3R - 261

REPORTS

DATE:

Oct. 30, 1997

SITE INVESTIGATION REPORT

for

WELLEX/OTIS ENGINEERING FACILITY
HALLIBURTON ENERGY SERVICES

2600 EAST BLOOMFIELD HIGHWAY
FARMINGTON, NEW MEXICO

by

Brown & Root Environmental
2300 Buena Vista SE, Suite 110
Albuquerque, New Mexico 87106

Submitted to:

State of New Mexico
Energy, Minerals and Natural Resources Department
Oil Conservation Division
2040 S. Pacheco
Santa Fe, New Mexico 87505

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Halliburton Energy Services
2600 East Bloomfield Hwy
Farmington, NM

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1.0 INTRODUCTION

On behalf of Halliburton Energy Services (HES), Brown & Root Environmental (B&RE) conducted an environmental site investigation at 2600 East Bloomfield Highway, Farmington, New Mexico. The investigation was conducted on September 4 and 5, 1997. This report documents the findings of the investigation. The site is owned by Halliburton Energy Services (HES).

1.1 SITE DESCRIPTION AND ENVIRONMENTAL SETTING

1.1.1 Site Description

The facility is located on a 150 ft by 290 ft fenced parcel identified as Section 14 of Township 29 North and Range 13 West in San Juan County, New Mexico. The address of the site is 2600 East Bloomfield Highway, Farmington, New Mexico. The facility consists of a building approximately 50 feet by 150 feet containing service bays and a small office space. The working area of the site is enclosed within an eight foot chain link fence. The site formerly operated as both a Wellex and an Otis Engineering facility and has been abandoned since 1993. While in operation, an oil/water separator (OWS) was located on site. The OWS consisted of a cinderblock enclosure located below grade with no floor. The OWS was demolished in 1995.

No records are available that document operations at this site. It is known that this facility supported well logging activities. Waste streams discharged into the former OWS are unknown.

1.1.2 Environmental Setting

The HES facility is approximately 1.5 miles southeast of Farmington, New Mexico within a commercial zone. Site elevation is 5338 ft above MSL on a southwest trending slope approximately 1 mile north of the San Juan river. The facility is situated on soils of the Garland series which is formed from mixed alluvial sediments. Typical horizons in this series consist of a upper layer of brown loam 4 inches thick. The subsoil is brown clay loam about 20 inches thick underlain by light brown gray very gravely loamy sand. These characteristics were evident during the site investigation. Groundwater is encountered at 25 to 27 feet below ground surface (ft bgs). Groundwater was not encountered during this investigation.

1.2 PREVIOUS INVESTIGATIONS

A preliminary site investigation was conducted by OVAC Engineering in 1993. Their effort included soil sampling and analysis and a general site review. Eleven soil samples were collected and analyzed for volatile organic compounds (VOCs), toxicity characteristic leaching procedure (TCLP) metals, total petroleum hydrocarbons (TPH) and pH. Samples were collected at depths varying from 2 ft to 12 ft bgs at locations throughout the facility. Sample results showed TPH present in the vicinity of the OWS. A sample collected along the east side of the OWS at 9 ft bgs showed a TPH concentration 4,200 mg/kg. A second sample collected approximately 20 ft southeast of the OWS at 3 ft bgs showed a TPH concentration of 807 mg/kg. A third sample collected 20 ft due south of the OWS showed a toluene concentration of 26.3 mg/kg. The 1993 investigation concluded that the OWS was the source of the petroleum hydrocarbons. An estimated 4 cubic yards of sludge was observed within the OWS enclosure. The investigation report concluded that approximately 75 to 80 cubic yards of soil had been impacted with TPH by the OWS

In 1995, a cosmetic clean-up of the site was performed consisting of cleaning and policing of the site and the building. The OWS was demolished and sludge within the excavation was left in place. No remediation of the OWS facility was performed. In addition, no formal report was generated by OVAC. This operation was documented in a letter from Halliburton to the New Mexico Department of Energy, Minerals and Natural Resources, Oil Conservation Division (OCD).

2.0 FIELD ACTIVITIES

The New Mexico Energy, Minerals and Natural Resources Department (NMEMNR), Oil Conservation Division (OCD) requested that Halliburton Energy Services perform a site investigation to determine the nature and extent of the hydrocarbon contamination resulting from the OWS. Brown & Root Environmental performed a site investigation of the former OWS facility on September 4 and 5, 1997.

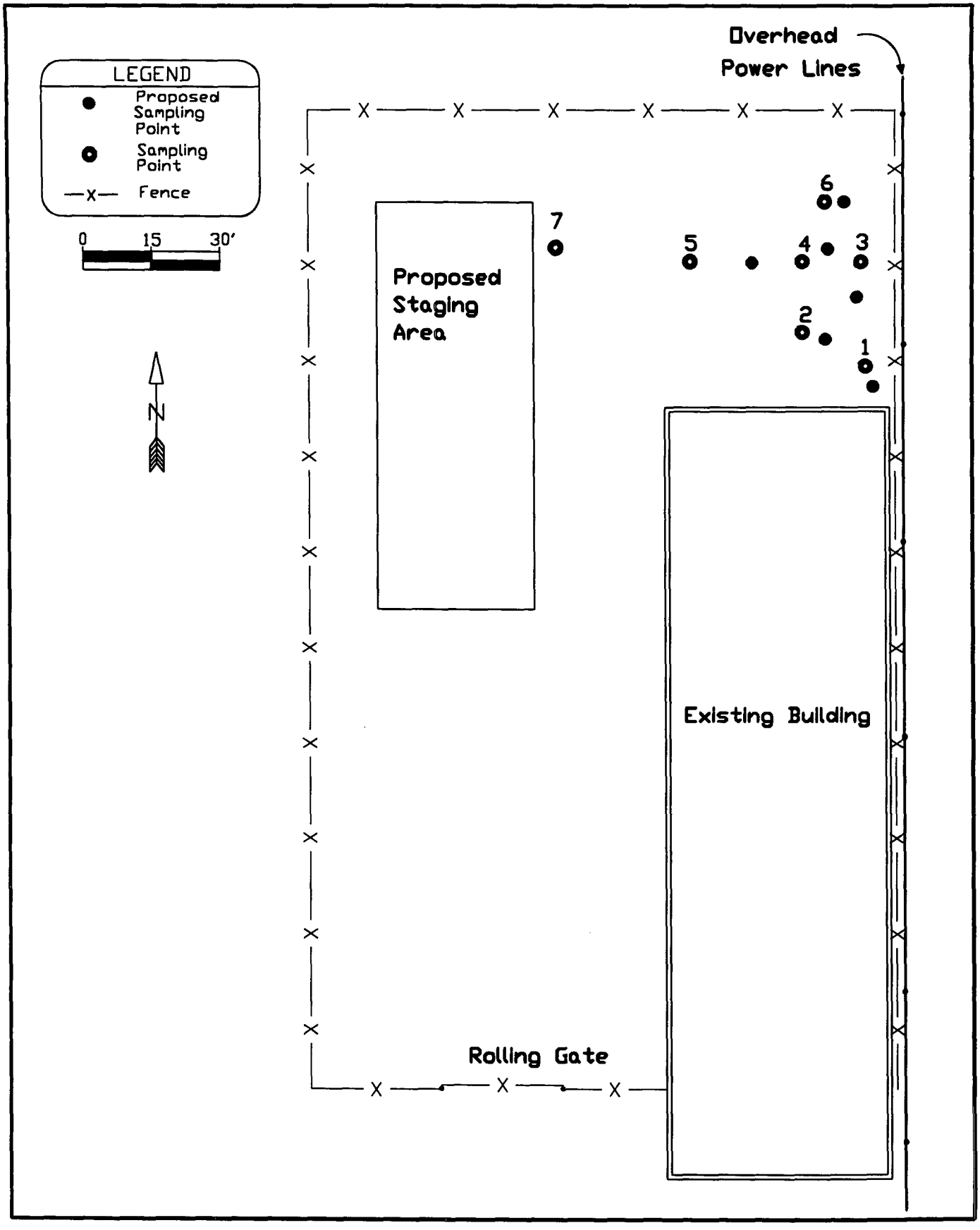
2.1 METHODOLOGY

The work was performed in accordance with the work plan dated June 27, 1997 approved by the OCD. Six separate excavations were made using a Caterpillar 320L long reach excavator. Proposed and actual excavation points are shown in Figure 2-1. The work plan called for excavating and sampling to a depth of 20 ft bgs. Sampling was performed at 5 ft increments beginning at 5 ft bgs. The sample exhibiting the highest organic vapor analyzer (OVA) reading from each excavation was submitted for analysis. Analyses performed included VOCs (EPA Method 8260A), SVOCs (EPA Method 8270B), and target analyte metals (EPA Methods 6010, 6020 and 7000).

The maximum depth achieved was 15 ft bgs. Soil conditions did not permit excavating to the proposed 20 foot depth. Soils consisted of very cobbly, silty sands with little cohesive strength. The sides of the excavations caved continually during the excavation and greater depth could not be reached without endangering the excavator and its operator. Adjustments were also made to the location of the excavations due to site constraints and observations during the excavations. The existing building, overhead power lines and the property boundary all limited the work area.

2.1.1 Work Activities

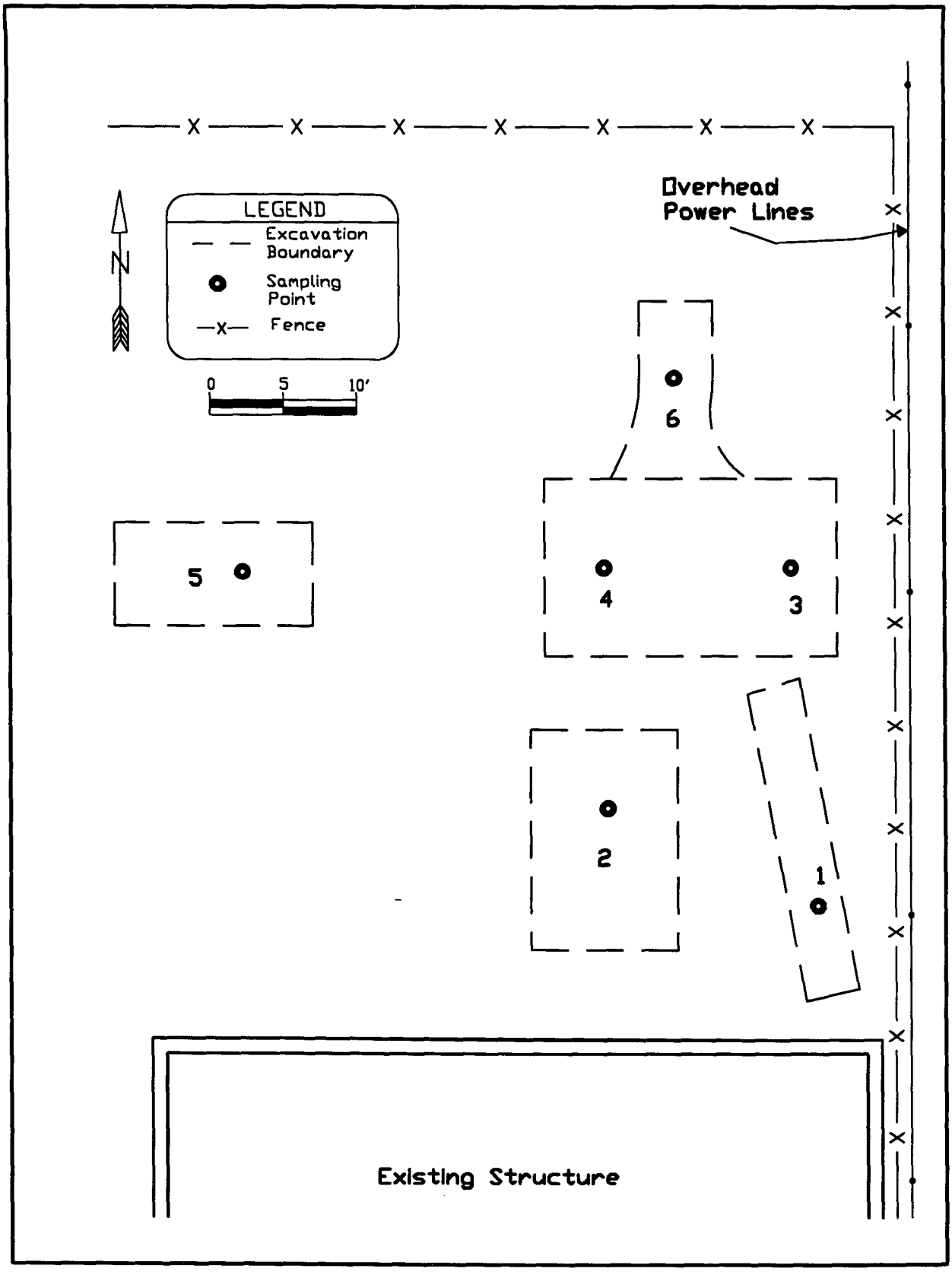
Work began on September 4, 1997. Figure 2-2 illustrates the location and size of the excavations created during the investigation.



Site Plan of
2600 East Bloomfield Hwy
Farmington, New Mexico

Figure 2-1

Brown & Root Environmental



Sampling Location and Excavation Areas

Figure 2-2

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2.1.1.1 Excavation No. 1

Excavation No. 1 was located immediately north of the existing building southeast of the former OWS. The soil appeared in its natural condition exhibiting no staining or other visible signs of contamination. A petroleum odor was apparent during the initial soil removal in the excavation but did not continue with depth. Samples were collected at 5, 10, and 15 ft bgs. Readings from the OVA showed 0 (zero) meter units at 5, 10, and 15 ft bgs, respectively. The excavation was lined with 10-mil High Density Polyethlyene (HDPE) as specified in the work plan. The HDPE ripped during backfilling operations due to the nature of the soil material. Cobbles made up approximately 50 percent of the soil matrix with an average diameter of 12 inches.

2.1.1.2 Excavation No. 2

Excavation No. 2 was located due south of the former OWS adjacent to the building. Samples collected at 5, 10, and 15 ft bgs showed OVA readings of 9, 7, and 43 units, respectively. Grayish to black staining was evident on the northern side of the excavation. A noticeable petroleum odor was present during this excavation. The sample from 15 ft bgs was submitted for analysis. The excavation was lined with 10-mil HDPE and backfilled. However, the liner again failed due to the loading placed on it and the coarseness of the media.

2.1.1.3 Excavation No. 3 and No. 4

Excavations No. 3 and 4 were performed concurrently due to their proximity to each other and the poor integrity of the soils as excavation proceeded. Excavation No. 3 was located on the eastern limit of the former OWS. Excavation No. 4 was located in what was believed to be the center of the former OWS. These two proposed sample points were approximately 13 feet apart. Both exhibited significant staining, and a petroleum odor. The affected area extended to within 10 feet of the eastern property boundary. The western end of the excavation exhibited black soil and noticeable petroleum odors.

Samples were collected at 5, 10 and 15 ft bgs in both excavations. Sample OVA readings in Excavation No. 3 were 31, 21, and 173 meter units for the 5, 10, and 15 ft depths respectively. Sample OVA readings from Excavation No. 4 for the 5, 10, and 15 ft bgs samples were 37, 57, and 113 units, respectively. The 15 ft bgs samples were subsequently sent in for analysis. Within the dual excavation, noticeable quantities of cinder blocks, debris and black grease waste were observed.

The excavation was lined with 10-mil HDPE prior to backfilling but again, the material ripped due to loading and the coarseness of the material.

2.1.1.4 Excavation No. 5

Excavation No. 5 was located approximately 25 feet west of Excavation No. 4. This adjustment to the work plan was made in order to attempt to delineate the extent of the affected area. This decision was mutually made between the B&RE site manager and OCD personnel on site. No visible sign of contamination or odor were evident. Organic Vapor Analyzer readings showed 3, 2, and 3 meter units for the 5, 10 and 15 ft samples respectively. The 15 ft sample was submitted to the lab.

2.1.1.5 Excavation No. 6

Excavation No. 6 was located north of excavation No. 3. No visible contamination was evident until approximately 7 ft bgs. At this point a black, asphaltic layer was encountered. This layer extended laterally approximately 48 ft north of the building. Readings from the OVA showed 12, 53 and 54 units at the 5, 10, and 15 ft depths, respectively. The 15 ft sample was submitted for analysis. This excavation was not lined prior to backfilling.

2.1.1.6 Excavation No. 7 (Background)

A sample was collected at 4 ft bgs to establish background levels for all parameters. This excavation exhibited no hazardous characteristics and appeared to be previously undisturbed soil.

2.2 OBSERVATIONS

The site did not exhibit any other noticeable characteristics indicating other sources of contamination. Affected areas including Excavations 3,4, and 6 exhibited stained soils down to the 15 foot depth. It is assumed that the contaminants continued down to greater depth based on visual observations.

3.0 RESULTS AND DISCUSSION

Samples were collected from each excavation and analyzed for the contaminants of concern specified in the Work Plan. Site conditions warrant the implementation of some remedial action. Six samples were collected and analyzed from the excavations made in the vicinity of the former OWS, north of the existing building. The background sample (SB07) was collected west of the disturbed area and utilized for baseline comparisons.

3.1 SAMPLE RESULTS

Results from all samples analyzed are shown in Table 3-1. All were analyzed for VOCs (EPA 8260A), SVOCs (EPA 8270B) and TAL metals (EPA 6010, 6020 and 7000 series). A review of all sample data showed that reported concentrations of acetone and methylene chloride were false positives. This review also showed that reported concentrations for potassium were biased high due to higher than normal recovery levels for this parameter. All other data was found to meet data acceptance criteria. The data report is included within Appendix A.

3.1.1 Excavation No. 1

The first excavation was begun approximately 10 feet north of the northeast corner of the building (Fig 2-1). The sample from Excavation No. 1, collected at 10 ft bgs, showed no presence of VOCs or SVOCs. All metals concentrations were below background sample levels with the exception of copper, lead, silver and zinc. Copper in the Excavation No. 1 sample was 49.8 mg/kg with a background concentration of 15 mg/kg. Lead in the sample was 14.7 mg/kg compared to a background concentration of 7.8 mg/kg. Silver and zinc were detected at 1.4 and 40.8 mg/kg compared to background levels of no silver and 28.5 mg/kg of zinc.

3.1.2 Excavation No. 2

Excavation No. 2 was made 16 feet north of the building and approximately 15 west of Excavation No. 1. Sample data from Excavation No. 2 showed no VOCs. The sample had detectable quantities of SVOCs including 2.4 mg/kg of 2-methylnaphthalene, 0.41 mg/kg of naphthalene and 0.4 mg/kg of phenanthrene. Metals detected above background concentrations included chromium and zinc. Chromium was detected

TABLE 3-1. RESULTS OF SOIL ANALYSES FOR SEMI-VOLATILE ORGANIC COMPOUNDS, VOLATILE ORGANIC COMPOUNDS AND METALS FOR SAMPLES COLLECTED AT 2600 EAST BLOOMFILED HWY, FARMINGTON, NEW MEXICO

	EXCAVATION/SAMPLE NUMBER and SAMPLE DEPTH								
	SB01-10	SB02-15	SB03-15	SB04-15	SB05-15	SB06-15	SB07-04	OCD GUIDELINE	EPA REGION VI HHRB LEVEL
							backgrnd		
Analysis Parameter	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
VOCs EPA 8260A									
Ethylbenzene	nd	nd	160	320	nd	170	nd		2900
Xylenes (total)	nd	nd	1200	1700	nd	1000	nd	**BTEX**	980
TOTAL			1360	2020		1170		50	
SVOCs EPA 8270B									
2-Methylnaphthalene	nd	2.4	15	30	nd	9.9	nd		NA
Naphthalene	nd	0.41	nd	5	nd	2	nd		NA
Phenanthrene	nd	0.4	nd	nd	nd	nd	nd		NA
Metals EPA 6020 (ICP/MS)									
Arsenic	1.2	1.6	2.7	1.4	1.4	1.2	2.3		22n
Beryllium	0.13	0.15	0.24	0.17	0.14	0.15	0.19		0.14
Selenium	nd	nd	nd	nd	nd	nd	nd		380
Thallium	nd	nd	nd	nd	nd	nd	nd		NA
Total Metals EPA 6010									
Aluminum	3520	3350	6130	6030	2960	6590	5360		77000
Antimony	nd	nd	nd	nd	nd	nd	nd		31
Barium	74.1	63.6	224	289	69.5	120	103		5300
Cadmium	nd	nd	1.8	1.2	nd	nd	nd		38
Calcium	24400	35300	23900	34400	34800	60100	41600		NA
Chromium	4.1	4.4	7.1	7	3.7	6.8	4.2		210
Cobalt	3.2	3.1	4.3	3.2	2.9	4.4	3.9		4700
Copper	49.8	11.8	155	116	8.2	30.2	15		2800
Iron	6830	6890	10400	8640	6330	11200	10200		23000
Lead	14.7	5.7	84.2	61.4	nd	22.3	7.8		400
Magnesium	2630	3520	3120	3740	3300	6180	9280		NA
Manganese	226	352	295	304	276	479	375		380
Mercury (EPA 7471)	0.022	0.04	0.079	nd	nd	nd	0.02		23
Molybdenum	nd	nd	2.4	nd	nd	nd	nd		380
Nickel	nd	nd	7.1	5.8	nd	6.6	4.5		1500
Potassium	606	620	1200	891	nd	998	866		NA
Silver	1.4	nd	16.5	14.4	nd	3.2	nd		380
Sodium	nd	nd	nd	nd	nd	nd	nd		NA
Vanadium	10.3	9.7	13.8	11.7	8.4	16	15.3		540
Zinc	40.8	27.1	505	1230	20.1	325	28.5		23000

at 4.4 mg/kg compared to 4.2 mg/kg in the background sample. Mercury was found at 0.04 mg/kg compared to a background concentration of 0.02 mg/kg.

3.1.3 Excavation No. 3

Excavation No. 3 appeared to define the eastern extent of the former OWS. This excavation exhibited some of the higher concentrations of contaminants detected during the investigation. Two VOCs (ethylbenzene and xylene) and one SVOC were detected. Elevated concentrations of aluminum, barium beryllium, cadmium chromium, cobalt, copper, iron, lead, mercury, molybdenum, nickel, potassium, silver, and zinc were detected above background levels.

3.1.4 Excavation No. 4

Excavation No. 4, directly west of Excavation No. 3, appeared to be the center of the former OWS location. Two VOCs (ethylbenzene and xylene), two SVOCs (2-methylnaphthalene, naphthalene) and elevated concentrations of aluminum, barium, cadmium chromium, copper, lead, molybdenum, nickel, potassium, silver, and zinc were found.

3.1.5 Excavation No. 5

Excavation No. 5 was made approximately 25 ft west of excavation no. 4. It was anticipated that this sample point might delineate the western extent of the contaminant plume. However, no visual signs of contamination were identified during the excavation. No VOCs or SVOCs were found in the soil sample. Additionally, all metal parameters analyzed were less than those in the background sample.

3.1.6 Excavation No. 6

Excavation no. 6 was made approximately 12 ft north of excavations 3 and 4. Observation showed during excavation that the stained, blackened soil zone extended about 6 feet north of sample point no. 4. Values in Table 3-2 show comparisons between this sample and the background sample. Sample analysis showed the same two VOCs (ethylbenzene and xylene) and two SVOCs (2-methylnaphthalene, naphthalene) were found in excavations 3 and 4. Elevated concentrations of metals, above background levels, including aluminum, barium, beryllium calcium chromium, cobalt, copper, iron, lead, manganese, nickel potassium, silver, vanadium and zinc were also found.

4.0 CONCLUSIONS

The waste that entered the oil/water separator has created contaminated conditions within the soil profile. Potential groundwater contamination has not yet been investigated.

4.1 RECOMMENDATIONS

A source removal is recommended to remove as much of the contaminated soil as practicable. Concentrations of ethylbenzene and xylene exceed the OCD guideline of 50 mg/kg for BTEX. The contaminated soil may be excavated through conventional means and disposed at an OCD permitted land treatment facility. The excavation can be backfilled with clean soil. At least two groundwater monitoring wells are recommended to determine whether groundwater is impacted. The installation of one monitoring well near the center of the former OWS location and one at the property line downgradient from the facility is recommended.

Halliburton Energy Services
2600 East Bloomfield Hwy
Farmington, NM

APPENDIX

Quanterra
Environmental Services

I. OVERVIEW

On September 6, 1997, Quanterra Environmental Services, Denver laboratory received seven solid samples and one trip blank from Brown & Root.

This report presents the analytical results as well as supporting information to aid in the evaluation and interpretation of the data and is arranged in the following order:

I. Overview
II. Sample Description Information/Analytical Test Requests
III. Analytical Results
IV. Quality Control Report
    A. Standard Quanterra QC
    B. Matrix Specific QC

Sample Receipt

The cooler temperatures were 2.3 and 3.0 degrees celsius upon receipt at the laboratory. Sample 056857-0009 on the chain of custody was not received. (Trip Blank) Mr. Brad Sumrall directed the laboratory to perform additional analyses on sample HX20-SB04-15 (056857-0008). These additional requests are reported under 056857-0009.

Volatile Organics

Samples 056857-0001, -0006, -0007 and -0008 were analyzed as medium level volatiles.

Semivolatile Organics (TCLP)

Samples 056857-0001, -0005, -0007 and -0008 were analyzed for semivolatiles by Method 8270. Dilutions were required for these samples due to the concentration of target compounds in excess of the linear calibration range. The reporting limits have been adjusted relative to the required dilution. The surrogates for samples 056857-0007 and -0008 were not recovered due to dilution and are reported as NC or not calculated.

GC Semivolatiles

The %recovery of DCB and DBC in sample 056857-0009 and -0002 were below control limits for Method 8080. TCX is in control as is lab QC. The DCS's are reported due to the matrix QC being out of control. Matrix interferences are indicated. DDD is reported but was not confirmed on the 2nd channel as it co-elutes with Endosulfan II.

The %recovery of the sample surrogate DCAA is high in sample 056857-0009. Matrix interference is suspected. Other associated QC for this analysis is in control.

Metals

No anomalies were noted.

Wet Chemistry

The reactive sulfide reporting limit was raised proportionate to the amount of sample prepared.

Quanterra
Environmental Services

LIMs Report Key

Section	Description
Cover Letter	Signature page, report narrative as applicable.
Sample Description Information	Tabulated cross-reference between the Lab ID and Client ID, including matrix, date and time sampled, and the date received for all samples in the project.
Sample Analysis Results Sheets	Lists sample results, test components, reporting limits, dates prepared and analyzed, and any data qualifiers. Pages are organized by test.
QC LOT Assignment Report	Cross-reference between lab IDs and applicable QC batches (DCS, LCS, Blank, MS/SD, DU)
Duplicate Control Sample Report	Percent recovery and RPD results, with acceptance limits, for the laboratory duplicate control samples for each test are tabulated in this report. These are measures of accuracy and precision for each test. Acceptance limits are based upon laboratory historical data.
Laboratory Control Sample Report	Percent recovery results for a single Laboratory Control Sample (if applicable) are tabulated in this report, with the applicable acceptance limits for each test.
Matrix Spike/Matrix Spike Duplicate Report	Percent recovery and RPD results for matrix-specific QC samples and acceptance limits, where applicable. This report can be used to assess matrix effects on an analysis.
Single Control Sample Report	A tabulation of the surrogate recoveries for the blank for organic analyses.
Method Blank Report	A summary of the results of the analysis of the method blank for each test.

List of Abbreviations and Terms

Abbreviation	Term	Abbreviation	Term
DCS	Duplicate Control Sample	MSD	Matrix Spike Duplicate
DU	Sample Duplicate	QC Run	Preparation Batch
EB	Equipment Blank	QC Category	LIMs QC Category
FB	Field Blank	QC Lot	DCS Batch
FD	Field Duplicate	ND	Not Detected at or above the reporting limit expressed
IDL	Instrument Detection Limit (Metals)	QC Matrix	Matrix of the laboratory control sample(s)
LCS	Laboratory Control Sample	RL	Reporting Limit
MB	Method Blank	QC	Quality Control
MDL	Method Detection Limit	SA	Sample
MS	Matrix Spike	SD	Spike Duplicate
RPD	Relative Percent Difference	TB	Trip Blank
ppm (part-per-million)	mg/L or mg/kg (usually)	ppb (part-per-billion)	ug/L or ug/kg (usually)
QUAL	Qualifier flag	DIL	Dilution Factor

II. SAMPLE DESCRIPTION INFORMATION/ANALYTICAL TEST REQUESTS

Sample Description Information

The Sample Description Information lists all of the samples received in this project together with the internal laboratory identification number assigned to each sample. Each project received at Quanterra's Denver laboratory is assigned a unique six digit number. Samples within the project are numbered sequentially. The laboratory identification number is a combination of the six digit project code and the sample sequence number.

Also given in the Sample Description Information is the Sample Type (matrix), Date of Sampling (if known) and Date of Receipt at the laboratory.

Analytical Test Requests

The Analytical Test Requests lists the analyses that were performed on each sample. The Custom Test column indicates where tests have been modified to conform to the specific requirements of this project.

Quanterra
Environmental
Services

SAMPLE DESCRIPTION INFORMATION
for
Brown and Root Environmental

Lab ID	Client ID	Matrix	Sampled Date	Sampled Time	Received Date
056857-0001-SA	HX20-SB06-15	SOLID	05 SEP 97	08:06	06 SEP 97
056857-0002-SA	HX20-SB05-15	SOLID	05 SEP 97	09:55	06 SEP 97
056857-0003-SA	HX20-SB07-04	SOLID	05 SEP 97	09:55	06 SEP 97
056857-0004-TB	Trip Blank- TB-01-090597	AQUEOUS	05 SEP 97	10:48	06 SEP 97
056857-0005-SA	HX20-SB01-10	SOLID	04 SEP 97	08:22	06 SEP 97
056857-0006-SA	HX20-SB02-15	SOLID	04 SEP 97	11:19	06 SEP 97
056857-0007-SA	HX20-SB03-15	SOLID	04 SEP 97	14:57	06 SEP 97
056857-0008-SA	HX20-SB04-15	SOLID	04 SEP 97	15:07	06 SEP 97
056857-0009-SA	HX20-SB04-15	SOLID	04 SEP 97	15:07	06 SEP 97

Quanterra
Environmental Services

ANALYTICAL TEST REQUESTS
for
Brown and Root Environmental

Lab ID: 056857	Group Code	Analysis Description	Custom Test?
0001 - 0003, 0005 - 0008	A	Mercury, Cold Vapor AA	N
		Prep - Mercury, Cold Vapor AA	N
		ICP/MS Metals - (Total for Soils)	Y
		ICP/MS prep	N
		TAL Metals done by ICP	Y
		Prep - Total Metals, ICP	N
		Percent Water	N
		Volatile Organics Target Compound List (TCL)	Y
		GC Screen For Low Level Soils	N
		TCL Semivolatile Organics	Y
		Prep - Semivolatile Organics by GC/MS, Low Level Soils	N
0004	B	Volatile Organics Target Compound List (TCL)	Y
		Screen - Volatile Organics for 25mL Purge	N
0009	C	Chlorinated Herbicides SW-846 List	N
		Prep - Herbicides by GC	N
		Volatile Organic Toxicity Characteristic List	N
		Prep-Volatile Organics /API	N
		TCLP Extraction / Purgeable Volatile Organics	N
		Semivolatile Organics / TCLP	N
		Prep - Semivolatile Organics by GC/MS, TCLP Leachate	N
		TCLP Extraction / Extractable Organics & Metals	N
		Toxicity Characteristic Metals	N
		Digestion for Metals from a TCLP leachate	N
		Mercury, Cold Vapor AA TCLP Leachate	N
		Mercury, Cold Vapor AA from a TCLP Leachate	N
		Cyanide, Reactive	N
		Prep - Reactive Sulfide & Cyanide	N
		SW-846 Chap 7 / Method 9030A - Sulfide, Reactive	N
		pH	N
		Prep - pH soils	N
		Ignitability, SW846 Chapter 7	N
		Chlorinated Pesticides and PCB's Target Compound List (TCL)	N
		OCP/PCB Low Level Soils	N
		Percent Water	N

III. ANALYTICAL RESULTS

The analytical results for this project are presented in the following data tables. The results are presented by sample, by test, with tests reported in the following order: GC/MS, Chromatography, Metals and Inorganics.

Each data table includes sample identification information, and when available and appropriate, dates sampled, received, authorized, prepared and analyzed. The authorization date is the date when the project was defined by the client such that laboratory work could begin. The date prepared is typically the date an extraction or digestion was initiated. For volatile organic compounds in water, the date prepared is the date the screening of the sample was performed.

Datasheets contain a listing of the parameters measured in each test, the analytical results and Quanterra's Denver laboratory reporting limit. Reporting limits are adjusted to reflect dilution of the sample, when appropriate. Solid and soil samples are reported on a "Dry weight" basis, i.e. correction is made for moisture content.

In addition, surrogate recovery data is presented for all GC/MS analyses. The surrogate recovery is an indication of the effect of the sample matrix on the performance of the method. The results from Quanterra's Denver Laboratory Standard QA/QC Program, which generates data independent of matrix effects, are given in Section IV.

Quanterra
Environmental Services

Volatile Organics
Target Compound List (TCL)
Method 8260A

Client Name: Brown and Root Environmental
Client ID: HX20-SB06-15
Lab ID: 056857-0001-SA
Matrix: SOLID Sampled: 05 SEP 97 Prepared: 10 SEP 97
Authorized: 08 SEP 97 Received: 06 SEP 97 Analyzed: 15 SEP 97

Parameter	Result	Dry Weight Units	Reporting Limit	
Acetone	450	ug/kg	2600	J
Benzene	ND	ug/kg	650	
Bromodichloromethane	ND	ug/kg	650	
Bromoform	ND	ug/kg	650	
Bromomethane	ND	ug/kg	1300	
2-Butanone (MEK)	ND	ug/kg	2600	
Carbon disulfide	ND	ug/kg	650	
Carbon tetrachloride	ND	ug/kg	650	
Chlorobenzene	ND	ug/kg	650	
Chloroethane	ND	ug/kg	1300	
2-Chloroethyl vinyl ether	ND	ug/kg	6500	
Chloroform	ND	ug/kg	650	
Chloromethane	ND	ug/kg	1300	
Dibromochloromethane	ND	ug/kg	650	
1,1-Dichloroethane	ND	ug/kg	650	
1,2-Dichloroethane	ND	ug/kg	650	
1,1-Dichloroethene	ND	ug/kg	650	
cis-1,2-Dichloroethene	ND	ug/kg	330	
trans-1,2-Dichloroethene	ND	ug/kg	330	
1,2-Dichloroethene (total)	ND	ug/kg	650	
1,2-Dichloropropane	ND	ug/kg	650	
cis-1,3-Dichloropropene	ND	ug/kg	650	
trans-1,3-Dichloropropene	ND	ug/kg	650	
Ethylbenzene	170	ug/kg	650	J
2-Hexanone	ND	ug/kg	2600	
Methylene chloride	160	ug/kg	650	J
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	2600	
Styrene	ND	ug/kg	650	
1,1,2,2-Tetrachloroethane	ND	ug/kg	650	
Tetrachloroethene	ND	ug/kg	650	
Toluene	ND	ug/kg	650	
1,1,1-Trichloroethane	ND	ug/kg	650	
1,1,2-Trichloroethane	ND	ug/kg	650	
Trichloroethene	ND	ug/kg	650	
Vinyl acetate	ND	ug/kg	1300	
Vinyl chloride	ND	ug/kg	1300	
Xylenes (total)	1000	ug/kg	650	

Percent moisture is 5.3%. All results and limits are reported on a dry weight basis.
Dilution factor is 1.0. All results and limits are corrected for dilution.

J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

Reported By: Steven Francis Approved By: Lynn S. Calvin

Volatile Organics
Target Compound List (TCL)
Method 8260A

Client Name: Brown and Root Environmental
Client ID: HX20-SB06-15
Lab ID: 056857-0001-SA
Matrix: SOLID Sampled: 05 SEP 97 Prepared: 10 SEP 97
Authorized: 08 SEP 97 Received: 06 SEP 97 Analyzed: 15 SEP 97

Parameter	Result	Dry Weight Units	Reporting Limit
Surrogate	Recovery		Limits
1,2-Dichloroethane-d4	90	%	77-114
4-Bromofluorobenzene	103	%	83-118
Toluene-d8	96	%	84-114

Percent moisture is 5.3%. All results and limits are reported on a dry weight basis.
Dilution factor is 1.0. All results and limits are corrected for dilution.

Reported By: Steven Francis Approved By: Lynn S. Calvin

Quanterra
Environmental Services

Volatile Organics
Target Compound List (TCL)
Method 8260A

Client Name: Brown and Root Environmental
Client ID: HX20-SB05-15
Lab ID: 056857-0002-SA
Matrix: SOLID Sampled: 05 SEP 97 Prepared: 09 SEP 97
Authorized: 08 SEP 97 Received: 06 SEP 97 Analyzed: 15 SEP 97

Parameter	Result	Dry Weight Units	Reporting Limit	
Acetone	3.7	ug/kg	21	J
Benzene	ND	ug/kg	5.1	
Bromodichloromethane	ND	ug/kg	5.1	
Bromoform	ND	ug/kg	5.1	
Bromomethane	ND	ug/kg	10	
2-Butanone (MEK)	ND	ug/kg	21	
Carbon disulfide	ND	ug/kg	5.1	
Carbon tetrachloride	ND	ug/kg	5.1	
Chlorobenzene	ND	ug/kg	5.1	
Chloroethane	ND	ug/kg	10	
2-Chloroethyl vinyl ether	ND	ug/kg	51	
Chloroform	ND	ug/kg	5.1	
Chloromethane	ND	ug/kg	10	
Dibromochloromethane	ND	ug/kg	5.1	
1,1-Dichloroethane	ND	ug/kg	5.1	
1,2-Dichloroethane	ND	ug/kg	5.1	
1,1-Dichloroethene	ND	ug/kg	5.1	
cis-1,2-Dichloroethene	ND	ug/kg	2.6	
trans-1,2-Dichloroethene	ND	ug/kg	2.6	
1,2-Dichloroethene (total)	ND	ug/kg	5.1	
1,2-Dichloropropane	ND	ug/kg	5.1	
cis-1,3-Dichloropropene	ND	ug/kg	5.1	
trans-1,3-Dichloropropene	ND	ug/kg	5.1	
Ethylbenzene	ND	ug/kg	5.1	
2-Hexanone	ND	ug/kg	21	
Methylene chloride	1.3	ug/kg	5.1	J
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	21	
Styrene	ND	ug/kg	5.1	
1,1,2,2-Tetrachloroethane	ND	ug/kg	5.1	
Tetrachloroethene	ND	ug/kg	5.1	
Toluene	ND	ug/kg	5.1	
1,1,1-Trichloroethane	ND	ug/kg	5.1	
1,1,2-Trichloroethane	ND	ug/kg	5.1	
Trichloroethene	ND	ug/kg	5.1	
Vinyl acetate	ND	ug/kg	10	
Vinyl chloride	ND	ug/kg	10	
m&p-Xylene	ND	ug/kg	2.6	
o-Xylene	ND	ug/kg	2.6	

Percent moisture is 2.7%. All results and limits are reported on a dry weight basis.
Dilution factor is 1.0. All results and limits are corrected for dilution.

J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

Reported By: Sandra Jones Approved By: Lynn S. Calvin

Quanterra Environmental Services (cont.)

Volatile Organics
Target Compound List (TCL)
Method 8260A

Client Name: Brown and Root Environmental
Client ID: HX20-SB05-15
Lab ID: 056857-0002-SA
Matrix: SOLID
Authorized: 08 SEP 97
Sampled: 05 SEP 97
Received: 06 SEP 97
Prepared: 09 SEP 97
Analyzed: 15 SEP 97

Parameter	Result	Dry Weight Units	Reporting Limit
Surrogate	Recovery		Limits
1,2-Dichloroethane-d4	92	%	77-115
4-Bromofluorobenzene	96	%	90-113
Toluene-d8	101	%	86-115

Percent moisture is 2.7%. All results and limits are reported on a dry weight basis.
Dilution factor is 1.0. All results and limits are corrected for dilution.

Reported By: Sandra Jones
Approved By: Lynn S. Calvin

Quanterra
Environmental Services

Volatile Organics
Target Compound List (TCL)
Method 8260A

Client Name: Brown and Root Environmental
Client ID: HX20-SB07-04
Lab ID: 056857-0003-SA
Matrix: SOLID
Authorized: 08 SEP 97
Sampled: 05 SEP 97
Received: 06 SEP 97
Prepared: 09 SEP 97
Analyzed: 15 SEP 97

Parameter	Result	Dry Weight Units	Reporting Limit	
Acetone	4.1	ug/kg	20	J
Benzene	ND	ug/kg	5.1	
Bromodichloromethane	ND	ug/kg	5.1	
Bromoform	ND	ug/kg	5.1	
Bromomethane	ND	ug/kg	10	
2-Butanone (MEK)	ND	ug/kg	20	
Carbon disulfide	ND	ug/kg	5.1	
Carbon tetrachloride	ND	ug/kg	5.1	
Chlorobenzene	ND	ug/kg	5.1	
Chloroethane	ND	ug/kg	10	
2-Chloroethyl vinyl ether	ND	ug/kg	51	
Chloroform	ND	ug/kg	5.1	
Chloromethane	ND	ug/kg	10	
Dibromochloromethane	ND	ug/kg	5.1	
1,1-Dichloroethane	ND	ug/kg	5.1	
1,2-Dichloroethane	ND	ug/kg	5.1	
1,1-Dichloroethene	ND	ug/kg	5.1	
cis-1,2-Dichloroethene	ND	ug/kg	2.6	
trans-1,2-Dichloroethene	ND	ug/kg	2.6	
1,2-Dichloroethene (total)	ND	ug/kg	5.1	
1,2-Dichloropropane	ND	ug/kg	5.1	
cis-1,3-Dichloropropene	ND	ug/kg	5.1	
trans-1,3-Dichloropropene	ND	ug/kg	5.1	
Ethylbenzene	ND	ug/kg	5.1	
2-Hexanone	ND	ug/kg	20	
Methylene chloride	1.5	ug/kg	5.1	J
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	20	
Styrene	ND	ug/kg	5.1	
1,1,2,2-Tetrachloroethane	ND	ug/kg	5.1	
Tetrachloroethene	ND	ug/kg	5.1	
Toluene	ND	ug/kg	5.1	
1,1,1-Trichloroethane	ND	ug/kg	5.1	
1,1,2-Trichloroethane	ND	ug/kg	5.1	
Trichloroethene	ND	ug/kg	5.1	
Vinyl acetate	ND	ug/kg	10	
Vinyl chloride	ND	ug/kg	10	
m&p-Xylene	ND	ug/kg	2.6	
o-Xylene	ND	ug/kg	2.6	

Percent moisture is 2.3%. All results and limits are reported on a dry weight basis.
Dilution factor is 1.0. All results and limits are corrected for dilution.

J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

Reported By: Sandra Jones
Approved By: Lynn S. Calvin

Volatile Organics
Target Compound List (TCL)
Method 8260A

Client Name: Brown and Root Environmental
Client ID: HX20-SB07-04
Lab ID: 056857-0003-SA
Matrix: SOLID Sampled: 05 SEP 97 Prepared: 09 SEP 97
Authorized: 08 SEP 97 Received: 06 SEP 97 Analyzed: 15 SEP 97

Parameter	Result	Dry Weight Units	Reporting Limit
Surrogate	Recovery		Limits
1,2-Dichloroethane-d4	93	%	77-115
4-Bromofluorobenzene	95	%	90-113
Toluene-d8	104	%	86-115

Percent moisture is 2.3%. All results and limits are reported on a dry weight basis.
Dilution factor is 1.0. All results and limits are corrected for dilution.

Reported By: Sandra Jones Approved By: Lynn S. Calvin

Quanterra
Environmental Services

Volatile Organics Target Compound List (TCL)
Method 8260A

Client Name: Brown and Root Environmental
Client ID: Trip Blank- TB-01-090597
Lab ID: 056857-0004-TB
Matrix: AQUEOUS Sampled: 05 SEP 97 Prepared: 09 SEP 97
Authorized: 08 SEP 97 Received: 06 SEP 97 Analyzed: 12 SEP 97

Parameter	Result	Units	Reporting Limit	
Acetone	ND	ug/L	10	
Benzene	ND	ug/L	1.0	
Bromodichloromethane	ND	ug/L	1.0	
Bromoform	ND	ug/L	1.0	
Bromomethane	ND	ug/L	2.0	
2-Butanone (MEK)	ND	ug/L	5.0	
Carbon disulfide	ND	ug/L	1.0	
Carbon tetrachloride	ND	ug/L	1.0	
Chlorobenzene	ND	ug/L	1.0	
Chloroethane	ND	ug/L	2.0	
Chloroform	ND	ug/L	1.0	
Chloromethane	ND	ug/L	2.0	
Dibromochloromethane	ND	ug/L	1.0	
Vinyl acetate	ND	ug/L	2.0	
1,1-Dichloroethane	ND	ug/L	1.0	
1,2-Dichloroethane	ND	ug/L	1.0	
1,1-Dichloroethene	ND	ug/L	1.0	
cis-1,2-Dichloroethene	ND	ug/L	0.50	
trans-1,2-Dichloroethene	ND	ug/L	0.50	
1,2-Dichloroethene (total)	ND	ug/L	1.0	
1,2-Dichloropropane	ND	ug/L	1.0	
cis-1,3-Dichloropropene	ND	ug/L	1.0	
trans-1,3-Dichloropropene	ND	ug/L	1.0	
Ethylbenzene	ND	ug/L	1.0	
2-Hexanone	ND	ug/L	5.0	
Methylene chloride	0.51	ug/L	1.0	J
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	
Styrene	ND	ug/L	1.0	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	
Tetrachloroethene	ND	ug/L	1.0	
Toluene	ND	ug/L	1.0	
1,1,1-Trichloroethane	ND	ug/L	1.0	
1,1,2-Trichloroethane	ND	ug/L	1.0	
Trichloroethene	ND	ug/L	1.0	
2-Chloroethyl vinyl ether	ND	ug/L	2.0	
Vinyl chloride	ND	ug/L	2.0	
o-Xylene	ND	ug/L	0.50	
m- & p-Xylenes	ND	ug/L	0.50	
Xylenes (total)	ND	ug/L	1.0	

Dilution factor is 1.0. All results and limits are corrected for dilution.

J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

Reported By: Mike Hoffman Approved By: Lynn S. Calvin

Volatile Organics Target Compound List (TCL)
Method 8260A

Client Name: Brown and Root Environmental
Client ID: Trip Blank- TB-01-090597
Lab ID: 056857-0004-TB
Matrix: AQUEOUS Sampled: 05 SEP 97 Prepared: 09 SEP 97
Authorized: 08 SEP 97 Received: 06 SEP 97 Analyzed: 12 SEP 97

Parameter	Result	Units	Reporting Limit
Surrogate	Recovery		Limits
1,2-Dichloroethane-d4	100	%	78-113
4-Bromofluorobenzene	102	%	88-113
Toluene-d8	106	%	90-108

Dilution factor is 1.0. All results and limits are corrected for dilution.

Reported By: Mike Hoffman Approved By: Lynn S. Calvin

Quanterra
Environmental Services

Volatile Organics
Target Compound List (TCL)
Method 8260A

Client Name: Brown and Root Environmental
Client ID: HX20-SB01-10
Lab ID: 056857-0005-SA
Matrix: SOLID
Authorized: 08 SEP 97
Sampled: 04 SEP 97
Received: 06 SEP 97
Prepared: 09 SEP 97
Analyzed: 15 SEP 97

Parameter	Result	Dry Weight Units	Reporting Limit	
Acetone	2.9	ug/kg	21	J
Benzene	ND	ug/kg	5.2	
Bromodichloromethane	ND	ug/kg	5.2	
Bromoform	ND	ug/kg	5.2	
Bromomethane	ND	ug/kg	10	
2-Butanone (MEK)	ND	ug/kg	21	
Carbon disulfide	ND	ug/kg	5.2	
Carbon tetrachloride	ND	ug/kg	5.2	
Chlorobenzene	ND	ug/kg	5.2	
Chloroethane	ND	ug/kg	10	
2-Chloroethyl vinyl ether	ND	ug/kg	52	
Chloroform	ND	ug/kg	5.2	
Chloromethane	ND	ug/kg	10	
Dibromochloromethane	ND	ug/kg	5.2	
1,1-Dichloroethane	ND	ug/kg	5.2	
1,2-Dichloroethane	ND	ug/kg	5.2	
1,1-Dichloroethene	ND	ug/kg	5.2	
cis-1,2-Dichloroethene	ND	ug/kg	2.6	
trans-1,2-Dichloroethene	ND	ug/kg	2.6	
1,2-Dichloroethene (total)	ND	ug/kg	5.2	
1,2-Dichloropropane	ND	ug/kg	5.2	
cis-1,3-Dichloropropene	ND	ug/kg	5.2	
trans-1,3-Dichloropropene	ND	ug/kg	5.2	
Ethylbenzene	ND	ug/kg	5.2	
2-Hexanone	ND	ug/kg	21	
Methylene chloride	1.3	ug/kg	5.2	J
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	21	
Styrene	ND	ug/kg	5.2	
1,1,2,2-Tetrachloroethane	ND	ug/kg	5.2	
Tetrachloroethene	ND	ug/kg	5.2	
Toluene	ND	ug/kg	5.2	
1,1,1-Trichloroethane	ND	ug/kg	5.2	
1,1,2-Trichloroethane	ND	ug/kg	5.2	
Trichloroethene	ND	ug/kg	5.2	
Vinyl acetate	ND	ug/kg	10	
Vinyl chloride	ND	ug/kg	10	
m&p-Xylene	ND	ug/kg	2.6	
o-Xylene	ND	ug/kg	2.6	

Percent moisture is 3.2%. All results and limits are reported on a dry weight basis.
Dilution factor is 1.0. All results and limits are corrected for dilution.

J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

Reported By: Sandra Jones
Approved By: Lynn S. Calvin

Quanterra Environmental Services (cont.)

Volatile Organics
Target Compound List (TCL)
Method 8260A

Client Name: Brown and Root Environmental
Client ID: HX20-SB01-10
Lab ID: 056857-0005-SA
Matrix: SOLID
Authorized: 08 SEP 97
Sampled: 04 SEP 97
Received: 06 SEP 97
Prepared: 09 SEP 97
Analyzed: 15 SEP 97

Parameter	Result	Dry Weight Units	Reporting Limit
Surrogate	Recovery		Limits
1,2-Dichloroethane-d4	93	%	77-115
4-Bromofluorobenzene	92	%	90-113
Toluene-d8	105	%	86-115

Percent moisture is 3.2%. All results and limits are reported on a dry weight basis.
Dilution factor is 1.0. All results and limits are corrected for dilution.

Reported By: Sandra Jones
Approved By: Lynn S. Calvin

Quanterra
Environmental Services

Volatile Organics
Target Compound List (TCL)
Method 8260A

Client Name: Brown and Root Environmental
Client ID: HX20-SB02-15
Lab ID: 056857-0006-SA
Matrix: SOLID Sampled: 04 SEP 97 Prepared: 10 SEP 97
Authorized: 08 SEP 97 Received: 06 SEP 97 Analyzed: 15 SEP 97

Parameter	Result	Dry Weight Units	Reporting Limit	
Acetone	360	ug/kg	2700	J
Benzene	ND	ug/kg	660	
Bromodichloromethane	ND	ug/kg	660	
Bromoform	ND	ug/kg	660	
Bromomethane	ND	ug/kg	1300	
2-Butanone (MEK)	ND	ug/kg	2700	
Carbon disulfide	ND	ug/kg	660	
Carbon tetrachloride	ND	ug/kg	660	
Chlorobenzene	ND	ug/kg	660	
Chloroethane	ND	ug/kg	1300	
2-Chloroethyl vinyl ether	ND	ug/kg	6600	
Chloroform	ND	ug/kg	660	
Chloromethane	ND	ug/kg	1300	
Dibromochloromethane	ND	ug/kg	660	
1,1-Dichloroethane	ND	ug/kg	660	
1,2-Dichloroethane	ND	ug/kg	660	
1,1-Dichloroethene	ND	ug/kg	660	
cis-1,2-Dichloroethene	ND	ug/kg	330	
trans-1,2-Dichloroethene	ND	ug/kg	330	
1,2-Dichloroethene (total)	ND	ug/kg	660	
1,2-Dichloropropane	ND	ug/kg	660	
cis-1,3-Dichloropropene	ND	ug/kg	660	
trans-1,3-Dichloropropene	ND	ug/kg	660	
Ethylbenzene	ND	ug/kg	660	
2-Hexanone	ND	ug/kg	2700	
Methylene chloride	160	ug/kg	660	J
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	2700	
Styrene	ND	ug/kg	660	
1,1,2,2-Tetrachloroethane	ND	ug/kg	660	
Tetrachloroethene	ND	ug/kg	660	
Toluene	ND	ug/kg	660	
1,1,1-Trichloroethane	ND	ug/kg	660	
1,1,2-Trichloroethane	ND	ug/kg	660	
Trichloroethene	ND	ug/kg	660	
Vinyl acetate	ND	ug/kg	1300	
Vinyl chloride	ND	ug/kg	1300	
Xylenes (total)	ND	ug/kg	660	

Percent moisture is 6.6%. All results and limits are reported on a dry weight basis.
Dilution factor is 1.0. All results and limits are corrected for dilution.

J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

Reported By: Steven Francis Approved By: Lynn S. Calvin

Volatile Organics
Target Compound List (TCL)
Method 8260A

Client Name: Brown and Root Environmental
Client ID: HX20-SB02-15
Lab ID: 056857-0006-SA
Matrix: SOLID Sampled: 04 SEP 97 Prepared: 10 SEP 97
Authorized: 08 SEP 97 Received: 06 SEP 97 Analyzed: 15 SEP 97

Parameter	Result	Dry Weight Units	Reporting Limit
Surrogate	Recovery		Limits
1,2-Dichloroethane-d4	91	%	77-114
4-Bromofluorobenzene	99	%	83-118
Toluene-d8	97	%	84-114

Percent moisture is 6.6%. All results and limits are reported on a dry weight basis.
Dilution factor is 1.0. All results and limits are corrected for dilution.

Reported By: Steven Francis Approved By: Lynn S. Calvin

Quanterra
Environmental Services

Volatile Organics
Target Compound List (TCL)
Method 8260A

Client Name: Brown and Root Environmental
Client ID: HX20-SB03-15
Lab ID: 056857-0007-SA
Matrix: SOLID Sampled: 04 SEP 97 Prepared: 10 SEP 97
Authorized: 08 SEP 97 Received: 06 SEP 97 Analyzed: 15 SEP 97

Parameter	Result	Dry Weight Units	Reporting Limit	
Acetone	530	ug/kg	2700	J
Benzene	ND	ug/kg	680	
Bromodichloromethane	ND	ug/kg	680	
Bromoform	ND	ug/kg	680	
Bromomethane	ND	ug/kg	1300	
2-Butanone (MEK)	ND	ug/kg	2700	
Carbon disulfide	ND	ug/kg	680	
Carbon tetrachloride	ND	ug/kg	680	
Chlorobenzene	ND	ug/kg	680	
Chloroethane	ND	ug/kg	1300	
2-Chloroethyl vinyl ether	ND	ug/kg	6800	
Chloroform	ND	ug/kg	680	
Chloromethane	ND	ug/kg	1300	
Dibromochloromethane	ND	ug/kg	680	
1,1-Dichloroethane	ND	ug/kg	680	
1,2-Dichloroethane	ND	ug/kg	680	
1,1-Dichloroethene	ND	ug/kg	680	
cis-1,2-Dichloroethene	ND	ug/kg	340	
trans-1,2-Dichloroethene	ND	ug/kg	340	
1,2-Dichloroethene (total)	ND	ug/kg	680	
1,2-Dichloropropane	ND	ug/kg	680	
cis-1,3-Dichloropropene	ND	ug/kg	680	
trans-1,3-Dichloropropene	ND	ug/kg	680	
Ethylbenzene	160	ug/kg	680	J
2-Hexanone	ND	ug/kg	2700	
Methylene chloride	160	ug/kg	680	J
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	2700	
Styrene	ND	ug/kg	680	
1,1,2,2-Tetrachloroethane	ND	ug/kg	680	
Tetrachloroethene	ND	ug/kg	680	
Toluene	ND	ug/kg	680	
1,1,1-Trichloroethane	ND	ug/kg	680	
1,1,2-Trichloroethane	ND	ug/kg	680	
Trichloroethene	ND	ug/kg	680	
Vinyl acetate	ND	ug/kg	1300	
Vinyl chloride	ND	ug/kg	1300	
Xylenes (total)	1200	ug/kg	680	

Percent moisture is 8.6%. All results and limits are reported on a dry weight basis.
Dilution factor is 1.0. All results and limits are corrected for dilution.

J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

Reported By: Steven Francis Approved By: Lynn S. Calvin

Volatile Organics
Target Compound List (TCL)
Method 8260A

Client Name: Brown and Root Environmental
Client ID: HX20-SB03-15
Lab ID: 056857-0007-SA
Matrix: SOLID Sampled: 04 SEP 97 Prepared: 10 SEP 97
Authorized: 08 SEP 97 Received: 06 SEP 97 Analyzed: 15 SEP 97

Parameter	Result	Dry Weight Units	Reporting Limit
Surrogate	Recovery		Limits
1,2-Dichloroethane-d4	91	%	77-114
4-Bromofluorobenzene	106	%	83-118
Toluene-d8	99	%	84-114

Percent moisture is 8.6%. All results and limits are reported on a dry weight basis.
Dilution factor is 1.0. All results and limits are corrected for dilution.

Reported By: Steven Francis Approved By: Lynn S. Calvin

Quanterra
Environmental Services

Volatile Organics
Target Compound List (TCL)
Method 8260A

Client Name: Brown and Root Environmental
Client ID: HX20-SB04-15
Lab ID: 056857-0008-SA
Matrix: SOLID Sampled: 04 SEP 97 Prepared: 10 SEP 97
Authorized: 08 SEP 97 Received: 06 SEP 97 Analyzed: 15 SEP 97

Parameter	Result	Dry Weight Units	Reporting Limit	
Acetone	380	ug/kg	2700	J
Benzene	ND	ug/kg	680	
Bromodichloromethane	ND	ug/kg	680	
Bromoform	ND	ug/kg	680	
Bromomethane	ND	ug/kg	1300	
2-Butanone (MEK)	ND	ug/kg	2700	
Carbon disulfide	ND	ug/kg	680	
Carbon tetrachloride	ND	ug/kg	680	
Chlorobenzene	ND	ug/kg	680	
Chloroethane	ND	ug/kg	1300	
2-Chloroethyl vinyl ether	ND	ug/kg	6800	
Chloroform	ND	ug/kg	680	
Chloromethane	ND	ug/kg	1300	
Dibromochloromethane	ND	ug/kg	680	
1,1-Dichloroethane	ND	ug/kg	680	
1,2-Dichloroethane	ND	ug/kg	680	
1,1-Dichloroethene	ND	ug/kg	680	
cis-1,2-Dichloroethene	ND	ug/kg	340	
trans-1,2-Dichloroethene	ND	ug/kg	340	
1,2-Dichloroethene (total)	ND	ug/kg	680	
1,2-Dichloropropane	ND	ug/kg	680	
cis-1,3-Dichloropropene	ND	ug/kg	680	
trans-1,3-Dichloropropene	ND	ug/kg	680	
Ethylbenzene	320	ug/kg	680	J
2-Hexanone	ND	ug/kg	2700	
Methylene chloride	160	ug/kg	680	J
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	2700	
Styrene	ND	ug/kg	680	
1,1,2,2-Tetrachloroethane	ND	ug/kg	680	
Tetrachloroethene	ND	ug/kg	680	
Toluene	ND	ug/kg	680	
1,1,1-Trichloroethane	ND	ug/kg	680	
1,1,2-Trichloroethane	ND	ug/kg	680	
Trichloroethene	ND	ug/kg	680	
Vinyl acetate	ND	ug/kg	1300	
Vinyl chloride	ND	ug/kg	1300	
Xylenes (total)	1700	ug/kg	680	

Percent moisture is 8.8%. All results and limits are reported on a dry weight basis.
Dilution factor is 1.0. All results and limits are corrected for dilution.

J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

Reported By: Steven Francis Approved By: Lynn S. Calvin

Volatile Organics
Target Compound List (TCL)
Method 8260A

Client Name: Brown and Root Environmental
Client ID: HX20-SB04-15
Lab ID: 056857-0008-SA
Matrix: SOLID
Authorized: 08 SEP 97
Sampled: 04 SEP 97
Received: 06 SEP 97
Prepared: 10 SEP 97
Analyzed: 15 SEP 97

Parameter	Result	Dry Weight Units	Reporting Limit
Surrogate	Recovery		Limits
1,2-Dichloroethane-d4	90	%	77-114
4-Bromofluorobenzene	106	%	83-118
Toluene-d8	99	%	84-114

Percent moisture is 8.8%. All results and limits are reported on a dry weight basis.
Dilution factor is 1.0. All results and limits are corrected for dilution.

Reported By: Steven Francis
Approved By: Lynn S. Calvin

Quanterra
Environmental Services

TCL Semivolatile Organics
Method 8270B

Client Name: Brown and Root Environmental
Client ID: HX20-SB06-15
Lab ID: 056857-0001-SA
Matrix: SOLID — Sampled: 05 SEP 97 — Prepared: 09 SEP 97
Authorized: 08 SEP 97 — Received: 06 SEP 97 — Analyzed: 11 SEP 97

Parameter	Result	Dry Weight Units	Reporting Limit
Acenaphthene	ND	ug/kg	1400
Acenaphthylene	ND	ug/kg	1400
Anthracene	ND	ug/kg	1400
Benzo(a)anthracene	ND	ug/kg	1400
Benzo(b)fluoranthene	ND	ug/kg	1400
Benzo(k)fluoranthene	ND	ug/kg	1400
Benzo(g,h,i)perylene	ND	ug/kg	1400
Benzo(a)pyrene	ND	ug/kg	1400
4-Bromophenyl phenyl ether	ND	ug/kg	1400
Butyl benzyl phthalate	ND	ug/kg	1400
Carbazole	ND	ug/kg	1400
4-Chloroaniline	ND	ug/kg	1400
bis(2-Chloroethoxy)methane	ND	ug/kg	1400
bis(2-Chloroethyl) ether	ND	ug/kg	1400
2,2'-oxybis(1-chloropropane)	ND	ug/kg	1400
4-Chloro-3-methylphenol	ND	ug/kg	1400
2-Chloronaphthalene	ND	ug/kg	1400
2-Chlorophenol	ND	ug/kg	1400
4-Chlorophenyl phenyl ether	ND	ug/kg	1400
Chrysene	ND	ug/kg	1400
Dibenz(a,h)anthracene	ND	ug/kg	1400
Dibenzofuran	ND	ug/kg	1400
Di-n-butyl phthalate	ND	ug/kg	1400
1,2-Dichlorobenzene	ND	ug/kg	1400
1,3-Dichlorobenzene	ND	ug/kg	1400
1,4-Dichlorobenzene	ND	ug/kg	1400
3,3'-Dichlorobenzidine	ND	ug/kg	6800
2,4-Dichlorophenol	ND	ug/kg	1400
Diethyl phthalate	ND	ug/kg	1400
2,4-Dimethylphenol	ND	ug/kg	1400
Dimethyl phthalate	ND	ug/kg	1400
4,6-Dinitro-2-methylphenol	ND	ug/kg	6800
2,4-Dinitrophenol	ND	ug/kg	6800
2,4-Dinitrotoluene	ND	ug/kg	1400
2,6-Dinitrotoluene	ND	ug/kg	1400
Di-n-octyl phthalate	ND	ug/kg	1400
bis(2-Ethylhexyl)phthalate	ND	ug/kg	1400
Fluoranthene	ND	ug/kg	1400
Fluorene	ND	ug/kg	1400
Hexachlorobenzene	ND	ug/kg	1400
Hexachlorobutadiene	ND	ug/kg	1400
Hexachlorocyclopentadiene	ND	ug/kg	6800

Percent moisture is 5.3%. All results and limits are reported on a dry weight basis.
Dilution factor is 4.0. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Deneen Spence — Approved By: Audrey Cornell

TCL Semivolatile Organics
Method 8270B

Client Name: Brown and Root Environmental
Client ID: HX20-SB06-15
Lab ID: 056857-0001-SA
Matrix: SOLID Sampled: 05 SEP 97 Prepared: 09 SEP 97
Authorized: 08 SEP 97 Received: 06 SEP 97 Analyzed: 11 SEP 97

Parameter	Result	Dry Weight Units	Reporting Limit
Hexachloroethane	ND	ug/kg	1400
Indeno(1,2,3-cd)pyrene	ND	ug/kg	1400
Isophorone	ND	ug/kg	1400
2-Methylnaphthalene	9900	ug/kg	1400
2-Methylphenol	ND	ug/kg	1400
4-Methylphenol	ND	ug/kg	1400
Naphthalene	2000	ug/kg	1400
2-Nitroaniline	ND	ug/kg	6800
3-Nitroaniline	ND	ug/kg	6800
4-Nitroaniline	ND	ug/kg	6800
Nitrobenzene	ND	ug/kg	1400
2-Nitrophenol	ND	ug/kg	1400
4-Nitrophenol	ND	ug/kg	6800
N-Nitrosodiphenylamine	ND	ug/kg	1400
N-Nitroso-di-n-propylamine	ND	ug/kg	1400
Benzyl alcohol	ND	ug/kg	1400
Bis(2-chloroisopropyl) ether-d12	ND	ug/kg	1400
Pyridine	ND	ug/kg	2800
Benzoic acid	ND	ug/kg	6800
Pentachlorophenol	ND	ug/kg	6800
Phenanthrene	ND	ug/kg	1400
Phenol	ND	ug/kg	1400
Pyrene	ND	ug/kg	1400
1,2,4-Trichlorobenzene	ND	ug/kg	1400
2,4,5-Trichlorophenol	ND	ug/kg	1400
2,4,6-Trichlorophenol	ND	ug/kg	1400

Surrogate	Recovery		Limits
Nitrobenzene-d5	75	%	56-108
2-Fluorobiphenyl	75	%	56-110
Terphenyl-d14	54	%	51-135
2-Fluorophenol	74	%	57-112
Phenol-d5	71	%	61-110
2,4,6-Tribromophenol	95	%	42-106

Percent moisture is 5.3%. All results and limits are reported on a dry weight basis.
Dilution factor is 4.0. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Deneen Spence Approved By: Audrey Cornell

Quanterra
Environmental Services

TCL Semivolatile Organics
Method 8270B

Client Name: Brown and Root Environmental
Client ID: HX20-SB05-15
Lab ID: 056857-0002-SA
Matrix: SOLID
Authorized: 08 SEP 97

Sampled: 05 SEP 97
Received: 06 SEP 97

Prepared: 09 SEP 97
Analyzed: 10 SEP 97

Parameter	Result	Dry Weight Units	Reporting Limit
Acenaphthene	ND	ug/kg	340
Acenaphthylene	ND	ug/kg	340
Anthracene	ND	ug/kg	340
Benzo(a)anthracene	ND	ug/kg	340
Benzo(b)fluoranthene	ND	ug/kg	340
Benzo(k)fluoranthene	ND	ug/kg	340
Benzo(g,h,i)perylene	ND	ug/kg	340
Benzo(a)pyrene	ND	ug/kg	340
4-Bromophenyl phenyl ether	ND	ug/kg	340
Butyl benzyl phthalate	ND	ug/kg	340
Carbazole	ND	ug/kg	340
4-Chloroaniline	ND	ug/kg	340
bis(2-Chloroethoxy)methane	ND	ug/kg	340
bis(2-Chloroethyl) ether	ND	ug/kg	340
2,2'-oxybis(1-chloropropane)	ND	ug/kg	340
4-Chloro-3-methylphenol	ND	ug/kg	340
2-Chloronaphthalene	ND	ug/kg	340
2-Chlorophenol	ND	ug/kg	340
4-Chlorophenyl phenyl ether	ND	ug/kg	340
Chrysene	ND	ug/kg	340
Dibenz(a,h)anthracene	ND	ug/kg	340
Dibenzofuran	ND	ug/kg	340
Di-n-butyl phthalate	ND	ug/kg	340
1,2-Dichlorobenzene	ND	ug/kg	340
1,3-Dichlorobenzene	ND	ug/kg	340
1,4-Dichlorobenzene	ND	ug/kg	340
3,3'-Dichlorobenzidine	ND	ug/kg	1600
2,4-Dichlorophenol	ND	ug/kg	340
Diethyl phthalate	ND	ug/kg	340
2,4-Dimethylphenol	ND	ug/kg	340
Dimethyl phthalate	ND	ug/kg	340
4,6-Dinitro-2-methylphenol	ND	ug/kg	1600
2,4-Dinitrophenol	ND	ug/kg	1600
2,4-Dinitrotoluene	ND	ug/kg	340
2,6-Dinitrotoluene	ND	ug/kg	340
Di-n-octyl phthalate	ND	ug/kg	340
bis(2-Ethylhexyl)phthalate	ND	ug/kg	340
Fluoranthene	ND	ug/kg	340
Fluorene	ND	ug/kg	340
Hexachlorobenzene	ND	ug/kg	340
Hexachlorobutadiene	ND	ug/kg	340
Hexachlorocyclopentadiene	ND	ug/kg	1600

Percent moisture is 2.7%. All results and limits are reported on a dry weight basis.
Dilution factor is 1.0. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Deneen Spence

Approved By: Audrey Cornell

TCL Semivolatile Organics
Method 8270B

Client Name: Brown and Root Environmental
Client ID: HX20-SB05-15
Lab ID: 056857-0002-SA
Matrix: SOLID
Authorized: 08 SEP 97
Sampled: 05 SEP 97
Received: 06 SEP 97
Prepared: 09 SEP 97
Analyzed: 10 SEP 97

Parameter	Result	Dry Weight Units	Reporting Limit
Hexachloroethane	ND	ug/kg	340
Indeno(1,2,3-cd)pyrene	ND	ug/kg	340
Isophorone	ND	ug/kg	340
2-Methylnaphthalene	ND	ug/kg	340
2-Methylphenol	ND	ug/kg	340
4-Methylphenol	ND	ug/kg	340
Naphthalene	ND	ug/kg	340
2-Nitroaniline	ND	ug/kg	1600
3-Nitroaniline	ND	ug/kg	1600
4-Nitroaniline	ND	ug/kg	1600
Nitrobenzene	ND	ug/kg	340
2-Nitrophenol	ND	ug/kg	340
4-Nitrophenol	ND	ug/kg	1600
N-Nitrosodiphenylamine	ND	ug/kg	340
N-Nitroso-di-n-propylamine	ND	ug/kg	340
Benzyl alcohol	ND	ug/kg	340
Bis(2-chloroisopropyl) ether-d12	ND	ug/kg	340
Pyridine	ND	ug/kg	680
Benzoic acid	ND	ug/kg	1600
Pentachlorophenol	ND	ug/kg	1600
Phenanthrene	ND	ug/kg	340
Phenol	ND	ug/kg	340
Pyrene	ND	ug/kg	340
1,2,4-Trichlorobenzene	ND	ug/kg	340
2,4,5-Trichlorophenol	ND	ug/kg	340
2,4,6-Trichlorophenol	ND	ug/kg	340

Surrogate	Recovery		Limits
Nitrobenzene-d5	64	%	56-108
2-Fluorobiphenyl	71	%	56-110
Terphenyl-d14	64	%	51-135
2-Fluorophenol	78	%	57-112
Phenol-d5	75	%	61-110
2,4,6-Tribromophenol	91	%	42-106

Percent moisture is 2.7%. All results and limits are reported on a dry weight basis.
Dilution factor is 1.0. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Deneen Spence
Approved By: Audrey Cornell

Quanterra
Environmental Services

TCL Semivolatile Organics
Method 8270B

Client Name: Brown and Root Environmental
Client ID: HX20-SB07-04
Lab ID: 056857-0003-SA
Matrix: SOLID — Sampled: 05 SEP 97 — Prepared: 09 SEP 97
Authorized: 08 SEP 97 — Received: 06 SEP 97 — Analyzed: 10 SEP 97

Parameter	Result	Dry Weight Units	Reporting Limit
Acenaphthene	ND	ug/kg	340
Acenaphthylene	ND	ug/kg	340
Anthracene	ND	ug/kg	340
Benzo(a)anthracene	ND	ug/kg	340
Benzo(b)fluoranthene	ND	ug/kg	340
Benzo(k)fluoranthene	ND	ug/kg	340
Benzo(g,h,i)perylene	ND	ug/kg	340
Benzo(a)pyrene	ND	ug/kg	340
4-Bromophenyl phenyl ether	ND	ug/kg	340
Butyl benzyl phthalate	ND	ug/kg	340
Carbazole	ND	ug/kg	340
4-Chloroaniline	ND	ug/kg	340
bis(2-Chloroethoxy)methane	ND	ug/kg	340
bis(2-Chloroethyl) ether	ND	ug/kg	340
2,2'-oxybis(1-chloropropane)	ND	ug/kg	340
4-Chloro-3-methylphenol	ND	ug/kg	340
2-Chloronaphthalene	ND	ug/kg	340
2-Chlorophenol	ND	ug/kg	340
4-Chlorophenyl phenyl ether	ND	ug/kg	340
Chrysene	ND	ug/kg	340
Dibenz(a,h)anthracene	ND	ug/kg	340
Dibenzofuran	ND	ug/kg	340
Di-n-butyl phthalate	ND	ug/kg	340
1,2-Dichlorobenzene	ND	ug/kg	340
1,3-Dichlorobenzene	ND	ug/kg	340
1,4-Dichlorobenzene	ND	ug/kg	340
3,3'-Dichlorobenzidine	ND	ug/kg	1600
2,4-Dichlorophenol	ND	ug/kg	340
Diethyl phthalate	ND	ug/kg	340
2,4-Dimethylphenol	ND	ug/kg	340
Dimethyl phthalate	ND	ug/kg	340
4,6-Dinitro-2-methylphenol	ND	ug/kg	1600
2,4-Dinitrophenol	ND	ug/kg	1600
2,4-Dinitrotoluene	ND	ug/kg	340
2,6-Dinitrotoluene	ND	ug/kg	340
Di-n-octyl phthalate	ND	ug/kg	340
bis(2-Ethylhexyl)phthalate	ND	ug/kg	340
Fluoranthene	ND	ug/kg	340
Fluorene	ND	ug/kg	340
Hexachlorobenzene	ND	ug/kg	340
Hexachlorobutadiene	ND	ug/kg	340
Hexachlorocyclopentadiene	ND	ug/kg	1600

Percent moisture is 2.3%. All results and limits are reported on a dry weight basis.
Dilution factor is 1.0. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Deneen Spence — Approved By: Audrey Cornell

TCL Semivolatile Organics
Method 8270B

Client Name: Brown and Root Environmental
Client ID: HX20-SB07-04
Lab ID: 056857-0003-SA
Matrix: SOLID
Authorized: 08 SEP 97
Sampled: 05 SEP 97
Received: 06 SEP 97
Prepared: 09 SEP 97
Analyzed: 10 SEP 97

Parameter	Result	Dry Weight Units	Reporting Limit
Hexachloroethane	ND	ug/kg	340
Indeno(1,2,3-cd)pyrene	ND	ug/kg	340
Isophorone	ND	ug/kg	340
2-Methylnaphthalene	ND	ug/kg	340
2-Methylphenol	ND	ug/kg	340
4-Methylphenol	ND	ug/kg	340
Naphthalene	ND	ug/kg	340
2-Nitroaniline	ND	ug/kg	1600
3-Nitroaniline	ND	ug/kg	1600
4-Nitroaniline	ND	ug/kg	1600
Nitrobenzene	ND	ug/kg	340
2-Nitrophenol	ND	ug/kg	340
4-Nitrophenol	ND	ug/kg	1600
N-Nitrosodiphenylamine	ND	ug/kg	340
N-Nitroso-di-n-propylamine	ND	ug/kg	340
Benzyl alcohol	ND	ug/kg	340
Bis(2-chloroisopropyl) ether-d12	ND	ug/kg	340
Pyridine	ND	ug/kg	680
Benzoic acid	ND	ug/kg	1600
Pentachlorophenol	ND	ug/kg	1600
Phenanthrene	ND	ug/kg	340
Phenol	ND	ug/kg	340
Pyrene	ND	ug/kg	340
1,2,4-Trichlorobenzene	ND	ug/kg	340
2,4,5-Trichlorophenol	ND	ug/kg	340
2,4,6-Trichlorophenol	ND	ug/kg	340

Surrogate	Recovery		Limits
Nitrobenzene-d5	57	%	56-108
2-Fluorobiphenyl	64	%	56-110
Terphenyl-d14	58	%	51-135
2-Fluorophenol	69	%	57-112
Phenol-d5	66	%	61-110
2,4,6-Tribromophenol	86	%	42-106

Percent moisture is 2.3%. All results and limits are reported on a dry weight basis.
Dilution factor is 1.0. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Deneen Spence
Approved By: Audrey Cornell

Quanterra
Environmental Services

TCL Semivolatile Organics
Method 8270B

Client Name: Brown and Root Environmental
Client ID: HX20-SB01-10
Lab ID: 056857-0005-SA
Matrix: SOLID
Authorized: 08 SEP 97
Sampled: 04 SEP 97
Received: 06 SEP 97
Prepared: 09 SEP 97
Analyzed: 11 SEP 97

Parameter	Result	Dry Weight Units	Reporting Limit
Acenaphthene	ND	ug/kg	680
Acenaphthylene	ND	ug/kg	680
Anthracene	ND	ug/kg	680
Benzo(a)anthracene	ND	ug/kg	680
Benzo(b)fluoranthene	ND	ug/kg	680
Benzo(k)fluoranthene	ND	ug/kg	680
Benzo(g,h,i)perylene	ND	ug/kg	680
Benzo(a)pyrene	ND	ug/kg	680
4-Bromophenyl phenyl ether	ND	ug/kg	680
Butyl benzyl phthalate	ND	ug/kg	680
Carbazole	ND	ug/kg	680
4-Chloroaniline	ND	ug/kg	680
bis(2-Chloroethoxy)methane	ND	ug/kg	680
bis(2-Chloroethyl) ether	ND	ug/kg	680
2,2'-oxybis(1-chloropropane)	ND	ug/kg	680
4-Chloro-3-methylphenol	ND	ug/kg	680
2-Chloronaphthalene	ND	ug/kg	680
2-Chlorophenol	ND	ug/kg	680
4-Chlorophenyl phenyl ether	ND	ug/kg	680
Chrysene	ND	ug/kg	680
Dibenz(a,h)anthracene	ND	ug/kg	680
Dibenzofuran	ND	ug/kg	680
Di-n-butyl phthalate	ND	ug/kg	680
1,2-Dichlorobenzene	ND	ug/kg	680
1,3-Dichlorobenzene	ND	ug/kg	680
1,4-Dichlorobenzene	ND	ug/kg	680
3,3'-Dichlorobenzidine	ND	ug/kg	3300
2,4-Dichlorophenol	ND	ug/kg	680
Diethyl phthalate	ND	ug/kg	680
2,4-Dimethylphenol	ND	ug/kg	680
Dimethyl phthalate	ND	ug/kg	680
4,6-Dinitro-2-methylphenol	ND	ug/kg	3300
2,4-Dinitrophenol	ND	ug/kg	3300
2,4-Dinitrotoluene	ND	ug/kg	680
2,6-Dinitrotoluene	ND	ug/kg	680
Di-n-octyl phthalate	ND	ug/kg	680
bis(2-Ethylhexyl)phthalate	ND	ug/kg	680
Fluoranthene	ND	ug/kg	680
Fluorene	ND	ug/kg	680
Hexachlorobenzene	ND	ug/kg	680
Hexachlorobutadiene	ND	ug/kg	680
Hexachlorocyclopentadiene	ND	ug/kg	3300

Percent moisture is 3.2%. All results and limits are reported on a dry weight basis.
Dilution factor is 2.0. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Deneen Spence
Approved By: Audrey Cornell

TCL Semivolatile Organics
Method 8270B

Client Name: Brown and Root Environmental
Client ID: HX20-SB01-10
Lab ID: 056857-0005-SA
Matrix: SOLID Sampled: 04 SEP 97 Prepared: 09 SEP 97
Authorized: 08 SEP 97 Received: 06 SEP 97 Analyzed: 11 SEP 97

Parameter	Result	Dry Weight Units	Reporting Limit
Hexachloroethane	ND	ug/kg	680
Indeno(1,2,3-cd)pyrene	ND	ug/kg	680
Isophorone	ND	ug/kg	680
2-Methylnaphthalene	ND	ug/kg	680
2-Methylphenol	ND	ug/kg	680
4-Methylphenol	ND	ug/kg	680
Naphthalene	ND	ug/kg	680
2-Nitroaniline	ND	ug/kg	3300
3-Nitroaniline	ND	ug/kg	3300
4-Nitroaniline	ND	ug/kg	3300
Nitrobenzene	ND	ug/kg	680
2-Nitrophenol	ND	ug/kg	680
4-Nitrophenol	ND	ug/kg	3300
N-Nitrosodiphenylamine	ND	ug/kg	680
N-Nitroso-di-n-propylamine	ND	ug/kg	680
Benzyl alcohol	ND	ug/kg	680
Bis(2-chloroisopropyl) ether-d12	ND	ug/kg	680
Pyridine	ND	ug/kg	1400
Benzoic acid	ND	ug/kg	3300
Pentachlorophenol	ND	ug/kg	3300
Phenanthrene	ND	ug/kg	680
Phenol	ND	ug/kg	680
Pyrene	ND	ug/kg	680
1,2,4-Trichlorobenzene	ND	ug/kg	680
2,4,5-Trichlorophenol	ND	ug/kg	680
2,4,6-Trichlorophenol	ND	ug/kg	680

Surrogate	Recovery		Limits
Nitrobenzene-d5	58	%	56-108
2-Fluorobiphenyl	68	%	56-110
Terphenyl-d14	53	%	51-135
2-Fluorophenol	67	%	57-112
Phenol-d5	65	%	61-110
2,4,6-Tribromophenol	84	%	42-106

Percent moisture is 3.2%. All results and limits are reported on a dry weight basis.
Dilution factor is 2.0. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Deneen Spence Approved By: Audrey Cornell

Quanterra
Environmental Services

TCL Semivolatile Organics
Method 8270B

Client Name: Brown and Root Environmental
Client ID: HX20-SB02-15
Lab ID: 056857-0006-SA
Matrix: SOLID Sampled: 04 SEP 97 Prepared: 09 SEP 97
Authorized: 08 SEP 97 Received: 06 SEP 97 Analyzed: 10 SEP 97

Parameter	Result	Dry Weight Units	Reporting Limit
Acenaphthene	ND	ug/kg	350
Acenaphthylene	ND	ug/kg	350
Anthracene	ND	ug/kg	350
Benzo(a)anthracene	ND	ug/kg	350
Benzo(b)fluoranthene	ND	ug/kg	350
Benzo(k)fluoranthene	ND	ug/kg	350
Benzo(g,h,i)perylene	ND	ug/kg	350
Benzo(a)pyrene	ND	ug/kg	350
4-Bromophenyl phenyl ether	ND	ug/kg	350
Butyl benzyl phthalate	ND	ug/kg	350
Carbazole	ND	ug/kg	350
4-Chloroaniline	ND	ug/kg	350
bis(2-Chloroethoxy)methane	ND	ug/kg	350
bis(2-Chloroethyl) ether	ND	ug/kg	350
2,2'-oxybis(1-chloropropane)	ND	ug/kg	350
4-Chloro-3-methylphenol	ND	ug/kg	350
2-Chloronaphthalene	ND	ug/kg	350
2-Chlorophenol	ND	ug/kg	350
4-Chlorophenyl phenyl ether	ND	ug/kg	350
Chrysene	ND	ug/kg	350
Dibenz(a,h)anthracene	ND	ug/kg	350
Dibenzofuran	ND	ug/kg	350
Di-n-butyl phthalate	ND	ug/kg	350
1,2-Dichlorobenzene	ND	ug/kg	350
1,3-Dichlorobenzene	ND	ug/kg	350
1,4-Dichlorobenzene	ND	ug/kg	350
3,3'-Dichlorobenzidine	ND	ug/kg	1700
2,4-Dichlorophenol	ND	ug/kg	350
Diethyl phthalate	ND	ug/kg	350
2,4-Dimethylphenol	ND	ug/kg	350
Dimethyl phthalate	ND	ug/kg	350
4,6-Dinitro-2-methylphenol	ND	ug/kg	1700
2,4-Dinitrophenol	ND	ug/kg	1700
2,4-Dinitrotoluene	ND	ug/kg	350
2,6-Dinitrotoluene	ND	ug/kg	350
Di-n-octyl phthalate	ND	ug/kg	350
bis(2-Ethylhexyl)phthalate	ND	ug/kg	350
Fluoranthene	ND	ug/kg	350
Fluorene	ND	ug/kg	350
Hexachlorobenzene	ND	ug/kg	350
Hexachlorobutadiene	ND	ug/kg	350
Hexachlorocyclopentadiene	ND	ug/kg	1700

Percent moisture is 6.6%. All results and limits are reported on a dry weight basis.
Dilution factor is 1.0. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Deneen Spence Approved By: Audrey Cornell

TCL Semivolatile Organics
Method 8270B

Client Name: Brown and Root Environmental
Client ID: HX20-SB02-15
Lab ID: 056857-0006-SA
Matrix: SOLID Sampled: 04 SEP 97 Prepared: 09 SEP 97
Authorized: 08 SEP 97 Received: 06 SEP 97 Analyzed: 10 SEP 97

Parameter	Result	Dry Weight Units	Reporting Limit
Hexachloroethane	ND	ug/kg	350
Indeno(1,2,3-cd)pyrene	ND	ug/kg	350
Isophorone	ND	ug/kg	350
2-Methylnaphthalene	2400	ug/kg	350
2-Methylphenol	ND	ug/kg	350
4-Methylphenol	ND	ug/kg	350
Naphthalene	410	ug/kg	350
2-Nitroaniline	ND	ug/kg	1700
3-Nitroaniline	ND	ug/kg	1700
4-Nitroaniline	ND	ug/kg	1700
Nitrobenzene	ND	ug/kg	350
2-Nitrophenol	ND	ug/kg	350
4-Nitrophenol	ND	ug/kg	1700
N-Nitrosodiphenylamine	ND	ug/kg	350
N-Nitroso-di-n-propylamine	ND	ug/kg	350
Benzyl alcohol	ND	ug/kg	350
Bis(2-chloroisopropyl) ether-d12	ND	ug/kg	350
Pyridine	ND	ug/kg	710
Benzoic acid	ND	ug/kg	1700
Pentachlorophenol	ND	ug/kg	1700
Phenanthrene	400	ug/kg	350
Phenol	ND	ug/kg	350
Pyrene	ND	ug/kg	350
1,2,4-Trichlorobenzene	ND	ug/kg	350
2,4,5-Trichlorophenol	ND	ug/kg	350
2,4,6-Trichlorophenol	ND	ug/kg	350

Surrogate	Recovery		Limits
Nitrobenzene-d5	66	%	56-108
2-Fluorobiphenyl	70	%	56-110
Terphenyl-d14	54	%	51-135
2-Fluorophenol	71	%	57-112
Phenol-d5	70	%	61-110
2,4,6-Tribromophenol	91	%	42-106

Percent moisture is 6.6%. All results and limits are reported on a dry weight basis.
Dilution factor is 1.0. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Deneen Spence Approved By: Audrey Cornell

Quanterra
Environmental Services

TCL Semivolatile Organics
Method 8270B

Client Name: Brown and Root Environmental
Client ID: HX20-SB03-15
Lab ID: 056857-0007-SA
Matrix: SOLID Sampled: 04 SEP 97 Prepared: 09 SEP 97
Authorized: 08 SEP 97 Received: 06 SEP 97 Analyzed: 11 SEP 97

Parameter	Result	Dry Weight Units	Reporting Limit
Acenaphthene	ND	ug/kg	3600
Acenaphthylene	ND	ug/kg	3600
Anthracene	ND	ug/kg	3600
Benzo(a)anthracene	ND	ug/kg	3600
Benzo(b)fluoranthene	ND	ug/kg	3600
Benzo(k)fluoranthene	ND	ug/kg	3600
Benzo(g,h,i)perylene	ND	ug/kg	3600
Benzo(a)pyrene	ND	ug/kg	3600
4-Bromophenyl phenyl ether	ND	ug/kg	3600
Butyl benzyl phthalate	ND	ug/kg	3600
Carbazole	ND	ug/kg	3600
4-Chloroaniline	ND	ug/kg	3600
bis(2-Chloroethoxy)methane	ND	ug/kg	3600
bis(2-Chloroethyl) ether	ND	ug/kg	3600
2,2'-oxybis(1-chloropropane)	ND	ug/kg	3600
4-Chloro-3-methylphenol	ND	ug/kg	3600
2-Chloronaphthalene	ND	ug/kg	3600
2-Chlorophenol	ND	ug/kg	3600
4-Chlorophenyl phenyl ether	ND	ug/kg	3600
Chrysene	ND	ug/kg	3600
Dibenz(a,h)anthracene	ND	ug/kg	3600
Dibenzofuran	ND	ug/kg	3600
Di-n-butyl phthalate	ND	ug/kg	3600
1,2-Dichlorobenzene	ND	ug/kg	3600
1,3-Dichlorobenzene	ND	ug/kg	3600
1,4-Dichlorobenzene	ND	ug/kg	3600
3,3'-Dichlorobenzidine	ND	ug/kg	18000
2,4-Dichlorophenol	ND	ug/kg	3600
Diethyl phthalate	ND	ug/kg	3600
2,4-Dimethylphenol	ND	ug/kg	3600
Dimethyl phthalate	ND	ug/kg	3600
4,6-Dinitro-2-methylphenol	ND	ug/kg	18000
2,4-Dinitrophenol	ND	ug/kg	18000
2,4-Dinitrotoluene	ND	ug/kg	3600
2,6-Dinitrotoluene	ND	ug/kg	3600
Di-n-octyl phthalate	ND	ug/kg	3600
bis(2-Ethylhexyl)phthalate	ND	ug/kg	3600
Fluoranthene	ND	ug/kg	3600
Fluorene	ND	ug/kg	3600
Hexachlorobenzene	ND	ug/kg	3600
Hexachlorobutadiene	ND	ug/kg	3600
Hexachlorocyclopentadiene	ND	ug/kg	18000

Percent moisture is 8.6%. All results and limits are reported on a dry weight basis.
Dilution factor is 10. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Deneen Spence Approved By: Audrey Cornell

TCL Semivolatile Organics
Method 8270B

Client Name: Brown and Root Environmental
Client ID: HX20-SB03-15
Lab ID: 056857-0007-SA
Matrix: SOLID Sampled: 04 SEP 97 Prepared: 09 SEP 97
Authorized: 08 SEP 97 Received: 06 SEP 97 Analyzed: 11 SEP 97

Parameter	Result	Dry Weight Units	Reporting Limit
Hexachloroethane	ND	ug/kg	3600
Indeno(1,2,3-cd)pyrene	ND	ug/kg	3600
Isophorone	ND	ug/kg	3600
2-Methylnaphthalene	15000	ug/kg	3600
2-Methylphenol	ND	ug/kg	3600
4-Methylphenol	ND	ug/kg	3600
Naphthalene	ND	ug/kg	3600
2-Nitroaniline	ND	ug/kg	18000
3-Nitroaniline	ND	ug/kg	18000
4-Nitroaniline	ND	ug/kg	18000
Nitrobenzene	ND	ug/kg	3600
2-Nitrophenol	ND	ug/kg	3600
4-Nitrophenol	ND	ug/kg	18000
N-Nitrosodiphenylamine	ND	ug/kg	3600
N-Nitroso-di-n-propylamine	ND	ug/kg	3600
Benzyl alcohol	ND	ug/kg	3600
Bis(2-chloroisopropyl) ether-d12	ND	ug/kg	3600
Pyridine	ND	ug/kg	7200
Benzoic acid	ND	ug/kg	18000
Pentachlorophenol	ND	ug/kg	18000
Phenanthrene	ND	ug/kg	3600
Phenol	ND	ug/kg	3600
Pyrene	ND	ug/kg	3600
1,2,4-Trichlorobenzene	ND	ug/kg	3600
2,4,5-Trichlorophenol	ND	ug/kg	3600
2,4,6-Trichlorophenol	ND	ug/kg	3600

Surrogate	Recovery		Limits
Nitrobenzene-d5	NC	%	56-108
2-Fluorobiphenyl	NC	%	56-110
Terphenyl-d14	NC	%	51-135
2-Fluorophenol	NC	%	57-112
Phenol-d5	NC	%	61-110
2,4,6-Tribromophenol	NC	%	42-106

Percent moisture is 8.6%. All results and limits are reported on a dry weight basis.
Dilution factor is 10. All results and limits are corrected for dilution.

NC = Not Calculated, calculation not applicable.
ND = Not Detected

Reported By: Deneen Spence Approved By: Audrey Cornell

Quanterra
Environmental Services

TCL Semivolatile Organics
Method 8270B

Client Name: Brown and Root Environmental
Client ID: HX20-SB04-15
Lab ID: 056857-0008-SA
Matrix: SOLID
Authorized: 08 SEP 97
Sampled: 04 SEP 97
Received: 06 SEP 97
Prepared: 09 SEP 97
Analyzed: 11 SEP 97

Parameter	Result	Dry Weight Units	Reporting Limit
Acenaphthene	ND	ug/kg	3600
Acenaphthylene	ND	ug/kg	3600
Anthracene	ND	ug/kg	3600
Benzo(a)anthracene	ND	ug/kg	3600
Benzo(b)fluoranthene	ND	ug/kg	3600
Benzo(k)fluoranthene	ND	ug/kg	3600
Benzo(g,h,i)perylene	ND	ug/kg	3600
Benzo(a)pyrene	ND	ug/kg	3600
4-Bromophenyl phenyl ether	ND	ug/kg	3600
Butyl benzyl phthalate	ND	ug/kg	3600
Carbazole	ND	ug/kg	3600
4-Chloroaniline	ND	ug/kg	3600
bis(2-Chloroethoxy)methane	ND	ug/kg	3600
bis(2-Chloroethyl) ether	ND	ug/kg	3600
2,2'-oxybis(1-chloropropane)	ND	ug/kg	3600
4-Chloro-3-methylphenol	ND	ug/kg	3600
2-Chloronaphthalene	ND	ug/kg	3600
2-Chlorophenol	ND	ug/kg	3600
4-Chlorophenyl phenyl ether	ND	ug/kg	3600
Chrysene	ND	ug/kg	3600
Dibenz(a,h)anthracene	ND	ug/kg	3600
Dibenzofuran	ND	ug/kg	3600
Di-n-butyl phthalate	ND	ug/kg	3600
1,2-Dichlorobenzene	ND	ug/kg	3600
1,3-Dichlorobenzene	ND	ug/kg	3600
1,4-Dichlorobenzene	ND	ug/kg	3600
3,3'-Dichlorobenzidine	ND	ug/kg	18000
2,4-Dichlorophenol	ND	ug/kg	3600
Diethyl phthalate	ND	ug/kg	3600
2,4-Dimethylphenol	ND	ug/kg	3600
Dimethyl phthalate	ND	ug/kg	3600
4,6-Dinitro-2-methylphenol	ND	ug/kg	18000
2,4-Dinitrophenol	ND	ug/kg	18000
2,4-Dinitrotoluene	ND	ug/kg	3600
2,6-Dinitrotoluene	ND	ug/kg	3600
Di-n-octyl phthalate	ND	ug/kg	3600
bis(2-Ethylhexyl)phthalate	ND	ug/kg	3600
Fluoranthene	ND	ug/kg	3600
Fluorene	ND	ug/kg	3600
Hexachlorobenzene	ND	ug/kg	3600
Hexachlorobutadiene	ND	ug/kg	3600
Hexachlorocyclopentadiene	ND	ug/kg	18000

Percent moisture is 8.8%. All results and limits are reported on a dry weight basis.
Dilution factor is 10. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Deneen Spence
Approved By: Audrey Cornell

TCL Semivolatile Organics
Method 8270B

Client Name: Brown and Root Environmental
Client ID: HX20-SB04-15
Lab ID: 056857-0008-SA
Matrix: SOLID Sampled: 04 SEP 97 Prepared: 09 SEP 97
Authorized: 08 SEP 97 Received: 06 SEP 97 Analyzed: 11 SEP 97

Parameter	Result	Dry Weight Units	Reporting Limit
Hexachloroethane	ND	ug/kg	3600
Indeno(1,2,3-cd)pyrene	ND	ug/kg	3600
Isophorone	ND	ug/kg	3600
2-Methylnaphthalene	30000	ug/kg	3600
2-Methylphenol	ND	ug/kg	3600
4-Methylphenol	ND	ug/kg	3600
Naphthalene	5000	ug/kg	3600
2-Nitroaniline	ND	ug/kg	18000
3-Nitroaniline	ND	ug/kg	18000
4-Nitroaniline	ND	ug/kg	18000
Nitrobenzene	ND	ug/kg	3600
2-Nitrophenol	ND	ug/kg	3600
4-Nitrophenol	ND	ug/kg	18000
N-Nitrosodiphenylamine	ND	ug/kg	3600
N-Nitroso-di-n-propylamine	ND	ug/kg	3600
Benzyl alcohol	ND	ug/kg	3600
Bis(2-chloroisopropyl) ether-d12	ND	ug/kg	3600
Pyridine	ND	ug/kg	7200
Benzoic acid	ND	ug/kg	18000
Pentachlorophenol	ND	ug/kg	18000
Phenanthrene	ND	ug/kg	3600
Phenol	ND	ug/kg	3600
Pyrene	ND	ug/kg	3600
1,2,4-Trichlorobenzene	ND	ug/kg	3600
2,4,5-Trichlorophenol	ND	ug/kg	3600
2,4,6-Trichlorophenol	ND	ug/kg	3600

Surrogate	Recovery		Limits
Nitrobenzene-d5	NC	%	56-108
2-Fluorobiphenyl	NC	%	56-110
Terphenyl-d14	NC	%	51-135
2-Fluorophenol	NC	%	57-112
Phenol-d5	NC	%	61-110
2,4,6-Tribromophenol	NC	%	42-106

Percent moisture is 8.8%. All results and limits are reported on a dry weight basis.
Dilution factor is 10. All results and limits are corrected for dilution.

NC = Not Calculated, calculation not applicable.
ND = Not Detected

Reported By: Deneen Spence Approved By: Audrey Cornell

Quanterra
Environmental Services

Metals
Total Metals

Client Name: Brown and Root Environmental
Client ID: HX20-SB06-15
Lab ID: 056857-0001-SA
Matrix: SOLID — Sampled: 05 SEP 97 — Received: 06 SEP 97
Authorized: 08 SEP 97 — Prepared: See Below — Analyzed: See Below

Parameter	Result	Qual	Dil	RL	Units	Test Method	Prepared Date	Analyzed Date
Aluminum	6590		1.0	10.6	mg/kg	6010	10 SEP 97	11 SEP 97
Antimony	ND		1.0	6.3	mg/kg	6010	10 SEP 97	11 SEP 97
Barium	120		1.0	1.1	mg/kg	6010	10 SEP 97	11 SEP 97
Beryllium	0.42		1.0	0.21	mg/kg	6010	10 SEP 97	11 SEP 97
Cadmium	ND		1.0	0.53	mg/kg	6010	10 SEP 97	11 SEP 97
Calcium	60100		1.0	21.1	mg/kg	6010	10 SEP 97	11 SEP 97
Chromium	6.8		1.0	1.1	mg/kg	6010	10 SEP 97	11 SEP 97
Cobalt	4.4		1.0	1.1	mg/kg	6010	10 SEP 97	11 SEP 97
Copper	30.2		1.0	2.1	mg/kg	6010	10 SEP 97	11 SEP 97
Iron	11200		1.0	10.6	mg/kg	6010	10 SEP 97	11 SEP 97
Lead	22.3		1.0	5.3	mg/kg	6010	10 SEP 97	11 SEP 97
Magnesium	6180		1.0	21.1	mg/kg	6010	10 SEP 97	11 SEP 97
Manganese	479		1.0	1.1	mg/kg	6010	10 SEP 97	11 SEP 97
Mercury	ND		1.0	0.017	mg/kg	7471	17 SEP 97	17 SEP 97
Molybdenum	ND		1.0	1.6	mg/kg	6010	10 SEP 97	11 SEP 97
Nickel	6.6		1.0	4.2	mg/kg	6010	10 SEP 97	11 SEP 97
Potassium	998		1.0	528	mg/kg	6010	10 SEP 97	11 SEP 97
Silver	3.2		1.0	1.1	mg/kg	6010	10 SEP 97	11 SEP 97
Sodium	ND		1.0	528	mg/kg	6010	10 SEP 97	11 SEP 97
Vanadium	16.0		1.0	1.1	mg/kg	6010	10 SEP 97	11 SEP 97
Zinc	325		1.0	2.1	mg/kg	6010	10 SEP 97	11 SEP 97

Percent moisture is 5.3%. All results and limits are reported on a dry weight basis.

ND = Not Detected

Reported By: Doug Gomer — Approved By: Richard Persichitte

Quanterra
Environmental Services

Metals
Total Metals

Client Name: Brown and Root Environmental
Client ID: HX20-SB05-15
Lab ID: 056857-0002-SA
Matrix: SOLID — Sampled: 05 SEP 97 — Received: 06 SEP 97
Authorized: 08 SEP 97 — Prepared: See Below — Analyzed: See Below

Parameter	Result	Qual	Dil	RL	Units	Test Method	Prepared Date	Analyzed Date
Aluminum	2960		1.0	10.3	mg/kg	6010	10 SEP 97	11 SEP 97
Antimony	ND		1.0	6.2	mg/kg	6010	10 SEP 97	11 SEP 97
Barium	69.5		1.0	1.0	mg/kg	6010	10 SEP 97	11 SEP 97
Beryllium	ND		1.0	0.21	mg/kg	6010	10 SEP 97	11 SEP 97
Cadmium	ND		1.0	0.51	mg/kg	6010	10 SEP 97	11 SEP 97
Calcium	34800		1.0	20.6	mg/kg	6010	10 SEP 97	11 SEP 97
Chromium	3.7		1.0	1.0	mg/kg	6010	10 SEP 97	11 SEP 97
Cobalt	2.9		1.0	1.0	mg/kg	6010	10 SEP 97	11 SEP 97
Copper	8.2		1.0	2.1	mg/kg	6010	10 SEP 97	11 SEP 97
Iron	6330		1.0	10.3	mg/kg	6010	10 SEP 97	11 SEP 97
Lead	ND		1.0	5.1	mg/kg	6010	10 SEP 97	11 SEP 97
Magnesium	3300		1.0	20.6	mg/kg	6010	10 SEP 97	11 SEP 97
Manganese	276		1.0	1.0	mg/kg	6010	10 SEP 97	11 SEP 97
Mercury	ND		1.0	0.017	mg/kg	7471	17 SEP 97	17 SEP 97
Molybdenum	ND		1.0	1.5	mg/kg	6010	10 SEP 97	11 SEP 97
Nickel	ND		1.0	4.1	mg/kg	6010	10 SEP 97	11 SEP 97
Potassium	ND		1.0	514	mg/kg	6010	10 SEP 97	11 SEP 97
Silver	ND		1.0	1.0	mg/kg	6010	10 SEP 97	11 SEP 97
Sodium	ND		1.0	514	mg/kg	6010	10 SEP 97	11 SEP 97
Vanadium	8.4		1.0	1.0	mg/kg	6010	10 SEP 97	11 SEP 97
Zinc	20.1		1.0	2.1	mg/kg	6010	10 SEP 97	11 SEP 97

Percent moisture is 2.7%. All results and limits are reported on a dry weight basis.

ND = Not Detected

Reported By: Doug Gomer

Approved By: Richard Persichitte

Quanterra
Environmental Services

Metals
Total Metals

Client Name: Brown and Root Environmental
Client ID: HX20-SB07-04
Lab ID: 056857-0003-SA
Matrix: SOLID — Sampled: 05 SEP 97 — Received: 06 SEP 97
Authorized: 08 SEP 97 — Prepared: See Below — Analyzed: See Below

Parameter	Result	Qual	Dil	RL	Units	Test Method	Prepared Date	Analyzed Date
Aluminum	5360		1.0	10.2	mg/kg	6010	10 SEP 97	11 SEP 97
Antimony	ND		1.0	6.1	mg/kg	6010	10 SEP 97	11 SEP 97
Barium	103		1.0	1.0	mg/kg	6010	10 SEP 97	11 SEP 97
Beryllium	0.40		1.0	0.20	mg/kg	6010	10 SEP 97	11 SEP 97
Cadmium	ND		1.0	0.51	mg/kg	6010	10 SEP 97	11 SEP 97
Calcium	41600		1.0	20.5	mg/kg	6010	10 SEP 97	11 SEP 97
Chromium	4.2		1.0	1.0	mg/kg	6010	10 SEP 97	11 SEP 97
Cobalt	3.9		1.0	1.0	mg/kg	6010	10 SEP 97	11 SEP 97
Copper	15.0		1.0	2.0	mg/kg	6010	10 SEP 97	11 SEP 97
Iron	10200		1.0	10.2	mg/kg	6010	10 SEP 97	11 SEP 97
Lead	7.8		1.0	5.1	mg/kg	6010	10 SEP 97	11 SEP 97
Magnesium	9280		1.0	20.5	mg/kg	6010	10 SEP 97	11 SEP 97
Manganese	375		1.0	1.0	mg/kg	6010	10 SEP 97	11 SEP 97
Mercury	0.020		1.0	0.017	mg/kg	7471	17 SEP 97	17 SEP 97
Molybdenum	ND		1.0	1.5	mg/kg	6010	10 SEP 97	11 SEP 97
Nickel	4.5		1.0	4.1	mg/kg	6010	10 SEP 97	11 SEP 97
Potassium	866		1.0	512	mg/kg	6010	10 SEP 97	11 SEP 97
Silver	ND		1.0	1.0	mg/kg	6010	10 SEP 97	11 SEP 97
Sodium	ND		1.0	512	mg/kg	6010	10 SEP 97	11 SEP 97
Vanadium	15.3		1.0	1.0	mg/kg	6010	10 SEP 97	11 SEP 97
Zinc	28.5		1.0	2.0	mg/kg	6010	10 SEP 97	11 SEP 97

Percent moisture is 2.3%. All results and limits are reported on a dry weight basis.

ND = Not Detected

Reported By: Doug Gomer

Approved By: Richard Persichitte

Quanterra
Environmental Services

Metals
Total Metals

Client Name: Brown and Root Environmental
Client ID: HX20-SB01-10
Lab ID: 056857-0005-SA
Matrix: SOLID — Sampled: 04 SEP 97 — Received: 06 SEP 97
Authorized: 08 SEP 97 — Prepared: See Below — Analyzed: See Below

Parameter	Result	Qual	Dil	RL	Units	Test Method	Prepared Date	Analyzed Date
Aluminum	3520		1.0	10.3	mg/kg	6010	10 SEP 97	11 SEP 97
Antimony	ND		1.0	6.2	mg/kg	6010	10 SEP 97	11 SEP 97
Barium	74.1		1.0	1.0	mg/kg	6010	10 SEP 97	11 SEP 97
Beryllium	ND		1.0	0.21	mg/kg	6010	10 SEP 97	11 SEP 97
Cadmium	ND		1.0	0.52	mg/kg	6010	10 SEP 97	11 SEP 97
Calcium	24400		1.0	20.7	mg/kg	6010	10 SEP 97	11 SEP 97
Chromium	4.1		1.0	1.0	mg/kg	6010	10 SEP 97	11 SEP 97
Cobalt	3.2		1.0	1.0	mg/kg	6010	10 SEP 97	11 SEP 97
Copper	49.8		1.0	2.1	mg/kg	6010	10 SEP 97	11 SEP 97
Iron	6830		1.0	10.3	mg/kg	6010	10 SEP 97	11 SEP 97
Lead	14.7		1.0	5.2	mg/kg	6010	10 SEP 97	11 SEP 97
Magnesium	2630		1.0	20.7	mg/kg	6010	10 SEP 97	11 SEP 97
Manganese	226		1.0	1.0	mg/kg	6010	10 SEP 97	11 SEP 97
Mercury	0.022		1.0	0.017	mg/kg	7471	17 SEP 97	17 SEP 97
Molybdenum	ND		1.0	1.6	mg/kg	6010	10 SEP 97	11 SEP 97
Nickel	ND		1.0	4.1	mg/kg	6010	10 SEP 97	11 SEP 97
Potassium	606		1.0	517	mg/kg	6010	10 SEP 97	11 SEP 97
Silver	1.4		1.0	1.0	mg/kg	6010	10 SEP 97	11 SEP 97
Sodium	ND		1.0	517	mg/kg	6010	10 SEP 97	11 SEP 97
Vanadium	10.3		1.0	1.0	mg/kg	6010	10 SEP 97	11 SEP 97
Zinc	40.8		1.0	2.1	mg/kg	6010	10 SEP 97	11 SEP 97

Percent moisture is 3.2%. All results and limits are reported on a dry weight basis.

ND = Not Detected

Reported By: Doug Gomer

Approved By: Richard Persichitte

Quanterra
Environmental Services

Metals
Total Metals

Client Name: Brown and Root Environmental
Client ID: HX20-SB02-15
Lab ID: 056857-0006-SA
Matrix: SOLID — Sampled: 04 SEP 97 — Received: 06 SEP 97
Authorized: 08 SEP 97 — Prepared: See Below — Analyzed: See Below

Parameter	Result	Qual	Dil	RL	Units	Test Method	Prepared Date	Analyzed Date
Aluminum	3350		1.0	10.7	mg/kg	6010	10 SEP 97	11 SEP 97
Antimony	ND		1.0	6.4	mg/kg	6010	10 SEP 97	11 SEP 97
Barium	63.6		1.0	1.1	mg/kg	6010	10 SEP 97	11 SEP 97
Beryllium	ND		1.0	0.21	mg/kg	6010	10 SEP 97	11 SEP 97
Cadmium	ND		1.0	0.54	mg/kg	6010	10 SEP 97	11 SEP 97
Calcium	35300		1.0	21.4	mg/kg	6010	10 SEP 97	11 SEP 97
Chromium	4.4		1.0	1.1	mg/kg	6010	10 SEP 97	11 SEP 97
Cobalt	3.1		1.0	1.1	mg/kg	6010	10 SEP 97	11 SEP 97
Copper	11.8		1.0	2.1	mg/kg	6010	10 SEP 97	11 SEP 97
Iron	6890		1.0	10.7	mg/kg	6010	10 SEP 97	11 SEP 97
Lead	5.7		1.0	5.4	mg/kg	6010	10 SEP 97	11 SEP 97
Magnesium	3520		1.0	21.4	mg/kg	6010	10 SEP 97	11 SEP 97
Manganese	352		1.0	1.1	mg/kg	6010	10 SEP 97	11 SEP 97
Mercury	0.040		1.0	0.018	mg/kg	7471	17 SEP 97	17 SEP 97
Molybdenum	ND		1.0	1.6	mg/kg	6010	10 SEP 97	11 SEP 97
Nickel	ND		1.0	4.3	mg/kg	6010	10 SEP 97	11 SEP 97
Potassium	620		1.0	535	mg/kg	6010	10 SEP 97	11 SEP 97
Silver	ND		1.0	1.1	mg/kg	6010	10 SEP 97	11 SEP 97
Sodium	ND		1.0	535	mg/kg	6010	10 SEP 97	11 SEP 97
Vanadium	9.7		1.0	1.1	mg/kg	6010	10 SEP 97	11 SEP 97
Zinc	27.1		1.0	2.1	mg/kg	6010	10 SEP 97	11 SEP 97

Percent moisture is 6.6%. All results and limits are reported on a dry weight basis.

ND = Not Detected

Reported By: Doug Gomer

Approved By: Richard Persichitte

Quanterra
Environmental Services

Metals
Total Metals

Client Name: Brown and Root Environmental
Client ID: HX20-SB03-15
Lab ID: 056857-0007-SA
Matrix: SOLID — Sampled: 04 SEP 97 — Received: 06 SEP 97
Authorized: 08 SEP 97 — Prepared: See Below — Analyzed: See Below

Parameter	Result	Qual	Dil	RL	Units	Test Method	Prepared Date	Analyzed Date
Aluminum	6130		1.0	10.9	mg/kg	6010	10 SEP 97	11 SEP 97
Antimony	ND		1.0	6.6	mg/kg	6010	10 SEP 97	11 SEP 97
Barium	224		1.0	1.1	mg/kg	6010	10 SEP 97	11 SEP 97
Beryllium	0.48		1.0	0.22	mg/kg	6010	10 SEP 97	11 SEP 97
Cadmium	1.8		1.0	0.55	mg/kg	6010	10 SEP 97	11 SEP 97
Calcium	23900		1.0	21.9	mg/kg	6010	10 SEP 97	11 SEP 97
Chromium	7.1		1.0	1.1	mg/kg	6010	10 SEP 97	11 SEP 97
Cobalt	4.3		1.0	1.1	mg/kg	6010	10 SEP 97	11 SEP 97
Copper	155		1.0	2.2	mg/kg	6010	10 SEP 97	11 SEP 97
Iron	10400		1.0	10.9	mg/kg	6010	10 SEP 97	11 SEP 97
Lead	84.2		1.0	5.5	mg/kg	6010	10 SEP 97	11 SEP 97
Magnesium	3120		1.0	21.9	mg/kg	6010	10 SEP 97	11 SEP 97
Manganese	295		1.0	1.1	mg/kg	6010	10 SEP 97	11 SEP 97
Mercury	0.079		1.0	0.018	mg/kg	7471	17 SEP 97	17 SEP 97
Molybdenum	2.4		1.0	1.6	mg/kg	6010	10 SEP 97	11 SEP 97
Nickel	7.1		1.0	4.4	mg/kg	6010	10 SEP 97	11 SEP 97
Potassium	1200		1.0	547	mg/kg	6010	10 SEP 97	11 SEP 97
Silver	16.5		1.0	1.1	mg/kg	6010	10 SEP 97	11 SEP 97
Sodium	ND		1.0	547	mg/kg	6010	10 SEP 97	11 SEP 97
Vanadium	13.8		1.0	1.1	mg/kg	6010	10 SEP 97	11 SEP 97
Zinc	505		1.0	2.2	mg/kg	6010	10 SEP 97	11 SEP 97

Percent moisture is 8.6%. All results and limits are reported on a dry weight basis.

ND = Not Detected

Reported By: Doug Gomer — Approved By: Richard Persichitte

Quanterra
Environmental Services

Metals
Total Metals

Client Name: Brown and Root Environmental
Client ID: HX20-SB04-15
Lab ID: 056857-0008-SA
Matrix: SOLID — Sampled: 04 SEP 97 — Received: 06 SEP 97
Authorized: 08 SEP 97 — Prepared: See Below — Analyzed: See Below

Parameter	Result	Qual	Dil	RL	Units	Test Method	Prepared Date	Analyzed Date
Aluminum	6030		1.0	11.0	mg/kg	6010	10 SEP 97	11 SEP 97
Antimony	ND		1.0	6.6	mg/kg	6010	10 SEP 97	11 SEP 97
Barium	289		1.0	1.1	mg/kg	6010	10 SEP 97	11 SEP 97
Beryllium	0.40		1.0	0.22	mg/kg	6010	10 SEP 97	11 SEP 97
Cadmium	1.2		1.0	0.55	mg/kg	6010	10 SEP 97	11 SEP 97
Calcium	34400		1.0	21.9	mg/kg	6010	10 SEP 97	11 SEP 97
Chromium	7.0		1.0	1.1	mg/kg	6010	10 SEP 97	11 SEP 97
Cobalt	3.2		1.0	1.1	mg/kg	6010	10 SEP 97	11 SEP 97
Copper	116		1.0	2.2	mg/kg	6010	10 SEP 97	11 SEP 97
Iron	8640		1.0	11.0	mg/kg	6010	10 SEP 97	11 SEP 97
Lead	61.4		1.0	5.5	mg/kg	6010	10 SEP 97	11 SEP 97
Magnesium	3740		1.0	21.9	mg/kg	6010	10 SEP 97	11 SEP 97
Manganese	304		1.0	1.1	mg/kg	6010	10 SEP 97	11 SEP 97
Mercury	ND		1.0	0.018	mg/kg	7471	17 SEP 97	17 SEP 97
Molybdenum	ND		1.0	1.6	mg/kg	6010	10 SEP 97	11 SEP 97
Nickel	5.8		1.0	4.4	mg/kg	6010	10 SEP 97	11 SEP 97
Potassium	891		1.0	548	mg/kg	6010	10 SEP 97	11 SEP 97
Silver	14.4		1.0	1.1	mg/kg	6010	10 SEP 97	11 SEP 97
Sodium	ND		1.0	548	mg/kg	6010	10 SEP 97	11 SEP 97
Vanadium	11.7		1.0	1.1	mg/kg	6010	10 SEP 97	11 SEP 97
Zinc	1230		1.0	2.2	mg/kg	6010	10 SEP 97	11 SEP 97

Percent moisture is 8.8%. All results and limits are reported on a dry weight basis.

ND = Not Detected

Reported By: Doug Gomer

Approved By: Richard Persichitte

Quanterra
Environmental Services

ICP/MS Metals
Total Metals

Client Name: Brown and Root Environmental
Client ID: HX20-SB06-15
Lab ID: 056857-0001-SA
Matrix: SOLID Sampled: 05 SEP 97 Received: 06 SEP 97
Authorized: 08 SEP 97 Prepared: See Below Analyzed: See Below

Parameter	Result	Qual	Dil	RL	Units	Test Method	Prepared Date	Analyzed Date
Arsenic	1.2		1.0	0.53	mg/kg	6020	17 SEP 97	18 SEP 97
Beryllium	0.15		1.0	0.11	mg/kg	6020	17 SEP 97	18 SEP 97
Selenium	ND		1.0	0.53	mg/kg	6020	17 SEP 97	18 SEP 97
Thallium	ND		1.0	0.11	mg/kg	6020	17 SEP 97	18 SEP 97

Percent moisture is 5.3%. All results and limits are reported on a dry weight basis.

ND = Not Detected

Reported By: Dave Roberts Approved By: Richard Persichitte

Quanterra
Environmental Services

ICP/MS Metals
Total Metals

Client Name: Brown and Root Environmental
Client ID: HX20-SB05-15
Lab ID: 056857-0002-SA
Matrix: SOLID — Sampled: 05 SEP 97 — Received: 06 SEP 97
Authorized: 08 SEP 97 — Prepared: See Below — Analyzed: See Below

Parameter	Result	Qual	Dil	RL	Units	Test Method	Prepared Date	Analyzed Date
Arsenic	1.4		1.0	0.51	mg/kg	6020	17 SEP 97	18 SEP 97
Beryllium	0.14		1.0	0.10	mg/kg	6020	17 SEP 97	18 SEP 97
Selenium	ND		1.0	0.51	mg/kg	6020	17 SEP 97	18 SEP 97
Thallium	ND		1.0	0.10	mg/kg	6020	17 SEP 97	18 SEP 97

Percent moisture is 2.7%. All results and limits are reported on a dry weight basis.

ND = Not Detected

Reported By: Dave Roberts

Approved By: Richard Persichitte

Quanterra
Environmental Services

ICP/MS Metals
Total Metals

Client Name: Brown and Root Environmental
Client ID: HX20-SB07-04
Lab ID: 056857-0003-SA
Matrix: SOLID
Authorized: 08 SEP 97
Sampled: 05 SEP 97
Prepared: See Below
Received: 06 SEP 97
Analyzed: See Below

Parameter	Result	Qual	Dil	RL	Units	Test Method	Prepared Date	Analyzed Date
Arsenic	2.3		1.0	0.51	mg/kg	6020	17 SEP 97	18 SEP 97
Beryllium	0.19		1.0	0.10	mg/kg	6020	17 SEP 97	18 SEP 97
Selenium	ND		1.0	0.51	mg/kg	6020	17 SEP 97	18 SEP 97
Thallium	ND		1.0	0.10	mg/kg	6020	17 SEP 97	18 SEP 97

Percent moisture is 2.3%. All results and limits are reported on a dry weight basis.

ND = Not Detected

Reported By: Dave Roberts

Approved By: Richard Persichitte

Quanterra
Environmental Services

ICP/MS Metals
Total Metals

Client Name: Brown and Root Environmental
Client ID: HX20-SB01-10
Lab ID: 056857-0005-SA
Matrix: SOLID Sampled: 04 SEP 97 Received: 06 SEP 97
Authorized: 08 SEP 97 Prepared: See Below Analyzed: See Below

Parameter	Result	Qual	Dil	RL	Units	Test Method	Prepared Date	Analyzed Date
Arsenic	1.2		1.0	0.52	mg/kg	6020	17 SEP 97	18 SEP 97
Beryllium	0.13		1.0	0.10	mg/kg	6020	17 SEP 97	18 SEP 97
Selenium	ND		1.0	0.52	mg/kg	6020	17 SEP 97	18 SEP 97
Thallium	ND		1.0	0.10	mg/kg	6020	17 SEP 97	18 SEP 97

Percent moisture is 3.2%. All results and limits are reported on a dry weight basis.

ND = Not Detected

Reported By: Dave Roberts Approved By: Richard Persichitte

Quanterra
Environmental Services

ICP/MS Metals
Total Metals

Client Name: Brown and Root Environmental
Client ID: HX20-SB02-15
Lab ID: 056857-0006-SA
Matrix: SOLID
Authorized: 08 SEP 97
Sampled: 04 SEP 97
Prepared: See Below
Received: 06 SEP 97
Analyzed: See Below

Parameter	Result	Qual	Dil	RL	Units	Test Method	Prepared Date	Analyzed Date
Arsenic	1.6		1.0	0.54	mg/kg	6020	17 SEP 97	18 SEP 97
Beryllium	0.15		1.0	0.11	mg/kg	6020	17 SEP 97	18 SEP 97
Selenium	ND		1.0	0.54	mg/kg	6020	17 SEP 97	18 SEP 97
Thallium	ND		1.0	0.11	mg/kg	6020	17 SEP 97	18 SEP 97

Percent moisture is 6.6%. All results and limits are reported on a dry weight basis.

ND = Not Detected

Reported By: Dave Roberts

Approved By: Richard Persichitte

Quanterra
Environmental Services

ICP/MS Metals
Total Metals

Client Name: Brown and Root Environmental
Client ID: HX20-SB03-15
Lab ID: 056857-0007-SA
Matrix: SOLID
Authorized: 08 SEP 97
Sampled: 04 SEP 97
Prepared: See Below
Received: 06 SEP 97
Analyzed: See Below

Parameter	Result	Qual	Dil	RL	Units	Test Method	Prepared Date	Analyzed Date
Arsenic	2.7		1.0	0.55	mg/kg	6020	17 SEP 97	18 SEP 97
Beryllium	0.24		1.0	0.11	mg/kg	6020	17 SEP 97	18 SEP 97
Selenium	ND		1.0	0.55	mg/kg	6020	17 SEP 97	18 SEP 97
Thallium	ND		1.0	0.11	mg/kg	6020	17 SEP 97	18 SEP 97

Percent moisture is 8.6%. All results and limits are reported on a dry weight basis.

ND = Not Detected

Reported By: Dave Roberts

Approved By: Richard Persichitte

Quanterra
Environmental Services

ICP/MS Metals
Total Metals

Client Name: Brown and Root Environmental
Client ID: HX20-SB04-15
Lab ID: 056857-0008-SA
Matrix: SOLID
Authorized: 08 SEP 97
Sampled: 04 SEP 97
Prepared: See Below
Received: 06 SEP 97
Analyzed: See Below

Parameter	Result	Qual	Dil	RL	Units	Test Method	Prepared Date	Analyzed Date
Arsenic	1.4		1.0	0.55	mg/kg	6020	17 SEP 97	18 SEP 97
Beryllium	0.17		1.0	0.11	mg/kg	6020	17 SEP 97	18 SEP 97
Selenium	ND		1.0	0.55	mg/kg	6020	17 SEP 97	18 SEP 97
Thallium	ND		1.0	0.11	mg/kg	6020	17 SEP 97	18 SEP 97

Percent moisture is 8.8%. All results and limits are reported on a dry weight basis.

ND = Not Detected

Reported By: Dave Roberts

Approved By: Richard Persichitte

IV. QUALITY CONTROL REPORT

The Quanterra laboratories operate under a rigorous QA/QC program designed to ensure the generation of scientifically valid, legally defensible data by monitoring every aspect of laboratory operations. Routine QA/QC procedures include the use of approved methodologies, independent verification of analytical standards, use of duplicate Laboratory Control Samples to assess the precision and accuracy of the methodology on a routine basis, and a rigorous system of data review.

A. Standard Quanterra QC

The standard laboratory QC package is designed to:

1. establish a strong, cost-effective QC program that ensures the generation of scientifically valid, legally defensible data,

2. assess the laboratory's performance of the analytical method using control limits generated with a well-defined matrix,

3. establish clear-cut guidelines for acceptability of analytical data so that QC decisions can be made immediately at the bench, and

4. provide a standard set of reportables which assures the client of the quality of his data.

The Quanterra QC program is based upon monitoring the precision and accuracy of an analytical method by analyzing a set of Duplicate Control Samples (DCS) at frequent, well-defined intervals. Each DCS is a well-characterized matrix which is spiked with target compounds at 5-100 times the reporting limit, depending upon the methodology being monitored. The purpose of the DCS is not to duplicate the sample matrix, but rather to provide an interference-free, homogeneous matrix from which to gather data to establish control limits. These limits are used to determine whether data generated by the laboratory on any given day is in control.

Control limits for accuracy (percent recovery) are based on the average, historical percent recovery +/- 3 standard deviation units. Control limits for precision (relative percent difference) range from 0 (identical duplicate DCS results) to the average, historical relative percent difference + 3 standard deviation units. These control limits are fairly narrow based on the consistency of the matrix being monitored and are updated on a quarterly basis.

For each batch of samples analyzed, an additional control measure is taken in the form of a Single Control Sample (SCS). The SCS consists of a control matrix that is spiked with surrogate compounds appropriate to the method being used. In cases where no surrogate is available, (e.g., metals or conventional analyses) a single DCS serves as the control sample. An SCS is prepared for each sample lot for which the DCS pair are not analyzed. The recovery of the SCS is charted in exactly the same manner as described for the DCS, and provides a daily check on the performance of the method.

Accuracy for DCS and SCS is measured by Percent Recovery.

$$\% \text{ Recovery} = \frac{\text{Measured Concentration}}{\text{Actual Concentration}} \times 100$$

Precision for DCS is measured by Relative Percent Difference (RPD).

$$\text{RPD} = \frac{|\text{Measured Concentration DCS1} - \text{Measured Concentration DCS2}|}{(\text{Measured Concentration DCS1} + \text{Measured Concentration DCS2})/2} \times 100$$

All samples analyzed concurrently by the same test are assigned the same QC lot number. Projects which contain numerous samples, analyzed over several days, may have multiple QC lot numbers associated with each test. The QC information which follows includes a listing of the QC lot numbers associated with each of the samples reported, DCS and SCS (where applicable) recoveries from the QC lots associated with the samples, and control limits for these lots. The QC data is reported by test code, in the order that the tests are reported in the analytical results section of this report.

B. Matrix Specific QC

With this project, additional QC was requested in the form of duplicate sample analyses and/or spiked sample analyses. The use of an actual sample as the QC matrix is termed "matrix specific" QC.

Matrix specific QC is valuable in assessing the affect of the sample matrix on the performance of the analytical method. QC limits for accuracy and precision were assigned from data generated by laboratory historical data on similar sample matrices. However, these limits should be considered advisory due to the variability of the matrix at different sampling sites.

The results of the duplicate and/or spike sample analyses follow. For matrix spike analyses, the matrix specific QC results contain the analytical results from both analyses along with the spike level and percent recovery. The percent recovery calculation is not performed if the spike level is less than or equal to 25% of the value in the sample.

For duplicate analyses, the results from both the analyses are reported along with the relative percent difference.

Quanterra
Environmental Services

QC LOT ASSIGNMENT REPORT
Volatile Organics by GC/MS

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
056857-0001-SA	SOLID	Q8260-S	10 SEP 97-A	10 SEP 97-A
056857-0002-SA	SOIL	Q8260-L-S	15 SEP 97-S	15 SEP 97-S
056857-0003-SA	SOIL	Q8260-L-S	15 SEP 97-S	15 SEP 97-S
056857-0004-TB	AQUEOUS	Q8260-A	12 SEP 97-H	12 SEP 97-H
056857-0005-SA	SOIL	Q8260-L-S	15 SEP 97-S	15 SEP 97-S
056857-0006-SA	SOLID	Q8260-S	10 SEP 97-A	10 SEP 97-A
056857-0007-SA	SOLID	Q8260-S	10 SEP 97-A	10 SEP 97-A
056857-0008-SA	SOLID	Q8260-S	10 SEP 97-A	10 SEP 97-A
056857-0009-SA	LEACHATE	Q8240-L	15 SEP 97-J	15 SEP 97-J

Quanterra
Environmental Services

LABORATORY CONTROL SAMPLE REPORT
Volatile Organics by GC/MS

Analyte	Concentration Spiked	Measured	Accuracy(%) LCS	Limits
Category: Q8260-L-S Matrix: SOIL QC Lot: 15 SEP 97-S	QC Run: 15 SEP 97-S			
Concentration Units: ug/kg				
1,1-Dichloroethene	50.0	57.7	115	68-134
Trichloroethene	50.0	47.4	95	81-116
Benzene	50.0	48.8	98	85-116
Toluene	50.0	49.1	98	86-119
Chlorobenzene	50.0	48.2	96	83-120
1,2-Dichloroethane-d4	50.0	45.1	90	77-115
4-Bromofluorobenzene	50.0	49.1	98	90-113
Toluene-d8	50.0	49.9	100	86-115

Analyte	Concentration Spiked	Measured	Accuracy(%) LCS	Limits
Category: Q8260-S Matrix: SOLID QC Lot: 10 SEP 97-A	QC Run: 10 SEP 97-A			
Concentration Units: ug/kg				
1,1-Dichloroethene	6250	5320	85	65-130
Trichloroethene	6250	6180	99	73-128
Benzene	6250	6210	99	82-129
Toluene	6250	6250	100	83-125
Chlorobenzene	6250	6370	102	85-125
1,2-Dichloroethane-d4	6250	5750	92	77-114
4-Bromofluorobenzene	6250	6550	105	83-118
Toluene-d8	6250	6280	101	84-114

Analyte	Concentration Spiked	Measured	Accuracy(%) LCS	Limits
Category: Q8260-A Matrix: AQUEOUS QC Lot: 12 SEP 97-H	QC Run: 12 SEP 97-H			
Concentration Units: ug/L				
1,1-Dichloroethene	10.0	10.1	101	69-126
Trichloroethene	10.0	10.1	101	85-111
Benzene	10.0	10.5	105	85-115
Toluene	10.0	10.6	106	89-112
Chlorobenzene	10.0	10.5	105	91-112
1,2-Dichloroethane-d4	10.0	9.92	99	78-113
4-Bromofluorobenzene	10.0	9.94	99	88-113
Toluene-d8	10.0	10.1	101	90-108

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

Quanterra
Environmental Services

LABORATORY CONTROL SAMPLE REPORT
Volatile Organics by GC/MS (cont.)

Category: Q8240-L
Matrix: LEACHATE
QC Lot: 15 SEP 97-J QC Run: 15 SEP 97-J
Concentration Units: mg/L

Analyte	Concentration Spiked	Measured	Accuracy(%) LCS	Limits
Vinyl chloride	0.500	0.388	78	14-185
1,1-Dichloroethene	0.500	0.456	91	66-148
Chloroform	0.500	0.463	93	81-120
1,2-Dichloroethane	0.500	0.450	90	79-126
2-Butanone	0.500	0.315	63	13-179
Carbon tetrachloride	0.500	0.447	89	79-125
Trichloroethene	0.500	0.474	95	78-126
Benzene	0.500	0.472	94	80-125
Tetrachloroethene	0.500	0.470	94	80-121
Chlorobenzene	0.500	0.484	97	84-119
1,2-Dichloroethane-d4	0.500	0.462	92	80-120
4-Bromofluorobenzene	0.500	0.484	97	86-115
Toluene-d8	0.500	0.486	97	88-110

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

Quanterra
Environmental Services

SINGLE CONTROL SAMPLE REPORT
Volatile Organics by GC/MS

Analyte	Concentration Spiked	Concentration Measured	Accuracy(%) SCS	Accuracy(%) Limits
Category: Q8260-S				
Matrix: SOLID				
QC Lot: 10 SEP 97-A QC Run: 10 SEP 97-A				
Concentration Units: ug/kg				
1,2-Dichloroethane-d4	6250	6040	97	77-114
4-Bromofluorobenzene	6250	6630	106	83-118
Toluene-d8	6250	6290	101	84-114
Category: Q8260-L-S				
Matrix: SOIL				
QC Lot: 15 SEP 97-S QC Run: 15 SEP 97-S				
Concentration Units: ug/kg				
1,2-Dichloroethane-d4	50.0	47.7	95	77-115
4-Bromofluorobenzene	50.0	48.1	96	90-113
Toluene-d8	50.0	51.1	102	86-115
Category: Q8260-A				
Matrix: AQUEOUS				
QC Lot: 12 SEP 97-H QC Run: 12 SEP 97-H				
Concentration Units: ug/L				
1,2-Dichloroethane-d4	10.0	10.0	100	78-113
4-Bromofluorobenzene	10.0	10.1	101	88-113
Toluene-d8	10.0	10.4	104	90-108
Category: Q8240-L				
Matrix: LEACHATE				
QC Lot: 15 SEP 97-J QC Run: 15 SEP 97-J				
Concentration Units: mg/L				
1,2-Dichloroethane-d4	0.500	0.442	88	80-120
4-Bromofluorobenzene	0.500	0.482	96	86-115
Toluene-d8	0.500	0.490	98	88-110

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

Quanterra
Environmental Services

METHOD BLANK REPORT
Volatile Organics by GC/MS

Test: Q8260-TCL-M-S
Matrix: SOLID
QC Lot: 10 SEP 97-A QC Run: 10 SEP 97-A

Analyte	Result	Units	Reporting Limit	
Acetone	390	ug/kg	2500	J
Benzene	ND	ug/kg	620	
Bromodichloromethane	ND	ug/kg	620	
Bromoform	ND	ug/kg	620	
Bromomethane	ND	ug/kg	1200	
2-Butanone (MEK)	ND	ug/kg	2500	
Carbon disulfide	ND	ug/kg	620	
Carbon tetrachloride	ND	ug/kg	620	
Chlorobenzene	ND	ug/kg	620	
Chloroethane	ND	ug/kg	1200	
2-Chloroethyl vinyl ether	ND	ug/kg	6200	
Chloroform	ND	ug/kg	620	
Chloromethane	ND	ug/kg	1200	
Dibromochloromethane	ND	ug/kg	620	
1,1-Dichloroethane	ND	ug/kg	620	
1,2-Dichloroethane	ND	ug/kg	620	
1,1-Dichloroethene	ND	ug/kg	620	
1,2-Dichloroethene (total)	ND	ug/kg	620	
1,2-Dichloropropane	ND	ug/kg	620	
cis-1,3-Dichloropropene	ND	ug/kg	620	
trans-1,3-Dichloropropene	ND	ug/kg	620	
Ethylbenzene	ND	ug/kg	620	
2-Hexanone	ND	ug/kg	2500	
Methylene chloride	160	ug/kg	620	J
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	2500	
Styrene	ND	ug/kg	620	
1,1,2,2-Tetrachloroethane	ND	ug/kg	620	
Tetrachloroethene	ND	ug/kg	620	
Toluene	ND	ug/kg	620	
1,1,1-Trichloroethane	ND	ug/kg	620	
1,1,2-Trichloroethane	ND	ug/kg	620	
Trichloroethene	ND	ug/kg	620	
Vinyl acetate	ND	ug/kg	1200	
Vinyl chloride	ND	ug/kg	1200	
Xylenes (total)	ND	ug/kg	620	

J = Result is detected below the reporting limit or is an estimated concentration.

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METHOD BLANK REPORT
Volatile Organics by GC/MS (cont.)

Test: Q8260-TCL-L-S
Matrix: SOLID
QC Lot: 15 SEP 97-S QC Run: 15 SEP 97-S

Analyte	Result	Units	Reporting Limit
Acetone	ND	ug/kg	20
Benzene	ND	ug/kg	5.0
Bromodichloromethane	ND	ug/kg	5.0
Bromoform	ND	ug/kg	5.0
Bromomethane	ND	ug/kg	10
2-Butanone (MEK)	ND	ug/kg	20
Carbon disulfide	ND	ug/kg	5.0
Carbon tetrachloride	ND	ug/kg	5.0
Chlorobenzene	ND	ug/kg	5.0
Chloroethane	ND	ug/kg	10
2-Chloroethyl vinyl ether	ND	ug/kg	50
Chloroform	ND	ug/kg	5.0
Chloromethane	ND	ug/kg	10
Dibromochloromethane	ND	ug/kg	5.0
1,1-Dichloroethane	ND	ug/kg	5.0
1,2-Dichloroethane	ND	ug/kg	5.0
1,1-Dichloroethene	ND	ug/kg	5.0
cis-1,2-Dichloroethene	ND	ug/kg	2.5
trans-1,2-Dichloroethene	ND	ug/kg	2.5
1,2-Dichloroethene (total)	ND	ug/kg	5.0
1,2-Dichloropropane	ND	ug/kg	5.0
cis-1,3-Dichloropropene	ND	ug/kg	5.0
trans-1,3-Dichloropropene	ND	ug/kg	5.0
Ethylbenzene	ND	ug/kg	5.0
2-Hexanone	ND	ug/kg	20
Methylene chloride	ND	ug/kg	5.0
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	20
Styrene	ND	ug/kg	5.0
1,1,2,2-Tetrachloroethane	ND	ug/kg	5.0
Tetrachloroethene	ND	ug/kg	5.0
Toluene	ND	ug/kg	5.0
1,1,1-Trichloroethane	ND	ug/kg	5.0
1,1,2-Trichloroethane	ND	ug/kg	5.0
Trichloroethene	ND	ug/kg	5.0
Vinyl acetate	ND	ug/kg	10
Vinyl chloride	ND	ug/kg	10
m&p-Xylene	ND	ug/kg	2.5
o-Xylene	ND	ug/kg	2.5

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METHOD BLANK REPORT
Volatile Organics by GC/MS (cont.)

Test: Q8260-TCL-AP
Matrix: AQUEOUS
QC Lot: 12 SEP 97-H QC Run: 12 SEP 97-H

Analyte	Result	Units	Reporting Limit
Acetone	ND	ug/L	10
Benzene	ND	ug/L	1.0
Bromodichloromethane	ND	ug/L	1.0
Bromoform	ND	ug/L	1.0
Bromomethane	ND	ug/L	2.0
2-Butanone (MEK)	ND	ug/L	5.0
Carbon disulfide	ND	ug/L	1.0
Carbon tetrachloride	ND	ug/L	1.0
Chlorobenzene	ND	ug/L	1.0
Chloroethane	ND	ug/L	2.0
Chloroform	ND	ug/L	1.0
Chloromethane	ND	ug/L	2.0
Dibromochloromethane	ND	ug/L	1.0
Vinyl acetate	ND	ug/L	2.0
1,1-Dichloroethane	ND	ug/L	1.0
1,2-Dichloroethane	ND	ug/L	1.0
1,1-Dichloroethene	ND	ug/L	1.0
1,2-Dichloroethene (total)	ND	ug/L	1.0
1,2-Dichloropropane	ND	ug/L	1.0
cis-1,3-Dichloropropene	ND	ug/L	1.0
trans-1,3-Dichloropropene	ND	ug/L	1.0
Ethylbenzene	ND	ug/L	1.0
2-Hexanone	ND	ug/L	5.0
Methylene chloride	ND	ug/L	1.0
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0
Styrene	ND	ug/L	1.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0
Tetrachloroethene	ND	ug/L	1.0
Toluene	ND	ug/L	1.0
1,1,1-Trichloroethane	ND	ug/L	1.0
1,1,2-Trichloroethane	ND	ug/L	1.0
Trichloroethene	ND	ug/L	1.0
2-Chloroethyl vinyl ether	ND	ug/L	2.0
Vinyl chloride	ND	ug/L	2.0
Xylenes (total)	ND	ug/L	1.0

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METHOD BLANK REPORT
Volatile Organics by GC/MS (cont.)

Analyte	Result	Units	Reporting Limit
Test: Q8240-TCLP-L			
Matrix: SOLID			
QC Lot: 15 SEP 97-J QC Run: 15 SEP 97-J			
Benzene	ND	mg/L	0.050
2-Butanone	ND	mg/L	0.20
Carbon tetrachloride	ND	mg/L	0.050
Chlorobenzene	ND	mg/L	0.050
Chloroform	ND	mg/L	0.050
1,2-Dichloroethane	ND	mg/L	0.050
1,1-Dichloroethene	ND	mg/L	0.050
Tetrachloroethene	ND	mg/L	0.050
Trichloroethene	ND	mg/L	0.050
Vinyl chloride	ND	mg/L	0.10

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MATRIX SPIKE/MATRIX SPIKE DUPLICATE QC REPORT
Volatile Organics by GC/MS
Project: 056857

Category: Q8260-L-S Volatile Organics in Soil (Method 8260)
Matrix: SOIL
Sample: 056816-0002
MS Run: 15 SEP 97-S
Units ug/kg Units Qualifier: Dry weight

Analyte	Sample Result	MS Result	MSD Result	Amount Spiked MS	Amount Spiked MSD	% Recovery MS	% Recovery MSD	Recov. Accep. Limits	RPD MS-MSD	RPD Accept Limits
		Concentration								
1,1-Dichloroethene	ND	56.9	63.5	56.0	56.0	102	113	68-134	11	20
Trichloroethene	ND	51.5	52.0	56.0	56.0	92	93	81-116	0.8	20
Benzene	ND	56.3	59.8	56.0	56.0	101	107	85-116	6.0	20
Toluene	ND	60.7	64.6	56.0	56.0	108	115	86-119	6.3	20
Chlorobenzene	ND	54.4	54.7	56.0	56.0	97	98	83-120	0.4	20

Surrogates		%Recovery		Rec. Accept. Limits
1,2-Dichloroethane-d4	94.8	87.3	89.4	77-115
4-Bromofluorobenzene	88.7	88.9	83.0	90-113
Toluene-d8	108	107	115	86-115

Category: Q8260-S Method 8260 - Volatile Organics
Matrix: SOLID
Sample: 056857-0006
MS Run: 10 SEP 97-A
Units ug/kg Units Qualifier: Wet wt.

Analyte	Sample Result	MS Result	MSD Result	Amount Spiked MS	Amount Spiked MSD	% Recovery MS	% Recovery MSD	Recov. Accep. Limits	RPD MS-MSD	RPD Accept Limits
		Concentration								
1,1-Dichloroethene	ND	5590	5430	6250	6250	89	87	65-130	2.9	20
Trichloroethene	ND	6170	6120	6250	6250	99	98	73-128	0.8	20
Benzene	ND	6130	6070	6250	6250	98	97	82-129	0.9	20
Toluene	ND	6120	6260	6250	6250	98	100	83-125	2.3	20
Chlorobenzene	ND	6290	6450	6250	6250	101	103	85-125	2.4	20

Surrogates		%Recovery		Rec. Accept. Limits
1,2-Dichloroethane-d4	91.0	88.9	91.8	77-114
4-Bromofluorobenzene	99.1	100	98.5	83-118
Toluene-d8	97.3	96.5	103	84-114

ND = Not Detected

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

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MATRIX SPIKE/MATRIX SPIKE DUPLICATE QC REPORT
Volatile Organics by GC/MS
Project: 056857 (cont.)

Category: Q8260-A Volatile Organics
Matrix: AQUEOUS
Sample: 056886-0008
MS Run: 12 SEP 97-H
Units: ug/L

Analyte	Concentration Sample Result	MS Result	MSD Result	Amount Spiked MS	Amount Spiked MSD	% Recovery MS	% Recovery MSD	Recov. Accep. Limits	RPD MS-MSD	RPD Accept Limits
1,1-Dichloroethene	ND	10.5	10.5	10.0	10.0	105	105	69-126	0.0	20
Trichloroethene	ND	10.2	10.0	10.0	10.0	102	100	85-111	2.2	20
Benzene	ND	10.5	10.4	10.0	10.0	105	104	85-115	1.2	20
Toluene	ND	10.9	10.8	10.0	10.0	109	108	89-112	1.0	20
Chlorobenzene	ND	10.5	10.6	10.0	10.0	105	106	91-112	0.1	20

Surrogates	%Recovery			Rec. Accept. Limits
1,2-Dichloroethane-d4	98.9	99.4	102	78-113
4-Bromofluorobenzene	98.2	98.2	101	88-113
Toluene-d8	108	103	105	90-108

Category: Q8240-L Volatile Organics for TCLP
Matrix: LEACHATE
Sample: 056900-0001
MS Run: 15 SEP 97-J
Units: mg/L

Analyte	Concentration Sample Result	MS Result	MSD Result	Amount Spiked MS	Amount Spiked MSD	% Recovery MS	% Recovery MSD	Recov. Accep. Limits	RPD MS-MSD	RPD Accept Limits
Vinyl chloride	ND	0.376	0.375	0.500	0.500	75	75	14-185	0.2	20
1,1-Dichloroethene	0.0701	0.510	0.485	0.500	0.500	88	83	66-148	5.0	20
Chloroform	ND	0.445	0.445	0.500	0.500	89	89	81-120	0.0	20
1,2-Dichloroethane	ND	0.435	0.451	0.500	0.500	87	90	79-126	3.6	20
2-Butanone	ND	0.277	0.295	0.500	0.500	55	59	13-179	6.3	21
Carbon tetrachloride	ND	0.433	0.449	0.500	0.500	87	90	79-125	3.6	20
Trichloroethene	ND	0.472	0.484	0.500	0.500	94	97	78-126	2.5	20
Benzene	ND	0.484	0.491	0.500	0.500	97	98	80-125	1.4	20
Tetrachloroethene	ND	0.455	0.466	0.500	0.500	91	93	80-121	2.4	20
Chlorobenzene	ND	0.467	0.481	0.500	0.500	93	96	84-119	3.0	20

ND = Not Detected

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

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MATRIX SPIKE/MATRIX SPIKE DUPLICATE QC REPORT
Volatile Organics by GC/MS
Project: 056857 (cont.)

Surrogates		%Recovery		Rec. Accept. Limits
1,2-Dichloroethane-d4	86.3	91.5	91.5	80-120
4-Bromofluorobenzene	98.7	98.1	98.1	86-115
Toluene-d8	98.2	97.6	97.6	88-110

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

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QC LOT ASSIGNMENT REPORT
Semivolatile Organics by GC/MS

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
056857-0001-SA	SOIL	Q8270-S	09 SEP 97-01	09 SEP 97-01
056857-0002-SA	SOIL	Q8270-S	09 SEP 97-01	09 SEP 97-01
056857-0003-SA	SOIL	Q8270-S	09 SEP 97-01	09 SEP 97-01
056857-0005-SA	SOIL	Q8270-S	09 SEP 97-01	09 SEP 97-01
056857-0006-SA	SOIL	Q8270-S	09 SEP 97-01	09 SEP 97-01
056857-0007-SA	SOIL	Q8270-S	09 SEP 97-01	09 SEP 97-01
056857-0008-SA	SOIL	Q8270-S	09 SEP 97-01	09 SEP 97-01
056857-0009-SA	LEACHATE	Q8270-L	21 SEP 97-02	21 SEP 97-02

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LABORATORY CONTROL SAMPLE REPORT
Semivolatile Organics by GC/MS

Analyte	Concentration Spiked	Measured	Accuracy(%) LCS	Limits
Category: Q8270-S				
Matrix: SOIL				
QC Lot: 09 SEP 97-01	QC Run: 09 SEP 97-01			
Concentration Units: ug/kg				
Phenol	5000	3030	61	41-104
2-Chlorophenol	5000	3780	76	44-111
1,4-Dichlorobenzene	3330	2510	75	54-99
N-Nitroso-di-n-propylamine	3330	2260	68	56-104
1,2,4-Trichlorobenzene	3330	2780	83	44-142
4-Chloro-3-methylphenol	5000	3300	66	22-147
Acenaphthene	3330	2480	74	47-145
4-Nitrophenol	5000	3010	60	48-117
2,4-Dinitrotoluene	3330	2590	78	55-118
Pentachlorophenol	5000	3670	73	14-176
Pyrene	3330	2280	68	50-114
Nitrobenzene-d5	3330	2010	60	56-108
2-Fluorobiphenyl	3330	2210	66	56-110
Terphenyl-d14	3330	1900	57	51-135
2-Fluorophenol	5000	3590	72	57-112
Phenol-d5	5000	3440	69	61-110
2,4,6-Tribromophenol	5000	4350	87	42-106

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

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LABORATORY CONTROL SAMPLE REPORT
Semivolatile Organics by GC/MS (cont.)

Analyte	Concentration Spiked	Measured	Accuracy(%) LCS	Limits
Category: Q8270-L				
Matrix: LEACHATE				
QC Lot: 21 SEP 97-02	QC Run: 21 SEP 97-02			
Concentration Units: mg/L				
Pyridine	0.250	0.137	55	18-130
1,4-Dichlorobenzene	0.250	0.149	60	48-97
2-Methylphenol	0.250	0.230	92	55-119
3/4-Methylphenol	0.500	0.361	72	52-111
Hexachloroethane	0.250	0.147	59	40-113
Nitrobenzene	0.250	0.167	67	35-180
Hexachlorobutadiene	0.250	0.170	68	41-95
2,4,6-Trichlorophenol	0.250	0.217	87	37-144
2,4,5-Trichlorophenol	0.250	0.223	89	53-103
2,4-Dinitrotoluene	0.250	0.240	96	55-114
Hexachlorobenzene	0.250	0.200	80	58-110
Pentachlorophenol	0.500	0.439	88	14-176
Nitrobenzene-d5	0.500	0.345	69	57-102
2-Fluorobiphenyl	0.500	0.345	69	43-116
Terphenyl-d14	0.500	0.366	73	43-128
2-Fluorophenol	0.750	0.516	69	26-104
Phenol-d5	0.750	0.584	78	33-117
2,4,6-Tribromophenol	0.750	0.568	76	37-117

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

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SINGLE CONTROL SAMPLE REPORT
Semivolatile Organics by GC/MS

Analyte	Concentration Spiked	Measured	Accuracy(%) SCS	Limits
Category: Q8270-S				
Matrix: SOIL				
QC Lot: 09 SEP 97-01 QC Run: 09 SEP 97-01				
Concentration Units: ug/kg				
Nitrobenzene-d5	3330	2080	62	56-108
2-Fluorobiphenyl	3330	2360	71	56-110
Terphenyl-d14	3330	2050	61	51-135
2-Fluorophenol	5000	3660	73	57-112
Phenol-d5	5000	3580	72	61-110
2,4,6-Tribromophenol	5000	4490	90	42-106
Category: Q8270-L				
Matrix: LEACHATE				
QC Lot: 21 SEP 97-02 QC Run: 21 SEP 97-02				
Concentration Units: mg/L				
Nitrobenzene-d5	0.500	0.374	75	57-102
2-Fluorobiphenyl	0.500	0.380	76	43-116
Terphenyl-d14	0.500	0.358	72	43-128
2-Fluorophenol	0.750	0.546	73	26-104
Phenol-d5	0.750	0.634	85	33-117
2,4,6-Tribromophenol	0.750	0.598	80	37-117

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

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METHOD BLANK REPORT
Semivolatile Organics by GC/MS

Test: Q8270-TCL-L-S
Matrix: SOLID
QC Lot: 09 SEP 97-01 QC Run: 09 SEP 97-01

Analyte	Result	Units	Reporting Limit
Acenaphthene	ND	ug/kg	330
Acenaphthylene	ND	ug/kg	330
Anthracene	ND	ug/kg	330
Benzo(a)anthracene	ND	ug/kg	330
Benzo(b)fluoranthene	ND	ug/kg	330
Benzo(k)fluoranthene	ND	ug/kg	330
Benzo(g,h,i)perylene	ND	ug/kg	330
Benzo(a)pyrene	ND	ug/kg	330
4-Bromophenyl phenyl ether	ND	ug/kg	330
Butyl benzyl phthalate	ND	ug/kg	330
Carbazole	ND	ug/kg	330
4-Chloroaniline	ND	ug/kg	330
bis(2-Chloroethoxy) methane	ND	ug/kg	330
bis(2-Chloroethyl) ether	ND	ug/kg	330
2,2'-oxybis(1-chloropropane)	ND	ug/kg	330
4-Chloro-3-methylphenol	ND	ug/kg	330
2-Chloronaphthalene	ND	ug/kg	330
2-Chlorophenol	ND	ug/kg	330
4-Chlorophenyl phenyl ether	ND	ug/kg	330
Chrysene	ND	ug/kg	330
Dibenz(a,h)anthracene	ND	ug/kg	330
Dibenzofuran	ND	ug/kg	330
Di-n-butyl phthalate	ND	ug/kg	330
1,2-Dichlorobenzene	ND	ug/kg	330
1,3-Dichlorobenzene	ND	ug/kg	330
1,4-Dichlorobenzene	ND	ug/kg	330
3,3'-Dichlorobenzidine	ND	ug/kg	1600
2,4-Dichlorophenol	ND	ug/kg	330
Diethyl phthalate	ND	ug/kg	330
2,4-Dimethylphenol	ND	ug/kg	330
Dimethyl phthalate	ND	ug/kg	330
4,6-Dinitro-2-methylphenol	ND	ug/kg	1600
2,4-Dinitrophenol	ND	ug/kg	1600
2,4-Dinitrotoluene	ND	ug/kg	330
2,6-Dinitrotoluene	ND	ug/kg	330
Di-n-octyl phthalate	ND	ug/kg	330
bis(2-Ethylhexyl) phthalate	ND	ug/kg	330

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METHOD BLANK REPORT
Semivolatile Organics by GC/MS (cont.)

Test: Q8270-TCL-L-S
Matrix: SOLID
QC Lot: 09 SEP 97-01 QC Run: 09 SEP 97-01

Analyte	Result	Units	Reporting Limit
Fluoranthene	ND	ug/kg	330
Fluorene	ND	ug/kg	330
Hexachlorobenzene	ND	ug/kg	330
Hexachlorobutadiene	ND	ug/kg	330
Hexachlorocyclopentadiene	ND	ug/kg	1600
Hexachloroethane	ND	ug/kg	330
Indeno(1,2,3-cd)pyrene	ND	ug/kg	330
Isophorone	ND	ug/kg	330
2-Methylnaphthalene	ND	ug/kg	330
2-Methylphenol	ND	ug/kg	330
4-Methylphenol	ND	ug/kg	330
Naphthalene	ND	ug/kg	330
2-Nitroaniline	ND	ug/kg	1600
3-Nitroaniline	ND	ug/kg	1600
4-Nitroaniline	ND	ug/kg	1600
Nitrobenzene	ND	ug/kg	330
2-Nitrophenol	ND	ug/kg	330
4-Nitrophenol	ND	ug/kg	1600
N-Nitrosodiphenylamine	ND	ug/kg	330
N-Nitroso-di-n-propylamine	ND	ug/kg	330
Benzyl alcohol	ND	ug/kg	330
Bis(2-chloroisopropyl) ether-d12	ND	ug/kg	330
Pyridine	ND	ug/kg	660
Benzoic acid	ND	ug/kg	1600
Pentachlorophenol	ND	ug/kg	1600
Phenanthrene	ND	ug/kg	330
Phenol	ND	ug/kg	330
Pyrene	ND	ug/kg	330
1,2,4-Trichlorobenzene	ND	ug/kg	330
2,4,5-Trichlorophenol	ND	ug/kg	330
2,4,6-Trichlorophenol	ND	ug/kg	330

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METHOD BLANK REPORT
Semivolatile Organics by GC/MS (cont.)

Analyte	Result	Units	Reporting Limit
Test: Q8270-TCLP-3520-L			
Matrix: SOLID			
QC Lot: 21 SEP 97-02 QC Run: 21 SEP 97-02			
1,4-Dichlorobenzene	ND	mg/L	0.050
2,4-Dinitrotoluene	ND	mg/L	0.050
Hexachlorobenzene	ND	mg/L	0.050
Hexachlorobutadiene	ND	mg/L	0.050
Hexachloroethane	ND	mg/L	0.050
2-Methylphenol	ND	mg/L	0.050
3/4-Methylphenol	ND	mg/L	0.050
Nitrobenzene	ND	mg/L	0.050
Pentachlorophenol	ND	mg/L	0.25
Pyridine	ND	mg/L	0.10
2,4,5-Trichlorophenol	ND	mg/L	0.050
2,4,6-Trichlorophenol	ND	mg/L	0.050

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MATRIX SPIKE/MATRIX SPIKE DUPLICATE QC REPORT
Semivolatile Organics by GC/MS
Project: 056857

Category: Q8270-S Acid, Base and Neutrals by GC/MS.
Matrix: SOIL
Sample: 056868-0001
MS Run: 09 SEP 97-01
Units ug/kg Units Qualifier: Dry Weight

Analyte	Concentration Sample Result	MS Result	MSD Result	Amount Spiked MS	Amount Spiked MSD	% Recovery MS	% Recovery MSD	Recov. Accep. Limits	RPD MS-MSD	RPD Accept Limits
Phenol	ND	3170	3130	5000	5000	63	63	41-104	1.4	20
2-Chlorophenol	ND	3980	3840	5000	5000	80	77	44-111	3.7	20
1,4-Dichlorobenzene	ND	2510	2370	3330	3330	75	71	54-99	5.4	20
N-Nitroso-di-n-propylamine	ND	2310	2380	3330	3330	69	71	56-104	2.8	20
1,2,4-Trichlorobenzene	ND	2810	2700	3330	3330	84	81	44-142	3.9	20
4-Chloro-3-methylphenol	ND	3430	3310	5000	5000	69	66	22-147	3.8	20
Acenaphthene	ND	2540	2530	3330	3330	76	76	47-145	0.3	20
4-Nitrophenol	ND	3430	3320	5000	5000	69	66	48-117	3.2	20
2,4-Dinitrotoluene	ND	2630	2680	3330	3330	79	81	55-118	2.0	20
Pentachlorophenol	ND	4060	3730	5000	5000	81	75	14-176	8.5	20
Pyrene	ND	2280	2270	3330	3330	69	68	50-114	0.5	20

Surrogates	%Recovery			Rec. Accept. Limits
Nitrobenzene-d5	55.3	64.5	61.7	56-108
2-Fluorobiphenyl	62.0	72.4	66.9	56-110
Terphenyl-d14	54.6	61.6	58.3	51-135
2-Fluorophenol	66.0	76.0	74.1	57-112
Phenol-d5	63.4	74.2	70.7	61-110
2,4,6-Tribromophenol	83.5	96.3	92.0	42-106

ND = Not Detected

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

Quanterra
Environmental Services

MATRIX SPIKE/MATRIX SPIKE DUPLICATE QC REPORT
Semivolatile Organics by GC/MS
Project: 056857 (cont.)

Category: Q8270-L Semivolatile Organics / TCLP
Matrix: LEACHATE
Sample: 056857-0009
MS Run: 21 SEP 97-02
Units: mg/L

Analyte	Concentration Sample Result	MS Result	MSD Result	Amount Spiked MS	Amount Spiked MSD	% Recovery MS	% Recovery MSD	Recov. Accep. Limits	RPD MS-MSD	RPD Accept Limits
Pyridine	ND	0.145	0.160	0.250	0.250	58	64	18-130	9.8	32
1,4-Dichlorobenzene	ND	0.157	0.183	0.250	0.250	63	73	48-97	15	20
2-Methylphenol	ND	0.244	0.264	0.250	0.250	98	106	55-119	7.9	20
3/4-Methylphenol	ND	0.369	0.399	0.500	0.500	74	80	52-111	7.8	20
Hexachloroethane	ND	0.154	0.186	0.250	0.250	62	74	40-113	19	20
Nitrobenzene	ND	0.187	0.200	0.250	0.250	75	80	35-180	6.7	20
Hexachlorobutadiene	ND	0.185	0.224	0.250	0.250	74	90	41-95	19	20
2,4,6-Trichlorophenol	ND	0.194	0.215	0.250	0.250	78	86	37-144	10	20
2,4,5-Trichlorophenol	ND	0.190	0.232	0.250	0.250	76	93	53-103	20	20
2,4-Dinitrotoluene	ND	0.200	0.245	0.250	0.250	80	98	55-114	20	20
Hexachlorobenzene	ND	0.198	0.223	0.250	0.250	79	89	58-110	12	20
Pentachlorophenol	ND	0.411	0.439	0.500	0.500	82	88	14-176	6.6	26

Surrogates	%Recovery Sample	%Recovery MS	%Recovery MSD	Rec. Accept. Limits
Nitrobenzene-d5	71.8	69.0	77.0	57-102
2-Fluorobiphenyl	69.1	59.9	72.9	43-116
Terphenyl-d14	63.6	69.5	70.5	43-128
2-Fluorophenol	74.0	67.6	79.3	26-104
Phenol-d5	76.9	79.9	85.5	33-117
2,4,6-Tribromophenol	80.6	77.2	84.5	37-117

ND = Not Detected

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

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QC LOT ASSIGNMENT REPORT
Semivolatile Organics by GC

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
056857-0009-SA	SOIL	8150-S	18 SEP 97-01	18 SEP 97-01
056857-0009-SA	SOIL	8080-S	18 SEP 97-01	18 SEP 97-01

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DUPLICATE CONTROL SAMPLE REPORT
Semivolatile Organics by GC

Analyte	Concentration Spiked	Measured DCS1	Measured DCS2	AVG	Accuracy Average(%) DCS	Accuracy Limits	Precision (RPD) DCS	Precision Limits
Category: 8150-S Matrix: SOIL QC Lot: 18 SEP 97-01 Concentration Units: ug/kg								
2,4-D	100	72.6	72.4	72.5	73	41- 91	0.28	40
2,4,5-TP (Silvex)	20.0	15.0	15.5	15.2	76	49-103	3.3	35
2,4,5-T	20.0	13.8	14.4	14.1	71	45-109	4.3	35
Category: 8080-S Matrix: SOIL QC Lot: 18 SEP 97-01 Concentration Units: ug/kg								
gamma-BHC (Lindane)	26.7	28.6	24.8	26.7	100	70-113	14	15
Heptachlor	26.7	29.2	25.8	27.5	103	71-115	12	15
Aldrin	26.7	30.9	27.0	29.0	108	71-113	13	15
Dieldrin	66.7	62.1	55.0	58.6	88	36-146	12	15
Endrin	66.7	65.6	58.5	62.0	93	30-147	11	15
4,4'-DDT	66.7	60.8	53.6	57.2	86	64-115	13	15

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

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SINGLE CONTROL SAMPLE REPORT
Semivolatile Organics by GC

Analyte	Concentration Spiked	Measured	Accuracy(%) SCS	Limits
Category: 8150-S Matrix: SOIL QC Lot: 18 SEP 97-01 QC Run: 18 SEP 97-01 Concentration Units: ug/kg				
DCAA	100	74.5	74	39-113
Category: 8080-S Matrix: SOIL QC Lot: 18 SEP 97-01 QC Run: 18 SEP 97-01 Concentration Units: ug/kg				
Tetrachloro-m-xylene	66.7	54.7	82	39-105
Dibutyl chlorendate	66.7	59.0	88	51-115
Decachlorobiphenyl	13.3	11.2	84	70-126

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

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METHOD BLANK REPORT
Semivolatile Organics by GC

Analyte	Result	Units	Reporting Limit
Test: 8150-S			
Matrix: SOLID			
QC Lot: 18 SEP 97-01 QC Run: 18 SEP 97-01			
2,4-D	ND	ug/kg	40
2,4-DB	ND	ug/kg	100
2,4,5-T	ND	ug/kg	10
2,4,5-TP (Silvex)	ND	ug/kg	10
Dalapon	ND	ug/kg	100
Dicamba	ND	ug/kg	10
Dichlorprop	ND	ug/kg	20
Dinoseb	ND	ug/kg	20
MCPA	ND	ug/kg	5000
MCPP	ND	ug/kg	5000
Test: 8080CPL-TCL-S			
Matrix: SOLID			
QC Lot: 18 SEP 97-01 QC Run: 18 SEP 97-01			
Aldrin	ND	ug/kg	1.7
Aroclor 1016	ND	ug/kg	33
Aroclor 1221	ND	ug/kg	33
Aroclor 1232	ND	ug/kg	33
Aroclor 1242	ND	ug/kg	33
Aroclor 1248	ND	ug/kg	33
Aroclor 1254	ND	ug/kg	33
Aroclor 1260	ND	ug/kg	33
alpha-BHC	ND	ug/kg	1.7
beta-BHC	ND	ug/kg	1.7
delta-BHC	ND	ug/kg	1.7
gamma-BHC (Lindane)	ND	ug/kg	1.7
alpha-Chlordane	ND	ug/kg	1.7
gamma-Chlordane	ND	ug/kg	1.7
4,4'-DDD	ND	ug/kg	3.3
4,4'-DDE	ND	ug/kg	3.3
4,4'-DDT	ND	ug/kg	3.3
Dieldrin	ND	ug/kg	3.3
Endosulfan I	ND	ug/kg	1.7
Endosulfan II	ND	ug/kg	3.3
Endosulfan sulfate	ND	ug/kg	3.3
Endrin	ND	ug/kg	3.3
Endrin ketone	ND	ug/kg	3.3
Heptachlor	ND	ug/kg	1.7
Heptachlor epoxide	ND	ug/kg	1.7

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METHOD BLANK REPORT
Semivolatile Organics by GC (cont.)

Analyte	Result	Units	Reporting Limit
Test: 8080CPL-TCL-S			
Matrix: SOLID			
QC Lot: 18 SEP 97-01 QC Run: 18 SEP 97-01			
Methoxychlor	ND	ug/kg	17
Toxaphene	ND	ug/kg	170

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MATRIX SPIKE/MATRIX SPIKE DUPLICATE QC REPORT
Semivolatile Organics by GC
Project: 056857

Category: 8150-S Herbicides
Matrix: SOIL
Sample: 056916-0001
MS Run: 18 SEP 97-01
Units ug/kg Units Qualifier: Dry weight

Analyte	Concentration Sample Result	MS Result	MSD Result	Amount Spiked MS	Amount Spiked MSD	% Recovery MS	% Recovery MSD	Recov. Accep. Limits	RPD MS-MSD	RPD Accept Limits
2,4-D	ND	88.4	94.4	134	134	66	70	41-91	6.6	40
2,4,5-TP (Silvex)	ND	20.3	20.7	26.9	26.9	76	77	49-103	2.0	35
2,4,5-T	ND	16.7	18.4	26.9	26.9	62	68	45-109	10	35

Category: 8080-S Organochlorine Pesticides
Matrix: SOIL
Sample: 056857-0009
MS Run: 18 SEP 97-01
Units ug/kg Units Qualifier: Wet wt.

Analyte	Concentration Sample Result	MS Result	MSD Result	Amount Spiked MS	Amount Spiked MSD	% Recovery MS	% Recovery MSD	Recov. Accep. Limits	RPD MS-MSD	RPD Accept Limits
gamma-BHC (Lindane)	ND	17.8	19.4	26.7	26.7	67	73	70-113	8.6	15
Heptachlor	ND	19.2	20.5	26.7	26.7	72	77	71-115	6.5	15
Aldrin	ND	5.43	13.3	26.7	26.7	20	50	71-113	84	15
Dieldrin	ND	42.4	48.2	66.7	66.7	64	72	36-146	13	15
Endrin	ND	47.0	53.6	66.7	66.7	70	80	30-147	13	15
4,4'-DDT	ND	44.7	55.7	66.7	66.7	67	84	64-115	22	15

ND = Not Detected

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

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QC LOT ASSIGNMENT REPORT
Metals Analysis and Preparation

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
056857-0001-SA	SOIL	HG-CVAA-S	17 SEP 97-H1	17 SEP 97-H1
056857-0001-SA	SOIL	6020-S	17 SEP 97-L3	17 SEP 97-L3
056857-0001-SA	SOIL	ICP-S	10 SEP 97-J1	10 SEP 97-J1
056857-0002-SA	SOIL	HG-CVAA-S	17 SEP 97-H1	17 SEP 97-H1
056857-0002-SA	SOIL	6020-S	17 SEP 97-L3	17 SEP 97-L3
056857-0002-SA	SOIL	ICP-S	10 SEP 97-J1	10 SEP 97-J1
056857-0003-SA	SOIL	HG-CVAA-S	17 SEP 97-H1	17 SEP 97-H1
056857-0003-SA	SOIL	6020-S	17 SEP 97-L3	17 SEP 97-L3
056857-0003-SA	SOIL	ICP-S	10 SEP 97-J1	10 SEP 97-J1
056857-0005-SA	SOIL	HG-CVAA-S	17 SEP 97-H1	17 SEP 97-H1
056857-0005-SA	SOIL	6020-S	17 SEP 97-L3	17 SEP 97-L3
056857-0005-SA	SOIL	ICP-S	10 SEP 97-J1	10 SEP 97-J1
056857-0006-SA	SOIL	HG-CVAA-S	17 SEP 97-H1	17 SEP 97-H1
056857-0006-SA	SOIL	6020-S	17 SEP 97-L3	17 SEP 97-L3
056857-0006-SA	SOIL	ICP-S	10 SEP 97-J1	10 SEP 97-J1
056857-0007-SA	SOIL	HG-CVAA-S	17 SEP 97-H1	17 SEP 97-H1
056857-0007-SA	SOIL	6020-S	17 SEP 97-L3	17 SEP 97-L3
056857-0007-SA	SOIL	ICP-S	10 SEP 97-J1	10 SEP 97-J1
056857-0008-SA	SOIL	HG-CVAA-S	17 SEP 97-H1	17 SEP 97-H1
056857-0008-SA	SOIL	6020-S	17 SEP 97-L3	17 SEP 97-L3
056857-0008-SA	SOIL	ICP-S	10 SEP 97-J1	10 SEP 97-J1
056857-0009-SA	LEACHATE	ICP-RC-TL	19 SEP 97-L2	17 SEP 97-T1
056857-0009-SA	LEACHATE	HG-CVAA-TL	23 SEP 97-P1	17 SEP 97-T1

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LABORATORY CONTROL SAMPLE REPORT
Metals Analysis and Preparation
Project: 056857

Category: HG-CVAA-S Mercury by CVAA
Matrix: SOIL
Date Analyzed: 17 SEP 97
QC Run: 17 SEP 97-H1
Concentration Units: mg/kg

Analyte	Concentration Spiked	Measured	Accuracy(%) LCS	Limits
Mercury	0.417	0.407	98	82-114

Category: 6020-S ICPMS Metals - (Total for Soils)
Matrix: SOIL
Date Analyzed: 18 SEP 97
QC Run: 17 SEP 97-L3
Concentration Units: mg/kg

Analyte	Concentration Spiked	Measured	Accuracy(%) LCS	Limits
Arsenic	10.0	10.1	101	70-130
Beryllium	10.0	10.2	102	70-130
Selenium	10.0	9.88	99	70-130
Thallium	10.0	11.0	110	70-130

Category: ICP-S ICP Metals
Matrix: SOIL
Date Analyzed: 11 SEP 97
QC Run: 10 SEP 97-J1
Concentration Units: mg/kg

Analyte	Concentration Spiked	Measured	Accuracy(%) LCS	Limits
Aluminum	200	220	110	88-120
Antimony	50.0	47.5	95	82-113
Arsenic	200	184	92	80-120
Barium	200	199	99	85-112
Beryllium	5.00	5.02	100	78-118
Boron	100	120	120	85-125
Cadmium	5.00	4.81	96	80-120
Calcium	5000	5040	101	85-114
Chromium	20.0	19.8	99	83-112
Cobalt	50.0	51.2	102	80-116
Copper	25.0	25.0	100	84-115
Iron	100	107	107	87-117
Lead	50.0	47.8	96	82-114
Magnesium	5000	5260	105	84-113
Manganese	50.0	49.6	99	84-114
Nickel	50.0	50.0	100	84-112
Potassium	5000	5140	103	82-110
Silver	5.00	5.00	100	80-115
Selenium	200	199	99	83-113
Sodium	5000	5140	103	85-117

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

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Environmental Services

LABORATORY CONTROL SAMPLE REPORT
Metals Analysis and Preparation (cont.)
Project: 056857

Category: ICP-S ICP Metals
Matrix: SOIL Date Analyzed: 11 SEP 97
QC Run: 10 SEP 97-J1 (cont.)
Concentration Units: mg/kg

Analyte	Concentration Spiked	Measured	Accuracy(%) LCS	Limits
Thallium	200	ND	97	79-115
Tin	200	174	87	80-118
Vanadium	50.0	49.9	100	85-116
Zinc	50.0	47.4	95	80-120

Category: ICP-RC-TL TCLP Metals by ICP
Matrix: LEACHATE Date Analyzed: 22 SEP 97
QC Run: 17 SEP 97-T1
Concentration Units: mg/L

Analyte	Concentration Spiked	Measured	Accuracy(%) LCS	Limits
Arsenic	5.00	4.82	96	80-116
Barium	50.0	49.3	99	83-111
Cadmium	1.00	0.962	96	82-110
Chromium	5.00	4.99	100	80-120
Lead	5.00	4.93	99	82-114
Selenium	1.00	1.02	102	85-125
Silver	1.00	0.969	97	83-108

Category: HG-CVAA-TL TCLP Mercury by CVAA
Matrix: LEACHATE Date Analyzed: 24 SEP 97
QC Run: 17 SEP 97-T1
Concentration Units: mg/L

Analyte	Concentration Spiked	Measured	Accuracy(%) LCS	Limits
Mercury	0.00500	0.00498	100	80-111

ND = Not Detected
Calculations are performed before rounding to avoid round-off errors in calculated results.

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METHOD BLANK REPORT
Metals Analysis and Preparation

Analyte	Result	Units	Reporting Limit
Test: HG-CVAA-S			
Matrix: SOLID			
QC Lot: 17 SEP 97-H1 QC Run: 17 SEP 97-H1			
Mercury	ND	mg/kg	0.033
Test: ICPMS-6020-S			
Matrix: SOLID			
QC Lot: 17 SEP 97-L3 QC Run: 17 SEP 97-L3			
Arsenic	ND	mg/kg	0.50
Beryllium	ND	mg/kg	0.10
Selenium	ND	mg/kg	0.50
Thallium	ND	mg/kg	0.10
Test: ICP-TAL-S			
Matrix: SOLID			
QC Lot: 10 SEP 97-J1 QC Run: 10 SEP 97-J1			
Aluminum	ND	mg/kg	10.0
Antimony	ND	mg/kg	6.0
Barium	ND	mg/kg	1.0
Beryllium	ND	mg/kg	0.20
Cadmium	ND	mg/kg	0.50
Calcium	ND	mg/kg	20.0
Chromium	ND	mg/kg	1.0
Cobalt	ND	mg/kg	1.0
Copper	ND	mg/kg	2.0
Iron	ND	mg/kg	10.0
Lead	ND	mg/kg	5.0
Magnesium	ND	mg/kg	20.0
Manganese	ND	mg/kg	1.0
Molybdenum	ND	mg/kg	1.5
Nickel	ND	mg/kg	4.0
Potassium	ND	mg/kg	500
Silver	ND	mg/kg	1.0
Sodium	ND	mg/kg	500
Vanadium	ND	mg/kg	1.0
Zinc	ND	mg/kg	2.0

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Environmental Services

METHOD BLANK REPORT
Metals Analysis and Preparation (cont.)

Analyte	Result	Units	Reporting Limit
Test: ICP-RCRA-TCLP-L Matrix: SOLID QC Lot: 19 SEP 97-L2 QC Run: 17 SEP 97-T1			
Arsenic	ND	mg/L	0.50
Barium	ND	mg/L	10.0
Cadmium	ND	mg/L	0.10
Chromium	ND	mg/L	0.50
Lead	ND	mg/L	0.50
Selenium	ND	mg/L	0.25
Silver	ND	mg/L	0.50
Test: HG-CVAA-TCLP-L Matrix: SOLID QC Lot: 23 SEP 97-P1 QC Run: 17 SEP 97-T1			
Mercury	ND	mg/L	0.00020

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MATRIX SPIKE/MATRIX SPIKE DUPLICATE QC REPORT
Metals Analysis and Preparation
Project: 056857

Category: HG-CVAA-S Mercury by CVAA
Matrix: SOIL
Sample: 056857-0008
MS Run: 17 SEP 97-H1
Units mg/kg Units Qualifier: Wet wt.

Analyte	Sample Result	Concentration MS Result	MSD Result	Amount Spiked MS/MSD	%Recovery MS	%Recovery MSD	%RPD	Acceptance Limit Recov.	Acceptance Limit RPD
Mercury	ND	0.368	0.367	0.417	88	88	0.3	82-114	10

Category: ICP-S ICP Metals
Matrix: SOIL
Sample: 056758-0011
MS Run: 10 SEP 97-J1
Units mg/kg Units Qualifier: Wet wt.

Analyte	Sample Result	Concentration MS Result	MSD Result	Amount Spiked MS/MSD	%Recovery MS	%Recovery MSD	%RPD	Acceptance Limit Recov.	Acceptance Limit RPD
Aluminum	ND	226	225	200	113	112	0.5	88-120	10
Antimony	ND	47.1	46.6	50.0	94	93	1.0	82-113	10
Barium	1.3	196	191	200	97	95	2.5	85-112	10
Beryllium	ND	4.94	4.86	5.00	99	97	1.6	78-118	10
Cadmium	ND	5.30	4.59	5.00	106	92	14	80-120	16
Calcium	1260	6330	6250	5000	101	100	1.4	85-114	10
Chromium	ND	19.3	19.0	20.0	96	95	1.3	83-112	10
Cobalt	ND	50.6	49.2	50.0	101	98	2.8	80-116	10
Copper	9.4	35.2	34.9	25.0	103	102	0.7	84-115	10
Iron	14.9	118	110	100	103	95	7.6	87-117	10
Lead	ND	47.8	45.7	50.0	96	91	4.4	82-114	11
Magnesium	441	5680	5580	5000	105	103	1.8	84-113	10
Manganese	1.4	51.0	50.0	50.0	99	97	1.9	84-114	10
Molybdenum	ND	98.9	96.7	100	99	97	2.3	80-120	20
Nickel	ND	49.3	48.2	50.0	99	96	2.3	84-112	10
Potassium	2420	8070	7880	5000	113	109	2.4	82-110	10
Silver	ND	4.93	4.79	5.00	99	96	2.8	80-115	10
Sodium	2980	8400	8340	5000	108	107	0.6	85-117	10
Tin	ND	154	147	200	77	74	4.6	80-118	10
Vanadium	ND	49.1	48.2	50.0	98	96	1.8	85-116	10
Zinc	37.9	89.8	85.7	50.0	104	96	4.6	80-120	10

ND = Not Detected

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

Quanterra
Environmental Services

MATRIX SPIKE/MATRIX SPIKE DUPLICATE QC REPORT
Metals Analysis and Preparation
Project: 056857 (cont.)

Category: ICP-RC-TL TCLP Metals by ICP
Matrix: LEACHATE
Sample: 056897-0003
MS Run: 19 SEP 97-L2
Units: mg/L

Analyte	Sample Result	Concentration MS Result	Concentration MSD Result	Amount Spiked MS/MSD	%Recovery MS	%Recovery MSD	%RPD	Acceptance Limit Recov.	Acceptance Limit RPD
Arsenic	ND	3.25	4.31	5.00	65	86	28	80-116	10
Barium	ND	32.0	41.1	50.0	64	82	25	83-111	10
Cadmium	ND	0.683	0.886	1.00	68	89	26	82-110	10
Chromium	ND	3.18	4.10	5.00	64	82	25	80-120	10
Lead	ND	3.34	4.31	5.00	67	86	25	82-114	10
Selenium	ND	0.765	0.999	1.00	76	100	27	85-125	11
Silver	ND	0.649	0.835	1.00	65	83	25	83-108	10

Category: HG-CVAA-TL TCLP Mercury by CVAA
Matrix: LEACHATE
Sample: 056857-0009
MS Run: 23 SEP 97-P1
Units: mg/L

Analyte	Sample Result	Concentration MS Result	Concentration MSD Result	Amount Spiked MS/MSD	%Recovery MS	%Recovery MSD	%RPD	Acceptance Limit Recov.	Acceptance Limit RPD
Mercury	ND	0.00544	0.00545	0.00500	109	109	0.1	80-111	10

ND = Not Detected

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

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LABORATORY CONTROL SAMPLE REPORT
Wet Chemistry Analysis and Preparation

Analyte	Concentration Spiked	Measured	Accuracy(%) LCS	Limits
Category: CNR-S Matrix: SOIL QC Lot: 17 SEP 97-N1 QC Run: 17 SEP 97-N1 Concentration Units: mg/kg				
Cyanide, Reactive	79.0	6.89	8.7	1-32

Analyte	Concentration Spiked	Measured	Accuracy(%) LCS	Limits
Category: SR-9030A-S Matrix: SOIL QC Lot: 17 SEP 97-N1 QC Run: 17 SEP 97-N1 Concentration Units: mg/kg				
Sulfide, Reactive	956	547	57	1-149

Analyte	Concentration Spiked	Measured	Accuracy(%) LCS	Limits
Category: PH-9045B-S Matrix: SOIL QC Lot: 24 SEP 97-D3 QC Run: 24 SEP 97-D3 Concentration Units: units				
pH	9.14	9.16	100	97-103

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

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Environmental Services

METHOD BLANK REPORT
Wet Chemistry Analysis and Preparation

Test: CNREAC-TEC-S
Matrix: SOIL
QC Lot: 17 SEP 97-N1 QC Run: 17 SEP 97-N1

Analyte	Result	Units	Reporting Limit
Cyanide, Reactive	ND	mg/kg	0.10

Test: SREAC-9030A-S
Matrix: SOIL
QC Lot: 17 SEP 97-N1 QC Run: 17 SEP 97-N1

Analyte	Result	Units	Reporting Limit
Sulfide, Reactive	25.4	mg/kg	25.0

ND = Not Detected

Quanterra
Environmental Services

MATRIX SPIKE/MATRIX SPIKE DUPLICATE QC REPORT
Wet Chemistry Analysis and Preparation
Project: 056857

Category: CNR-S Reactive Cyanide
Matrix: SOIL
Sample: 056975-0008
MS Run: 17 SEP 97-N1
Units: mg/kg

Analyte	Sample Result	Concentration MS Result	Concentration MSD Result	Amount Spiked MS/MSD	%Recovery MS	%Recovery MSD	%RPD	Acceptance Limit Recov.	Acceptance Limit RPD
Cyanide, Reactive	ND	14.9	6.07	100	15	6.1	84	1-32	151

Category: SR-9030A-S Sulfide, Reactive
Matrix: SOIL
Sample: 056975-0008
MS Run: 17 SEP 97-N1
Units: mg/kg

Analyte	Sample Result	Concentration MS Result	Concentration MSD Result	Amount Spiked MS/MSD	%Recovery MS	%Recovery MSD	%RPD	Acceptance Limit Recov.	Acceptance Limit RPD
Sulfide, Reactive	ND	440	264	743	59	36	50	1-149	213

ND = Not Detected

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