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Date: July 21, 2003
Refer to: RRES-WQH: 03-166

Ms. Vickie Maranville
Environmental Scientist
Hazardous Waste Bureau
New Mexico Environment Department (NMED)
P.O. Box 26110
Santa Fe, New Mexico 87502

SUBJECT: REVISIONS TO SAMPLING AND ANALYSIS PLAN (SAP) FOR DIESEL FUEL CONTAMINATED SOIL AT TA-3-26 ABOVEGROUND STORAGE TANK (AST)

Dear Ms. Maranville:

Thank you for your letter of May 28, 2003, e-mail comments of June 30, 2003, and follow-up verbal advice to Mark Haagenstad of our Group concerning the Sampling and Analysis Plan (SAP) for Diesel Fuel Contaminated Soil Near TA-3-26 Aboveground Storage Tank (AST). We have incorporated your comments in the SAP. The revised SAP is attached for your files (Enclosure 1). The Laboratory is scheduled to begin drilling activities for the characterization work during the week of July 21, 2003.

Please contact Mark Haagenstad at (505) 665-2014 or Mike Saladen at (505) 665-6085 if additional information would be helpful.

Sincerely,

Steven Rae
Group Leader
Water Quality & Hydrology Group

SR:MH/tml

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Enclosures: a/s

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RRES-WQH File, w/enc., MS K497
IM-5, w/enc., MS A150

ENCLOSURE 1

KSL
KBR • SHAW • LATA

Sampling and Analysis Plan
Assessment of Fuel Oil Contamination Near Fuel Storage Tank TA-3-26
Revision 1

July 15, 2003

Project Number: 9901-310

Prepared by:
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List of Acronyms

AHA	Activity Hazard Analysis
AST	Aboveground Storage Tank
DOE	Department of Energy
DRO	Diesel Range Organics
EPA	Environmental Protection Agency
FWO-SWO	Facility Waste Operations-Solid Waste Operations
FWO-UI	Facility Waste Operations – Utilities and Infrastructure
KSL	KBR-Shaw-LATA
KSL-CDDO	KSL-Construction Department Department Office
KSL-HENV	KSL Environmental Group (a.k.a. Eberline Services)
KSL-HSEO	KSL-Health, Safety, and Environment Office
KSL-UMDO	KSL Utilities Division Office
LANL	Los Alamos National Laboratory
ND	Not Detectable at the method detection limit
NMED	New Mexico Environment Department
QA	Quality Assurance
QC	Quality Control
QCP	Quality Control Plan
RRES-SWRC	Risk Reduction Environmental Stewardship-Solid Waste Regulatory Compliance
RRES-WQH	Risk Reduction Environmental Stewardship-Water Quality and Hydrology
SAP	Sampling and Analysis Plan
TPH	Total Petroleum Hydrocarbons
VOA	Volatile Organic Analytes

1.0 INTRODUCTION

Eberline Services/KSL-HENV has prepared this site sampling and analysis plan (SAP) to describe sampling and contaminated material handling activities associated with soil contamination discovered near the above ground storage tank (Tank SM-26) at the TA-3 Power Plant at Los Alamos National Laboratory (LANL). Sampling and analysis is required to further define the extent of contamination discovered during modifications to Tank SM-26. Sampling and analysis activities will also investigate the release source of the contaminated soil. This SAP will be implemented in conjunction with a detailed Activity Hazard Analysis (AHA).

This SAP is organized into three main sections: project description, a work plan and quality control procedures. The work activities for this SAP include:

- Mobilization
- Drilling
- Core Sampling
- Sample Collection and Analysis
- Project Report Preparation
- Material Management

1.1 Scope of Work

The scope of work for this project is to drill investigative boreholes in the area around Tank SM-26 in an attempt to define the horizontal and vertical extent of contamination in this area and to perform core sampling in the sand beneath the tank and within the concrete retaining ring in an attempt to determine if the tank is leaking. Specific activities to accomplish the drilling and core sampling are provided in the Work Plan Section of this document. A schedule for the completion of the investigation is provided in Appendix A.

The purpose of this SAP is to document the objectives, rationale and procedures for collecting, analyzing, and managing environmental samples taken from this site. Sampling methods for the investigation are in accordance with the objectives and procedures described in Chapter 1, Soil and Groundwater, Sampling and Disposal of the Guidelines For Corrective Action (New Mexico Environment Department [NMED] Petroleum Storage Tank Bureau, March 13, 2003). This plan outlines the methods and procedures to collect samples and gather data of sufficient quality and quantity to adequately verify the extent of the contaminated soil discovered to the north and east of Tank SM-26 at the TA-3 Power Plant. The project will receive appropriate LANL reviews and will be performed in accordance with approved site health, safety, and emergency response plans. The project will be performed in accordance with applicable DOE, LANL, and State of New Mexico requirements.

The extent of the contaminated soil to the north of the tank will be defined as far as practicable with the edge of the canyon, which is approximately 40'-50' north of the tank, being a bounding limit. If the contamination extends beyond the bermed area of the tank, additional drilling, coring, or other method of determining the extent of contamination will be implemented, considering any physical obstacles or contaminant conditions, and documented as an amendment to this plan. Any amendments to this plan will be provided to the NMED.

1.2 Project Organization and Responsibilities

LANL Facility Waste Operations (FWO) - Utilities and Infrastructure (UI) Division has overall responsibility for the project. KSL Utilities is responsible for obtaining the required excavation permits and addressing issues related to working in proximity to overhead power lines that may need to be de-energized. Eberline Services/KSL-HENV is responsible for planning and directing of site sampling, conducting field screening, arranging for shipping of samples, laboratory analysis of samples, and reporting of results. KSL-HENV will also be responsible for waste characterization and waste management including temporary storage of the waste. FWO-SWO will be responsible for waste transportation and disposal. KSL construction is responsible for removal of the soil and any mobilization/site preparation tasks required for obtaining necessary clearances and site access. A contract laboratory, under subcontract to LANL, will provide analytical services. LANL's Water Quality & Hydrology Group (RRES-WQH) and Solid Waste Regulatory Compliance Group (RRES-SWRC) will provide institutional regulatory support for water quality issues and solid waste issues, respectively.

1.3 Key Individuals

Key project participants for this effort include the Project Manager, Site Manager, Health and Safety Officer, Sampling Personnel, Construction Supervisor, and the Driller. The proposed project assignments and responsibilities are provided as follows:

- Project Manager (FWO-UI) - Responsible for overall management of the investigation. Coordinates between internal and client organizations, manages administrative requirements, schedules, technical approach, implementation, and report preparation.
- Facility Manager (KSL-UMDO) -Responsible for operations and management of the Facility.
- Site Manager (Eberline Services/KSL-HENV)- Supervises all field investigation activities and is responsible for implementation of appropriate site health, safety and emergency response plans and quality control and sampling plans during the fieldwork phase of this project.
- Health and Safety Officer (KSL-HSEO) - Oversees and ensures proper implementation of the appropriate site health, safety and emergency response requirements and coordinates with the Site Manager to resolve site safety issues.

- Sampling Personnel (Eberline Services/KSL-HENV) - Responsible for collecting soil samples from drilling boreholes and core samples for field test screening and laboratory analysis.
- Construction Supervisor (KSL-CDDO)- Responsible for coordinating all construction activities pertaining to the investigation activities.
- Geologist (Eberline Services/KSL-HENV) - Responsible for logging boreholes.
- Data validation personnel (Eberline Services/KSL-HENV) – Responsible for ensuring the analytical data meets the data quality objectives.
- Driller (Enviro Drill) – Responsible for rig operation and safety pertaining to working at or near the rig.

1.4 Site Characteristics

A site diagram of the TA-3 Power Plant fuel tank area depicting the aboveground storage tanks (ASTs) is provided in Figure 1. There are two large #2 fuel oil ASTs located in the northeast corner of the property. Tank SM-26 has a capacity of 158,300 gallons and Tank SM-779 has a capacity of 230,300 gallons. Each tank is contained in an unlined earthen berm. Tank SM-26 was installed in 1950 while Tank SM-779 was constructed to replace another tank at the site in 1999. Fuel from the tanks is supplied to the power plant by underground lines from a pump house located between the tanks just to the south of the tank berms. Fuel is transferred between the tanks and the pump house via underground piping. Fuel is delivered to the tanks by trucks which off load at a fuel station to the west of the pump house. There are also two previously unidentified pipes, that have been capped, that originate under valves on the north side of the two tanks. The approximate layout of the two lines is shown on Figure 1.

During work to install cathodic protection for Tank SM-26, a trench was cut at a distance of approximately 5-feet from the outer edge of the tank. The trench is approximately 6-inches wide and 2-feet deep. Six holes were augered to a depth of approximately 9.5 feet in the trench, distributed at approximately even distances around the tank. A seventh partial hole (3A) was augered just to the south of Hole 3. Figure 2 provides a more detailed diagram of the area around Tank SM-26 including the location of the augered holes. Hole 3A was the first hole augered and soil contaminated with diesel fuel was encountered at 4-5 feet in depth. Augering at this hole was suspended and the auger was moved to Hole 1. Hole 1 was augered to a depth of 9.5 feet with no fuel odor or visible signs of contamination. The remaining holes were augered to a total depth of 9.5 feet in the following order: Hole 3, Hole 4, Hole 2, Hole 6, and Hole 5. For holes in which contamination was evident, samples were collected from the midpoint of the hole and at total depth. Samples were collected at total depth (9.5 feet) from holes in which no contamination was evident. Results of the cathodic protection augering analysis are provided in Table 1.

Table 1
Cathodic Protection Auger Hole Analytical Results

Sample ID	Hole	Description	Results (mg/kg)	
3-0292	1	Composite from cuttings in drum 1	Benzene	ND
			Ethyl benzene	ND
			Toluene	ND
			Xylene	ND
			TPH	ND
3-0291	1	Composite from cuttings in drum 1A	Benzene	ND
			Ethyl benzene	ND
			Toluene	ND
			Xylene	0.011
			TPH	ND
0326H29.5	2	Sample from auger at 9.5' depth	Benzene	ND
			Ethyl benzene	ND
			Toluene	ND
			Xylene	ND
			TPH	ND
3-0287	3	Sample from auger at 5' depth	Benzene	ND
			Ethyl benzene	0.077
			Toluene	ND
			Xylene	0.14
			TPH	310
3-0290	3	Sample from auger at 9.5' depth	Benzene	ND
			Ethyl benzene	ND
			Toluene	ND
			Xylene	0.010
			TPH	150
3-0288	3	Composite from cuttings in drum 3	Benzene	ND
			Ethyl benzene	0.056
			Toluene	ND
			Xylene	0.12
			TPH	290
3-0289	3	Composite from cuttings in drum 3A	Benzene	ND
			Ethyl benzene	ND
			Toluene	ND
			Xylene	ND
			TPH	45
3-0293	4	Sample from auger at 4' depth	Benzene	ND
			Ethyl benzene	0.79
			Toluene	ND
			Xylene	3.5
			TPH	4800
3-0294	4	Sample from auger at 9.5' depth	Benzene	ND
			Ethyl benzene	0.21
			Toluene	ND
			Xylene	0.9
			TPH	1700
0326H55	5	Sample from auger at 5' depth	Benzene	ND
			Ethyl benzene	0.59
			Toluene	ND
			Xylene	1.83
			TPH	3100
0326H59.5	5	Sample from auger at 9.5' depth	Benzene	ND
			Ethyl benzene	1.1

			Toluene ND Xylene 3.4 TPH 18000
0326H69.5	6	Sample from auger at 9.5' depth	Benzene ND Ethyl benzene ND Toluene ND Xylene ND TPH 620

Cathode protection augering results indicate soil contamination extending from the west side of the tank around the north to the east side of the tank to a depth of at least 9.5 feet. The source of the contamination has not been identified. To date the following activities have been conducted in an attempt to identify the source. All active lines for the two tanks were pressure tested in February of 2003 and no leaks were indicated. Reviews of the daily records of digital tank levels as well as a review of the monthly tank measurements were conducted and do not reveal any large unexplained losses of fuel. A tank integrity inspection, which included ultrasonic thickness test, floor elevation measurements, and a visual inspection was conducted and revealed no integrity issues with the tank. There are no large stained areas on the ground surface and no fuel was encountered during the trenching operation. The core sampling activities described in Section 2.3 will be conducted to further investigate the source of the contamination.

The LANL Environmental Restoration (ER) program lists an Area of Concern (AOC) in the area of the tank. A review of ER documentation revealed that AOC 03-036(j) is not associated with the contamination being investigated under this plan.

Organic vapor levels in the pump house were checked using a photoionization detector. No organic vapor levels above background, which was determined to be 0.3ppm due to fuel oil residue from previous spills and the storage of fuel materials in the building, were detected in the pump house, which is the closest structure to the contamination. The only known utility in the area is the previously unidentified piping. No fuel was evident, using visual and olfactory means, in the pipe trench that was exposed during the trenching to install the catodic protection. The pipe was installed during the excavation and backfilling to install the tank and therefore the pipe trench would not be a preferential pathway having the exact fill and compaction as surrounding soils. The pipe trench is also several feet above the level at which contamination was seen in any of the cathodic protection boreholes.