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CERTIFIED MAIL - RETURN RECEIPT REQUESTED

March 24, 2010

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Michael J. Graham
Associate Director Environmental Programs
Los Alamos National Security, L.L.C.
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RE: NOTICE OF DISAPPROVAL
TWOMILE CANYON AGGREGATE AREA INVESTIGATION WORK PLAN
LOS ALAMOS NATIONAL LABORATORY
EPA ID #NM0890010515
HWB-LANL-10-014

Dear Messrs. Rael and Graham:

The New Mexico Environment Department (NMED) has received the United States Department of Energy (DOE) and the Los Alamos National Security L.L.C.'s (LANS) (collectively, the Permittees) *Investigation Work Plan for Twomile Canyon Aggregate Area* (Plan), dated January 2010 and referenced by LA-UR-10-0385/EP2009-0680. NMED has reviewed the Plan and hereby issues this Notice of Disapproval (NOD).

General Comments

1. Table 4.0-1, Summary of Proposed Samples and Analyses:

NMED Comment: The table has a column labeled "Explosive Compounds (EPA SW-846:8321A_MOD)". There is no associated table in the Plan that lists which compounds can be analyzed by that method. NMED reminds the Permittees that the required compounds are listed in Table III-1 (page 37) of the March 1, 2005 Compliance Order on Consent (Order). Provide verification in the revised Plan that the proposed analytical method is appropriate for



analyses of Composition A, Composition B and Baratol, in addition to the explosive compounds listed in Table III-1 of the Order. Unless otherwise noted, this comment is applicable to all Areas of Concern (AOCs) and Solid Waste Management Units (SWMUs) where the Permittees have proposed sampling and analysis of explosive compounds.

2. **NMED Comment:** For any AOC or SWMU that is categorized in the Plan as a firing site, firing pad, former firing site, inactive firing site, inactive firing pit, firing chamber, or any site which could be affected by firing activities of any kind (e.g., AOCs C-06-019 and 06-008), soil sample analyses must include perchlorate as part of the proposed analytical suite. In addition, these types of sites must include provisions for sampling and analyses of dioxins and furans. In the event radionuclides may have been handled at a given site, the Permittees must add tritium to the analytical suites as well. This comment also applies to sampling of any disposal pits or shafts associated with SWMU 06-005 and SWMUs 06-007(a-e), also known as (a.k.a.) Material Disposal Area (MDA) F. Revise Table 4.0-1 as needed to reflect the changes to the analyte suites at the affected sites.
3. **NMED Comment:** For any firing site AOC or SWMU that is listed in Table IV-2 of the Order (Deferred Sites in Testing Hazard Zones), add dioxins, furans, and perchlorate to the site analytical suites if not already proposed in the Plan. In the event radionuclides may have been handled at a given site, add tritium to the analytical suites as well.

Specific Comments:

TA-03

1. Section 4.1.1.3, Proposed Activities, page 15:

NMED Comment: The Permittees are proposing deferral of site characterization and investigation of AOC 03-001(e) until building 03-0030 is demolished. SWMU 03-010(a) is adjacent to AOC 03-001 and, historically, both sites have been studied concurrently since they are affected by the same contaminant source(s). The Plan is not clear regarding whether the Permittees are also proposing deferral of site characterization activities at SWMU 03-010(a). The Plan must be revised to address both sites.

2. Section 4.1.21.3, AOC 03-051(a), Proposed Activities, page 32:

NMED Comment: Add Total Recoverable Petroleum Hydrocarbons (TRPH, SW-846 8440) to the analytical suite for soil samples at AOC 03-051(a) and revise Table 4.0-1 to reflect the change.

3. Section 4.1.22.3, AOC 03-051(b), Proposed Activities, page 32:

NMED Comment: Based on discussions during a March 17, 2010 NMED site visit, NMED understands that the Permittees will add two sample locations to be placed approximately 40 feet east and approximately 80 feet east of the southeastern-most proposed sample location. One of the additional sample locations will be placed south of the fence located south of building 03-0102 and the other location will be placed on the north side of the same fence. Sample intervals and analytical suites for the soil samples must be the same as proposed for all other sample locations at the AOC. Add TRPH

(SW-846 8440) to the analytical suite for all soil samples at AOC 03-051(b) and revise Figure 4.1-38 and Table 4.0-1 to reflect this change.

4. Section 4.1.23.3, AOC 03-052(a), Proposed Activities, page 34:

NMED Comment: Add TRPH (SW-846 8440) to the analytical suite for soil samples at CU 03-052(a)-00 and revise Table 4.0-1 to reflect the change.

TA-06

5. Section 4.2.1.3, SWMU 06-001(a), Proposed Activities, pages 36 and 37; and, Figure 4.2-2, Proposed sample locations at SWMU 06-001(a), page 137:

NMED Comment: If the illustration of the drain line leaving former building 06-0001 accurately reflects the as-built construction of the line, an additional sample location must be proposed below the pipe bend located approximately ten feet east of the building where the line turns approximately 45 degrees to the northeast and toward the SWMU.

6. Section 4.2.3.2 AOC C-06-005, Area of Potential Soil Contamination, Description and History and Proposed Activities, pages 41 - 43:

NMED Comment: The Plan indicates that Composition A, Composition B and Baratol were used in detonators assembled in former building 06-0013. Table III-1 of the Order does not include these compounds (see also, General Comment 1 above). Analyses of potential contaminants, including explosive compounds, is proposed in the Plan. Explosives analyses must include those three compounds in addition to the compounds listed in Table III-1 of the Order. If analyses of barium and 2,4,6-trinitrotoluene (TNT) will provide essentially the same information as analyses of Baratol, include that information in the revised Plan. In the event the three compounds are not included in Modified Method 8321A, the revised Plan must include information on what analytical method(s) will be used for the analyses.

7. Section 4.2.4.1, SWMU 06-003(a), Firing Site, Proposed Activities, pages 43 and 44:

NMED Comment: Include analyses of dioxins, furans, tritium, and perchlorate for all sediment samples collected from the bowl and filter pit. These analytes must also be included for confirmation swipe samples if their presence is suspected based on the analytical results of the sediment samples.

8. Section 4.2.4.2, AOC 06-008, Area of Potential Soil Contamination, Proposed Activities, pages 44 and 45:

NMED Comment: Add TRPH (SW-846 8440) to the analytical suite for soil samples at AOC 06-008 and revise Table 4.0-1 to reflect this change

9. Section 4.2.7.3, SWMU 06-003(f), Firing Site, Proposed Activities, page 47:

NMED Comment: Add an additional soil sampling location to be placed approximately 50 feet east of the circular pad. The collection sample depth intervals must be the same as the other six

sample locations. Collected samples must be analyzed for the same analytical suites proposed for the other six sample locations. The additional sample location must be placed in an area that is topographically lower than the pad area.

10. Section 4.2.8.3, SWMU 06-003(h), Firing Site, Proposed Activities, pages 48 and 49:

NMED Comment: Verify that Baratol will be included as part of the explosives suite, or that indirect means will be used to assess the possible presence of Baratol such as analyses of barium and TNT.

11. Section 4.2.10.1, SWMU 06-005, Pit, (a.k.a. MDA F), Proposed Activities, page 50:

NMED Comment: There is some uncertainty concerning how the pit was abandoned and the depth of backfill used during abandonment. Add language to the discussion indicating that step-out sample locations may be advanced and sampled at depths greater than ten feet if field observations indicate the depth of backfill within the pit foot print exceeds eight feet. Additionally, discussion must be added to address what will be done with the timbers (e.g., sample and leave in place, remove and sample prior to disposal) that were used to line the pit if records indicate they were not removed during the abandonment process in 1952.

12. Section 4.2.10.2, SWMUs 06-007(a-e), (a.k.a. MDA F), Proposed Activities, page 51:

NMED Comment: The exact locations, shapes and depths of the SWMUs are not known. Include an estimate of the number of borings that will be placed "...around the boundaries of the disposal units..."

13. Section 4.2.12.3 SWMU 06-007(g), Area of Potential Soil Contamination, Proposed Activities, page 53:

NMED Comment: Include tritium in the analytical suite proposed for this SWMU.
TA-07

14. Section 4.3.1.1 SWMU 07-001(a), Inactive Firing Pit, Proposed Activities, page 55:

NMED Comment: Include Composition B in the explosive compounds analytical suite proposed for this SWMU. The Plan indicates pellets of unexploded plastic-bonded explosive (PBX) were found at the site in the late 1950s. It is NMED's understanding that PBX usually contains pentaerythritol tetranitrate (PETN), hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX, or cyclonite), octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX), or 2,4,6-trinitro-1,3,5-benzenetriamine (TATB) as the base explosive. In the event the base explosive included other explosives not listed in Table III-1 of the Order, the revised Plan must identify the compound(s) used and include the compound(s) in the explosives analytical suite for the site.

15. Section 4.3.1.2 SWMU 07-001(b), Inactive Firing Pit, Proposed Activities, pages 55 and 56:

NMED Comment: Include Composition B in the explosive compounds analytical suite proposed for this SWMU if site records indicate it may have been present at the site.

16. Section 4.3.1.3 SWMU 07-001(c), Inactive Firing Site, Proposed Activities, pages 56 and 57:

NMED Comment: Include Composition B in the explosive compounds analytical suite proposed for this SWMU if site records indicate it may have been present at the site.

17. Section 4.3.1.4 SWMU 07-001(d), Inactive Firing Site, Proposed Activities, page 57:

NMED Comment: Include Composition B in the explosive compounds analytical suite proposed for this SWMU if site records indicate it may have been present at the site. The Plan indicates the site may have been "...the location of a one-time 'celebratory shot' fired in 1945 after the Japanese surrender..." If records are available, confirm that the shot involved use of only conventional explosives.

TA-22

18. Section 4.4.1.3, Proposed Activities, SWMU 22-010(a), Septic System, pages 58 and 59:

NMED Comment: NMED noted that a 1997 soil sample (ID 22-06063) collected from a location west-northwest of the SWMU's outfall and topographically higher than the outfall contained elevated metal concentrations and some organic compounds. The sample location has not been proposed for re-sampling in the Plan as a proposed activity for this SWMU. However, the Plan also indicates that that location and several other topographically up- and down-slope locations (relative to the estimated outfall location) will be sampled as proposed for SWMUs 22-014(a), 22-014(b) and 22-015(a). Data from those locations will be helpful in assessing site risks for all four SWMUs.

19. Section 4.4.2.1, SWMU 22-014(a), Sump System, Description and History, page 59, Section 4.4.2.3, Proposed Activities, pages 59 and 60, and Section 8.1, References, page 82:

NMED Comments: The Plan describes the seepage pit at this SWMU as being four feet in diameter and 40 feet deep. The reference cited in Section 4.4.2.1 for these dimensions is shown as "(LANL 1993, **026028**, p. 5-25)." NMED is unable to verify this reference. The Plan identifies a similar reference in Section 8.1, page 82, listed as follows: "LANL (Los Alamos National Laboratory), August 1993. "RFI Work Plan for Operable Unit 1111," Los Alamos National Laboratory document LA-UR-93-2166, Los Alamos, New Mexico. (LANL, 1993, **026068**)". Page 5-25 of the second reference listed above includes a generic drawing (*Figure 5-7. Cross section of a dry well.*) of a dry well four feet in diameter with a depth of 40 feet (emphases added).

The Plan proposes placement of a soil boring adjacent to the seepage pit that would be advanced to a depth of 30 feet below the bottom of the seepage pit. Whether this proposed depth is appropriate or not depends in part on the accuracy of the dimensions shown on the generic drawing of the "Cross section of a dry well." The Plan indicates the sump system has been operating since 1985, implying it may have been constructed in 1985 or at some time prior to 1985. If as-built drawings are available for the seepage pit, dimensions of the pit from those drawings must be used to determine an appropriate depth for the proposed soil boring. The revised Plan must clarify the reference discrepancy discussed above and briefly summarize the Permittees' efforts to locate as-built plan sets for the seepage pit. Absent the availability of as-built drawings of the seepage pit, the Permittees must propose an alternate means of determining the actual depth of the pit.

The Plan indicates "...the seepage pit surface infrastructure [will be] removed and backfilled." The revised Plan must provide more detailed information concerning which parts of the pit will be removed and the anticipated depth and source(s) of backfill that will be used after infrastructure removal.

20. Section 4.4.4.3, SWMU 22-015(a), Seepage Pits, Proposed Activities, pages 62 and 63:

NMED Comment: Sample locations must be added to the right angle drain line bends located approximately 30 feet from the south and east sides of building 22-0091. Sampled intervals and analytical suites must be the same as those proposed for other sample locations along the drain line. Provide verification that the portion of the drain line located south of building 22-0091 (see Figure 4.4-12) and running below building (or former building) 22-0169 was not, and is not currently, connected to 22-0169. If the line has been or is connected to building 22-0169, additional sample locations must be placed at the inlets and outlets of those connections.

TA-40

21. Sections 4.5.1.1 and 4.5.1.3, SWMU 40-001(b), Septic System, Description and History and Proposed Activities, pages 64 and 65 and Figure 4.5-2, Proposed sampling locations at SWMU 40-001(b), page 188:

NMED Comments: The revised Plan must include more detailed information and discussion concerning the nature and extent of planned seepage pit infrastructure removal and indicate the anticipated depth and source(s) of backfill that will be used after infrastructure removal.

An inconsistency was noted concerning whether or not an outfall is or may be present; the second sentence of the first paragraph in Section 4.5.1.1 indicates the system includes an outfall, while language in the second paragraph of Section 4.5.1.3 indicates "The existence of an outfall from the drain field is not known...." Edit the figure or the text as needed for consistency.

The Plan proposes placement of soil borings adjacent to the seepage pits which would be advanced to a depth of 30 feet below the bottom of each seepage pit; however, the

depth(s) of the seepage pits is either not known or the information is not provided in the Plan. If as-built drawings are available for the seepage pits, the dimensions of the pits from those drawings must be used to determine an appropriate depth(s) for the proposed soil borings. Absent the availability of as-built drawings of the seepage pits, the Permittees must propose an alternate means of determining the actual depth of the pits.

Figure 4.5-2 shows two drain line segments entering/leaving building 40-0001 and two proposed borings are indicated where the line enters/leaves the building. The text in Section 4.5.1.3 indicates one boring will be placed "...from one location where it exits building 40-0001...." The revised Plan must clarify whether there are one or two lines entering/exiting the building. Additionally, if there are two lines entering the building, two additional borings must be placed at the 90 degree junction of the building lines with the main line running on the north side of the building, subject to underground utility constraints. If there is only one line entering the building, a single boring must be proposed at the 90 degree junction with the main drain line. The figure indicates a line segment (approximately 25 feet long) runs north (from the main line) to former building 40-0019. No sample location is proposed in the area where the line entered the former building. The revised Plan must include a boring location where the line entered the former building.

All additional required sample locations discussed in this comment must be sampled at the same depth intervals and for the same analytical suites as proposed for other portions of the drain line.

22. Section 4.5.3.3, AOC 40-007(e), Storage Area, page 67:

NMED Comment: The boring locations for this AOC may be appropriate as presented in the Plan. In the event one or more sides of building 40-0041 has features, such as doors or loading areas that might serve as favored, potential release routes from the building, one or more of the boring locations must be moved to areas most likely to have been impacted by historical site activities.

TA-59

23. AOC 59-004, Outfall, Sections 4.7.1.1, Description and History, page 68, 4.7.1.3, Proposed Activities, pages 68 and 69, and Figure 4.7-2, Proposed sampling locations at AOC 59-004, page 197:

NMED Comment: Additional discussions, along with appropriate figure revision(s), are needed to evaluate proposed sampling locations at this AOC. The text indicates the outfall received wastewater from building 59-0001 and cooling tower blowdown from building 59-0010. The figure shows a structure (illustrated as being a storm drain) that is approximately 210 feet long, running northwest to southeast approximately 30 feet from the southwest corner of building 59-0001 and approximately 300 feet west of building 59-0010. It is not clear from the text discussion or the figure illustrations how wastes from either building were routed for subsequent discharge to the associated outfall and additional sampling locations are needed to evaluate the route(s).

Based on discussions during a March 17, 2010 NMED site visit, NMED understands that the Permittees will review available engineering plans and drawings to determine the

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location(s) of waste lines that were used for routing wastes from buildings 59-001 and 59-0010 to the outfall and/or the storm drain shown on Figure 4.7-2. The proposed borings must be placed to evaluate potential contaminants below the transmission line(s) in areas where the line(s) exits the building(s), including areas indicating a change in piping direction so that soils below apparent pipe joints can be sufficiently evaluated as potential contaminant sources. The Permittees must add additional sample locations to areas of the waste transmission line(s) in order to characterize possible contaminants at the AOC. The Plan text indicates the outfall discharged to a 50 foot long, rock-lined, drainage channel which is not shown on the figure. If present, the channel (or former channel) must also be evaluated as a potential contaminant source by collection of soil samples from within and beneath the channel. The text also indicates two sample locations will be placed "...in the drainage downgradient of the outfall..." but the locations are not shown on the figure. Presumably, those locations will be placed somewhere south of five other down-slope locations which are shown on the figure. Alternatively, the Plan text may be revised to remove references to the two locations if the Permittees determine the locations are not needed to characterize the AOC.

Provide additional text discussions and edit the figure as needed to respond to this comment.

24. : Section 7.0, Schedule, page 78:

Permittees' Statement: "The scheduled notice date for NMED to approve this investigation work plan is February 28, 2010."

NMED Comment: The most recent public-noticed Master-Task Table (June 18, 2008) indicates the current notice date for the Plan is June 15, 2010. Revise the text to match the correct notice date for the Plan and revise the anticipated submittal date for the Twomile Canyon Aggregate Area investigation report as appropriate.

The Permittees must address these comments and submit a revised Plan by or before May 14, 2010. As part of the response letter that accompanies the revised Plan, the Permittees shall include a table that details where all revisions have been made to the revised Plan and that cross-references NMED's numbered comments. All submittals (including maps) must be in the form of two paper copies and one electronic copy in accordance with Section XI.A of the Order. The Permittees must submit a redline-strikeout version that includes all changes and edits to the Plan (electronic copy) with the response to this NOD.

Please contact Daniel Comeau at (505) 476-6043, if you have any questions.

Sincerely,



James P. Bearzi
Chief
Hazardous Waste Bureau

Messrs. Rael and Graham

March 24, 2010

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File: LANL, Investigation Work Plan for Twomile Canyon Aggregate Area (dated January 2010)

