

TA-16



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Date: August 19, 2005  
Refer To: ENV-WQH: 05-154

Mr. John Young  
Hazardous Waste Bureau  
New Mexico Environment Department  
2905 Rodeo Park Drive East, Building 1  
Santa Fe, New Mexico 87505-6303



**SUBJECT: RESPONSE TO NMED'S JUNE 17, 2005, LETTER CONCERNING DIESEL RELEASES AT THE LABORATORY**

Dear Mr. Young:

Please accept the enclosed information in response to your letter of June 17, 2005, concerning diesel releases at the Laboratory. Responses to the technical comments in your letter of June 17, 2005, have been enclosed for your review. The Laboratory's Legal Counsel is currently reviewing the applicability of NMED's comments concerning regulation of these sites under the Consent Order, including NMED's request that specific sites be designated as Areas of Concern (AOCs). These issues have been addressed in a separate letter from the Laboratory's Legal Counsel also dated August 19, 2005.

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

Sincerely,

Steven Rae  
Group Leader  
Water Quality & Hydrology Group

SR:MH/lm



Enclosures: a/s

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IM-9, w/enc., MS A150

## **Response to Comments from NMED Letter Dated June 17, 2005**

### **Section I. Sampling and Analysis Plan (SAP) for Additional Characterization of Petroleum Product Contamination Near Former TA-16-7:**

#### **1) Section 1.4- Data Review, Page 5:**

##### **NMED Comment:**

The Permittees must provide rationale to support the conclusion that the most likely source of inorganics in soil samples is metal chips from the waterline disconnection activities.

##### **LANL Response:**

Based on the visual observation of metal chips in the excavation, and absent any historical information concerning releases of inorganic chemicals at this location, LANL concluded that the chips were the most likely source of the detected inorganic chemicals. The proposed sampling will provide data to determine if this conclusion is correct. If the metal cutting activities are the source of the detected inorganic chemicals, inorganic chemicals above BVs should be limited to the excavation boundary and should not be detected at the proposed sampling locations.

#### **Paragraph 2**

##### **NMED Comment:**

The Permittees state later in this section (page 6) that there were other historical uses of petroleum products in the vicinity of TA-16-7, specifically operation of Building 16-7 (steam plant) itself. As discussed in a conference call with the Permittees on May 3, 2005, there are discrepancies between the SAP and other historical documents, such as the 1990 SWMU Reports (LAUR 90-3400) and the July 1995 RFI Work Plan for OU 1082, regarding potential historical sources of contamination and historical structures. The Permittees must consider 16-033(a), 16-033(c) and building 16-7 as potential sources of contamination and propose additional sampling to exclude these sites as possible contaminant sources.

##### **LANL Response:**

As noted in the SAP, the objective of the proposed investigation is to determine the extent of the diesel contamination identified by the previous sampling.

AOC 16-033(a) is a 1,000 gallon underground diesel fuel tank that was located east of Building TA-16-16 in the old S-Site administration area. The tank was rectangular and attached to a larger cylindrical tank. According to the 1990 SWMU report, this tank had a documented release. Before the tank was removed in 1987, it was surveyed for gross alpha, -beta, and -gamma and tritium; no activity was detected. During removal, about 15 cubic yards of contaminated soil were excavated and taken to TA-54 for land farming. The excavation was backfilled with clean soil. This site is located approximately 170 ft. from the oil sheen found in the excavation, in a northeast direction. In view of the removal of this oil tank in 1987, the distance to the oil sheen, and the fact that oil will normally age and degrade in the soil, the Permittees do not believe this site was the source of the oil sheen.

AOC 16-033(c) was a 52,000 gallon aboveground fuel storage tank (Structure TA-16-29) that was constructed of metal and mounted on concrete saddles. The tank was 12 ft. in diameter and 62 ft long and was located approximately 50 ft. north of the S-Site Cafeteria (Building TA-16-16). The tank was installed in 1945 and removed in 1956. According to a former site worker,

pipng from the tank went directly to a pump house (Building TA-16-19) and then to the steam plant (Building TA-16-7). There was no record of any fuel spills at this site during the eleven years that it was in operation. This site is located approximately 215 ft. from the oil sheen found in the excavation, in a northeast direction. In view of the removal of this oil tank in 1956, the distance to the oil sheen, and the fact that oil will normally age and degrade in the soil, the Permittees do not believe this site is the source of the oil sheen.

Pursuant to the proposed SAP, samples will be taken in four directions around the area where the oil sheen was discovered. The results of the proposed sampling should provide an indication of the source of the diesel contamination. AOCs 16-033(a) and 16-033(c) and other SWMUs and AOCs in the vicinity of TA-16-7, will be addressed by the investigation work plans for the Cañon de Valle Aggregate Area or Upper Water Canyon Aggregate Area.

## **2) Section 2.3 - Sample Collection and Analysis, page 9, paragraph 2:**

### **NMED Comment:**

The Permittees state in Section 1.4 that "[b]ased on a review of the historical structures and operations in this area, no discernable unit could be identified as a source of the contamination." Therefore, in accordance with the NMED TPH Screening Guidelines, dated February 28, 2003 sites with petroleum products from unknown sources must be tested for VOCs, SVOCs, metals, and PCBs to determine if other potentially toxic constituents are present. NMED considers the initial SAP as a SWMU Assessment Report (SAR) in accordance with Section V.C of the March 1, 2005 Consent Order (Order). NMED has determined that there is need for further investigations at this site. Based on this determination, the Permittees must submit a supplemental Investigation Work Plan (IWP) in accordance with Section V.C of the Order. The supplemental IWP must propose additional sampling and analysis to address sampling required by the NMED TPH Screening Guidelines and the Order.

### **LANL Response:**

The samples collected by LANL at the time of discovery of the contamination were analyzed for volatile organic compounds (VOCs); semivolatile organic compounds (SVOCs); benzene, toluene, ethyl benzene and xylenes (BTEX), total petroleum hydrocarbons-diesel range organics (TPH-DRO), target analyte list (TAL) metals and high explosives (HE). Only two VOCs were detected in the two samples collected from the excavation at concentrations similar to estimated quantitation limits (EQLs) and well below soil screening levels (SSLs). No VOCs were detected in the soil pile sample or in any of the QA samples. A total of eight SVOCs were detected in the soil samples collected from the excavation (including the duplicate) and one SVOC was detected in the soil pile sample. The SVOCs other than TPH-DRO were all detected at concentrations close to the EQLs and well below SSLs, and are typically associated with asphalt. TPH-DRO was detected at 740 mg/kg and 220 mg/kg in the two samples collected from the bottom of the excavation, respectively. HE and BTEX were not detected in any of the samples. Based on these results, there do not appear to be any other potentially toxic constituents present that would require additional analysis for VOCs and SVOCs pursuant to NMED TPH Screening Guidelines, so LANL is not proposing analysis for these constituents.

LANL does not agree that additional actions at this site should be conducted under the Consent Order. LANL's position in this matter is set out in a letter to Tracy Hughes, NMED General Counsel, dated August 19, 2005. LANL, however does intend to implement the sampling and analysis described in its April 22, 2005 SAP, specifically for TPH-DRO, metals and PCBs.

## **Section II. TA-3-26 Diesel Fuel Oil Contamination Assessment and Characterization**

### **General Comment 1):**

#### **NMED Comment:**

The Permittees must describe all SWMUs, AOCs, and any other potential source of contamination within the vicinity of Tank 26. The Permittees suggest in Section 7.2 that the release was historical; therefore, a more detailed discussion of potential sources of contamination, current or historical, is warranted. For example, the Sampling and Analysis Plan (SAP), dated July 15, 2003 explains that there is an AOC (03-036(j)) in the area of the tank, but it doesn't discuss why it's not associated with Tank 26, its viability as a potential source, its historic uses and/or periods of operation. The Permittees must also provide a map, which displays the locations of SWMUs, AOCs, other storage tanks, etc. in respect to Tank 26.

#### **LANL Response:**

AOCs and SWMUs in the vicinity of the tank are AOC 03-036(j) and SWMU 03-045(e). AOC 03-036(j) consists of potential soil contamination associated with two 150,000 gallon diesel fuel tanks (structures TA-03-26 and TA-03-27) installed in 1954 as backup power for the TA-3 Power Plant (Building TA-03-22). The two tanks were connected to a pump house (structure TA-03-57), which pumped the fuel to Building TA-03-22. The only known release of petroleum at this site occurred in 1991 when the system was brought online in order to allow repair of the natural gas fuel supply line for Building TA-03-22. When the diesel fuel system was pressurized, workers immediately discovered a leak in the underground fuel line between the pump house (TA-03-57) and power plant (TA-03-22). Diesel fuel was discharged to the ground and drained into a watercourse leading to upper Sandia Canyon. The diesel fuel system was shut down and the discharge ceased. The total volume of fuel released was estimated to be 100 to 200 gallons.

The spill was contained in the watercourse using absorbent booms and pillows and the pooled fuel was removed through use of vacuuming and absorbents. The removed fuel and absorbents were containerized and disposed of off-site. Additional cleanup activities included removing contaminated soil for off-site disposal, cleaning contaminated rocks by low-pressure spraying and temporarily re-routing storm water flow around the site until cleanup was complete. A temporary fuel line was installed until the line could be replaced.

The release occurred on September 25, 1991 and NMED was notified on the same day. The U.S. Environmental Protection Agency (EPA), Region 6, was notified the following morning, as was the National Response Center. A formal Notification of Discharge was submitted to the NMED Surface Water Quality Bureau on October 2, 1991 in accordance with the New Mexico Water Quality Control Commission (WQCC) regulations. The NMED Surface Water Quality Bureau inspected the site on February 28, 1992 and on June 10, 1992 the Surface Water Quality Bureau notified LANL that the corrective actions were satisfactory and that the file for this spill was closed.

Based on the above cleanup activities, AOC 03-036(j) was recommended for no further action (NFA) in Addendum 1 to the Operable Unit (OU) 1114 Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) Work Plan submitted to EPA in July 1995. The basis for the recommendation was that the site had been remediated under a different regulatory authority. EPA approved this NFA recommendation in November 1995.

One of the fuel tanks, TA-03-27, was replaced by a new, 228,000 gallon tank in 1998. Tank TA-03-027 was removed and the new tank (structure TA-03-2382) was installed at the same location.

SWMU 03-045(e) is an inactive outfall from a floor drain in an oil pump house (structure 03-57) located at the TA-03 Steam Plant (Building 03-22). One line from each diesel storage tank (structures 03-26 and 03-27) passed through the pump house to the steam plant. Valves in the pump house operated each line and allowed diesel to flow from one or both storage tanks. The drain was in place to prevent the pump house from filling with diesel fuel if a valve junction had ruptured or leaked. The drain was plugged in 1989. A concrete apron is located at the point where the drain line discharged to the outfall area in Sandia Canyon. The drainpipe also was plugged in 1989. In 1995, a LANL site worker who had worked at the steam plant since 1981 reported that there had been no known releases of oil into the drain. At the time that Addendum 1 to the OU 1114 RFI Work Plan was prepared, some staining was observed on the concrete apron at the outfall. Further investigations at this site will be conducted as part of the Upper Sandia Canyon Aggregate Area investigation.

The Permittees believe the contamination is a release from operations and/or maintenance involved with the TA-3-26 aboveground storage tank (AST). The Permittees have investigated and determined that there is no current release from the TA-3-26 AST.

#### **Specific Comments:**

##### **1) Figure 2 – Placement of Boreholes Around Tank SM-26, page 7:**

###### **NMED Comment:**

Section 6.0 states that the heaviest contamination was located in the vicinity of CZ-1 and CZ-2. According to Figure 2, borehole CZ-2 was clean. The Permittees must explain why two step-out perimeter boreholes were advanced if contamination was not observed in boring CZ-2. The advancement of borings CZ-1 and CZ-2 suggests to NMED that contamination was found.

###### **LANL Response:**

Section 6.1 states that boreholes were placed in areas where the heaviest contamination was found during the anode borehole placement (i.e. first discovered when the personnel installing the anode boreholes began to smell diesel fuel in the borehole cuttings). CZ-2 was advanced and indicated TPH on field screening results above the action level (880 mg/Kg), thus boreholes P4 and P5 were advanced at step-out locations from CZ-2. Laboratory results for TPH in borehole CZ-2 were below the action levels and therefore, borehole CZ-2 was shown as “clean” on Figure 2.

##### **2) Section 6.4 – Sample Analysis, page 9:**

###### **NMED Comment:**

The Permittees state in Section 7.2 that “the source of the contamination was not readily apparent when the contamination was discovered” and “it was suspected that the contamination was an historical release.” Therefore, in accordance with the NMED TPH Screening Guidelines, dated February 28, 2003 sites with petroleum products from unknown sources must be tested for VOCs, SVOCs, metals, and PCBs to determine if other potentially toxic constituents are present. NMED considers the initial Assessment and Characterization Report as a SWMU Assessment Report (SAR) in accordance with Section V.C. of the March 1, 2005 Consent Order

(Order). NMED has determined that there is need for further investigation at this site. Based on this determination, the Permittees must submit a Supplemental Investigation Work Plan(IWP) in accordance with Section V.C. of the Order. The Supplemental IWP must propose additional sampling and analysis to address sampling required by the NMED TPH Screening Guidelines and the Order.

**LANL Response:**

As discussed in the General Comments Section above, the Permittees believe the contamination is a release from operations and/or maintenance involved with TA-3-26. The contamination was discovered because the smell of diesel fuel was evident in the anode borehole cuttings. All analysis was performed using TPH-DRO methods. TPH-DRO would not be present if the material were something different than diesel fuel. Additionally, work conducted to compare the chromatographs of the samples analyzed against known diesel standards to attempt to date the contamination indicated the contamination was TPH-DRO. This information is evidence that the contamination is diesel fuel. The Permittees have investigated and determined that there is no current release from the TA-3-26 AST system.

Despite LANL's belief that diesel is the sole contaminant present at this location, LANL will conduct additional characterization of the TA-3-26 site to determine nature and extent of additional contaminants of concern (VOCs, SVOCs, metals, and PCBs) as described in the NMED TPH Screening Guidelines, dated February 28, 2003 to ensure that no other contaminants of concern from the Guidelines requirements exist. As previously indicated, LANL does not believe that this nor the other 2 sites discussed in this response are subject to requirements established in the March 1, 2005 Consent Order

**3) Section 6.5 – Core Sampling Under the Tank**

**NMED Comment:**

The Permittees must explain why the core samples were not sent to an off-site laboratory for confirmatory analysis and why another core sampling location (four were proposed, only three completed) was not chosen when the electrical conduit was discovered in the space between the tank and the retaining wall on the east side of the tank. Additionally, the Permittees must clarify what they mean by "background levels for TPH", given that there is no background value for TPH.

**LANL Response:**

Core samples were not sent to an off-site analytical laboratory for analysis because, upon consultation with off-site analytical laboratory personnel and the known presence of the aged asphalt layer under the tank, it was determined that the organics from the aged asphalt would interfere with the analysis for TPH-DRO. The primary purpose of the sampling was to observe (visual and olfactory) the materials from the sample under the tank to determine if evidence of diesel fuel was present. No olfactory or visual indication of contamination was observed in the samples as indicated on the sample collection logs.

The four sample locations were proposed to encompass the radius of the tank around which contamination was observed. Moving the fourth point to a location not obstructed by the electrical conduit would have moved the point to a location on the radius of the tank where no contamination was observed.

The PetroFlag test recommends running a "background" sample of clean soils from the area to determine any naturally occurring interference with the test results. This is the "background value" referred to in the text.

**4) Section 6.7 Air Quality Assessment, page 10**

**NMED Comment:**

The Permittees must explain in more detail how they conducted their air quality assessment in the pump house and which specific VOCs were found. Based on the information provided regarding activities performed within the pump house, there should not be any VOCs present in ambient air. Furthermore, there is no "background" value for VOCs.

**LANL Response:**

A properly calibrated photoionization detector (PID) was used to conduct the air monitoring in the pump house. A PID does not distinguish individual compounds just overall VOC levels. The pump house is a mechanical room with pumps, valves, seals, piping, etc. It is reasonable to expect that due to normal operating losses from pumps and seals, and residues left from larger losses and maintenance activities, which have been cleaned up, but from which residues still exist, that there will be VOCs in the pump house.

With regard to the reference to "background", it was LANL's intention to describe, but not to quantify, the normal, expected presence of diesel fuel odor in the pump house as "background".

**5) Section 8.0 – Conclusions, page 11:**

**NMED Comment:**

The fact that the contamination is above all fractures in the subsurface is the concern. There may not be any current evidence of transport via fractures, however the possibility does exist. NMED agrees that the Permittees have defined the vertical and horizontal extent of contamination, but the Permittees have not identified the source of the contamination. The Permittees must discuss their course of action regarding an attempt at identifying the source and remediation of the site.

**LANL Response:**

Despite LANL's belief that diesel is the sole contaminant present at this location as discussed in section 2), LANL will conduct additional characterization of the TA-3-26 site to determine nature and extent of additional contaminants of concern (VOCs, SVOCs, metals, and PCBs) as described in the NMED TPH Screening Guidelines, dated February 28, 2003 to ensure that no other contaminants of concern from the Guidelines requirements exist. Additional characterization will be conducted to further define the source material. An addendum Sampling and Analysis Plan (SAP) will be developed to further assess the site. LANL will obtain NMED approval of the proposed SAP prior to conducting additional characterization.

### **Section III. Response to NMED's Letter Concerning the Characterization Report for the Technical Area (TA) 21-57 Aboveground Storage Tank Diesel Fuel Oil Release Site.**

#### **2) NMED Comment:**

The Permittees did not respond to specific comment #1 from NMED's February 16, 2005 response letter. NMED requires that the Permittees add DRO to the analytical suite at wells in the vicinity of the TA-21-57 AST. DRO sampling of nearby wells will aid in confirming that the contamination has not migrated laterally or vertically. This sampling must be addressed in the Interim Facility Groundwater Monitoring Plan.

#### **LANL Response:**

The Laboratory has been conducting diesel range organics (DRO) monitoring at four Los Alamos County water supply wells; O-1, O-4, PM-1, and PM-3. The monitoring occurred each month from February 2002 to May 2004. Beginning in August 2004, TPH-DRO monitoring was changed to quarterly at O-4 only. DRO has not been detected at any of these locations. In addition, the Interim Facility Groundwater Monitoring Plan will include analysis for DRO in samples collected from alluvial wells and gauging stations in DP Canyon.