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Date: September 25, 2007
Refer To: ENV-RCRA: 07-228
LA-UR: 07-6185

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NMED Hazardous Waste Bureau

Ms. Kathryn Chamberlain
Hazardous Waste Bureau
New Mexico Environment Department
2905 Rodeo Park Drive East, Building 1
Santa Fe, NM 87505

Dear Ms. Chamberlain:

SUBJECT: SUBMITTAL OF TA-3-26 DIESEL FUEL OIL CONTAMINATION ASSESSMENT AND CHARACTERIZATION REPORT, REVISION 1

Enclosed for your review is the "TA-3-26 Diesel Fuel Oil Contamination Assessment and Characterization, Revision 1" Report. The report summarizes additional characterization work conducted near TA-3-26 aboveground storage tank in Fiscal Year 2007.

The Laboratory plans to conduct a Tier 1 Risk Assessment Evaluation on the site pursuant to 20.5 NMAC of the New Mexico Petroleum Storage Tank Bureau (NMED-PSTB) Regulations in Fiscal Year 2008.

Please contact Mark Haagenstad at (505) 665-2014 of the Water Quality and RCRA Group (ENV-RCRA) if you have any questions.

Sincerely,

A. R. Grieggs

Anthony R. Grieggs
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Sincerely,

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LA-UR-07-6185

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Diesel Fuel Oil Contamination Assessment and Characterization

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KSL
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TA-3-26
DIESEL FUEL OIL CONTAMINATION ASSESSMENT AND CHARACTERIZATION

Revision 1

August 30, 2007

Prepared by:

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CONTENTS

Section **Page**

ACRONYMS iii

1.0 INTRODUCTION 1

2.0 SCOPE OF WORK 1

3.0 HISTORY OF THE FUEL TANK AND CONTAMINATION DISCOVERY 2

4.0 SITE-SPECIFIC GEOLOGY AND GROUNDWATER 4
- 4.1 Regional Geology 4
- 4.2 Site-Specific Lithologic Descriptions 4
  - 4.2.1 Unit 3 4
  - 4.2.2 Unit 4 4
  - 4.2.3 Fractures 5
- 4.3 Site-Specific Groundwater 6
- 4.4 Surface Water 6

5.0 REGULATORY REQUIREMENTS 6

6.0 ASSESSMENT AND CHARACTERIZATION 7
- 6.1 Borehole Placement and Sample Collection 7
- 6.2 Sample Collection 9
- 6.3 Field Screening 10
- 6.4 Sample Analysis 10
- 6.5 Core Sampling Under Tank 11
- 6.6 Handling and Disposal of Contaminated Soil 11
- 6.7 Air Quality Assessment 11

7.0 DISCUSSION 12
- 7.1 Plume Volume Estimate 12
- 7.2 Release Source 12

8.0 CONCLUSIONS 13

9.0 REFERENCES 13

Appendices

1 Sample Collection Logs for SAP Sampling
2 Sample Collection Logs for Supplemental Sampling
3 Sample Control Documentation
4 TPH-DRO Sample Results
5 Supplemental Sampling Detected Parameters
6 Core Sample Collection Log

FIGURES

Figure **Page**

Figure 1. Site Diagram of the Fuel Storage Area at TA-3-22 3
Figure 2. Placement of Boreholes Around Tank SM-26 8

TABLES

Table **Page**

Table 1. Pertinent Information on Hollow-Stem Auger Boreholes 7
Table 2 Supplemental Sampling Locations and Depths 9
Table 3 Sample Containers 9
Table 4. Maximum Petroleum-Related Contaminants Detected During Characterization Activities 10

ACRONYMS

AST	aboveground storage tank
BGL	below ground level
BTEX	benzene, toluene, ethylbenzene, and xylenes
DAF	dilution attenuation factor
DOE	U.S. Department of Energy
DRO	diesel-range organics
EPA	U.S. Environmental Protection Agency
EPDB	Environmental Programs Database
ENV-RCRA	Environmental Programs Water Quality and RCRA
GEL	General Engineering Laboratory, Inc.
KSL-AENV	KBR-Shaw-LATA Environmental Department
KSL-HENV	KBR-Shaw-LATA Health and Environmental Department
LANL	Los Alamos National Laboratory
Ma	million annum or million years
mg/kg	milligrams per kilogram
NMED	New Mexico Environment Department
NPDES	National Pollutant Discharge Elimination System
PAH	polynuclear aromatic hydrocarbons
PCB	polychlorinated biphenyls
PID	photoionization detector
ppm	parts per million
SAP	*Sampling and Analysis Plan, Assessment of Fuel Oil Contamination Near Fuel Oil Tank TA-3-26, Revision 1*
SVOC	semi-volatile organic compounds
SWPPP	storm water pollution prevention plan
TA	Technical Area
TPH	total petroleum hydrocarbons
VOC	volatile organic compound
WS-HMWO	Waste Services Hazardous and Mixed Waste Operations

1.0 INTRODUCTION

KBR-Shaw-LATA Environmental Department (KSL-AENV)/Eberline Services have prepared this summary of results from the environmental assessments associated with soil contamination around the aboveground storage tank (AST) at Technical Area (TA)-3-26. A site diagram of the fuel storage area at the TA-3 Power Plant is provided in Figure 1. Fuel oil contamination was discovered on the north and east side of Tank 26 while installing a cathodic protection system for the tank on April 2, 2003. A sampling and analysis plan was developed and implemented to determine the nature and extent of the contamination. Results of the sampling and analysis were submitted to the New Mexico Environment Department (NMED) on April 26, 2004. Based on comments received from the NMED on June 17, 2005, requesting that additional analysis be conducted on contamination at the site, a supplemental sampling plan was prepared and implemented. All sampling for the assessment was performed in accordance with the requirements of Los Alamos National Laboratory (LANL), the U.S. Department of Energy (DOE), the NMED, and the U.S. Environmental Protection Agency (EPA) to determine the extent of the contamination and to identify the source of the contamination.

2.0 SCOPE OF WORK

The scope of work for the first assessment is described in detail in the *Sampling and Analysis Plan, Assessment of Fuel Oil Contamination Near Fuel Oil Tank TA-3-26, Revision 1* (SAP), (Eberline Services/KSL-Health and Environmental [HENV], July 2003). The scope of work for the supplemental sampling requested by NMED is detailed in the *Supplemental Sampling and Analysis Plan Defining Nature of Contamination Near Fuel Storage Tank TA-3-26, Revision 1,* (Eberline Services/KSL-AENV, March 1, 2006) The following is a summary of this scope of work under both sampling and analysis plans.

The scope of work performed under the SAP was to define the horizontal and vertical extent of the contamination identified during the tank upgrade activities as well as to collect samples from under the tank and within the concrete retainer around the base of the tank to determine if the tank has a leak in the floor. The vertical extent of the contamination was determined by drilling two boreholes and collecting samples through the contamination zone to a depth of 50 feet beyond the depth at which contamination was identified using field screening methods. The horizontal extent of contamination was determined using a step-out approach. Boreholes were placed along the radius of the tank and radially outward from the tank at step-out intervals from known-contamination locations. If the step-out borehole revealed contamination using field screening techniques, another step-out was performed and a borehole placed at that location. This process continued until the contamination was bounded by boreholes exhibiting contamination below the level specified in *the New Mexico Environment Department TPH Screening Guidelines* (NMED, February 28, 2003) based on field screening results. In all, eleven boreholes were advanced to define the horizontal extent of contamination.

The scope of work performed under the supplemental sampling plan was to collect samples from boreholes adjacent to boreholes sampled under the SAP that contained the highest levels of total petroleum hydrocarbons (TPH). The samples collected during the supplemental sampling were analyzed for the parameters required to be analyzed at sites with contamination from unknown sources as specified in the *NMED Soil Screening Guidelines, Revision 3.0,* (NMED, August 2005). This analytical suite was not used for the samples analyzed under the initial July 2003 SAP.

3.0 HISTORY OF THE FUEL TANK AND CONTAMINATION DISCOVERY

The TA-3-26 No. 2 fuel oil AST is a 150,000-gallon, one-section, non-baffled tank that was installed in early 1950 to store No. 2 fuel oil to supply the Power Plant, TA-3-22. A site diagram of the fuel storage area and associated piping is provided in Figure 1. No. 2 fuel oil reaches the Power Plant via an aboveground pumping system in a pump house located to the south and east of tank TA-3-26. The AST provides fuel oil as a backup source to fire boilers at TA-3-22. The normal fuel source is natural gas. The tank is filled through the fuel return line through the pump house. During an upgrade project to add cathodic protection to the tank in April 2003, a trench was cut around the tank and boreholes were advanced at evenly spaced intervals around the tank to install anodes. Cuttings from the borehole had a noticeable diesel fuel odor indicating the presence of contamination. Samples of the cuttings were collected and analyzed, confirming that contamination was present in shallow soils to the north and east of Tank 26. Results of this sampling have been incorporated into the results of this assessment.

Following confirmation that contamination was present, records from the operating log of the facility and from the tank level indicators, with an accuracy of ± 200 gallons, were reviewed to determine if a release was indicated by any unexplained changes in the tank levels. No unexplained level changes in the tank were identified. In addition, a subcontractor was brought in to perform an integrity test on the tank floor. Results of the integrity testing are reported in the *In-Service Internal Floor Inspection Report*, (InTANK Services, Inc., April 2003). The testing indicated that the integrity of the tank floor was good and there were no areas where a leak would be suspected. Pressure tests are performed periodically on the fuel supply and return lines. The latest tests do not reveal any leaks in the delivery system to the power plant (Facility Operating Record, Supply and Return Line Test Records, February 3, 2003).

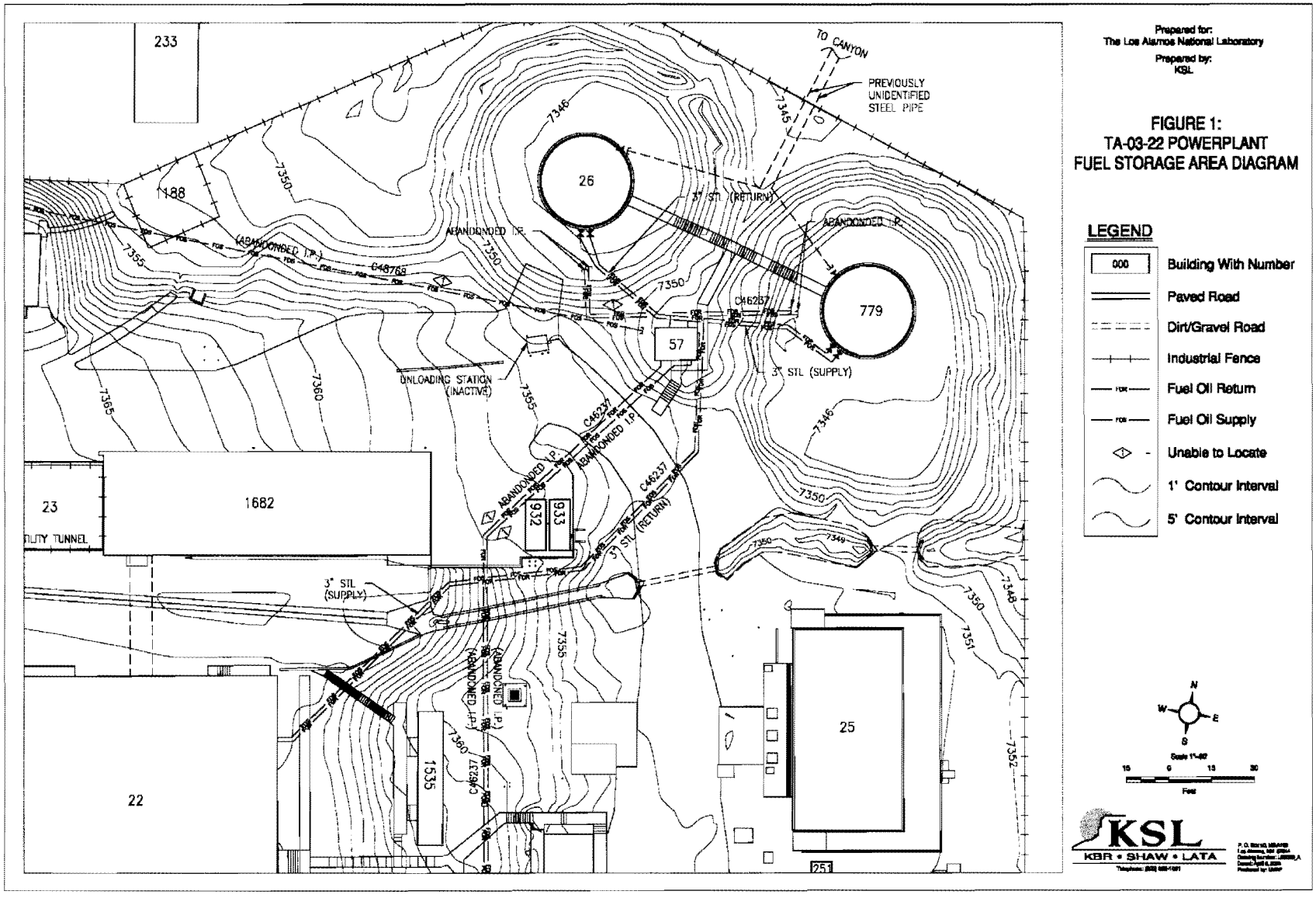

Figure 1. Site Diagram of the Fuel Storage Area at TA-3-22

4.0 SITE-SPECIFIC GEOLOGY AND GROUNDWATER

4.1 Regional Geology

The stratigraphic units of the Bandelier Tuff described in this report are largely according to Broxton and Reneau (1995). The Bandelier Tuff is dominantly composed of a complex sequence of nonwelded to welded ignimbrites that were erupted from the Valles-Toledo cauldera complex (Smith and Bailey 1966, Gardner et al. 1986). In the region of Los Alamos, the Bandelier Tuff consists of two members: the lower Otowi member (1.61 million annum or million years [Ma]; Izett and Obradovich 1994) and the upper Tshirege Member (1.22 Ma; Izett and Obradovich 1994), separated by a unit of volcaniclastic rocks and tuffs of the Cerro Toledo interval (Heiken et al. 1986, Broxton and Reneau 1995, Lavine et al. 1997). The Tshirege Member consists of four identified units (Units 1 through 4). The two units of the Tshirege tuff positively encountered at the Power Plant site are Unit 4 (the top layer), and Unit 3 (the lower layer).

4.2 Site-Specific Lithologic Descriptions

All descriptions were performed at the drill site with the help of a 10X hand lens. With the exception of differences in texture and induration brought about by the variations in welding (which were qualitatively determined by the degree of pumice flattening), the lithologic descriptions of Units 4 and 3 are consistent from borehole to borehole. The lithologic descriptions are arranged from oldest to youngest rocks.

4.2.1 Unit 3

Unit 3 is a nonwelded to moderately welded, phenocryst rich, moderate pumice bearing, devitrified tuff. Phenocrysts in Unit 3 are abundant at 25 to 35 volume percent, with quartz and alkali feldspar in subequal amounts, with very minor plagioclase. Phenocrysts are large, averaging 4 mm across, and more abundant than in Unit 4. The quartz and feldspar phenocrysts have distinctive physical characteristics. The quartz has a bipyramidal shape, and the alkali feldspar is chatoyant (flash of blue color observed). Plagioclase and mafic phenocrysts are extremely rare. Those mafic crystals observed appear to be fine-grained hornblende.

Pumice lapilli in the Unit 3 ash flow range from 5 to 10 percent by volume. Unit 3 is non- to slightly welded at the top but rapidly grade downward to partly welded tuff over a short interval (approximately ten feet). The pumices are fully inflated and vesicular at the top of the ash flow, but with increased welding, the tubular pumice structures become progressively more flattened and deformed. All pumices are devitrified in this unit. Colors of the pumice are of three modes. At the top of the flow, they are predominantly dark gray and brown with white stripes. Progressing down section, the brown lapilli gradually disappear and are replaced by large white pumice. The pumice range in size from 5mm to over 10 cm.

The matrix of Unit 3 is composed of ash, devitrified glass shards, crystal fragments, and very small pumice fragments. The matrix color of this unit ranges from purple gray to medium gray, and the matrix makes up approximately 65 percent by volume of the ash flow.

4.2.2 Unit 4

Unit 4 consists of nonwelded to densely welded, moderately pumice rich, and phenocryst-poor to moderately phenocryst-rich devitrified ignimbrite. Both phenocrysts and pumices range from 8 to 15 volume percent. Lithic clasts are rare throughout the ash flow, typically representing less that 1 volume percent. Color ranges from dark purple brown to moderate purple to medium brown.

Welding varies within the unit, with a nonwelded to partly welded interval at the top, becoming moderately to densely welded and then becoming nonwelded at the base of the unit. A thin, crystal rich, medium to course grained unconsolidated sandy surge deposit is typically present near the bottom of Unit 4.

Phenocrysts in Unit 4 are dominantly quartz and sanidine, with minor plagioclase and altered mafic minerals. Unbroken quartz crystals are bipyramidal, approximately 2mm on edge, and make up 5 to 7 volume percent of the tuff. Sanidines are similar in size to quartz (2 to 3 mm) and abundance (approximately 5 volume percent) and a chatoyant in sunlight. More than half the population of all crystal types are broken fragments. The rare and small (<1 mm) mafic phenocrysts comprise only 1 to 2 volume percent of the tuff.

Pumices in Unit 4 range in size from 5 mm to greater than 2 cm and are deep gray or purple with gray cores. All pumices are devitrified. Pumices are vapor phase altered in the less than densely welded portion of the tuff and are characterized by minute acicular crystals growing within relict tube structures of the pumice. The primary vapor phase mineralogy is presumably cristobolite, tridymite and sanidine. Pumices in this portion of the tuff are fully inflated and show little or no deformation, but the primary pumice textures are largely obliterated by devitrification and growth of vapor phase minerals. Where the welding is moderate to dense, the pumices are significantly elongated and aligned parallel to bedding. Their color is dark gray. There is rhythmic color banding in the lowermost portion of Unit 4. The horizontal bands consist on moderate brown color alteration of the tuff on a 2 to 4 cm scale alternating with the more typical purple matrix.

The matrix of Unit 4 is composed of ash, devitrified glass shards, small pumice fragments, and minute phenocryst fragments. The prevalent colors of the matrix in Unit 4 are grayish purple to moderate brown to moderate purple. The induration of the cores does not commonly match the degree of welding. Much of the moderately to densely welded core was recovered as 2 to 5 cm thick discs of indurated rock surrounded by rock powder in the core barrel, an effect caused by drilling action.

The sandy surge deposit at the base of Unit 4 was identified in the deepest 4 of the 13 drill cores (CZ-1, CZ-2, P2, and P-11). It was typically 2 to 6 inches thick and composed of greater than 75 volume percent quartz and feldspar crystals and approximately 25 volume percent ash. Recovery of undisturbed surge is difficult because of its noncohesive, granular nature, but most of these intervals appear as massive, well sorted, and poorly indurated sand.

4.2.3 Fractures

A total of eighteen fractures were identified in the thirteen boreholes used during this assessment phase. Of those fractures, 100 percent were encountered in the upper 25 feet of the boreholes (Unit 4 of the Tshirege Member).

The fractures observed were dominantly high angle, that is, 50 percent of the fractures were 70 degrees or better. Another 44 percent were fractures with 45-degree angle. The third subset was a fracture with a 15-degree angle (i.e. very low angle), which accounted for 6 percent of the observed set.

The petrography of the fracture linings and surrounding wall rock is extremely varied. Some of the fractures show no fill material and the surrounding ash flow is unaltered (44 percent). Other fractures are lined with orange clay, often with caliche veinlets included, and again the wall rock is unaltered (39 percent). The third fracture morphology encountered displays both a thin clay seam in the fracture itself and small surrounding wall rock alteration zone (11 percent). A fourth less common fracture type is

one in which the fracture walls are lined with Fe-Oxides, there is no obvious fill material, but the wall rock is altered to clay-like material to a couple centimeters beyond the fracture wall (6 percent).

The contamination zone lies above the fractures at the fill material and the Unit 4 interface. No contamination was seen in any of the fractures.

4.3 Site-Specific Groundwater

The regional aquifer is typically separated from the alluvial groundwater and intermediate perched zone groundwater by 350–620 feet of tuff, basalt, and sediments (LANL 1993). The regional aquifer beneath TA-3 is at an elevation of approximately 5,900 feet or approximately 1,400 feet below ground level (BGL) and is located chiefly within sediments of the Puye and Tesuque Formations (Broxton and Eller 1995). Thus, for mesa-top sites at TA-3, more than 1,400 feet of tuff and volcaniclastic sediments separate the surface from the regional aquifer. The aquifer is generally believed to flow easterly toward the Rio Grande (Birdsell 2002, personal communication).

4.4 Surface Water

The TA-3-22 Power Plant is located adjacent to an ephemeral tributary to Sandia Canyon. Surface water in Sandia Canyon is generated from discharges of treated effluent from the TA-3-22 Power Plant and TA-46 Sanitary Wastewater Treatment System facility permitted under the Laboratory's National Pollution Discharge Elimination System (NPDES) Permit No. NM0028355. The TA-3 Power Plant is authorized to discharge wastewater from cooling towers, boiler blowdown, de-mineralizer back wash and treated sanitary wastewater to Sandia Canyon in Segment Number 20.6.4.126 of the Rio Grande Basin. Storm water discharges from this facility and the TA-3 administrative complex also contribute to surface water in Sandia Canyon. Sandia Canyon has a well developed wetlands located east and down gradient from the TA-3 Power Plant. Storm water discharges at the site are permitted under an industrial Storm Water Pollution Prevention Plan (SWPPP), as required by the Laboratory's NPDES Multi-Sector General Permits NMR05A734 and NMR05A735.

Surface water was not impacted by the contaminated soil discovered at the site. Diesel contaminated soil identified in the 7-day and 15-day Spill Report submitted to NMED on April 10, 2004 lies within a horizontal profile contained within an area 72 feet long and 30 feet wide. The contamination is present along the backfill soil and Unit 4 Interface in depths primarily between 5 and 15 feet. In one borehole (CZ1) contamination was seen at 20 feet. Surface water exposure to contaminated soil is unlikely because it lies within a contained area beneath the ground surface and within the earthen berm secondary containment. Additionally, after discovery of the contaminated soil, Laboratory personnel conducted assessments of nearby canyon sides and surface water and determined that diesel contamination was not present.

5.0 REGULATORY REQUIREMENTS

Sampling methods for the investigations are in accordance with the objectives and procedures described in Chapter 1, Soil and Groundwater, Sampling and Disposal of the *Guidelines For Corrective Action* (NMED Petroleum Storage Tank Bureau, March 13, 2003). Characterization of the contamination boundary was defined as levels of total petroleum hydrocarbons – diesel range organics TPH-DRO less than 880 milligrams per kilogram (mg/kg); total benzene, toluene, ethylbenzene, and xylenes (BTEX) and polynuclear aromatic hydrocarbons (PAH) less than the petroleum-related contaminants screening guidelines (NMED, February 28, 2003). Samples collected during the supplemental sampling were analyzed for the parameters required to be analyzed at sites with contamination from unknown sources in the *NMED Soil Screening Guidelines Revision 3.0*, (NMED August 2005).

6.0 ASSESSMENT AND CHARACTERIZATION

6.1 Borehole Placement and Sample Collection

The SAP drilling at TA-3-26 tank site was accomplished with a Central Mine Equipment 75 hollow-stem auger unit. During a one-week interval, thirteen continuous core boreholes were completed. Figure 2 shows the placement of boreholes around Tank SM-26. Core samples were obtained by one singular method. Cores were collected with 4-inch hollow tube split spoons driven by the hollow-stem auger unit. Boreholes CZ-1 and CZ-2 were advanced in locations where the heaviest contamination was identified during the anode borehole placement, to determine the vertical extent of contamination. These boreholes were advanced to a depth of 50 feet beyond the depth at which contamination was present based on field screening results. Boreholes with the "P" (perimeter) designation were advanced to determine the horizontal extent of contamination.

Perimeter borehole locations were placed in a step-out fashion from areas of known contamination towards areas that were known or suspected to be free of contamination. If a perimeter borehole was determined to be contaminated, based on field-testing, the drill rig would step out and place another perimeter borehole. This step out procedure continued until the perimeter boreholes showed contamination below the *NMED TPH Screening Guidelines* (NMED, February 28, 2003) based on field screening tests. No contaminant-saturated soil conditions as described in 20NMAC5 were encountered during the investigation. Perimeter boreholes P7 and P10, which were specified in the SAP, were not installed since perimeter boreholes P2 and P5 were below the TPH screening guidelines. The perimeter boreholes were stepped out from areas of known contamination along the radius of the tank and radially outward from the tank towards the berm. Perimeter boreholes were advanced to a depth of ten feet below the depth at which contamination was observed in the borehole based on field screening or to a depth of ten feet below the depth at which contamination was seen in any adjacent boreholes. Samples were taken at depth intervals of five feet. Table 1 below provides a summary of the depth of each borehole and depths to each geologic unit interface.

Table 1. Pertinent Information on Hollow-Stem Auger Boreholes

Hole No. / Interface Feet BGL	CZ1	CZ2	P1	P2	P3	P4	P5	P6	P8	P9	P11	P12	P14
Fill/Unit 4	10	12	6.7	7.5	8	8.7	7	7	9.7	8.3	11.5	5.5	13
Unit 4/Unit 3	28	27.5	NA	28	NA	NA	NA	NA	NA	NA	25.5	NA	NA
Total Depth	70	65	20	30	20	20	25	20	20	25	30	20	25

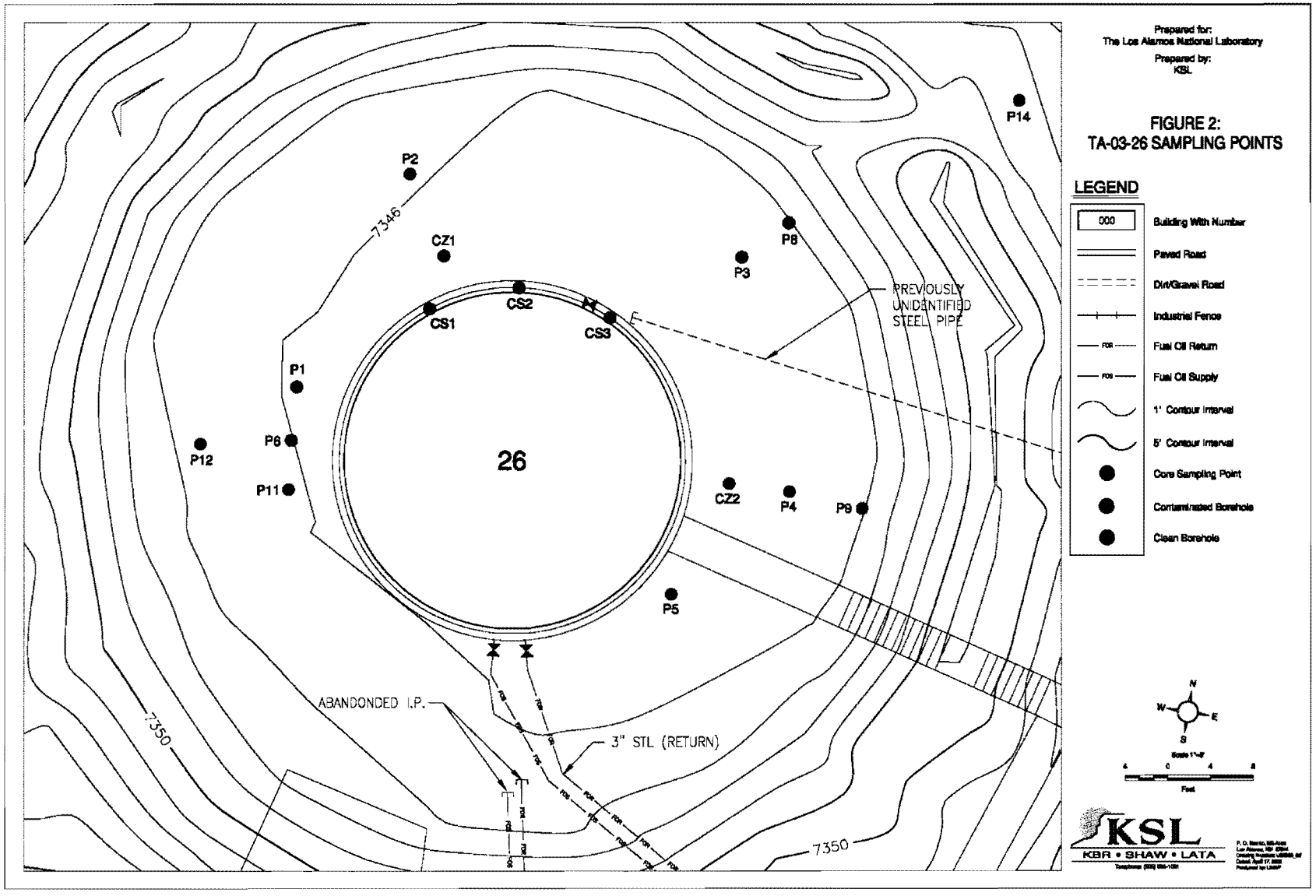

Figure 2. Placement of Boreholes Around Tank SM-26

The supplemental-sampling at the TA-3-26 tank site was also accomplished with a Central Mine Equipment 75 hollow-stem auger unit. Supplemental samples were collected at the following boreholes and depths in accordance with the supplemental sampling plan:

Table 2 Supplemental Sampling Locations and Depths

Borehole	Depth (ft)	Borehole	Depth (ft)
CZ1	10, 15, 20	CZ2	5, 10, 15
P2	5, 10, 15	P12	5, 10, 15
P14	5, 10, 15		

6.2 Sample Collection

Samples collected under the SAP and the supplemental sampling plan were collected using identical methods. Samples were collected from the split-spoon sampler using a new disposable poly scoop for each sample. Sample collection logs for samples collected under the SAP for each borehole are provided in Appendix 1. Supplemental sampling sample collection logs are provided in Appendix 2. Table 3 lists the sample jars used for each analysis. Jars were filled completely, leaving no headspace in the jar.

Table 3. Sample Containers

Analysis Requested	Container
TPH-DRO and PAH	8 oz amber glass, wide mouth jar
BTEX	4 oz amber septum
Volatile Organic Compounds (VOCs)	125 ml amber septum
Semi-Volatile Organic Compounds (SVOCs) and Polychlorinted Biphenyls (PCBs)	250 ml amber glass, wide mouth jar
Metals	125 ml poly wide mouth jar

During the SAP sampling, two sets of jars were collected from each sample point. A ten-gram aliquot of each sample was subjected to a field screening analysis. The jars were then placed on ice until a determination was made, based on the field testing results, as to what analysis the samples would be subjected to as specified in the SAP. Samples collected but not shipped for analysis were archived in the KSL-AENV laboratory sample storage refrigerator until it was determined that they were no longer needed and then disposed in accordance with Section 6.6. No excess sample was collected during the supplemental sampling. All samples for laboratory analysis were placed on ice for shipment to General

Engineering Laboratory, Inc. (GEL) for analysis. Sample control documentation for the samples is provided in Appendix 3.

6.3 Field Screening

Field screening of the SAP samples was accomplished using a PetroFLAG® hydrocarbon test kit for soils. Results of the field screening are provided on the sample collection logs in Appendix 1. Field test results less than 100 parts per million (ppm) were assumed to be at background levels for determining the presence of contamination and the sample analysis scheme. A comparison of the laboratory TPH data with the field test data confirmed that this was a valid assumption. No additional field screening was performed on samples collected during the supplemental sampling.

6.4 Sample Analysis

All SAP samples were analyzed for TPH-DRO by method 8015A/B. The first and last analytical sample, collected under the SAP, with a field analytical result above 100 ppm from each borehole was analyzed for TPH-DRO and the target analytes (BTEX and PAH) using Methods 8260/8310. All supplemental samples were analyzed for VOCs by Method 8260B, SVOCs by Method 8270C, PCBs by Method 8082, and total metals using the 6000/7000 series methods. Summary results of the SAP TPH-DRO analysis are provided in Appendix 4. TPH-DRO results were compared to the NMED soil screening guidelines to develop the contamination profile depicted on Figure 2 and used to calculate the plume volume estimate in Section 7.1. The full SAP analytical report can be accessed through LANL's Environmental Programs-Water Quality and RCRA (ENV-RCRA) information management systems (the ENV-RCRA Water Quality Database). Results of the parameters detected during analysis of the supplemental samples are provided in Appendix 5. The full analytical report for the supplemental sampling can be accessed through the LANL's Environmental Programs Database (EPDB).

Table 4 provides a comparison of the maximum petroleum-related contaminants detected at this site versus the NMED *TPH screening guidelines,* (NMED, October, 2006). All petroleum related contaminants were below the groundwater protection and industrial screening guidelines except Benzo(a)pyrene, which, at 3.7 mg/kg, is only slightly above the screening guidelines of 2.78 mg/kg and 2.34 mg/kg respectively.

Table 4. Maximum Petroleum-Related Contaminants Detected During Characterization Activities

Contaminant of Concern	NMED DAF20 GW Protection Screening Guidelines (mg/kg)	Maximum Site Concentration Detected (mg/kg)
Benzene	0.02	0.0051
Ethyl benzene	20.2	0.0162
Naphthalene	0.394	0.336
Toluene	21.7	0.0078
Xylene	2.06	0.0650
Benzo(a)anthracene	10.9	2.00
Benzo(a)pyrene	2.78	3.70
Benzo(b)fluoranthene	33.5	1.18
Benzo(k)fluoranthene	335	0.0185

Chrysene	348	0.037
Dibenzo(a,h)anthracene	10.4	0.0857
Indeno(1,2,3-cd)pyrene	94.6	0.0370

No volatile or semi-volatile organic compounds were detected in any of the supplemental samples. Very low levels of PCBs (Aroclors 1242, 1254, and 1260) were detected in one of the supplemental samples. The PCB levels were below the NMED soil screening guidelines for groundwater protection and industrial/occupational soil (NMED August, 2005). All metals detected during the supplemental sampling were below the background levels developed for Los Alamos soils and Bandelier Tuff (Ryti, 1998). The supplemental sampling results indicate that there are no significant contaminants other than the Diesel/No. 2 Fuel Oil identified in the initial investigation.

6.5 Core Sampling Under Tank

The SAP specified the collection of four core samples under the tank and within the concrete retaining wall around the base of the tank. The tank sits on a layer of sand and gravel on top of an asphalt layer within the retaining wall. The core samples were collected with a hand auger to determine if any fuel oil had collected in the sand and gravel above the asphalt, which would indicate a leak in the tank floor. Due to an electrical conduit in the space between the tank and retaining wall on the east side of the tank, only three samples were collected from underneath the tank. The locations of the core samples (CS-1, CS-2, and CS-3) are shown in Figure 2. The samples were tested using a PetroFLAG® test kit for TPH. A sample collection log with the test results is provided in Appendix 6. No TPH above background levels was detected in the samples from beneath the tank. The samples were dark in color but dry and had no fuel odor.

6.6 Handling and Disposal of Contaminated Soil

During the SAP assessment process, soil was segregated (contaminated versus uncontaminated) during drilling operations. Suspected contaminated soils were placed in 55-gallon drums. Non-contaminated soils were stockpiled on site to await receipt of analytical results confirming that the material was below regulated concentrations. Contaminated soil with TPH levels higher than 1,000 mg/kg was managed as New Mexico Special Waste. All drill cuttings generated during the supplemental sampling was considered to be New Mexico Special Waste since the boreholes were purposely advanced in areas identified with the highest levels of TPH contamination during the SAP assessment. All soil removed during this assessment was properly characterized (waste profiles) and disposed of in accordance with LANL, NMED, and DOE requirements through Waste Services-Hazardous and Mixed Waste Operations (WS-HMWO).

6.7 Air Quality Assessment

The only structure in the vicinity of the tank is the pump house. The pump house is not an inhabited building and is only entered during fuel delivery, to realign the feed valves, and for periodic maintenance and inspection. The pump house was monitored for volatile organic compounds (VOCs) using a photoionization detector (PID) to determine if any vapors were accumulating in the building. Due to residual diesel fuel from previous maintenance activities, de-minimis losses from pumping, and organic lubricants used in the mechanical equipment in the building, vapors from the release would not be discernable from the residual vapors inherent in the pump house. Organic vapor readings in the pump house using a PID were 5 ppm.

7.0 DISCUSSION

The following sections provide a discussion of the plume size and source.

7.1 Plume Volume Estimate

Based on the location of perimeter holes with no contamination based on field and laboratory analytical data (green borehole locations on Figure 2) the largest dimensions of the plume would be 72 feet long from P12 to P14 and 30 feet wide from P2 to CZ2. A plume volume estimate was prepared by segregating the contamination zone into five-foot lifts and using average concentrations within the lift to provide an estimate of the volume of diesel in the plume. The plume volume estimate indicated that there is approximately 300 gallons of fuel in the contamination zone. It was assumed that the plume boundaries were at the clean perimeter boreholes and at the clean depths within the contamination zone so that the volume estimate would be a "worst case" estimate. Field observations and analytical data indicate that the material traveled along the backfill/Unit 4 interface and has stayed within several feet of the interface. Therefore the volume estimate is expected to be high, and could be as high as five times the actual volume. Additionally, the tank inventory reconciliation does not indicate any unexplained losses from the tank.

7.2 Release Source

The source of the contamination was not readily apparent when the contamination was discovered. Following confirmation that contamination was present, tank level indicator records from the operating log of the facility were reviewed to determine if a release was indicated by any unexplained changes in the tank levels over the past two years. No unexplained level changes in the tank were identified. In addition, a subcontractor was contracted to perform an integrity test on the tank floor. Results of the integrity testing are reported in the *In-Service Internal Floor Inspection Report*, (InTANK Services, Inc., April 2003). The testing indicated that the integrity of the tank floor was good and there were no areas where a leak would be suspected. Core samples collected under the tank and within the retaining wall contained no visible signs of fuel oil contamination and field test results indicate that there is not fuel oil under the tank in the area near the contamination zone. A small release of fuel oil was documented during the monthly Spill Prevention Control and Countermeasures inspections for this tank. Repairs to the leaking valve were documented and a visual inspection of the area where the leak was reported indicated that the documented release was not the source of this contamination.

It was suspected that the contamination was an historical release. A task was undertaken to identify if the contamination is recent or historical. The task was completed and results were reported in the *TA-3-26 Diesel Fuel Oil Contamination Dating Report*, (KSL-AENV, February 27, 2004). During the task, analytical chromatograms from the site were compared to chromatograms from sites with fresh and weathered diesel contamination based on the length of time the contamination was present in the soil. The comparison of the chromatograms from the three sites provided no conclusive results as to the relative weathering between the sites. The chromatograms from contamination at TA-3-26 were also compared to a chromatogram of a sample of fuel taken from the tank in January 2004. The comparison of these chromatograms indicates weathering of the fuel oil in the soil has occurred compared to the fuel oil in the tank.

Additionally a sample collected from the contaminated zone of this site was analyzed for sulfur to determine the sulfur content of the fuel oil in the soil. The tank previously contained high-sulfur content fuel oil, which was consumed in May 2000 during the Cerro Grande fire. Following the fire, the tank was refilled with low sulfur content fuel oil. The sulfur content of the fuel oil in the soil was compared to the sulfur content of the fuel oil in the tank after May 2000. The sulfur content of the fuel oil in the soil is

0.63% compared to a sulfur content of 0.05% in the fuel oil currently stored in the tank. This indicates that the fuel release occurred prior to May 2000.

8.0 CONCLUSIONS

The contamination consists of No. 2 Fuel Oil. The horizontal profile of the contamination is contained within an area 72 feet long and 30 feet wide on the north end of the tank. The contamination is present along the backfill soil and Unit 4 interface. The deepest contamination seen at the site was at 15-20 feet in depth at one borehole (CZ1). In all other boreholes contamination was seen at ten feet in depth while no contamination was seen at the five- and 15-foot depths. A conservative plume volume estimate is 300 gallons of fuel in the soil. The tank and associated piping have been tested and show no evidence that the tank is currently leaking. The tank level indications taken since digital level indicators were installed in 2001 were reviewed and there is no evidence that the tank is currently leaking. Sulfur analysis of the contamination in the soil indicates that the release occurred at some point in time prior to May 2000 when the tank contained high sulfur content fuel oil. There are no buildings in the area whose air quality is threatened by the contamination. Groundwater is not impacted or threatened by the contamination, which is almost 1,400 feet above the aquifer. There is no evidence that surface water was impacted or threatened by the release. There were no fractures evident in the subsurface below the contamination zone and there appears to be no contaminant transport in fractures. Characterization methods, activities, evaluations, and associated results and conclusions indicate that the nature and extent of fuel oil contamination at this site has been fully defined.

9.0 REFERENCES

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APPENDIX 1

SAMPLE COLLECTION LOGS FOR SAP SAMPLING

Sample Collection Log

Hole ID CZ1-

Date 7/23/03 **Page** 1 **of** 1

Sampling Personnel N. SEQUIN, L. AMEZCUA

Time	Depth (ft)	Field Analysis (ppm)	Sample No.	TPH	BTEX	PAH	Notes
8:36	10	>10,000	0326CZ1-1	X	X	X	• TPH field analysis
8:41	15	>10,000	0326CZ1-2	X	X	X	by PETROFLAG
8:42	15 dup	>10,000	0326CZ1-3	X	X	X	• TPH to be run at
8:49	20	13	0326CZ1-4	X	X	X	analytical lab
8:58	25	22	0326CZ1-5	X			for all depths
9:11	30	28	0326CZ1-6	X			-BTEX and PAH to
9:25	35	16	0326CZ1-7	X			be run at analytical
9:39	40	46	0326CZ1-8	X			lab for the following
9:54	45	52	0326CZ1-9	X			depths: 10, 15, 20
10:12	50	70	0326CZ1-10	X			• BTEX and PAH
10:39	55	44	0326CZ1-11	X			samples from other
10:55	60	44	0326CZ1-12	X			depths will be
~~12:53~~	70'	80	0326CZ1-13	X	X	X	reserved at KSL-HENV
* 12:57	70' dup	59	0326CZ1-14	X	X	X	lab
* 1:05	—	TRIP BLANK	0326CZ1-15	X	X	X	• CORE LOSS AT 65'
							no sample
							* PETROFLAG READING
							WAS DONE AT
							>20 MINUTES.

MS 7/23/03

Sample Collection Log

Hole ID CZ2-

Date 7/22/2003 **Page** 1 **of** 1

Sampling Personnel NICOLE SEGUIN, LUIZ AMEZCUA

Time	Depth (ft)	Field Analysis (ppm)	Sample No.	TPH	BTEX	PAH	Notes
10:13	10	139	0326CZ2-1	X	X	X	• TPH to be run at
10:16	15	24	0326CZ2-2	X	X	X	analytical laboratory
10:19	20	38	0326CZ2-3	X	X	X	for all depths.
10:36	25	22	0326CZ2-4	X			• BTEX and PAH to
10:41	30	15	0326CZ2-5	X			be run at analytical
10:52	35	11	0326CZ2-6	X			lab for the
11:05	40	40	0326CZ2-7	X			following depths:
11:22	45	17	0326CZ2-8	X			10, 15, 20, 65
11:35	50	26	0326CZ2-9	X			• BTEX and PAH
13:00	55	21	0326CZ2-10	X			samples from other
13:10	60	44	0326CZ2-11	X			depths will be
13:29	65	100	0326CZ2-12	X			reserved @ KSL-HENV
							lab
							• TPH Field Analysis
							by Petroflag

MS 7/22/2003

Sample Collection Log

Hole ID PM-1

Date 7/24/03 **Page** 1 **of** 1

Sampling Personnel F. Caporuscio, L. Amezcua, B. Bazzarton

Time	Depth (ft)	Field Analysis (ppm)	Sample No.	TPH	BTEX	PAH	Notes
0816	5	35	0326PM1-1	X			
0820	10	> 10,000	0326PM1-2	X			Diesel smell at 10'
0835	15	0	0326PM1-3	X			
0845	20	14	0326PM1-4	X			
1205	Trip Blank		0326PM1-5		X		Trip Blank

Sample Collection Log

Hole ID PM2 –

Date 7/23/03 **Page** 1 **of** 1

Sampling Personnel N. SEGUIN, B. BAUMGARTNER

Time	Depth (ft)	Field Analysis (ppm)	Sample No.	TPH	BTEX	PAH	Notes
13:59	5	14	0326PM2-1	X	X	X	
14:02	10	81	0326PM2-2	X	X	X	
14:05	10.1	74	0326PM2-3	X	X	X	
14:19	15	65	0326PM2-4	X	X	X	
14:33	20	70	0326PM2-5	X			
14:32	25	52	0326PM2-6	X			
14:37	30	58	0326PM2-7	X	X	X	
14:40	30.1	20	0326PM2-8	X	X	X	

NS 7/23/03

Sample Collection Log

Hole ID PM3

Date 7/24/03 **Page** 1 **of** 1

Sampling Personnel B. Bagwell, L. Anczewa, F. Capuzzo

Time	Depth (ft)	Field Analysis (ppm)	Sample No.	TPH	BTEX	PAH	Notes
1320	5	20	0326PM3-1	X			
1326	10	1900	0326PM3-2	Y			Dark patch in sediment from 7'-8'
1336	15	45	0326PM3-3	Y			
1347	20	47	0326PM3-4	Y			

Sample Collection Log

Hole ID BM4

Date 7/25/03 **Page** 1 **of** 1

Sampling Personnel L. Amezcua, Flor. Caporosso, B. Baumgartner

Time	Depth (ft)	Field Analysis (ppm)	Sample No.	TPH	BTEX	PAH	Notes
0916	5	34	0326PM4-1	X			
0922	15	25	0326PM4-2	X			
0931	15	21	0326PM4-3	X			
0936	20	26	0326PM4-4	X			

Sample Collection Log

Hole ID PM5

Date 3/25/03 **Page** 1 **of** 1

Sampling Personnel L. Ametzua, F. Caporuscio, R. Baughman

Time	Depth (ft)	Field Analysis (ppm)	Sample No.	TPH	BTEX	PAH	Notes
1046	5	1432	0326PM5-1	X	X	X	
1055	10	54	0326PM5-2	X	X	X	
1055	10	53	0326PM5-3	X	X	X	
1101	15	28	0326PM5-4	X	X	X	
1107	20	21	0326PM5-5	X			
1114	25	51	0326PM5-6	X	X	X	

Sample Collection Log

Hole ID PM 8

Date 7/24/03 Page 1 of 1

Sampling Personnel B. Bangerter, L. Amezcua, F. Caporrino

Time	Depth (ft)	Field Analysis (ppm)	Sample No.	TPH	BTEX	PAH	Notes
1516	5	85	0326PM8-1	X			
1522	10	586	0326PM8-2	X			
1527	15	33	0326PM8-3	X			
1532	20	42	0326PM8-4	Y			

Sample Collection Log

Hole ID PM9

Date 7-25-03 **Page** 1 **of** 1

Sampling Personnel Benco Baumgartner, L. Smucia, F. Caporuscio

Time	Depth (ft)	Field Analysis (ppm)	Sample No.	TPH	BTEX	PAH	Notes
830	5	21	0326PM9-1	X	X	X	
840	8	174	0326PM9-2	X	\		Saybolt cb/organic/TCLP/interface
840	10	26	0326PM9-3	X	X	X	
847	15	17	0326PM9-4	X	X	X	
854	20	21	0326PM9-5	X			
905	25	19	0326PM9-6	X	X	X	

BB

Sample Collection Log

Hole ID P-PM11

Date 7/24/03 **Page** 1 **of** 1

Sampling Personnel L. Amezcua, R. Bermudez, F. Cuevas

Time	Depth (ft)	Field Analysis (ppm)	Sample No.	TPH	BTEX	PAH	Notes
1025	10	75	0326PM11-1	X	X	X	
1030	15	59	0326PM11-2	X	X	X	
1043	20	22	0326PM11-3	X	X	X	
1049	25	55	0326PM11-4	X			
1055	30	37	0326PM11-5	X	X	X	

Sample Collection Log

Hole ID PM12

Date 7/24/03 **Page** 1 **of** 1

Sampling Personnel B. Bergantz, L. Amezcua, F. Lagerstrine

Time	Depth (ft)	Field Analysis (ppm)	Sample No.	TPH	BTEX	PAH	Notes
12:25	5	22	0326PM12-1	X			
12:30	10	10	0326PM12-2	X			TPH Single Individual Fraction
12:40	15	14	0326PM12-3	X			
12:45	20	23	0326PM12-4	X			

Sample Collection Log

Hole ID PM14

Date 7/26/03 **Page** 1 **of** 1

Sampling Personnel B. Bagatha, L. Anderson, F. Caparusso

Time	Depth (ft)	Field Analysis (ppm)	Sample No.	TPH	BTEX	PAH	Notes
1424	5	37	0326PM14-1	X	X	X	OUTSIDE OF 20 MINUTES
1433	10	20	0326PM14-2	X	X	X	" " " "
1434	15	126	0326PM14-3	X	X	X	
1440	20	46	0326PM14-4	X			
1446	25	29	0326PM14-5	X	X	X	

APPENDIX 2

SAMPLE COLLECTION LOGS FOR SUPPLEMENTAL SAMPLING

Los Alamos National Laboratory
Environmental Restoration Project
Los Alamos, NM 87545

SAMPLE COLLECTION LOG

SAMPLE ID: RE03-07-73726

EVENT ID: 11102

EVENT NAME: TA-3-26 Supplemental Sampling, 03-036(j)

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		10/2/06	EVAL CLASS:	QBT3	Fill
TIME COLLECTED (HH:MM):		1243	SAMPLE TECH CODE:	CBS	ok
PRS ID:	PRS: 03-036(j)	ok	FIELD QC TYPE:	NA	ok
LOCATION ID:	03-27014	ok	COMPOSITE TYPE:	NA	ok
LOCATION TYPE:	BH	ok	FIELD PREP:	NA	ok
TOP DEPTH ():		4.5 (FT / cm / NA)	SAMPLE USAGE:	INV	ok
BOTTOM DEPTH ():		5.0 (FT / cm / NA)	WATER FLOWING :		YES___ NO___ NA X
FIELD MATRIX:	R	FS BB 10/3/06	SCREEN/PORT DESC (wells only):		NA
			ER SOP Followed:		06.26

#	CONTAINER	PRESERVATIVE	ORDER	ANALYTICAL SPECIAL INSTRUCTIONS
1	125 SEPTUM AMBER GLASS	ICE	8260B	
2	250 ML AMBER GLASS	ICE	8270C+8082	
3	125 ML POLY	ICE	METALS-GEL	

ADDITIONAL INFORMATION (optional): Special Instructions: Please assign top and bottom depths.

SAMPLE DESC: Brown/grey sand, clay

SAMPLE LOCATION DESC: 03-27014

Location Description: Borehole CZ-2, East of tank 3-26

FIELD SCREENING/MEASUREMENT RESULTS: NA

COLLECTED BY: (PRINTED NAME) Bruce Baumgartner (SIGNATURE) [signature] (DATE) 10/2/06

REVIEWED BY: (PRINTED NAME) MARK HARGENSTAD (SIGNATURE) [signature] (DATE) 10/3/06

Los Alamos National Laboratory
Environmental Restoration Project
Los Alamos, NM 87545

SAMPLE COLLECTION LOG

SAMPLE ID: RE03-07-73727

EVENT ID: 11102

EVENT NAME: TA-3-26 Supplemental Sampling, 03-036(j)

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		10/2/06	EVAL CLASS:	QBT3	
TIME COLLECTED (HH:MM):		1247	SAMPLE TECH CODE:	CBS	Ok
PRS ID:	PRS: 03-036(j)	Ok	FIELD QC TYPE:	NA	Ok
LOCATION ID:	03-27014	Ok	COMPOSITE TYPE:	NA	Ok
LOCATION TYPE:	BH	Ok	FIELD PREP:	NA	Ok
TOP DEPTH ():		9.5 (FT / cm / NA)	SAMPLE USAGE:	INV	Ok
BOTTOM DEPTH ():		10 (FT / cm / NA)	WATER FLOWING :		YES___ NO___ NA ✓
FIELD MATRIX:	R	Ok	SCREEN/PORT DESC (wells only):		NA
			ER SOP Followed:		06.26

#	CONTAINER	PRESERVATIVE	ORDER	ANALYTICAL SPECIAL INSTRUCTIONS
1	125 SEPTUM AMBER GLASS	ICE	8260B	
2	250 ML AMBER GLASS	ICE	8270C+8082	
3	125 ML POLY	ICE	METALS-GEL	

ADDITIONAL INFORMATION (optional): Special Instructions: Please assign top and bottom depths.

SAMPLE DESC: Grey tuff, no odors

SAMPLE LOCATION DESC: 03-27014

Location Description: Borehole CZ-2, east of tank 3-26 10ft

FIELD SCREENING/MEASUREMENT RESULTS:

COLLECTED BY: (PRINTED NAME) Bruce Baumgartner (SIGNATURE) [signature] (DATE) 10/2/06

REVIEWED BY: (PRINTED NAME) MARK HAAGENSTAD (SIGNATURE) [signature] (DATE) 10/3/06

Los Alamos National Laboratory
Environmental Restoration Project
Los Alamos, NM 87545

SAMPLE COLLECTION LOG

SAMPLE ID: RE03-07-73728

EVENT ID: 11102

EVENT NAME: TA-3-26 Supplemental Sampling, 03-036(j)

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		10/02/2006	EVAL CLASS:	QBT3	
TIME COLLECTED (HH:MM):		1309	SAMPLE TECH CODE:	CBS	ok
PRS ID:	PRS: 03-036(j)	ok	FIELD QC TYPE:	NA	ok
LOCATION ID:	03-27014	ok	COMPOSITE TYPE:	NA	ok
LOCATION TYPE:	BH	ok	FIELD PREP:	NA	ok
TOP DEPTH ():		14.5 (FT / cm / NA)	SAMPLE USAGE:	INV	ok
BOTTOM DEPTH ():		15.0 (FT / cm / NA)	WATER FLOWING :		YES___ NO___ NA ✓
FIELD MATRIX:	R	ok	SCREEN/PORT DESC (wells only):		NA
			ER SOP Followed:		OG.26

#	CONTAINER	PRESERVATIVE	ORDER	ANALYTICAL SPECIAL INSTRUCTIONS
1	125 SEPTUM AMBER GLASS	ICE	8260B	
2	250 ML AMBER GLASS	ICE	8270C+8082	
3	125 ML POLY	ICE	METALS-GEL	

ADDITIONAL INFORMATION (optional): Special Instructions: Please assign top and bottom depths.

SAMPLE DESC: Grey tuff, no odor or stains

SAMPLE LOCATION DESC: 03-27014
Location Description: Borehole CZ-2, east of tank 3-26

FIELD SCREENING/MEASUREMENT RESULTS:

NA

COLLECTED BY: (PRINTED NAME) Bruce Baumgartner (SIGNATURE) [signature] (DATE) 10/2/06

REVIEWED BY: (PRINTED NAME) MARK HAAGGANSTAD (SIGNATURE) [signature] (DATE) 10/5/06

Los Alamos National Laboratory
Environmental Restoration Project
Los Alamos, NM 87545

SAMPLE COLLECTION LOG

SAMPLE ID: RE03-07-73729

EVENT ID: 11102

EVENT NAME: TA-3-26 Supplemental Sampling, 03-036(j)

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		10/2/06	EVAL CLASS:	QBT3	Fill
TIME COLLECTED (HH:MM):		1337	SAMPLE TECH CODE:	CBS	OK
PRS ID:	PRS: 03-036(j)	OK	FIELD QC TYPE:	NA	OK
LOCATION ID:	03-27015	OK	COMPOSITE TYPE:	NA	OK
LOCATION TYPE:	BH	OK	FIELD PREP:	NA	OK
TOP DEPTH ():		4.5 (FT / cm / NA)	SAMPLE USAGE:	INV	OK
BOTTOM DEPTH ():		5.0 (FT / cm / NA)	WATER FLOWING :		YES___ NO___ NA ✓
FIELD MATRIX:	R	S	SCREEN/PORT DESC (wells only):		NA
			ER SOP Followed:		06.24

#	CONTAINER	PRESERVATIVE	ORDER	ANALYTICAL SPECIAL INSTRUCTIONS
1	125 SEPTUM AMBER GLASS	ICE	8260B	
2	250 ML AMBER GLASS	ICE	8270C+8082	
3	125 ML POLY	ICE	METALS-GEL	

ADDITIONAL INFORMATION (optional): Special Instructions: Please assign top and bottom depths.

SAMPLE DESC: Brown soil, clay sand

SAMPLE LOCATION DESC: 03-27015 Borehole P-8 NE of tank 3-26 along berm border

Location Description:

FIELD SCREENING/MEASUREMENT RESULTS: NA

COLLECTED BY: (PRINTED NAME) Bruce Baumgartner (SIGNATURE) [signature] (DATE) 10/2/06

REVIEWED BY: (PRINTED NAME) MARK HAAGENSTAD (SIGNATURE) [signature] (DATE) 10/4/06

Los Alamos National Laboratory
Environmental Restoration Project
Los Alamos, NM 87545

SAMPLE COLLECTION LOG

SAMPLE ID: RE03-07-73730

EVENT ID: 11102

EVENT NAME: TA-3-26 Supplemental Sampling, 03-036(j)

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		10/2/06	EVAL CLASS:	QBT3	
TIME COLLECTED (HH:MM):		1345	SAMPLE TECH CODE:	CBS	Ok
PRS ID:	PRS: 03-036(j)	Ok	FIELD QC TYPE:	NA	Ok
LOCATION ID:	03-27015	Ok	COMPOSITE TYPE:	NA	Ok
LOCATION TYPE:	BH	Ok	FIELD PREP:	NA	Ok
TOP DEPTH ():		9.5 (FT / cm / NA)	SAMPLE USAGE:	INV	Ok
BOTTOM DEPTH ():		10 (FT / cm / NA)	WATER FLOWING :		YES___ NO___ NA✓
FIELD MATRIX:	R	Ok	SCREEN/PORT DESC (wells only):		NA
			ER SOP Followed:		Ok.26

#	CONTAINER	PRESERVATIVE	ORDER	ANALYTICAL SPECIAL INSTRUCTIONS
1	125 SEPTUM AMBER GLASS	ICE	8260B	
2	250 ML AMBER GLASS	ICE	8270C+8082	
3	125 ML POLY	ICE	METALS-GEL	

ADDITIONAL INFORMATION (optional): Special Instructions: Please assign top and bottom depths.

SAMPLE DESC: Grey tuff, nodular or staining

SAMPLE LOCATION DESC: 03-27015 Borehole P-8, NE of tank 3-24 along Berm boundary

Location Description:

FIELD SCREENING/MEASUREMENT RESULTS: NA

COLLECTED BY: (PRINTED NAME) Bruce Baumgartner (SIGNATURE) [signature] (DATE) 10/2/06

REVIEWED BY: (PRINTED NAME) MARK HAAGENSTAD (SIGNATURE) [signature] (DATE) 10/5/06

Los Alamos National Laboratory
Environmental Restoration Project
Los Alamos, NM 87545

SAMPLE COLLECTION LOG

SAMPLE ID: RE03-07-73731

EVENT ID: 11102

EVENT NAME: TA-3-26 Supplemental Sampling, 03-036(j)

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		10/2/06	EVAL CLASS:	QBT3	
TIME COLLECTED (HH:MM):		1355	SAMPLE TECH CODE:	CBS	Ok
PRS ID:	PRS: 03-036(j)	Ok	FIELD QC TYPE:	NA	Ok
LOCATION ID:	03-27015	Ok	COMPOSITE TYPE:	NA	Ok
LOCATION TYPE:	BH	Ok	FIELD PREP:	NA	Ok
TOP DEPTH ():		14.5 (FT / cm / NA)	SAMPLE USAGE:	INV	Ok
BOTTOM DEPTH ():		15 (FT / cm / NA)	WATER FLOWING :		YES___ NO___ NA✓
FIELD MATRIX:	R	Ok	SCREEN/PORT DESC (wells only):		NA
			ER SOP Followed:		04.26

#	CONTAINER	PRESERVATIVE	ORDER	ANALYTICAL SPECIAL INSTRUCTIONS
1	125 SEPTUM AMBER GLASS	ICE	8260B	
2	250 ML AMBER GLASS	ICE	8270C+8082	
3	125 ML POLY	ICE	METALS-GEL	

ADDITIONAL INFORMATION (optional): Special Instructions: Please assign top and bottom depths.

SAMPLE DESC: Gray tuff, no odor or staining

SAMPLE LOCATION DESC: 03-27015 Borehole P-8 NE of tank 3-24 along berm boundary

Location Description:

FIELD SCREENING/MEASUREMENT RESULTS: NA

COLLECTED BY: (PRINTED NAME) Bonnie Baumgartner (SIGNATURE) [signature] (DATE) 10/2/06

REVIEWED BY: (PRINTED NAME) MARK HAAGENSTAD (SIGNATURE) [signature] (DATE) 10/3/06

Los Alamos National Laboratory
Environmental Restoration Project
Los Alamos, NM 87545

SAMPLE COLLECTION LOG

SAMPLE ID: RE03-07-73732

EVENT ID: 11102

EVENT NAME: TA-3-26 Supplemental Sampling, 03-036(j)

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		10/2/06	EVAL CLASS:	QBT3	F.11
TIME COLLECTED (HH:MM):		1403	SAMPLE TECH CODE:	CBS	Ok
PRS ID:	PRS: 03-036(j)	Ok	FIELD QC TYPE:	NA	Ok
LOCATION ID:	03-27016	Ok	COMPOSITE TYPE:	NA	Ok
LOCATION TYPE:	BH	Ok	FIELD PREP:	NA	Ok
TOP DEPTH ():		4.5 (FT / cm / NA)	SAMPLE USAGE:	INV	Ok
BOTTOM DEPTH ():		5 (FT / cm / NA)	WATER FLOWING :		YES___ NO___ NA ✓
FIELD MATRIX:	R	S	SCREEN/PORT DESC (wells only):		N/A
			ER SOP Followed:		06.26

#	CONTAINER	PRESERVATIVE	ORDER	ANALYTICAL SPECIAL INSTRUCTIONS
1	125 SEPTUM AMBER GLASS	ICE	8260B	
2	250 ML AMBER GLASS	ICE	8270C+8082	
3	125 ML POLY	ICE	METALS-GEL	

ADDITIONAL INFORMATION (optional): Special Instructions: Please assign top and bottom depths.

SAMPLE DESC: Brown sand, clay no odor or stains

SAMPLE LOCATION DESC: 03-27016

Location Description: Borehole P-2, NW of tank 3-26 along berm boundary

FIELD SCREENING/MEASUREMENT RESULTS:

N/A

COLLECTED BY: (PRINTED NAME) Bruce Baumgartner (SIGNATURE) [signature] (DATE) 10/2/06

REVIEWED BY: (PRINTED NAME) MARK HAAGENSTAD (SIGNATURE) [signature] (DATE) 10/3/06

Los Alamos National Laboratory
Environmental Restoration Project
Los Alamos, NM 87545

SAMPLE COLLECTION LOG

SAMPLE ID: RE03-07-73733

EVENT ID: 11102

EVENT NAME: TA-3-26 Supplemental Sampling, 03-036(j)

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		10/2/06	EVAL CLASS:	QBT3	
TIME COLLECTED (HH:MM):		1410	SAMPLE TECH CODE:	CBS	Ok
PRS ID:	PRS: 03-036(j)	Ok	FIELD QC TYPE:	NA	Ok
LOCATION ID:	03-27016	Ok	COMPOSITE TYPE:	NA	Ok
LOCATION TYPE:	BH	Ok	FIELD PREP:	NA	Ok
TOP DEPTH ():		9.5 (FT / cm / NA)	SAMPLE USAGE:	INV	Ok
BOTTOM DEPTH ():		10 (FT / cm / NA)	WATER FLOWING :		YES___ NO___ NA ✓
FIELD MATRIX:	R	Ok	SCREEN/PORT DESC (wells only):		N/A
			ER SOP Followed:		06.26

#	CONTAINER	PRESERVATIVE	ORDER	ANALYTICAL SPECIAL INSTRUCTIONS
1	125 SEPTUM AMBER GLASS	ICE	8260B	
2	250 ML AMBER GLASS	ICE	8270C+8082	
3	125 ML POLY	ICE	METALS-GEL	

ADDITIONAL INFORMATION (optional): Special Instructions: Please assign top and bottom depths.

SAMPLE DESC: Gray tuff, no odor or staining

SAMPLE LOCATION DESC: 03-27016
Location Description: Borehole P-2, NW of tank 3-24 along berm boundary

FIELD SCREENING/MEASUREMENT RESULTS:

N/A

COLLECTED BY: (PRINTED NAME) Bruce Baumgartner (SIGNATURE) [signature] (DATE) 10/2/06

REVIEWED BY: (PRINTED NAME) Mark Haagenstad (SIGNATURE) [signature] (DATE) 10/3/06

Los Alamos National Laboratory
Environmental Restoration Project
Los Alamos, NM 87545

SAMPLE COLLECTION LOG

SAMPLE ID: RE03-07-73734

EVENT ID: 11102

EVENT NAME: TA-3-26 Supplemental Sampling, 03-036(j)

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		10/2/06	EVAL CLASS:	QBT3	
TIME COLLECTED (HH:MM):		1415	SAMPLE TECH CODE:	CBS	Ok
PRS ID:	PRS: 03-036(j)	Ok	FIELD QC TYPE:	NA	Ok
LOCATION ID:	03-27016	Ok	COMPOSITE TYPE:	NA	Ok
LOCATION TYPE:	BH	Ok	FIELD PREP:	NA	Ok
TOP DEPTH ():		14.5 (FT / cm / NA)	SAMPLE USAGE:	INV	Ok
BOTTOM DEPTH ():		15 (FT / cm / NA)	WATER FLOWING :		YES___ NO___ NA✓
FIELD MATRIX:	R	Ok	SCREEN/PORT DESC (wells only):		NA
			ER SOP Followed:		06.24

#	CONTAINER	PRESERVATIVE	ORDER	ANALYTICAL SPECIAL INSTRUCTIONS
1	125 SEPTUM AMBER GLASS	ICE	8260B	
2	250 ML AMBER GLASS	ICE	8270C+8082	
3	125 ML POLY	ICE	METALS-GEL	

ADDITIONAL INFORMATION (optional): Special Instructions: Please assign top and bottom depths.

SAMPLE DESC: Gray tuff no staining or odor

SAMPLE LOCATION DESC: 03-27016

Location Description: Borehole P-2, NW of tank 3-26 along Berm Boundary

FIELD SCREENING/MEASUREMENT RESULTS:

NA

COLLECTED BY: (PRINTED NAME) Bruce Baumgartner (SIGNATURE) [signature] (DATE) 10/2/06

REVIEWED BY: (PRINTED NAME) MARK HAGGERTY (SIGNATURE) [signature] (DATE) 10/3/06

Los Alamos National Laboratory
Environmental Restoration Project
Los Alamos, NM 87545

SAMPLE COLLECTION LOG

SAMPLE ID: RE03-07-73735

EVENT ID: 11102

EVENT NAME: TA-3-26 Supplemental Sampling, 03-036(j)

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		10/2/06	EVAL CLASS:	QBT3	Fill
TIME COLLECTED (HH:MM):		1438	SAMPLE TECH CODE:	CBS	OR
PRS ID:	PRS: 03-036(j)	Oh	FIELD QC TYPE:	NA	OK
LOCATION ID:	03-27017	Oh	COMPOSITE TYPE:	NA	Oh
LOCATION TYPE:	BH	Oh	FIELD PREP:	NA	Oh
TOP DEPTH ():		4.5 (FT / cm / NA)	SAMPLE USAGE:	INV	Oh
BOTTOM DEPTH ():		5 (FT / cm / NA)	WATER FLOWING :		YES___ NO___ NA✓
FIELD MATRIX:	R	S	SCREEN/PORT DESC (wells only):		NA
			ER SOP Followed:		06.24

#	CONTAINER	PRESERVATIVE	ORDER	ANALYTICAL SPECIAL INSTRUCTIONS
1	125 SEPTUM AMBER GLASS	ICE	8260B	
2	250 ML AMBER GLASS	ICE	8270C+8082	
3	125 ML POLY	ICE	METALS-GEL	

ADDITIONAL INFORMATION (optional): Special Instructions: Please assign top and bottom depths.

SAMPLE DESC: Brown sandy clay. No Odor or staining

SAMPLE LOCATION DESC: 03-27017
Location Description: Borehole R-12 west of tank 3-26 along beam boundary

FIELD SCREENING/MEASUREMENT RESULTS: NA

COLLECTED BY: (PRINTED NAME) Bruce Baumgartner (SIGNATURE) [signature] (DATE) 10/2/06

REVIEWED BY: (PRINTED NAME) MARK HOAGLANDSTAD (SIGNATURE) [signature] (DATE) 10/3/06

Los Alamos National Laboratory
Environmental Restoration Project
Los Alamos, NM 87545

SAMPLE COLLECTION LOG

SAMPLE ID: RE03-07-73736

EVENT ID: 11102

EVENT NAME: TA-3-26 Supplemental Sampling, 03-036(j)

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		10/2/06	EVAL CLASS:	QBT3	
TIME COLLECTED (HH:MM):		1440	SAMPLE TECH CODE:	CBS	OK
PRS ID:	PRS: 03-036(j)	OK	FIELD QC TYPE:	NA	OK
LOCATION ID:	03-27017	OK	COMPOSITE TYPE:	NA	OK
LOCATION TYPE:	BH	OK	FIELD PREP:	NA	OK
TOP DEPTH ():		9.5 (FT / cm / NA)	SAMPLE USAGE:	INV	OK
BOTTOM DEPTH ():		10 (FT / cm / NA)	WATER FLOWING :		YES___ NO___ NA✓
FIELD MATRIX:	R	OK	SCREEN/PORT DESC (wells only):		N/A
			ER SOP Followed:		OK.26

#	CONTAINER	PRESERVATIVE	ORDER	ANALYTICAL SPECIAL INSTRUCTIONS
1	125 SEPTUM AMBER GLASS	ICE	8260B	
2	250 ML AMBER GLASS	ICE	8270C+8082	
3	125 ML POLY	ICE	METALS-GEL	

ADDITIONAL INFORMATION (optional): Special Instructions: Please assign top and bottom depths.

SAMPLE DESC: Gray tuff, no odor or staining

SAMPLE LOCATION DESC: 03-27017
Location Description: Borehole P-12 west of tank 3-26 along berm boundary

FIELD SCREENING/MEASUREMENT RESULTS:

COLLECTED BY: (PRINTED NAME) Bruce Baumgardner (SIGNATURE) [signature] (DATE) 10/2/06

REVIEWED BY: (PRINTED NAME) MARK HAGGSTAD (SIGNATURE) [signature] (DATE) 10/3/06

Los Alamos National Laboratory
Environmental Restoration Project
Los Alamos, NM 87545

SAMPLE COLLECTION LOG

SAMPLE ID: RE03-07-73737

EVENT ID: 11102

EVENT NAME: TA-3-26 Supplemental Sampling, 03-036(j)

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		10/2/06	EVAL CLASS:	QBT3	
TIME COLLECTED (HH:MM):		1444	SAMPLE TECH CODE:	CBS	Ok
PRS ID:	PRS: 03-036(j)	Ok	FIELD QC TYPE:	NA	Ok
LOCATION ID:	03-27017	Ok	COMPOSITE TYPE:	NA	Ok
LOCATION TYPE:	BH	Ok	FIELD PREP:	NA	Ok
TOP DEPTH ():		14.5 (FT / cm / NA)	SAMPLE USAGE:	INV	Ok
BOTTOM DEPTH ():		15 (FT / cm / NA)	WATER FLOWING :		YES___ NO___ NA ✓
FIELD MATRIX:	R	Ok	SCREEN/PORT DESC (wells only):		NA
			ER SOP Followed:		DG. 26

#	CONTAINER	PRESERVATIVE	ORDER	ANALYTICAL SPECIAL INSTRUCTIONS
1	125 SEPTUM AMBER GLASS	ICE	8260B	
2	250 ML AMBER GLASS	ICE	8270C+8082	
3	125 ML POLY	ICE	METALS-GEL	

ADDITIONAL INFORMATION (optional): Special Instructions: Please assign top and bottom depths.

SAMPLE DESC: Gray tuff no odor or stains

SAMPLE LOCATION DESC: 03-27017

Location Description: Bore hole P-12 west of tank 3-26 along berm boundary

FIELD SCREENING/MEASUREMENT RESULTS: NA

COLLECTED BY: (PRINTED NAME) Brian Baumgartner (SIGNATURE) [signature] (DATE) 10/2/06

REVIEWED BY: (PRINTED NAME) MARK HAAGENSTAD (SIGNATURE) [signature] (DATE) 10/3/06

Los Alamos National Laboratory
Environmental Restoration Project
Los Alamos, NM 87545

SAMPLE COLLECTION LOG

SAMPLE ID: RE03-07-73738

EVENT ID: 11102

EVENT NAME: TA-3-26 Supplemental Sampling, 03-036(j)

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		10/2/06	EVAL CLASS:	QBT3	
TIME COLLECTED (HH:MM):		1542	SAMPLE TECH CODE:	CBS	Ok
PRS ID:	PRS: 03-036(j)	Ok	FIELD QC TYPE:	NA	Ok
LOCATION ID:	03-27018	Ok	COMPOSITE TYPE:	NA	Ok
LOCATION TYPE:	BH	Ok	FIELD PREP:	NA	Ok
TOP DEPTH ():		9.5 (FT / cm / NA)	SAMPLE USAGE:	INV	Ok
BOTTOM DEPTH ():		10 (FT / cm / NA)	WATER FLOWING :		YES___ NO___ NA✓
FIELD MATRIX:	R	Ok	SCREEN/PORT DESC (wells only):		NA
			ER SOP Followed:		06.26

#	CONTAINER	PRESERVATIVE	ORDER	ANALYTICAL SPECIAL INSTRUCTIONS
1	125 SEPTUM AMBER GLASS	ICE	8260B	
2	250 ML AMBER GLASS	ICE	8270C+8082	
3	125 ML POLY	ICE	METALS-GEL	

ADDITIONAL INFORMATION (optional): Special Instructions: Please assign top and bottom depths.

SAMPLE DESC: Gray/Brown tuff slight diesel odor

SAMPLE LOCATION DESC: 03-27018

Location Description: Borehole C7-1 North of tank 3-26 Berm

FIELD SCREENING/MEASUREMENT RESULTS: NA

COLLECTED BY: (PRINTED NAME) Brian Baumgartner (SIGNATURE) [signature] (DATE) 10/2/06

REVIEWED BY: (PRINTED NAME) MARK HAAGENSTAD (SIGNATURE) [signature] (DATE) 10/3/06

Los Alamos National Laboratory
Environmental Restoration Project
Los Alamos, NM 87545

SAMPLE COLLECTION LOG

SAMPLE ID: RE03-07-73739

EVENT ID: 11102

EVENT NAME: TA-3-26 Supplemental Sampling, 03-036(j)

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		10/2/06	EVAL CLASS:	QBT3	
TIME COLLECTED (HH:MM):		1550	SAMPLE TECH CODE:	CBS	OK
PRS ID:	PRS: 03-036(j)	OK	FIELD QC TYPE:	NA	OK
LOCATION ID:	03-27018	OK	COMPOSITE TYPE:	NA	OK
LOCATION TYPE:	BH	OK	FIELD PREP:	NA	OK
TOP DEPTH ():		14.5 (FT / cm / NA)	SAMPLE USAGE:	INV	OK
BOTTOM DEPTH ():		15 (FT / cm / NA)	WATER FLOWING :		YES___ NO___ NA_✓
FIELD MATRIX:	R	OK	SCREEN/PORT DESC (wells only):		NA
			ER SOP Followed:		09.26

#	CONTAINER	PRESERVATIVE	ORDER	ANALYTICAL SPECIAL INSTRUCTIONS
1	125 SEPTUM AMBER GLASS	ICE	8260B	
2	250 ML AMBER GLASS	ICE	8270C+8082	
3	125 ML POLY	ICE	METALS-GEL	

ADDITIONAL INFORMATION (optional): Special Instructions: Please assign top and bottom depths.

SAMPLE DESC: Brown/Gray tuff slight diesel odor

SAMPLE LOCATION DESC: 03-27018

Location Description: Borehole C7-1 north of Tank 3.24 in berm

FIELD SCREENING/MEASUREMENT RESULTS: N/A

COLLECTED BY: (PRINTED NAME) Bruce Baumgartner (SIGNATURE) [signature] (DATE) 10/2/06

REVIEWED BY: (PRINTED NAME) MARK HAAGENSTAD (SIGNATURE) [signature] (DATE) 10/3/06

Los Alamos National Laboratory
Environmental Restoration Project
Los Alamos, NM 87545

SAMPLE COLLECTION LOG

SAMPLE ID: RE03-07-73740

EVENT ID: 11102

EVENT NAME: TA-3-26 Supplemental Sampling, 03-036(j)

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		10/2/06	EVAL CLASS:	QBT3	
TIME COLLECTED (HH:MM):		1555	SAMPLE TECH CODE:	CBS	ok
PRS ID:	PRS: 03-036(j)	ok	FIELD QC TYPE:	NA	ok
LOCATION ID:	03-27018	ok	COMPOSITE TYPE:	NA	ok
LOCATION TYPE:	BH	ok	FIELD PREP:	NA	ok
TOP DEPTH ():		19.5 (FT / cm / NA)	SAMPLE USAGE:	INV	ok
BOTTOM DEPTH ():		20 (FT / cm / NA)	WATER FLOWING :		YES___ NO___ NA✓
FIELD MATRIX:	R	ok	SCREEN/PORT DESC (wells only):		NA
			ER SOP Followed:		04.26

#	CONTAINER	PRESERVATIVE	ORDER	ANALYTICAL SPECIAL INSTRUCTIONS
1	125 SEPTUM AMBER GLASS	ICE	8260B	
2	250 ML AMBER GLASS	ICE	8270C+8082	
3	125 ML POLY	ICE	METALS-GEL	

ADDITIONAL INFORMATION (optional): Special Instructions: Please assign top and bottom depths.

SAMPLE DESC: Gray/brown tuff, no odor or staining

SAMPLE LOCATION DESC: 03-27018

Location Description: Borehole CZ-1 north of tank 3-26 inberm

FIELD SCREENING/MEASUREMENT RESULTS:

NA

COLLECTED BY: (PRINTED NAME) Brian Baumgartner (SIGNATURE) [signature] (DATE) 10/2/06

REVIEWED BY: (PRINTED NAME) MARK HAGENSTAD (SIGNATURE) [signature] (DATE) 10/3/06

Los Alamos National Laboratory
Environmental Restoration Project
Los Alamos, NM 87545

SAMPLE COLLECTION LOG

SAMPLE ID: RE03-07-73744

EVENT ID: 11102

EVENT NAME: TA-3-26 Supplemental Sampling, 03-036(j)

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		10/2/06	EVAL CLASS:	QBT3	
TIME COLLECTED (HH:MM):		1355	SAMPLE TECH CODE:	CBS	Ok
PRS ID:	PRS: 03-036(j)	Ok	FIELD QC TYPE:	FD	Ok
LOCATION ID:	UA	03-27015	COMPOSITE TYPE:	NA	Ok
LOCATION TYPE:	GENERIC	BH	FIELD PREP:	NA	Ok
TOP DEPTH ():		14.5 (FT / cm / NA)	SAMPLE USAGE:	QC	Ok
BOTTOM DEPTH ():		15 (FT / cm / NA)	WATER FLOWING :		YES___ NO___ NA✓
FIELD MATRIX:	R	Ok	SCREEN/PORT DESC (wells only):		N/A
			ER SOP Followed:		Ok.26

#	CONTAINER	PRESERVATIVE	ORDER	ANALYTICAL SPECIAL INSTRUCTIONS
1	125 SEPTUM AMBER GLASS	ICE	8260B	
2	250 ML AMBER GLASS	ICE	8270C+8082	
3	125 ML POLY	ICE	METALS-GEL	

ADDITIONAL INFORMATION (optional): Special Instructions: Please assign location and depths.

SAMPLE DESC: Grey Tuff, no odor or stains Field Dup of RE 03-07-73731

SAMPLE LOCATION DESC: ~~UA~~ 03-27015

Location Description: Borehole P-8 NE of tah 3-26 along berm boundary

FIELD SCREENING/MEASUREMENT RESULTS:

N/A

COLLECTED BY: (PRINTED NAME) Bruce Baumgartner (SIGNATURE) [signature] (DATE) 10/2/06

REVIEWED BY: (PRINTED NAME) MARK HOAGENSTAD (SIGNATURE) [signature] (DATE) 10/3/06

Los Alamos National Laboratory
Environmental Restoration Project
Los Alamos, NM 87545

SAMPLE COLLECTION LOG

SAMPLE ID: RE03-07-73745

EVENT ID: 11102

EVENT NAME: TA-3-26 Supplemental Sampling, 03-036(j)

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		10/2/06	EVAL CLASS:	QBT3	
TIME COLLECTED (HH:MM):		1550	SAMPLE TECH CODE:	CBS	Oh
PRS ID:	PRS: 03-036(j)	Oh	FIELD QC TYPE:	FD	Oh
LOCATION ID:	UA	03-27018	COMPOSITE TYPE:	NA	Oh
LOCATION TYPE:	GENERIC	BH	FIELD PREP:	NA	Oh
TOP DEPTH ():		14.5 (FT / cm / NA)	SAMPLE USAGE:	QC	Oh
BOTTOM DEPTH ():		15 (FT / cm / NA)	WATER FLOWING :		YES___ NO___ NA✓
FIELD MATRIX:	R	Oh	SCREEN/PORT DESC (wells only):		NA
			ER SOP Followed:		06.26

#	CONTAINER	PRESERVATIVE	ORDER	ANALYTICAL SPECIAL INSTRUCTIONS
1	125 SEPTUM AMBER GLASS	ICE	8260B	
2	250 ML AMBER GLASS	ICE	8270C+8082	
3	125 ML POLY	ICE	METALS-GEL	

ADDITIONAL INFORMATION (optional): Special Instructions: Please assign location and depths.

SAMPLE DESC: Brown/Gray soil, slight diesel odor Duplicate of RE03-07-73739

SAMPLE LOCATION DESC: UA 03-27018

Location Description: Borehole CZ-1 north of tank 3-26 in berm

FIELD SCREENING/MEASUREMENT RESULTS: NA

COLLECTED BY: (PRINTED NAME) Bruce Baumgartner (SIGNATURE) [signature] (DATE) 10/2/06

REVIEWED BY: (PRINTED NAME) JM HAAGENSTAD (SIGNATURE) [signature] (DATE) 10/3/06

Los Alamos National Laboratory
Environmental Restoration Project
Los Alamos, NM 87545

SAMPLE COLLECTION LOG

SAMPLE ID: RE03-07-73746

EVENT ID: 11102

EVENT NAME: TA-3-26 Supplemental Sampling, 03-036(j)

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		10/2/06	EVAL CLASS:	NA	Ok
TIME COLLECTED (HH:MM):		1555	SAMPLE TECH CODE:	DC	Ok
PRS ID:	PRS: 03-036(j)	Ok	FIELD QC TYPE:	FTB	Ok
LOCATION ID:	NA	Ok	COMPOSITE TYPE:	NA	Ok
LOCATION TYPE:	GENERIC	Ok	FIELD PREP:	NA	Ok
TOP DEPTH ():	0.00	Ok (FT / cm / NA)	SAMPLE USAGE:	QC	Ok
BOTTOM DEPTH ():	0.00	Ok (FT / cm / NA)	WATER FLOWING :		YES___ NO___ NA✓
FIELD MATRIX:	S	Ok	SCREEN/PORT DESC (wells only):		NA
			ER SOP Followed:		06.24

#	CONTAINER	PRESERVATIVE	ORDER	ANALYTICAL SPECIAL INSTRUCTIONS
1	40 ML SEPTUM AMBER GLASS	ICE	8260B Trip Blank	

ADDITIONAL INFORMATION (optional): Special Instructions:

SAMPLE DESC: Sand, Trip Blank

SAMPLE LOCATION DESC: NA

Location Description:

FIELD SCREENING/MEASUREMENT RESULTS:

NA

COLLECTED BY: (PRINTED NAME) Ron Baumgartner (SIGNATURE) [signature] (DATE) 10/2/06

REVIEWED BY: (PRINTED NAME) MARK HAAGENSTAD (SIGNATURE) [signature] (DATE) 10/3/06

APPENDIX 3

SAMPLE CONTROL DOCUMENTATION

Los Alamos National Laboratory | **WQ & H Group ESH-18** | **Chain of Custody Record**

Billing #: WQ 116960.41	Hardcopy: B Turney	EDD: B Turney (turney@lanl.gov)	KSL-326013
Approved by:	Analytic Laboratory: GEL	Sampling Team: (Signatures)	

Relinquished by: (Signatures)	Date:	Time:	Received By:	Date:	Time:
	7-24-03	4:15		7/24/03	4:15

0326PM1-5 Is a Trip Blank

PAH SW 846 8310 (HPLC)
BTEX plus Napthalene and MTBE (SW 846 8260B)

Remarks:

Samples collected unfiltered.

Run total analysis- Do Not Filter before digesting and/or analyzing

Sample Id	TPH-DRO	BTEX	PAH	Total Number of Containers	TPH - DRO (Unfiltered) 8 ounce amb gls	BTEX (Unfiltered) 4 ounce amb gls	PAH (Unfiltered) 8 ounce amb gls	Log Book Page No.	Date	Time
O326PM1-1	X			1					7/23/03	0915
O326PM1-2	X			1						0820
O326PM1-3	X			1						0835
O326PM1-4	X			1						0845
O326PM1-5		X		1		X	TRIP Blank			1205
~~O326PM1-6~~										
~~O326PM1-7~~										
~~O326PM1-8~~										
~~O326PM1-9~~										
O326PM1-10										

Los Alamos National Laboratory | **WQ & H Group ESH-18** | **Chain of Custody Record**

Billing #:	Hardcopy: B Turney	EDD: B Turney (turney@lanl.gov)	**KSL-326015**
Approved by:	Analytic Laboratory: GEL	Sampling Team: (Signatures) Nicole Segui, Luis Aguilar	

Relinquished by: (Signatures)	Date:	Time:	Received By:	Date:	Time:
Luis Aguilar	7-23-03	3:50	[illegible]	7/23/03	3:50

PAH & TPH sample in same container.

PAH SW 846 8310 (HPLC)
BTEX plus Napthalene and MTBE (SW 846 8260B)

Remarks:

Samples collected unfiltered.

Run total analysis- Do Not Filter before digesting and/or analyzing

Sample Id	Analysis Requested: TPH-DRO	BTEX	PAH	Bottles Collected (Analyte, Preservative, Bottle Size/Type): Total Number of Containers	TPH - DRO (Unfiltered) 8 ounce amb gls	BTEX (Unfiltered) 4 ounce amb gls	PAH (Unfiltered) 8 ounce amb gls	Log Book Page No.	Sample Collected: Date	Time
O326PM2-1	X	X	X	2	X	X	X		7/23/03	13:59
O326PM2-2	X	X	X	2	X	X	X		7/23/03	14:00
O326PM2-3	X	X	X	2	X	X	X		7/23/03	14:05
O326PM2-4	X	X	X	2	X	X	X		7/23/03	14:19
O326PM2-5	X			1	X				7/23/03	14:23
O326PM2-6	X			1	X				7/23/03	14:32
O326PM2-7	X	X	X	3	X	X	X		7/23/03	14:38
O326PM2-8	X	X	X	2	X	X	X		7/23/03	14:40
~~O326PM2-9~~										
~~O326PM2-10~~										

Los Alamos National Laboratory | **WQ & H Group ESH-18** | **Chain of Custody Record**

Billing #: 116960.99	Hardcopy: B Turney	EDD: B Turney (turney@lanl.gov)	KSL-326017
Approved by:	Analytic Laboratory: GEL	Sampling Team: (Signatures) Jim Amecia	

Relinquished by: (Signatures)	Date:	Time:	Received By:	Date:	Time:
	7.24.03	4:15		7/24/03	4:15

PAH SW 846 8310 (HPLC)
BTEX plus Napthalene and MTBE (SW 846 8260B)

Remarks:

Samples collected unfiltered.

Run total analysis- Do Not Filter before digesting and/or analyzing

	Analysis Requested									Bottles Collected: Analyte, Preservative, Bottle Size/Type																		Sample Collected	
Sample Id	TPH-DRO	BTEX	PAH							Total Number of Containers				TPH - DRO (Unfiltered) 8 ounce amb gls		BTEX (Unfiltered) 4 ounce amb gls		PAH (Unfiltered) 8 ounce amb gls										Log Book Page No.	Date	Time
O326PM3-1	X									1				X															7/24/03	1320
O326PM3-2	X									1				X																1326
O326PM3-3	X									1				X																1334
O326PM3-4	X									1				X																1341
~~O326PM3-5~~																														
~~O326PM3-6~~																														
~~O326PM3-7~~																														
~~O326PM3-8~~																														
~~O326PM3-9~~																														
~~O326PM3-10~~																														

Los Alamos National Laboratory | **WQ & H Group ESH-18** | **Chain of Custody Record**

KSL-326019

Billing #: 116960.91	Hardcopy: B Turney	EDD: B Turney (turney@lanl.gov)	
Approved by:	Analytic Laboratory: GEL	Sampling Team: (Signatures)	
Relinquished by: (Signatures)	Date: 7-25-03	Time: 4:15	Received By:

Received By:	Date:	Time:
	7/25/03	4115

PAH SW 846 8310 (HPLC)
BTEX plus Napthalene and MTBE (SW 846 8260B)

Remarks:

Samples collected unfiltered.

Run total analysis- Do Not Filter before digesting and/or analyzing

	Analysis Requested				Bottles Collected: Analyte, Preservative, Bottle Size/Type													Sample Collected	
Sample Id	TPH-DRO	BTEX	PAH		Total Number of Containers	TPH - DRO (Unfiltered) 8 ounce amb gls	BTEX (Unfiltered) 4 ounce amb gls	PAH (Unfiltered) 8 ounce amb gls									Log Book Page No.	Date	Time
O326PM4-1	5 X				1	X												7/25/03	0916
O326PM4-2	10 X				1	X													0922
O326PM4-3	15 X				1	X													0931
O326PM4-4	20 X				1	X													0936
~~O326PM4-5~~																			
~~O326PM4-6~~																			
~~O326PM4-7~~																			
~~O326PM4-8~~																			
~~O326PM4-9~~																			
~~O326PM4-10~~																			

Los Alamos National Laboratory | **WQ & H Group ESH-18** | **Chain of Custody Record**

Billing #: 116960.91	Hardcopy: B Turney	EDD: B Turney (turney@lanl.gov)	KSL-326021
Approved by:	Analytic Laboratory: GEL	Sampling Team: (Signatures)	

Relinquished by: (Signatures)	Date:	Time:	Received By:	Date:	Time:
	7-25-03	4:15		7/25/03	4:15

PAH SW 846 8310 (HPLC)
BTEX plus Napthalene and MTBE (SW 846 8260B)

Remarks:

Samples collected unfiltered.

Run total analysis- Do Not Filter before digesting and/or analyzing

Sample Id	TPH-DRO	BTEX	PAH	Total Number of Containers	TPH - DRO (Unfiltered) 8 ounce amb gls	BTEX (Unfiltered) 4 ounce amb gls	PAH (Unfiltered) 8 ounce amb gls	Log Book Page No.	Date	Time
O326PM5-1	X	X	X	2	X	X	X		7/25/03	1046
O326PM5-2	X	X	X	2	X	X	X			1055
O326PM5-3	X	X	X	2	X	X	X			1056
O326PM5-4	X	X	X	2	X	X	X			1101
O326PM5-5	X			1	X					1107
O326PM5-6	X	X	X	2	X	X	X			1114
O326PM5-7		X		1		X		Trip Blank	7/25/03	1305
O326PM5-8										
O326PM5-9										
O326PM5-10										

Los Alamos National Laboratory | **WQ & H Group ESH-18** | **Chain of Custody Record**

Billing #: 117696.01	Hardcopy: B Turney	EDD: B Turney (turney@lanl.gov)	**KSL-326023**
Approved by:	Analytic Laboratory: GEL	Sampling Team: (Signatures)	
Relinquished by: (Signatures)	Date: 7-24-03	Time: 4:15	Received By:
			Date: 7/24/03 Time: 4:15

Remarks:

Samples collected unfiltered.

Run total analysis- Do Not Filter before digesting and/or analyzing

PAH SW 846 8310 (HPLC)
BTEX plus Napthalene and MTBE (SW 846 8260B)

	Analysis Requested				Bottles Collected: Analyte, Preservative, Bottle Size/Type																		Sample Collected	
Sample Id	TPH-DRO	BTEX	PAH		Total Number of Containers				TPH - DRO (Unfiltered) 8 ounce amb gls	BTEX (Unfiltered) 4 ounce amb gls	PAH (Unfiltered) 8 ounce amb gls										Log Book Page No.	Date	Time
O326PM6-1	X				1				X													7/24/03	0927
O326PM6-2	X				1				X														0935
O326PM6-3	X				1				X														0950
O326PM6-4	X				1				X														0955
~~O326PM6-5~~																							
~~O326PM6-6~~																							
~~O326PM6-7~~																							
~~O326PM6-8~~																							
~~O326PM6-9~~																							
~~O326PM6-10~~																							

Los Alamos National Laboratory | **WQ & H Group ESH-18** | **Chain of Custody Record**

Billing #: 116960.91	Hardcopy: B Turney	EDD: B Turney (turney@lanl.gov)	**KSL-326025**
Approved by:	Analytic Laboratory: GEL	Sampling Team: (Signatures)	

Relinquished by: (Signatures)	Date:	Time:	Received By:	Date:	Time:
	7.24.03	4:15		7/24/03	4:15

PAH SW 846 8310 (HPLC)
BTEX plus Napthalene and MTBE (SW 846 8260B)

Remarks:

Samples collected unfiltered.

Run total analysis- Do Not Filter before digesting and/or analyzing

	Analysis Requested				Bottles Collected: Analyte, Preservative, Bottle Size/Type																Sample Collected	
Sample Id	TPH-DRO	BTEX	PAH		Total Number of Containers				TPH - DRO (Unfiltered) 8 ounce amb gls		BTEX (Unfiltered) 4 ounce amb gls	PAH (Unfiltered) 8 ounce amb gls								Log Book Page No.	Date	Time
O326PM8-1	X				1				X												7/24/03	1515
O326PM8-2	X				1				X													1527
O326PM8-3	X				1				X													1527
O326PM8-4	X				1				X													1532
~~O326PM8-5~~																						
~~O326PM8-6~~																						
~~O326PM8-7~~																						
~~O326PM8-8~~																						
~~O326PM8-9~~																						
~~O326PM8-10~~																						

Los Alamos National Laboratory | **WQ & H Group ESH-18** | **Chain of Custody Record**

Billing #: 116060.01	Hardcopy: B Turney	EDD: B Turney (turney@lanl.gov)	KSL-326026
Approved by:	Analytic Laboratory: GEL	Sampling Team: (Signatures)	
Relinquished by: (Signatures)	Date: 7.25.03	Time: 4:15	Received By: / Date: 7/25/03 Time: 4:15 pm

Remarks:

Samples collected unfiltered.

Run total analysis- Do Not Filter before digesting and/or analyzing

PAH SW 846 8310 (HPLC)
BTEX plus Napthalene and MTBE (SW 846 8260B)

Sample Id	Analysis Requested: TPH-DRO	BTEX	PAH	Total Number of Containers	Bottles Collected (Analyte, Preservative, Bottle Size/Type): TPH - DRO (unfiltered) 8 ounce amb gls	BTEX (Unfiltered) 4 ounce amb gls	PAH (Unfiltered) 8 ounce amb gls	Log Book Page No.	Sample Collected: Date	Time
O326PM9-1	5 X	X	X	2	X	X	X		7/25/03	0830
O326PM9-2	8 X			1	X					0840
O326PM9-3	10 X	X	X	2	X	X	X			0840
O326PM9-4	15 X	X	X	2	X	X	X			0847
O326PM9-5	20 X			1	X					0854
O326PM9-6	25 X	X	X	2	X	X	X			0905
~~O326PM9-7~~										
~~O326PM9-8~~										
~~O326PM9-9~~										
~~O326PM9-10~~										

Los Alamos National Laboratory | **WQ & H Group ESH-18** | **Chain of Custody Record**

Billing #: 116960.91	Hardcopy: B Turney	EDD: B Turney (turney@lanl.gov)	KSL-326028
Approved by:	Analytic Laboratory: GEL	Sampling Team: (Signatures)	Dios Amezcua

Relinquished by: (Signatures)	Date:	Time:	Received By:	Date:	Time:
	7.24.03	4:15		7/24/03	4:15

PAH SW 846 8310 (HPLC)
BTEX plus Napthalene and MTBE (SW 846 8260B)

Remarks:

Samples collected unfiltered.

Run total analysis- Do Not Filter before digesting and/or analyzing

Sample Id	Analysis Requested: TPH-DRO	BTEX	PAH	Total Number of Containers	TPH - DRO (Unfiltered) 8 ounce amb gls	BTEX (Unfiltered) 4 ounce amb gls	PAH (Unfiltered) 8 ounce amb gls	Log Book Page No.	Sample Collected: Date	Time
O326PM11-1	X	X	X	2	X	X	X		7/24/03	1025
O326PM11-2	X	X	X	2	X	X	X			1035
O326PM11-3	X	X	X	2	X	X	X			1043
O326PM11-4	X			1	X					1044
O326PM11-5	X	X	X	2	X	X	X			1055
~~O326PM11-6~~										
~~O326PM11-7~~										
~~O326PM11-8~~										
~~O326PM11-9~~										
~~O326PM11-10~~										

Los Alamos National Laboratory | **WQ & H Group ESH-18** | **Chain of Custody Record**

Billing #: 116460.2	Hardcopy: B Turney	EDD: B Turney (turney@lanl.gov)	**KSL-326029**
Approved by:	Analytic Laboratory: GEL	Sampling Team: (Signatures)	

Relinquished by: (Signatures)	Date:	Time:	Received By:	Date:	Time:
	7-24-03	4:15		7/24/03	4:15

PAH SW 846 8310 (HPLC)
BTEX plus Napthalene and MTBE (SW 846 8260B)

Remarks:

Samples collected unfiltered.

Run total analysis- Do Not Filter before digesting and/or analyzing

Sample Id	Analysis Requested: TPH-DRO	Analysis Requested: BTEX	Analysis Requested: PAH	Total Number of Containers	Bottles Collected (Analyte, Preservative, Bottle Size/Type): TPH - DRO (Unfiltered) 8 ounce amb gls	BTEX (Unfiltered) 4 ounce amb gls	PAH (Unfiltered) 8 ounce amb gls	Log Book Page No.	Sample Collected: Date	Sample Collected: Time
O326PM12-1	X			1	X				7/24/03	1225
O326PM12-2	X			1	X					1230
O326PM12-3	X			1	X					1240
O326PM12-4	X			1	X					1245
~~O326PM12-5~~										
~~O326PM12-6~~										
~~O326PM12-7~~										
~~O326PM12-8~~										
~~O326PM12-9~~										
~~O326PM12-10~~										

Los Alamos National Laboratory | **WQ & H Group ESH-18** | **Chain of Custody Record**

Billing #: 116960.91	Hardcopy: B Turney	EDD: B Turney (turney@lanl.gov)	KSL-326031
Approved by:	Analytic Laboratory: GEL	Sampling Team: (Signatures)	

Relinquished by: (Signatures)	Date:	Time:	Received By:	Date:	Time:
	7-25-03	4:15		7/25/03	4:15

PAH SW 846 8310 (HPLC)
BTEX plus Napthalene and MTBE (SW 846 8260B)

Remarks:

Samples collected unfiltered.

Run total analysis- Do Not Filter before digesting and/or analyzing

Sample Id	Analysis Requested: TPH-DRO	Analysis Requested: BTEX	Analysis Requested: PAH	Total Number of Containers	Bottles Collected (Analyte, Preservative, Bottle Size/Type): TPH - DRO (Unfiltered) 8 ounce amb gls	BTEX (Unfiltered) 4 ounce amb gls	PAH (Unfiltered) 8 ounce amb gls	Log Book Page No.	Sample Collected: Date	Sample Collected: Time
O326PM14-1	X	X	X	2	X	X	X		7/25/03	1424
O326PM14-2	X	X	X	2	X	X	X			1427
O326PM14-3	X	X	X	2	X	X	X			1434
O326PM14-4	X			1	X					1440
O326PM14-5	X	X	X	2	X	X	X			1446
~~O326PM14-6~~										
~~O326PM14-7~~										
~~O326PM14-8~~										
~~O326PM14-9~~										
~~O326PM14-10~~										

Los Alamos National Laboratory | **WQ & H Group ESH-18** | **Chain of Custody Record**

Billing #:	Hardcopy: B Turney	EDD: B Turney (turney@lanl.gov)	**KSL-32605**
Approved by:	Analytic Laboratory: **GEL**	Sampling Team: (Signatures) Nicole Segi, Luis Aguilar	

Relinquished by: (Signatures)	Date:	Time:	Received By:	Date:	Time:
Nicole Segi	7/22/03	15:55	[illegible]	7/22/03	15:55

TPH and PAH combined in same sample container.

PAH SW 846 8310 (HPLC)
BTEX plus Napthalene and MTBE (SW 846 8260B)

Remarks:

Samples collected unfiltered.

Run total analysis- Do Not Filter before digesting and/or analyzing

	Analysis Requested									Bottles Collected: Analyte, Preservative, Bottle Size/Type																			Sample Collected	
Sample Id	DEPTH (FT)	TPH-DRO		BTEX		PAH				Total Number of Containers				TPH - DRO (Unfiltered) 8 ounce amb gls		BTEX (Unfiltered) 4 ounce amb gls		PAH (Unfiltered) 8 ounce amb gls											Log Book Page No.	Date	Time
0326CZ2-1	10	X		X		X				3				X		X		X												7/22/2003	10:13
0326CZ2-2	15	X		X		X				3				X		X		X												7/22/2003	10:16
0326CZ2-3	20	X		X		X				3				X		X		X												7/22/2003	10:19
0326CZ2-4	25	X								1				X																7/22/2003	10:36
0326CZ2-5	30	X								1				X																7/22/2003	10:41
0326CZ2-6	35	X								1				X																7/22/2003	10:52
0326CZ2-7	40	X								1				X																7/22/2003	11:05
0326CZ2-8	45	X								1				X																7/22/2003	11:22
0326CZ2-9	50	X								1				X																7/22/2003	11:35
0326CZ2-10	55	X								1				X																7/22/2003	13:00

Los Alamos National Laboratory | **WQ & H Group ESH-18** | **Chain of Custody Record**

Billing #:	Hardcopy: B Turney	EDD: B Turney (turney@lani.gov)	**KSL-32606**
Aporoved by:	Analytic Laboratory: GEL	Sampling Team: (Signatures) Nicole Segi, Luis Barrera	

Relinquished by: (Signatures)	Date:	Time:	Received By:	Date:	Time:
Nicole Segi	7/22/03	15:55	[illegible]	7 22 03	1555

TPH and PAH combined in same sample container.

* 0326CZ2-13 USED AS TRIP BLANK

PAH SW 846 8310 (HPLC)
BTEX plus Napthalene and MTBE (SW 846 8260B)

Remarks:

Samples collected unfiltered.

Run total analysis- Do Not Filter before digesting and/or analyzing

	Analysis Requested					Bottles Collected: Analyte, Preservative, Bottle Size/Type																Sample Collected	
Sample Id	DEPTH (ft)	TPH-DRO	BTEX	PAH	TRIP BLANK	Total Number of Containers				TPH - DRO (Unfiltered) 8 ounce amb gls		BTEX (Unfiltered) 4 ounce amb gls		PAH (Unfiltered) 8 ounce amb gls		TRIP BLANK 4ml Half vial						Log Book Page No.	Date	Time
0326CZ2-11	10	X				1				X													7/22/2003	13:10
0326CZ2-12	69	X	X	X		3				X		X		X									7/22/2003	13:29
* 0326CZ2-13					X	1										X							7/22/2003	13:29
~~0326CZ2-14~~																								
~~0326CZ2-15~~																								
~~0326CZ2-16~~																								
~~0326CZ2-17~~																								
~~0326CZ2-18~~																								
~~0326CZ2-19~~																								
~~0326CZ2-20~~																								

Los Alamos National Laboratory | **WQ & H Group ESH-18** | **Chain of Custody Record**

Billing #:	Hardcopy: B Turney	EDD: B Turney (turney@lanl.gov)	KSL-32601
Approved by:	Analytic Laboratory: GEL	Sampling Team: (Signatures) Nicole [illegible], Luis Amazola	

Relinquished by: (Signatures)	Date:	Time:	Received By:	Date:	Time:
Luis Amazola	7-23-03	3:50	[illegible]	7/23/03	3:50

PAH and TPH to be analyzed from same sample container

PAH SW 846 8310 (HPLC)
BTEX plus Napthalene and MTBE (SW 846 8260B)

Remarks:

Samples collected unfiltered.

Run total analysis- Do Not Filter before digesting and/or analyzing

Sample Id	Analysis Requested: TPH-DRO	BTEX	PAH	Total Number of Containers	Bottles Collected (Analyte, Preservative, Bottle Size/Type): TPH - DRO (Unfiltered) 8 ounce amb gls	BTEX (Unfiltered) 4 ounce amb gls	PAH (Unfiltered) 8 ounce amb gls	Log Book Page No.	Sample Collected: Date	Time
O326CZ1-1	X	X	X	2	X	X	X		7/23/2003	8:36
O326CZ1-2	X	X	X	2	X	X	X		7/23/2003	8:41
O326CZ1-3	X	X	X	2	X	X	X		7/23/2003	8:42
O326CZ1-4	X	X	X	2	X	X	X		7/23/2003	8:47
O326CZ1-5	X			1	X				7/23/2003	8:58
O326CZ1-6	X			1	X				7/23/2003	9:11
O326CZ1-7	X			1	X				7/23/2003	9:25
O326CZ1-8	X			1	X				7/23/2003	9:39
O326CZ1-9	X			1	X				7/23/2003	9:54
O326CZ1-10	X			1	X				7/23/2003	10:12

Los Alamos National Laboratory | **WQ & H Group ESH-18** | Chain of Custody Record

Billing #:	Hardcopy: B Turney	EDD: B Turney (turney@lanl.gov)	**KSL-32602**
Approved by:	Analytic Laboratory: GEL	Sampling Team: (Signatures) Todd Seg, Luis Amezcua	

Relinquished by: (Signatures)	Date:	Time:	Received By:	Date:	Time:
Luis Amezcua	7-23-03	7:51	[illegible]	7/23/03	3:50

TPH and PAH are in same sample container

* 0326CZ1-15 is TRIP BLANK
CORRECTION- TRIP BLANK FOR BTEX ONLY TS 7/23/03

PAH SW 846 8310 (HPLC)
BTEX plus Napthalene and MTBE (SW 846 8260B)

Remarks:
Samples collected unfiltered.
Run total analysis- Do Not Filter before digesting and/or analyzing

	Analysis Requested					Bottles Collected: Analyte, Preservative, Bottle Size/Type													Sample Collected	
Sample Id	TPH-DRO	BTEX	PAH	TRIP BLANK		Total Number of Containers				TPH - DRO (Unfiltered) 8 ounce amb gls		BTEX (Unfiltered) 4 ounce amb gls		PAH (Unfiltered) 8 ounce amb gls		TRIP BLANK			Log Book Page No.	Date	Time
0326CZ1-11	X					1				X										7/23/2003	10:39
0326CZ1-12	X					1				X										7/23/2003	10:55
0326CZ1-13	X	X	X			2				X		X		X						7/23/2003	12:53
0326CZ1-14	X	X	X			2				X		X		X						7/23/2003	12:57
* 0326CZ1-15	[redacted]	X		[redacted]		1				~~X~~		X		~~X~~		A				7/23/2003	1:05
~~0326CZ1-16~~																					
~~0326CZ1-17~~																					
~~0326CZ1-18~~																					
~~0326CZ1-19~~																					
~~0326CZ1-20~~																					

APPENDIX 4

TPH-DRO SAMPLE RESULTS

Results from Vertical Coring Holes at TA-3-26 Fuel Oil Assessment
Analytical Data from General Engineering Laboratories

Sample Name	Depth (ft)	General Engineering Laboratories Analytical Data (TPH-Diesel Range Organics [mg/kg])
Hole CZ-1	4	4,800
	9.5	1,700
	10	1,150
	15	6,350
	15	38,900
	20	4.9
	25	3.0
	30	1.4
	35	1.0
	40	1.1
	45	1.8
	50	5.4
	55	1.8
	60	1.8
	65	No sample, core loss
	70	1.7
	70	2.0
Hole CZ-2	5	310
	9.5	150
	10	36.1
	15	1.9
	20	1.6
	25	1.7
	30	1.3
	35	1.2
	40	1.3
	45	1.4
	50	1.2
	55	1.1
	60	1.1
	65	1.3
Hole P-1	5	2.5
	10	19,200
	15	2.7
	20	2.1

Sample Name	Depth (ft)	General Engineering Laboratories Analytical Data (TPH-Diesel Range Organics [mg/kg])
Hole P-2	5	2.2
	10	8.4
	10	33.1
	15	2.6
	20	1.3
	25	2.5
	30	1.5
	30	1.5
Hole P-3	5	2.0
	10	2,450
	15	1.4
	20	2.1
Hole P-4	5	2.0
	10	5.1
	15	22.7
	20	1.2
Hole P-5	5	1.6
	10	7.6
	10	11.8
	15	1.6
	20	1.2
	25	1.3
Hole P-6	5	1.3
	10	2,740
	15	1.1
	20	4.5
Hole P-8	5	1.2
	10	11,700
	15	4.7
	20	1.9
Hole P-9	5	2.1
	8	7.6
	10	1.1
	15	2.0
	20	1.3
	25	1.4

Sample Name	Depth (ft)	General Engineering Laboratories Analytical Data (TPH-Diesel Range Organics [mg/kg])
Hole P-11	10	37.9
	15	30.7
	20	1.2
	25	1.9
	30	1.1
Hole P-12	5	1.8
	10	1.2
	15	1.8
	20	1.8
Hole P-14	5	1.9
	10	1.9
	15	3.4
	20	2.0
	25	2.0

APPENDIX 5

SUPPLEMENTAL SAMPLING DETECTED PARAMETERS

TA-3-26 Supplemental Sampling Detected Parameters

SAMPLE_ID	ANALYTE_NAME	SAMPLE_VALUE	UNITS	QUAL	ANYL_METH	Borehole
RE03-07-73726	Aluminum	18600	MG/KG		SW-846:6010B	CZ-2 5'
RE03-07-73726	Arsenic	4.849999905	MG/KG		SW-846:6010B	CZ-2 5'
RE03-07-73726	Barium	112	MG/KG		SW-846:6010B	CZ-2 5'
RE03-07-73726	Beryllium	1.25	MG/KG		SW-846:6020	CZ-2 5'
RE03-07-73726	Calcium	8090	MG/KG	J	SW-846:6010B	CZ-2 5'
RE03-07-73726	Chromium	9.239999771	MG/KG		SW-846:6010B	CZ-2 5'
RE03-07-73726	Cobalt	1.899999976	MG/KG		SW-846:6010B	CZ-2 5'
RE03-07-73726	Copper	5.230000019	MG/KG		SW-846:6010B	CZ-2 5'
RE03-07-73726	Iron	22400	MG/KG		SW-846:6010B	CZ-2 5'
RE03-07-73726	Lead	9.829999924	MG/KG		SW-846:6010B	CZ-2 5'
RE03-07-73726	Magnesium	2270	MG/KG		SW-846:6010B	CZ-2 5'
RE03-07-73726	Manganese	125	MG/KG	J+	SW-846:6010B	CZ-2 5'
RE03-07-73726	Mercury	0.037700001	MG/KG		SW-846:7471A	CZ-2 5'
RE03-07-73726	Nickel	9.350000381	MG/KG	J-	SW-846:6020	CZ-2 5'
RE03-07-73726	Potassium	1430	MG/KG		SW-846:6010B	CZ-2 5'
RE03-07-73726	Silver	0.126000002	MG/KG	J	SW-846:6020	CZ-2 5'
RE03-07-73726	Sodium	255	MG/KG		SW-846:6010B	CZ-2 5'
RE03-07-73726	Thallium	0.559000015	MG/KG		SW-846:6020	CZ-2 5'
RE03-07-73726	Vanadium	17.5	MG/KG		SW-846:6010B	CZ-2 5'
RE03-07-73726	Zinc	33.59999847	MG/KG		SW-846:6010B	CZ-2 5'
RE03-07-73727	Aluminum	1490	MG/KG		SW-846:6010B	CZ-2 10'
RE03-07-73727	Arsenic	2.019999981	MG/KG		SW-846:6010B	CZ-2 10'
RE03-07-73727	Barium	14.69999981	MG/KG		SW-846:6010B	CZ-2 10'
RE03-07-73727	Beryllium	0.335000008	MG/KG		SW-846:6020	CZ-2 10'
RE03-07-73727	Calcium	526	MG/KG	J	SW-846:6010B	CZ-2 10'
RE03-07-73727	Chromium	1.700000048	MG/KG		SW-846:6010B	CZ-2 10'
RE03-07-73727	Cobalt	0.605000019	MG/KG		SW-846:6010B	CZ-2 10'
RE03-07-73727	Copper	2.109999895	MG/KG		SW-846:6010B	CZ-2 10'
RE03-07-73727	Iron	8550	MG/KG		SW-846:6010B	CZ-2 10'
RE03-07-73727	Lead	28.89999962	MG/KG		SW-846:6010B	CZ-2 10'
RE03-07-73727	Magnesium	444	MG/KG		SW-846:6010B	CZ-2 10'
RE03-07-73727	Manganese	326	MG/KG	J+	SW-846:6010B	CZ-2 10'
RE03-07-73727	Mercury	0.0095	MG/KG	J	SW-846:7471A	CZ-2 10'
RE03-07-73727	Nickel	1.919999957	MG/KG	J-	SW-846:6020	CZ-2 10'
RE03-07-73727	Potassium	360	MG/KG		SW-846:6010B	CZ-2 10'
RE03-07-73727	Sodium	176	MG/KG		SW-846:6010B	CZ-2 10'
RE03-07-73727	Thallium	0.142000005	MG/KG	J	SW-846:6020	CZ-2 10'
RE03-07-73727	Vanadium	4.760000229	MG/KG		SW-846:6010B	CZ-2 10'
RE03-07-73727	Zinc	33.90000153	MG/KG		SW-846:6010B	CZ-2 10'
RE03-07-73728	Aluminum	5670	MG/KG		SW-846:6010B	CZ-2 15'
RE03-07-73728	Aroclor-1242	0.0218	MG/KG		SW-846:8082	CZ-2 15'
RE03-07-73728	Aroclor-1254	0.0106	MG/KG		SW-846:8082	CZ-2 15'
RE03-07-73728	Aroclor-1260	0.0038	MG/KG	J	SW-846:8082	CZ-2 15'
RE03-07-73728	Arsenic	2.329999924	MG/KG		SW-846:6010B	CZ-2 15'
RE03-07-73728	Barium	28.89999962	MG/KG		SW-846:6010B	CZ-2 15'
RE03-07-73728	Beryllium	0.368999988	MG/KG		SW-846:6020	CZ-2 15'
RE03-07-73728	Calcium	994	MG/KG	J	SW-846:6010B	CZ-2 15'
RE03-07-73728	Chromium	3.789999962	MG/KG		SW-846:6010B	CZ-2 15'

RE03-07-73728	Cobalt	1.460000038	MG/KG		SW-846:6010B	CZ-2 15'
RE03-07-73728	Copper	3.099999905	MG/KG		SW-846:6010B	CZ-2 15'
RE03-07-73728	Iron	11600	MG/KG		SW-846:6010B	CZ-2 15'
RE03-07-73728	Lead	234	MG/KG		SW-846:6010B	CZ-2 15'
RE03-07-73728	Magnesium	1050	MG/KG		SW-846:6010B	CZ-2 15'
RE03-07-73728	Manganese	471	MG/KG	J+	SW-846:6010B	CZ-2 15'
RE03-07-73728	Mercury	0.0148	MG/KG		SW-846:7471A	CZ-2 15'
RE03-07-73728	Nickel	2.00999999	MG/KG	J-	SW-846:6020	CZ-2 15'
RE03-07-73728	Potassium	722	MG/KG		SW-846:6010B	CZ-2 15'
RE03-07-73728	Selenium	0.819999993	MG/KG	J	SW-846:6010B	CZ-2 15'
RE03-07-73728	Silver	0.059	MG/KG	J	SW-846:6020	CZ-2 15'
RE03-07-73728	Sodium	140	MG/KG		SW-846:6010B	CZ-2 15'
RE03-07-73728	Thallium	0.188999996	MG/KG	J	SW-846:6020	CZ-2 15'
RE03-07-73728	Vanadium	10.39999962	MG/KG		SW-846:6010B	CZ-2 15'
RE03-07-73728	Zinc	47.29999924	MG/KG		SW-846:6010B	CZ-2 15'
RE03-07-73729	Aluminum	1780	MG/KG		SW-846:6010B	P-8 5'
RE03-07-73729	Arsenic	2.359999895	MG/KG		SW-846:6010B	P-8 5'
RE03-07-73729	Barium	20	MG/KG		SW-846:6010B	P-8 5'
RE03-07-73729	Beryllium	0.425000012	MG/KG		SW-846:6020	P-8 5'
RE03-07-73729	Calcium	689	MG/KG	J	SW-846:6010B	P-8 5'
RE03-07-73729	Chromium	2.210000038	MG/KG		SW-846:6010B	P-8 5'
RE03-07-73729	Cobalt	0.73299998	MG/KG		SW-846:6010B	P-8 5'
RE03-07-73729	Copper	1.409999967	MG/KG		SW-846:6010B	P-8 5'
RE03-07-73729	Iron	8930	MG/KG		SW-846:6010B	P-8 5'
RE03-07-73729	Lead	4.53000021	MG/KG		SW-846:6010B	P-8 5'
RE03-07-73729	Magnesium	580	MG/KG		SW-846:6010B	P-8 5'
RE03-07-73729	Manganese	253	MG/KG	J+	SW-846:6010B	P-8 5'
RE03-07-73729	Mercury	0.0065	MG/KG	J	SW-846:7471A	P-8 5'
RE03-07-73729	Nickel	2.730000019	MG/KG	J-	SW-846:6020	P-8 5'
RE03-07-73729	Potassium	378	MG/KG		SW-846:6010B	P-8 5'
RE03-07-73729	Sodium	127	MG/KG		SW-846:6010B	P-8 5'
RE03-07-73729	Vanadium	5.090000153	MG/KG		SW-846:6010B	P-8 5'
RE03-07-73729	Zinc	33.09999847	MG/KG		SW-846:6010B	P-8 5'
RE03-07-73730	Aluminum	2300	MG/KG		SW-846:6010B	P-8 10'
RE03-07-73730	Arsenic	1.789999962	MG/KG		SW-846:6010B	P-8 10'
RE03-07-73730	Barium	16.20000076	MG/KG		SW-846:6010B	P-8 10'
RE03-07-73730	Beryllium	0.405000001	MG/KG		SW-846:6020	P-8 10'
RE03-07-73730	Calcium	378	MG/KG	J	SW-846:6010B	P-8 10'
RE03-07-73730	Chromium	1.769999981	MG/KG		SW-846:6010B	P-8 10'
RE03-07-73730	Cobalt	0.870999992	MG/KG		SW-846:6010B	P-8 10'
RE03-07-73730	Copper	1.809999943	MG/KG		SW-846:6010B	P-8 10'
RE03-07-73730	Iron	10400	MG/KG		SW-846:6010B	P-8 10'
RE03-07-73730	Magnesium	319	MG/KG		SW-846:6010B	P-8 10'
RE03-07-73730	Manganese	125	MG/KG	J+	SW-846:6010B	P-8 10'
RE03-07-73730	Mercury	0.0042	MG/KG	J	SW-846:7471A	P-8 10'
RE03-07-73730	Nickel	2.460000038	MG/KG	J-	SW-846:6020	P-8 10'
RE03-07-73730	Potassium	348	MG/KG		SW-846:6010B	P-8 10'
RE03-07-73730	Silver	0.067699999	MG/KG	J	SW-846:6020	P-8 10'
RE03-07-73730	Sodium	153	MG/KG		SW-846:6010B	P-8 10'
RE03-07-73730	Thallium	0.145999998	MG/KG	J	SW-846:6020	P-8 10'
RE03-07-73730	Vanadium	4.789999962	MG/KG		SW-846:6010B	P-8 10'
RE03-07-73730	Zinc	39.90000153	MG/KG		SW-846:6010B	P-8 10'

RE03-07-73731	Aluminum	3250	MG/KG		SW-846:6010B	P-8 15'
RE03-07-73731	Arsenic	1.769999981	MG/KG		SW-846:6010B	P-8 15'
RE03-07-73731	Barium	19.70000076	MG/KG		SW-846:6010B	P-8 15'
RE03-07-73731	Beryllium	0.657000005	MG/KG		SW-846:6020	P-8 15'
RE03-07-73731	Calcium	635	MG/KG	J	SW-846:6010B	P-8 15'
RE03-07-73731	Chromium	2.910000086	MG/KG		SW-846:6010B	P-8 15'
RE03-07-73731	Cobalt	0.750999987	MG/KG		SW-846:6010B	P-8 15'
RE03-07-73731	Copper	2.24000001	MG/KG		SW-846:6010B	P-8 15'
RE03-07-73731	Iron	10000	MG/KG		SW-846:6010B	P-8 15'
RE03-07-73731	Lead	4.039999962	MG/KG		SW-846:6010B	P-8 15'
RE03-07-73731	Magnesium	659	MG/KG		SW-846:6010B	P-8 15'
RE03-07-73731	Manganese	259	MG/KG	J+	SW-846:6010B	P-8 15'
RE03-07-73731	Mercury	0.0074	MG/KG	J	SW-846:7471A	P-8 15'
RE03-07-73731	Nickel	2.380000114	MG/KG	J-	SW-846:6020	P-8 15'
RE03-07-73731	Potassium	424	MG/KG		SW-846:6010B	P-8 15'
RE03-07-73731	Sodium	100	MG/KG		SW-846:6010B	P-8 15'
RE03-07-73731	Vanadium	5.730000019	MG/KG		SW-846:6010B	P-8 15'
RE03-07-73731	Zinc	39.09999847	MG/KG		SW-846:6010B	P-8 15'
RE03-07-73732	Aluminum	16900	MG/KG		SW-846:6010B	P-2 5'
RE03-07-73732	Arsenic	4.130000114	MG/KG		SW-846:6010B	P-2 5'
RE03-07-73732	Barium	128	MG/KG		SW-846:6010B	P-2 5'
RE03-07-73732	Beryllium	0.948000014	MG/KG		SW-846:6020	P-2 5'
RE03-07-73732	Calcium	2500	MG/KG	J	SW-846:6010B	P-2 5'
RE03-07-73732	Chromium	10	MG/KG		SW-846:6010B	P-2 5'
RE03-07-73732	Cobalt	4.75	MG/KG		SW-846:6010B	P-2 5'
RE03-07-73732	Copper	5.869999886	MG/KG		SW-846:6010B	P-2 5'
RE03-07-73732	Iron	18500	MG/KG		SW-846:6010B	P-2 5'
RE03-07-73732	Lead	15.69999981	MG/KG		SW-846:6010B	P-2 5'
RE03-07-73732	Magnesium	2370	MG/KG		SW-846:6010B	P-2 5'
RE03-07-73732	Manganese	366	MG/KG	J+	SW-846:6010B	P-2 5'
RE03-07-73732	Mercury	0.0263	MG/KG		SW-846:7471A	P-2 5'
RE03-07-73732	Nickel	7.289999962	MG/KG	J-	SW-846:6020	P-2 5'
RE03-07-73732	Potassium	1470	MG/KG		SW-846:6010B	P-2 5'
RE03-07-73732	Selenium	0.893999994	MG/KG	J	SW-846:6010B	P-2 5'
RE03-07-73732	Silver	0.114	MG/KG	J	SW-846:6020	P-2 5'
RE03-07-73732	Sodium	154	MG/KG		SW-846:6010B	P-2 5'
RE03-07-73732	Thallium	0.326999992	MG/KG		SW-846:6020	P-2 5'
RE03-07-73732	Vanadium	22.5	MG/KG		SW-846:6010B	P-2 5'
RE03-07-73732	Zinc	38.5	MG/KG		SW-846:6010B	P-2 5'
RE03-07-73733	Aluminum	1460	MG/KG		SW-846:6010B	P-2 10'
RE03-07-73733	Arsenic	1.480000019	MG/KG	J	SW-846:6010B	P-2 10'
RE03-07-73733	Barium	18.39999962	MG/KG		SW-846:6010B	P-2 10'
RE03-07-73733	Beryllium	0.435000002	MG/KG		SW-846:6020	P-2 10'
RE03-07-73733	Calcium	538	MG/KG	J	SW-846:6010B	P-2 10'
RE03-07-73733	Chromium	2.309999943	MG/KG		SW-846:6010B	P-2 10'
RE03-07-73733	Cobalt	0.619000018	MG/KG		SW-846:6010B	P-2 10'
RE03-07-73733	Copper	1.559999943	MG/KG		SW-846:6010B	P-2 10'
RE03-07-73733	Iron	7860	MG/KG		SW-846:6010B	P-2 10'
RE03-07-73733	Lead	5.590000153	MG/KG		SW-846:6010B	P-2 10'
RE03-07-73733	Magnesium	410	MG/KG		SW-846:6010B	P-2 10'
RE03-07-73733	Manganese	266	MG/KG	J+	SW-846:6010B	P-2 10'
RE03-07-73733	Mercury	0.0075	MG/KG	J	SW-846:7471A	P-2 10'

RE03-07-73733	Nickel	2.650000095	MG/KG	J-	SW-846:6020	P-2 10'
RE03-07-73733	Potassium	327	MG/KG		SW-846:6010B	P-2 10'
RE03-07-73733	Silver	0.0605	MG/KG	J	SW-846:6020	P-2 10'
RE03-07-73733	Sodium	163	MG/KG		SW-846:6010B	P-2 10'
RE03-07-73733	Vanadium	3.190000057	MG/KG		SW-846:6010B	P-2 10'
RE03-07-73733	Zinc	31	MG/KG		SW-846:6010B	P-2 10'
RE03-07-73734	Aluminum	983	MG/KG		SW-846:6010B	P-2 15'
RE03-07-73734	Arsenic	1.690000057	MG/KG		SW-846:6010B	P-2 15'
RE03-07-73734	Barium	15	MG/KG		SW-846:6010B	P-2 15'
RE03-07-73734	Beryllium	0.614000022	MG/KG		SW-846:6020	P-2 15'
RE03-07-73734	Calcium	594	MG/KG	J	SW-846:6010B	P-2 15'
RE03-07-73734	Chromium	1.769999981	MG/KG		SW-846:6010B	P-2 15'
RE03-07-73734	Cobalt	0.623000026	MG/KG		SW-846:6010B	P-2 15'
RE03-07-73734	Copper	1.450000048	MG/KG		SW-846:6010B	P-2 15'
RE03-07-73734	Iron	8050	MG/KG		SW-846:6010B	P-2 15'
RE03-07-73734	Lead	6.480000019	MG/KG		SW-846:6010B	P-2 15'
RE03-07-73734	Magnesium	445	MG/KG		SW-846:6010B	P-2 15'
RE03-07-73734	Manganese	283	MG/KG	J+	SW-846:6010B	P-2 15'
RE03-07-73734	Mercury	0.0047	MG/KG	J	SW-846:7471A	P-2 15'
RE03-07-73734	Nickel	1.580000043	MG/KG	J-	SW-846:6020	P-2 15'
RE03-07-73734	Potassium	346	MG/KG		SW-846:6010B	P-2 15'
RE03-07-73734	Silver	0.0513	MG/KG	J	SW-846:6020	P-2 15'
RE03-07-73734	Sodium	175	MG/KG		SW-846:6010B	P-2 15'
RE03-07-73734	Vanadium	3.569999933	MG/KG		SW-846:6010B	P-2 15'
RE03-07-73734	Zinc	32.59999847	MG/KG		SW-846:6010B	P-2 15'
RE03-07-73735	Aluminum	29000	MG/KG		SW-846:6010B	P-12 5'
RE03-07-73735	Arsenic	5.150000095	MG/KG		SW-846:6010B	P-12 5'
RE03-07-73735	Barium	166	MG/KG		SW-846:6010B	P-12 5'
RE03-07-73735	Beryllium	1.25999999	MG/KG		SW-846:6020	P-12 5'
RE03-07-73735	Calcium	3010	MG/KG	J	SW-846:6010B	P-12 5'
RE03-07-73735	Chromium	16.5	MG/KG		SW-846:6010B	P-12 5'
RE03-07-73735	Cobalt	4.550000191	MG/KG		SW-846:6010B	P-12 5'
RE03-07-73735	Copper	10.39999962	MG/KG		SW-846:6010B	P-12 5'
RE03-07-73735	Iron	23900	MG/KG		SW-846:6010B	P-12 5'
RE03-07-73735	Lead	49.29999924	MG/KG		SW-846:6010B	P-12 5'
RE03-07-73735	Magnesium	4060	MG/KG		SW-846:6010B	P-12 5'
RE03-07-73735	Manganese	333	MG/KG	J+	SW-846:6010B	P-12 5'
RE03-07-73735	Mercury	0.033599999	MG/KG		SW-846:7471A	P-12 5'
RE03-07-73735	Nickel	11.69999981	MG/KG	J-	SW-846:6020	P-12 5'
RE03-07-73735	Potassium	2370	MG/KG		SW-846:6010B	P-12 5'
RE03-07-73735	Selenium	1.299999952	MG/KG	J	SW-846:6010B	P-12 5'
RE03-07-73735	Silver	0.140000001	MG/KG	J	SW-846:6020	P-12 5'
RE03-07-73735	Sodium	258	MG/KG		SW-846:6010B	P-12 5'
RE03-07-73735	Thallium	0.742999971	MG/KG		SW-846:6020	P-12 5'
RE03-07-73735	Vanadium	35.70000076	MG/KG		SW-846:6010B	P-12 5'
RE03-07-73735	Zinc	52.59999847	MG/KG		SW-846:6010B	P-12 5'
RE03-07-73736	Aluminum	2310	MG/KG		SW-846:6010B	P-12 10'
RE03-07-73736	Arsenic	2.119999886	MG/KG		SW-846:6010B	P-12 10'
RE03-07-73736	Barium	26.39999962	MG/KG		SW-846:6010B	P-12 10'
RE03-07-73736	Beryllium	0.643000007	MG/KG		SW-846:6020	P-12 10'
RE03-07-73736	Calcium	1700	MG/KG	J	SW-846:6010B	P-12 10'
RE03-07-73736	Chromium	3.049999952	MG/KG		SW-846:6010B	P-12 10'

RE03-07-73736	Cobalt	0.910000026	MG/KG		SW-846:6010B	P-12	10'
RE03-07-73736	Copper	2	MG/KG		SW-846:6010B	P-12	10'
RE03-07-73736	Iron	8560	MG/KG		SW-846:6010B	P-12	10'
RE03-07-73736	Lead	1.940000057	MG/KG		SW-846:6010B	P-12	10'
RE03-07-73736	Magnesium	692	MG/KG		SW-846:6010B	P-12	10'
RE03-07-73736	Manganese	336	MG/KG	J+	SW-846:6010B	P-12	10'
RE03-07-73736	Mercury	0.01	MG/KG	J	SW-846:7471A	P-12	10'
RE03-07-73736	Nickel	1.889999986	MG/KG	J-	SW-846:6020	P-12	10'
RE03-07-73736	Potassium	420	MG/KG		SW-846:6010B	P-12	10'
RE03-07-73736	Silver	0.051899999	MG/KG	J	SW-846:6020	P-12	10'
RE03-07-73736	Sodium	144	MG/KG		SW-846:6010B	P-12	10'
RE03-07-73736	Vanadium	4.679999828	MG/KG		SW-846:6010B	P-12	10'
RE03-07-73736	Zinc	35.70000076	MG/KG		SW-846:6010B	P-12	10'
RE03-07-73737	Aluminum	1370	MG/KG		SW-846:6010B	P-12	15'
RE03-07-73737	Arsenic	1.590000033	MG/KG	J	SW-846:6010B	P-12	15'
RE03-07-73737	Barium	17.20000076	MG/KG		SW-846:6010B	P-12	15'
RE03-07-73737	Beryllium	0.324999988	MG/KG		SW-846:6020	P-12	15'
RE03-07-73737	Calcium	981	MG/KG	J	SW-846:6010B	P-12	15'
RE03-07-73737	Chromium	1.460000038	MG/KG		SW-846:6010B	P-12	15'
RE03-07-73737	Cobalt	0.643999994	MG/KG		SW-846:6010B	P-12	15'
RE03-07-73737	Copper	1.409999967	MG/KG		SW-846:6010B	P-12	15'
RE03-07-73737	Iron	7970	MG/KG		SW-846:6010B	P-12	15'
RE03-07-73737	Lead	1.769999981	MG/KG		SW-846:6010B	P-12	15'
RE03-07-73737	Magnesium	544	MG/KG		SW-846:6010B	P-12	15'
RE03-07-73737	Manganese	265	MG/KG	J+	SW-846:6010B	P-12	15'
RE03-07-73737	Nickel	1.320000052	MG/KG	J-	SW-846:6020	P-12	15'
RE03-07-73737	Potassium	326	MG/KG		SW-846:6010B	P-12	15'
RE03-07-73737	Sodium	244	MG/KG		SW-846:6010B	P-12	15'
RE03-07-73737	Vanadium	4.989999771	MG/KG		SW-846:6010B	P-12	15'
RE03-07-73737	Zinc	33.5	MG/KG		SW-846:6010B	P-12	15'
RE03-07-73738	Aluminum	1960	MG/KG		SW-846:6010B	CZ-1	10'
RE03-07-73738	Arsenic	1.549999952	MG/KG	J	SW-846:6010B	CZ-1	10'
RE03-07-73738	Barium	18	MG/KG		SW-846:6010B	CZ-1	10'
RE03-07-73738	Beryllium	0.323000014	MG/KG		SW-846:6020	CZ-1	10'
RE03-07-73738	Calcium	517	MG/KG	J	SW-846:6010B	CZ-1	10'
RE03-07-73738	Chromium	1.99000001	MG/KG		SW-846:6010B	CZ-1	10'
RE03-07-73738	Cobalt	0.684000015	MG/KG		SW-846:6010B	CZ-1	10'
RE03-07-73738	Copper	1.629999995	MG/KG		SW-846:6010B	CZ-1	10'
RE03-07-73738	Iron	9100	MG/KG		SW-846:6010B	CZ-1	10'
RE03-07-73738	Lead	6.960000038	MG/KG		SW-846:6010B	CZ-1	10'
RE03-07-73738	Magnesium	421	MG/KG		SW-846:6010B	CZ-1	10'
RE03-07-73738	Manganese	198	MG/KG	J+	SW-846:6010B	CZ-1	10'
RE03-07-73738	Mercury	0.0085	MG/KG	J	SW-846:7471A	CZ-1	10'
RE03-07-73738	Nickel	2.640000105	MG/KG	J-	SW-846:6020	CZ-1	10'
RE03-07-73738	Potassium	325	MG/KG		SW-846:6010B	CZ-1	10'
RE03-07-73738	Silver	0.056400001	MG/KG	J	SW-846:6020	CZ-1	10'
RE03-07-73738	Sodium	139	MG/KG		SW-846:6010B	CZ-1	10'
RE03-07-73738	Vanadium	4.320000172	MG/KG		SW-846:6010B	CZ-1	10'
RE03-07-73738	Zinc	39.20000076	MG/KG		SW-846:6010B	CZ-1	10'
RE03-07-73739	Aluminum	1800	MG/KG		SW-846:6010B	CZ-1	15'
RE03-07-73739	Arsenic	1.669999957	MG/KG		SW-846:6010B	CZ-1	15'
RE03-07-73739	Barium	14.80000019	MG/KG		SW-846:6010B	CZ-1	15'

RE03-07-73739	Beryllium	0.456	MG/KG		SW-846:6020	CZ-1	15'
RE03-07-73739	Calcium	671	MG/KG	J	SW-846:6010B	CZ-1	15'
RE03-07-73739	Chromium	1.99000001	MG/KG		SW-846:6010B	CZ-1	15'
RE03-07-73739	Cobalt	0.684000015	MG/KG		SW-846:6010B	CZ-1	15'
RE03-07-73739	Copper	1.75	MG/KG		SW-846:6010B	CZ-1	15'
RE03-07-73739	Iron	8380	MG/KG		SW-846:6010B	CZ-1	15'
RE03-07-73739	Lead	9.710000038	MG/KG		SW-846:6010B	CZ-1	15'
RE03-07-73739	Magnesium	540	MG/KG		SW-846:6010B	CZ-1	15'
RE03-07-73739	Manganese	261	MG/KG	J+	SW-846:6010B	CZ-1	15'
RE03-07-73739	Mercury	0.0073	MG/KG	J	SW-846:7471A	CZ-1	15'
RE03-07-73739	Nickel	1.730000019	MG/KG	J-	SW-846:6020	CZ-1	15'
RE03-07-73739	Potassium	343	MG/KG		SW-846:6010B	CZ-1	15'
RE03-07-73739	Silver	0.043900002	MG/KG	J	SW-846:6020	CZ-1	15'
RE03-07-73739	Sodium	107	MG/KG		SW-846:6010B	CZ-1	15'
RE03-07-73739	Vanadium	4.429999828	MG/KG		SW-846:6010B	CZ-1	15'
RE03-07-73739	Zinc	36.09999847	MG/KG		SW-846:6010B	CZ-1	15'
RE03-07-73740	Aluminum	2440	MG/KG		SW-846:6010B	CZ-1	20'
RE03-07-73740	Arsenic	2.069999933	MG/KG		SW-846:6010B	CZ-1	20'
RE03-07-73740	Barium	19.89999962	MG/KG		SW-846:6010B	CZ-1	20'
RE03-07-73740	Beryllium	1.50999999	MG/KG		SW-846:6020	CZ-1	20'
RE03-07-73740	Calcium	736	MG/KG	J	SW-846:6010B	CZ-1	20'
RE03-07-73740	Chromium	2.390000105	MG/KG		SW-846:6010B	CZ-1	20'
RE03-07-73740	Cobalt	0.824000001	MG/KG		SW-846:6010B	CZ-1	20'
RE03-07-73740	Copper	1.840000033	MG/KG		SW-846:6010B	CZ-1	20'
RE03-07-73740	Iron	8440	MG/KG		SW-846:6010B	CZ-1	20'
RE03-07-73740	Lead	8.270000458	MG/KG		SW-846:6010B	CZ-1	20'
RE03-07-73740	Magnesium	812	MG/KG		SW-846:6010B	CZ-1	20'
RE03-07-73740	Manganese	271	MG/KG	J+	SW-846:6010B	CZ-1	20'
RE03-07-73740	Mercury	0.0054	MG/KG	J	SW-846:7471A	CZ-1	20'
RE03-07-73740	Nickel	3.49000001	MG/KG	J-	SW-846:6020	CZ-1	20'
RE03-07-73740	Potassium	491	MG/KG		SW-846:6010B	CZ-1	20'
RE03-07-73740	Silver	0.054499999	MG/KG	J	SW-846:6020	CZ-1	20'
RE03-07-73740	Sodium	106	MG/KG		SW-846:6010B	CZ-1	20'
RE03-07-73740	Thallium	0.112999998	MG/KG	J	SW-846:6020	CZ-1	20'
RE03-07-73740	Vanadium	5.260000229	MG/KG		SW-846:6010B	CZ-1	20'
RE03-07-73740	Zinc	36.59999847	MG/KG		SW-846:6010B	CZ-1	20'