug/kg
4-Chloro-3-methylphenol	ND	430	ug/kg
2-Chloronaphthalene	ND	430	ug/kg
2-Chlorophenol	ND	430	ug/kg
4-Chlorophenyl phenyl ether	ND	430	ug/kg
Chrysene	ND	430	ug/kg
Dibenz(a,h)anthracene	ND	430	ug/kg
Dibenzofuran	ND	430	ug/kg
Di-n-butyl phthalate	ND	430	ug/kg
1,2-Dichlorobenzene	ND	430	ug/kg
1,3-Dichlorobenzene	ND	430	ug/kg
1,4-Dichlorobenzene	ND	430	ug/kg
3,3'-Dichlorobenzidine	ND	430	ug/kg
2,4-Dichlorophenol	ND	430	ug/kg
Diethyl phthalate	ND	430	ug/kg
2,4-Dimethylphenol	ND	430	ug/kg
Dimethyl phthalate	ND	430	ug/kg
Di-n-octyl phthalate	ND	430	ug/kg
4,6-Dinitro-2-methylphenol	ND	1000	ug/kg

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U.S. ARMY CORPS OF ENGINEERS

Client Sample ID: PBOW99SBA102A

GC/MS Semivolatiles

Lot-Sample #...: A9F150184-003 **Work Order #...:** CWWCQ101 **Matrix.....:** SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS
2,4-Dinitrophenol	ND	1000	ug/kg
2,4-Dinitrotoluene	ND	430	ug/kg
2,6-Dinitrotoluene	ND	430	ug/kg
Fluoranthene	ND	430	ug/kg
Fluorene	ND	430	ug/kg
Hexachlorobenzene	ND	430	ug/kg
Hexachlorobutadiene	ND	430	ug/kg
Hexachlorocyclopenta-diene	ND	430	ug/kg
Hexachloroethane	ND	430	ug/kg
Indeno(1,2,3-cd)pyrene	ND	430	ug/kg
Isophorone	ND	430	ug/kg
2-Methylnaphthalene	ND	430	ug/kg
2-Methylphenol	ND	430	ug/kg
Naphthalene	ND	430	ug/kg
2-Nitroaniline	ND	1000	ug/kg
3-Nitroaniline	ND	1000	ug/kg
4-Nitroaniline	ND	1000	ug/kg
itrobenzene	ND	430	ug/kg
2-Nitrophenol	ND	430	ug/kg
4-Nitrophenol	ND	1000	ug/kg
N-Nitrosodi-n-propyl-amine	ND	430	ug/kg
N-Nitrosodiphenylamine	ND	430	ug/kg
Pentachlorophenol	ND	1000	ug/kg
Phenanthrene	ND	430	ug/kg
Phenol	ND	430	ug/kg
Pyrene	ND	430	ug/kg
1,2,4-Trichlorobenzene	ND	430	ug/kg
2,4,5-Trichlorophenol	ND	430	ug/kg
2,4,6-Trichlorophenol	ND	430	ug/kg
Carbazole	ND	430	ug/kg
4-Methylphenol	ND	430	ug/kg
bis(2-Chloroisopropyl) ether	ND	430	ug/kg

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Nitrobenzene-d5	52	(23 - 120)
Terphenyl-d14	69	(18 - 137)
2-Fluorobiphenyl	58	(30 - 115)
2-Fluorophenol	35	(30 - 115)
Phenol-d5	36	(24 - 113)
,4,6-Tribromophenol	43	(19 - 122)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

U.S. ARMY CORPS OF ENGINEERS

Client Sample ID: PBOW99SBA102A

TOTAL Metals

Lot-Sample #...: A9F150184-003 Matrix.....: SOLID
Date Sampled...: 06/10/99 16:22 Date Received..: 06/12/99
% Moisture.....: 24

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 9174305						
Silver	ND	0.65	mg/kg	SW846 6010B	06/24-07/16/99	CWWCQ10J
		Dilution Factor: 1				
Aluminum	**12700**	**26.2**	**mg/kg**	**SW846 6010B**	**06/24-07/15/99**	**CWWCQ103**
		Dilution Factor: 1				
Arsenic	**19.6**	**2.6**	**mg/kg**	**SW846 6010B**	**06/24-07/19/99**	**CWWCQ10K**
		Dilution Factor: 2				
Barium	**163**	**26.2**	**mg/kg**	**SW846 6010B**	**06/24-07/16/99**	**CWWCQ104**
		Dilution Factor: 1				
Beryllium	ND	0.65	mg/kg	SW846 6010B	06/24-07/16/99	CWWCQ105
		Dilution Factor: 1				
admium	ND G	0.52	mg/kg	SW846 6010B	06/24-07/19/99	CWWCQ1
		Dilution Factor: 2				
Calcium	**6600**	**654**	**mg/kg**	**SW846 6010B**	**06/24-07/15/99**	**CWWCQ106**
		Dilution Factor: 1				
Chromium	**12.2**	**1.3**	**mg/kg**	**SW846 6010B**	**06/24-07/19/99**	**CWWCQ10M**
		Dilution Factor: 2				
Cobalt	**6.8**	**6.5**	**mg/kg**	**SW846 6010B**	**06/24-07/16/99**	**CWWCQ107**
		Dilution Factor: 1				
Lead	**5.9**	**0.79**	**mg/kg**	**SW846 6010B**	**06/24-07/19/99**	**CWWCQ10N**
		Dilution Factor: 2				
Copper	**32.1**	**3.3**	**mg/kg**	**SW846 6010B**	**06/24-07/16/99**	**CWWCQ108**
		Dilution Factor: 1				
Antimony	ND G	2.6	mg/kg	SW846 6010B	06/24-07/19/99	CWWCQ10P
		Dilution Factor: 2				
Iron	**95100**	**26.2**	**mg/kg**	**SW846 6010B**	**06/24-07/19/99**	**CWWCQ109**
		Dilution Factor: 2				
Selenium	ND G	1.3	mg/kg	SW846 6010B	06/24-07/19/99	CWWCQ10Q
		Dilution Factor: 2				

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U.S. ARMY CORPS OF ENGINEERS

Client Sample ID: PBOW99SBA102A

TOTAL Metals

Lot-Sample #...: A9F150184-003 **Matrix.....:** SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Mercury	ND	0.13	mg/kg	SW846 7471A	06/24-06/28/99	CWWCQ10T
		Dilution Factor: 1				
Potassium	**1090**	**654**	**mg/kg**	**SW846 6010B**	**06/24-07/15/99**	**CWWCQ10A**
		Dilution Factor: 1				
Thallium	ND G	2.6	mg/kg	SW846 6010B	06/24-07/19/99	CWWCQ10R
		Dilution Factor: 2				
Magnesium	ND	654	mg/kg	SW846 6010B	06/24-07/15/99	CWWCQ10C
		Dilution Factor: 1				
Manganese	**199**	**3.9**	**mg/kg**	**SW846 6010B**	**06/24-07/19/99**	**CWWCQ10D**
		Dilution Factor: 2				
Sodium	ND	654	mg/kg	SW846 6010B	06/24-07/15/99	CWWCQ10E
		Dilution Factor: 1				
Nickel	**16.1**	**5.2**	**mg/kg**	**SW846 6010B**	**06/24-07/16/99**	**CWWCQ10F**
		Dilution Factor: 1				
Vanadium	**17.8**	**13.1**	**mg/kg**	**SW846 6010B**	**06/24-07/19/99**	**CWWCQ10G**
		Dilution Factor: 2				
Zinc	**10.7 MBD**	**5.2**	**mg/kg**	**SW846 6010B**	**06/24-07/19/99**	**CWWCQ10H**
		Dilution Factor: 2				

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

G Elevated reporting limit. The reporting limit is elevated due to matrix interference.

MBD This analyte is present in the associated method blank at an amount that is less than two times the reporting limit.

U.S. ARMY CORPS OF ENGINEERS

Client Sample ID: PBOW99SBA102A

General Chemistry

Lot-Sample #...: A9F150184-003 **Work Order #...:** CWWCQ **Matrix.....:** SOLID
Date Sampled...: 06/10/99 16:22 **Date Received..:** 06/12/99
% Moisture.....: 24

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Percent Solids	**76.4**	**0.10**	**%**	**MCAWW 160.3 MOD**	**06/23-06/24/99**	**9174259**
	Dilution Factor: 1					
Total Organic Carbon	ND	130	mg/kg	SMCA WALKLEY-BLAC	07/05/99	9186124
	Dilution Factor: 1					

NOTE(S):

RL Reporting Limit

Results and reporting limits have been adjusted for dry weight.

U.S. ARMY CORPS OF ENGINEERS

Client Sample ID: PBOW99SBA103A

GC/MS Semivolatiles

Lot-Sample #...: A9F150184-004 **Work Order #...:** CWWCT101 **Matrix.....:** SOLID
Date Sampled...: 06/10/99 17:07 **Date Received..:** 06/12/99
Prep Date.....: 06/21/99 **Analysis Date..:** 06/26/99
Prep Batch #...: 9172112
Dilution Factor: 1
% Moisture.....: 40 **Method.....:** SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	550	ug/kg
Acenaphthylene	ND	550	ug/kg
Anthracene	ND	550	ug/kg
Benzo(a)anthracene	ND	550	ug/kg
Benzo(b)fluoranthene	ND	550	ug/kg
Benzo(k)fluoranthene	ND	550	ug/kg
Benzo(ghi)perylene	ND	550	ug/kg
Benzo(a)pyrene	ND	550	ug/kg
bis(2-Chloroethoxy) methane	ND	550	ug/kg
bis(2-Chloroethyl)-ether	ND	550	ug/kg
bis(2-Ethylhexyl) phthalate	ND	550	ug/kg
4-Bromophenyl phenyl ether	ND	550	ug/kg
Butyl benzyl phthalate	ND	550	ug/kg
4-Chloroaniline	ND	550	ug/kg
4-Chloro-3-methylphenol	ND	550	ug/kg
2-Chloronaphthalene	ND	550	ug/kg
2-Chlorophenol	ND	550	ug/kg
4-Chlorophenyl phenyl ether	ND	550	ug/kg
Chrysene	ND	550	ug/kg
Dibenz(a,h)anthracene	ND	550	ug/kg
Dibenzofuran	ND	550	ug/kg
Di-n-butyl phthalate	ND	550	ug/kg
1,2-Dichlorobenzene	ND	550	ug/kg
1,3-Dichlorobenzene	ND	550	ug/kg
1,4-Dichlorobenzene	ND	550	ug/kg
3,3'-Dichlorobenzidine	ND	550	ug/kg
2,4-Dichlorophenol	ND	550	ug/kg
Diethyl phthalate	ND	550	ug/kg
2,4-Dimethylphenol	ND	550	ug/kg
Dimethyl phthalate	ND	550	ug/kg
Di-n-octyl phthalate	ND	550	ug/kg
4,6-Dinitro-2-methylphenol	ND	1300	ug/kg

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U.S. ARMY CORPS OF ENGINEERS

Client Sample ID: PBOW99SBA103A

GC/MS Semivolatiles

Lot-Sample #...: A9F150184-004 **Work Order #...:** CWWCT101 **Matrix.....:** SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS
2,4-Dinitrophenol	ND	1300	ug/kg
2,4-Dinitrotoluene	ND	550	ug/kg
2,6-Dinitrotoluene	ND	550	ug/kg
Fluoranthene	ND	550	ug/kg
Fluorene	ND	550	ug/kg
Hexachlorobenzene	ND	550	ug/kg
Hexachlorobutadiene	ND	550	ug/kg
Hexachlorocyclopenta-diene	ND	550	ug/kg
Hexachloroethane	ND	550	ug/kg
Indeno(1,2,3-cd)pyrene	ND	550	ug/kg
Isophorone	ND	550	ug/kg
2-Methylnaphthalene	ND	550	ug/kg
2-Methylphenol	ND	550	ug/kg
Naphthalene	ND	550	ug/kg
2-Nitroaniline	ND	1300	ug/kg
3-Nitroaniline	ND	1300	ug/kg
4-Nitroaniline	ND	1300	ug/kg
Nitrobenzene	ND	550	ug/kg
2-Nitrophenol	ND	550	ug/kg
4-Nitrophenol	ND	1300	ug/kg
N-Nitrosodi-n-propyl-amine	ND	550	ug/kg
N-Nitrosodiphenylamine	ND	550	ug/kg
Pentachlorophenol	ND	1300	ug/kg
Phenanthrene	ND	550	ug/kg
Phenol	ND	550	ug/kg
Pyrene	ND	550	ug/kg
1,2,4-Trichlorobenzene	ND	550	ug/kg
2,4,5-Trichlorophenol	ND	550	ug/kg
2,4,6-Trichlorophenol	ND	550	ug/kg
Carbazole	ND	550	ug/kg
4-Methylphenol	ND	550	ug/kg
bis(2-Chloroisopropyl) ether	ND	550	ug/kg

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Nitrobenzene-d5	49	(23 - 120)
Terphenyl-d14	61	(18 - 137)
2-Fluorobiphenyl	52	(30 - 115)
2-Fluorophenol	26 *	(30 - 115)
Phenol-d5	26	(24 - 113)
2,4,6-Tribromophenol	33	(19 - 122)

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U.S. ARMY CORPS OF ENGINEERS

Client Sample ID: PBOW99SBA103A

GC/MS Semivolatiles

Lot-Sample #...: A9F150184-004 Work Order #...: CWWCT101 Matrix.....: SOLID

NOTE(S):

* Surrogate recovery is outside stated control limits.

Results and reporting limits have been adjusted for dry weight.

U.S. ARMY CORPS OF ENGINEERS

Client Sample ID: PBOW99SBA103A

TOTAL Metals

Lot-Sample #...: A9F150184-004 **Matrix.....:** SOLID
Date Sampled...: 06/10/99 17:07 **Date Received..:** 06/12/99
% Moisture.....: 40

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 9174305						
Silver	ND	0.84 Dilution Factor: 1	mg/kg	SW846 6010B	06/24-07/16/99	CWWCI10H
Aluminum	**8310**	**33.4** Dilution Factor: 1	**mg/kg**	**SW846 6010B**	**06/24-07/15/99**	**CWWCI102**
Arsenic	**9.4**	**1.7** Dilution Factor: 1	**mg/kg**	**SW846 6010B**	**06/24-07/16/99**	**CWWCI10J**
Barium	**41.3**	**33.4** Dilution Factor: 1	**mg/kg**	**SW846 6010B**	**06/24-07/16/99**	**CWWCI103**
Beryllium	ND	0.84 Dilution Factor: 1	mg/kg	SW846 6010B	06/24-07/16/99	CWWCI104
admium	ND	0.33 Dilution Factor: 1	mg/kg	SW846 6010B	06/24-07/16/99	CWWCI
Calcium	**5590**	**835** Dilution Factor: 1	**mg/kg**	**SW846 6010B**	**06/24-07/15/99**	**CWWCI105**
Chromium	**18.1**	**0.84** Dilution Factor: 1	**mg/kg**	**SW846 6010B**	**06/24-07/16/99**	**CWWCI10L**
Cobalt	ND	8.4 Dilution Factor: 1	mg/kg	SW846 6010B	06/24-07/16/99	CWWCI106
Lead	**8.1**	**0.50** Dilution Factor: 1	**mg/kg**	**SW846 6010B**	**06/24-07/16/99**	**CWWCI10M**
Copper	**13.5**	**4.2** Dilution Factor: 1	**mg/kg**	**SW846 6010B**	**06/24-07/16/99**	**CWWCI107**
Antimony	ND	1.7 Dilution Factor: 1	mg/kg	SW846 6010B	06/24-07/16/99	CWWCI10N
Iron	**29000**	**16.7** Dilution Factor: 1	**mg/kg**	**SW846 6010B**	**06/24-07/16/99**	**CWWCI108**
Selenium	**1.2**	**0.84** Dilution Factor: 1	**mg/kg**	**SW846 6010B**	**06/24-07/16/99**	**CWWCI10P**

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U.S. ARMY CORPS OF ENGINEERS

Client Sample ID: PBOW99SBA103A

TOTAL Metals

Lot-Sample #...: A9F150184-004 Matrix.....: SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Mercury	ND	0.17	mg/kg	SW846 7471A	06/24-06/28/99	CWWCT10R
		Dilution Factor: 1				
Potassium	ND	835	mg/kg	SW846 6010B	06/24-07/15/99	CWWCT109
		Dilution Factor: 1				
Thallium	ND	1.7	mg/kg	SW846 6010B	06/24-07/16/99	CWWCT10Q
		Dilution Factor: 1				
Magnesium	**1470**	**835**	**mg/kg**	**SW846 6010B**	**06/24-07/15/99**	**CWWCT10A**
		Dilution Factor: 1				
Manganese	**125**	**2.5**	**mg/kg**	**SW846 6010B**	**06/24-07/16/99**	**CWWCT10C**
		Dilution Factor: 1				
Sodium	ND	835	mg/kg	SW846 6010B	06/24-07/15/99	CWWCT10D
		Dilution Factor: 1				
ckel	**21.1**	**6.7**	**mg/kg**	**SW846 6010B**	**06/24-07/16/99**	**CWWCT10E**
		Dilution Factor: 1				
Vanadium	**39.2**	**8.4**	**mg/kg**	**SW846 6010B**	**06/24-07/16/99**	**CWWCT10F**
		Dilution Factor: 1				
Zinc	**43.5 MBD**	**3.3**	**mg/kg**	**SW846 6010B**	**06/24-07/16/99**	**CWWCT10G**
		Dilution Factor: 1				

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

MBD This analyte is present in the associated method blank at an amount that is less than two times the reporting limit.

U.S. ARMY CORPS OF ENGINEERS

Client Sample ID: PBOW99SBA103B

GC/MS Semivolatiles

Lot-Sample #...: A9F150184-005 **Work Order #...:** CWWCW101 **Matrix.....:** SOLID
Date Sampled...: 06/10/99 17:24 **Date Received..:** 06/12/99
Prep Date.....: 06/21/99 **Analysis Date..:** 06/26/99
Prep Batch #...: 9172112
Dilution Factor: 1
% Moisture.....: 21 **Method.....:** SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	420	ug/kg
Acenaphthylene	ND	420	ug/kg
Anthracene	ND	420	ug/kg
Benzo(a)anthracene	ND	420	ug/kg
Benzo(b)fluoranthene	ND	420	ug/kg
Benzo(k)fluoranthene	ND	420	ug/kg
Benzo(ghi)perylene	ND	420	ug/kg
Benzo(a)pyrene	ND	420	ug/kg
bis(2-Chloroethoxy) methane	ND	420	ug/kg
bis(2-Chloroethyl)-ether	ND	420	ug/kg
bis(2-Ethylhexyl) phthalate	ND	420	ug/kg
4-Bromophenyl phenyl ether	ND	420	ug/kg
Butyl benzyl phthalate	ND	420	ug/kg
4-Chloroaniline	ND	420	ug/kg
4-Chloro-3-methylphenol	ND	420	ug/kg
2-Chloronaphthalene	ND	420	ug/kg
2-Chlorophenol	ND	420	ug/kg
4-Chlorophenyl phenyl ether	ND	420	ug/kg
Chrysene	ND	420	ug/kg
Dibenz(a,h)anthracene	ND	420	ug/kg
Dibenzofuran	ND	420	ug/kg
Di-n-butyl phthalate	ND	420	ug/kg
1,2-Dichlorobenzene	ND	420	ug/kg
1,3-Dichlorobenzene	ND	420	ug/kg
1,4-Dichlorobenzene	ND	420	ug/kg
3,3'-Dichlorobenzidine	ND	420	ug/kg
2,4-Dichlorophenol	ND	420	ug/kg
Diethyl phthalate	ND	420	ug/kg
2,4-Dimethylphenol	ND	420	ug/kg
Dimethyl phthalate	ND	420	ug/kg
Di-n-octyl phthalate	ND	420	ug/kg
4,6-Dinitro-2-methylphenol	ND	1000	ug/kg

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U.S. ARMY CORPS OF ENGINEERS

Client Sample ID: PBOW99SBA103B

GC/MS Semivolatiles

Lot-Sample #...: A9F150184-005 **Work Order #...:** CWWCW101 **Matrix.....:** SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS
2,4-Dinitrophenol	ND	1000	ug/kg
2,4-Dinitrotoluene	ND	420	ug/kg
2,6-Dinitrotoluene	ND	420	ug/kg
Fluoranthene	ND	420	ug/kg
Fluorene	ND	420	ug/kg
Hexachlorobenzene	ND	420	ug/kg
Hexachlorobutadiene	ND	420	ug/kg
Hexachlorocyclopenta-diene	ND	420	ug/kg
Hexachloroethane	ND	420	ug/kg
Indeno(1,2,3-cd)pyrene	ND	420	ug/kg
Isophorone	ND	420	ug/kg
2-Methylnaphthalene	ND	420	ug/kg
2-Methylphenol	ND	420	ug/kg
Naphthalene	ND	420	ug/kg
2-Nitroaniline	ND	1000	ug/kg
3-Nitroaniline	ND	1000	ug/kg
4-Nitroaniline	ND	1000	ug/kg
itrobenzene	ND	420	ug/kg
2-Nitrophenol	ND	420	ug/kg
4-Nitrophenol	ND	1000	ug/kg
N-Nitrosodi-n-propyl-amine	ND	420	ug/kg
N-Nitrosodiphenylamine	ND	420	ug/kg
Pentachlorophenol	ND	1000	ug/kg
Phenanthrene	ND	420	ug/kg
Phenol	ND	420	ug/kg
Pyrene	ND	420	ug/kg
1,2,4-Trichlorobenzene	ND	420	ug/kg
2,4,5-Trichlorophenol	ND	420	ug/kg
2,4,6-Trichlorophenol	ND	420	ug/kg
Carbazole	ND	420	ug/kg
4-Methylphenol	ND	420	ug/kg
bis(2-Chloroisopropyl) ether	ND	420	ug/kg

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Nitrobenzene-d5	59	(23 - 120)
Terphenyl-d14	71	(18 - 137)
2-Fluorobiphenyl	65	(30 - 115)
2-Fluorophenol	61	(30 - 115)
Phenol-d5	50	(24 - 113)
,4,6-Tribromophenol	65	(19 - 122)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

U.S. ARMY CORPS OF ENGINEERS

Client Sample ID: PBOW99SBA103B

TOTAL Metals

Lot-Sample #...: A9F150184-005 Matrix.....: SOLID
Date Sampled...: 06/10/99 17:24 Date Received..: 06/12/99
% Moisture.....: 21

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 9174305						
Silver	ND	0.63	mg/kg	SW846 6010B	06/24-07/16/99	CWWCW10J
		Dilution Factor: 1				
Aluminum	**12600**	**25.3**	**mg/kg**	**SW846 6010B**	**06/24-07/15/99**	**CWWCW103**
		Dilution Factor: 1				
Arsenic	**15.8**	**1.3**	**mg/kg**	**SW846 6010B**	**06/24-07/16/99**	**CWWCW10K**
		Dilution Factor: 1				
Barium	**78.9**	**25.3**	**mg/kg**	**SW846 6010B**	**06/24-07/16/99**	**CWWCW104**
		Dilution Factor: 1				
Beryllium	ND	0.63	mg/kg	SW846 6010B	06/24-07/16/99	CWWCW105
		Dilution Factor: 1				
Cadmium	ND	0.25	mg/kg	SW846 6010B	06/24-07/16/99	CWWCW1
		Dilution Factor: 1				
Calcium	**3770**	**632**	**mg/kg**	**SW846 6010B**	**06/24-07/15/99**	**CWWCW106**
		Dilution Factor: 1				
Chromium	**20.7**	**0.63**	**mg/kg**	**SW846 6010B**	**06/24-07/16/99**	**CWWCW10M**
		Dilution Factor: 1				
Cobalt	**14.8**	**6.3**	**mg/kg**	**SW846 6010B**	**06/24-07/16/99**	**CWWCW107**
		Dilution Factor: 1				
Lead	**10.9**	**0.38**	**mg/kg**	**SW846 6010B**	**06/24-07/16/99**	**CWWCW10N**
		Dilution Factor: 1				
Copper	**27.9**	**3.2**	**mg/kg**	**SW846 6010B**	**06/24-07/16/99**	**CWWCW108**
		Dilution Factor: 1				
Antimony	ND	1.3	mg/kg	SW846 6010B	06/24-07/16/99	CWWCW10P
		Dilution Factor: 1				
Iron	**45500**	**12.6**	**mg/kg**	**SW846 6010B**	**06/24-07/16/99**	**CWWCW109**
		Dilution Factor: 1				
Selenium	**0.97**	**0.63**	**mg/kg**	**SW846 6010B**	**06/24-07/16/99**	**CWWCW10O**
		Dilution Factor: 1				

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U.S. ARMY CORPS OF ENGINEERS

Client Sample ID: PBOW99SBA103B

TOTAL Metals

Lot-Sample #...: A9F150184-005 **Matrix.....:** SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Mercury	ND	0.13	mg/kg	SW846 7471A	06/24-06/28/99	CWWCW10T
		Dilution Factor: 1				
Potassium	**1720**	**632**	**mg/kg**	**SW846 6010B**	**06/24-07/15/99**	**CWWCW10A**
		Dilution Factor: 1				
Thallium	ND	1.3	mg/kg	SW846 6010B	06/24-07/16/99	CWWCW10R
		Dilution Factor: 1				
Magnesium	**4910**	**632**	**mg/kg**	**SW846 6010B**	**06/24-07/15/99**	**CWWCW10C**
		Dilution Factor: 1				
Manganese	**409**	**1.9**	**mg/kg**	**SW846 6010B**	**06/24-07/16/99**	**CWWCW10D**
		Dilution Factor: 1				
Sodium	ND	632	mg/kg	SW846 6010B	06/24-07/15/99	CWWCW10E
		Dilution Factor: 1				
ickel	**44.3**	**5.1**	**mg/kg**	**SW846 6010B**	**06/24-07/16/99**	**CWWCW10F**
		Dilution Factor: 1				
Vanadium	**26.8**	**6.3**	**mg/kg**	**SW846 6010B**	**06/24-07/16/99**	**CWWCW10G**
		Dilution Factor: 1				
Zinc	**74.5 MBD**	**2.5**	**mg/kg**	**SW846 6010B**	**06/24-07/16/99**	**CWWCW10H**
		Dilution Factor: 1				

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

MBD This analyte is present in the associated method blank at an amount that is less than two times the reporting limit.

U.S. ARMY CORPS OF ENGINEERS

Client Sample ID: PBOW99SBA103B

General Chemistry

Lot-Sample #...: A9F150184-005 Work Order #...: CWWCW Matrix.....: SOLID
Date Sampled...: 06/10/99 17:24 Date Received..: 06/12/99
% Moisture.....: 21

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Percent Solids	79.2	0.10	%	MCAWW 160.3 MOD	06/23-06/24/99	9174259
	Dilution Factor: 1					
Total Organic Carbon	1900	130	mg/kg	SMCA WALKLEY-BLAC	07/05/99	9186124
	Dilution Factor: 1					

NOTE(S):

RL Reporting Limit

Results and reporting limits have been adjusted for dry weight.

U.S. ARMY CORPS OF ENGINEERS

Client Sample ID: PBOW99SBA104B

GC/MS Semivolatiles

Lot-Sample #...: A9F150184-006 **Work Order #...:** CWWCX101 **Matrix.....:** SOLID
Date Sampled...: 06/10/99 16:38 **Date Received..:** 06/12/99
Prep Date.....: 06/21/99 **Analysis Date..:** 06/26/99
Prep Batch #...: 9172112
Dilution Factor: 1
% Moisture.....: 23 **Method.....:** SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	430	ug/kg
Acenaphthylene	ND	430	ug/kg
Anthracene	ND	430	ug/kg
Benzo(a)anthracene	ND	430	ug/kg
Benzo(b)fluoranthene	ND	430	ug/kg
Benzo(k)fluoranthene	ND	430	ug/kg
Benzo(ghi)perylene	ND	430	ug/kg
Benzo(a)pyrene	ND	430	ug/kg
bis(2-Chloroethoxy) methane	ND	430	ug/kg
bis(2-Chloroethyl)-ether	ND	430	ug/kg
bis(2-Ethylhexyl) phthalate	ND	430	ug/kg
4-Bromophenyl phenyl ether	ND	430	ug/kg
Butyl benzyl phthalate	ND	430	ug/kg
4-Chloroaniline	ND	430	ug/kg
4-Chloro-3-methylphenol	ND	430	ug/kg
2-Chloronaphthalene	ND	430	ug/kg
2-Chlorophenol	ND	430	ug/kg
4-Chlorophenyl phenyl ether	ND	430	ug/kg
Chrysene	ND	430	ug/kg
Dibenz(a,h)anthracene	ND	430	ug/kg
Dibenzofuran	ND	430	ug/kg
Di-n-butyl phthalate	ND	430	ug/kg
1,2-Dichlorobenzene	ND	430	ug/kg
1,3-Dichlorobenzene	ND	430	ug/kg
1,4-Dichlorobenzene	ND	430	ug/kg
3,3'-Dichlorobenzidine	ND	430	ug/kg
2,4-Dichlorophenol	ND	430	ug/kg
Diethyl phthalate	ND	430	ug/kg
2,4-Dimethylphenol	ND	430	ug/kg
Dimethyl phthalate	ND	430	ug/kg
Di-n-octyl phthalate	ND	430	ug/kg
4,6-Dinitro-2-methylphenol	ND	1000	ug/kg

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U.S. ARMY CORPS OF ENGINEERS

Client Sample ID: PBOW99SBA104B

GC/MS Semivolatiles

Lot-Sample #...: A9F150184-006 **Work Order #...:** CWWCX101 **Matrix.....:** SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS
2,4-Dinitrophenol	ND	1000	ug/kg
2,4-Dinitrotoluene	ND	430	ug/kg
2,6-Dinitrotoluene	ND	430	ug/kg
Fluoranthene	ND	430	ug/kg
Fluorene	ND	430	ug/kg
Hexachlorobenzene	ND	430	ug/kg
Hexachlorobutadiene	ND	430	ug/kg
Hexachlorocyclopenta-diene	ND	430	ug/kg
Hexachloroethane	ND	430	ug/kg
Indeno(1,2,3-cd)pyrene	ND	430	ug/kg
Isophorone	ND	430	ug/kg
2-Methylnaphthalene	ND	430	ug/kg
2-Methylphenol	ND	430	ug/kg
Naphthalene	ND	430	ug/kg
2-Nitroaniline	ND	1000	ug/kg
3-Nitroaniline	ND	1000	ug/kg
4-Nitroaniline	ND	1000	ug/kg
Nitrobenzene	ND	430	ug/kg
2-Nitrophenol	ND	430	ug/kg
4-Nitrophenol	ND	1000	ug/kg
N-Nitrosodi-n-propyl-amine	ND	430	ug/kg
N-Nitrosodiphenylamine	ND	430	ug/kg
Pentachlorophenol	ND	1000	ug/kg
Phenanthrene	ND	430	ug/kg
Phenol	ND	430	ug/kg
Pyrene	ND	430	ug/kg
1,2,4-Trichlorobenzene	ND	430	ug/kg
2,4,5-Trichlorophenol	ND	430	ug/kg
2,4,6-Trichlorophenol	ND	430	ug/kg
Carbazole	ND	430	ug/kg
4-Methylphenol	ND	430	ug/kg
bis(2-Chloroisopropyl) ether	ND	430	ug/kg

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Nitrobenzene-d5	54	(23 - 120)
Terphenyl-d14	67	(18 - 137)
2-Fluorobiphenyl	63	(30 - 115)
2-Fluorophenol	43	(30 - 115)
Phenol-d5	39	(24 - 113)
2,4,6-Tribromophenol	49	(19 - 122)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

U.S. ARMY CORPS OF ENGINEERS

Client Sample ID: PBOW99SBA104B

TOTAL Metals

Lot-Sample #...: A9F150184-006 **Matrix.....:** SOLID
Date Sampled...: 06/10/99 16:38 **Date Received..:** 06/12/99
% Moisture.....: 23

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 9174305						
Silver	ND	0.65	mg/kg	SW846 6010B	06/24-07/16/99	CWWCX10H
		Dilution Factor: 1				
Aluminum	**8820**	**25.9**	**mg/kg**	**SW846 6010B**	**06/24-07/15/99**	**CWWCX102**
		Dilution Factor: 1				
Arsenic	**14.0**	**1.3**	**mg/kg**	**SW846 6010B**	**06/24-07/16/99**	**CWWCX10J**
		Dilution Factor: 1				
Barium	**160**	**25.9**	**mg/kg**	**SW846 6010B**	**06/24-07/16/99**	**CWWCX103**
		Dilution Factor: 1				
Beryllium	ND	0.65	mg/kg	SW846 6010B	06/24-07/16/99	CWWCX104
		Dilution Factor: 1				
admium	ND	0.26	mg/kg	SW846 6010B	06/24-07/16/99	CWWCX10K
		Dilution Factor: 1				
Calcium	**6080**	**648**	**mg/kg**	**SW846 6010B**	**06/24-07/15/99**	**CWWCX105**
		Dilution Factor: 1				
Chromium	**10.5**	**0.65**	**mg/kg**	**SW846 6010B**	**06/24-07/16/99**	**CWWCX10L**
		Dilution Factor: 1				
Cobalt	**8.6**	**6.5**	**mg/kg**	**SW846 6010B**	**06/24-07/16/99**	**CWWCX106**
		Dilution Factor: 1				
Lead	**4.9**	**0.39**	**mg/kg**	**SW846 6010B**	**06/24-07/16/99**	**CWWCX10M**
		Dilution Factor: 1				
Copper	**24.0**	**3.2**	**mg/kg**	**SW846 6010B**	**06/24-07/16/99**	**CWWCX107**
		Dilution Factor: 1				
Antimony	ND	1.3	mg/kg	SW846 6010B	06/24-07/16/99	CWWCX10N
		Dilution Factor: 1				
Iron	**70300**	**13.0**	**mg/kg**	**SW846 6010B**	**06/24-07/16/99**	**CWWCX108**
		Dilution Factor: 1				
Selenium	**2.7**	**0.65**	**mg/kg**	**SW846 6010B**	**06/24-07/16/99**	**CWWCX10P**
		Dilution Factor: 1				

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U.S. ARMY CORPS OF ENGINEERS

Client Sample ID: PBOW99SBA104B

TOTAL Metals

Lot-Sample #...: A9F150184-006 Matrix.....: SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Mercury	ND	0.13	mg/kg	SW846 7471A	06/24-06/28/99	CWWCX10R
		Dilution Factor: 1				
Potassium	**781**	**648**	**mg/kg**	**SW846 6010B**	**06/24-07/15/99**	**CWWCX109**
		Dilution Factor: 1				
Thallium	ND	1.3	mg/kg	SW846 6010B	06/24-07/16/99	CWWCX10Q
		Dilution Factor: 1				
Magnesium	**651**	**648**	**mg/kg**	**SW846 6010B**	**06/24-07/15/99**	**CWWCX10A**
		Dilution Factor: 1				
Manganese	**181**	**1.9**	**mg/kg**	**SW846 6010B**	**06/24-07/16/99**	**CWWCX10C**
		Dilution Factor: 1				
Sodium	ND	648	mg/kg	SW846 6010B	06/24-07/15/99	CWWCX10D
		Dilution Factor: 1				
Nickel	**16.7**	**5.2**	**mg/kg**	**SW846 6010B**	**06/24-07/16/99**	**CWWCX**
		Dilution Factor: 1				
Vanadium	**14.4**	**6.5**	**mg/kg**	**SW846 6010B**	**06/24-07/16/99**	**CWWCX10F**
		Dilution Factor: 1				
Zinc	**11.9 MBD**	**2.6**	**mg/kg**	**SW846 6010B**	**06/24-07/16/99**	**CWWCX10G**
		Dilution Factor: 1				

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

MBD This analyte is present in the associated method blank at an amount that is less than two times the reporting limit.

U.S. ARMY CORPS OF ENGINEERS

Client Sample ID: PBOW99SSA101

GC/MS Semivolatiles

Lot-Sample #...: A9F150184-007 **Work Order #...:** CWWD4101 **Matrix.....:** SOLID
Date Sampled...: 06/10/99 18:08 **Date Received..:** 06/12/99
Prep Date.....: 06/21/99 **Analysis Date..:** 06/26/99
Prep Batch #...: 9172112
Dilution Factor: 1
% Moisture.....: 59 **Method.....:** SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	810	ug/kg
Acenaphthylene	ND	810	ug/kg
Anthracene	ND	810	ug/kg
Benzo(a)anthracene	ND	810	ug/kg
Benzo(b)fluoranthene	ND	810	ug/kg
Benzo(k)fluoranthene	ND	810	ug/kg
Benzo(ghi)perylene	ND	810	ug/kg
Benzo(a)pyrene	ND	810	ug/kg
bis(2-Chloroethoxy) methane	ND	810	ug/kg
bis(2-Chloroethyl)-ether	ND	810	ug/kg
bis(2-Ethylhexyl) phthalate	ND	810	ug/kg
4-Bromophenyl phenyl ether	ND	810	ug/kg
Butyl benzyl phthalate	ND	810	ug/kg
4-Chloroaniline	ND	810	ug/kg
4-Chloro-3-methylphenol	ND	810	ug/kg
2-Chloronaphthalene	ND	810	ug/kg
2-Chlorophenol	ND	810	ug/kg
4-Chlorophenyl phenyl ether	ND	810	ug/kg
Chrysene	ND	810	ug/kg
Dibenz(a,h)anthracene	ND	810	ug/kg
Dibenzofuran	ND	810	ug/kg
Di-n-butyl phthalate	ND	810	ug/kg
1,2-Dichlorobenzene	ND	810	ug/kg
1,3-Dichlorobenzene	ND	810	ug/kg
1,4-Dichlorobenzene	ND	810	ug/kg
3,3'-Dichlorobenzidine	ND	810	ug/kg
2,4-Dichlorophenol	ND	810	ug/kg
Diethyl phthalate	ND	810	ug/kg
2,4-Dimethylphenol	ND	810	ug/kg
Dimethyl phthalate	ND	810	ug/kg
Di-n-octyl phthalate	ND	810	ug/kg
4,6-Dinitro-2-methylphenol	ND	2000	ug/kg

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U.S. ARMY CORPS OF ENGINEERS

Client Sample ID: PBOW99SSA101

GC/MS Semivolatiles

Lot-Sample #...: A9F150184-007 **Work Order #...:** CWWD4101 **Matrix.....:** SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS
2,4-Dinitrophenol	ND	2000	ug/kg
2,4-Dinitrotoluene	ND	810	ug/kg
2,6-Dinitrotoluene	ND	810	ug/kg
Fluoranthene	ND	810	ug/kg
Fluorene	ND	810	ug/kg
Hexachlorobenzene	ND	810	ug/kg
Hexachlorobutadiene	ND	810	ug/kg
Hexachlorocyclopenta-diene	ND	810	ug/kg
Hexachloroethane	ND	810	ug/kg
Indeno(1,2,3-cd)pyrene	ND	810	ug/kg
Isophorone	ND	810	ug/kg
2-Methylnaphthalene	ND	810	ug/kg
2-Methylphenol	ND	810	ug/kg
Naphthalene	ND	810	ug/kg
2-Nitroaniline	ND	2000	ug/kg
3-Nitroaniline	ND	2000	ug/kg
4-Nitroaniline	ND	2000	ug/kg
Nitrobenzene	ND	810	ug/kg
2-Nitrophenol	ND	810	ug/kg
4-Nitrophenol	ND	2000	ug/kg
N-Nitrosodi-n-propyl-amine	ND	810	ug/kg
N-Nitrosodiphenylamine	ND	810	ug/kg
Pentachlorophenol	ND	2000	ug/kg
Phenanthrene	ND	810	ug/kg
Phenol	ND	810	ug/kg
Pyrene	ND	810	ug/kg
1,2,4-Trichlorobenzene	ND	810	ug/kg
2,4,5-Trichlorophenol	ND	810	ug/kg
2,4,6-Trichlorophenol	ND	810	ug/kg
Carbazole	ND	810	ug/kg
4-Methylphenol	ND	810	ug/kg
bis(2-Chloroisopropyl) ether	ND	810	ug/kg

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Nitrobenzene-d5	53	(23 - 120)
Terphenyl-d14	55	(18 - 137)
2-Fluorobiphenyl	49	(30 - 115)
2-Fluorophenol	7.2 *	(30 - 115)
Phenol-d5	9.7 *	(24 - 113)
2,4,6-Tribromophenol	12 *	(19 - 122)

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U.S. ARMY CORPS OF ENGINEERS

Client Sample ID: PBOW99SSA101

GC/MS Semivolatiles

Lot-Sample #...: A9F150184-007 Work Order #...: CWWD4101 Matrix.....: SOLID

NOTE(S):

* Surrogate recovery is outside stated control limits.

Results and reporting limits have been adjusted for dry weight.

U.S. ARMY CORPS OF ENGINEERS

Client Sample ID: PBOW99SSA101

GC/MS Semivolatiles

Lot-Sample #...: A9F150184-007 **Work Order #...:** CWWD4201 **Matrix.....:** SOLID
Date Sampled...: 06/10/99 18:08 **Date Received..:** 06/12/99
Prep Date.....: 06/28/99 **Analysis Date..:** 07/01/99
Prep Batch #...: 9177103
Dilution Factor: 1
% Moisture.....: 59 **Method.....:** SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	810	ug/kg
Acenaphthylene	ND	810	ug/kg
Anthracene	ND	810	ug/kg
Benzo(a)anthracene	ND	810	ug/kg
Benzo(b)fluoranthene	ND	810	ug/kg
Benzo(k)fluoranthene	ND	810	ug/kg
Benzo(ghi)perylene	ND	810	ug/kg
Benzo(a)pyrene	ND	810	ug/kg
bis(2-Chloroethoxy) methane	ND	810	ug/kg
bis(2-Chloroethyl)-ether	ND	810	ug/kg
bis(2-Ethylhexyl) phthalate	ND	810	ug/kg
4-Bromophenyl phenyl ether	ND	810	ug/kg
Butyl benzyl phthalate	ND	810	ug/kg
4-Chloroaniline	ND	810	ug/kg
4-Chloro-3-methylphenol	ND	810	ug/kg
2-Chloronaphthalene	ND	810	ug/kg
2-Chlorophenol	ND	810	ug/kg
4-Chlorophenyl phenyl ether	ND	810	ug/kg
Chrysene	ND	810	ug/kg
Dibenz(a,h)anthracene	ND	810	ug/kg
Dibenzofuran	ND	810	ug/kg
Di-n-butyl phthalate	ND	810	ug/kg
1,2-Dichlorobenzene	ND	810	ug/kg
1,3-Dichlorobenzene	ND	810	ug/kg
1,4-Dichlorobenzene	ND	810	ug/kg
3,3'-Dichlorobenzidine	ND	810	ug/kg
2,4-Dichlorophenol	ND	810	ug/kg
Diethyl phthalate	ND	810	ug/kg
2,4-Dimethylphenol	ND	810	ug/kg
Dimethyl phthalate	ND	810	ug/kg
Di-n-octyl phthalate	ND	810	ug/kg
4,6-Dinitro-2-methylphenol	ND	2000	ug/kg

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U.S. ARMY CORPS OF ENGINEERS

Client Sample ID: PBOW99SSA101

GC/MS Semivolatiles

Lot-Sample #...: A9F150184-007 **Work Order #...:** CWWD4201 **Matrix.....:** SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS
2,4-Dinitrophenol	ND	2000	ug/kg
2,4-Dinitrotoluene	ND	810	ug/kg
2,6-Dinitrotoluene	ND	810	ug/kg
Fluoranthene	ND	810	ug/kg
Fluorene	ND	810	ug/kg
Hexachlorobenzene	ND	810	ug/kg
Hexachlorobutadiene	ND	810	ug/kg
Hexachlorocyclopenta-diene	ND	810	ug/kg
Hexachloroethane	ND	810	ug/kg
Indeno(1,2,3-cd)pyrene	ND	810	ug/kg
Isophorone	ND	810	ug/kg
2-Methylnaphthalene	ND	810	ug/kg
2-Methylphenol	ND	810	ug/kg
Naphthalene	ND	810	ug/kg
2-Nitroaniline	ND	2000	ug/kg
3-Nitroaniline	ND	2000	ug/kg
4-Nitroaniline	ND	2000	ug/kg
Nitrobenzene	ND	810	ug/kg
2-Nitrophenol	ND	810	ug/kg
4-Nitrophenol	ND	2000	ug/kg
N-Nitrosodi-n-propyl-amine	ND	810	ug/kg
N-Nitrosodiphenylamine	ND	810	ug/kg
Pentachlorophenol	ND	2000	ug/kg
Phenanthrene	ND	810	ug/kg
Phenol	ND	810	ug/kg
Pyrene	ND	810	ug/kg
1,2,4-Trichlorobenzene	ND	810	ug/kg
2,4,5-Trichlorophenol	ND	810	ug/kg
2,4,6-Trichlorophenol	ND	810	ug/kg
Carbazole	ND	810	ug/kg
4-Methylphenol	ND	810	ug/kg
bis(2-Chloroisopropyl) ether	ND	810	ug/kg

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Nitrobenzene-d5	60	(23 - 120)
Terphenyl-d14	73	(18 - 137)
2-Fluorobiphenyl	49	(30 - 115)
2-Fluorophenol	6.2 *	(30 - 115)
Phenol-d5	11 *	(24 - 113)
2,4,6-Tribromophenol	3.6 *	(19 - 122)

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U.S. ARMY CORPS OF ENGINEERS

Client Sample ID: PBOW99SSA101

GC/MS Semivolatiles

Lot-Sample #...: A9F150184-007 Work Order #...: CWWD4201 Matrix.....: SOLID

NOTE(S):

* Surrogate recovery is outside stated control limits.

Results and reporting limits have been adjusted for dry weight.

U.S. ARMY CORPS OF ENGINEERS

Client Sample ID: PBOW99SSA101

TOTAL Metals

Lot-Sample #...: A9F150184-007 Matrix.....: SOLID
Date Sampled...: 06/10/99 18:08 Date Received..: 06/12/99
% Moisture.....: 59

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 9174305						
Silver	ND	1.2	mg/kg	SW846 6010B	06/24-07/16/99	CWWD410H
		Dilution Factor: 1				
Aluminum	16600	48.9	mg/kg	SW846 6010B	06/24-07/15/99	CWWD4102
		Dilution Factor: 1				
Arsenic	31.2	2.4	mg/kg	SW846 6010B	06/24-07/16/99	CWWD410J
		Dilution Factor: 1				
Barium	132	48.9	mg/kg	SW846 6010B	06/24-07/16/99	CWWD4103
		Dilution Factor: 1				
Beryllium	1.5	1.2	mg/kg	SW846 6010B	06/24-07/16/99	CWWD4104
		Dilution Factor: 1				
admium	ND	0.49	mg/kg	SW846 6010B	06/24-07/16/99	CWWD410K
		Dilution Factor: 1				
Calcium	59100	1220	mg/kg	SW846 6010B	06/24-07/15/99	CWWD4105
		Dilution Factor: 1				
Chromium	13.5	1.2	mg/kg	SW846 6010B	06/24-07/16/99	CWWD410L
		Dilution Factor: 1				
Cobalt	26.0	12.2	mg/kg	SW846 6010B	06/24-07/16/99	CWWD4106
		Dilution Factor: 1				
Lead	5.6	0.73	mg/kg	SW846 6010B	06/24-07/16/99	CWWD410M
		Dilution Factor: 1				
Copper	34.2	6.1	mg/kg	SW846 6010B	06/24-07/16/99	CWWD4107
		Dilution Factor: 1				
Antimony	ND	2.4	mg/kg	SW846 6010B	06/24-07/16/99	CWWD410N
		Dilution Factor: 1				
Iron	73200	24.4	mg/kg	SW846 6010B	06/24-07/16/99	CWWD4108
		Dilution Factor: 1				
Selenium	2.6	1.2	mg/kg	SW846 6010B	06/24-07/16/99	CWWD410P
		Dilution Factor: 1				

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U.S. ARMY CORPS OF ENGINEERS

Client Sample ID: PBOW99SSA101

TOTAL Metals

Lot-Sample #...: A9F150184-007 **Matrix.....:** SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Mercury	ND	0.24	mg/kg	SW846 7471A	06/24-06/28/99	CWWD410R
		Dilution Factor: 1				
Potassium	ND	1220	mg/kg	SW846 6010B	06/24-07/15/99	CWWD4109
		Dilution Factor: 1				
Thallium	ND	2.4	mg/kg	SW846 6010B	06/24-07/16/99	CWWD410Q
		Dilution Factor: 1				
Magnesium	**3770**	**1220**	**mg/kg**	**SW846 6010B**	**06/24-07/15/99**	**CWWD410A**
		Dilution Factor: 1				
Manganese	**1370**	**3.7**	**mg/kg**	**SW846 6010B**	**06/24-07/16/99**	**CWWD410C**
		Dilution Factor: 1				
Sodium	ND	1220	mg/kg	SW846 6010B	06/24-07/15/99	CWWD410D
		Dilution Factor: 1				
Nickel	**79.2**	**9.8**	**mg/kg**	**SW846 6010B**	**06/24-07/16/99**	**CWWD4**
		Dilution Factor: 1				
Vanadium	**23.0**	**12.2**	**mg/kg**	**SW846 6010B**	**06/24-07/16/99**	**CWWD410F**
		Dilution Factor: 1				
Zinc	**95.8 MBD**	**4.9**	**mg/kg**	**SW846 6010B**	**06/24-07/16/99**	**CWWD410G**
		Dilution Factor: 1				

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

MBD This analyte is present in the associated method blank at an amount that is less than two times the reporting limit.

U.S. ARMY CORPS OF ENGINEERS

Client Sample ID: PBOW99SWA301

GC/MS Semivolatiles

Lot-Sample #...: A9F150184-008 **Work Order #...:** CWWD7101 **Matrix.....:** WATER
Date Sampled...: 06/11/99 12:40 **Date Received..:** 06/12/99
Prep Date.....: 06/16/99 **Analysis Date..:** 06/26/99
Prep Batch #...: 9167109
Dilution Factor: 1 **Method.....:** SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	10	ug/L
Acenaphthylene	ND	10	ug/L
Anthracene	ND	10	ug/L
Benzo(a)anthracene	ND	10	ug/L
Benzo(b)fluoranthene	ND	10	ug/L
Benzo(k)fluoranthene	ND	10	ug/L
Benzo(ghi)perylene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
bis(2-Chloroethoxy) methane	ND	10	ug/L
bis(2-Chloroethyl)-ether	ND	10	ug/L
bis(2-Ethylhexyl) phthalate	ND	10	ug/L
4-Bromophenyl phenyl ether	ND	10	ug/L
Butyl benzyl phthalate	ND	10	ug/L
4-Chloroaniline	ND	10	ug/L
4-Chloro-3-methylphenol	ND	10	ug/L
2-Chloronaphthalene	ND	10	ug/L
2-Chlorophenol	ND	10	ug/L
4-Chlorophenyl phenyl ether	ND	10	ug/L
Chrysene	ND	10	ug/L
Dibenz(a,h)anthracene	ND	10	ug/L
Dibenzofuran	ND	10	ug/L
Di-n-butyl phthalate	ND	10	ug/L
1,2-Dichlorobenzene	ND	10	ug/L
1,3-Dichlorobenzene	ND	10	ug/L
1,4-Dichlorobenzene	ND	10	ug/L
3,3'-Dichlorobenzidine	ND	10	ug/L
2,4-Dichlorophenol	ND	10	ug/L
Diethyl phthalate	ND	10	ug/L
2,4-Dimethylphenol	ND	10	ug/L
Dimethyl phthalate	ND	10	ug/L
Di-n-octyl phthalate	ND	10	ug/L
4,6-Dinitro-2-methylphenol	ND	25	ug/L
2,4-Dinitrophenol	ND	25	ug/L

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U.S. ARMY CORPS OF ENGINEERS

Client Sample ID: PBOW99SWA301

GC/MS Semivolatiles

Lot-Sample #...: A9F150184-008 **Work Order #...:** CWWD7101 **Matrix.....:** WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS
2,4-Dinitrotoluene	ND	10	ug/L
2,6-Dinitrotoluene	ND	10	ug/L
Fluoranthene	ND	10	ug/L
Fluorene	ND	10	ug/L
Hexachlorobenzene	ND	10	ug/L
Hexachlorobutadiene	ND	10	ug/L
Hexachlorocyclopenta-diene	ND	10	ug/L
Hexachloroethane	ND	10	ug/L
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
Isophorone	ND	10	ug/L
2-Methylnaphthalene	ND	10	ug/L
2-Methylphenol	ND	10	ug/L
Naphthalene	ND	10	ug/L
2-Nitroaniline	ND	25	ug/L
3-Nitroaniline	ND	25	ug/L
4-Nitroaniline	ND	25	ug/L
Nitrobenzene	ND	10	ug/L
2-Nitrophenol	ND	10	ug/L
4-Nitrophenol	ND	25	ug/L
N-Nitrosodi-n-propyl-amine	ND	10	ug/L
N-Nitrosodiphenylamine	ND	10	ug/L
Pentachlorophenol	ND	25	ug/L
Phenanthrene	ND	10	ug/L
Phenol	ND	10	ug/L
Pyrene	ND	10	ug/L
1,2,4-Trichlorobenzene	ND	10	ug/L
2,4,5-Trichlorophenol	ND	10	ug/L
2,4,6-Trichlorophenol	ND	10	ug/L
Carbazole	ND	10	ug/L
4-Methylphenol	ND	10	ug/L
bis(2-Chloroisopropyl) ether	ND	10	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Nitrobenzene-d5	69	(40 - 114)
Terphenyl-d14	80	(33 - 141)
2-Fluorobiphenyl	70	(45 - 118)
2-Fluorophenol	58	(21 - 100)
Phenol-d5	57	(17 - 101)
2,4,6-Tribromophenol	67	(16 - 129)

U.S. ARMY CORPS OF ENGINEERS

Client Sample ID: PBOW99SWA301

TOTAL Metals

Lot-Sample #...: A9F150184-008 **Matrix.....:** WATER
Date Sampled...: 06/11/99 12:40 **Date Received..:** 06/12/99

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 9172344						
Silver	ND	5.0	ug/L	SW846 6010B	06/22-07/16/99	CWWD7103
		Dilution Factor: 1				
Aluminum	ND	200	ug/L	SW846 6010B	06/22-07/15/99	CWWD710C
		Dilution Factor: 1				
Arsenic	ND	10.0	ug/L	SW846 6010B	06/22-07/16/99	CWWD7104
		Dilution Factor: 1				
Cadmium	ND	2.0	ug/L	SW846 6010B	06/22-07/16/99	CWWD7105
		Dilution Factor: 1				
Barium	ND	200	ug/L	SW846 6010B	06/22-07/15/99	CWWD710D
		Dilution Factor: 1				
Beryllium	ND	5.0	ug/L	SW846 6010B	06/22-07/16/99	CWWD710E
		Dilution Factor: 1				
Chromium	ND	5.0	ug/L	SW846 6010B	06/22-07/16/99	CWWD7106
		Dilution Factor: 1				
Calcium	**27900**	**5000**	**ug/L**	**SW846 6010B**	**06/22-07/15/99**	**CWWD710F**
		Dilution Factor: 1				
Lead	ND	3.0	ug/L	SW846 6010B	06/22-07/16/99	CWWD7107
		Dilution Factor: 1				
Antimony	ND	10.0	ug/L	SW846 6010B	06/22-07/16/99	CWWD7108
		Dilution Factor: 1				
Cobalt	ND	50.0	ug/L	SW846 6010B	06/22-07/16/99	CWWD710G
		Dilution Factor: 1				
Selenium	ND	5.0	ug/L	SW846 6010B	06/22-07/16/99	CWWD7109
		Dilution Factor: 1				
Thallium	ND	10.0	ug/L	SW846 6010B	06/22-07/16/99	CWWD710A
		Dilution Factor: 1				
Copper	ND	25.0	ug/L	SW846 6010B	06/22-07/16/99	CWWD710H
		Dilution Factor: 1				

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U.S. ARMY CORPS OF ENGINEERS

Client Sample ID: PBOW99SWA301

TOTAL Metals

Lot-Sample #...: A9F150184-008 **Matrix.....:** WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Iron	**687 MBD**	**100**	**ug/L**	**SW846 6010B**	**06/22-07/16/99**	**CWWD710J**
		Dilution Factor: 1				
Potassium	ND	5000	ug/L	SW846 6010B	06/22-07/15/99	CWWD710K
		Dilution Factor: 1				
Magnesium	**9410**	**5000**	**ug/L**	**SW846 6010B**	**06/22-07/15/99**	**CWWD710L**
		Dilution Factor: 1				
Manganese	**195**	**15.0**	**ug/L**	**SW846 6010B**	**06/22-07/15/99**	**CWWD710M**
		Dilution Factor: 1				
Sodium	**9740**	**5000**	**ug/L**	**SW846 6010B**	**06/22-07/15/99**	**CWWD710N**
		Dilution Factor: 1				
Nickel	ND	40.0	ug/L	SW846 6010B	06/22-07/16/99	CWWD710P
		Dilution Factor: 1				
Vanadium	ND	50.0	ug/L	SW846 6010B	06/22-07/16/99	CWWD7[illegible]
		Dilution Factor: 1				
Zinc	ND	20.0	ug/L	SW846 6010B	06/22-07/16/99	CWWD710R
		Dilution Factor: 1				
Mercury	ND	0.20	ug/L	SW846 7470A	06/22-06/23/99	CWWD7102
		Dilution Factor: 1				

NOTE(S):

MBD This analyte is present in the associated method blank at an amount that is less than two times the reporting limit.

U.S. ARMY CORPS OF ENGINEERS

Client Sample ID: PBOW99SWA302

GC/MS Semivolatiles

Lot-Sample #...: A9F150184-009 **Work Order #...:** CWWD8101 **Matrix.....:** WATER
Date Sampled...: 06/11/99 12:55 **Date Received..:** 06/12/99
Prep Date.....: 06/16/99 **Analysis Date..:** 06/26/99
Prep Batch #...: 9167109
Dilution Factor: 1 **Method.....:** SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	10	ug/L
Acenaphthylene	ND	10	ug/L
Anthracene	ND	10	ug/L
Benzo(a)anthracene	ND	10	ug/L
Benzo(b)fluoranthene	ND	10	ug/L
Benzo(k)fluoranthene	ND	10	ug/L
Benzo(ghi)perylene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
bis(2-Chloroethoxy) methane	ND	10	ug/L
bis(2-Chloroethyl)- ether	ND	10	ug/L
bis(2-Ethylhexyl) phthalate	ND	10	ug/L
-Bromophenyl phenyl ether	ND	10	ug/L
Butyl benzyl phthalate	ND	10	ug/L
4-Chloroaniline	ND	10	ug/L
4-Chloro-3-methylphenol	ND	10	ug/L
2-Chloronaphthalene	ND	10	ug/L
2-Chlorophenol	ND	10	ug/L
4-Chlorophenyl phenyl ether	ND	10	ug/L
Chrysene	ND	10	ug/L
Dibenz(a,h)anthracene	ND	10	ug/L
Dibenzofuran	ND	10	ug/L
Di-n-butyl phthalate	ND	10	ug/L
1,2-Dichlorobenzene	ND	10	ug/L
1,3-Dichlorobenzene	ND	10	ug/L
1,4-Dichlorobenzene	ND	10	ug/L
3,3'-Dichlorobenzidine	ND	10	ug/L
2,4-Dichlorophenol	ND	10	ug/L
Diethyl phthalate	ND	10	ug/L
2,4-Dimethylphenol	ND	10	ug/L
Dimethyl phthalate	ND	10	ug/L
Di-n-octyl phthalate	ND	10	ug/L
4,6-Dinitro- 2-methylphenol	ND	25	ug/L
2,4-Dinitrophenol	ND	25	ug/L

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U.S. ARMY CORPS OF ENGINEERS

Client Sample ID: PBOW99SWA302

GC/MS Semivolatiles

Lot-Sample #...: A9F150184-009 **Work Order #...:** CWWD8101 **Matrix.....:** WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS
2,4-Dinitrotoluene	ND	10	ug/L
2,6-Dinitrotoluene	ND	10	ug/L
Fluoranthene	ND	10	ug/L
Fluorene	ND	10	ug/L
Hexachlorobenzene	ND	10	ug/L
Hexachlorobutadiene	ND	10	ug/L
Hexachlorocyclopenta-diene	ND	10	ug/L
Hexachloroethane	ND	10	ug/L
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
Isophorone	ND	10	ug/L
2-Methylnaphthalene	ND	10	ug/L
2-Methylphenol	ND	10	ug/L
Naphthalene	ND	10	ug/L
2-Nitroaniline	ND	25	ug/L
3-Nitroaniline	ND	25	ug/L
4-Nitroaniline	ND	25	ug/L
Nitrobenzene	ND	10	ug/L
2-Nitrophenol	ND	10	ug/L
4-Nitrophenol	ND	25	ug/L
N-Nitrosodi-n-propyl-amine	ND	10	ug/L
N-Nitrosodiphenylamine	ND	10	ug/L
Pentachlorophenol	ND	25	ug/L
Phenanthrene	ND	10	ug/L
Phenol	ND	10	ug/L
Pyrene	ND	10	ug/L
1,2,4-Trichlorobenzene	ND	10	ug/L
2,4,5-Trichlorophenol	ND	10	ug/L
2,4,6-Trichlorophenol	ND	10	ug/L
Carbazole	ND	10	ug/L
4-Methylphenol	ND	10	ug/L
bis(2-Chloroisopropyl) ether	ND	10	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Nitrobenzene-d5	73	(40 - 114)
Terphenyl-d14	81	(33 - 141)
2-Fluorobiphenyl	71	(45 - 118)
2-Fluorophenol	61	(21 - 100)
Phenol-d5	61	(17 - 101)
2,4,6-Tribromophenol	73	(16 - 129)

U.S. ARMY CORPS OF ENGINEERS

Client Sample ID: PBOW99SWA302

TOTAL Metals

Lot-Sample #...: A9F150184-009 **Matrix.....:** WATER
Date Sampled...: 06/11/99 12:55 **Date Received..:** 06/12/99

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 9172344						
Silver	ND	5.0	ug/L	SW846 6010B	06/22-07/16/99	CWWD8103
		Dilution Factor: 1				
Aluminum	ND	200	ug/L	SW846 6010B	06/22-07/15/99	CWWD810C
		Dilution Factor: 1				
Arsenic	ND	10.0	ug/L	SW846 6010B	06/22-07/16/99	CWWD8104
		Dilution Factor: 1				
Cadmium	ND	2.0	ug/L	SW846 6010B	06/22-07/16/99	CWWD8105
		Dilution Factor: 1				
Barium	ND	200	ug/L	SW846 6010B	06/22-07/15/99	CWWD810D
		Dilution Factor: 1				
Beryllium	ND	5.0	ug/L	SW846 6010B	06/22-07/16/99	CWWD810E
		Dilution Factor: 1				
Chromium	ND	5.0	ug/L	SW846 6010B	06/22-07/16/99	CWWD8106
		Dilution Factor: 1				
Calcium	**27700**	**5000**	**ug/L**	**SW846 6010B**	**06/22-07/15/99**	**CWWD810F**
		Dilution Factor: 1				
Lead	ND	3.0	ug/L	SW846 6010B	06/22-07/16/99	CWWD8107
		Dilution Factor: 1				
Antimony	ND	10.0	ug/L	SW846 6010B	06/22-07/16/99	CWWD8108
		Dilution Factor: 1				
Cobalt	ND	50.0	ug/L	SW846 6010B	06/22-07/16/99	CWWD810G
		Dilution Factor: 1				
Selenium	ND	5.0	ug/L	SW846 6010B	06/22-07/16/99	CWWD8109
		Dilution Factor: 1				
Thallium	ND	10.0	ug/L	SW846 6010B	06/22-07/16/99	CWWD810A
		Dilution Factor: 1				
Copper	ND	25.0	ug/L	SW846 6010B	06/22-07/16/99	CWWD810H
		Dilution Factor: 1				

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U.S. ARMY CORPS OF ENGINEERS

Client Sample ID: PBOW99SWA302

TOTAL Metals

Lot-Sample #...: A9F150184-009 **Matrix.....:** WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Iron	**429 MBD**	**100**	**ug/L**	**SW846 6010B**	**06/22-07/16/99**	**CWWD810J**
		Dilution Factor: 1				
Potassium	ND	5000	ug/L	SW846 6010B	06/22-07/15/99	CWWD810K
		Dilution Factor: 1				
Magnesium	**9470**	**5000**	**ug/L**	**SW846 6010B**	**06/22-07/15/99**	**CWWD810L**
		Dilution Factor: 1				
Manganese	**153**	**15.0**	**ug/L**	**SW846 6010B**	**06/22-07/15/99**	**CWWD810M**
		Dilution Factor: 1				
Sodium	**9840**	**5000**	**ug/L**	**SW846 6010B**	**06/22-07/15/99**	**CWWD810N**
		Dilution Factor: 1				
Nickel	ND	40.0	ug/L	SW846 6010B	06/22-07/16/99	CWWD810P
		Dilution Factor: 1				
Vanadium	ND	50.0	ug/L	SW846 6010B	06/22-07/16/99	CWWD81
		Dilution Factor: 1				
Zinc	ND	20.0	ug/L	SW846 6010B	06/22-07/16/99	CWWD810R
		Dilution Factor: 1				
Mercury	ND	0.20	ug/L	SW846 7470A	06/22-06/23/99	CWWD8102
		Dilution Factor: 1				

NOTE(S):

MBD This analyte is present in the associated method blank at an amount that is less than two times the reporting limit.

U.S. ARMY CORPS OF ENGINEERS

Client Sample ID: PBOW99SDA302

GC/MS Semivolatiles

Lot-Sample #...: A9F150184-010 **Work Order #...:** CWWDA101 **Matrix.....:** SOLID
Date Sampled...: 06/11/99 12:55 **Date Received..:** 06/12/99
Prep Date.....: 06/21/99 **Analysis Date..:** 06/26/99
Prep Batch #...: 9172112
Dilution Factor: 1
% Moisture.....: 40 **Method.....:** SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	550	ug/kg
Acenaphthylene	ND	550	ug/kg
Anthracene	ND	550	ug/kg
Benzo(a)anthracene	ND	550	ug/kg
Benzo(b)fluoranthene	ND	550	ug/kg
Benzo(k)fluoranthene	ND	550	ug/kg
Benzo(ghi)perylene	ND	550	ug/kg
Benzo(a)pyrene	ND	550	ug/kg
bis(2-Chloroethoxy) methane	ND	550	ug/kg
bis(2-Chloroethyl)- ether	ND	550	ug/kg
bis(2-Ethylhexyl) phthalate	ND	550	ug/kg
-Bromophenyl phenyl ether	ND	550	ug/kg
Butyl benzyl phthalate	ND	550	ug/kg
4-Chloroaniline	ND	550	ug/kg
4-Chloro-3-methylphenol	ND	550	ug/kg
2-Chloronaphthalene	ND	550	ug/kg
2-Chlorophenol	ND	550	ug/kg
4-Chlorophenyl phenyl ether	ND	550	ug/kg
Chrysene	ND	550	ug/kg
Dibenz(a,h)anthracene	ND	550	ug/kg
Dibenzofuran	ND	550	ug/kg
Di-n-butyl phthalate	ND	550	ug/kg
1,2-Dichlorobenzene	ND	550	ug/kg
1,3-Dichlorobenzene	ND	550	ug/kg
1,4-Dichlorobenzene	ND	550	ug/kg
3,3'-Dichlorobenzidine	ND	550	ug/kg
2,4-Dichlorophenol	ND	550	ug/kg
Diethyl phthalate	ND	550	ug/kg
2,4-Dimethylphenol	ND	550	ug/kg
Dimethyl phthalate	ND	550	ug/kg
Di-n-octyl phthalate	ND	550	ug/kg
4,6-Dinitro- 2-methylphenol	ND	1300	ug/kg

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U.S. ARMY CORPS OF ENGINEERS

Client Sample ID: PBOW99SDA302

GC/MS Semivolatiles

Lot-Sample #...: A9F150184-010 **Work Order #...:** CWWDA101 **Matrix.....:** SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS
2,4-Dinitrophenol	ND	1300	ug/kg
2,4-Dinitrotoluene	ND	550	ug/kg
2,6-Dinitrotoluene	ND	550	ug/kg
Fluoranthene	ND	550	ug/kg
Fluorene	ND	550	ug/kg
Hexachlorobenzene	ND	550	ug/kg
Hexachlorobutadiene	ND	550	ug/kg
Hexachlorocyclopenta-diene	ND	550	ug/kg
Hexachloroethane	ND	550	ug/kg
Indeno(1,2,3-cd)pyrene	ND	550	ug/kg
Isophorone	ND	550	ug/kg
2-Methylnaphthalene	ND	550	ug/kg
2-Methylphenol	ND	550	ug/kg
Naphthalene	ND	550	ug/kg
2-Nitroaniline	ND	1300	ug/kg
3-Nitroaniline	ND	1300	ug/kg
4-Nitroaniline	ND	1300	ug/kg
Nitrobenzene	ND	550	ug/kg
2-Nitrophenol	ND	550	ug/kg
4-Nitrophenol	ND	1300	ug/kg
N-Nitrosodi-n-propyl-amine	ND	550	ug/kg
N-Nitrosodiphenylamine	ND	550	ug/kg
Pentachlorophenol	ND	1300	ug/kg
Phenanthrene	ND	550	ug/kg
Phenol	ND	550	ug/kg
Pyrene	ND	550	ug/kg
1,2,4-Trichlorobenzene	ND	550	ug/kg
2,4,5-Trichlorophenol	ND	550	ug/kg
2,4,6-Trichlorophenol	ND	550	ug/kg
Carbazole	ND	550	ug/kg
4-Methylphenol	ND	550	ug/kg
bis(2-Chloroisopropyl) ether	ND	550	ug/kg

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Nitrobenzene-d5	57	(23 - 120)
Terphenyl-d14	68	(18 - 137)
2-Fluorobiphenyl	57	(30 - 115)
2-Fluorophenol	57	(30 - 115)
Phenol-d5	46	(24 - 113)
2,4,6-Tribromophenol	67	(19 - 122)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

U.S. ARMY CORPS OF ENGINEERS

Client Sample ID: PBOW99SDA302

TOTAL Metals

Lot-Sample #...: A9F150184-010 **Matrix.....:** SOLID
Date Sampled...: 06/11/99 12:55 **Date Received..:** 06/12/99
% Moisture.....: 40

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 9174305						
Silver	ND	0.83	mg/kg	SW846 6010B	06/24-07/16/99	CWWDA10H
		Dilution Factor: 1				
Aluminum	**7750**	**33.1**	**mg/kg**	**SW846 6010B**	**06/24-07/15/99**	**CWWDA102**
		Dilution Factor: 1				
Arsenic	**5.9**	**1.7**	**mg/kg**	**SW846 6010B**	**06/24-07/16/99**	**CWWDA10J**
		Dilution Factor: 1				
Barium	**47.8**	**33.1**	**mg/kg**	**SW846 6010B**	**06/24-07/16/99**	**CWWDA103**
		Dilution Factor: 1				
Beryllium	ND	0.83	mg/kg	SW846 6010B	06/24-07/16/99	CWWDA104
		Dilution Factor: 1				
dmium	ND	0.33	mg/kg	SW846 6010B	06/24-07/16/99	CWWDA10K
		Dilution Factor: 1				
Calcium	**18100**	**828**	**mg/kg**	**SW846 6010B**	**06/24-07/15/99**	**CWWDA105**
		Dilution Factor: 1				
Chromium	**10.8**	**0.83**	**mg/kg**	**SW846 6010B**	**06/24-07/16/99**	**CWWDA10L**
		Dilution Factor: 1				
Cobalt	ND	8.3	mg/kg	SW846 6010B	06/24-07/16/99	CWWDA106
		Dilution Factor: 1				
Lead	**11.9**	**0.50**	**mg/kg**	**SW846 6010B**	**06/24-07/16/99**	**CWWDA10M**
		Dilution Factor: 1				
Copper	**14.4**	**4.1**	**mg/kg**	**SW846 6010B**	**06/24-07/16/99**	**CWWDA107**
		Dilution Factor: 1				
Antimony	ND	1.7	mg/kg	SW846 6010B	06/24-07/16/99	CWWDA10N
		Dilution Factor: 1				
Iron	**12800**	**16.6**	**mg/kg**	**SW846 6010B**	**06/24-07/16/99**	**CWWDA108**
		Dilution Factor: 1				
Selenium	**1.1**	**0.83**	**mg/kg**	**SW846 6010B**	**06/24-07/16/99**	**CWWDA10P**
		Dilution Factor: 1				

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U.S. ARMY CORPS OF ENGINEERS

Client Sample ID: PBOW99SDA302

TOTAL Metals

Lot-Sample #...: A9F150184-010 Matrix.....: SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Mercury	ND	0.17	mg/kg	SW846 7471A	06/24-06/28/99	CWWDA10R
		Dilution Factor: 1				
Potassium	1270	828	mg/kg	SW846 6010B	06/24-07/15/99	CWWDA109
		Dilution Factor: 1				
Thallium	ND	1.7	mg/kg	SW846 6010B	06/24-07/16/99	CWWDA10Q
		Dilution Factor: 1				
Magnesium	5670	828	mg/kg	SW846 6010B	06/24-07/15/99	CWWDA10A
		Dilution Factor: 1				
Manganese	318	2.5	mg/kg	SW846 6010B	06/24-07/16/99	CWWDA10C
		Dilution Factor: 1				
Sodium	ND	828	mg/kg	SW846 6010B	06/24-07/15/99	CWWDA10D
		Dilution Factor: 1				
ickel	12.5	6.6	mg/kg	SW846 6010B	06/24-07/16/99	CWWDA1
		Dilution Factor: 1				
Vanadium	19.3	8.3	mg/kg	SW846 6010B	06/24-07/16/99	CWWDA10F
		Dilution Factor: 1				
Zinc	48.3 MBD	3.3	mg/kg	SW846 6010B	06/24-07/16/99	CWWDA10G
		Dilution Factor: 1				

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

MBD This analyte is present in the associated method blank at an amount that is less than two times the reporting limit.

U.S. ARMY CORPS OF ENGINEERS

Client Sample ID: PBOW99SWA303

GC/MS Semivolatiles

Lot-Sample #...: A9F150184-011 **Work Order #...:** CWWDC101 **Matrix.....:** WATER
Date Sampled...: 06/11/99 13:10 **Date Received..:** 06/12/99
Prep Date.....: 06/16/99 **Analysis Date..:** 06/26/99
Prep Batch #...: 9167109
Dilution Factor: 1 **Method.....:** SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	10	ug/L
Acenaphthylene	ND	10	ug/L
Anthracene	ND	10	ug/L
Benzo(a)anthracene	ND	10	ug/L
Benzo(b)fluoranthene	ND	10	ug/L
Benzo(k)fluoranthene	ND	10	ug/L
Benzo(ghi)perylene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
bis(2-Chloroethoxy) methane	ND	10	ug/L
bis(2-Chloroethyl)-ether	ND	10	ug/L
bis(2-Ethylhexyl) phthalate	ND	10	ug/L
4-Bromophenyl phenyl ether	ND	10	ug/L
Butyl benzyl phthalate	ND	10	ug/L
4-Chloroaniline	ND	10	ug/L
4-Chloro-3-methylphenol	ND	10	ug/L
2-Chloronaphthalene	ND	10	ug/L
2-Chlorophenol	ND	10	ug/L
4-Chlorophenyl phenyl ether	ND	10	ug/L
Chrysene	ND	10	ug/L
Dibenz(a,h)anthracene	ND	10	ug/L
Dibenzofuran	ND	10	ug/L
Di-n-butyl phthalate	ND	10	ug/L
1,2-Dichlorobenzene	ND	10	ug/L
1,3-Dichlorobenzene	ND	10	ug/L
1,4-Dichlorobenzene	ND	10	ug/L
3,3'-Dichlorobenzidine	ND	10	ug/L
2,4-Dichlorophenol	ND	10	ug/L
Diethyl phthalate	ND	10	ug/L
2,4-Dimethylphenol	ND	10	ug/L
Dimethyl phthalate	ND	10	ug/L
Di-n-octyl phthalate	ND	10	ug/L
4,6-Dinitro-2-methylphenol	ND	25	ug/L
2,4-Dinitrophenol	ND	25	ug/L

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U.S. ARMY CORPS OF ENGINEERS

Client Sample ID: PBOW99SWA303

GC/MS Semivolatiles

Lot-Sample #...: A9F150184-011 **Work Order #...:** CWWDC101 **Matrix.....:** WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS
2,4-Dinitrotoluene	ND	10	ug/L
2,6-Dinitrotoluene	ND	10	ug/L
Fluoranthene	ND	10	ug/L
Fluorene	ND	10	ug/L
Hexachlorobenzene	ND	10	ug/L
Hexachlorobutadiene	ND	10	ug/L
Hexachlorocyclopenta-diene	ND	10	ug/L
Hexachloroethane	ND	10	ug/L
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
Isophorone	ND	10	ug/L
2-Methylnaphthalene	ND	10	ug/L
2-Methylphenol	ND	10	ug/L
Naphthalene	ND	10	ug/L
2-Nitroaniline	ND	25	ug/L
3-Nitroaniline	ND	25	ug/L
4-Nitroaniline	ND	25	ug/L
Nitrobenzene	ND	10	ug/L
2-Nitrophenol	ND	10	ug/L
4-Nitrophenol	ND	25	ug/L
N-Nitrosodi-n-propyl-amine	ND	10	ug/L
N-Nitrosodiphenylamine	ND	10	ug/L
Pentachlorophenol	ND	25	ug/L
Phenanthrene	ND	10	ug/L
Phenol	ND	10	ug/L
Pyrene	ND	10	ug/L
1,2,4-Trichlorobenzene	ND	10	ug/L
2,4,5-Trichlorophenol	ND	10	ug/L
2,4,6-Trichlorophenol	ND	10	ug/L
Carbazole	ND	10	ug/L
4-Methylphenol	ND	10	ug/L
bis(2-Chloroisopropyl) ether	ND	10	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Nitrobenzene-d5	73	(40 - 114)
Terphenyl-d14	104	(33 - 141)
2-Fluorobiphenyl	77	(45 - 118)
2-Fluorophenol	63	(21 - 100)
Phenol-d5	61	(17 - 101)
2,4,6-Tribromophenol	76	(16 - 129)

U.S. ARMY CORPS OF ENGINEERS

Client Sample ID: PBOW99SWA303

TOTAL Metals

Lot-Sample #...: A9F150184-011 **Matrix.....:** WATER
Date Sampled...: 06/11/99 13:10 **Date Received..:** 06/12/99

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 9172344						
Silver	ND	5.0	ug/L	SW846 6010B	06/22-07/16/99	CWWDC103
		Dilution Factor: 1				
Aluminum	ND	200	ug/L	SW846 6010B	06/22-07/15/99	CWWDC10C
		Dilution Factor: 1				
Arsenic	ND	10.0	ug/L	SW846 6010B	06/22-07/16/99	CWWDC104
		Dilution Factor: 1				
Cadmium	ND	2.0	ug/L	SW846 6010B	06/22-07/16/99	CWWDC105
		Dilution Factor: 1				
Barium	ND	200	ug/L	SW846 6010B	06/22-07/15/99	CWWDC10D
		Dilution Factor: 1				
Beryllium	ND	5.0	ug/L	SW846 6010B	06/22-07/16/99	CWWDC10E
		Dilution Factor: 1				
Chromium	ND	5.0	ug/L	SW846 6010B	06/22-07/16/99	CWWDC106
		Dilution Factor: 1				
Calcium	**24400**	**5000**	**ug/L**	**SW846 6010B**	**06/22-07/15/99**	**CWWDC10F**
		Dilution Factor: 1				
Lead	ND	3.0	ug/L	SW846 6010B	06/22-07/16/99	CWWDC107
		Dilution Factor: 1				
Antimony	ND	10.0	ug/L	SW846 6010B	06/22-07/16/99	CWWDC108
		Dilution Factor: 1				
Cobalt	ND	50.0	ug/L	SW846 6010B	06/22-07/16/99	CWWDC10G
		Dilution Factor: 1				
Selenium	ND	5.0	ug/L	SW846 6010B	06/22-07/16/99	CWWDC109
		Dilution Factor: 1				
Thallium	ND	10.0	ug/L	SW846 6010B	06/22-07/16/99	CWWDC10A
		Dilution Factor: 1				
Copper	ND	25.0	ug/L	SW846 6010B	06/22-07/16/99	CWWDC10H
		Dilution Factor: 1				

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U.S. ARMY CORPS OF ENGINEERS

Client Sample ID: PBOW99SWA303

TOTAL Metals

Lot-Sample #...: A9F150184-011 **Matrix.....:** WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Iron	**431 MBD**	**100**	**ug/L**	**SW846 6010B**	**06/22-07/16/99**	**CWWDC10J**
		Dilution Factor: 1				
Potassium	ND	5000	ug/L	SW846 6010B	06/22-07/15/99	CWWDC10K
		Dilution Factor: 1				
Magnesium	**8940**	**5000**	**ug/L**	**SW846 6010B**	**06/22-07/15/99**	**CWWDC10L**
		Dilution Factor: 1				
Manganese	**48.4**	**15.0**	**ug/L**	**SW846 6010B**	**06/22-07/15/99**	**CWWDC10M**
		Dilution Factor: 1				
Sodium	**10200**	**5000**	**ug/L**	**SW846 6010B**	**06/22-07/15/99**	**CWWDC10N**
		Dilution Factor: 1				
Nickel	ND	40.0	ug/L	SW846 6010B	06/22-07/16/99	CWWDC10P
		Dilution Factor: 1				
Vanadium	ND	50.0	ug/L	SW846 6010B	06/22-07/16/99	CWWDC1
		Dilution Factor: 1				
Zinc	ND	20.0	ug/L	SW846 6010B	06/22-07/16/99	CWWDC10R
		Dilution Factor: 1				
Mercury	ND	0.20	ug/L	SW846 7470A	06/22-06/23/99	CWWDC102
		Dilution Factor: 1				

NOTE(S):

MBD This analyte is present in the associated method blank at an amount that is less than two times the reporting limit.

U.S. ARMY CORPS OF ENGINEERS

Client Sample ID: PBOW99SDA303

GC/MS Semivolatiles

Lot-Sample #...: A9F150184-012 **Work Order #...:** CWWDE101 **Matrix.....:** SOLID
Date Sampled...: 06/11/99 13:10 **Date Received..:** 06/12/99
Prep Date.....: 06/21/99 **Analysis Date..:** 06/26/99
Prep Batch #...: 9172112
Dilution Factor: 1
% Moisture.....: 33 **Method.....:** SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	490	ug/kg
Acenaphthylene	ND	490	ug/kg
Anthracene	ND	490	ug/kg
Benzo(a)anthracene	ND	490	ug/kg
Benzo(b)fluoranthene	ND	490	ug/kg
Benzo(k)fluoranthene	ND	490	ug/kg
Benzo(ghi)perylene	ND	490	ug/kg
Benzo(a)pyrene	ND	490	ug/kg
bis(2-Chloroethoxy) methane	ND	490	ug/kg
bis(2-Chloroethyl)-ether	ND	490	ug/kg
bis(2-Ethylhexyl) phthalate	ND	490	ug/kg
4-Bromophenyl phenyl ether	ND	490	ug/kg
Butyl benzyl phthalate	ND	490	ug/kg
4-Chloroaniline	ND	490	ug/kg
4-Chloro-3-methylphenol	ND	490	ug/kg
2-Chloronaphthalene	ND	490	ug/kg
2-Chlorophenol	ND	490	ug/kg
4-Chlorophenyl phenyl ether	ND	490	ug/kg
Chrysene	ND	490	ug/kg
Dibenz(a,h)anthracene	ND	490	ug/kg
Dibenzofuran	ND	490	ug/kg
Di-n-butyl phthalate	ND	490	ug/kg
1,2-Dichlorobenzene	ND	490	ug/kg
1,3-Dichlorobenzene	ND	490	ug/kg
1,4-Dichlorobenzene	ND	490	ug/kg
3,3'-Dichlorobenzidine	ND	490	ug/kg
2,4-Dichlorophenol	ND	490	ug/kg
Diethyl phthalate	ND	490	ug/kg
2,4-Dimethylphenol	ND	490	ug/kg
Dimethyl phthalate	ND	490	ug/kg
Di-n-octyl phthalate	ND	490	ug/kg
4,6-Dinitro-2-methylphenol	ND	1200	ug/kg

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U.S. ARMY CORPS OF ENGINEERS

Client Sample ID: PBOW99SDA303

GC/MS Semivolatiles

Lot-Sample #...: A9F150184-012 **Work Order #...:** CWWDE101 **Matrix.....:** SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS
2,4-Dinitrophenol	ND	1200	ug/kg
2,4-Dinitrotoluene	ND	490	ug/kg
2,6-Dinitrotoluene	ND	490	ug/kg
Fluoranthene	ND	490	ug/kg
Fluorene	ND	490	ug/kg
Hexachlorobenzene	ND	490	ug/kg
Hexachlorobutadiene	ND	490	ug/kg
Hexachlorocyclopenta-diene	ND	490	ug/kg
Hexachloroethane	ND	490	ug/kg
Indeno(1,2,3-cd)pyrene	ND	490	ug/kg
Isophorone	ND	490	ug/kg
2-Methylnaphthalene	ND	490	ug/kg
2-Methylphenol	ND	490	ug/kg
Naphthalene	ND	490	ug/kg
2-Nitroaniline	ND	1200	ug/kg
3-Nitroaniline	ND	1200	ug/kg
4-Nitroaniline	ND	1200	ug/kg
Nitrobenzene	ND	490	ug/kg
2-Nitrophenol	ND	490	ug/kg
4-Nitrophenol	ND	1200	ug/kg
N-Nitrosodi-n-propyl-amine	ND	490	ug/kg
N-Nitrosodiphenylamine	ND	490	ug/kg
Pentachlorophenol	ND	1200	ug/kg
Phenanthrene	ND	490	ug/kg
Phenol	ND	490	ug/kg
Pyrene	ND	490	ug/kg
1,2,4-Trichlorobenzene	ND	490	ug/kg
2,4,5-Trichlorophenol	ND	490	ug/kg
2,4,6-Trichlorophenol	ND	490	ug/kg
Carbazole	ND	490	ug/kg
4-Methylphenol	ND	490	ug/kg
bis(2-Chloroisopropyl) ether	ND	490	ug/kg

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Nitrobenzene-d5	42	(23 - 120)
Terphenyl-d14	61	(18 - 137)
2-Fluorobiphenyl	51	(30 - 115)
2-Fluorophenol	45	(30 - 115)
Phenol-d5	36	(24 - 113)
2,4,6-Tribromophenol	70	(19 - 122)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

U.S. ARMY CORPS OF ENGINEERS

Client Sample ID: PBOW99SDA303

TOTAL Metals

Lot-Sample #...: A9F150184-012 **Matrix.....:** SOLID
Date Sampled...: 06/11/99 13:10 **Date Received..:** 06/12/99
% Moisture.....: 33

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 9174305						
Silver	ND	0.74 Dilution Factor: 1	mg/kg	SW846 6010B	06/24-07/16/99	CWWDE1[illegible]
Aluminum	**1800**	**29.8** Dilution Factor: 1	**mg/kg**	**SW846 6010B**	**06/24-07/15/99**	**CWWDE1[illegible]2**
Arsenic	**3.6**	**1.5** Dilution Factor: 1	**mg/kg**	**SW846 6010B**	**06/24-07/16/99**	**CWWDE1[illegible]J**
Barium	ND	29.8 Dilution Factor: 1	mg/kg	SW846 6010B	06/24-07/16/99	CWWDE1[illegible]3
Beryllium	ND	0.74 Dilution Factor: 1	mg/kg	SW846 6010B	06/24-07/16/99	CWWDE1[illegible]4
dmium	ND	0.30 Dilution Factor: 1	mg/kg	SW846 6010B	06/24-07/16/99	CWWDE1[illegible]K
Calcium	**4560**	**744** Dilution Factor: 1	**mg/kg**	**SW846 6010B**	**06/24-07/15/99**	**CWWDE1[illegible]5**
Chromium	**5.6**	**0.74** Dilution Factor: 1	**mg/kg**	**SW846 6010B**	**06/24-07/16/99**	**CWWDE1[illegible]L**
Cobalt	ND	7.4 Dilution Factor: 1	mg/kg	SW846 6010B	06/24-07/16/99	CWWDE1[illegible]6
Lead	**5.1**	**0.45** Dilution Factor: 1	**mg/kg**	**SW846 6010B**	**06/24-07/16/99**	**CWWDE1[illegible]M**
Copper	**71.8**	**3.7** Dilution Factor: 1	**mg/kg**	**SW846 6010B**	**06/24-07/16/99**	**CWWDE1[illegible]7**
Antimony	ND	1.5 Dilution Factor: 1	mg/kg	SW846 6010B	06/24-07/16/99	CWWDE1[illegible]N
Iron	**5880**	**14.9** Dilution Factor: 1	**mg/kg**	**SW846 6010B**	**06/24-07/16/99**	**CWWDE1[illegible]8**
Selenium	ND	0.74 Dilution Factor: 1	mg/kg	SW846 6010B	06/24-07/16/99	CWWDE1[illegible]P

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U.S. ARMY CORPS OF ENGINEERS

Client Sample ID: PBOW99SDA303

TOTAL Metals

Lot-Sample #...: A9F150184-012 **Matrix.....:** SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Mercury	ND	0.15	mg/kg	SW846 7471A	06/24-06/28/99	CWWDE10R
		Dilution Factor: 1				
Potassium	ND	744	mg/kg	SW846 6010B	06/24-07/15/99	CWWDE109
		Dilution Factor: 1				
Thallium	ND	1.5	mg/kg	SW846 6010B	06/24-07/16/99	CWWDE10Q
		Dilution Factor: 1				
Magnesium	**2220**	**744**	**mg/kg**	**SW846 6010B**	**06/24-07/15/99**	**CWWDE10A**
		Dilution Factor: 1				
Manganese	**122**	**2.2**	**mg/kg**	**SW846 6010B**	**06/24-07/16/99**	**CWWDE10C**
		Dilution Factor: 1				
Sodium	ND	744	mg/kg	SW846 6010B	06/24-07/15/99	CWWDE10D
		Dilution Factor: 1				
Nickel	**6.3**	**6.0**	**mg/kg**	**SW846 6010B**	**06/24-07/16/99**	**CWWDE1**
		Dilution Factor: 1				
Vanadium	ND	7.4	mg/kg	SW846 6010B	06/24-07/16/99	CWWDE10F
		Dilution Factor: 1				
Zinc	**24.4 MBD**	**3.0**	**mg/kg**	**SW846 6010B**	**06/24-07/16/99**	**CWWDE10G**
		Dilution Factor: 1				

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

MBD This analyte is present in the associated method blank at an amount that is less than two times the reporting limit.

U.S. ARMY CORPS OF ENGINEERS

Client Sample ID: PBOW99SWA303DUP

GC/MS Semivolatiles

Lot-Sample #...: A9F150184-013 **Work Order #...:** CWWDH101 **Matrix.....:** WATER
Date Sampled...: 06/11/99 13:10 **Date Received..:** 06/12/99
Prep Date.....: 06/16/99 **Analysis Date..:** 06/18/99
Prep Batch #...: 9167109
Dilution Factor: 1 **Method.....:** SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	10	ug/L
Acenaphthylene	ND	10	ug/L
Anthracene	ND	10	ug/L
Benzo(a)anthracene	ND	10	ug/L
Benzo(b)fluoranthene	ND	10	ug/L
Benzo(k)fluoranthene	ND	10	ug/L
Benzo(ghi)perylene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
bis(2-Chloroethoxy) methane	ND	10	ug/L
bis(2-Chloroethyl)-ether	ND	10	ug/L
bis(2-Ethylhexyl) phthalate	ND	10	ug/L
-Bromophenyl phenyl ether	ND	10	ug/L
Butyl benzyl phthalate	ND	10	ug/L
4-Chloroaniline	ND	10	ug/L
4-Chloro-3-methylphenol	ND	10	ug/L
2-Chloronaphthalene	ND	10	ug/L
2-Chlorophenol	ND	10	ug/L
4-Chlorophenyl phenyl ether	ND	10	ug/L
Chrysene	ND	10	ug/L
Dibenz(a,h)anthracene	ND	10	ug/L
Dibenzofuran	ND	10	ug/L
Di-n-butyl phthalate	ND	10	ug/L
1,2-Dichlorobenzene	ND	10	ug/L
1,3-Dichlorobenzene	ND	10	ug/L
1,4-Dichlorobenzene	ND	10	ug/L
3,3'-Dichlorobenzidine	ND	10	ug/L
2,4-Dichlorophenol	ND	10	ug/L
Diethyl phthalate	ND	10	ug/L
2,4-Dimethylphenol	ND	10	ug/L
Dimethyl phthalate	ND	10	ug/L
Di-n-octyl phthalate	ND	10	ug/L
4,6-Dinitro-2-methylphenol	ND	25	ug/L
2,4-Dinitrophenol	ND	25	ug/L

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U.S. ARMY CORPS OF ENGINEERS

Client Sample ID: PBOW99SWA303DUP

GC/MS Semivolatiles

Lot-Sample #...: A9F150184-013 **Work Order #...:** CWWDH101 **Matrix.....:** WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS
2,4-Dinitrotoluene	ND	10	ug/L
2,6-Dinitrotoluene	ND	10	ug/L
Fluoranthene	ND	10	ug/L
Fluorene	ND	10	ug/L
Hexachlorobenzene	ND	10	ug/L
Hexachlorobutadiene	ND	10	ug/L
Hexachlorocyclopentadiene	ND	10	ug/L
Hexachloroethane	ND	10	ug/L
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
Isophorone	ND	10	ug/L
2-Methylnaphthalene	ND	10	ug/L
2-Methylphenol	ND	10	ug/L
Naphthalene	ND	10	ug/L
2-Nitroaniline	ND	25	ug/L
3-Nitroaniline	ND	25	ug/L
4-Nitroaniline	ND	25	ug/L
Nitrobenzene	ND	10	ug/L
2-Nitrophenol	ND	10	ug/L
4-Nitrophenol	ND	25	ug/L
N-Nitrosodi-n-propylamine	ND	10	ug/L
N-Nitrosodiphenylamine	ND	10	ug/L
Pentachlorophenol	ND	25	ug/L
Phenanthrene	ND	10	ug/L
Phenol	ND	10	ug/L
Pyrene	ND	10	ug/L
1,2,4-Trichlorobenzene	ND	10	ug/L
2,4,5-Trichlorophenol	ND	10	ug/L
2,4,6-Trichlorophenol	ND	10	ug/L
Carbazole	ND	10	ug/L
4-Methylphenol	ND	10	ug/L
bis(2-Chloroisopropyl)ether	ND	10	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Nitrobenzene-d5	66	(40 - 114)
Terphenyl-d14	76	(33 - 141)
2-Fluorobiphenyl	60	(45 - 118)
2-Fluorophenol	60	(21 - 100)
Phenol-d5	61	(17 - 101)
2,4,6-Tribromophenol	70	(16 - 129)

U.S. ARMY CORPS OF ENGINEERS

Client Sample ID: PBOW99SWA303DUP

TOTAL Metals

Lot-Sample #...: A9F150184-013 **Matrix.....:** WATER
Date Sampled...: 06/11/99 13:10 **Date Received..:** 06/12/99

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 9172344						
Silver	ND	5.0 Dilution Factor: 1	ug/L	SW846 6010B	06/22-07/16/99	CWWDE103
Aluminum	ND	200 Dilution Factor: 1	ug/L	SW846 6010B	06/22-07/15/99	CWWDE10C
Arsenic	ND	10.0 Dilution Factor: 1	ug/L	SW846 6010B	06/22-07/16/99	CWWDE104
Cadmium	ND	2.0 Dilution Factor: 1	ug/L	SW846 6010B	06/22-07/16/99	CWWDE105
Barium	ND	200 Dilution Factor: 1	ug/L	SW846 6010B	06/22-07/15/99	CWWDE10D
Beryllium	ND	5.0 Dilution Factor: 1	ug/L	SW846 6010B	06/22-07/16/99	CWWDE10E
Chromium	ND	5.0 Dilution Factor: 1	ug/L	SW846 6010B	06/22-07/16/99	CWWDE106
Calcium	**24500**	**5000** Dilution Factor: 1	**ug/L**	**SW846 6010B**	**06/22-07/15/99**	**CWWDE10F**
Lead	ND	3.0 Dilution Factor: 1	ug/L	SW846 6010B	06/22-07/16/99	CWWDE107
Antimony	ND	10.0 Dilution Factor: 1	ug/L	SW846 6010B	06/22-07/16/99	CWWDE108
Cobalt	ND	50.0 Dilution Factor: 1	ug/L	SW846 6010B	06/22-07/16/99	CWWDE10G
Selenium	ND	5.0 Dilution Factor: 1	ug/L	SW846 6010B	06/22-07/16/99	CWWDE109
Thallium	ND	10.0 Dilution Factor: 1	ug/L	SW846 6010B	06/22-07/16/99	CWWDE10A
Copper	ND	25.0 Dilution Factor: 1	ug/L	SW846 6010B	06/22-07/16/99	CWWDE10H

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U.S. ARMY CORPS OF ENGINEERS

Client Sample ID: PBOW99SWA303DUP

TOTAL Metals

Lot-Sample #...: A9F150184-013 **Matrix.....:** WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Iron	**251 MBD**	**100**	**ug/L**	**SW846 6010B**	**06/22-07/16/99**	**CWWDH10J**
		Dilution Factor: 1				
Potassium	ND	5000	ug/L	SW846 6010B	06/22-07/15/99	CWWDH10K
		Dilution Factor: 1				
Magnesium	**9040**	**5000**	**ug/L**	**SW846 6010B**	**06/22-07/15/99**	**CWWDH10L**
		Dilution Factor: 1				
Manganese	**34.9**	**15.0**	**ug/L**	**SW846 6010B**	**06/22-07/15/99**	**CWWDH10M**
		Dilution Factor: 1				
Sodium	**10500**	**5000**	**ug/L**	**SW846 6010B**	**06/22-07/15/99**	**CWWDH10N**
		Dilution Factor: 1				
Nickel	ND	40.0	ug/L	SW846 6010B	06/22-07/16/99	CWWDH10P
		Dilution Factor: 1				
anadium	ND	50.0	ug/L	SW846 6010B	06/22-07/16/99	CWWDH1(
		Dilution Factor: 1				
Zinc	ND	20.0	ug/L	SW846 6010B	06/22-07/16/99	CWWDH10R
		Dilution Factor: 1				
Mercury	ND	0.20	ug/L	SW846 7470A	06/22-06/23/99	CWWDH102
		Dilution Factor: 1				

NOTE(S):

MBD This analyte is present in the associated method blank at an amount that is less than two times the reporting limit.

U.S. ARMY CORPS OF ENGINEERS

Client Sample ID: PBOW99SDA303DUP

GC/MS Semivolatiles

Lot-Sample #...: A9F150184-014 **Work Order #...:** CWWDJ101 **Matrix.....:** SOLID
Date Sampled...: 06/11/99 13:10 **Date Received..:** 06/12/99
Prep Date.....: 06/21/99 **Analysis Date..:** 06/28/99
Prep Batch #...: 9172112
Dilution Factor: 1
% Moisture.....: 35 **Method.....:** SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	510	ug/kg
Acenaphthylene	ND	510	ug/kg
Anthracene	ND	510	ug/kg
Benzo(a)anthracene	ND	510	ug/kg
Benzo(b)fluoranthene	ND	510	ug/kg
Benzo(k)fluoranthene	ND	510	ug/kg
Benzo(ghi)perylene	ND	510	ug/kg
Benzo(a)pyrene	ND	510	ug/kg
bis(2-Chloroethoxy) methane	ND	510	ug/kg
bis(2-Chloroethyl)-ether	ND	510	ug/kg
bis(2-Ethylhexyl) phthalate	ND	510	ug/kg
4-Bromophenyl phenyl ether	ND	510	ug/kg
Butyl benzyl phthalate	ND	510	ug/kg
4-Chloroaniline	ND	510	ug/kg
4-Chloro-3-methylphenol	ND	510	ug/kg
2-Chloronaphthalene	ND	510	ug/kg
2-Chlorophenol	ND	510	ug/kg
4-Chlorophenyl phenyl ether	ND	510	ug/kg
Chrysene	ND	510	ug/kg
Dibenz(a,h)anthracene	ND	510	ug/kg
Dibenzofuran	ND	510	ug/kg
Di-n-butyl phthalate	ND	510	ug/kg
1,2-Dichlorobenzene	ND	510	ug/kg
1,3-Dichlorobenzene	ND	510	ug/kg
1,4-Dichlorobenzene	ND	510	ug/kg
3,3'-Dichlorobenzidine	ND	510	ug/kg
2,4-Dichlorophenol	ND	510	ug/kg
Diethyl phthalate	ND	510	ug/kg
2,4-Dimethylphenol	ND	510	ug/kg
Dimethyl phthalate	ND	510	ug/kg
Di-n-octyl phthalate	ND	510	ug/kg
4,6-Dinitro-2-methylphenol	ND	1200	ug/kg

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U.S. ARMY CORPS OF ENGINEERS

Client Sample ID: PBOW99SDA303DUP

GC/MS Semivolatiles

Lot-Sample #...: A9F150184-014 **Work Order #...:** CWWDJ101 **Matrix.....:** SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS
2,4-Dinitrophenol	ND	1200	ug/kg
2,4-Dinitrotoluene	ND	510	ug/kg
2,6-Dinitrotoluene	ND	510	ug/kg
Fluoranthene	ND	510	ug/kg
Fluorene	ND	510	ug/kg
Hexachlorobenzene	ND	510	ug/kg
Hexachlorobutadiene	ND	510	ug/kg
Hexachlorocyclopenta-diene	ND	510	ug/kg
Hexachloroethane	ND	510	ug/kg
Indeno(1,2,3-cd)pyrene	ND	510	ug/kg
Isophorone	ND	510	ug/kg
2-Methylnaphthalene	ND	510	ug/kg
2-Methylphenol	ND	510	ug/kg
Naphthalene	ND	510	ug/kg
2-Nitroaniline	ND	1200	ug/kg
3-Nitroaniline	ND	1200	ug/kg
4-Nitroaniline	ND	1200	ug/kg
Nitrobenzene	ND	510	ug/kg
2-Nitrophenol	ND	510	ug/kg
4-Nitrophenol	ND	1200	ug/kg
N-Nitrosodi-n-propyl-amine	ND	510	ug/kg
N-Nitrosodiphenylamine	ND	510	ug/kg
Pentachlorophenol	ND	1200	ug/kg
Phenanthrene	ND	510	ug/kg
Phenol	ND	510	ug/kg
Pyrene	ND	510	ug/kg
1,2,4-Trichlorobenzene	ND	510	ug/kg
2,4,5-Trichlorophenol	ND	510	ug/kg
2,4,6-Trichlorophenol	ND	510	ug/kg
Carbazole	ND	510	ug/kg
4-Methylphenol	ND	510	ug/kg
bis(2-Chloroisopropyl) ether	ND	510	ug/kg

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Nitrobenzene-d5	68	(23 - 120)
Terphenyl-d14	86	(18 - 137)
2-Fluorobiphenyl	80	(30 - 115)
2-Fluorophenol	71	(30 - 115)
Phenol-d5	69	(24 - 113)
2,4,6-Tribromophenol	84	(19 - 122)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

U.S. ARMY CORPS OF ENGINEERS

Client Sample ID: PBOW99SDA303DUP

TOTAL Metals

Lot-Sample #...: A9F150184-014 **Matrix.....:** SOLID
Date Sampled...: 06/11/99 13:10 **Date Received..:** 06/12/99
% Moisture.....: 35

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 9174305						
Silver	ND	0.77 Dilution Factor: 1	mg/kg	SW846 6010B	06/24-07/16/99	CWWD[illegible]10H
Aluminum	**3150**	**30.9** Dilution Factor: 1	**mg/kg**	**SW846 6010B**	**06/24-07/15/99**	**CWWD[illegible]102**
Arsenic	**3.8**	**1.5** Dilution Factor: 1	**mg/kg**	**SW846 6010B**	**06/24-07/16/99**	**CWWD[illegible]10J**
Barium	ND	30.9 Dilution Factor: 1	mg/kg	SW846 6010B	06/24-07/16/99	CWWD[illegible]103
Beryllium	ND	0.77 Dilution Factor: 1	mg/kg	SW846 6010B	06/24-07/16/99	CWWD[illegible]104
ıdmium	ND	0.31 Dilution Factor: 1	mg/kg	SW846 6010B	06/24-07/16/99	CWWD[illegible]10K
Calcium	**5620**	**773** Dilution Factor: 1	**mg/kg**	**SW846 6010B**	**06/24-07/15/99**	**CWWD[illegible]105**
Chromium	**5.2**	**0.77** Dilution Factor: 1	**mg/kg**	**SW846 6010B**	**06/24-07/16/99**	**CWWD[illegible]10L**
Cobalt	ND	7.7 Dilution Factor: 1	mg/kg	SW846 6010B	06/24-07/16/99	CWWD[illegible]106
Lead	**8.3**	**0.46** Dilution Factor: 1	**mg/kg**	**SW846 6010B**	**06/24-07/16/99**	**CWWD[illegible]10M**
Copper	**76.2**	**3.9** Dilution Factor: 1	**mg/kg**	**SW846 6010B**	**06/24-07/16/99**	**CWWD[illegible]107**
Antimony	ND	1.5 Dilution Factor: 1	mg/kg	SW846 6010B	06/24-07/16/99	CWWD[illegible]0N
Iron	**7540**	**15.5** Dilution Factor: 1	**mg/kg**	**SW846 6010B**	**06/24-07/16/99**	**CWWD[illegible]108**
Selenium	ND	0.77 Dilution Factor: 1	mg/kg	SW846 6010B	06/24-07/16/99	CWWD[illegible]0P

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U.S. ARMY CORPS OF ENGINEERS

Client Sample ID: PBOW99SDA303DUP

TOTAL Metals

Lot-Sample #...: A9F150184-014 **Matrix.....:** SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Mercury	ND	0.15	mg/kg	SW846 7471A	06/24-06/28/99	CWWDJ10R
		Dilution Factor: 1				
Potassium	ND	773	mg/kg	SW846 6010B	06/24-07/15/99	CWWDJ109
		Dilution Factor: 1				
Thallium	ND	1.5	mg/kg	SW846 6010B	06/24-07/16/99	CWWDJ10Q
		Dilution Factor: 1				
Magnesium	**2920**	**773**	**mg/kg**	**SW846 6010B**	**06/24-07/15/99**	**CWWDJ10A**
		Dilution Factor: 1				
Manganese	**159**	**2.3**	**mg/kg**	**SW846 6010B**	**06/24-07/16/99**	**CWWDJ10C**
		Dilution Factor: 1				
Sodium	ND	773	mg/kg	SW846 6010B	06/24-07/15/99	CWWDJ10D
		Dilution Factor: 1				
ickel	**6.8**	**6.2**	**mg/kg**	**SW846 6010B**	**06/24-07/16/99**	**CWWDJ1**
		Dilution Factor: 1				
Vanadium	**9.4**	**7.7**	**mg/kg**	**SW846 6010B**	**06/24-07/16/99**	**CWWDJ10F**
		Dilution Factor: 1				
Zinc	**28.2 MBD**	**3.1**	**mg/kg**	**SW846 6010B**	**06/24-07/16/99**	**CWWDJ10G**
		Dilution Factor: 1				

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

MBD This analyte is present in the associated method blank at an amount that is less than two times the reporting limit.

U.S. ARMY CORPS OF ENGINEERS

Client Sample ID: PBOW99SWA101 (MS/MSD)

GC/MS Semivolatiles

Lot-Sample #...: A9F150184-015 **Work Order #...:** CWWDK101 **Matrix.....:** WATER
Date Sampled...: 06/11/99 14:20 **Date Received..:** 06/12/99
Prep Date.....: 06/16/99 **Analysis Date..:** 06/26/99
Prep Batch #...: 9167109
Dilution Factor: 1 **Method.....:** SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	10	ug/L
Acenaphthylene	ND	10	ug/L
Anthracene	ND	10	ug/L
Benzo(a)anthracene	ND	10	ug/L
Benzo(b)fluoranthene	ND	10	ug/L
Benzo(k)fluoranthene	ND	10	ug/L
Benzo(ghi)perylene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
bis(2-Chloroethoxy) methane	ND	10	ug/L
bis(2-Chloroethyl)- ether	ND	10	ug/L
bis(2-Ethylhexyl) phthalate	ND	10	ug/L
-Bromophenyl phenyl ether	ND	10	ug/L
Butyl benzyl phthalate	ND	10	ug/L
4-Chloroaniline	ND	10	ug/L
4-Chloro-3-methylphenol	ND	10	ug/L
2-Chloronaphthalene	ND	10	ug/L
2-Chlorophenol	ND	10	ug/L
4-Chlorophenyl phenyl ether	ND	10	ug/L
Chrysene	ND	10	ug/L
Dibenz(a,h)anthracene	ND	10	ug/L
Dibenzofuran	ND	10	ug/L
Di-n-butyl phthalate	ND	10	ug/L
1,2-Dichlorobenzene	ND	10	ug/L
1,3-Dichlorobenzene	ND	10	ug/L
1,4-Dichlorobenzene	ND	10	ug/L
3,3'-Dichlorobenzidine	ND	10	ug/L
2,4-Dichlorophenol	ND	10	ug/L
Diethyl phthalate	ND	10	ug/L
2,4-Dimethylphenol	ND	10	ug/L
Dimethyl phthalate	ND	10	ug/L
Di-n-octyl phthalate	ND	10	ug/L
4,6-Dinitro- 2-methylphenol	ND	25	ug/L
2,4-Dinitrophenol	ND	25	ug/L

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U.S. ARMY CORPS OF ENGINEERS

Client Sample ID: PBOW99SWA101 (MS/MSD)

GC/MS Semivolatiles

Lot-Sample #...: A9F150184-015 **Work Order #...:** CWWDK101 **Matrix.....:** WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS
2,4-Dinitrotoluene	ND	10	ug/L
2,6-Dinitrotoluene	ND	10	ug/L
Fluoranthene	ND	10	ug/L
Fluorene	ND	10	ug/L
Hexachlorobenzene	ND	10	ug/L
Hexachlorobutadiene	ND	10	ug/L
Hexachlorocyclopenta-diene	ND	10	ug/L
Hexachloroethane	ND	10	ug/L
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
Isophorone	ND	10	ug/L
2-Methylnaphthalene	ND	10	ug/L
2-Methylphenol	ND	10	ug/L
Naphthalene	ND	10	ug/L
2-Nitroaniline	ND	25	ug/L
3-Nitroaniline	ND	25	ug/L
4-Nitroaniline	ND	25	ug/L
Nitrobenzene	ND	10	ug/L
2-Nitrophenol	ND	10	ug/L
4-Nitrophenol	ND	25	ug/L
N-Nitrosodi-n-propyl-amine	ND	10	ug/L
N-Nitrosodiphenylamine	ND	10	ug/L
Pentachlorophenol	ND	25	ug/L
Phenanthrene	ND	10	ug/L
Phenol	ND	10	ug/L
Pyrene	ND	10	ug/L
1,2,4-Trichlorobenzene	ND	10	ug/L
2,4,5-Trichlorophenol	ND	10	ug/L
2,4,6-Trichlorophenol	ND	10	ug/L
Carbazole	ND	10	ug/L
4-Methylphenol	ND	10	ug/L
bis(2-Chloroisopropyl) ether	ND	10	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Nitrobenzene-d5	75	(40 - 114)
Terphenyl-d14	93	(33 - 141)
2-Fluorobiphenyl	76	(45 - 118)
2-Fluorophenol	64	(21 - 100)
Phenol-d5	61	(17 - 101)
2,4,6-Tribromophenol	74	(16 - 129)

U.S. ARMY CORPS OF ENGINEERS

Client Sample ID: PBOW99SWA101 (MS/MSD)

TOTAL Metals

Lot-Sample #...: A9F150184-015 **Matrix.....:** WATER
Date Sampled...: 06/11/99 14:20 **Date Received..:** 06/12/99

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 9172344						
Silver	ND	5.0	ug/L	SW846 6010B	06/22-07/16/99	CWWDK107
		Dilution Factor: 1				
Aluminum	**652**	**200**	**ug/L**	**SW846 6010B**	**06/22-07/15/99**	**CWWDK111**
		Dilution Factor: 1				
Arsenic	ND	10.0	ug/L	SW846 6010B	06/22-07/16/99	CWWDK10A
		Dilution Factor: 1				
Cadmium	ND	2.0	ug/L	SW846 6010B	06/22-07/16/99	CWWDK10E
		Dilution Factor: 1				
Barium	ND	200	ug/L	SW846 6010B	06/22-07/15/99	CWWDK114
		Dilution Factor: 1				
Beryllium	ND	5.0	ug/L	SW846 6010B	06/22-07/16/99	CWWDK117
		Dilution Factor: 1				
Chromium	ND	5.0	ug/L	SW846 6010B	06/22-07/16/99	CWWDK10H
		Dilution Factor: 1				
Calcium	**36100**	**5000**	**ug/L**	**SW846 6010B**	**06/22-07/15/99**	**CWWDK11A**
		Dilution Factor: 1				
Lead	ND	3.0	ug/L	SW846 6010B	06/22-07/16/99	CWWDK10L
		Dilution Factor: 1				
Antimony	ND	10.0	ug/L	SW846 6010B	06/22-07/16/99	CWWDK10P
		Dilution Factor: 1				
Cobalt	ND	50.0	ug/L	SW846 6010B	06/22-07/16/99	CWWDK11E
		Dilution Factor: 1				
Selenium	ND	5.0	ug/L	SW846 6010B	06/22-07/16/99	CWWDK10T
		Dilution Factor: 1				
Thallium	ND	10.0	ug/L	SW846 6010B	06/22-07/16/99	CWWDK10W
		Dilution Factor: 1				
Copper	ND	25.0	ug/L	SW846 6010B	06/22-07/16/99	CWWDK11H
		Dilution Factor: 1				

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U.S. ARMY CORPS OF ENGINEERS

Client Sample ID: PBOW99SWA101 (MS/MSD)

TOTAL Metals

Lot-Sample #...: A9F150184-015 Matrix.....: WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Iron	1390 MBD	100	ug/L	SW846 6010B	06/22-07/16/99	CWWDK11L
		Dilution Factor: 1				
Potassium	ND	5000	ug/L	SW846 6010B	06/22-07/15/99	CWWDK11P
		Dilution Factor: 1				
Magnesium	16800	5000	ug/L	SW846 6010B	06/22-07/15/99	CWWDK11T
		Dilution Factor: 1				
Manganese	78.8	15.0	ug/L	SW846 6010B	06/22-07/15/99	CWWDK11W
		Dilution Factor: 1				
Sodium	26900	5000	ug/L	SW846 6010B	06/22-07/15/99	CWWDK121
		Dilution Factor: 1				
Nickel	ND	40.0	ug/L	SW846 6010B	06/22-07/16/99	CWWDK124
		Dilution Factor: 1				
Vanadium	ND	50.0	ug/L	SW846 6010B	06/22-07/16/99	CWWDK
		Dilution Factor: 1				
Zinc	ND	20.0	ug/L	SW846 6010B	06/22-07/16/99	CWWDK12A
		Dilution Factor: 1				
Mercury	ND	0.20	ug/L	SW846 7470A	06/22-06/23/99	CWWDK104
		Dilution Factor: 1				

NOTE(S):

MBD This analyte is present in the associated method blank at an amount that is less than two times the reporting limit.

U.S. ARMY CORPS OF ENGINEERS

Client Sample ID: PBOW99SDA101 (MS/MSD)

GC/MS Semivolatiles

Lot-Sample #...: A9F150184-016 **Work Order #...:** CWWDR101 **Matrix.....:** SOLID
Date Sampled...: 06/11/99 14:20 **Date Received..:** 06/12/99
Prep Date.....: 06/21/99 **Analysis Date..:** 06/26/99
Prep Batch #...: 9172112
Dilution Factor: 1
% Moisture.....: 24 **Method.....:** SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	430	ug/kg
Acenaphthylene	ND	430	ug/kg
Anthracene	ND	430	ug/kg
Benzo(a)anthracene	ND	430	ug/kg
Benzo(b)fluoranthene	ND	430	ug/kg
Benzo(k)fluoranthene	ND	430	ug/kg
Benzo(ghi)perylene	ND	430	ug/kg
Benzo(a)pyrene	ND	430	ug/kg
bis(2-Chloroethoxy) methane	ND	430	ug/kg
bis(2-Chloroethyl)-ether	ND	430	ug/kg
bis(2-Ethylhexyl) phthalate	ND	430	ug/kg
4-Bromophenyl phenyl ether	ND	430	ug/kg
Butyl benzyl phthalate	ND	430	ug/kg
4-Chloroaniline	ND	430	ug/kg
4-Chloro-3-methylphenol	ND	430	ug/kg
2-Chloronaphthalene	ND	430	ug/kg
2-Chlorophenol	ND	430	ug/kg
4-Chlorophenyl phenyl ether	ND	430	ug/kg
Chrysene	ND	430	ug/kg
Dibenz(a,h)anthracene	ND	430	ug/kg
Dibenzofuran	ND	430	ug/kg
Di-n-butyl phthalate	ND	430	ug/kg
1,2-Dichlorobenzene	ND	430	ug/kg
1,3-Dichlorobenzene	ND	430	ug/kg
1,4-Dichlorobenzene	ND	430	ug/kg
3,3'-Dichlorobenzidine	ND	430	ug/kg
2,4-Dichlorophenol	ND	430	ug/kg
Diethyl phthalate	ND	430	ug/kg
2,4-Dimethylphenol	ND	430	ug/kg
Dimethyl phthalate	ND	430	ug/kg
Di-n-octyl phthalate	ND	430	ug/kg
4,6-Dinitro-2-methylphenol	ND	1100	ug/kg

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U.S. ARMY CORPS OF ENGINEERS

Client Sample ID: PBOW99SDA101 (MS/MSD)

GC/MS Semivolatiles

Lot-Sample #...: A9F150184-016 **Work Order #...:** CWWDR101 **Matrix.....:** SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS
2,4-Dinitrophenol	ND	1100	ug/kg
2,4-Dinitrotoluene	ND	430	ug/kg
2,6-Dinitrotoluene	ND	430	ug/kg
Fluoranthene	ND	430	ug/kg
Fluorene	ND	430	ug/kg
Hexachlorobenzene	ND	430	ug/kg
Hexachlorobutadiene	ND	430	ug/kg
Hexachlorocyclopenta-diene	ND	430	ug/kg
Hexachloroethane	ND	430	ug/kg
Indeno(1,2,3-cd)pyrene	ND	430	ug/kg
Isophorone	ND	430	ug/kg
2-Methylnaphthalene	ND	430	ug/kg
2-Methylphenol	ND	430	ug/kg
Naphthalene	ND	430	ug/kg
2-Nitroaniline	ND	1100	ug/kg
3-Nitroaniline	ND	1100	ug/kg
4-Nitroaniline	ND	1100	ug/kg
Nitrobenzene	ND	430	ug/kg
2-Nitrophenol	ND	430	ug/kg
4-Nitrophenol	ND	1100	ug/kg
N-Nitrosodi-n-propyl-amine	ND	430	ug/kg
N-Nitrosodiphenylamine	ND	430	ug/kg
Pentachlorophenol	ND	1100	ug/kg
Phenanthrene	ND	430	ug/kg
Phenol	ND	430	ug/kg
Pyrene	ND	430	ug/kg
1,2,4-Trichlorobenzene	ND	430	ug/kg
2,4,5-Trichlorophenol	ND	430	ug/kg
2,4,6-Trichlorophenol	ND	430	ug/kg
Carbazole	ND	430	ug/kg
4-Methylphenol	ND	430	ug/kg
bis(2-Chloroisopropyl) ether	ND	430	ug/kg

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Nitrobenzene-d5	50	(23 - 120)
Terphenyl-d14	72	(18 - 137)
2-Fluorobiphenyl	59	(30 - 115)
2-Fluorophenol	56	(30 - 115)
Phenol-d5	43	(24 - 113)
2,4,6-Tribromophenol	71	(19 - 122)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

U.S. ARMY CORPS OF ENGINEERS

Client Sample ID: PBOW99SDA101 (MS/MSD)

TOTAL Metals

Lot-Sample #...: A9F150184-016 Matrix.....: SOLID
Date Sampled...: 06/11/99 14:20 Date Received..: 06/12/99
% Moisture.....: 24

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 9174305						
Silver	ND	0.66	mg/kg	SW846 6010B	06/24-07/16/99	CWWDR11H
		Dilution Factor: 1				
Aluminum	11400	26.3	mg/kg	SW846 6010B	06/24-07/15/99	CWWDR104
		Dilution Factor: 1				
Arsenic	41.5	2.6	mg/kg	SW846 6010B	06/24-07/19/99	CWWDR11L
		Dilution Factor: 2				
Barium	135	26.3	mg/kg	SW846 6010B	06/24-07/16/99	CWWDR107
		Dilution Factor: 1				
Beryllium	0.90	0.66	mg/kg	SW846 6010B	06/24-07/16/99	CWWDR10A
		Dilution Factor: 1				
ıdmium	ND G	0.53	mg/kg	SW846 6010B	06/24-07/19/99	CWWDR11P
		Dilution Factor: 2				
Calcium	5190	657	mg/kg	SW846 6010B	06/24-07/15/99	CWWDR10E
		Dilution Factor: 1				
Chromium	21.6	1.3	mg/kg	SW846 6010B	06/24-07/19/99	CWWDR11T
		Dilution Factor: 2				
Cobalt	41.4 L	6.6	mg/kg	SW846 6010B	06/24-07/16/99	CWWDR10H
		Dilution Factor: 1				
Lead	17.3	0.79	mg/kg	SW846 6010B	06/24-07/19/99	CWWDR11W
		Dilution Factor: 2				
Copper	20.0	3.3	mg/kg	SW846 6010B	06/24-07/16/99	CWWDR10L
		Dilution Factor: 1				
Antimony	ND G	2.6	mg/kg	SW846 6010B	06/24-07/19/99	CWWDR121
		Dilution Factor: 2				
Iron	80900	26.3	mg/kg	SW846 6010B	06/24-07/19/99	CWWDR10P
		Dilution Factor: 2				
Selenium	ND G	1.3	mg/kg	SW846 6010B	06/24-07/19/99	CWWDR124
		Dilution Factor: 2				

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U.S. ARMY CORPS OF ENGINEERS

Client Sample ID: PBOW99SDA101 (MS/MSD)

TOTAL Metals

Lot-Sample #...: A9F150184-016 Matrix.....: SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Mercury	ND	0.13	mg/kg	SW846 7471A	06/24-06/28/99	CWWDE12A
		Dilution Factor: 1				
Potassium	**1310**	**657**	**mg/kg**	**SW846 6010B**	**06/24-07/15/99**	**CWWDE10T**
		Dilution Factor: 1				
Thallium	ND G	2.6	mg/kg	SW846 6010B	06/24-07/19/99	CWWDE127
		Dilution Factor: 2				
Magnesium	**2240**	**657**	**mg/kg**	**SW846 6010B**	**06/24-07/15/99**	**CWWDE10W**
		Dilution Factor: 1				
Manganese	**1730**	**3.9**	**mg/kg**	**SW846 6010B**	**06/24-07/19/99**	**CWWDE111**
		Dilution Factor: 2				
Sodium	ND	657	mg/kg	SW846 6010B	06/24-07/15/99	CWWDE114
		Dilution Factor: 1				
Nickel	**47.0 L**	**5.3**	**mg/kg**	**SW846 6010B**	**06/24-07/16/99**	**CWWDE**
		Dilution Factor: 1				
Vanadium	**73.5**	**13.1**	**mg/kg**	**SW846 6010B**	**06/24-07/19/99**	**CWWDE11A**
		Dilution Factor: 2				
Zinc	**145 MBB**	**5.3**	**mg/kg**	**SW846 6010B**	**06/24-07/19/99**	**CWWDE11E**
		Dilution Factor: 2				

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

G Elevated reporting limit. The reporting limit is elevated due to matrix interference.

L Serial dilution of a digestate in the analytical batch indicates that physical and chemical interferences are present.

MBB This analyte is present at a reportable level in the associated method blank but is less than 5% of the sample amount.

U.S. ARMY CORPS OF ENGINEERS

Client Sample ID: FIELD BLANK

GC/MS Semivolatiles

Lot-Sample #...: A9F150184-017 **Work Order #...:** CWWDX101 **Matrix.....:** WATER
Date Sampled...: 06/11/99 10:00 **Date Received..:** 06/12/99
Prep Date.....: 06/16/99 **Analysis Date..:** 06/26/99
Prep Batch #...: 9167109
Dilution Factor: 1 **Method.....:** SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	10	ug/L
Acenaphthylene	ND	10	ug/L
Anthracene	ND	10	ug/L
Benzo(a)anthracene	ND	10	ug/L
Benzo(b)fluoranthene	ND	10	ug/L
Benzo(k)fluoranthene	ND	10	ug/L
Benzo(ghi)perylene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
bis(2-Chloroethoxy) methane	ND	10	ug/L
bis(2-Chloroethyl)- ether	ND	10	ug/L
bis(2-Ethylhexyl) phthalate	ND	10	ug/L
-Bromophenyl phenyl ether	ND	10	ug/L
Butyl benzyl phthalate	ND	10	ug/L
4-Chloroaniline	ND	10	ug/L
4-Chloro-3-methylphenol	ND	10	ug/L
2-Chloronaphthalene	ND	10	ug/L
2-Chlorophenol	ND	10	ug/L
4-Chlorophenyl phenyl ether	ND	10	ug/L
Chrysene	ND	10	ug/L
Dibenz(a,h)anthracene	ND	10	ug/L
Dibenzofuran	ND	10	ug/L
Di-n-butyl phthalate	ND	10	ug/L
1,2-Dichlorobenzene	ND	10	ug/L
1,3-Dichlorobenzene	ND	10	ug/L
1,4-Dichlorobenzene	ND	10	ug/L
3,3'-Dichlorobenzidine	ND	10	ug/L
2,4-Dichlorophenol	ND	10	ug/L
Diethyl phthalate	ND	10	ug/L
2,4-Dimethylphenol	ND	10	ug/L
Dimethyl phthalate	ND	10	ug/L
Di-n-octyl phthalate	ND	10	ug/L
4,6-Dinitro- 2-methylphenol	ND	25	ug/L
2,4-Dinitrophenol	ND	25	ug/L

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U.S. ARMY CORPS OF ENGINEERS

Client Sample ID: FIELD BLANK

GC/MS Semivolatiles

Lot-Sample #...: A9F150184-017 **Work Order #...:** CWWDX101 **Matrix.....:** WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS
2,4-Dinitrotoluene	ND	10	ug/L
2,6-Dinitrotoluene	ND	10	ug/L
Fluoranthene	ND	10	ug/L
Fluorene	ND	10	ug/L
Hexachlorobenzene	ND	10	ug/L
Hexachlorobutadiene	ND	10	ug/L
Hexachlorocyclopenta-diene	ND	10	ug/L
Hexachloroethane	ND	10	ug/L
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
Isophorone	ND	10	ug/L
2-Methylnaphthalene	ND	10	ug/L
2-Methylphenol	ND	10	ug/L
Naphthalene	ND	10	ug/L
2-Nitroaniline	ND	25	ug/L
3-Nitroaniline	ND	25	ug/L
4-Nitroaniline	ND	25	ug/L
Nitrobenzene	ND	10	ug/L
2-Nitrophenol	ND	10	ug/L
4-Nitrophenol	ND	25	ug/L
N-Nitrosodi-n-propyl-amine	ND	10	ug/L
N-Nitrosodiphenylamine	ND	10	ug/L
Pentachlorophenol	ND	25	ug/L
Phenanthrene	ND	10	ug/L
Phenol	ND	10	ug/L
Pyrene	ND	10	ug/L
1,2,4-Trichlorobenzene	ND	10	ug/L
2,4,5-Trichlorophenol	ND	10	ug/L
2,4,6-Trichlorophenol	ND	10	ug/L
Carbazole	ND	10	ug/L
4-Methylphenol	ND	10	ug/L
bis(2-Chloroisopropyl) ether	ND	10	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Nitrobenzene-d5	81	(40 - 114)
Terphenyl-d14	101	(33 - 141)
2-Fluorobiphenyl	83	(45 - 118)
2-Fluorophenol	70	(21 - 100)
Phenol-d5	65	(17 - 101)
2,4,6-Tribromophenol	62	(16 - 129)

U.S. ARMY CORPS OF ENGINEERS

Client Sample ID: FIELD BLANK

TOTAL Metals

Lot-Sample #...: A9F150184-017 **Matrix.....:** WATER
Date Sampled...: 06/11/99 10:00 **Date Received..:** 06/12/99

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 9172344						
Silver	ND	5.0	ug/L	SW846 6010B	06/22-07/16/99	CWWDX103
		Dilution Factor: 1				
Aluminum	ND	200	ug/L	SW846 6010B	06/22-07/15/99	CWWDX10C
		Dilution Factor: 1				
Arsenic	ND	10.0	ug/L	SW846 6010B	06/22-07/16/99	CWWDX104
		Dilution Factor: 1				
Cadmium	ND	2.0	ug/L	SW846 6010B	06/22-07/16/99	CWWDX105
		Dilution Factor: 1				
Barium	ND	200	ug/L	SW846 6010B	06/22-07/15/99	CWWDX10D
		Dilution Factor: 1				
Beryllium	ND	5.0	ug/L	SW846 6010B	06/22-07/16/99	CWWDX10E
		Dilution Factor: 1				
Chromium	ND	5.0	ug/L	SW846 6010B	06/22-07/16/99	CWWDX106
		Dilution Factor: 1				
Calcium	ND	5000	ug/L	SW846 6010B	06/22-07/15/99	CWWDX10F
		Dilution Factor: 1				
Lead	ND	3.0	ug/L	SW846 6010B	06/22-07/16/99	CWWDX107
		Dilution Factor: 1				
Antimony	ND	10.0	ug/L	SW846 6010B	06/22-07/16/99	CWWDX108
		Dilution Factor: 1				
Cobalt	ND	50.0	ug/L	SW846 6010B	06/22-07/16/99	CWWDX10G
		Dilution Factor: 1				
Selenium	ND	5.0	ug/L	SW846 6010B	06/22-07/16/99	CWWDX109
		Dilution Factor: 1				
Thallium	ND	10.0	ug/L	SW846 6010B	06/22-07/16/99	CWWDX10A
		Dilution Factor: 1				
Copper	ND	25.0	ug/L	SW846 6010B	06/22-07/16/99	CWWDX10H
		Dilution Factor: 1				

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U.S. ARMY CORPS OF ENGINEERS

Client Sample ID: FIELD BLANK

TOTAL Metals

Lot-Sample #...: A9F150184-017 **Matrix.....:** WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Iron	ND MBE	100	ug/L	SW846 6010B	06/22-07/16/99	CWWDX10J
		Dilution Factor: 1				
Potassium	ND	5000	ug/L	SW846 6010B	06/22-07/15/99	CWWDX10K
		Dilution Factor: 1				
Magnesium	ND	5000	ug/L	SW846 6010B	06/22-07/15/99	CWWDX10L
		Dilution Factor: 1				
Manganese	ND	15.0	ug/L	SW846 6010B	06/22-07/15/99	CWWDX10M
		Dilution Factor: 1				
Sodium	ND	5000	ug/L	SW846 6010B	06/22-07/15/99	CWWDX10N
		Dilution Factor: 1				
Nickel	ND	40.0	ug/L	SW846 6010B	06/22-07/16/99	CWWDX10P
		Dilution Factor: 1				
Vanadium	ND	50.0	ug/L	SW846 6010B	06/22-07/16/99	CWWDX
		Dilution Factor: 1				
Zinc	ND	20.0	ug/L	SW846 6010B	06/22-07/16/99	CWWDX10R
		Dilution Factor: 1				
Mercury	ND	0.20	ug/L	SW846 7470A	06/22-06/23/99	CWWDX102
		Dilution Factor: 1				

NOTE(S):

MBE This analyte is present in the associated method blank.

QUALITY CONTROL SECTION

QUALITY CONTROL ELEMENTS OF SW-846 METHODS

Quanterra® Incorporated conducts a quality assurance/quality control (QA/QC) program designed to provide scientifically valid and legally defensible data. Toward this end, several types of quality control indicators are incorporated into the QA/QC program. These indicators are introduced into the sample testing process to provide a mechanism for the assessment of the analytical data.

QC BATCH

Environmental samples are taken through the testing process in groups called QUALITY CONTROL BATCHES (QC batches). A QC batch contains up to twenty environmental samples of a similar matrix (water, soil) that are processed using the same reagents and standards. Quanterra requires that each environmental sample be associated with a QC batch.

Several quality control samples are included in each QC batch and are processed identically to the twenty environmental samples. These QC samples include a METHOD BLANK (MB), a LABORATORY CONTROL SAMPLE (LCS) and, where appropriate, a MATRIX SPIKE/MATRIX SPIKE DUPLICATE (MS/MSD) pair or a MATRIX SPIKE/SAMPLE DUPLICATE (MS/DU) pair. If there is insufficient sample to perform an MS/MSD or an MS/DU, then a LABORATORY CONTROL SAMPLE DUPLICATE (LCSD) is included in the QC batch.

LABORATORY CONTROL SAMPLE

The Laboratory Control Sample is a QC sample that is created by adding known concentrations of a full or partial set of target analytes to a matrix similar to that of the environmental samples in the QC batch. The LCS analyte recovery results are used to monitor the analytical process and provide evidence that the laboratory is performing the method within acceptable guidelines. Failure to meet the established recovery guidelines requires the repreparation and reanalysis of all samples in the QC batch. The only exception is that if the LCS recoveries are biased high and the associated sample is ND for the parameter(s) of interest, the batch is acceptable.

At times, a Laboratory Control Sample Duplicate (LCSD) is also included in the QC batch. An LCSD is a QC sample that is created and handled identically to the LCS. Analyte recovery data from the LCSD is assessed in the same way as that of the LCS. The LCSD recoveries, together with the LCS recoveries, are used to determine the reproducibility (precision) of the analytical system. Precision data are expressed as relative percent differences (RPDs). Failure of the RPDs to fall within the laboratory-generated acceptance windows requires the repreparation and reanalysis of all samples in the QC batch. The only exception is that if the MS/MSD RPDs are within acceptance criteria, the batch is acceptable.

METHOD BLANK

The Method Blank is a QC sample consisting of all the reagents used in analyzing the environmental samples contained in the QC batch. Method Blank results are used to determine if interference or contamination in the analytical system could lead to the reporting of false positive data or elevated analyte concentrations. All target analytes must be below the reporting limits (RL) or the associated sample(s) must be ND except for the common laboratory contaminants indicated below.

Volatile (GC or GC/MS)	Semivolatile (GC/MS)	Metals
Methylene chloride	Phthalate Esters	Copper
Acetone		Iron
2-Butanone		Zinc
		Lead*

** for analyses run on TJA Trace ICP or GFAA only*

QUALITY CONTROL ELEMENTS OF SW-846 METHODS
(Continued)

The listed volatile and semivolatile compounds may be present in concentrations up to 5 times the reporting limits. The listed metals may be present in concentrations up to 2 times the reporting limit or must be twenty fold less than the results of the environmental samples. Failure to meet these Method Blank criteria requires the repreparation and reanalysis of all samples in the QC batch.

MATRIX SPIKE/MATRIX SPIKE DUPLICATE

A Matrix Spike and a Matrix Spike Duplicate are a pair of environmental samples to which known concentrations of a full or partial set of target analytes are added. The MS/MSD results are determined in the same manner as the results of the environmental sample used to prepare the MS/MSD. The analyte recoveries and the relative percent differences (RPDs) of the recoveries are calculated and used to evaluate the effect of the sample matrix on the analytical results. When these values fail to meet acceptance criteria, the data is reviewed to determine the cause. If, in the analyst's judgment, sample matrix effects are indicated, no corrective action is performed. Otherwise, the MS/MSD and the environmental sample used to prepare them are reprepared and reanalyzed.

For certain methods, a Matrix Spike/Sample Duplicate (MS/DU) may be included in the QC batch in place of the MS/MSD. For the parameters (i.e. pH, ignitability) where it is not possible to prepare a spiked sample, a Sample Duplicate may be included in the QC batch.

SURROGATE COMPOUNDS

In addition to these batch-related QC indicators, each organic environmental and QC sample are spiked with surrogate compounds. Surrogates are organic chemicals that behave similarly to the analytes of interest and that are rarely present in the environment. Surrogate recoveries are used to monitor the individual performance of a sample in the analytical system.

The acceptance criteria do not apply to samples that are diluted. All other surrogate recoveries will be reported. If the LCS, LCSD, or the Method Blank surrogates fail to meet recovery criteria (exception for dilutions), the entire batch of samples is reprepared and reanalyzed.

If the surrogate recoveries are biased high in the LCS, LCSD, or the Method Blank and the associated sample(s) are ND, the batch is acceptable. If the surrogate recoveries are outside criteria for environmental or MS/MSD samples, the batch may be acceptable based on the analyst's judgment that sample matrix effects are indicated.

For the GC/MS BNA methods, the surrogate criteria is that two of the three surrogates for each fraction must meet acceptance criteria. The third surrogate must have a recovery of ten percent or greater.

For the Pesticide/PCB, PAH, TPH, and Herbicide methods, the surrogate criteria is that one of two surrogate compounds meet acceptance criteria.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: A9F150184 Work Order #...: CWX2T102 Matrix.....: WATER
LCS Lot-Sample#: A9F160000-109
Prep Date.....: 06/16/99 Analysis Date..: 06/18/99
Prep Batch #...: 9167109
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD
Acenaphthene	80	(47 - 145)	SW846 8270C
Acenaphthylene	78	(47 - 111)	SW846 8270C
Anthracene	78	(53 - 107)	SW846 8270C
Benzo(a)anthracene	82	(53 - 110)	SW846 8270C
Benzo(b)fluoranthene	75	(43 - 110)	SW846 8270C
Benzo(k)fluoranthene	83	(46 - 120)	SW846 8270C
Benzo(ghi)perylene	91	(17 - 120)	SW846 8270C
Benzo(a)pyrene	76	(28 - 114)	SW846 8270C
bis(2-Chloroethoxy) methane	82	(50 - 106)	SW846 8270C
bis(2-Chloroethyl)-ether	83	(44 - 95)	SW846 8270C
bis(2-Ethylhexyl) phthalate	78	(30 - 123)	SW846 8270C
4-Bromophenyl phenyl ether	91	(52 - 114)	SW846 8270C
Butyl benzyl phthalate	73	(35 - 110)	SW846 8270C
4-Chloroaniline	52	(43 - 91)	SW846 8270C
4-Chloro-3-methylphenol	81	(22 - 147)	SW846 8270C
2-Chloronaphthalene	84	(43 - 111)	SW846 8270C
2-Chlorophenol	77	(23 - 134)	SW846 8270C
4-Chlorophenyl phenyl ether	89	(48 - 124)	SW846 8270C
Chrysene	78	(54 - 120)	SW846 8270C
Dibenz(a,h)anthracene	88	(23 - 112)	SW846 8270C
Dibenzofuran	82 a	(85 - 117)	SW846 8270C
Di-n-butyl phthalate	81	(44 - 115)	SW846 8270C
1,2-Dichlorobenzene	69	(43 - 95)	SW846 8270C
1,3-Dichlorobenzene	65	(41 - 92)	SW846 8270C
1,4-Dichlorobenzene	67	(20 - 124)	SW846 8270C
3,3'-Dichlorobenzidine	48	(19 - 137)	SW846 8270C
2,4-Dichlorophenol	76	(33 - 93)	SW846 8270C
Diethyl phthalate	82	(16 - 129)	SW846 8270C
2,4-Dimethylphenol	47	(23 - 74)	SW846 8270C
Dimethyl phthalate	81	(10 - 115)	SW846 8270C

(Continued on next page)

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: A9F150184 Work Order #...: CWX2T102 Matrix.....: WATER
LCS Lot-Sample#: A9F160000-109

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD
Di-n-octyl phthalate	76	(25 - 123)	SW846 8270C
4,6-Dinitro-2-methylphenol	79	(10 - 115)	SW846 8270C
2,4-Dinitrophenol	68	(10 - 96)	SW846 8270C
2,4-Dinitrotoluene	86	(60 - 134)	SW846 8270C
2,6-Dinitrotoluene	88	(40 - 121)	SW846 8270C
Fluoranthene	83	(38 - 131)	SW846 8270C
Fluorene	84	(45 - 124)	SW846 8270C
Hexachlorobenzene	94	(53 - 110)	SW846 8270C
Hexachlorobutadiene	70	(45 - 96)	SW846 8270C
Hexachlorocyclopentadiene	0.0 a	(16 - 88)	SW846 8270C
Hexachloroethane	62	(38 - 90)	SW846 8270C
Indeno(1,2,3-cd)pyrene	93	(28 - 112)	SW846 8270C
Isophorone	77	(44 - 105)	SW846 8270C
2-Methylnaphthalene	77	(43 - 82)	SW846 8270C
-Methylphenol	72	(20 - 95)	SW846 8270C
Naphthalene	77	(44 - 99)	SW846 8270C
2-Nitroaniline	86	(52 - 170)	SW846 8270C
3-Nitroaniline	63	(55 - 172)	SW846 8270C
4-Nitroaniline	51 a	(74 - 195)	SW846 8270C
Nitrobenzene	85	(44 - 102)	SW846 8270C
2-Nitrophenol	80	(10 - 99)	SW846 8270C
4-Nitrophenol	73	(30 - 162)	SW846 8270C
N-Nitrosodi-n-propylamine	78	(0.0- 230)	SW846 8270C
N-Nitrosodiphenylamine	75	(37 - 134)	SW846 8270C
Pentachlorophenol	74	(14 - 176)	SW846 8270C
Phenanthrene	82	(50 - 189)	SW846 8270C
Phenol	78	(5.0- 112)	SW846 8270C
Pyrene	74	(68 - 131)	SW846 8270C
1,2,4-Trichlorobenzene	72	(41 - 105)	SW846 8270C
2,4,5-Trichlorophenol	84	(20 - 159)	SW846 8270C
2,4,6-Trichlorophenol	79	(22 - 102)	SW846 8270C
Carbazole	56	(50 - 150)	SW846 8270C
4-Methylphenol	70	(10 - 85)	SW846 8270C
2,2'-oxybis(1-Chloropropane)	99	(21 - 122)	SW846 8270C

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LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: A9F150184 **Work Order #...:** CWX2T102 **Matrix.....:** WATER
LCS Lot-Sample#: A9F160000-109

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Nitrobenzene-d5	84	(40 - 114)
Terphenyl-d14	78	(33 - 141)
2-Fluorobiphenyl	80	(45 - 118)
2-Fluorophenol	74	(21 - 100)
Phenol-d5	76	(17 - 101)
2,4,6-Tribromophenol	80	(16 - 129)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

a Spiked analyte recovery is outside stated control limits.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: A9F150184 Work Order #...: CXDQ2102 Matrix.....: SOLID
LCS Lot-Sample#: A9F260000-103
Prep Date.....: 06/28/99 Analysis Date..: 07/01/99
Prep Batch #...: 9177103
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD
Acenaphthene	78	(51 - 101)	SW846 8270C
Acenaphthylene	77	(33 - 145)	SW846 8270C
Anthracene	83	(27 - 133)	SW846 8270C
Benzo(a)anthracene	84	(33 - 143)	SW846 8270C
Benzo(b)fluoranthene	86	(24 - 159)	SW846 8270C
Benzo(k)fluoranthene	86	(60 - 125)	SW846 8270C
Benzo(ghi)perylene	77	(10 - 219)	SW846 8270C
Benzo(a)pyrene	80	(17 - 163)	SW846 8270C
bis(2-Chloroethoxy) methane	79	(33 - 184)	SW846 8270C
bis(2-Chloroethyl)-ether	74	(12 - 158)	SW846 8270C
bis(2-Ethylhexyl) phthalate	98	(10 - 158)	SW846 8270C
-Bromophenyl phenyl ether	92	(33 - 127)	SW846 8270C
Butyl benzyl phthalate	88	(10 - 122)	SW846 8270C
4-Chloroaniline	47	(43 - 91)	SW846 8270C
4-Chloro-3-methylphenol	92	(46 - 106)	SW846 8270C
2-Chloronaphthalene	80	(60 - 118)	SW846 8270C
2-Chlorophenol	75	(44 - 103)	SW846 8270C
4-Chlorophenyl phenyl ether	90	(25 - 158)	SW846 8270C
Chrysene	85	(17 - 168)	SW846 8270C
Dibenz(a,h)anthracene	84	(10 - 227)	SW846 8270C
Dibenzofuran	82 a	(85 - 117)	SW846 8270C
Di-n-butyl phthalate	86	(10 - 118)	SW846 8270C
1,2-Dichlorobenzene	77	(32 - 129)	SW846 8270C
1,3-Dichlorobenzene	70	(10 - 172)	SW846 8270C
1,4-Dichlorobenzene	71	(51 - 95)	SW846 8270C
3,3'-Dichlorobenzidine	51	(10 - 262)	SW846 8270C
2,4-Dichlorophenol	80	(39 - 135)	SW846 8270C
Diethyl phthalate	89	(10 - 114)	SW846 8270C
2,4-Dimethylphenol	69	(32 - 119)	SW846 8270C
Dimethyl phthalate	92	(10 - 112)	SW846 8270C

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LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: A9F150184 Work Order #...: CXDQ2102 Matrix.....: SOLID
LCS Lot-Sample#: A9F260000-103

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD
Di-n-octyl phthalate	97	(10 - 146)	SW846 8270C
4,6-Dinitro-2-methylphenol	74	(10 - 181)	SW846 8270C
2,4-Dinitrophenol	62	(10 - 191)	SW846 8270C
2,4-Dinitrotoluene	87	(54 - 129)	SW846 8270C
2,6-Dinitrotoluene	86	(50 - 151)	SW846 8270C
Fluoranthene	85	(26 - 137)	SW846 8270C
Fluorene	85	(59 - 121)	SW846 8270C
Hexachlorobenzene	92	(10 - 152)	SW846 8270C
Hexachlorobutadiene	82	(24 - 116)	SW846 8270C
Hexachlorocyclopentadiene	22	(2.0- 55)	SW846 8270C
Hexachloroethane	69	(40 - 113)	SW846 8270C
Indeno(1,2,3-cd)pyrene	84	(10 - 171)	SW846 8270C
Isophorone	78	(21 - 196)	SW846 8270C
2-Methylnaphthalene	78	(15 - 111)	SW846 8270C
2-Methylphenol	74	(10 - 103)	SW846 8270C
Naphthalene	75	(21 - 133)	SW846 8270C
2-Nitroaniline	93	(32 - 165)	SW846 8270C
3-Nitroaniline	65	(31 - 177)	SW846 8270C
4-Nitroaniline	75	(38 - 229)	SW846 8270C
Nitrobenzene	83	(35 - 180)	SW846 8270C
2-Nitrophenol	73	(29 - 182)	SW846 8270C
4-Nitrophenol	113	(16 - 192)	SW846 8270C
N-Nitrosodi-n-propylamine	79	(39 - 95)	SW846 8270C
N-Nitrosodiphenylamine	85	(28 - 121)	SW846 8270C
Pentachlorophenol	54	(24 - 115)	SW846 8270C
Phenanthrene	86	(54 - 120)	SW846 8270C
Phenol	76	(36 - 103)	SW846 8270C
Pyrene	90	(46 - 147)	SW846 8270C
1,2,4-Trichlorobenzene	80	(51 - 101)	SW846 8270C
2,4,5-Trichlorophenol	86	(13 - 136)	SW846 8270C
2,4,6-Trichlorophenol	81	(37 - 144)	SW846 8270C
Carbazole	86	(50 - 150)	SW846 8270C
4-Methylphenol	74	(10 - 103)	SW846 8270C
2,2'-oxybis(1-Chloropropane)	94	(36 - 166)	SW846 8270C

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LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: A9F150184 **Work Order #...:** CXDQ2102 **Matrix.....:** SOLID
LCS Lot-Sample#: A9F260000-103

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Nitrobenzene-d5	79	(23 - 120)
Terphenyl-d14	101	(18 - 137)
2-Fluorobiphenyl	79	(30 - 115)
2-Fluorophenol	73	(30 - 115)
Phenol-d5	76	(24 - 113)
2,4,6-Tribromophenol	82	(19 - 122)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

a Spiked analyte recovery is outside stated control limits.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: A9F150184 Work Order #...: CX51W102 Matrix.....: SOLID
LCS Lot-Sample#: A9F210000-112
Prep Date.....: 06/21/99 Analysis Date..: 06/25/99
Prep Batch #...: 9172112
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD
Acenaphthene	68	(51 - 101)	SW846 8270C
Acenaphthylene	68	(33 - 145)	SW846 8270C
Anthracene	75	(27 - 133)	SW846 8270C
Benzo(a)anthracene	73	(33 - 143)	SW846 8270C
Benzo(b)fluoranthene	74	(24 - 159)	SW846 8270C
Benzo(k)fluoranthene	67	(60 - 125)	SW846 8270C
Benzo(ghi)perylene	77	(10 - 219)	SW846 8270C
Benzo(a)pyrene	70	(17 - 163)	SW846 8270C
bis(2-Chloroethoxy) methane	63	(33 - 184)	SW846 8270C
bis(2-Chloroethyl)-ether	62	(12 - 158)	SW846 8270C
bis(2-Ethylhexyl) phthalate	66	(10 - 158)	SW846 8270C
4-Bromophenyl phenyl ether	77	(33 - 127)	SW846 8270C
Butyl benzyl phthalate	64	(10 - 122)	SW846 8270C
4-Chloroaniline	38 a	(43 - 91)	SW846 8270C
4-Chloro-3-methylphenol	67	(46 - 106)	SW846 8270C
2-Chloronaphthalene	68	(60 - 118)	SW846 8270C
2-Chlorophenol	63	(44 - 103)	SW846 8270C
4-Chlorophenyl phenyl ether	74	(25 - 158)	SW846 8270C
Chrysene	71	(17 - 168)	SW846 8270C
Dibenz(a,h)anthracene	81	(10 - 227)	SW846 8270C
Dibenzofuran	71 a	(85 - 117)	SW846 8270C
Di-n-butyl phthalate	73	(10 - 118)	SW846 8270C
1,2-Dichlorobenzene	63	(32 - 129)	SW846 8270C
1,3-Dichlorobenzene	60	(10 - 172)	SW846 8270C
1,4-Dichlorobenzene	60	(51 - 95)	SW846 8270C
3,3'-Dichlorobenzidine	42	(10 - 262)	SW846 8270C
2,4-Dichlorophenol	66	(39 - 135)	SW846 8270C
Diethyl phthalate	72	(10 - 114)	SW846 8270C
2,4-Dimethylphenol	56	(32 - 119)	SW846 8270C
Dimethyl phthalate	75	(10 - 112)	SW846 8270C

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LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: A9F150184 Work Order #...: CX51W102 Matrix.....: SOLID
LCS Lot-Sample#: A9F210000-112

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD
Di-n-octyl phthalate	60	(10 - 146)	SW846 8270C
4,6-Dinitro-2-methylphenol	61	(10 - 181)	SW846 8270C
2,4-Dinitrophenol	53	(10 - 191)	SW846 8270C
2,4-Dinitrotoluene	78	(54 - 129)	SW846 8270C
2,6-Dinitrotoluene	81	(50 - 151)	SW846 8270C
Fluoranthene	77	(26 - 137)	SW846 8270C
Fluorene	73	(59 - 121)	SW846 8270C
Hexachlorobenzene	79	(10 - 152)	SW846 8270C
Hexachlorobutadiene	58	(24 - 116)	SW846 8270C
Hexachlorocyclopentadiene	27	(2.0- 55)	SW846 8270C
Hexachloroethane	57	(40 - 113)	SW846 8270C
Indeno(1,2,3-cd)pyrene	90	(10 - 171)	SW846 8270C
Isophorone	58	(21 - 196)	SW846 8270C
2-Methylnaphthalene	62	(15 - 111)	SW846 8270C
-Methylphenol	61	(10 - 103)	SW846 8270C
aphthalene	60	(21 - 133)	SW846 8270C
2-Nitroaniline	69	(32 - 165)	SW846 8270C
3-Nitroaniline	59	(31 - 177)	SW846 8270C
4-Nitroaniline	57	(38 - 229)	SW846 8270C
Nitrobenzene	58	(35 - 180)	SW846 8270C
2-Nitrophenol	66	(29 - 182)	SW846 8270C
4-Nitrophenol	50	(16 - 192)	SW846 8270C
N-Nitrosodi-n-propylamine	59	(39 - 95)	SW846 8270C
N-Nitrosodiphenylamine	78	(28 - 121)	SW846 8270C
Pentachlorophenol	37	(24 - 115)	SW846 8270C
Phenanthrene	76	(54 - 120)	SW846 8270C
Phenol	63	(36 - 103)	SW846 8270C
Pyrene	67	(46 - 147)	SW846 8270C
1,2,4-Trichlorobenzene	62	(51 - 101)	SW846 8270C
2,4,5-Trichlorophenol	73	(13 - 136)	SW846 8270C
2,4,6-Trichlorophenol	65	(37 - 144)	SW846 8270C
Carbazole	75	(50 - 150)	SW846 8270C
4-Methylphenol	62	(10 - 103)	SW846 8270C
2,2'-oxybis(1-Chloropropane)	80	(36 - 166)	SW846 8270C

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LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: A9F150184 **Work Order #...:** CX51W102 **Matrix.....:** SOLID
LCS Lot-Sample#: A9F210000-112

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Nitrobenzene-d5	55	(23 - 120)
Terphenyl-d14	72	(18 - 137)
2-Fluorobiphenyl	65	(30 - 115)
2-Fluorophenol	60	(30 - 115)
Phenol-d5	59	(24 - 113)
2,4,6-Tribromophenol	67	(19 - 122)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

a Spiked analyte recovery is outside stated control limits.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

TOTAL Metals

Client Lot #...: A9F150184 **Matrix.....:** WATER

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
LCS Lot-Sample#: A9F210000-344 **Prep Batch #...:** 9172344					
Silver	110	(80 - 120)	SW846 6010B	06/22-07/16/99	CX5Z2112
		Dilution Factor: 1			
Arsenic	98	(80 - 120)	SW846 6010B	06/22-07/16/99	CX5Z210R
		Dilution Factor: 1			
Aluminum	99	(87 - 115)	SW846 6010B	06/22-07/15/99	CX5Z211A
		Dilution Factor: 1			
Cadmium	98	(80 - 120)	SW846 6010B	06/22-07/16/99	CX5Z210T
		Dilution Factor: 1			
Barium	100	(87 - 110)	SW846 6010B	06/22-07/16/99	CX5Z211C
		Dilution Factor: 1			
Chromium	98	(80 - 120)	SW846 6010B	06/22-07/16/99	CX5Z210U
		Dilution Factor: 1			
Beryllium	95	(85 - 110)	SW846 6010B	06/22-07/16/99	CX5Z211D
		Dilution Factor: 1			
Lead	96	(80 - 120)	SW846 6010B	06/22-07/16/99	CX5Z210V
		Dilution Factor: 1			
Calcium	101	(86 - 109)	SW846 6010B	06/22-07/15/99	CX5Z2113
		Dilution Factor: 1			
Antimony	97	(80 - 120)	SW846 6010B	06/22-07/16/99	CX5Z210W
		Dilution Factor: 1			
Selenium	98	(80 - 120)	SW846 6010B	06/22-07/16/99	CX5Z210X
		Dilution Factor: 1			
Cobalt	95	(83 - 107)	SW846 6010B	06/22-07/16/99	CX5Z2114
		Dilution Factor: 1			
Thallium	101	(80 - 120)	SW846 6010B	06/22-07/16/99	CX5Z2110
		Dilution Factor: 1			
Copper	100	(84 - 112)	SW846 6010B	06/22-07/16/99	CX5Z2115
		Dilution Factor: 1			

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LABORATORY CONTROL SAMPLE EVALUATION REPORT

TOTAL Metals

Client Lot #...: A9F150184 **Matrix.....:** WATER

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Iron	110	(80 - 120)	SW846 6010B	06/22-07/16/99	CX5X2116
		Dilution Factor: 1			
Potassium	94	(87 - 106)	SW846 6010B	06/22-07/15/99	CX5X2117
		Dilution Factor: 1			
Magnesium	98	(88 - 112)	SW846 6010B	06/22-07/15/99	CX5X2118
		Dilution Factor: 1			
Manganese	98	(88 - 117)	SW846 6010B	06/22-07/15/99	CX5X2119
		Dilution Factor: 1			
Sodium	101	(88 - 107)	SW846 6010B	06/22-07/15/99	CX5X211F
		Dilution Factor: 1			
Nickel	97	(85 - 116)	SW846 6010B	06/22-07/16/99	CX5X211G
		Dilution Factor: 1			
unadium	97	(86 - 111)	SW846 6010B	06/22-07/16/99	CX5X211H
		Dilution Factor: 1			
Zinc	103	(83 - 120)	SW846 6010B	06/22-07/16/99	CX5X211E
		Dilution Factor: 1			
Mercury	92	(80 - 120)	SW846 7470A	06/22-06/23/99	CX5X2111
		Dilution Factor: 1			

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

TOTAL Metals

Client Lot #...: A9F150184 **Matrix.....:** SOLID

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
LCS Lot-Sample#: A9F230000-305 **Prep Batch #...:** 9174305					
Silver	107	(80 - 120)	SW846 6010B	06/24-07/16/99	CX8M810X
		Dilution Factor: 1			
Aluminum	100	(80 - 113)	SW846 6010B	06/24-07/15/99	CX8M8118
		Dilution Factor: 1			
Arsenic	96	(80 - 120)	SW846 6010B	06/24-07/16/99	CX8M8110
		Dilution Factor: 1			
Barium	101	(80 - 109)	SW846 6010B	06/24-07/16/99	CX8M8119
		Dilution Factor: 1			
Beryllium	95	(80 - 105)	SW846 6010B	06/24-07/16/99	CX8M811A
		Dilution Factor: 1			
Cadmium	97	(80 - 120)	SW846 6010B	06/24-07/16/99	CX8M8111
		Dilution Factor: 1			
Calcium	98	(80 - 109)	SW846 6010B	06/24-07/15/99	CX8M811C
		Dilution Factor: 1			
Chromium	101	(80 - 120)	SW846 6010B	06/24-07/16/99	CX8M8112
		Dilution Factor: 1			
Cobalt	95	(80 - 104)	SW846 6010B	06/24-07/16/99	CX8M811D
		Dilution Factor: 1			
Lead	97	(80 - 120)	SW846 6010B	06/24-07/16/99	CX8M8113
		Dilution Factor: 1			
Copper	102	(80 - 113)	SW846 6010B	06/24-07/16/99	CX8M811E
		Dilution Factor: 1			
Antimony	95	(80 - 120)	SW846 6010B	06/24-07/16/99	CX8M8114
		Dilution Factor: 1			
Iron	120	(80 - 120)	SW846 6010B	06/24-07/16/99	CX8M811F
		Dilution Factor: 1			
Selenium	92	(80 - 120)	SW846 6010B	06/24-07/16/99	CX8M8115
		Dilution Factor: 1			

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LABORATORY CONTROL SAMPLE EVALUATION REPORT

TOTAL Metals

Client Lot #...: A9F150184 **Matrix.....:** SOLID

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Potassium	90	(80 - 103)	SW846 6010B	06/24-07/15/99	CX8M811G
		Dilution Factor: 1			
Mercury	86	(70 - 130)	SW846 7471A	06/24-06/28/99	CX8M8116
		Dilution Factor: 1			
Thallium	101	(80 - 120)	SW846 6010B	06/24-07/16/99	CX8M8117
		Dilution Factor: 1			
Magnesium	95	(80 - 109)	SW846 6010B	06/24-07/15/99	CX8M811H
		Dilution Factor: 1			
Manganese	103	(80 - 114)	SW846 6010B	06/24-07/16/99	CX8M810R
		Dilution Factor: 1			
Sodium	92	(80 - 107)	SW846 6010B	06/24-07/15/99	CX8M810T
		Dilution Factor: 1			
Nickel	96	(80 - 112)	SW846 6010B	06/24-07/16/99	CX8M810U
		Dilution Factor: 1			
Vanadium	99	(80 - 111)	SW846 6010B	06/24-07/16/99	CX8M810V
		Dilution Factor: 1			
Zinc	102	(80 - 120)	SW846 6010B	06/24-07/16/99	CX8M810W
		Dilution Factor: 1			

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Results and reporting limits have been adjusted for dry weight.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

General Chemistry

Client Lot #...: A9F150184 **Matrix.....:** SOLID

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Total Organic Carbon		Work Order #: CXP61102	LCS Lot-Sample#: A9G050000-124		
	110	(69 - 130)	SMCA WALKLEY-BLAC	07/05/99	9186124
		Dilution Factor: 1			

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

METHOD BLANK REPORT

GC/MS Semivolatiles

Client Lot #...: A9F150184 **Work Order #...:** CWX2T101 **Matrix.....:** WATER
MB Lot-Sample #: A9F160000-109

Prep Date.....: 06/16/99
Analysis Date..: 06/18/99 **Prep Batch #...:** 9167109
Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Acenaphthene	ND	10	ug/L	SW846 8270C
Acenaphthylene	ND	10	ug/L	SW846 8270C
Anthracene	ND	10	ug/L	SW846 8270C
Benzo(a)anthracene	ND	10	ug/L	SW846 8270C
Benzo(b)fluoranthene	ND	10	ug/L	SW846 8270C
Benzo(k)fluoranthene	ND	10	ug/L	SW846 8270C
Benzo(ghi)perylene	ND	10	ug/L	SW846 8270C
Benzo(a)pyrene	ND	10	ug/L	SW846 8270C
bis(2-Chloroethoxy) methane	ND	10	ug/L	SW846 8270C
bis(2-Chloroethyl)-ether	ND	10	ug/L	SW846 8270C
bis(2-Ethylhexyl) phthalate	ND	10	ug/L	SW846 8270C
-Bromophenyl phenyl ether	ND	10	ug/L	SW846 8270C
Butyl benzyl phthalate	ND	10	ug/L	SW846 8270C
4-Chloroaniline	ND	10	ug/L	SW846 8270C
4-Chloro-3-methylphenol	ND	10	ug/L	SW846 8270C
2-Chloronaphthalene	ND	10	ug/L	SW846 8270C
2-Chlorophenol	ND	10	ug/L	SW846 8270C
4-Chlorophenyl phenyl ether	ND	10	ug/L	SW846 8270C
Chrysene	ND	10	ug/L	SW846 8270C
Dibenz(a,h)anthracene	ND	10	ug/L	SW846 8270C
Dibenzofuran	ND	10	ug/L	SW846 8270C
Di-n-butyl phthalate	ND	10	ug/L	SW846 8270C
1,2-Dichlorobenzene	ND	10	ug/L	SW846 8270C
1,3-Dichlorobenzene	ND	10	ug/L	SW846 8270C
1,4-Dichlorobenzene	ND	10	ug/L	SW846 8270C
3,3'-Dichlorobenzidine	ND	10	ug/L	SW846 8270C
2,4-Dichlorophenol	ND	10	ug/L	SW846 8270C
Diethyl phthalate	ND	10	ug/L	SW846 8270C
2,4-Dimethylphenol	ND	10	ug/L	SW846 8270C
Dimethyl phthalate	ND	10	ug/L	SW846 8270C
Di-n-octyl phthalate	ND	10	ug/L	SW846 8270C
4,6-Dinitro-2-methylphenol	ND	25	ug/L	SW846 8270C
2,4-Dinitrophenol	ND	25	ug/L	SW846 8270C
2,4-Dinitrotoluene	ND	10	ug/L	SW846 8270C
6-Dinitrotoluene	ND	10	ug/L	SW846 8270C

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METHOD BLANK REPORT

GC/MS Semivolatiles

Client Lot #...: A9F150184 **Work Order #...:** CWX2T101 **Matrix.....:** WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Fluoranthene	ND	10	ug/L	SW846 8270C
Fluorene	ND	10	ug/L	SW846 8270C
Hexachlorobenzene	ND	10	ug/L	SW846 8270C
Hexachlorobutadiene	ND	10	ug/L	SW846 8270C
Hexachlorocyclopenta-diene	ND	10	ug/L	SW846 8270C
Hexachloroethane	ND	10	ug/L	SW846 8270C
Indeno(1,2,3-cd)pyrene	ND	10	ug/L	SW846 8270C
Isophorone	ND	10	ug/L	SW846 8270C
2-Methylnaphthalene	ND	10	ug/L	SW846 8270C
2-Methylphenol	ND	10	ug/L	SW846 8270C
Naphthalene	ND	10	ug/L	SW846 8270C
2-Nitroaniline	ND	25	ug/L	SW846 8270C
3-Nitroaniline	ND	25	ug/L	SW846 8270C
4-Nitroaniline	ND	25	ug/L	SW846 8270C
Nitrobenzene	ND	10	ug/L	SW846 8270C
2-Nitrophenol	ND	10	ug/L	SW846 8270C
4-Nitrophenol	ND	25	ug/L	SW846 8270C
Nitrosodi-n-propyl-amine	ND	10	ug/L	SW846 8270C
N-Nitrosodiphenylamine	ND	10	ug/L	SW846 8270C
Pentachlorophenol	ND	25	ug/L	SW846 8270C
Phenanthrene	ND	10	ug/L	SW846 8270C
Phenol	ND	10	ug/L	SW846 8270C
Pyrene	ND	10	ug/L	SW846 8270C
1,2,4-Trichlorobenzene	ND	10	ug/L	SW846 8270C
2,4,5-Trichlorophenol	ND	10	ug/L	SW846 8270C
2,4,6-Trichlorophenol	ND	10	ug/L	SW846 8270C
Carbazole	ND	10	ug/L	SW846 8270C
4-Methylphenol	ND	10	ug/L	SW846 8270C
bis(2-Chloroisopropyl) ether	ND	10	ug/L	SW846 8270C

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Nitrobenzene-d5	78	(40 - 114)
Terphenyl-d14	80	(33 - 141)
2-Fluorobiphenyl	73	(45 - 118)
2-Fluorophenol	66	(21 - 100)
Phenol-d5	66	(17 - 101)
2,4,6-Tribromophenol	71	(16 - 129)

NOTE(S):

culations are performed before rounding to avoid round-off errors in calculated results.

METHOD BLANK REPORT

GC/MS Semivolatiles

Client Lot #...: A9F150184 **Work Order #...:** CXDQ2101 **Matrix.....:** SOLID
MB Lot-Sample #: A9F260000-103

Prep Date.....: 06/28/99
Analysis Date..: 07/01/99 **Prep Batch #...:** 9177103
Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Acenaphthene	ND	330	ug/kg	SW846 8270C
Acenaphthylene	ND	330	ug/kg	SW846 8270C
Anthracene	ND	330	ug/kg	SW846 8270C
Benzo(a)anthracene	ND	330	ug/kg	SW846 8270C
Benzo(b)fluoranthene	ND	330	ug/kg	SW846 8270C
Benzo(k)fluoranthene	ND	330	ug/kg	SW846 8270C
Benzo(ghi)perylene	ND	330	ug/kg	SW846 8270C
Benzo(a)pyrene	ND	330	ug/kg	SW846 8270C
bis(2-Chloroethoxy) methane	ND	330	ug/kg	SW846 8270C
bis(2-Chloroethyl)-ether	ND	330	ug/kg	SW846 8270C
bis(2-Ethylhexyl) phthalate	ND	330	ug/kg	SW846 8270C
Bromophenyl phenyl ether	ND	330	ug/kg	SW846 8270C
Butyl benzyl phthalate	ND	330	ug/kg	SW846 8270C
4-Chloroaniline	ND	330	ug/kg	SW846 8270C
4-Chloro-3-methylphenol	ND	330	ug/kg	SW846 8270C
2-Chloronaphthalene	ND	330	ug/kg	SW846 8270C
2-Chlorophenol	ND	330	ug/kg	SW846 8270C
4-Chlorophenyl phenyl ether	ND	330	ug/kg	SW846 8270C
Chrysene	ND	330	ug/kg	SW846 8270C
Dibenz(a,h)anthracene	ND	330	ug/kg	SW846 8270C
Dibenzofuran	ND	330	ug/kg	SW846 8270C
Di-n-butyl phthalate	ND	330	ug/kg	SW846 8270C
1,2-Dichlorobenzene	ND	330	ug/kg	SW846 8270C
1,3-Dichlorobenzene	ND	330	ug/kg	SW846 8270C
1,4-Dichlorobenzene	ND	330	ug/kg	SW846 8270C
3,3'-Dichlorobenzidine	ND	330	ug/kg	SW846 8270C
2,4-Dichlorophenol	ND	330	ug/kg	SW846 8270C
Diethyl phthalate	ND	330	ug/kg	SW846 8270C
2,4-Dimethylphenol	ND	330	ug/kg	SW846 8270C
Dimethyl phthalate	ND	330	ug/kg	SW846 8270C
Di-n-octyl phthalate	ND	330	ug/kg	SW846 8270C
4,6-Dinitro-2-methylphenol	ND	800	ug/kg	SW846 8270C
2,4-Dinitrophenol	ND	800	ug/kg	SW846 8270C
4-Dinitrotoluene	ND	330	ug/kg	SW846 8270C
6-Dinitrotoluene	ND	330	ug/kg	SW846 8270C

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METHOD BLANK REPORT

GC/MS Semivolatiles

Client Lot #...: A9F150184 **Work Order #...:** CXDQ2101 **Matrix.....:** SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Fluoranthene	ND	330	ug/kg	SW846 8270C
Fluorene	ND	330	ug/kg	SW846 8270C
Hexachlorobenzene	ND	330	ug/kg	SW846 8270C
Hexachlorobutadiene	ND	330	ug/kg	SW846 8270C
Hexachlorocyclopenta-diene	ND	330	ug/kg	SW846 8270C
Hexachloroethane	ND	330	ug/kg	SW846 8270C
Indeno(1,2,3-cd)pyrene	ND	330	ug/kg	SW846 8270C
Isophorone	ND	330	ug/kg	SW846 8270C
2-Methylnaphthalene	ND	330	ug/kg	SW846 8270C
2-Methylphenol	ND	330	ug/kg	SW846 8270C
Naphthalene	ND	330	ug/kg	SW846 8270C
2-Nitroaniline	ND	800	ug/kg	SW846 8270C
3-Nitroaniline	ND	800	ug/kg	SW846 8270C
4-Nitroaniline	ND	800	ug/kg	SW846 8270C
Nitrobenzene	ND	330	ug/kg	SW846 8270C
2-Nitrophenol	ND	330	ug/kg	SW846 8270C
4-Nitrophenol	ND	800	ug/kg	SW846 8270C
Nitrosodi-n-propyl-amine	ND	330	ug/kg	SW846 8270C
N-Nitrosodiphenylamine	ND	330	ug/kg	SW846 8270C
Pentachlorophenol	ND	800	ug/kg	SW846 8270C
Phenanthrene	ND	330	ug/kg	SW846 8270C
Phenol	ND	330	ug/kg	SW846 8270C
Pyrene	ND	330	ug/kg	SW846 8270C
1,2,4-Trichlorobenzene	ND	330	ug/kg	SW846 8270C
2,4,5-Trichlorophenol	ND	330	ug/kg	SW846 8270C
2,4,6-Trichlorophenol	ND	330	ug/kg	SW846 8270C
Carbazole	ND	330	ug/kg	SW846 8270C
4-Methylphenol	ND	330	ug/kg	SW846 8270C
bis(2-Chloroisopropyl) ether	ND	330	ug/kg	SW846 8270C

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Nitrobenzene-d5	78	(23 - 120)
Terphenyl-d14	92	(18 - 137)
2-Fluorobiphenyl	75	(30 - 115)
2-Fluorophenol	71	(30 - 115)
Phenol-d5	71	(24 - 113)
2,4,6-Tribromophenol	51	(19 - 122)

NOTE(S):

culations are performed before rounding to avoid round-off errors in calculated results.

METHOD BLANK REPORT

GC/MS Semivolatiles

Client Lot #...: A9F150184 **Work Order #...:** CX51W101 **Matrix.....:** SOLID
MB Lot-Sample #: A9F210000-112

Prep Date.....: 06/21/99
Analysis Date..: 06/25/99 **Prep Batch #...:** 9172112
Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Acenaphthene	ND	330	ug/kg	SW846 8270C
Acenaphthylene	ND	330	ug/kg	SW846 8270C
Anthracene	ND	330	ug/kg	SW846 8270C
Benzo(a)anthracene	ND	330	ug/kg	SW846 8270C
Benzo(b)fluoranthene	ND	330	ug/kg	SW846 8270C
Benzo(k)fluoranthene	ND	330	ug/kg	SW846 8270C
Benzo(ghi)perylene	ND	330	ug/kg	SW846 8270C
Benzo(a)pyrene	ND	330	ug/kg	SW846 8270C
bis(2-Chloroethoxy) methane	ND	330	ug/kg	SW846 8270C
bis(2-Chloroethyl)-ether	ND	330	ug/kg	SW846 8270C
bis(2-Ethylhexyl) phthalate	ND	330	ug/kg	SW846 8270C
-Bromophenyl phenyl ether	ND	330	ug/kg	SW846 8270C
Butyl benzyl phthalate	ND	330	ug/kg	SW846 8270C
4-Chloroaniline	ND	330	ug/kg	SW846 8270C
4-Chloro-3-methylphenol	ND	330	ug/kg	SW846 8270C
2-Chloronaphthalene	ND	330	ug/kg	SW846 8270C
2-Chlorophenol	ND	330	ug/kg	SW846 8270C
4-Chlorophenyl phenyl ether	ND	330	ug/kg	SW846 8270C
Chrysene	ND	330	ug/kg	SW846 8270C
Dibenz(a,h)anthracene	ND	330	ug/kg	SW846 8270C
Dibenzofuran	ND	330	ug/kg	SW846 8270C
Di-n-butyl phthalate	ND	330	ug/kg	SW846 8270C
1,2-Dichlorobenzene	ND	330	ug/kg	SW846 8270C
1,3-Dichlorobenzene	ND	330	ug/kg	SW846 8270C
1,4-Dichlorobenzene	ND	330	ug/kg	SW846 8270C
3,3'-Dichlorobenzidine	ND	330	ug/kg	SW846 8270C
2,4-Dichlorophenol	ND	330	ug/kg	SW846 8270C
Diethyl phthalate	ND	330	ug/kg	SW846 8270C
2,4-Dimethylphenol	ND	330	ug/kg	SW846 8270C
Dimethyl phthalate	ND	330	ug/kg	SW846 8270C
Di-n-octyl phthalate	ND	330	ug/kg	SW846 8270C
4,6-Dinitro-2-methylphenol	ND	800	ug/kg	SW846 8270C
2,4-Dinitrophenol	ND	800	ug/kg	SW846 8270C
?,4-Dinitrotoluene	ND	330	ug/kg	SW846 8270C
,6-Dinitrotoluene	ND	330	ug/kg	SW846 8270C

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METHOD BLANK REPORT

GC/MS Semivolatiles

Client Lot #...: A9F150184 **Work Order #...:** CX51W101 **Matrix.....:** SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Fluoranthene	ND	330	ug/kg	SW846 8270C
Fluorene	ND	330	ug/kg	SW846 8270C
Hexachlorobenzene	ND	330	ug/kg	SW846 8270C
Hexachlorobutadiene	ND	330	ug/kg	SW846 8270C
Hexachlorocyclopenta-diene	ND	330	ug/kg	SW846 8270C
Hexachloroethane	ND	330	ug/kg	SW846 8270C
Indeno(1,2,3-cd)pyrene	ND	330	ug/kg	SW846 8270C
Isophorone	ND	330	ug/kg	SW846 8270C
2-Methylnaphthalene	ND	330	ug/kg	SW846 8270C
2-Methylphenol	ND	330	ug/kg	SW846 8270C
Naphthalene	ND	330	ug/kg	SW846 8270C
2-Nitroaniline	ND	800	ug/kg	SW846 8270C
3-Nitroaniline	ND	800	ug/kg	SW846 8270C
4-Nitroaniline	ND	800	ug/kg	SW846 8270C
Nitrobenzene	ND	330	ug/kg	SW846 8270C
2-Nitrophenol	ND	330	ug/kg	SW846 8270C
4-Nitrophenol	ND	800	ug/kg	SW846 8270C
Nitrosodi-n-propyl-amine	ND	330	ug/kg	SW846 8270C
N-Nitrosodiphenylamine	ND	330	ug/kg	SW846 8270C
Pentachlorophenol	ND	800	ug/kg	SW846 8270C
Phenanthrene	ND	330	ug/kg	SW846 8270C
Phenol	ND	330	ug/kg	SW846 8270C
Pyrene	ND	330	ug/kg	SW846 8270C
1,2,4-Trichlorobenzene	ND	330	ug/kg	SW846 8270C
2,4,5-Trichlorophenol	ND	330	ug/kg	SW846 8270C
2,4,6-Trichlorophenol	ND	330	ug/kg	SW846 8270C
Carbazole	ND	330	ug/kg	SW846 8270C
4-Methylphenol	ND	330	ug/kg	SW846 8270C
bis(2-Chloroisopropyl) ether	ND	330	ug/kg	SW846 8270C

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Nitrobenzene-d5	49	(23 - 120)
Terphenyl-d14	74	(18 - 137)
2-Fluorobiphenyl	54	(30 - 115)
2-Fluorophenol	52	(30 - 115)
Phenol-d5	49	(24 - 113)
2,4,6-Tribromophenol	51	(19 - 122)

NOTE(S):

'culations are performed before rounding to avoid round-off errors in calculated results.

METHOD BLANK REPORT

TOTAL Metals

Client Lot #...: A9F150184 **Matrix.....:** WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MB Lot-Sample #: A9F210000-344 **Prep Batch #...:** 9172344						
Silver	ND	5.0	ug/L	SW846 6010B	06/22-07/16/99	CX5X2109
		Dilution Factor: 1				
Aluminum	ND	200	ug/L	SW846 6010B	06/22-07/15/99	CX5X210J
		Dilution Factor: 1				
Arsenic	ND	10.0	ug/L	SW846 6010B	06/22-07/16/99	CX5X2101
		Dilution Factor: 1				
Cadmium	ND	2.0	ug/L	SW846 6010B	06/22-07/16/99	CX5X2102
		Dilution Factor: 1				
Barium	ND	200	ug/L	SW846 6010B	06/22-07/16/99	CX5X210K
		Dilution Factor: 1				
Beryllium	ND	5.0	ug/L	SW846 6010B	06/22-07/16/99	CX5X210L
		Dilution Factor: 1				
Chromium	ND	5.0	ug/L	SW846 6010B	06/22-07/16/99	CX5X21'
		Dilution Factor: 1				
Calcium	ND	5000	ug/L	SW846 6010B	06/22-07/15/99	CX5X210A
		Dilution Factor: 1				
Lead	ND	3.0	ug/L	SW846 6010B	06/22-07/16/99	CX5X2104
		Dilution Factor: 1				
Antimony	ND	10.0	ug/L	SW846 6010B	06/22-07/16/99	CX5X2105
		Dilution Factor: 1				
Cobalt	ND	50.0	ug/L	SW846 6010B	06/22-07/16/99	CX5X210C
		Dilution Factor: 1				
Selenium	ND	5.0	ug/L	SW846 6010B	06/22-07/16/99	CX5X2106
		Dilution Factor: 1				
Thallium	ND	10.0	ug/L	SW846 6010B	06/22-07/16/99	CX5X2107
		Dilution Factor: 1				
Copper	ND	25.0	ug/L	SW846 6010B	06/22-07/16/99	CX5X210D
		Dilution Factor: 1				
Iron	**174**	**100**	**ug/L**	**SW846 6010B**	**06/22-07/16/99**	**CX5X210E**
		Dilution Factor: 1				

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METHOD BLANK REPORT

TOTAL Metals

Client Lot #...: A9F150184 Matrix.....: WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Potassium	ND	5000	ug/L	SW846 6010B	06/22-07/15/99	CX5X210F
		Dilution Factor: 1				
Magnesium	ND	5000	ug/L	SW846 6010B	06/22-07/15/99	CX5X210G
		Dilution Factor: 1				
Manganese	ND	15.0	ug/L	SW846 6010B	06/22-07/15/99	CX5X210H
		Dilution Factor: 1				
Sodium	ND	5000	ug/L	SW846 6010B	06/22-07/15/99	CX5X210N
		Dilution Factor: 1				
Nickel	ND	40.0	ug/L	SW846 6010B	06/22-07/16/99	CX5X210P
		Dilution Factor: 1				
Vanadium	ND	50.0	ug/L	SW846 6010B	06/22-07/16/99	CX5X210Q
		Dilution Factor: 1				
Zinc	ND	20.0	ug/L	SW846 6010B	06/22-07/16/99	CX5X210M
		Dilution Factor: 1				
rcury	ND	0.20	ug/L	SW846 7470A	06/22-06/23/99	CX5X2108
		Dilution Factor: 1				

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

METHOD BLANK REPORT

TOTAL Metals

Client Lot #...: A9F150184 **Matrix.....:** SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MB Lot-Sample #: A9F230000-305 **Prep Batch #...:** 9174305						
Aluminum	ND	20.0	mg/kg	SW846 6010B	06/24-07/15/99	CX8M810G
		Dilution Factor: 1				
Silver	ND	0.50	mg/kg	SW846 6010B	06/24-07/16/99	CX8M8106
		Dilution Factor: 1				
Arsenic	ND	1.0	mg/kg	SW846 6010B	06/24-07/16/99	CX8M8107
		Dilution Factor: 1				
Barium	ND	20.0	mg/kg	SW846 6010B	06/24-07/16/99	CX8M810H
		Dilution Factor: 1				
Beryllium	ND	0.50	mg/kg	SW846 6010B	06/24-07/16/99	CX8M810J
		Dilution Factor: 1				
Cadmium	ND	0.20	mg/kg	SW846 6010B	06/24-07/16/99	CX8M8108
		Dilution Factor: 1				
Calcium	ND	500	mg/kg	SW846 6010B	06/24-07/15/99	CX8M81
		Dilution Factor: 1				
Chromium	ND	0.50	mg/kg	SW846 6010B	06/24-07/16/99	CX8M8109
		Dilution Factor: 1				
Cobalt	ND	5.0	mg/kg	SW846 6010B	06/24-07/16/99	CX8M810L
		Dilution Factor: 1				
Lead	ND	0.30	mg/kg	SW846 6010B	06/24-07/16/99	CX8M810A
		Dilution Factor: 1				
Antimony	ND	1.0	mg/kg	SW846 6010B	06/24-07/16/99	CX8M810C
		Dilution Factor: 1				
Copper	ND	2.5	mg/kg	SW846 6010B	06/24-07/16/99	CX8M810M
		Dilution Factor: 1				
Iron	ND	10.0	mg/kg	SW846 6010B	06/24-07/16/99	CX8M810N
		Dilution Factor: 1				
Selenium	ND	0.50	mg/kg	SW846 6010B	06/24-07/16/99	CX8M810D
		Dilution Factor: 1				
Mercury	ND	0.10	mg/kg	SW846 7471A	06/24-06/28/99	CX8M810E
		Dilution Factor: 1				

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METHOD BLANK REPORT

TOTAL Metals

Client Lot #...: A9F150184 **Matrix.....:** SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Potassium	ND	500	mg/kg	SW846 6010B	06/24-07/15/99	CX8M810P
		Dilution Factor: 1				
Thallium	ND	1.0	mg/kg	SW846 6010B	06/24-07/16/99	CX8M810F
		Dilution Factor: 1				
Magnesium	ND	500	mg/kg	SW846 6010B	06/24-07/15/99	CX8M810Q
		Dilution Factor: 1				
Manganese	ND	1.5	mg/kg	SW846 6010B	06/24-07/16/99	CX8M8101
		Dilution Factor: 1				
Sodium	ND	500	mg/kg	SW846 6010B	06/24-07/15/99	CX8M8102
		Dilution Factor: 1				
Nickel	ND	4.0	mg/kg	SW846 6010B	06/24-07/16/99	CX8M8103
		Dilution Factor: 1				
Vanadium	ND	5.0	mg/kg	SW846 6010B	06/24-07/16/99	CX8M8104
		Dilution Factor: 1				
Zinc	3.5	2.0	mg/kg	SW846 6010B	06/24-07/16/99	CX8M8105
		Dilution Factor: 1				

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

METHOD BLANK REPORT

General Chemistry

Client Lot #...: A9F150184 **Matrix.....:** SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Percent Solids		Work Order #:	CX8A7101	MB Lot-Sample #:	A9F230000-259	
	ND	0.10	%	MCAWW 160.3 MOD	06/23-06/24/99	9174259
		Dilution Factor: 1				
Percent Solids		Work Order #:	CX8MQ101	MB Lot-Sample #:	A9F230000-310	
	ND	0.10	%	MCAWW 160.3 MOD	06/23-06/24/99	9174310
		Dilution Factor: 1				
Total Organic Carbon		Work Order #:	CXP61101	MB Lot-Sample #:	A9G050000-124	
	ND	100	mg/kg	SMCA WALKLEY-BLAC	07/05/99	9186124
		Dilution Factor: 1				

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

MATRIX SPIKE SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: A9F150184 Work Order #...: CWWDR102-MS Matrix.....: SOLID
MS Lot-Sample #: A9F150184-016 CWWDR103-MSD
Date Sampled...: 06/11/99 14:20 Date Received..: 06/12/99
Prep Date.....: 06/21/99 Analysis Date..: 06/26/99
Prep Batch #...: 9172112
Dilution Factor: 1 % Moisture.....: 24

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Acenaphthene	68	(47 - 145)			SW846 8270C
	62	(47 - 145)	9.9	(0-28)	SW846 8270C
Acenaphthylene	67	(33 - 145)			SW846 8270C
	59	(33 - 145)	12	(0-21)	SW846 8270C
Anthracene	72	(27 - 133)			SW846 8270C
	67	(27 - 133)	8.3	(0-35)	SW846 8270C
Benzo(a)anthracene	68	(33 - 143)			SW846 8270C
	62	(33 - 143)	10	(0-39)	SW846 8270C
Benzo(b)fluoranthene	69	(24 - 159)			SW846 8270C
	62	(24 - 159)	12	(0-25)	SW846 8270C
Benzo(k)fluoranthene	63	(22 - 133)			SW846 8270C
	66	(22 - 133)	4.4	(0-54)	SW846 8270C
Benzo(ghi)perylene	72	(10 - 219)			SW846 8270C
	68	(10 - 219)	5.8	(0-65)	SW846 8270C
enzo(a)pyrene	66	(17 - 163)			SW846 8270C
	61	(17 - 163)	6.7	(0-35)	SW846 8270C
bis(2-Chloroethoxy) methane	63	(33 - 184)			SW846 8270C
	55	(33 - 184)	15	(0-46)	SW846 8270C
bis(2-Chloroethyl)-ether	63	(12 - 158)			SW846 8270C
	52	(12 - 158)	18	(0-54)	SW846 8270C
bis(2-Ethylhexyl) phthalate	61	(10 - 158)			SW846 8270C
	51	(10 - 158)	16	(0-35)	SW846 8270C
4-Bromophenyl phenyl ether	78	(53 - 127)			SW846 8270C
	73	(53 - 127)	6.5	(0-35)	SW846 8270C
Butyl benzyl phthalate	54	(10 - 122)			SW846 8270C
	51	(10 - 122)	6.2	(0-38)	SW846 8270C
4-Chloroaniline	15 a	(43 - 91)			SW846 8270C
	18 a	(43 - 91)	17	(0-17)	SW846 8270C
4-Chloro-3-methylphenol	62	(22 - 147)			SW846 8270C
	58	(22 - 147)	7.3	(0-37)	SW846 8270C
-Chloronaphthalene	71	(60 - 118)			SW846 8270C
	62	(60 - 118)	14	(0-23)	SW846 8270C

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MATRIX SPIKE SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #....: A9F150184 Work Order #...: CWWDR102-MS Matrix.....: SOLID
MS Lot-Sample #: A9F150184-016 CWWDR103-MSD

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
2-Chlorophenol	64	(23 - 134)			SW846 8270C
	54	(23 - 134)	17	(0-29)	SW846 8270C
4-Chlorophenyl phenyl ether	75	(25 - 158)			SW846 8270C
	69	(25 - 158)	8.0	(0-43)	SW846 8270C
Chrysene	67	(17 - 168)			SW846 8270C
	63	(17 - 168)	5.7	(0-30)	SW846 8270C
Dibenz(a,h)anthracene	74	(10 - 227)			SW846 8270C
	71	(10 - 227)	3.7	(0-48)	SW846 8270C
Dibenzofuran	70 a	(85 - 117)			SW846 8270C
	63 a	(85 - 117)	9.6	(0-11)	SW846 8270C
Di-n-butyl phthalate	69	(10 - 118)			SW846 8270C
	64	(10 - 118)	8.8	(0-25)	SW846 8270C
1,2-Dichlorobenzene	66	(32 - 129)			SW846 8270C
	55	(32 - 129)	19	(0-43)	SW846 8270C
,3-Dichlorobenzene	63	(10 - 172)			SW846 8270C
	52	(10 - 172)	20	(0-43)	SW846 8270C
1,4-Dichlorobenzene	63	(20 - 124)			SW846 8270C
	53	(20 - 124)	18	(0-32)	SW846 8270C
3,3'-Dichlorobenzidine	12	(10 - 262)			SW846 8270C
	15	(10 - 262)	20	(0-45)	SW846 8270C
2,4-Dichlorophenol	70	(39 - 135)			SW846 8270C
	62	(39 - 135)	12	(0-32)	SW846 8270C
Diethyl phthalate	67	(10 - 114)			SW846 8270C
	62	(10 - 114)	8.5	(0-43)	SW846 8270C
2,4-Dimethylphenol	61	(32 - 119)			SW846 8270C
	54	(32 - 119)	12	(0-30)	SW846 8270C
Dimethyl phthalate	65	(10 - 112)			SW846 8270C
	64	(10 - 112)	1.4	(0-44)	SW846 8270C
Di-n-octyl phthalate	52	(10 - 146)			SW846 8270C
	53	(10 - 146)	0.83	(0-31)	SW846 8270C
4,6-Dinitro-2-methylphenol	60	(10 - 181)			SW846 8270C
	50	(10 - 181)	18	(0-35)	SW846 8270C
2,4-Dinitrophenol	60	(10 - 191)			SW846 8270C
	45	(10 - 191)	30	(0-34)	SW846 8270C
2,4-Dinitrotoluene	73	(39 - 139)			SW846 8270C
	67	(39 - 139)	8.7	(0-22)	SW846 8270C
2,6-Dinitrotoluene	75	(50 - 151)			SW846 8270C
	69	(50 - 151)	8.3	(0-41)	SW846 8270C
uoranthene	76	(26 - 137)			SW846 8270C
	69	(26 - 137)	8.7	(0-27)	SW846 8270C

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MATRIX SPIKE SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: A9F150184 Work Order #...: CWWDR102-MS Matrix.....: SOLID
MS Lot-Sample #: A9F150184-016 CWWDR103-MSD

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Fluorene	72	(59 - 121)			SW846 8270C
	66	(59 - 121)	8.6	(0-30)	SW846 8270C
Hexachlorobenzene	81	(10 - 152)			SW846 8270C
	76	(10 - 152)	6.2	(0-37)	SW846 8270C
Hexachlorobutadiene	64	(24 - 116)			SW846 8270C
	55	(24 - 116)	14	(0-33)	SW846 8270C
Hexachlorocyclopenta-diene	0.0 a	(2.0- 55)			SW846 8270C
	0.0 a	(2.0- 55)	0.0	(0-31)	SW846 8270C
Hexachloroethane	51	(40 - 113)			SW846 8270C
	41	(40 - 113)	22	(0-25)	SW846 8270C
Indeno(1,2,3-cd)pyrene	85	(10 - 171)			SW846 8270C
	79	(10 - 171)	7.1	(0-50)	SW846 8270C
Isophorone	57	(21 - 196)			SW846 8270C
	49	(21 - 196)	15	(0-30)	SW846 8270C
Methylnaphthalene	65	(15 - 111)			SW846 8270C
	58	(15 - 111)	13	(0-31)	SW846 8270C
2-Methylphenol	60	(10 - 103)			SW846 8270C
	53	(10 - 103)	13	(0-32)	SW846 8270C
Naphthalene	63	(21 - 133)			SW846 8270C
	53	(21 - 133)	16	(0-21)	SW846 8270C
2-Nitroaniline	65	(32 - 165)			SW846 8270C
	59	(32 - 165)	9.3	(0-42)	SW846 8270C
3-Nitroaniline	44	(31 - 177)			SW846 8270C
	42	(31 - 177)	2.6	(0-48)	SW846 8270C
4-Nitroaniline	34 a	(38 - 229)			SW846 8270C
	45	(38 - 229)	26	(0-47)	SW846 8270C
Nitrobenzene	58	(35 - 180)			SW846 8270C
	48	(35 - 180)	18	(0-31)	SW846 8270C
2-Nitrophenol	64	(29 - 182)			SW846 8270C
	52	(29 - 182)	21	(0-29)	SW846 8270C
4-Nitrophenol	48	(10 - 132)			SW846 8270C
	40	(10 - 132)	16	(0-47)	SW846 8270C
N-Nitrosodi-n-propyl-amine	56	(10 - 230)			SW846 8270C
	47	(10 - 230)	18	(0-55)	SW846 8270C
N-Nitrosodiphenylamine	74	(10 - 230)			SW846 8270C
	69	(10 - 230)	7.8	(0-32)	SW846 8270C
Pentachlorophenol	22	(14 - 176)			SW846 8270C
	27	(14 - 176)	23	(0-49)	SW846 8270C
enanthrene	73	(54 - 120)			SW846 8270C
	68	(54 - 120)	7.8	(0-35)	SW846 8270C

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MATRIX SPIKE SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: A9F150184 **Work Order #...:** CWWDR102-MS **Matrix.....:** SOLID
MS Lot-Sample #: A9F150184-016 CWWDR103-MSD

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Phenol	**55**	**(10 - 112)**			**SW846 8270C**
	48	**(10 - 112)**	**14**	**(0-23)**	**SW846 8270C**
Pyrene	**62**	**(52 - 115)**			**SW846 8270C**
	59	**(52 - 115)**	**4.6**	**(0-25)**	**SW846 8270C**
1,2,4-Trichlorobenzene	**67**	**(44 - 142)**			**SW846 8270C**
	58	**(44 - 142)**	**15**	**(0-28)**	**SW846 8270C**
2,4,5-Trichlorophenol	**69**	**(13 - 136)**			**SW846 8270C**
	67	**(13 - 136)**	**1.8**	**(0-41)**	**SW846 8270C**
2,4,6-Trichlorophenol	**61**	**(37 - 144)**			**SW846 8270C**
	61	**(37 - 144)**	**0.25**	**(0-30)**	**SW846 8270C**
Carbazole	**74**	**(50 - 150)**			**SW846 8270C**
	69	**(50 - 150)**	**6.7**	**(0-50)**	**SW846 8270C**
4-Methylphenol	**58**	**(10 - 103)**			**SW846 8270C**
	51	**(10 - 103)**	**14**	**(0-32)**	**SW846 8270C**
2,2'-oxybis(1-Chloro-propane)	**83**	**(36 - 166)**			**SW846 8270C**
	70	**(36 - 166)**	**17**	**(0-26)**	**SW846 8270C**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Nitrobenzene-d5	53	(23 - 120)
	45	(23 - 120)
Terphenyl-d14	70	(18 - 137)
	67	(18 - 137)
2-Fluorobiphenyl	70	(30 - 115)
	61	(30 - 115)
2-Fluorophenol	62	(30 - 115)
	52	(30 - 115)
Phenol-d5	60	(24 - 113)
	51	(24 - 113)
2,4,6-Tribromophenol	70	(19 - 122)
	76	(19 - 122)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

Results and reporting limits have been adjusted for dry weight.

a Spiked analyte recovery is outside stated control limits.

MATRIX SPIKE SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: A9F150184 **Work Order #...:** CWWDK102-MS **Matrix.....:** WATER
MS Lot-Sample #: A9F150184-015 CWWDK103-MSD
Date Sampled...: 06/11/99 14:20 **Date Received..:** 06/12/99
Prep Date.....: 06/16/99 **Analysis Date..:** 06/26/99
Prep Batch #...: 9167109
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Acenaphthene	85	(47 - 145)			SW846 8270C
	90	(47 - 145)	6.1	(0-28)	SW846 8270C
Acenaphthylene	81	(30 - 122)			SW846 8270C
	85	(30 - 122)	5.2	(0-19)	SW846 8270C
Anthracene	86	(18 - 133)			SW846 8270C
	89	(18 - 133)	3.1	(0-28)	SW846 8270C
Benzo(a)anthracene	96	(17 - 130)			SW846 8270C
	97	(17 - 130)	1.2	(0-31)	SW846 8270C
Benzo(b)fluoranthene	92	(29 - 108)			SW846 8270C
	94	(29 - 108)	2.1	(0-22)	SW846 8270C
Benzo(k)fluoranthene	98	(19 - 116)			SW846 8270C
	99	(19 - 116)	1.2	(0-40)	SW846 8270C
Benzo(ghi)perylene	72	(10 - 128)			SW846 8270C
	76	(10 - 128)	5.3	(0-51)	SW846 8270C
enzo(a)pyrene	84	(13 - 126)			SW846 8270C
	86	(13 - 126)	2.2	(0-27)	SW846 8270C
bis(2-Chloroethoxy) methane	77	(29 - 130)			SW846 8270C
	82	(29 - 130)	6.5	(0-25)	SW846 8270C
bis(2-Chloroethyl)-ether	71	(29 - 103)			SW846 8270C
	75	(29 - 103)	4.4	(0-30)	SW846 8270C
bis(2-Ethylhexyl) phthalate	114	(12 - 145)			SW846 8270C
	98	(12 - 145)	15	(0-35)	SW846 8270C
4-Bromophenyl phenyl ether	102	(32 - 128)			SW846 8270C
	103	(32 - 128)	1.5	(0-33)	SW846 8270C
Butyl benzyl phthalate	90	(10 - 152)			SW846 8270C
	90	(10 - 152)	0.15	(0-38)	SW846 8270C
4-Chloroaniline	51	(43 - 91)			SW846 8270C
	50	(43 - 91)	0.39	(0-17)	SW846 8270C
4-Chloro-3-methylphenol	85	(22 - 147)			SW846 8270C
	87	(22 - 147)	1.6	(0-37)	SW846 8270C
-Chloronaphthalene	85	(27 - 125)			SW846 8270C
	91	(27 - 125)	6.4	(0-21)	SW846 8270C

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MATRIX SPIKE SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: A9F150184 Work Order #...: CWWDK102-MS Matrix.....: WATER
MS Lot-Sample #: A9F150184-015 CWWDK103-MSD

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
2-Chlorophenol	71	(23 - 134)			SW846 8270C
	77	(23 - 134)	7.6	(0-29)	SW846 8270C
4-Chlorophenyl phenyl ether	99	(33 - 131)			SW846 8270C
	104	(33 - 131)	4.8	(0-37)	SW846 8270C
Chrysene	91	(20 - 138)			SW846 8270C
	90	(20 - 138)	0.34	(0-36)	SW846 8270C
Dibenz(a,h)anthracene	80	(18 - 116)			SW846 8270C
	84	(18 - 116)	5.2	(0-37)	SW846 8270C
Dibenzofuran	88	(85 - 117)			SW846 8270C
	91	(85 - 117)	4.0	(0-11)	SW846 8270C
Di-n-butyl phthalate	101	(24 - 126)			SW846 8270C
	101	(24 - 126)	0.19	(0-25)	SW846 8270C
1,2-Dichlorobenzene	69	(28 - 103)			SW846 8270C
	72	(28 - 103)	4.3	(0-20)	SW846 8270C
,3-Dichlorobenzene	65	(31 - 97)			SW846 8270C
	68	(31 - 97)	4.2	(0-20)	SW846 8270C
1,4-Dichlorobenzene	66	(20 - 124)			SW846 8270C
	70	(20 - 124)	5.0	(0-32)	SW846 8270C
3,3'-Dichlorobenzidine	54	(10 - 139)			SW846 8270C
	51	(10 - 139)	7.3	(0-40)	SW846 8270C
2,4-Dichlorophenol	80	(34 - 100)			SW846 8270C
	85	(34 - 100)	6.6	(0-36)	SW846 8270C
Diethyl phthalate	94	(27 - 110)			SW846 8270C
	97	(27 - 110)	3.2	(0-26)	SW846 8270C
2,4-Dimethylphenol	52	(11 - 78)			SW846 8270C
	54	(11 - 78)	5.6	(0-24)	SW846 8270C
Dimethyl phthalate	88	(10 - 101)			SW846 8270C
	93	(10 - 101)	5.6	(0-28)	SW846 8270C
Di-n-octyl phthalate	110	(31 - 110)			SW846 8270C
	111 a	(31 - 110)	0.46	(0-31)	SW846 8270C
4,6-Dinitro-2-methylphenol	86	(10 - 181)			SW846 8270C
	96	(10 - 181)	11	(0-35)	SW846 8270C
2,4-Dinitrophenol	71	(10 - 114)			SW846 8270C
	80	(10 - 114)	12	(0-34)	SW846 8270C
2,4-Dinitrotoluene	95	(39 - 139)			SW846 8270C
	98	(39 - 139)	3.2	(0-22)	SW846 8270C
2,6-Dinitrotoluene	90	(23 - 130)			SW846 8270C
	95	(23 - 130)	4.7	(0-24)	SW846 8270C
uoranthene	86	(26 - 123)			SW846 8270C
	90	(26 - 123)	4.3	(0-30)	SW846 8270C

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MATRIX SPIKE SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: A9F150184 Work Order #...: CWWDK102-MS Matrix.....: WATER
MS Lot-Sample #: A9F150184-015 CWWDK103-MSD

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Fluorene	89	(32 - 122)			SW846 8270C
	93	(32 - 122)	4.3	(0-28)	SW846 8270C
Hexachlorobenzene	104	(34 - 129)			SW846 8270C
	106	(34 - 129)	1.2	(0-36)	SW846 8270C
Hexachlorobutadiene	85	(31 - 109)			SW846 8270C
	90	(31 - 109)	6.0	(0-21)	SW846 8270C
Hexachlorocyclopenta-diene	3.9 a	(16 - 88)			SW846 8270C
	5.5 a,p	(16 - 88)	33	(0-31)	SW846 8270C
Hexachloroethane	64	(32 - 95)			SW846 8270C
	67	(32 - 95)	3.8	(0-12)	SW846 8270C
Indeno(1,2,3-cd)pyrene	84	(13 - 127)			SW846 8270C
	87	(13 - 127)	3.8	(0-41)	SW846 8270C
Isophorone	70	(19 - 133)			SW846 8270C
	74	(19 - 133)	5.6	(0-15)	SW846 8270C
Methylnaphthalene	82	(43 - 82)			SW846 8270C
	86 a	(43 - 82)	4.9	(0-15)	SW846 8270C
2-Methylphenol	62	(20 - 95)			SW846 8270C
	67	(20 - 95)	7.6	(0-26)	SW846 8270C
Naphthalene	76	(32 - 111)			SW846 8270C
	79	(32 - 111)	4.4	(0-23)	SW846 8270C
2-Nitroaniline	80	(52 - 170)			SW846 8270C
	83	(52 - 170)	2.9	(0-39)	SW846 8270C
3-Nitroaniline	68	(55 - 172)			SW846 8270C
	70	(55 - 172)	2.9	(0-39)	SW846 8270C
4-Nitroaniline	59 a	(74 - 195)			SW846 8270C
	63 a	(74 - 195)	6.9	(0-48)	SW846 8270C
Nitrobenzene	81	(34 - 114)			SW846 8270C
	85	(34 - 114)	4.2	(0-15)	SW846 8270C
2-Nitrophenol	84	(19 - 107)			SW846 8270C
	90	(19 - 107)	7.2	(0-20)	SW846 8270C
4-Nitrophenol	85	(10 - 132)			SW846 8270C
	94	(10 - 132)	9.9	(0-47)	SW846 8270C
N-Nitrosodi-n-propyl-amine	67	(10 - 230)			SW846 8270C
	72	(10 - 230)	6.0	(0-55)	SW846 8270C
N-Nitrosodiphenylamine	92	(37 - 134)			SW846 8270C
	93	(37 - 134)	0.81	(0-32)	SW846 8270C
Pentachlorophenol	68	(14 - 176)			SW846 8270C
	76	(14 - 176)	11	(0-49)	SW846 8270C
enanthrene	92	(30 - 120)			SW846 8270C
	93	(30 - 120)	1.8	(0-27)	SW846 8270C

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MATRIX SPIKE SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #....: A9F150184 **Work Order #....:** CWWDK102-MS **Matrix.....:** WATER
MS Lot-Sample #: A9F150184-015 CWWDK103-MSD

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Phenol	**66**	**(10 - 112)**			**SW846 8270C**
	72	**(10 - 112)**	**7.6**	**(0-23)**	**SW846 8270C**
Pyrene	**86**	**(52 - 115)**			**SW846 8270C**
	86	**(52 - 115)**	**0.52**	**(0-25)**	**SW846 8270C**
1,2,4-Trichlorobenzene	**82**	**(44 - 142)**			**SW846 8270C**
	86	**(44 - 142)**	**5.0**	**(0-28)**	**SW846 8270C**
2,4,5-Trichlorophenol	**83**	**(20 - 159)**			**SW846 8270C**
	89	**(20 - 159)**	**6.9**	**(0-33)**	**SW846 8270C**
2,4,6-Trichlorophenol	**81**	**(18 - 118)**			**SW846 8270C**
	86	**(18 - 118)**	**5.9**	**(0-36)**	**SW846 8270C**
Carbazole	**81**	**(50 - 150)**			**SW846 8270C**
	83	**(50 - 150)**	**2.4**	**(0-50)**	**SW846 8270C**
4-Methylphenol	**65**	**(10 - 85)**			**SW846 8270C**
	69	**(10 - 85)**	**7.0**	**(0-32)**	**SW846 8270C**
2,2'-oxybis(1-Chloro-propane)	**86**	**(19 - 150)**			**SW846 8270C**
	91	**(19 - 150)**	**6.2**	**(0-26)**	**SW846 8270C**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Nitrobenzene-d5	79	(40 - 114)
	82	(40 - 114)
Terphenyl-d14	93	(33 - 141)
	90	(33 - 141)
2-Fluorobiphenyl	80	(45 - 118)
	84	(45 - 118)
2-Fluorophenol	66	(21 - 100)
	70	(21 - 100)
Phenol-d5	65	(17 - 101)
	70	(17 - 101)
2,4,6-Tribromophenol	83	(16 - 129)
	85	(16 - 129)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

a Spiked analyte recovery is outside stated control limits.

p Relative percent difference (RPD) is outside stated control limits.

MATRIX SPIKE SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: A9F150184 Work Order #...: CWV6L10E-MS Matrix.....: SOLID
MS Lot-Sample #: A9F140135-006 CWV6L10F-MSD
Date Sampled...: 06/09/99 14:30 Date Received..: 06/10/99
Prep Date.....: 06/28/99 Analysis Date..: 07/01/99
Prep Batch #...: 9177103
Dilution Factor: 1 % Moisture.....: 21

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Acenaphthene	80	(47 - 145)			SW846 8270C
	74	(47 - 145)	6.9	(0-28)	SW846 8270C
Acenaphthylene	77	(33 - 145)			SW846 8270C
	73	(33 - 145)	5.6	(0-21)	SW846 8270C
Anthracene	80	(27 - 133)			SW846 8270C
	74	(27 - 133)	7.7	(0-35)	SW846 8270C
Benzo(a)anthracene	83	(33 - 143)			SW846 8270C
	74	(33 - 143)	11	(0-39)	SW846 8270C
Benzo(b)fluoranthene	81	(24 - 159)			SW846 8270C
	74	(24 - 159)	8.5	(0-25)	SW846 8270C
Benzo(k)fluoranthene	79	(22 - 133)			SW846 8270C
	74	(22 - 133)	7.2	(0-54)	SW846 8270C
Benzo(ghi)perylene	81	(10 - 219)			SW846 8270C
	68	(10 - 219)	17	(0-65)	SW846 8270C
enzo(a)pyrene	78	(17 - 163)			SW846 8270C
	72	(17 - 163)	8.4	(0-35)	SW846 8270C
bis(2-Chloroethoxy) methane	77	(33 - 184)			SW846 8270C
	76	(33 - 184)	1.6	(0-46)	SW846 8270C
bis(2-Chloroethyl)-ether	72	(12 - 158)			SW846 8270C
	72	(12 - 158)	0.15	(0-54)	SW846 8270C
bis(2-Ethylhexyl) phthalate	93	(10 - 158)			SW846 8270C
	74	(10 - 158)	22	(0-35)	SW846 8270C
4-Bromophenyl phenyl ether	92	(53 - 127)			SW846 8270C
	84	(53 - 127)	9.5	(0-35)	SW846 8270C
Butyl benzyl phthalate	85	(10 - 122)			SW846 8270C
	74	(10 - 122)	13	(0-38)	SW846 8270C
4-Chloroaniline	30 a	(43 - 91)			SW846 8270C
	31 a	(43 - 91)	3.9	(0-17)	SW846 8270C
4-Chloro-3-methylphenol	105	(22 - 147)			SW846 8270C
	97	(22 - 147)	7.9	(0-37)	SW846 8270C
2-Chloronaphthalene	82	(60 - 118)			SW846 8270C
	78	(60 - 118)	5.2	(0-23)	SW846 8270C

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MATRIX SPIKE SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: A9F150184 Work Order #...: CWV6L10E-MS Matrix.....: SOLID
MS Lot-Sample #: A9F140135-006 CWV6L10F-MSD

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
2-Chlorophenol	73	(23 - 134)			SW846 8270C
	72	(23 - 134)	1.4	(0-29)	SW846 8270C
4-Chlorophenyl phenyl ether	90	(25 - 158)			SW846 8270C
	83	(25 - 158)	8.2	(0-43)	SW846 8270C
Chrysene	82	(17 - 168)			SW846 8270C
	75	(17 - 168)	8.2	(0-30)	SW846 8270C
Dibenz(a,h)anthracene	87	(10 - 227)			SW846 8270C
	77	(10 - 227)	13	(0-48)	SW846 8270C
Dibenzofuran	85	(85 - 117)			SW846 8270C
	80 a	(85 - 117)	7.1	(0-11)	SW846 8270C
Di-n-butyl phthalate	82	(10 - 118)			SW846 8270C
	75	(10 - 118)	9.2	(0-25)	SW846 8270C
1,2-Dichlorobenzene	77	(32 - 129)			SW846 8270C
	75	(32 - 129)	2.3	(0-43)	SW846 8270C
,3-Dichlorobenzene	69	(10 - 172)			SW846 8270C
	69	(10 - 172)	0.79	(0-43)	SW846 8270C
1,4-Dichlorobenzene	70	(20 - 124)			SW846 8270C
	70	(20 - 124)	0.42	(0-32)	SW846 8270C
3,3'-Dichlorobenzidine	17	(10 - 262)			SW846 8270C
	15	(10 - 262)	14	(0-45)	SW846 8270C
2,4-Dichlorophenol	81	(39 - 135)			SW846 8270C
	76	(39 - 135)	6.5	(0-32)	SW846 8270C
Diethyl phthalate	85	(10 - 114)			SW846 8270C
	79	(10 - 114)	7.7	(0-43)	SW846 8270C
2,4-Dimethylphenol	73	(32 - 119)			SW846 8270C
	70	(32 - 119)	3.4	(0-30)	SW846 8270C
Dimethyl phthalate	95	(10 - 112)			SW846 8270C
	85	(10 - 112)	11	(0-44)	SW846 8270C
Di-n-octyl phthalate	86	(10 - 146)			SW846 8270C
	76	(10 - 146)	11	(0-31)	SW846 8270C
4,6-Dinitro-2-methylphenol	74	(10 - 181)			SW846 8270C
	66	(10 - 181)	12	(0-35)	SW846 8270C
2,4-Dinitrophenol	67	(10 - 191)			SW846 8270C
	56	(10 - 191)	17	(0-34)	SW846 8270C
2,4-Dinitrotoluene	83	(39 - 139)			SW846 8270C
	78	(39 - 139)	6.3	(0-22)	SW846 8270C
2,6-Dinitrotoluene	84	(50 - 151)			SW846 8270C
	78	(50 - 151)	7.5	(0-41)	SW846 8270C
uoranthene	80	(26 - 137)			SW846 8270C
	76	(26 - 137)	5.3	(0-27)	SW846 8270C

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MATRIX SPIKE SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: A9F150184 Work Order #...: CWV6L10E-MS Matrix.....: SOLID
MS Lot-Sample #: A9F140135-006 CWV6L10F-MSD

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Fluorene	83	(59 - 121)			SW846 8270C
	79	(59 - 121)	5.4	(0-30)	SW846 8270C
Hexachlorobenzene	90	(10 - 152)			SW846 8270C
	83	(10 - 152)	8.1	(0-37)	SW846 8270C
Hexachlorobutadiene	82	(24 - 116)			SW846 8270C
	82	(24 - 116)	0.77	(0-33)	SW846 8270C
Hexachlorocyclopenta-diene	13	(2.0- 55)			SW846 8270C
	14	(2.0- 55)	3.9	(0-31)	SW846 8270C
Hexachloroethane	67	(40 - 113)			SW846 8270C
	66	(40 - 113)	1.5	(0-25)	SW846 8270C
Indeno(1,2,3-cd)pyrene	86	(10 - 171)			SW846 8270C
	75	(10 - 171)	13	(0-50)	SW846 8270C
Isophorone	76	(21 - 196)			SW846 8270C
	75	(21 - 196)	1.3	(0-30)	SW846 8270C
Methylnaphthalene	79	(15 - 111)			SW846 8270C
	77	(15 - 111)	3.2	(0-31)	SW846 8270C
2-Methylphenol	73	(10 - 103)			SW846 8270C
	70	(10 - 103)	4.1	(0-32)	SW846 8270C
Naphthalene	73	(21 - 133)			SW846 8270C
	73	(21 - 133)	0.18	(0-21)	SW846 8270C
2-Nitroaniline	90	(32 - 165)			SW846 8270C
	83	(32 - 165)	7.9	(0-42)	SW846 8270C
3-Nitroaniline	53	(31 - 177)			SW846 8270C
	50	(31 - 177)	7.4	(0-48)	SW846 8270C
4-Nitroaniline	62	(38 - 229)			SW846 8270C
	50	(38 - 229)	21	(0-47)	SW846 8270C
Nitrobenzene	80	(35 - 180)			SW846 8270C
	80	(35 - 180)	0.38	(0-31)	SW846 8270C
2-Nitrophenol	71	(29 - 182)			SW846 8270C
	71	(29 - 182)	0.10	(0-29)	SW846 8270C
4-Nitrophenol	110	(10 - 132)			SW846 8270C
	98	(10 - 132)	12	(0-47)	SW846 8270C
N-Nitrosodi-n-propyl-amine	77	(10 - 230)			SW846 8270C
	76	(10 - 230)	1.5	(0-55)	SW846 8270C
N-Nitrosodiphenylamine	81	(10 - 230)			SW846 8270C
	76	(10 - 230)	6.6	(0-32)	SW846 8270C
Pentachlorophenol	46	(14 - 176)			SW846 8270C
	16 p	(14 - 176)	97	(0-49)	SW846 8270C
enanthrene	84	(54 - 120)			SW846 8270C
	77	(54 - 120)	7.8	(0-35)	SW846 8270C

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MATRIX SPIKE SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: A9F150184 **Work Order #...:** CWV6L10E-MS **Matrix.....:** SOLID
MS Lot-Sample #: A9F140135-006 CWV6L10F-MSD

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Phenol	**74**	**(10 - 112)**			**SW846 8270C**
	71	**(10 - 112)**	**4.3**	**(0-23)**	**SW846 8270C**
Pyrene	**90**	**(52 - 115)**			**SW846 8270C**
	78	**(52 - 115)**	**15**	**(0-25)**	**SW846 8270C**
1,2,4-Trichlorobenzene	**78**	**(44 - 142)**			**SW846 8270C**
	78	**(44 - 142)**	**0.38**	**(0-28)**	**SW846 8270C**
2,4,5-Trichlorophenol	**87**	**(13 - 136)**			**SW846 8270C**
	76	**(13 - 136)**	**14**	**(0-41)**	**SW846 8270C**
2,4,6-Trichlorophenol	**82**	**(37 - 144)**			**SW846 8270C**
	72	**(37 - 144)**	**12**	**(0-30)**	**SW846 8270C**
Carbazole	**80**	**(50 - 150)**			**SW846 8270C**
	75	**(50 - 150)**	**6.8**	**(0-50)**	**SW846 8270C**
4-Methylphenol	**74**	**(10 - 103)**			**SW846 8270C**
	69	**(10 - 103)**	**6.7**	**(0-32)**	**SW846 8270C**
2,2'-oxybis(1-Chloro-propane)	**90**	**(36 - 166)**			**SW846 8270C**
	90	**(36 - 166)**	**0.03**	**(0-26)**	**SW846 8270C**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Nitrobenzene-d5	76	(23 - 120)
	77	(23 - 120)
Terphenyl-d14	101	(18 - 137)
	86	(18 - 137)
2-Fluorobiphenyl	76	(30 - 115)
	74	(30 - 115)
2-Fluorophenol	67	(30 - 115)
	67	(30 - 115)
Phenol-d5	74	(24 - 113)
	71	(24 - 113)
2,4,6-Tribromophenol	79	(19 - 122)
	67	(19 - 122)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

Results and reporting limits have been adjusted for dry weight.

a Spiked analyte recovery is outside stated control limits.

p Relative percent difference (RPD) is outside stated control limits.

MATRIX SPIKE SAMPLE EVALUATION REPORT

TOTAL Metals

Client Lot #...: A9F150184 **Matrix.....:** WATER
Date Sampled...: 06/11/99 14:20 **Date Received..:** 06/12/99

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MS Lot-Sample #: A9F150184-015 **Prep Batch #...:** 9172344							
Silver	117	(80 - 120)			SW846 6010B	06/22-07/16/99	CWWDK108
	121 N	(80 - 120)	3.0	(0-20)	SW846 6010B	06/22-07/16/99	CWWDK109
		Dilution Factor: 1					
Aluminum	103	(80 - 120)			SW846 6010B	06/22-07/15/99	CWWDK112
	104	(80 - 120)	0.64	(0-20)	SW846 6010B	06/22-07/15/99	CWWDK113
		Dilution Factor: 1					
Arsenic	105	(80 - 120)			SW846 6010B	06/22-07/16/99	CWWDK10C
	110	(80 - 120)	3.9	(0-20)	SW846 6010B	06/22-07/16/99	CWWDK10D
		Dilution Factor: 1					
Cadmium	103	(80 - 120)			SW846 6010B	06/22-07/16/99	CWWDK10F
	107	(80 - 120)	3.6	(0-20)	SW846 6010B	06/22-07/16/99	CWWDK10G
		Dilution Factor: 1					
Barium	103	(80 - 120)			SW846 6010B	06/22-07/15/99	CWWDK115
	105	(80 - 120)	2.2	(0-20)	SW846 6010B	06/22-07/15/99	CWWDK116
		Dilution Factor: 1					
Beryllium	102	(80 - 120)			SW846 6010B	06/22-07/16/99	CWWDK118
	106	(80 - 120)	4.0	(0-20)	SW846 6010B	06/22-07/16/99	CWWDK119
		Dilution Factor: 1					
Chromium	105	(80 - 120)			SW846 6010B	06/22-07/16/99	CWWDK10J
	109	(80 - 120)	3.4	(0-20)	SW846 6010B	06/22-07/16/99	CWWDK10K
		Dilution Factor: 1					
Calcium	101	(80 - 120)			SW846 6010B	06/22-07/15/99	CWWDK11C
	102	(80 - 120)	0.97	(0-20)	SW846 6010B	06/22-07/15/99	CWWDK11D
		Dilution Factor: 1					
Lead	103	(80 - 120)			SW846 6010B	06/22-07/16/99	CWWDK10M
	107	(80 - 120)	3.6	(0-20)	SW846 6010B	06/22-07/16/99	CWWDK10N
		Dilution Factor: 1					
Antimony	105	(80 - 120)			SW846 6010B	06/22-07/16/99	CWWDK10Q
	109	(80 - 120)	3.4	(0-20)	SW846 6010B	06/22-07/16/99	CWWDK10R
		Dilution Factor: 1					
Cobalt	101	(80 - 120)			SW846 6010B	06/22-07/16/99	CWWDK11F
	105	(80 - 120)	3.9	(0-20)	SW846 6010B	06/22-07/16/99	CWWDK11G
		Dilution Factor: 1					

(Continued on next page)

MATRIX SPIKE SAMPLE EVALUATION REPORT

TOTAL Metals

Client Lot #...: A9F150184 **Matrix.....:** WATER
Date Sampled...: 06/11/99 14:20 **Date Received..:** 06/12/99

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Selenium	106	(80 - 120)			SW846 6010B	06/22-07/16/99	CWWDK10U
	110	(80 - 120)	3.7	(0-20)	SW846 6010B	06/22-07/16/99	CWWDK10V
		Dilution Factor: 1					
Thallium	109	(80 - 120)			SW846 6010B	06/22-07/16/99	CWWDK10X
	113	(80 - 120)	3.7	(0-20)	SW846 6010B	06/22-07/16/99	CWWDK110
		Dilution Factor: 1					
Copper	106	(80 - 120)			SW846 6010B	06/22-07/16/99	CWWDK11J
	111	(80 - 120)	3.8	(0-20)	SW846 6010B	06/22-07/16/99	CWWDK11K
		Dilution Factor: 1					
Iron	102	(80 - 120)			SW846 6010B	06/22-07/16/99	CWWDK11M
	102	(80 - 120)	0.08	(0-20)	SW846 6010B	06/22-07/16/99	CWWDK11N
		Dilution Factor: 1					
Potassium	100	(80 - 120)			SW846 6010B	06/22-07/15/99	CWWDK11Q
	101	(80 - 120)	1.2	(0-20)	SW846 6010B	06/22-07/15/99	CWWDK11R
		Dilution Factor: 1					
Magnesium	101	(80 - 120)			SW846 6010B	06/22-07/15/99	CWWDK11U
	103	(80 - 120)	1.4	(0-20)	SW846 6010B	06/22-07/15/99	CWWDK11V
		Dilution Factor: 1					
Manganese	102	(80 - 120)			SW846 6010B	06/22-07/15/99	CWWDK11X
	104	(80 - 120)	2.0	(0-20)	SW846 6010B	06/22-07/15/99	CWWDK120
		Dilution Factor: 1					
Sodium	98	(80 - 120)			SW846 6010B	06/22-07/15/99	CWWDK122
	101	(80 - 120)	1.9	(0-20)	SW846 6010B	06/22-07/15/99	CWWDK123
		Dilution Factor: 1					
Nickel	101	(80 - 120)			SW846 6010B	06/22-07/16/99	CWWDK125
	105	(80 - 120)	3.6	(0-20)	SW846 6010B	06/22-07/16/99	CWWDK126
		Dilution Factor: 1					
Vanadium	104	(80 - 120)			SW846 6010B	06/22-07/16/99	CWWDK128
	109	(80 - 120)	3.9	(0-20)	SW846 6010B	06/22-07/16/99	CWWDK129
		Dilution Factor: 1					
Zinc	106	(80 - 120)			SW846 6010B	06/22-07/16/99	CWWDK12C
	109	(80 - 120)	2.9	(0-20)	SW846 6010B	06/22-07/16/99	CWWDK12D
		Dilution Factor: 1					

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MATRIX SPIKE SAMPLE EVALUATION REPORT

TOTAL Metals

Client Lot #...: A9F150184 **Matrix.....:** WATER
Date Sampled...: 06/11/99 14:20 **Date Received..:** 06/12/99

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Mercury	98	(80 - 120)			SW846 7470A	06/22-06/23/99	CWWDK105
	103	(80 - 120)	4.9	(0-20)	SW846 7470A	06/22-06/23/99	CWWDK106

Dilution Factor: 1

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

N Spiked analyte recovery is outside stated control limits.

MATRIX SPIKE SAMPLE EVALUATION REPORT

TOTAL Metals

Client Lot #...: A9F150184 **Matrix.....:** SOLID
Date Sampled...: 06/11/99 14:20 **Date Received..:** 06/12/99

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MS Lot-Sample #: A9F150184-016 **Prep Batch #...:** 9174305							
Aluminum	NC,MSB	(80 - 120)			SW846 6010B	06/24-07/15/99	CWWDR105
	NC,MSB	(80 - 120)		(0-20)	SW846 6010B	06/24-07/15/99	CWWDR106
		Dilution Factor: 1					
Silver	108	(80 - 120)			SW846 6010B	06/24-07/16/99	CWWDR11J
	123 N	(80 - 120)	13	(0-20)	SW846 6010B	06/24-07/16/99	CWWDR11K
		Dilution Factor: 1					
Arsenic	84	(80 - 120)			SW846 6010B	06/24-07/16/99	CWWDR11M
	85	(80 - 120)	1.1	(0-20)	SW846 6010B	06/24-07/16/99	CWWDR11N
		Dilution Factor: 1					
Barium	92	(80 - 120)			SW846 6010B	06/24-07/16/99	CWWDR108
	84	(80 - 120)	6.1	(0-20)	SW846 6010B	06/24-07/16/99	CWWDR109
		Dilution Factor: 1					
Beryllium	83	(80 - 120)			SW846 6010B	06/24-07/16/99	CWWDR10C
	85	(80 - 120)	1.4	(0-20)	SW846 6010B	06/24-07/16/99	CWWDR10D
		Dilution Factor: 1					
Cadmium	96	(80 - 120)			SW846 6010B	06/24-07/16/99	CWWDR11Q
	96	(80 - 120)	0.60	(0-20)	SW846 6010B	06/24-07/16/99	CWWDR11R
		Dilution Factor: 1					
Calcium	104	(80 - 120)			SW846 6010B	06/24-07/15/99	CWWDR10F
	310 N,*	(80 - 120)	72	(0-20)	SW846 6010B	06/24-07/15/99	CWWDR10G
		Dilution Factor: 1					
Chromium	80	(80 - 120)			SW846 6010B	06/24-07/16/99	CWWDR11U
	75 N	(80 - 120)	2.7	(0-20)	SW846 6010B	06/24-07/16/99	CWWDR11V
		Dilution Factor: 1					
Cobalt	60 N	(80 - 120)			SW846 6010B	06/24-07/16/99	CWWDR10J
	63 N	(80 - 120)	2.7	(0-20)	SW846 6010B	06/24-07/16/99	CWWDR10K
		Dilution Factor: 1					
Lead	88	(80 - 120)			SW846 6010B	06/24-07/16/99	CWWDR11X
	89	(80 - 120)	0.93	(0-20)	SW846 6010B	06/24-07/16/99	CWWDR120
		Dilution Factor: 1					
Antimony	55 N	(80 - 120)			SW846 6010B	06/24-07/16/99	CWWDR122
	55 N	(80 - 120)	1.2	(0-20)	SW846 6010B	06/24-07/16/99	CWWDR123
		Dilution Factor: 1					

(Continued on next page)

MATRIX SPIKE SAMPLE EVALUATION REPORT

TOTAL Metals

Client Lot #...: A9F150184 **Matrix.....:** SOLID
Date Sampled...: 06/11/99 14:20 **Date Received..:** 06/12/99

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Copper	88	(80 - 120)			SW846 6010B	06/24-07/16/99	CWWDR10M
	86	(80 - 120)	1.6	(0-20)	SW846 6010B	06/24-07/16/99	CWWDR10N
		Dilution Factor: 1					
Iron	NC,MSB	(80 - 120)			SW846 6010B	06/24-07/16/99	CWWDR10Q
	NC,MSB	(80 - 120)		(0-20)	SW846 6010B	06/24-07/16/99	CWWDR10R
		Dilution Factor: 1					
Selenium	90	(80 - 120)			SW846 6010B	06/24-07/16/99	CWWDR125
	91	(80 - 120)	1.2	(0-20)	SW846 6010B	06/24-07/16/99	CWWDR126
		Dilution Factor: 1					
Mercury	89	(70 - 130)			SW846 7471A	06/24-06/28/99	CWWDR12C
	87	(70 - 130)	2.1	(0-20)	SW846 7471A	06/24-06/28/99	CWWDR12D
		Dilution Factor: 1					
Potassium	100	(80 - 120)			SW846 6010B	06/24-07/15/99	CWWDR10U
	98	(80 - 120)	1.7	(0-20)	SW846 6010B	06/24-07/15/99	CWWDR10V
		Dilution Factor: 1					
Thallium	97	(80 - 120)			SW846 6010B	06/24-07/16/99	CWWDR128
	98	(80 - 120)	0.57	(0-20)	SW846 6010B	06/24-07/16/99	CWWDR129
		Dilution Factor: 1					
Magnesium	101	(80 - 120)			SW846 6010B	06/24-07/15/99	CWWDR10X
	114	(80 - 120)	9.2	(0-20)	SW846 6010B	06/24-07/15/99	CWWDR110
		Dilution Factor: 1					
Manganese	NC,MSB	(80 - 120)			SW846 6010B	06/24-07/16/99	CWWDR112
	NC,MSB	(80 - 120)		(0-20)	SW846 6010B	06/24-07/16/99	CWWDR113
		Dilution Factor: 1					
Sodium	94	(80 - 120)			SW846 6010B	06/24-07/15/99	CWWDR115
	96	(80 - 120)	2.1	(0-20)	SW846 6010B	06/24-07/15/99	CWWDR116
		Dilution Factor: 1					
Nickel	82	(80 - 120)			SW846 6010B	06/24-07/16/99	CWWDR118
	80	(80 - 120)	0.92	(0-20)	SW846 6010B	06/24-07/16/99	CWWDR119
		Dilution Factor: 1					
Vanadium	41 N	(80 - 120)			SW846 6010B	06/24-07/16/99	CWWDR11C
	34 N	(80 - 120)	4.7	(0-20)	SW846 6010B	06/24-07/16/99	CWWDR11D
		Dilution Factor: 1					

(Continued on next page)

MATRIX SPIKE SAMPLE EVALUATION REPORT

TOTAL Metals

Client Lot #...: A9F150184 **Matrix.....:** SOLID
Date Sampled...: 06/11/99 14:20 **Date Received..:** 06/12/99

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Zinc	0.0 N	(80 - 120)			SW846 6010B	06/24-07/16/99	CWWDR11F
	0.0 N	(80 - 120)	0.0	(0-20)	SW846 6010B	06/24-07/16/99	CWWDR11G

Dilution Factor: 1

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

N Spiked analyte recovery is outside stated control limits.

Results and reporting limits have been adjusted for dry weight.

NC The recovery and/or RPD were not calculated.

MSB The recovery and RPD were not calculated because the sample amount was greater than four times the spike amount.

* Relative percent difference (RPD) is outside stated control limits.

SAMPLE DUPLICATE EVALUATION REPORT

General Chemistry

Client Lot #...: A9F150184 **Work Order #...:** CWVMW-SMP CWVMW-DUP **Matrix.....:** SOLID

Date Sampled...: 06/10/99 17:50 **Date Received..:** 06/12/99

% Moisture.....: 8.0

PARAM	RESULT	DUPLICATE RESULT	UNITS	RPD	RPD LIMIT	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Percent Solids						SD Lot-Sample #:	A9F150103-001	
	92.1	92.3	%	0.22	(0-20)	MCAWW 160.3 MOD	06/23-06/24/99	9174259

Dilution Factor: 1

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Results and reporting limits have been adjusted for dry weight.

SAMPLE DUPLICATE EVALUATION REPORT

General Chemistry

Client Lot #...: A9F150184 **Work Order #...:** CWV8R-SMP CWV8R-DUP **Matrix.....:** SOLID

Date Sampled...: 06/11/99 **Date Received..:** 06/12/99

% Moisture.....: 9.8

PARAM	RESULT	DUPLICATE RESULT	UNITS	RPD	RPD LIMIT	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Total Organic Carbon						SD Lot-Sample #: A9F140142-014		
	16000	16000	mg/kg	0.54	(0-20)	SMCA WALKLEY-BLAC	07/05/99	9186124

Dilution Factor: 1

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Results and reporting limits have been adjusted for dry weight.

SAMPLE DUPLICATE EVALUATION REPORT

General Chemistry

Client Lot #...: A9F150184 **Work Order #...:** CWWCW-SMP CWWCW-DUP **Matrix.....:** SOLID

Date Sampled...: 06/10/99 17:24 **Date Received..:** 06/12/99

% Moisture.....: 21

PARAM	RESULT	DUPLICATE RESULT	UNITS	RPD	RPD LIMIT	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Percent Solids						SD Lot-Sample #:	A9F150184-005	
	79.2	79.9	%	0.94	(0-20)	MCAWW 160.3 MOD	06/23-06/24/99	9174259

Dilution Factor: 1

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Results and reporting limits have been adjusted for dry weight.

SAMPLE DUPLICATE EVALUATION REPORT

General Chemistry

Client Lot #...: A9F150184 **Work Order #...:** CWWCX-SMP CWWCX-DUP **Matrix.....:** SOLID

Date Sampled...: 06/10/99 16:38 **Date Received..:** 06/12/99

% Moisture.....: 23

PARAM	RESULT	DUPLICATE RESULT	UNITS	RPD	RPD LIMIT	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Percent Solids						SD Lot-Sample #:	A9F150184-006	
	77.2	80.1	%	3.7	(0-20)	MCAWW 160.3 MOD	06/23-06/24/99	9174310

Dilution Factor: 1

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Results and reporting limits have been adjusted for dry weight.

SAMPLE DUPLICATE EVALUATION REPORT

General Chemistry

Client Lot #...: A9F150184 **Work Order #...:** CWX5E-SMP CWX5E-DUP **Matrix.....:** SOLID

Date Sampled...: 06/11/99 18:19 **Date Received..:** 06/14/99

% Moisture.....: 12

PARAM	RESULT	DUPLICATE RESULT	UNITS	RPD	RPD LIMIT	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Total Organic Carbon						SD Lot-Sample #: A9F160105-002		
	8100	7800	mg/kg	3.4	(0-20)	SMCA WALKLEY-BLAC	07/05/99	9186124

Dilution Factor: 1

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Results and reporting limits have been adjusted for dry weight.

SAMPLE DUPLICATE EVALUATION REPORT

General Chemistry

Client Lot #...: A9F150184 **Work Order #...:** CX4K6-SMP CX4K6-DUP **Matrix.....:** SOLID

Date Sampled...: 06/18/99 10:14 **Date Received..:** 06/19/99

% Moisture.....: 15

PARAM	RESULT	DUPLICATE RESULT	UNITS	RPD	RPD LIMIT	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Percent Solids						SD Lot-Sample #:	A9F190133-004	
	85.1	84.0	%	1.3	(0-20)	MCAWW 160.3 MOD	06/23-06/24/99	9174310

Dilution Factor: 1

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Results and reporting limits have been adjusted for dry weight.

Chain of Custody Record

Quanterra

QUA-4124

Client	Project Manager	Date	Chain Of Custody Number
USACE - LOUISVILLE DISTRICT	DARRELL R. DAVIS	6-11-99	56632
Address	Telephone Number (Area Code)/Fax Number: (502) 582-5561	Lab Number	Page 1 of 1

City	State	Zip Code	Site Contact
LOUIS.	KY		

Project Name: ASH PIT #1 - PBOW

Carrier/Waybill Number:

Contract/Purchase Order/Quote No.:

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	SVOC	TAL METALS	TOC	GEOTECHN.
PBOW99 SBA1Ø1 A	6-11-99	~~18:08~~ 8:43	SOIL						✓	✓		
PBOW99 SBA1Ø1 A-DUP	6-11-99	~~18:08~~ 8:43							✓	✓		
PBOW99 SBA1Ø2 A	6-10-99	16:22							✓	✓	✓	✓
PBOW99 SBA1Ø3 A	6-10-99	17:07							✓	✓		
PBOW99 SBA1Ø3 B	6-10-99	17:24							✓	✓	✓	✓
PBOW99 SBA1Ø4 B	6-10-99	16:39							✓	✓		
PBOW99 SS A1Ø1	6-10-99	18:08										

Special Instructions:

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☑ Unknown

Sample Disposal: ☐ Return To Client ☑ Disposal By Lab ☐ Archive For _____ Months

Turn Around Time Required: ☑ Normal ☐ Rush

QC Level: ☐ I. ☐ II. ☐ III.

Project Specific (Specify):

	Date	Time
1. Relinquished By: Darrell R. Davis	6-11-99	15:30
2. Relinquished By:		
3. Relinquished By:		

	Date	Time
1. Received By:		
2. Received By: Lous Eg	6-12-99	1000A
3. Received By:		

Comments:

DISTRIBUTION: WHITE - Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy

[redacted]

Chain of Custody Record

Quanterra

QUA-4124

Client	Project Manager	Date	Chain Of Custody Number
USACE - LOUISVILLE DISTRICT	DARRELL DAVIS	6-12-99	56633
Address	Telephone Number (Area Code)/Fax Number: 502-582-5561	Lab Number	Page 1 of 1
City / State / Zip Code	Site Contact		
Project Name: PBOW- ASHPIT #1	Carrier/Waybill Number		
Contract/Purchase Order/Quote No.			

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	SVOC	METALS
PBOW99SWA1Ø1	6-11-99	14:20	S. WATER	3 L		3	HNO_3 - MET		✓	✓
PBOW99SDA1Ø1	6-11-99	14:20	SEDIMENT	6 OZ	—	2	—		✓	✓
PBOW99SWA1Ø1 MS/MSD	6-11-99	14:20	S. WATER	3 L		3	HNO_3 - MET		✓	✓
PBOW99SDA1Ø1 MS/MSD	6-11-99	14:20	SEDIMENT	6 OZ	—	2	—		✓	✓
FIELD BLANK	6-11-99	10:00	DI WATER	3 L		3	HNO_3 - MET		✓	✓

Special Instructions

Possible Hazard Identification: ☒ Non-Hazard (D.O.) ☐ Flammable ☐ Skin Irritant ☐ Poison B ☑ Unknown

Sample Disposal: ☐ Return To Client ☑ Disposal By Lab ☐ Archive For _____ Months

Turn Around Time Required: ☑ Normal ☐ Rush

QC Level: ☐ I. ☐ II. ☐ III.

Project Specific (Specify)

	Date	Time
1. Relinquished By	6-12-99	12:00
2. Relinquished By		
3. Relinquished By		

	Date	Time
1. Received By		
2. Received By	6-14-99	920
3. Received By		

Comments: PLEASE CONTACT ME WHEN THESE SAMPLES AR LOGGED IN!

DISTRIBUTION: W Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy

Chain of Custody Record

Quanterra

QUA-4124

Client: USACE - LOUISVILLE DISTR.	Project Manager: DARRELL R. DAVIS	Date: 6-12-99	Chain Of Custody Number: 61626
Address:	Telephone Number (Area Code)/Fax Number: (502) 582-5561	Lab Number:	Page 1 of 1
City: LOUISVILLE State: KY Zip Code:	Site Contact:		
Project Name: PBOW - ASH PIT #3	Carrier/Waybill Number:		
Contract/Purchase Order/Quote No.			

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Analysis: SVOC	Analysis: T. METALS
PBOW99 SWA3Ø1	6-11-99	12:40	S. WATER	3L		3			✓	✓
PBOW99 SWA3Ø2	6-11-99	12:55	S. WATER	3L		3			✓	✓
PBOW99 SDA3Ø2	6-11-99	12:55	SEDIM.	6 oz.		2			✓	✓
PBOW99 SWA3Ø3	6-11-99	13:10	S. WATER	3L		3			✓	✓
PBOW99 SDA3Ø3	6-11-99	13:10	SEDIM.	6 oz		2			✓	✓
PBOW99 SWA3Ø3 DUP	6-11-99	13:10	S. WATER	3L		3			✓	✓
PBOW99 SDA3Ø3 DUP	6-11-99	13:10	SEDIM.	6 oz.		2			✓	✓

Special Instructions

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☑ Unknown

Sample Disposal: ☐ Return To Client ☑ Disposal By Lab ☐ Archive For _____ Months

Turn Around Time Required: ☑ Normal ☐ Rush

QC Level: ☐ I. ☐ II. ☐ III.

Project Specific (Specify)

	Date	Time
1. Relinquished By: Darrell R. D[illegible]	6-12-99	12:00
2. Relinquished By:		
3. Relinquished By:		

	Date	Time
1. Received By:		
2. Received By: [signature]	6-14-99	920 A
3. Received By:		

Comments

DISTRIBUTION: WHITE - Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy

135

Appendix G - Geotechnical Data

ENGINEERING • TESTING • INSPECTION

APPLIED CONSTRUCTION TECHNOLOGIES, INC.

210 HAYES DRIVE • SUITE C • CLEVELAND, OHIO 44131 • (216) 459-TEST • FAX (216) 459-8954
478 E. EXCHANGE ST. • SUITE 202 • AKRON, OHIO 44304 • (330) 253-TEST • FAX (330) 253-3462

June 28, 1999

Quanterra, Inc.
4101 Shuffel Drive
North Canton, Ohio 44720

Attention: Ms. Debora A. Hula

SUBJECT: LAB TEST RESULTS
FOR FIVE SUBMITTED SAMPLES
CLIENT CODE: 383620
LAB P.O. SR016694, SR016665, SR016663

ACT PROJECT NO. 9901.16
Report No. 16 – 28 June 1999

Enclosed are grain size analysis results for five jar samples of soil with organics submitted to ACT on June 15, 1999. Grain size analyses, which included a hydrometer for all of the samples, were performed per ASTM D-422, and samples were visually classified per ASTM D-2487. Atterburgs were also requested and results indicated a non-plastic soil for all samples except A9F150184-005, for which an insufficient sample size was provided and will require an additional sample for us to perform an Atterburg.

APPLIED CONSTRUCTION TECHNOLOGIES, INC.
by:

GEORGE WOZNIAK, C.E.T.
Manager – Materials Laboratory

GW:jh

777a.

ENGINEERING • TESTING • INSPECTION

APPLIED CONSTRUCTION TECHNOLOGIES, INC.

210 HAYES DRIVE • SUITE C • CLEVELAND, OHIO 44131 • (216) 459-TEST • FAX (216) 459-8954
478 E. EXCHANGE ST. • SUITE 202 • AKRON, OHIO 44304 • (330) 253-TEST • FAX (330) 253-3462

July 6, 1999

Quanterra, Inc.
4101 Shuffel Drive
North Canton, Ohio 44720

Attention: Ms. Debora A. Hula

SUBJECT: LAB TEST RESULTS
ONE SUBMITTED SAMPLE
CLIENT CODE: 383620
LAB P.O. SR016694

ACT PROJECT NO. 9901.16
Report No. 18 – 06 July 1999

On July 1, 1999, a second soil sample identified as A-9F150184-005 CWWCW-001 was received for Atterburg testing. The soil received consisted of a brown with gray lean clay and Atterburgs were performed and the Atterburg results were added to the grain size curve which was developed for an earlier submitted sample. Also, the material description and USCS designation were slightly changed based on the Atterburg results.

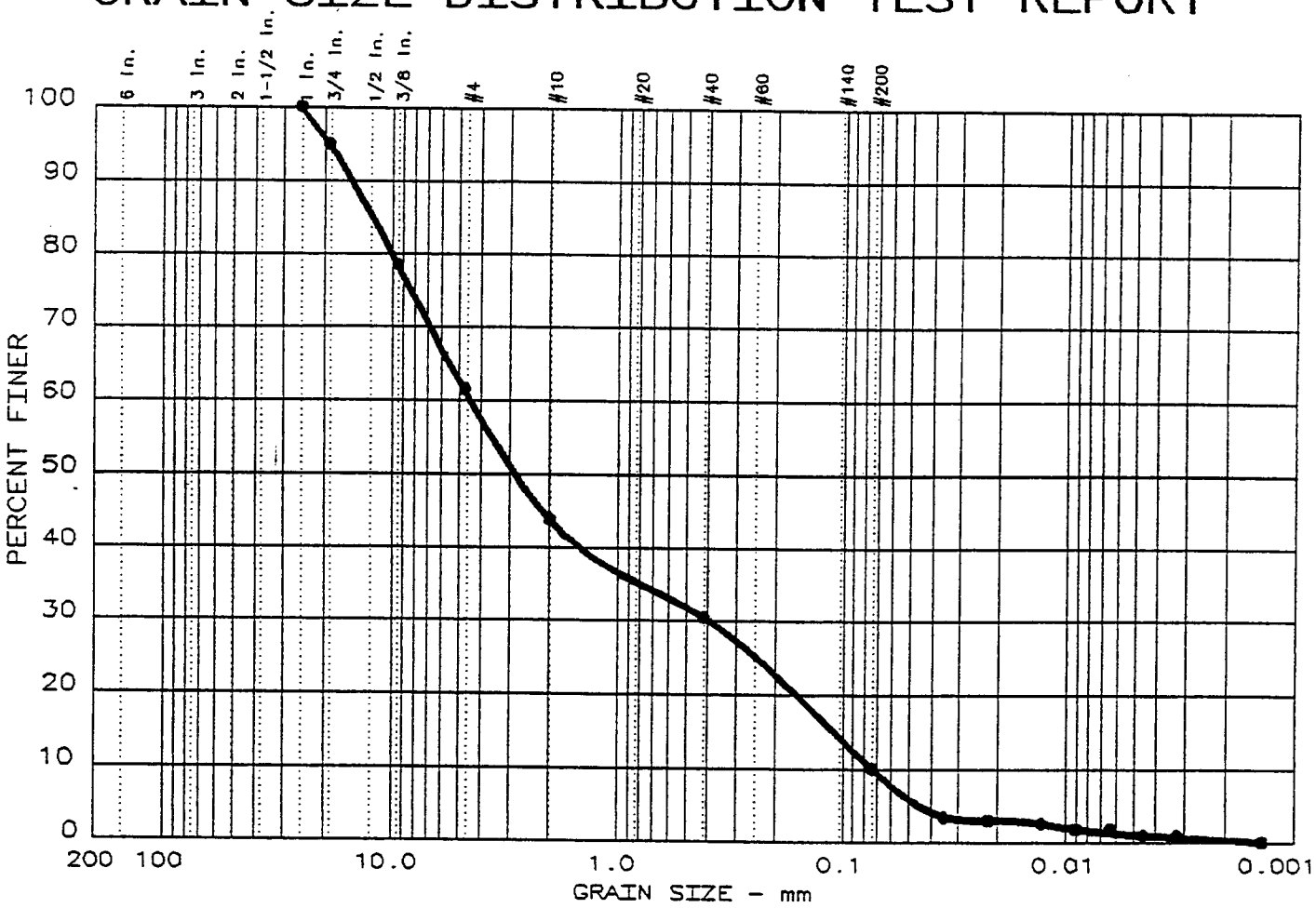
APPLIED CONSTRUCTION TECHNOLOGIES, INC.
Cindy Ours, Lab Technician
by:

GEORGE WOZNIAK, C.E.T.
Manager – Materials Laboratory

GW:jh

777b.

GRAIN SIZE DISTRIBUTION TEST REPORT



	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	0.0	56.1	33.8	9.0	1.1

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	N.P.	N.P.	12.27	4.46	2.81	0.393	0.1081	0.0731	0.47	61.0

MATERIAL DESCRIPTION	USCS	AASHTO
● DARK BLACK CINDERS WITH SILTY SAND.	GP-GM	

Project No.: 9901.16
Project: P.O. SR016694 CLIENT CODE: 383620
● Location: A9F150184-003 CWWCQ-1-OV
PBOW99SBA1ØZA

Date: 6/22/99

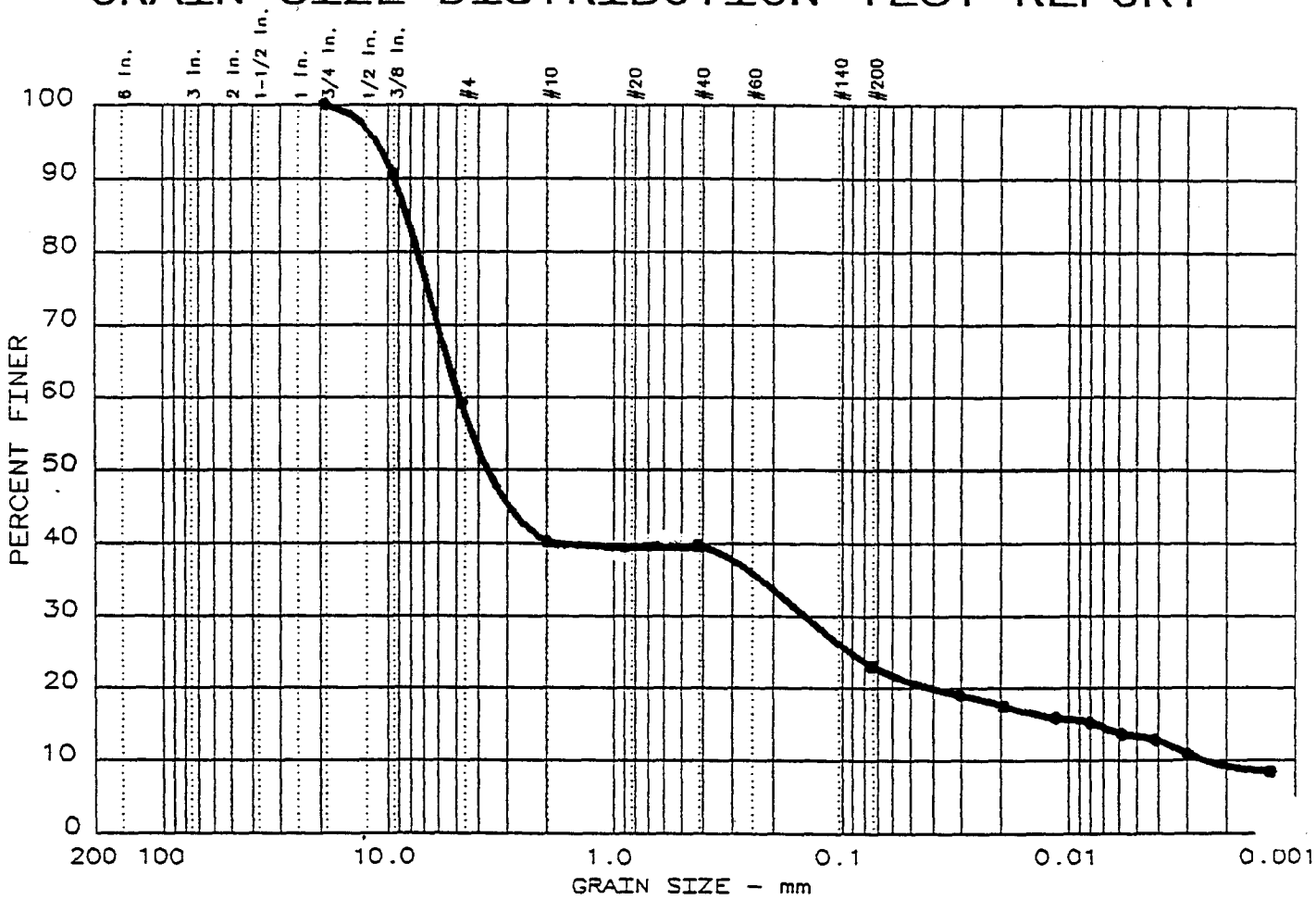
Remarks:
QUANTERRA, INC.
JAR SAMPLES RECEIVED ON
6/15/99

GRAIN SIZE DISTRIBUTION TEST REPORT

APPLIED CONSTRUCTION TECH., INC.

Figure No. 7-6

GRAIN SIZE DISTRIBUTION TEST REPORT



	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	0.0	59.8	17.2	9.7	13.3

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	49	28	8.22	4.84	3.63	0.145	0.0077	0.0025	1.72	1927.5

MATERIAL DESCRIPTION	USCS	AASHTO
● GRAY GRAVEL WITH LEAN CLAY & SAND.	GM CL	

Project No.: 9901.16
Project: P.O. SR016694 CLIENT CODE 383620
● Location: ASF150184-005 CWWCW-1-OV
PBOW99SBA1Ø3B

Date: 6/22/99

Remarks:
CLIENT: QUANTERRA, INC.
JAR SAMPLES RECEIVED ON
6/15/99

GRAIN SIZE DISTRIBUTION TEST REPORT

APPLIED CONSTRUCTION TECH., INC.

Figure No. 72-G

Appendix H - Variance Report

Variance Report

For the purpose of this investigation, variances are defined as necessary changes or modifications to the planned activities as specified by the Quality Assurance Project Plan (QAPP). Variances do not significantly affect the quality of the data. The following are the variances that occurred during this investigation.

Variance#1: The Region 9 PRG table presents the contaminant concentrations that are considered protective of humans for a lifetime of exposure. The exposure pathways considered in the development of the soil PRGs are soil ingestion, inhalation of particulate material, and dermal absorption. Comparison of the soil PRGs with the reporting limits revealed instances where the reporting limit exceeded the PRG for the analyte.

Justification: The achievement of adequate sensitivity to analyze soils to meet all PRGs is difficult. Some of PRGS are set at low levels of contaminants that are difficult to achieve when analyzing natural soils. Review of the information supplied by the laboratory of record indicates the reporting limits presented by the laboratory are within the ranges than could be expected for these soils. Some degree of matrix interference has been encountered in working with these samples.

Impact: The assessment of the human health risk posed by these soils may be hindered. The data provide useful information about the nature of contamination of these soils. If during the consideration of the exposure time and contact opportunity of humans with this material, the adequacy of the data appears to be troublesome, follow on work can be planned.

Appendix I - Environmental Information and Imaging Services (ERIIS) Data

ERIIS REPORT OVERVIEW

The following features are available for an ERIIS report:

* Database Report
    * Statistical Profile
    * Database Records
* Related Maps
    * Digital Custom Plotted Map
    * Sanborn Fire Insurance Map(s)
    * Topographical Map(s)

Statistical Profile

The statistical profile is an at-a-glance numeric summary of the databases searched for your ERIIS Report.

Database Records

The detailed federal and state database information indicates potential and actual environmental threats within the study radius. These records are sorted by their distance from the study site.

Digital Custom Map

The digital custom map is cross referenced with the database records. The cross-in-circle in the center of the map represents the study site. The red circles represent distances from the study site. The plottable sites in the report are distinguished on the map by symbols of different shape and color.

Historic Fire Insurance Maps

The ERIIS collection of historical Sanborn Fire Insurance Maps covers 14,000 cities and towns. These maps may indicate prior use of the study site. If no maps are available for the study site, a notice to that effect is included. This notice should serve as evidence of due diligence.

Topographical Map

USGS topographical maps show natural and man-made features as well as the shape and elevation of the terrain. The 7.5 minute quad maps are produced at a scale of 1:24,000, or one inch represents 2,000 feet.

If you have any questions about this report,
please contact ERIIS Customer Service at 1-800-989-0403

ERIIS CORRIDOR STATISTICAL PROFILE
State: OH

ERIIS Report #317596A Mar 4, 1999

Site:
SOUTH OF SANDUSKY
SANDUSKY, OH

Database	Plotted Sites
NPL	0
RCRIS_CA	0
RCRIS_TS	1
CERCLIS	0
NFRAP	1
RCRIS_LG	0
RCRIS_SG	1
ERNS	0
HWS	1
LRST	6
SWF	0
RST	9
	19

NR in a radius count indicates that the database cannot be reported by this search criteria due to insufficient and/or inaccurate addresses reported by a federal/state agency.

NPL
Date of Data: 10/14/1998
Release Date: 10/20/1998
Date on System: 11/20/1998
US Environmental Protection Agency
Office of Solid Waste and Emergency Response
703/603-8881
Date of Last Contact: 11/02/1998

National Priorities List

The NPL Report is an EPA listing of the nation's worst uncontrolled or abandoned hazardous waste sites. NPL sites are targeted for possible long-term remedial action under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980. In addition, the NPL Report includes information concerning cleanup agreements between EPA and Potentially Responsible Parties (commonly called Records of Decision, or RODS), any liens filed against contaminated properties, as well as the past and current EPA budget expenditures tracked within the Superfund Consolidated Accomplishments Plan (SCAP).

RCRIS_CA
Date of Data: 07/01/1998
Release Date: 09/18/1998
Date on System: 12/04/1998
US Environmental Protection Agency
Office of Solid Waste and Emergency Response
800/424-9346
Date of Last Contact: 11/04/1998

Resource Conservation and Recovery Information System - TSD's Subject to Corrective Action

The RCRIS_CA Report contains information pertaining to hazardous waste treatment, storage, and disposal Facilities (RCRA TSD's) which have conducted, or are currently conducting, a corrective action(s) as regulated under the Resource Conservation and Recovery Act. The following information is included within the RCRIS_CA Report:
- Information pertaining to the status of facilities tracked by the RCRA Administrative Action Tracking System (RAATS)
- Inspections & evaluations conducted by federal and state agencies
- All reported facility violations, the environmental statute(s) violated, and any proposed & actual penalties
- Information pertaining to corrective actions undertaken by the facility or EPA

RCRIS_TS
Date of Data: 07/01/1998
Release Date: 09/18/1998
Date on System: 12/04/1998
US Environmental Protection Agency
Office of Solid Waste and Emergency Response
800/424-9346
Date of Last Contact: 11/04/1998

Resource Conservation and Recovery Information System - Non-Corrective Action TSD Facilities

The RCRIS_TS Report contains information pertaining to facilities which either treat, store, or dispose of EPA regulated hazardous waste. The following information is also included in the RCRIS_TS Report:

- Information pertaining to the status of facilities tracked by the RCRA Administrative Action Tracking System (RAATS)
- Inspections & evaluations conducted by federal and state agencies
- All reported facility violations, the environmental statute(s) violated, and any proposed & actual penalties

CERCLIS
Date of Data: 10/14/1998
Release Date: 10/20/1998
Date on System: 11/13/1998
US Environmental Protection Agency
Office of Solid Waste and Emergency Response
703/603-8881
Date of Last Contact: 11/02/1998

Comprehensive Environmental Response, Compensation, and Liability Information System

The CERCLIS Database is a comprehensive listing of known or suspected uncontrolled or abandoned hazardous waste sites. These sites have either been investigated, or are currently under investigation by the U.S. EPA for the release, or threatened release of hazardous substances. Once a site is placed in CERCLIS, it may be subjected to several levels of review and evaluation, and ultimately placed on the National Priorities List (NPL). In addition to site events and milestone dates, the CERCLIS Report also contains financial information from the Superfund Consolidated Accomplishments Plan (SCAP).

NFRAP
Date of Data: 10/14/1998
Release Date: 10/20/1998
Date on System: 11/13/1998
US Environmental Protection Agency
Office of Solid Waste and Emergency Response
703/603-8881
Date of Last Contact: 11/02/1998

No Further Remedial Action Planned Sites

The No Further Remedial Action Planned Report (NFRAP), also known as the CERCLIS Archive, contains information pertaining to sites which have been removed from the U.S. EPA's CERCLIS Database. NFRAP sites may be sites where, following an initial investigation, either no contamination was found, contamination was removed quickly without need for the site to be placed on the NPL, or the contamination was not serious enough to require federal Superfund action or NPL consideration.

RCRIS_LG
Date of Data: 07/01/1998
Release Date: 09/18/1998
Date on System: 12/04/1998
US Environmental Protection Agency
Office of Solid Waste and Emergency Response
800/424-9346
Date of Last Contact: 11/04/1998

Resource Conservation and Recovery Information System - Large Quantity Generators

The RCRIS_LG Report contains information pertaining to facilities which either generate more than 1000kg of EPA regulated hazardous waste per month, or meet other applicable requirements of the Resource Conservation And Recovery Act. The following information is also included in the RCRIS_LG Report:
- Information pertaining to the status of facilities tracked by the RCRA Administrative Action Tracking System (RAATS)
- Inspections & evaluations conducted by federal and state agencies
- All reported facility violations, the environmental statute(s) violated, and any proposed & actual penalties
- Information pertaining to corrective actions undertaken by the facility or EPA

RCRIS_SG
Date of Data: 07/01/1998
Release Date: 09/18/1998
Date on System: 12/04/1998
US Environmental Protection Agency
Office of Solid Waste and Emergency Response
800/424-9346
Date of Last Contact: 11/04/1998

Resource Conservation and Recovery Information System - Small Quantity Generators

The RCRIS_SG Report contains information pertaining to facilities which either generate between 100kg and 1000kg of EPA regulated hazardous waste per month, or meet other applicable requirements of the Resource Conservation And Recovery Act. On advice of the U.S. EPA, ERIIS does not report so-called "RCRA Protective Filers." Protective Filers, commonly called Conditionally Exempt Small Quantity Generators (CESQG's), are facilities that have completed RCRA notification paperwork, but are not, in fact, subject to RCRA regulation. The determination of CESQG status is made by the U.S. EPA. The following information is also included in the RCRIS_SG Report:
- Information pertaining to the status of facilities tracked by the RCRA Administrative Action Tracking System (RAATS)
- Inspections & evaluations conducted by federal and state agencies
- All reported facility violations, the environmental statute(s) violated, and any proposed & actual penalties
- Information pertaining to corrective actions undertaken by the facility or EPA

ERNS
Date of Data: 10/08/1998
Release Date: 10/09/1998
Date on System: 11/13/1998
US Environmental Protection Agency
Office of Solid Waste and Emergency Response
202/260-2342
Date of Last Contact: 10/19/1998

Emergency Response Notification System

ERNS is a national computer database system that is used to store information concerning the sudden and/or accidental release of hazardous substances, including petroleum, into the environment. The ERNS Reporting System contains preliminary information on specific releases, including the spill location, the substance released, and the responsible party. Please note that the information in the ERNS Report pertains only to those releases that occured between January 1, 1997 and October 8, 1998.

HWS
Date of Data: 01/02/1998
Release Date: 01/02/1998
Date on System: 02/27/1998
OH Environmental Protection Agency
Emergency and Remedial Response Division
614/644-2924
Date of Last Contact: 08/19/1998

Ohio Master Sites List

The Ohio Master Sites List tracks sites in Ohio where hazardous waste has been found or where there are any known, suspected, or likely release of such wastes from a facility.

LRST
Date of Data: 10/01/1998
Release Date: 11/20/1998
Date on System: 12/04/1998
OH Office of the State Fire Marshal
Bureau of Licensing and Certification
614/752-7924
Date of Last Contact: 12/01/1998

Ohio Leaking Underground Storage Tank Report

The Ohio Leaking Underground Storage Tank Report (formerly The Petroleum Underground Storage Tank Release Incident Report, or PUSTR) is a comprehensive listing of all reported active and inactive leaking underground storage tanks located within the State of Ohio.

SWF
Date of Data: 12/31/1997
Release Date: 02/01/1998
Date on System: 03/11/1998
OH Environmental Protection Agency
Division of Solid Waste Management
614/644-3135
Date of Last Contact: 10/16/1998

Ohio Solid Waste Facility List

The Ohio Solid Waste Facility List contains information pertaining to all active and closed permitted solid waste landfills and processing facilities within the State of Ohio.

RST
Date of Data: 10/01/1998
Release Date: 10/01/1998
Date on System: 10/01/1998
OH Office of the State Fire Marshal
Bureau of Licensing and Certification
614/752-7924
Date of Last Contact: 10/26/1998

Ohio Underground Storage Tank Report

The Ohio Underground Storage Tank Report is a comprehensive listing of all registered active and inactive underground storage tanks located within the State of Ohio.

ERIIS SUMMARY OF PLOTTABLE SITES

ERIIS Report #317596A Mar 4, 1999

ERIIS ID.	FACILITY/ADDRESS	DATABASE	DISTANCE FROM SITE	MAP ID
9005009583	HEMMINGER FARMS 1118 FOX RD SANDUSKY, OH 44870-8367 COUNTY: ERIE	LRST	Corridor	9583
39005013250	NASA 6100 CLEVELAND AVE SANDUSKY, OH 44870 COUNTY: ERIE	LRST	Corridor	3250
39005013251	NASA 6100 COLUMBUS AVE SANDUSKY, OH 44870-8329 COUNTY: ERIE	LRST	Corridor	3251
39013000073	NASA LERC PLUM BROOK STATION 6100 COLUMBUS AVE SANDUSKY, OH 44870-8329 COUNTY: ERIE	RCRIS_TS	Corridor	73
39039000797	NASA PLUM BROOK 6100 COLUMBUS AVE SANDUSKY, OH 44870-8329 COUNTY: ERIE	NFRAP	Corridor	797
39005013257	NASA PLUM BROOK STATION 6100 COLUMBUS AVE SANDUSKY, OH 44870-8329 COUNTY: ERIE	LRST	Corridor	3257
39010005044	NASA PLUM BROOK STATION 6100 COLUMBUS AVE SANDUSKY, OH 44870-8329 COUNTY: ERIE	RST	Corridor	5044
39010005045	NASA PLUM BROOK STATION 6100 COLUMBUS AVE SANDUSKY, OH 44870-8329 COUNTY: ERIE	RST	Corridor	5045
39010005046	NASA PLUM BROOK STATION 6100 COLUMBUS AVE SANDUSKY, OH 44870-8329 COUNTY: ERIE	RST	Corridor	5046
1010005047	NASA PLUM BROOK STATION 6100 COLUMBUS AVE SANDUSKY, OH 44870-8329 COUNTY: ERIE	RST	Corridor	5047
39010005048	NASA PLUM BROOK STATION 6100 COLUMBUS AVE SANDUSKY, OH 44870-8329 COUNTY: ERIE	RST	Corridor	5048
39010005049	NASA PLUM BROOK STATION 6100 COLUMBUS AVE SANDUSKY, OH 44870-8329 COUNTY: ERIE	RST	Corridor	5049
39010005050	NASA PLUM BROOK STATION 6100 COLUMBUS AVE SANDUSKY, OH 44870-8329 COUNTY: ERIE	RST	Corridor	5050
39010005051	NASA PLUM BROOK STATION 6100 COLUMBUS AVE SANDUSKY, OH 44870-8329 COUNTY: ERIE	RST	Corridor	5051
39010005052	NASA PLUM BROOK STATION 6100 COLUMBUS AVE SANDUSKY, OH 44870-8329 COUNTY: ERIE	RST	Corridor	5052
39005013258	NASA PLUMBROOK STATION 6100 COLUMBUS AVE SANDUSKY, OH 44870-8329 COUNTY: ERIE	LRST	Corridor	3258
39005014705	PERKINS TRANSP. BUS GARAGE TAYLOR RD AT COLUMBUS AVE SANDUSKY, OH 44870 COUNTY: ERIE	LRST	Corridor	4705
39050000278	US NASA PLUM BROOK TAYLOR & COLUMBUS RD SANDUSKY, OH 44870 COUNTY: ERIE	HWS	Corridor	278
1008010305	USDOI SANDUSKY BIOLOGICAL STATION 6100 COLUMBUS AVE SANDUSKY, OH 44870-8329 COUNTY: ERIE	RCRIS_SG	Corridor	305

ERIIS ID EPA ID	FACILITY	ADDRESS	RAATS ISSUE DATE RAATS ACTION/STATUS RAATS PENALTIES	DISTANCE FROM SITE	DIRECTION FROM SITE	MAP ID
39013000073 OH3800015379	NASA LERC PLUM BROOK STATION COUNTY: ERIE	6100 COLUMBUS AVE SANDUSKY, OH 44870-8329	FACILITY NOT REPORTED IN RAATS	Corridor Site		73

FACILITY VIOLATIONS

	DATE DETERMINED:	DATE RESOLVED:	AREA OF VIOLATION:
1.	08/24/1989	12/05/1991	GENERATOR-ALL REQUIREMENTS
2.	08/24/1989	12/05/1991	GENERATOR-LAND BAN REQUIREMENTS
3.	02/18/1992	05/20/1992	GENERATOR-ALL REQUIREMENTS

FACILITY EVALUATIONS

	EVALUATION DATE:	EVALUATING AGENCY:	TYPE OF EVALUATION:	AREA(S) OF EVALUATION:
1.	08/24/1989	STATE	COMPLIANCE EVALUATION INSPECTION	GENERATOR-ALL REQUIREMENTS GENERATOR-LAND BAN REQUIREMENTS
2.	02/18/1992	STATE	COMPLIANCE EVALUATION INSPECTION	GENERATOR-ALL REQUIREMENTS GENERATOR-LAND BAN REQUIREMENTS

FACILITY ENFORCEMENTS

	ENFORCEMENT DATE:	ENFORCING AGENCY:	TYPE OF ACTION:	PENALTY(S):
1.	09/21/1990	EPA	WRITTEN, INFORMAL ADMINISTRATIVE ACTION	
2.	02/28/1992	STATE	WRITTEN, INFORMAL ADMINISTRATIVE ACTION	

ERIIS ID EPA ID	FACILITY	ADDRESS	DISTANCE FROM SITE	DIRECTION FROM SITE	MAP ID
39039000797 OH3800015379	NASA PLUM BROOK COUNTY: ERIE	6100 COLUMBUS AVE SANDUSKY, OH 44870-8329	Corridor		797

SITE EVENT(S)	COMPLETE DATE
DISCOVERY	08-01-1983
PRELIMINARY ASSESSMENT	08-01-1984
STATE, FUND FINANCED	09-30-1994

ERIIS ID EPA ID	FACILITY	ADDRESS	RAATS ISSUE DATE RAATS ACTION/STATUS RAATS PENALTIES	DISTANCE FROM SITE	DIRECTION FROM SITE	MAP ID
39008010305 OH3143690250	USDOI SANDUSKY BIOLOGICAL STATION COUNTY: ERIE	6100 COLUMBUS AVE SANDUSKY, OH 44870-8329	FACILITY NOT REPORTED IN RAATS	Corridor Site		305

ERIIS ID US EPA ID. OH EPA ID.	FACILITY	ADDRESS	PRIORITY	DELISTED(Y/N)	MAP ID
39050000278 OH3800015379 322-0552	US NASA PLUM BROOK DISTANCE FROM SITE: Corridor Site DIRECTION FROM SITE:	TAYLOR & COLUMBUS RD SANDUSKY, OH 44870 COUNTY: ERIE	NO PRIORITY	NOT REPORTED	278

ERIIS ID	FACILITY	ADDRESS	COUNTY	DISTANCE FROM SITE	DIRECTION FROM SITE	MAP ID
39005009583	HEMMINGER FARMS	1118 FOX RD SANDUSKY, OH 44870-8367	ERIE	Corridor Site		9583
INCIDENT NO.	STATUS	LUST TRUST FUND (LTF) ELIGIBILITY				
220219400	NO FURTHER ACTION	ELIGIBLE FOR LTF OVERSIGHT AND/OR SPENDING - SUSPECTED OR CONFIRMED FOR RELEASE OF PETROLEUM FROM A REGULATED UST.				
39005014705	PERKINS TRANSP. BUS GARAGE	TAYLOR RD AT COLUMBUS AVE SANDUSKY, OH 44870	ERIE	Corridor Site		4705
INCIDENT NO.	STATUS	LUST TRUST FUND (LTF) ELIGIBILITY				
228167200	REPORTED	CLOSURE OF AN UNDERGROUND STORAGE TANK.				
39005013250	NASA	6100 CLEVELAND AVE SANDUSKY, OH 44870	ERIE	Corridor Site		3250
INCIDENT NO.	STATUS	LUST TRUST FUND (LTF) ELIGIBILITY				
22936903	INITIAL CORRECTIVE ACTION	SUSPECTED OR CONFIRMED FOR RELEASE OF PETROLEUM FROM AN UST NOT REGULATED BY RCRA SUBTITLE I.				
22936902	NO FURTHER ACTION	ELIGIBLE FOR LTF OVERSIGHT AND/OR SPENDING - SUSPECTED OR CONFIRMED FOR RELEASE OF PETROLEUM FROM A REGULATED UST.				
39005013251	NASA	6100 COLUMBUS AVE SANDUSKY, OH 44870-8329	ERIE	Corridor Site		3251
INCIDENT NO.	STATUS	LUST TRUST FUND (LTF) ELIGIBILITY				
22936901	NO FURTHER ACTION	ELIGIBLE FOR LTF OVERSIGHT AND/OR SPENDING - SUSPECTED OR CONFIRMED FOR RELEASE OF PETROLEUM FROM A REGULATED UST.				
22936907	NO FURTHER ACTION	ELIGIBLE FOR LTF OVERSIGHT AND/OR SPENDING - SUSPECTED OR CONFIRMED FOR RELEASE OF PETROLEUM FROM A REGULATED UST.				
22936905	INITIAL CORRECTIVE ACTIONS	SUSPECTED OR CONFIRMED FOR RELEASE OF A HAZARDOUS SUBSTANCE FROM A REGULATED UST.				
22936906	INITIAL CORRECTIVE ACTIONS	SUSPECTED OR CONFIRMED FOR RELEASE OF A HAZARDOUS SUBSTANCE FROM A REGULATED UST.				
22936908	INITIAL CORRECTIVE ACTIONS	SUSPECTED OR CONFIRMED FOR RELEASE OF A HAZARDOUS SUBSTANCE FROM A REGULATED UST.				
22936904	INITIAL CORRECTIVE ACTIONS	SUSPECTED OR CONFIRMED FOR RELEASE OF A HAZARDOUS SUBSTANCE FROM A REGULATED UST.				
39005013257	NASA PLUM BROOK STATION	6100 COLUMBUS AVE SANDUSKY, OH 44870-8329	ERIE	Corridor Site		3257
INCIDENT NO.	STATUS	LUST TRUST FUND (LTF) ELIGIBILITY				
22936910	NO FURTHER ACTION	CLOSURE OF AN UNDERGROUND STORAGE TANK.				
39005013258	NASA PLUMBROOK STATION	6100 COLUMBUS AVE SANDUSKY, OH 44870-8329	ERIE	Corridor Site		3258
INCIDENT NO.	STATUS	LUST TRUST FUND (LTF) ELIGIBILITY				
22936911	NO FURTHER ACTION	CLOSURE OF AN UNDERGROUND STORAGE TANK.				

ERIIS ID / FACILITY ID	FACILITY	ADDRESS	OWNER ADDRESS	MANAGER	MAP ID
39010005044 / 0-227802	NASA PLUM BROOK STATION DISTANCE FROM SITE: Corridor Site DIRECTION FROM SITE:	6100 COLUMBUS AVE SANDUSKY, OH 44870-8329 COUNTY: ERIE	NASA LEWIS RESEARCH CENTER 21000 BROOKPARK RD CLEVELAND, OH 44135	PETER W. MCCALLUM (216) 433-8852	5044

TANK ID	STATUS	SUBSTANCE	CAPACITY	AGE	CONSTRUCTION
28	REMOVED	NOT REPORTED	3,000	55	BARE STEEL
29	REMOVED	NOT REPORTED	770	33	BARE STEEL
30	REMOVED	NOT REPORTED	770	33	BARE STEEL
31	REMOVED	NOT REPORTED	770	33	BARE STEEL

39010005045 / 0-227803	NASA PLUM BROOK STATION DISTANCE FROM SITE: Corridor Site DIRECTION FROM SITE:	6100 COLUMBUS AVE SANDUSKY, OH 44870-8329 COUNTY: ERIE	NASA LEWIS RESEARCH CENTER 21000 BROOKPARK RD CLEVELAND, OH 44135		5045

TANK ID	STATUS	SUBSTANCE	CAPACITY	AGE	CONSTRUCTION
32	REMOVED	USED OIL	1,500	55	BARE STEEL

39010005046 / 0-227804	NASA PLUM BROOK STATION DISTANCE FROM SITE: Corridor Site DIRECTION FROM SITE:	6100 COLUMBUS AVE SANDUSKY, OH 44870-8329 COUNTY: ERIE	NASA LEWIS RESEARCH CENTER 21000 BROOKPARK RD CLEVELAND, OH 44135		5046

TANK ID	STATUS	SUBSTANCE	CAPACITY	AGE	CONSTRUCTION
201	CURRENTLY IN USE	GASOLINE	8,000	8	FIBERGLASS
202	CURRENTLY IN USE	DIESEL	8,000	8	FIBERGLASS

39010005047 / 0-227805	NASA PLUM BROOK STATION DISTANCE FROM SITE: Corridor Site DIRECTION FROM SITE:	6100 COLUMBUS AVE SANDUSKY, OH 44870-8329 COUNTY: ERIE	NASA LEWIS RESEARCH CENTER 21000 BROOKPARK RD CLEVELAND, OH 44135		5047

TANK ID	STATUS	SUBSTANCE	CAPACITY	AGE	CONSTRUCTION
37	REMOVED	NOT REPORTED	12,000	18	BARE STEEL
38	REMOVED	NOT REPORTED	12,000	18	BARE STEEL

39010005048 / 0-227806	NASA PLUM BROOK STATION DISTANCE FROM SITE: Corridor Site DIRECTION FROM SITE:	6100 COLUMBUS AVE SANDUSKY, OH 44870-8329 COUNTY: ERIE	NASA LEWIS RESEARCH CENTER 21000 BROOKPARK RD CLEVELAND, OH 44135		5048

TANK ID	STATUS	SUBSTANCE	CAPACITY	AGE	CONSTRUCTION
39	REMOVED	UNK	250	UNK	UNKNOWN

39010005049 / 0-227807	NASA PLUM BROOK STATION DISTANCE FROM SITE: Corridor Site DIRECTION FROM SITE:	6100 COLUMBUS AVE SANDUSKY, OH 44870-8329 COUNTY: ERIE	NASA LEWIS RESEARCH CENTER 21000 BROOKPARK RD CLEVELAND, OH 44135		5049

TANK ID	STATUS	SUBSTANCE	CAPACITY	AGE	CONSTRUCTION
23	REMOVED	USED OIL	500	36	BARE STEEL

39010005050 / 0-227808	NASA PLUM BROOK STATION DISTANCE FROM SITE: Corridor Site DIRECTION FROM SITE:	6100 COLUMBUS AVE SANDUSKY, OH 44870-8329 COUNTY: ERIE	NASA LEWIS RESEARCH CENTER 21000 BROOKPARK RD CLEVELAND, OH 44135		5050

TANK ID	STATUS	SUBSTANCE	CAPACITY	AGE	CONSTRUCTION
24	REMOVED	USED OIL	1,000	29	BARE STEEL

ERIIS ID FACILITY ID	FACILITY	ADDRESS	OWNER ADDRESS	MANAGER	MAP ID
39010005051 0-227809	NASA PLUM BROOK STATION DISTANCE FROM SITE: Corridor Site DIRECTION FROM SITE:	6100 COLUMBUS AVE SANDUSKY, OH 44870-8329 COUNTY: ERIE	NASA LEWIS RESEARCH CENTER 21000 BROOKPARK RD CLEVELAND, OH 44135		5051

TANK ID	STATUS	SUBSTANCE	CAPACITY	AGE	CONSTRUCTION
26	REMOVED	NOT REPORTED	11,000	29	BARE STEEL
27	REMOVED	NOT REPORTED	11,000	29	BARE STEEL

39010005052 0-227810	NASA PLUM BROOK STATION DISTANCE FROM SITE: Corridor Site DIRECTION FROM SITE:	6100 COLUMBUS AVE SANDUSKY, OH 44870-8329 COUNTY: ERIE	NASA LEWIS RESEARCH CENTER 21000 BROOKPARK RD CLEVELAND, OH 44135		5052

TANK ID	STATUS	SUBSTANCE	CAPACITY	AGE	CONSTRUCTION
35	REMOVED	GASOLINE	9,000	55	BARE STEEL

Unplottable Sites

The remaining report pages list additional environmental sites that have been selected based on geographic criteria unique to your study site. They are classified as "unplottable sites" and require further investigation to assess their potential impact on your site.

How to Evaluate Unplottable Sites

Step 1
Streets Within the Radius: the following page is an alphabetical index of all streets that intersect or are contained within the largest study radius (usually one mile).

Step 2
Cross-Reference: use the "Streets Within the Radius" index to cross-reference the unplottable sites. For example, if Maple Avenue and Oak Avenue are listed in the street index, then any unplottable sites with a Maple Avenue or Oak Avenue address should be checked for possible impact on study site.

Questions on ERIIS' Proprietary Geocoding?

We're happy to answer any questions you might have about our data processing and **point-geocoding** (assigning a latitude and longitude to each address). Just give us a call on our toll-free number at (800) 989-0402 and let us know what state you're calling from. Our customer service staff is available from 8 a.m. to 8 p.m. (EST).

The ASTM Standard Practice For Environmental Site Assessments

As stated in the recently published **Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process** (E1527) by the American Society for Testing and Materials (ASTM):

> "For large databases with numerous facility records (such as RCRA hazardous waste generators and registered underground storage tanks), the records are not practically reviewable unless they can be obtained from the source agency in the smaller geographic area of ZIP code (3.3.24)."

Therefore, this Report contains information available by latitude/longitude or by ZIP code. If your research requires environmental records for which only city or county information is available (i.e., no valid street or ZIP code) ERIIS will include this data at no extra charge.

ERIIS LIST OF STREETS IN THE RADIUS

ERIIS Report #317596A Mar 4, 1999

STREET NAME
BIRCHWOOD DR
E BOGART ROAD
W BOGART ROAD
BOSTON ROAD
BOTAY ROAD
BOUY ROAD
BOX FACTORY ROAD
CAMBRIDGE CIR
CAMPBELL ST
CLARK ROAD
COLUMBUS AVE
COUNTRY PLACE DR
DALLAS AVE
DEERFIELD LANE
DENVER AVE
FOX ROAD
HARTFORD AVE
INDIANA AVE
INDUSTRIAL PKY
KIRKWOOD TER
LAKE CT
S LAKE WILMER DR
LINDEN WAY
LINDEN WAY DR
LISBON CIR
LONDON ROAD
N MAGAZINE ROAD
MAINTENANCE ROAD
MASON ROAD
MEMPHIS AVE
MICHIGAN AVE
MILAN ROAD
NORMANDY CT
OHIO TER
PARKWAY S
PATROL ROAD
PATTEN TRACT ROAD
PENNSYLVANIA AVE
PENTOLITE ROAD
RANSOM ROAD
RICHMOND CIR
SCHEID ROAD
SCHENK ROAD
SHORT CUT ROAD
STATE HWY 2
SWANO DR
TAYLOR ROAD
US HWY 250
VIRGINIA AVE
WALT LAKE TRL

ERIIS SUMMARY OF UNPLOTTABLE SITES
(Facilities sorted alphabetically within ZIP Code)

ERIIS Report #317596A Mar 4, 1999

ERIIS ID.	FACILITY/STREET	CITY/STATE/ZIP/COUNTY	DATABASE
,9005021849	BOB GARBA-FRANKLIN FLATS 90601 RIVER VIEW DR	HURON, OH 44839 COUNTY: ERIE	LRST
39005022207	CONSOLIDATED ELECTRIC 1901 SAWMILL INDUSTRIAL PKWY	HURON, OH 44839 COUNTY: ERIE	LRST
39010004952	DANIEL & CAROL LAPP 2112 CLEVELAND RD	HURON, OH 44839 COUNTY: ERIE	RST
39005022311	DANIEL LAPP 2112 CLEVELAND AVE	HURON, OH 44839 COUNTY: ERIE	LRST
39010019398	DENNIS MICHELSON 2416 CLEVELAND SANDUSY RD	HURON, OH 44839 COUNTY: ERIE	RST
39010005028	ERIE COUNTY LANDFILL HOOVER RD	HURON, OH 44839 COUNTY: ERIE	RST
39005022468	ERIE CTY LANDFILL HOOVER RD	HURON, OH 44839 COUNTY: ERIE	LRST
39005022729	GASTOWN 3674 2103 CLEVELAND	HURON, OH 44839 COUNTY: ERIE	LRST
39005022843	GTE NORTH, INC. MAIN ST	HURON, OH 44839 COUNTY: ERIE	LRST
39010005038	GTE NORTH, INC. MAIN & SHIRLEY	HURON, OH 44839 COUNTY: ERIE	RST
39018000056	HURON LIME COMPANY LANDFILL #1 RIVER RD	HURON, OH 44839 COUNTY: ERIE	SWF
`018000052	HURON LIME COMPANY LANDFILL #2 PO BOX 451	HURON, OH 44839-0451 COUNTY: ERIE	SWF
39005023854	PRESTON TRUCKING CO 1711 SAWMILL INDUSTRIAL PKWY	HURON, OH 44839 COUNTY: ERIE	LRST
39010004878	RYE BEACH HY-MILER 2026 CLEVELAND RD	HURON, OH 44839 COUNTY: ERIE	RST
39005025012	YELLOW FREIGHT RYE BEACH RD	HURON, OH 44839 COUNTY: ERIE	LRST
39005021816	BFI SR 101	SANDUSKY, OH 44870 COUNTY: ERIE	LRST
39010004932	C.S.C. OIL CO. #484 607 PERKINS AVE	SANDUSKY, OH 44870 COUNTY: ERIE	RST
39005022026	CAUSEWAY DR LIFT STA 1300 CAUSEWAY DR	SANDUSKY, OH 44870 COUNTY: ERIE	LRST
39010004967	CEDAR POINT #1 CAUSEWAY DR	SANDUSKY, OH 44870 COUNTY: ERIE	RST
39005022195	COMMODORE PERRY SVC PLAZA MILE POST 100.0 SOUTH SIDE	SANDUSKY, OH 44870 COUNTY: ERIE	LRST
39008008756	ERIE COUNTY SCHOOLS 7142 TAYLOR-COLUMBUS AVE	SANDUSKY, OH 44870 COUNTY: ERIE	RCRIS_SG
39005022515	FARWELL ST LIFT STATION FARWELL ST	SANDUSKY, OH 44870 COUNTY: ERIE	LRST
39005022720	GAS AMERICA 7065 US RT 30	SANDUSKY, OH 44870 COUNTY: ERIE	LRST
39008009438	GORDON FOOD SERVICE INC 1415 HOLLAND RD	PERRYSBURG, OH 44870 COUNTY: ERIE	RCRIS_SG

ERIIS ID EPA ID	FACILITY	ADDRESS	RAATS ISSUE DATE RAATS ACTION/STATUS RAATS PENALTIES
39008004325 OHD981786650	NORTHCOAST AUTO BODY COUNTY: ERIE	1944 ONE HALF MILAN RD SANDUSKY, OH 44870	FACILITY NOT REPORTED IN RAATS
39008004832 OHD982211450	SOHIO OIL CO NO 06672 COUNTY: ERIE	RTE 2 AND RTE 250 SANDUSKY, OH 44870	FACILITY NOT REPORTED IN RAATS
39008008756 OHR000003673	ERIE COUNTY SCHOOLS COUNTY: ERIE	7142 TAYLOR-COLUMBUS AVE SANDUSKY, OH 44870	FACILITY NOT REPORTED IN RAATS
39008009438 OHR000025809	GORDON FOOD SERVICE INC COUNTY: ERIE	1415 HOLLAND RD PERRYSBURG, OH 44870	FACILITY NOT REPORTED IN RAATS

ERIIS ENVIRONMENTAL DATA REPORT
EMERGENCY RESPONSE NOTIFICATION SYSTEM
ERNS - UNPLOTTABLE SITES

ERIIS Report #317596A

Mar 4, 1999

ERIIS ID REPORT NUMBER SOURCE AGENCY	SPILL CITY, STATE, ZIP CODE SPILL COUNTY	DISCHARGER NAME ORGANIZATION ADDRESS	MEDIA AFFECTED LAND	WATER	AIR	GRND WATER	FACILITY	SPILL DATE WATER WAY AFFECTED
39002000030 420277 NATL. RESPONSE CTR	SANDUSKY, OH 44870 ERIE	JIMS AUTO SALVAGE 1707 GEORGE STREET SANDUSKY, OH 44870	N	N	N	N	N	01/17/1998 STORM DRAIN/SOIL

LOCATION: Superior Street / Dead End, North Side Of Venice Road
DESCRIPTION: Caller States: Company Towed Many Vehicles Over 2 Days, Some Of The Vehicles Being Towed Spilled Gasoline And Motor Oil Onto The Roadway
MATERIAL SPILLED: Oil, Misc: Motor QTY: 0 Unk LBS: 0 QTY IN WATER: 0 Unk
Oil: Diesel QTY: 0 Unk LBS: 0 QTY IN WATER: 0 Unk
Gasoline: Automotive (4.23g Pb/g QTY: 0 Unk LBS: 0 QTY IN WATER: 0 Unk
ACTIONS TAKEN: None / Police Were Onscene, Were Going To Make Company Clean Up / Nothing Has Been Done To Date
MISCELLANEOUS: Sandusky Bay Is .5 Miles Away / Some Product Has Reached A Storm Drain And It Has Been Raining

ERIIS ENVIRONMENTAL DATA REPORT
OHIO MASTER SITES LIST
HWS - UNPLOTTABLE SITES

ERIIS Report #317596A

Mar 4, 1999

ERIIS ID US EPA ID. OH EPA ID.	FACILITY	ADDRESS	PRIORITY	DELISTED(Y/N)
39050000992 OHD980611487 362-0117		PORT CLINTON, OH 44870 COUNTY: ERIE	LOW	YES REASON: DSIWM SITE
39050000993 OHD980611487 362-0117		PORT CLINTON, OH 44870 COUNTY: ERIE	LOW	YES REASON: DSIWM REGULATION

ERIIS ID	FACILITY	ADDRESS	COUNTY
39005021849	BOB GARBA-FRANKLIN FLATS	90601 RIVER VIEW DR HURON, OH 44839	ERIE
INCIDENT NO. 228205100	STATUS REPORTED	LUST TRUST FUND (LTF) ELIGIBILITY CLOSURE OF AN UNDERGROUND STORAGE TANK.	
39005022207	CONSOLIDATED ELECTRIC	1901 SAWMILL INDUSTRIAL PKWY HURON, OH 44839	ERIE
INCIDENT NO. 224197300	STATUS NO FURTHER ACTION	LUST TRUST FUND (LTF) ELIGIBILITY CLOSURE OF AN UNDERGROUND STORAGE TANK.	
39005022311	DANIEL LAPP	2112 CLEVELAND AVE HURON, OH 44839	ERIE
INCIDENT NO. 222179300	STATUS NO FURTHER ACTION	LUST TRUST FUND (LTF) ELIGIBILITY CLOSURE OF AN UNDERGROUND STORAGE TANK.	
39005022468	ERIE CTY LANDFILL	HOOVER RD HURON, OH 44839	ERIE
INCIDENT NO. 397128300	STATUS REPORTED	LUST TRUST FUND (LTF) ELIGIBILITY CLOSURE OF AN UNDERGROUND STORAGE TANK.	
39005022729	GASTOWN 3674	2103 CLEVELAND HURON, OH 44839	ERIE
INCIDENT NO. 229105800	STATUS CORRECTIVE ACTIONS IN PROGRESS	LUST TRUST FUND (LTF) ELIGIBILITY ELIGIBLE FOR LTF OVERSIGHT AND/OR SPENDING - SUSPECTED OR CONFIRMED FOR RELEASE OF PETROLEUM FROM A REGULATED UST.	
39005022843	GTE NORTH, INC.	MAIN ST HURON, OH 44839	ERIE
INCIDENT NO. 226093300	STATUS NO FURTHER ACTION	LUST TRUST FUND (LTF) ELIGIBILITY CLOSURE OF AN UNDERGROUND STORAGE TANK.	
39005023854	PRESTON TRUCKING CO	1711 SAWMILL INDUSTRIAL PKWY HURON, OH 44839	ERIE
INCIDENT NO. 224197400	STATUS NO FURTHER ACTION	LUST TRUST FUND (LTF) ELIGIBILITY CLOSURE OF AN UNDERGROUND STORAGE TANK.	
39005025012	YELLOW FREIGHT	RYE BEACH RD HURON, OH 44839	ERIE
INCIDENT NO. 220106100	STATUS NO FURTHER ACTION	LUST TRUST FUND (LTF) ELIGIBILITY ELIGIBLE FOR LTF OVERSIGHT AND/OR SPENDING - SUSPECTED OR CONFIRMED FOR RELEASE OF PETROLEUM FROM A REGULATED UST.	
39005021816	BFI	SR 101 SANDUSKY, OH 44870	ERIE
INCIDENT NO. 221113001	STATUS DISPROVED	LUST TRUST FUND (LTF) ELIGIBILITY ELIGIBLE FOR LTF OVERSIGHT AND/OR SPENDING - SUSPECTED OR CONFIRMED FOR RELEASE OF PETROLEUM FROM A REGULATED UST.	

ERIIS ID	FACILITY	ADDRESS	COUNTY
39005022026	CAUSEWAY DR LIFT STA	1300 CAUSEWAY DR SANDUSKY, OH 44870	ERIE
INCIDENT NO. 220126300	STATUS NO FURTHER ACTION	LUST TRUST FUND (LTF) ELIGIBILITY CLOSURE OF AN UNDERGROUND STORAGE TANK.	
39005022195	COMMODORE PERRY SVC PLAZA	MILE POST 100.0 SOUTH SIDE SANDUSKY, OH 44870	ERIE
INCIDENT NO. 72948000	STATUS NO FURTHER ACTION	LUST TRUST FUND (LTF) ELIGIBILITY ELIGIBLE FOR LTF OVERSIGHT AND/OR SPENDING - SUSPECTED OR CONFIRMED FOR RELEASE OF PETROLEUM FROM A REGULATED UST.	
39005022515	FARWELL ST LIFT STATION	FARWELL ST SANDUSKY, OH 44870	ERIE
INCIDENT NO. 220078600	STATUS NO FURTHER ACTION	LUST TRUST FUND (LTF) ELIGIBILITY ELIGIBLE FOR LTF OVERSIGHT AND/OR SPENDING - SUSPECTED OR CONFIRMED FOR RELEASE OF PETROLEUM FROM A REGULATED UST.	
39005022720	GAS AMERICA	7065 US RT 30 SANDUSKY, OH 44870	ERIE
INCIDENT NO. 880063800	STATUS NO FURTHER ACTION	LUST TRUST FUND (LTF) ELIGIBILITY ELIGIBLE FOR LTF OVERSIGHT AND/OR SPENDING - SUSPECTED OR CONFIRMED FOR RELEASE OF PETROLEUM FROM A REGULATED UST.	
39005023788	PETERSON LIFT STATION	PETERSON LN SANDUSKY, OH 44870	ERIE
INCIDENT NO. 222274400	STATUS NO FURTHER ACTION	LUST TRUST FUND (LTF) ELIGIBILITY CLOSURE OF AN UNDERGROUND STORAGE TANK.	
39005024063	SANDUSKY BD OF EDUCATION	8118 CAMP ST SANDUSKY, OH 44870	ERIE
INCIDENT NO. 222173700	STATUS NO FURTHER ACTION	LUST TRUST FUND (LTF) ELIGIBILITY CLOSURE OF AN UNDERGROUND STORAGE TANK.	
39005024532	UNITED PARCEL SERV	PERKINS AVE SANDUSKY, OH 44870	ERIE
INCIDENT NO. 220165100	STATUS NO FURTHER ACTION	LUST TRUST FUND (LTF) ELIGIBILITY CLOSURE OF AN UNDERGROUND STORAGE TANK.	
39005024617	UNKNOWN	PERKINS TOWNSHIP SANDUSKY, OH 44870	ERIE
INCIDENT NO. 22704500	STATUS DISPROVED	LUST TRUST FUND (LTF) ELIGIBILITY ELIGIBLE FOR LTF OVERSIGHT AND/OR SPENDING - SUSPECTED OR CONFIRMED FOR RELEASE OF PETROLEUM FROM A REGULATED UST.	
39005024619	UNKNOWN	RAMADA & US RT 250 SANDUSKY, OH 44870	ERIE
INCIDENT NO. 221060900	STATUS REPORTED	LUST TRUST FUND (LTF) ELIGIBILITY ELIGIBLE FOR LTF OVERSIGHT AND/OR SPENDING - SUSPECTED OR CONFIRMED FOR RELEASE OF PETROLEUM FROM A REGULATED UST.	

ERIIS ENVIRONMENTAL DATA REPORT
OHIO LEAKING UNDERGROUND STORAGE TANKS
LRST - UNPLOTTABLE SITES

ERIIS ID	FACILITY	ADDRESS	COUNTY
39005024648	UNKNOWN (CITY WATER/SEWER LINE)	SR 101 SANDUSKY, OH 44870	ERIE

INCIDENT NO.	STATUS	LUST TRUST FUND (LTF) ELIGIBILITY
221113000	REPORTED	ELIGIBLE FOR LTF OVERSIGHT AND/OR SPENDING - SUSPECTED OR CONFIRMED FOR RELEASE OF PETROLEUM FROM A REGULATED UST.

ERIIS ID FACILITY ID	FACILITY ADDRESS	OPERATOR ADDRESS
39018000056 22-00-04	HURON LIME COMPANY LANDFILL #1 RIVER RD HURON, OH 44839 COUNTY: ERIE FACILITY TYPE: INDUSTRIAL SW LF CAPACITY: NOT REPORTED	H J MICHAELS HURON LIME COMPANY NOT REPORTED NOT REPORTED (419) 433-2141 FACILITY STATUS: CLOSED
39018000052 22-00-05	HURON LIME COMPANY LANDFILL #2 PO BOX 451 HURON, OH 44839-0451 COUNTY: ERIE FACILITY TYPE: INDUSTRIAL SW LF CAPACITY: NOT REPORTED	A.J. PARIS, HURON LIME COMPANY PO BOX 451 HURON, OH 44839 (419) 433-2141 FACILITY STATUS: ACTIVE
39018000388	HENSEN DUMP AKA HURON LIME CO. #2 WEST SIDE OF RIVER ROAD, 1/2 MILE HURON TOWNSHIP, OH COUNTY: ERIE FACILITY TYPE: PRIVATE, LIME SLUDGE CAPACITY: 12 ACRES	NOT REPORTED NOT REPORTED NOT REPORTED NOT REPORTED FACILITY STATUS: CLOSED 1982

ERIIS ENVIRONMENTAL DATA REPORT
OHIO UNDERGROUND STORAGE TANKS
RST - UNPLOTTABLE SITES

ERIIS Report #317596A

Mar 4, 1999

ERIIS ID / FACILITY ID	FACILITY	ADDRESS	OWNER ADDRESS	MANAGER
39010004878 / 0-220041	RYE BEACH HY-MILER	2026 CLEVELAND RD HURON, OH 44839 COUNTY: ERIE	DISTRICT PETROLEUM PRODUCTS, INC 1832 MILAN RD SANDUSKY, O 44870	MIKE STIPP

TANK ID	STATUS	SUBSTANCE	CAPACITY	AGE	CONSTRUCTION
1	CURRENTLY IN USE	GASOHOL	10,000	23	FIBERGLASS
2	CURRENTLY IN USE	GASOHOL	4,000	23	BARE STEEL
3	CURRENTLY IN USE	GASOHOL	6,000	23	BARE STEEL
4	CURRENTLY IN USE	GASOHOL	6,000	23	BARE STEEL
5	CURRENTLY IN USE	KEROSENE	2,000	23	BARE STEEL
6	TEMPORARILY OUT OF USE	USED OIL	550	23	BARE STEEL

39010004952 / 0-220235	DANIEL & CAROL LAPP	2112 CLEVELAND RD HURON, OH 44839 COUNTY: ERIE	DANIEL & CAROL LAPP 404 S HAMPTON CT HURON, OH 44839	

TANK ID	STATUS	SUBSTANCE	CAPACITY	AGE	CONSTRUCTION
1	REMOVED	GASOLINE	6,000	24	FIBERGLASS
2	REMOVED	GASOLINE	6,000	24	FIBERGLASS
3	REMOVED	GASOLINE	6,000	24	FIBERGLASS

39010005028 / 0-225986	ERIE COUNTY LANDFILL	HOOVER RD HURON, OH 44839 COUNTY: ERIE	ERIE COUNTY COMMISSIONERS PO BOX 370 HURON, OH 44839	JACK R. MYERS

TANK ID	STATUS	SUBSTANCE	CAPACITY	AGE	CONSTRUCTION
1	CURRENTLY IN USE	DIESEL	1,000	27	UNKNOWN

39010005038 / 0-227135	GTE NORTH, INC.	MAIN & SHIRLEY HURON, OH 44839 COUNTY: ERIE	GTE NORTH, INC. 1300 COLUMBUS SANDUSKY RD N MARION, OH 43302	KEITH E. ZUSPAN

TANK ID	STATUS	SUBSTANCE	CAPACITY	AGE	CONSTRUCTION
2	CURRENTLY IN USE	DIESEL	8,000	1	FIBERGLASS

39010019398 / 0-220307	DENNIS MICHELSON	2416 CLEVELAND SANDUSY RD HURON, OH 44839 COUNTY: ERIE	DENNIS MICHELSON 6322 146TH ST SW EDMONDS, WA 98026	

TANK ID	STATUS	SUBSTANCE	CAPACITY	AGE	CONSTRUCTION
1	CURRENTLY IN USE	UNK	UNKNOWN	UNK	UNKNOWN
2	CURRENTLY IN USE	UNK	UNKNOWN	UNK	UNKNOWN
3	CURRENTLY IN USE	UNK	UNKNOWN	UNK	UNKNOWN
4	CURRENTLY IN USE	UNK	UNKNOWN	UNK	UNKNOWN

39010004932 / 0-220191	C.S.C. OIL CO. #484	607 PERKINS AVE SANDUSKY, OH 44870 COUNTY: ERIE	C.S.C. OIL CO. 2210 GOLDSMITH LN - STE 108 LOUISVILLE, KY 40218	WILLIAM SHEPARD

TANK ID	STATUS	SUBSTANCE	CAPACITY	AGE	CONSTRUCTION
1	CURRENTLY IN USE	GASOLINE	10,000	25	BARE STEEL
2	CURRENTLY IN USE	GASOLINE	10,000	25	BARE STEEL
3	CURRENTLY IN USE	GASOLINE	10,000	25	BARE STEEL

ERIIS ENVIRONMENTAL DATA REPORT
OHIO UNDERGROUND STORAGE TANKS
RST - UNPLOTTABLE SITES

ERIIS Report #317596A

Mar 4, 1999

ERIIS ID / FACILITY ID	FACILITY	ADDRESS	OWNER ADDRESS	MANAGER
39010004967 / 0-220277	CEDAR POINT	#1 CAUSEWAY DR SANDUSKY, OH 44870 COUNTY: ERIE	CEDAR FAIR LIMITED PARTNERSHIP PO BOX 5006 SANDUSKY, OH 44870	RONALD K. FUSSNER

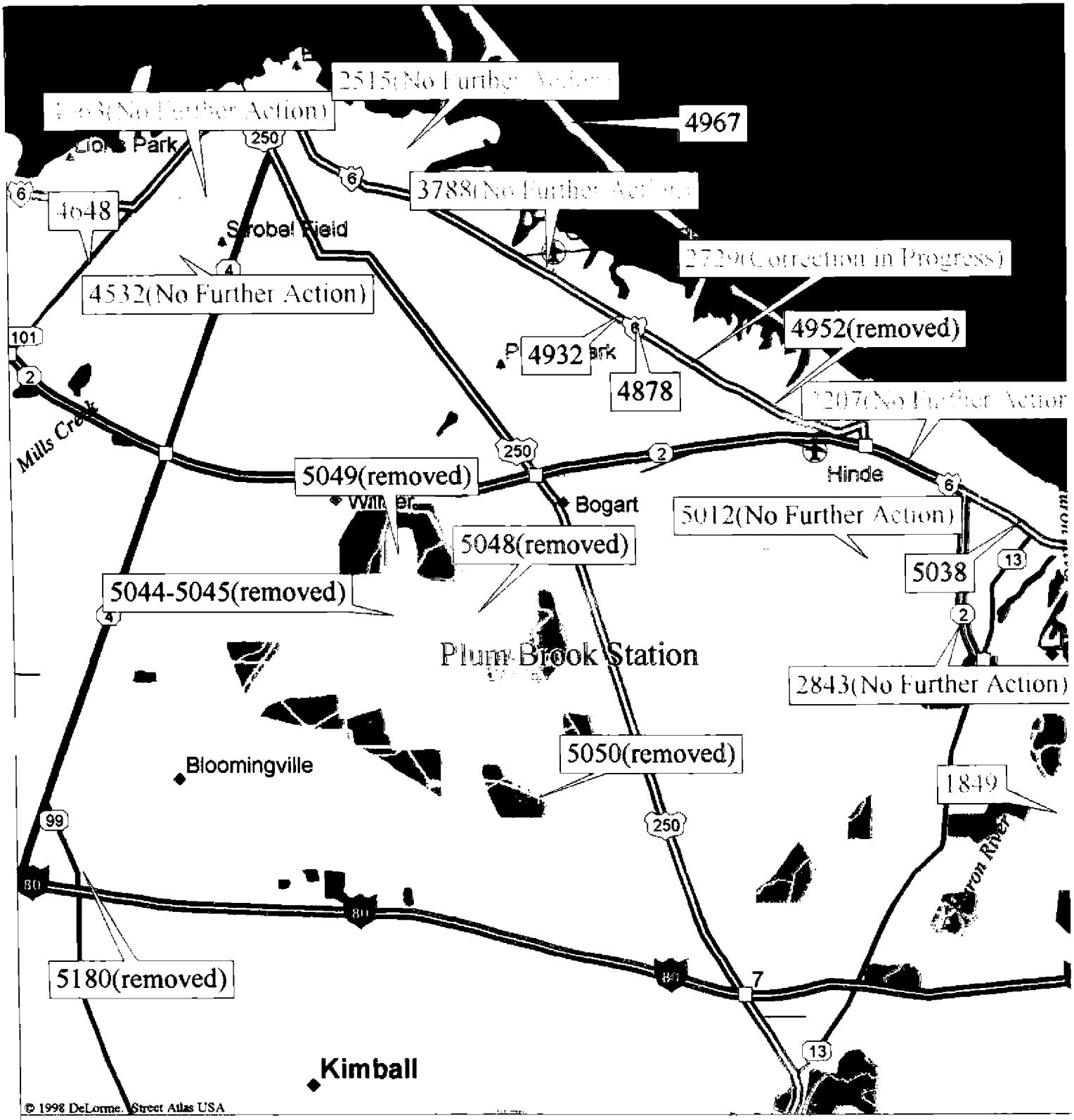
TANK ID	STATUS	SUBSTANCE	CAPACITY	AGE	CONSTRUCTION
10	CURRENTLY IN USE	GASOLINE	10,000	13	FIBERGLASS
11	CURRENTLY IN USE	DIESEL	6,000	13	FIBERGLASS
4	CURRENTLY IN USE	GASOLINE	2,500	8	FIBERGLASS
6	CURRENTLY IN USE	USED OIL	2,500	7	FIBERGLASS
7	CURRENTLY IN USE	DIESEL	6,000	7	FIBERGLASS
8	CURRENTLY IN USE	GASOLINE	10,000	7	FIBERGLASS
9	CURRENTLY IN USE	GASOLINE	10,000	13	FIBERGLASS

39010009256 / 0-390093	SANDUSKY STEEL & SUPPLY CO.	4957 RT 250 N NORWALK, OH 44870 COUNTY: ERIE	SANDUSKY STEEL & SUPPLY CO. 4957 RT 250 N MILAN, OH 44846	STEVE LICHTESSIEN

TANK ID	STATUS	SUBSTANCE	CAPACITY	AGE	CONSTRUCTION
1	REMOVED	GASOLINE	550	24	BARE STEEL

39010015180 / 0-720201	O.E. MEYER CO.	1520 E STATE ST SANDUSKY, OH 44870 COUNTY: ERIE	O.E. MEYER CO. PO BOX 479 SANDUSKY, OH 44870	

TANK ID	STATUS	SUBSTANCE	CAPACITY	AGE	CONSTRUCTION
1	REMOVED	UNK	2,000	34	COMPOSITE
2	REMOVED	UNK	2,000	34	UNKNOWN



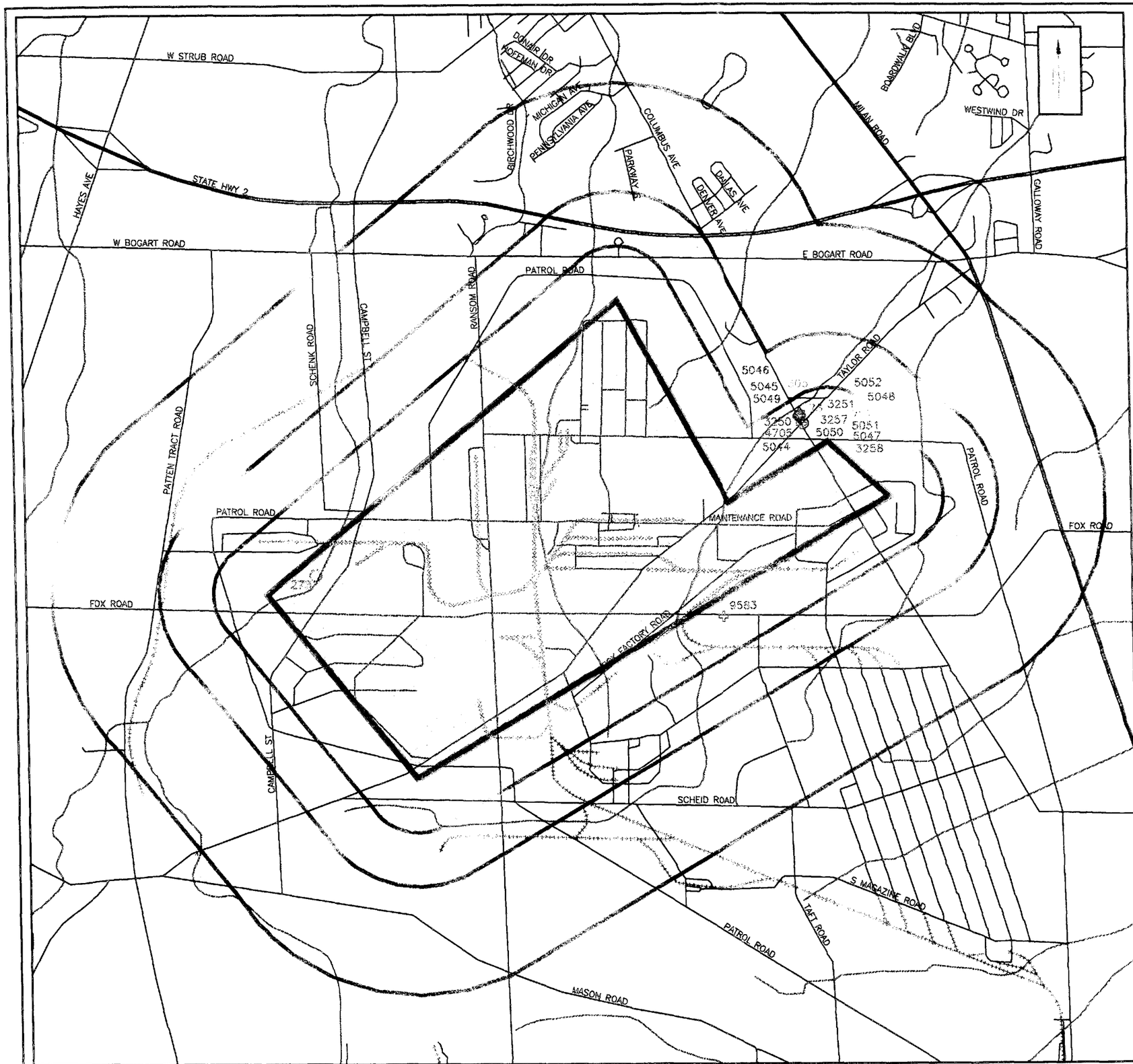
Mag 12.00
Tue Aug 10 14:12 1999
Scale 1:87,500 (at center)

2 Miles

2 KM

Local Road
Major Connector
State Route
Primary State Route
Ferry
Interstate/Limited Access
Toll Highway
US Highway

Exit
Utility/Pipe
Railroad
Small Town
Airfield
Park/Reservation
Locale
Public Airport



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SITE INFORMATION

South Of Sandusky
Sandusky, OH
Sandusky County
Job Number: 317596A
Map Plotted: Mar 4, 1999

MAP LEGEND

- Study Site
- ASTM Buffer
- Hydrography
- Railroads
- Roads
- Highways
- NPL 0 Sites
- RCRIS_TS 1 Site
- RCRIS_CA 0 Sites
- CERCLIS 0 Sites
- NFRAP 1 Site
- RCRIS_LG 0 Sites
- RCRIS_SG 1 Site
- ERNS 0 Sites
- HWS 1 Site
- LRST 6 Sites
- SWF 0 Sites
- RST 9 Sites

Miles

0 0.5

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DATA REVIEW AND VAILDATION REPORT - ASH PITS 1 & 3

PLUM BROOK ORDNANCE WORKS SITE INVESTIGATIONS

Contract Number DACA27-98-D-0029
Delivery Order 0006

June 1, 2000

Prepared For:
U.S. Army Corps of Engineers
Louisville District

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1.0 INTRODUCTION

URS Corporation was contracted by the United States Army Corps of Engineers (USACE), Louisville District, to complete a data review and validation for chemical data generated by Quanterra Incorporated, from soil and groundwater samples collected at the Plum Brook Ordnance Works (PBOW), Ash Pits 1 and 3. Pursuant to the USACE scope of work (SOW), one hundred percent of the data underwent a data review and 10 percent of the data for selected parameters underwent full validation. The data review and validation followed the general guidance provided in National Functional Guidelines for Organic Review (EPA, 1999) and National Functional Guidelines for Inorganic Review (EPA 1994). While these guidance documents were written for methods following the Contract Laboratory Program (CLP) Statement of Work (SOW), the guidelines were used where appropriate for the validated methods.

The data review included the review of the sample results and the quality control summary forms, while the data validation additionally included the review of raw data. The specific elements included in the data review and validation processes are identified in the subsequent sections. Where required, data were qualified as **U** (nondetect), **J** (estimated) or **R** (rejected) based on the data review and validation procedures.

This report is organized such that Section 1 summarizes the results of the data review and validations and the data usability for each Site. Section 2 provides the details of the data review. Sections 3 and 4 provide the details of the data validation for semivolatile organic compounds (SVOCs) and metals, respectively.

1.1 Data Review Summary

Data were qualified based on improperly preserved samples, blank contamination, and laboratory control sample (LCS), surrogate, field duplicate and matrix spike/matrix spike duplicate (MS/MSD) recoveries outside evaluation criteria. All qualifications for the Plum Brook Ordnance Works Ash Pits 1 and 3 are presented in Table 1-1.

1.2 Data Validation Summary

In addition to the outlying parameters identified in the data review, data were qualified based on the initial calibration. All qualifications for the Plum Brook Ordnance Works Ash Pits 1 and 3 are presented in Table 1-1.

1.3 Data Usability

While data were qualified as estimated due to outlying QC parameters, all data should be used for their intended purposes, with the exception of hexachlorocyclopentadiene for samples PBOW99SWA301, PBOW99SWA302, PBOW99SWA303, PBOW99SWA303DUP, and PBOW99SWA101, which were rejected due to an insufficient control spike recovery. The spike recovery (0%) was less than half of the lower limit (16%) established by the laboratory.

TABLE 1-1

ASH PITS 1 & 3
DATA QUALIFICATIONS

Sample Identification #	Analysis	Compound	Qualifier	Code
PBOW99SBA101A	Metals	manganese	J	FD
PBOW99SBA102A	Metals	zinc	U	PB
PBOW99SBA104B	Metals	zinc	U	PB
PBOW99SDA101	Metals	calcium, chromium, cobalt, vanadium, zinc	J	MS
PBOW99SDA101	Metals	antimony	UJ	MS
PBOW99SDA303	Metals	aluminum	J	FD
PBOW99SWA301	Metals	iron	U	PB
PBOW99SWA302	Metals	iron	U	PB
PBOW99SWA303	Metals	iron	U	PB
PBOW99SWA303	Metals	iron, manganese	J	FD
PBOW99SWA303-DUP	Metals	iron	U	PB
PBOW99SBA101A	SVOC	4-chloroaniline	UJ	LCS
PBOW99SBA101A	SVOC	dibenzofuran	UJ	LCS
PBOW99SBA101A-DUP	SVOC	4-chloroaniline	UJ	LCS
PBOW99SBA101A-DUP	SVOC	dibenzofuran	UJ	LCS
PBOW99SBA102A	SVOC	4-chloroaniline	UJ	LCS
PBOW99SBA102A	SVOC	dibenzofuran	UJ	LCS
PBOW99SBA103A	SVOC	4-chloroaniline	UJ	LCS
PBOW99SBA103A	SVOC	dibenzofuran	UJ	LCS
PBOW99SBA103B	SVOC	4-chloroaniline	UJ	LCS
PBOW99SBA103B	SVOC	dibenzofuran	UJ	LCS
PBOW99SBA104B	SVOC	4-chloroaniline	UJ	LCS
PBOW99SBA104B	SVOC	dibenzofuran	UJ	LCS
PBOW99SDA101	SVOC	All compounds	UJ	SP
PBOW99SDA302	SVOC	All compounds	UJ	SP
PBOW99SDA303	SVOC	All compounds	UJ	SP
PBOW99SDA303-DUP	SVOC	All compounds	UJ	SP
PBOW99SSA101	SVOC	All acid fraction[1] compounds	UJ	SUR
PBOW99SSA101-RE1	SVOC	All acid fraction[1] compounds	UJ	SUR
PBOW99SWA101	SVOC	All compounds	UJ	SP
PBOW99SWA101	SVOC	hexachlorocyclopentadiene	R	LCS
PBOW99SWA301	SVOC	All compounds	UJ	SP
PBOW99SWA301	SVOC	hexachlorocyclopentadiene	R	LCS
PBOW99SWA302	SVOC	All compounds	UJ	SP
PBOW99SWA302	SVOC	hexachlorocyclopentadiene	R	LCS
PBOW99SWA303	SVOC	All compounds	UJ	SP
PBOW99SWA303	SVOC	hexachlorocyclopentadiene	R	LCS
PBOW99SWA303-DUP	SVOC	All compounds	UJ	SP
PBOW99SWA303-DUP	SVOC	hexachlorocyclopentadiene	R	LCS
PBOWSSA101	SVOC	4-chloroaniline	UJ	LCS
PBOWSSA101	SVOC	dibenzofuran	UJ	LCS

U – Compound non-detect.
UJ – Estimated non-detect.
J – Estimated quantitation.
R – Data rejected.
FD – Field duplicate outside criteria.

LCS – Laboratory control spike outside criteria
MS – Matrix spike outside criteria.
PB – Preparation blank criteria.
SP – Sample preservation criteria.
SUR – Surrogate recovery outside criteria.

[1]Note: Acid fraction compounds include the phenols, or compounds ending with 'ol'.

2.0 PLUM BROOK DATA REVIEW – SDG A9F150184

Sample Identification #	Sample Identification #
PBOW99SBA101A	PBOW99SBA101A-DUP
PBOW99SBA102A	PBOW99SBA103A
PBOW99SBA103B	PBOW99SBA104B
PBOW99SSA101	PBOW99SWA301
PBOW99SWA302	PBOW99SDA302
PBOW99SWA303	PBOW99SDA303
PBOW99SWA303-DUP	PBOW99SDA303-DUP
PBOW99SWA101	PBOW99SDA101
Field Blank	

2.1 Data Package Completeness

Were all items delivered as specified in the QAPP and COC?

Yes.

2.2 Laboratory Case Narrative

Were problems noted in the laboratory case narrative or cooler receipt form, which are not discussed in subsequent sections?

The case narrative indicated the following:

- Samples were analyzed at a dilution due to matrix interferences, there were surrogate and matrix spike recoveries outside evaluation limits, and there was method blank contamination associated with samples. Also, the laboratory received samples above the recommended 4 $\pm$ 2 °C preservation temperature. These issues are discussed in the appropriate sections below
- A serial dilution for the metals indicated that interference's were present. The affected analytes were flagged with "L". Qualifications based on serial dilutions are beyond the scope of this review and are addressed in the corresponding data validations.

2.3 Sample Preservation and Holding Times

Were samples properly preserved and extracted/analyzed within QAPP limits?

Samples PBOW99SWA301, PBOW99SWA302, PBOW99SDA302, PBOW99SWA303, PBOW99SDA303, PBOW99SWA303-DUP, PBOW99SDA303-DUP, PBOW99SWA101, PBOW99SDA101, and Field Blank were received above temperature preservation limits of 4 $\pm$ 2 °C. All analytes, for SVOCs, associated with these samples are qualified **J** for detected analytes, and **UJ** for non-detects.

All samples were extracted and analyzed within the required holding times of 14 days to extraction (7 days for water) and 40 days to analysis for soil samples, as stated in the method. No further qualifications were necessary due to sample preservation or holding times.

2.4 Blank Contamination

Were any analytes detected in the Method Blanks, Field Blanks or Trip Blanks?

Yes.

Blank ID	Analyte	Conc. (ppb)
Batch 9167109	Bis (2-ethylhexyl) phthalate	1.49
Batch 9172112	Bis (2-ethylhexyl) phthalate	152
Batch 9177103	Bis (2-ethylhexyl) phthalate	64.3
Prep Batch 9172344	Iron	174
Prep Batch 9174305	Zinc	3.50

Qualifications due to blank contamination are identified in the following table:

Field ID	Analyte	New RL	Qualification
PBOW99SBA102A	Zinc	11	U
PBOW99SBA104B	Zinc	12	U
PBOW99SWA301	Iron	687	U
PBOW99SWA302	Iron	429	U
PBOW99SWA303	Iron	431	U
PBOW99SWA303-DUP	Iron	251	U

Sample data that were non-detect or reported at concentrations greater than five times (5X) the associated blank contamination concentration, or ten times (10X) the associated blank contamination concentration for common laboratory contaminants (methylene chloride, acetone, and phthalates), did not require qualifications.

2.5 Laboratory Control Sample

Were LCS recoveries within evaluation criteria?

No.

LCS ID	LCS Compound	LCS Recovery	LCS Criteria	LCSD RPD	RPD Criteria
9167109	Hexachlorocyclopentadiene	**0**	16-88	N/A	N/A
	Dibenzofuran	**82**	85-117	N/A	N/A
	4-Nitroanaline	**51**	74-195	N/A	N/A
9172112	4-Chloroanaline	**38**	43-91	N/A	N/A
	Dibenzofuran	**71**	85-117	N/A	N/A
9177103	Dibenzofuran	**82**	85-117	N/A	N/A

Analytical data, which required qualification based on LCS data, are included in the table below.

Field ID	Analyte	Qual.
PBOW99SBA101A	4-Chloroanaline	UJ
	Dibenzofuran	UJ
PBOW99SBA101A-DUP	4-Chloroanaline	UJ
	Dibenzofuran	UJ

Field ID	Analyte	Qual
PBOW99SBA102A	4-Chloroanaline	UJ
	Dibenzofuran	UJ
PBOW99SBA103A	4-Chloroanaline	UJ
	Dibenzofuran	UJ
PBOW99SBA103B	4-Chloroanaline	UJ
	Dibenzofuran	UJ
PBOW99SBA104B	4-Chloroanaline	UJ
	Dibenzofuran	UJ
PBOW99SSA101	4-Chloroanaline	UJ
	Dibenzofuran	UJ
PBOW99SWA301	Dibenzofuran	UJ
	Hexachlorocyclopentadiene	R
	4-Nitroanaline	UJ
PBOW99SWA302	Dibenzofuran	UJ
	Hexachlorocyclopentadiene	R
	4-Nitroanaline	UJ
PBOW99SDA302	4-Chloroanaline	UJ
	Dibenzofuran	UJ
PBOW99SWA303	Dibenzofuran	UJ
	Hexachlorocyclopentadiene	R
	4-Nitroanaline	UJ
PBOW99SDA303	4-Chloroanaline	UJ
	Dibenzofuran	UJ
PBOW99SWA303DUP	Dibenzofuran	UJ
	Hexachlorocyclopentadiene	R
	4-Nitroanaline	UJ
PBOW99SDA303DUP	4-Chloroanaline	UJ
	Dibenzofuran	UJ
PBOW99SWA101	Dibenzofuran	UJ
	Hexachlorocyclopentadiene	R
	4-Nitroanaline	UJ
PBOW99SDA101	4-Chloroanaline	UJ
	Dibenzofuran	UJ

2.6 Surrogate Recoveries

Were surrogate recoveries within evaluation criteria?

No.

Field ID	Surrogate	Recovery	Criteria
PBOW99SBA103A	2-Fluorophenol	26	30-115
PBOW99SSA101	2-Fluorophenol	7.2	30-115
	Phenol-d5	9.7	24-113
	2,4,6-Tribromophenol	12	19-122
PBOW99SSA101 RE-1	2-Fluorophenol	6.2	30-115
	Phenol-d5	11	24-113
	2,4,6-Tribromophenol	3.6	19-122

Three acid fraction surrogates were outside QC criteria for sample PBOW99SSA101 for SVOC analysis, so all of the acid fraction analytes were qualified estimated non-detect (**UJ**) for that sample. The reanalysis of sample PBOW99SSA101, designated with RE-1, also resulted in the acid fraction surrogates outside QC criteria. Therefore the reanalyzed sample was also qualified **UJ** for the acid fraction analytes.

No qualifications of data were necessary for SVOC sample PBOW99SBA103A with only one surrogate outside criteria.

2.7 Matrix Spike and Matrix Spike Duplicate Recoveries

Were MS/MSD samples reported as part of this SDG?

Yes.

Were all MS/MSD recoveries within evaluation criteria?

No.

MS/MSD ID	Analyte	MS/MSD Recovery (%)	RPD	Criteria
PBOW99SWA101	2-Methylnaphthalene	82/**86**	4.9	43-**82**/15
	Hexachlorocyclopentadiene	**3/5**	**33**	**16**-88/**31**
	4-Nitroanaline	**59/63**	6.9	**74**-195/48
	Di-n-octyl phthalate	110/**111**	0.5	31-**110**/31
PBOW99SDA101	4-Chloroanaline	**15/18**	17	**43**-91/17
	Hexachlorocyclopentadiene	**0/0**	0	**2**-55/31
	Dibenzofuran	**70/63**	9.6	**85**-117/11
	4-Nitroanaline	**34/45**	26	**38**-229/47
PBOW99SWA101	Silver	117/**121**	3.0	80-**120**/20
PBOW99SDA101	Silver	108/**123**	13	80-**120**/20
	Calcium	104/**310**	**72**	80-**120/20**
	Chromium	80/**75**	2.7	**80**-120/20
	Cobalt	**60/63**	2.7	**80**-120/20
	Antimony	**55/55**	1.2	**80**-120/20
	Vanadium	**41/34**	4.7	**80**-120/20
	Zinc	**0/0**	0	**80**-120/20

Analytical data, which required qualification based on MS/MSD data, are included in the table below.

Field ID	Analyte	Qual.
PBOW99SDA101	Calcium	**J**
	Chromium	**J**
	Cobalt	**J**
	Antimony	**UJ**
	Vanadium	**J**
	Zinc	**J**

Sample PBOW99SWA101 was previously qualified for hexachlorocyclopentadiene and 4-nitroanaline due to LCS recoveries. Also,

sample PBOW99SDA101 was previously qualified for 4-chloroanaline and dibenzofuran due to LCS recoveries. Since surrogate recoveries and the remaining LCS recoveries were within QC criteria, professional judgement was used to determine that no further qualifications of SVOC data were required, based on the MS/MSD alone.

Samples PBOW99SWA101 and PBOW99SDA101 required no qualification of the analyte Silver due to a non-detect in the parent sample.

2.8 Lab Duplicate Results

Were lab duplicates samples collected as part of this SDG?

Yes, samples PBOW99SBA103B and PBOW99SBA104B were analyzed in duplicate for percent solids.

Were laboratory duplicate sample RPDs within criteria?

Yes, duplicate RPDs were within criteria for percent solids.

2.9 Field Duplicate Results

Were field duplicates samples collected as part of this SDG?

Yes.

Were field duplicates within evaluation criteria?

No.

Sample ID #	Analyte	Primary/Duplicate/RPD	RPD Limits	Qual.
PBOW99SBA101A	Manganese	1170/480/**83.6**	50	J
PBOW99SWA303	Iron	431/251/**52.8**	25	J
	Manganese	48.4/34.9/**32.4**	25	J
PBOW99SDA303	Aluminum	1800/3150/**54.5**	50	J

2.10 Sample Dilutions

Were samples diluted which exceed 10X QAPP limits?

No.

2.11 Additional Qualifications

Were additional qualifications applied?

No.

3.0 FULL VALIDATION OF SVOC DATA – SDG A9F150184

This section describes the full validation for two groundwater samples that were analyzed for semivolatile organic compounds by USEPA SW-846 Method 8270C. Samples were analyzed by Quanterra Incorporated of North Canton, Ohio, and submitted as part of sample delivery group (SDG) A9F150184. Samples included as part of this validation are listed below:

Sample Identification #	Sample Identification #
PBOW99SWA301	PBOW99SWA302

Evaluation of the analytical data followed procedures outlined in the USEPA Contract Program National Functional Guidelines for Organic Review (USEPA 1999) where applicable to SW-846 Method 8270C. The evaluation criteria used during the validation were a combination of those criteria presented in Method 8270C and the laboratory criteria based on historical data.

Criteria evaluated included the following method performance criteria:

- Completeness of data package
- Significant problems identified in the Laboratory Case Narrative
- Sample preservation and holding times
- GC/MS instrument performance (tuning)
- Initial calibration
- Calibration Verification
- Method blank
- Surrogate recoveries
- Laboratory control samples
- MS/MSD samples
- Internal Standard areas and retention times
- Target compound identification and quantitation
- System performance and overall assessment of data
- Transcription errors

3.1 Data Package Completeness

The data package was reviewed to make certain that it contained the data contractually required in the deliverable. This included checking the data package for the results of each analyte requested, for each field sample submitted in the analytical batch, along with requested QC documentation for the respective methods. The data package was complete for this validation.

3.2 Problems Identified in the Laboratory Case Narrative

The case narrative indicated that the laboratory received some samples outside of temperature preservation criteria, and that there was a MS/MSD and surrogate outside evaluation criteria. These issues are addressed in the appropriate sections below. There were no other problems noted in the laboratory case narrative that were applicable to this validation.

3.3 Sample Preservation and Holding Times

Review of the sample collection and analysis dates involved comparing the chain-of-custody, the summary forms, the raw data forms, and the chromatograms for accuracy, consistency, and holding time compliance. The laboratory case narrative and the cooler receipt form indicated the samples were received at 13.1 °C, which is above the recommended 4 $\pm$ 2 °C cooler temperature. Results for samples PBOW99SWA301 and PBOW99SWA302 were qualified estimated (**J/UJ**) based on sample preservation criteria. The samples were extracted and analyzed within holding time criteria of 7 days to extraction and 40 days to analysis.

3.4 Instrument Performance

GC/MS instrument performance checks were performed to ensure mass resolution, identification, and instrument sensitivity. Criteria for evaluation of instrument performance included possible transcription/calculation errors, adherence to instrument tuning frequency requirements, mass assignments, and ion abundance criteria. Instrument performance check samples were evaluated against the laboratory tuning criteria. The laboratory tuning criteria were slightly different than the criteria established in Method 8270C; however, Method 8270C allows for alternate tuning criteria as long as the method performance is not adversely impacted. No qualification of data was required.

Based on the raw data, the ion abundance criteria were within evaluation criteria for all masses, and no calculation or transcription errors were noted.

3.5 Initial Calibration

Calibration criteria were established to assess whether the instrument was capable of producing acceptable qualitative and quantitative data for volatile analyses. An initial calibration was analyzed at the beginning of the run sequence. At least five concentration standards were used to establish the initial calibration curve as required by Method 8270C. For the initial calibration, the response factors (RFs) were reviewed and were greater than 0.05 for all analytes.

Review of the initial calibration summary forms indicated %RSDs were $\leq$ 30 percent for calibration check compounds (CCCs) and less than 15 percent for non-CCCs with the exception of 2,4-dinitrophenol (25.9%) for ICAL 6/19/99, 1607. As a result, 2,4-dinitrophenol results for samples PBOW99SWA301 and PBOW99SWA302 were qualified as **UJ**.

Review of the ICAL summary form indicated other analytes had %RSD values greater than 15 percent; however, these analytes were not target compounds for this project.

Recalculations of the RFs and %RSD for eight standard compounds were performed, and no errors in calculation were noted.

3.6 Calibration Verification

Review of the sample chromatograms indicated the calibration verifications (CVs) were performed approximately every 12 hours of operation. Based on the review of continuing calibration raw data and summary forms, all RFs met the evaluation criteria of greater than 0.05 for all analytes. In addition, percent differences (%Ds) met the evaluation criteria of $\leq$ 20 percent for CCCs, and < 50 percent for non-CCCs.

Recalculation of the RF and %D for six standard compounds was completed, and no errors in calculation were noted.

3.7 Blank Samples

The purpose of the method blank samples is to evaluate the existence and magnitude of contamination problems emanating from laboratory activities. Method blank samples were analyzed with each analytical batch as required by USEPA SW-846 Method 8270C. All target compounds were reported as non-detect with the exception of bis (2-ethylhexyl) phthalate for method blank 9167109. The samples associated with method blank 9167109 were reported as non-detect, so no qualifications were required. Review of chromatograms indicated all peaks present were accounted for or the concentrations reported were below the method detection limit.

3.8 Surrogate Spike Recoveries

Surrogate compounds were used to evaluate the overall laboratory sample preparation efficiency on a per-sample basis. All surrogate recoveries were within the method acceptance criteria for the validated samples. Twenty-five percent of the recoveries were recalculated, and the summary forms versus the raw data were verified. No calculation or transcription errors were noted.

3.9 Matrix Spike/Matrix Spike Duplicate (MS/MSD) Samples

MS/MSD samples were analyzed to assess accuracy and precision for the analyses. The MS/MSD summary form indicated the sample used as the MS/MSD sample for the batch was PBOW99SWA101, a sample not included as part of the validation. The MS had recoveries below QC limits for hexachlorocyclopentadiene (3%) and 4-nitroanaline (59%), and the MSD had recoveries outside QC limits for 2-methylnaphthalene (86%), hexachlorocyclopentadiene (5%), 4-nitroanaline (63%), and di-n-octyl phthalate (111%). All relative percent difference (RPD) values were within evaluation criteria for the spiked compounds.

No qualifications are made on organic MS/MSD data alone. Since the LCS and surrogate data for the validated samples were acceptable, no qualifications to the data were necessary.

Approximately ten percent of the MS/MSD recoveries and RPD values were recalculated from the raw data and no calculation errors were noted.

3.10 Internal Standards

Internal standard (IS) performance criteria ensure that the GC/MS sensitivity and response are stable during each analytical run. IS areas must be within -50 percent to +100 percent and the IS retention times must be within 30 seconds of the IS continuing calibration retention time. IS areas for the validated samples, and associated QC data in this SDG, were within evaluation criteria. All IS retention times were within criteria. The raw data were verified, and no transcription errors were noted.

3.11 Laboratory Control Samples (LCS)

A batch LCS was analyzed to assess the accuracy of the analytical process. All LCS recoveries were within evaluation criteria, with the exception of hexachlorocyclopentadiene (0%), dibenzofuran (82%) and 4-nitroanaline (51%). Samples below the lower acceptance limit, but greater than 50% of the limit defined by the laboratory, required qualification as estimated, while recoveries less than 50% of the lower acceptance limit required qualification as rejected. As a result, hexachlorocyclopentadiene was qualified as rejected (**R**), and dibenzofuran and 4-nitroanaline were qualified as estimated non-detect (**UJ**) for samples PBOW99SWA301 and PBOW99SWA302.

Approximately ten percent of the spiking compound recoveries for the LCS were recalculated using the LCS summary form, and no calculation or transcription errors were noted.

3.12 Target Compound Identification and Quantitation

For validation of the compound identification, chromatograms were reviewed to verify the major peaks were identified, the spectra of the identified compounds were verified against the library spectra, and the relative retention time was no greater than 0.06 different from the associated continuing calibration retention times. No anomalies were noted with the identification of the target compounds in the samples.

For the validation of compound quantitation, one surrogate from each of the validated samples was recalculated from the raw data, since no target compounds were detected in the validated samples. No calculation or transcription errors were noted.

3.13 Overall Data Assessment

Based on the criteria outlined, it is recommended that the results reported for these analyses be accepted for their intended use. Acceptable levels of accuracy and precision, based on MS/MSD, LCS, and surrogate data were achieved for this SDG with the noted

exceptions. In addition, completeness, defined to be the percentage of analytical results which are judged to be valid, including estimated (J) data, was 98 percent for the validated samples in this SDG.

4.0 FULL VALIDATION OF METALS DATA – SDG A9F150184

This section describes the full data validation for two groundwater samples, which were analyzed for metals by EPA Method 3010A/6010B and EPA Method 7470. Samples were analyzed by Quanterra Incorporated of North Canton, Ohio and submitted as part of SDG A9F150184. Per the statement of work (SOW), 10 percent of this SDG was fully validated. Samples included as part of this validation are listed below:

Sample Identification #
PBOW99SWA101
PBOW99SWA303

The data were validated following the guidance outlined in USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Review (USEPA 1999) where applicable to SW-846 methodologies. The evaluation criteria used during the validation were a combination of those criteria presented in Method 6010B and 7470 and laboratory criteria based on historical data.

Criteria evaluated included the following method performance criteria:

- Completeness of data package
- Laboratory case narrative
- Sample preservation and holding times
- Blank contamination
- Initial calibration verification
- Continuing calibration verification
- Laboratory control samples (LCS)
- Laboratory duplicate analysis
- Matrix spike/Matrix spike duplicate samples (MS/MSD)
- ICP serial dilution
- ICP interference check samples (ICS)
- Sample result verification
- Reporting limits

4.1 Data Package Completeness

The data package was reviewed to make certain that it contained the data contractually required in the deliverable. This included checking the data package for the results of each analyte requested for each field sample submitted in the analytical batch, along with requested QC documentation for the respective methods. The data package was complete for this validation.

4.2 Laboratory Case Narrative

The metals laboratory case narrative indicated that samples were received by the laboratory at 13.1, 10.1 and 1^0C; the serial dilution was outside evaluation criteria; and that the preparation blank had iron contamination. These issues are discussed in the appropriate sections below. No additional problems were noted in the metals case narrative.

4.3 Sample Preservation and Holding Times

Review of the sample collection and analysis dates involved comparing the chain-of-custody, the sample preparation logs, the analysis run logs, and raw data forms for holding time compliance. The samples were analyzed within the evaluation criteria of 28 days (mercury) and 6 months (other metals). The laboratory case narrative and the cooler receipt form indicated the samples were received at 13.1^0C and 10^0C, which is above the recommended 4 $\pm$ 2 °C cooler temperature; however, no qualification of data was required based on professional judgement and the stability of metals.

4.4 Blank Contamination

The purpose of blank samples was to evaluate the existence and magnitude of contamination problems emanating from laboratory activities. Initial calibration, continuing calibration, and preparation blanks associated with the validated samples were analyzed at the method recommended frequency and reported below the method detection limit for all metals with the exceptions listed below:

Blank ID	Analyte	Conc. (µg/L)	Comments
Preparation	Iron	174	PBOW99SWA303
ICB	Barium	1.1	All associated samples ND
ICB	Beryllium	0.8	All associated samples ND
ICB	Cadmium	0.2	All associated samples ND
ICB	Chromium	0.8	All associated samples ND
ICB	Cobalt	0.9	All associated samples ND
ICB	Copper	1.4	All associated samples ND
ICB	Vanadium	1.3	All associated samples ND
CCB2	Barium	1.7	All associated samples ND
CCB2	Beryllium	0.8	All associated samples ND
CCB2	Cobalt	1.1	All associated samples ND
CCB2	Copper	3.0	All associated samples ND
CCB2	Manganese	1.9	Sample results 5 >than blank contamination
CCB2	Nickel	1.3	All associated samples ND
CCB2	Silver	0.9	All associated samples ND
CCB2	Vanadium	1.6	All associated samples ND
CCB2	Zinc	-1.9	All associated samples ND
CCB3	Barium	2.1	All associated samples ND
CCB3	Beryllium	0.8	All associated samples ND
CCB3	Cobalt	1.1	All associated samples ND
CCB3	Copper	2.7	All associated samples ND
CCB3	Manganese	1.9	Sample results 5 >than blank contamination
CCB3	Nickel	-3.1	All associated samples ND

Blank ID	Analyte	Conc. (µg/L)	Comments
CCB3	Vanadium	1.1	All associated samples ND
CCB3	Zinc	-2.7	All associated samples ND

The validated sample results for barium, beryllium, cadmium, chromium, cobalt, copper, nickel, silver, vanadium, and zinc were reported as non-detect; therefore, no qualification of data was required.

The samples PBOW99SWA101 and PBOWSWA303 had manganese concentrations that were five times greater than the blank contamination; therefore, no qualification of manganese data was required.

The sample PBOW99SWA101 had an iron concentration that was five times greater than the preparation blank contamination; therefore, no qualification of data was required. The iron result for PBOW99SWA303 was reported at a concentration less than five times the preparation blank contamination; therefore, the iron result for PBOW99SWA303 was qualified as non-detect (U) based on preparation blank contamination.

One hundred percent of the blank sample results associated with the validated samples were compared to the raw data; no transcription errors were noted.

4.5 Initial Calibration Verification

Initial calibration verification (ICV) criteria were established to assess whether the instrument was capable of producing acceptable qualitative and quantitative data for metals analyses. All ICV recoveries were within evaluation criteria and therefore no qualification was required based on ICV recoveries. One hundred percent of the ICV recoveries, associated with the validated samples, were recalculated and compared to the raw data; no calculation or transcription errors were noted.

A blank and one standard were used to establish the initial calibration curve for Method 6010B; a blank and five standards were used to establish the calibration curve for mercury. Review of the initial calibration data indicated the r^2 values were greater than 0.995 for all metals; therefore no qualification of data was required. One hundred percent of the initial calibrations were recalculated and compared to the raw data; no calculation or transcription errors were noted.

4.6 Continuing Calibration Verification

Continuing calibration verification (CCV) criteria were established to assess whether the instrument was capable of producing acceptable qualitative and quantitative data established by the initial calibration curve. CCV samples associated with the validated samples were analyzed at the method recommended frequency and had recoveries within the evaluation criteria; therefore, no qualifications were required based on CCV recoveries. One hundred percent of the CCV sample recoveries, associated with the validated samples, were recalculated and compared to the raw data; no calculation or transcription errors were noted.

4.7 Laboratory Control Sample

Laboratory control samples (LCS) were analyzed to assess the accuracy of the analytical method and to demonstrate laboratory performance. LCS recoveries were within evaluation criteria and therefore no qualification of data was required based on LCS recoveries. One hundred percent of LCS recoveries were recalculated and compared to the raw data; no calculation or transcription errors were noted.

4.8 Laboratory Duplicate Analysis

The laboratory duplicates a sample to assess method precision at the time of analysis. The laboratory did not analyze duplicate sample pairs; however, the laboratory analyzed a matrix spike and matrix spike duplicate sample pair to assess precision, as summarized in the following section.

4.9 Matrix Spike/ Matrix Spike Duplicate Samples (MS/MSD)

Matrix Spike/Matrix Spike Duplicate samples (MS/MSD) were analyzed to assess the effects of matrix interference and precision during analysis. The laboratory spiked and analyzed sample PBOW99SWA101 in duplicate. All MS/MSD recoveries and relative percent differences (RPDs) were within the evaluation criteria; therefore, no qualification of data was required based on outlying MS/MSD recoveries or RPDs. One hundred percent of the MS/MSD recoveries were recalculated and compared to the raw data; no transcription and calculation errors were noted.

4.10 ICP Serial Dilutions

Serial dilutions were analyzed to assess the potential significant physical or chemical interference due to sample matrix. The laboratory analyzed the serial dilution on a non-validated sample, PBOW99SDA101. The serial dilution percent differences (%D) were within evaluation criteria with the exception of cobalt (11.3%). Cobalt data for sample PBOW99SDA101 was qualified estimated (J) based on the serial dilution data. One hundred percent of the serial dilution %Ds were recalculated and compared to the raw data; no transcription and calculation errors were noted.

4.11 ICP Interference Check Sample

Interference check samples (ICS) were analyzed to verify the contract laboratory's interelement and background correction factors for analysis of metals by ICP. The laboratory analyzed the ICS at the beginning and end of the analytical run (or a minimum or twice per eight hour analytical run) as required by the methodology. The ICS recoveries were within evaluation criteria; therefore, no qualification of the data was required. Twenty-five percent of the ICS recoveries were recalculated and compared to the raw data; no transcription and calculation errors were noted.

4.12 Sample Result Verification

One hundred percent of the validated sample results were recalculated to validate that analyte quantitation was derived accurately; no calculation errors were noted. Data summary forms were reviewed and compared to the raw data package; no transcription errors were noted.

4.13 Reporting Limits

The sample-reporting limit (RL) is the lowest concentration of an analyte that can be reported by the laboratory to be present in a sample result with a specified level of confidence. The RLs are a function of the sample characteristics, method quantitation, and laboratory performance. The raised RLs is this SDG were due to elevated metals concentrations.

4.14 Overall Data Assessment

Based on the criteria outlined, it is recommended that the results reported for these analyses be accepted for their intended use. Completeness, defined to be the percentage of analytical results that are judged to be valid, including estimated data (J), was 100 percent for this SDG.

Appendix K - Review Comments

Comment Responses

Document: **Draft Final Report for the Limited Site Inspection for Ash Pits 1 & 3**
Name: **Susan P. Allemeier, CELRH-EC-CE**

1. There is no acronym list in this report. Please add.

Response: An acronym list will be added to the report.

2. Page 2, fifth full paragraph, if known, please state what is cultivated in this area.

Response: The agricultural areas located around the PBOW primarily cultivate various vegetable and fruit crops. Specific crops are unknown at this time.

3. Page 5, please state what the USCS classifications SM & ML are.

Response: The USCS classification for SM and ML are "Silty Sands" and "Silts of low plasticity" respectively. These classifications are cited in the report.

4. Some figures are not numbered or labeled with titles. There is one figure between figures 1-4 and 3-1, and two figures between figures 3-1 and 3-2 that are not numbered or labeled.

Response: These figures are overlays. They coincide with figures 3-1 and 3-2. The figures will be labeled and referenced accordingly.

Comment Responses

Document: Draft Final Report for the Limited Site Inspection for Ash Pits 1 & 3
Name: Janet K. Wolfe, CELRH-EC-CE

1. Section 4.0, Analytical Results. A discussion of the duplicate results should be included.

Response: A discussion of the duplicate results will be included in the Data Validation section of the report.

2. Section 4.1, Semi-volatile analysis. It is indicated that Table 4-1 contains information pertaining to reporting limits for semi-volatile compounds above PRGs. Table 4-4 contains this information, not Table 4-1.

Response: The report will be edited to reference the correct table.

3. Section 4.2, Metals Analysis, 2nd paragraph. It is stated that Table 4-2 displays the PRGs used for screening. Table 4-2 does not include this information.

Response: The report will be edited to reference Table 4-5, which is the correct table.

4. Laboratory Analytical Data, Case Narrative A9F150184. It was noted that the coolers arrived at elevated temperatures. This should be addressed in a data quality assessment report or in the laboratory validation report.

Response: It appears that the coolers were in transit to the laboratory for two days. This would account for the elevated temperatures. Of the samples collected only the semivolatiles would have been affected. The possible effect on the semivolatile data would be false negatives, and low biased results. Discussion of the elevated temperature of the coolers will be included in Data Validation section of the report.

5. Appendix F. The reporting limits for the metals and semi-volatiles water analysis are high. Provide information that addresses if these limits meet data quality objectives.

Response: The reporting limits for metals and semi-volatiles met the data quality objectives for this site investigation. Reporting limits for several compounds increased due to dilutions and matrix effects. The data collected was used for its intended purpose, which was to compare results to very conservative screening criteria. Based on this comparison it was determined that these sites require a more detailed environmental study (RI/FS) to further evaluate the sites.

Comment Responses

6. Appendix F. It was noted that some of the quality control elements were outside control limits. This type of information needs to be addressed in a data quality assessment or in the data validation report.

Response: The quality control elements mentioned in the case narrative of the analytical report will be addressed in the Data Validation section of the report. The majority of the quality control elements that were outside control limits were due to matrix effects. The quality control exceedences were minimal and did not adversely affect the data.

7. Appendix H, Variance #2. It was stated that no deficiencies were noted and no significant effects on the quality of data are expected. Comment Nos. 4, 5, & 6 above pertain to factors that could compromise the quality of the data. These factors should be assessed to determine if the data quality has been impacted.

Response: See responses for comments 4, 5, and 6.