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CERTIFIED MAIL - RETURN RECEIPT REQUESTED

March 4, 2008

David Gregory
Federal Project Director
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David McInroy
Remediation Services Deputy Project Director
Los Alamos National Laboratory
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RE: NOTICE OF DISAPPROVAL FOR THE SUPPLEMENTAL INVESTIGATION REPORT FOR CONSOLIDATED UNIT 21-018(a)-99, MATERIAL DISPOSAL AREA V, AT TECHNICAL AREA 21 LOS ALAMOS NATIONAL LABORATORY (LANL), EPA ID #NM0890010515 HWB-LANL-08-003

Dear Messrs. Gregory and McInroy:

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) *Supplemental Investigation Report for Consolidated Unit 21-018(a)-99, Material Disposal Area V, at Technical Area 21* (Report), dated February 2008 and referenced by LA-UR-08-0051/EP2008-0006. NMED has reviewed the Report and hereby issues this Notice of Disapproval (NOD).

Specific Comments

1. **Table 5.2-2, Results of Radionuclides Detected or Detected above BVs/FVs at the Area of Elevated Radioactivity, Consolidated Unit 21-018(a)-99, page 34:**

NMED Comment: Table 5.5-2 displays a concentration of 3.32 (J) for Thorium-228 in pre-excavation sample 21-600105. This concentration is above both the

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background value (BV) and the residential screening action level (SAL) for Thorium-228. The Permittees must explain why post-excavation samples were not analyzed for Thorium-228.

2. **Table 6.4-1, Comparison of 2006-2007 COPC Analytical Results for Area of Elevated Radioactivity, Consolidated Unit 21-018(a)-99, with 2005-2006 Data, pages 37 and 38:**

NMED Comment: Table 6.4-1 is confusing and appears to be a summary of Tables 5.2-1, 5.2-2, and 5.2-3. The Permittees must therefore remove Table 6.4-1 from the Report, or otherwise clarify the Tables.

3. **Appendix D, Section D-2.1, VOCs in Pore Gas Samples, page D-2:**

NMED Comment: The text includes a discussion of volatile organic compounds (VOCs) detected in vapor-phase samples, indicating that these VOCs were included in the risk assessment (Appendix H) and evaluated via the vapor intrusion pathway for inhalation in indoor air. Appendix H indicates that the inhalation of indoor air was not addressed. While Appendix H includes a comparison of maximum detected site concentrations for post-excavation samples to residential screening data, it should be noted that neither the New Mexico Soil Screening Levels (SSLs) nor the Region 6 Human Health Medium-Specific Screening Levels (HHMSSL) provide screening levels for inhalation of indoor air. This pathway should be evaluated using the post-excavation subsurface soil data using an appropriate model, such as the Johnson and Ettinger model, and the risks added to those calculated using the residential screening data. The Permittees must revise the risk assessment to include an assessment of inhalation of indoor air and update the cumulative risk/hazard if necessary.

In addition, as discussed in Appendix D (Subsurface Vapor Monitoring Plan), quarterly monitoring will be conducted to determine concentration trends in pore gas and the nature and extent of tritium contamination in this medium. The risk assessment in Appendix H concludes that Material Disposal Area (MDA) V meets the criteria for unrestricted (residential) land use. However, increasing tritium concentrations with depth suggests the existence of preferential pathways for relatively rapid downward transport of contaminants. NMED therefore cannot make a determination of "Corrective Action Complete" for MDA V until the extent of vapor-phase tritium and the associated migration pathways are defined, and the potential for an adverse effect on groundwater is evaluated. The Permittees must discuss how the results of this continued monitoring will be evaluated with respect to the risk assessment. The Permittees must address the potential for site controls, such as limiting the construction of any building in this area, to be placed on the post-excavation area of MDA V, which would be utilized until NMED determines that the vapor intrusion pathway will not cause undue risk via inhalation of indoor air.

4. **Appendix D, Section D-3.1, Monitoring Distribution and Frequency, page D-2 – D-3:**

NMED Comment: As stated in NMED's January 8, 2007 Notice of Disapproval (NOD) for the Investigation Report for MDA V, the Permittees have not defined the extent of vapor-phase tritium. The maximum concentration of vapor-phase tritium (132,100 pCi/L) at location 21-24524 in 2006 was at a depth of 380 feet. Therefore, monitoring tritium concentrations at borehole 21-02523 at depths ranging from approximately 50 to 250 feet will not accomplish the objective of defining the vertical extent of vapor-phase tritium.

The Permittees must revise the Vapor-Monitoring Plan (Plan) to include drilling and installation of an additional vapor-monitoring well within 10 feet of borehole location 21-24524. The primary objective of this borehole will be to determine the vertical extent of vapor-phase tritium contamination at MDA V. NMED may also require use of this vapor-monitoring well for the future TA-21-wide vapor-monitoring network. The Permittees must revise sections D-3.1 (Monitoring Distribution and Frequency), D-3.2 (Monitoring Methods), and D-3.3 (Reporting) to include drilling and sampling of this additional well.

5. **Appendix H, Section H-3.2, Transport Pathways, page H-4 and Section H-3.3, Environmental Fate and Transport, pages H-5 through H-7:**

NMED Comment: The Permittees provide a detailed discussion of chemical-specific transport parameters in an effort to verify that the concentrations of residual contamination at MDA V are not likely to migrate to groundwater. The text indicates that saturation is the primary driver for migration to groundwater. While the justification for exclusion of the migration to groundwater pathway is based on the absence of saturation, it should be noted that other factors, such as speciation and pH, are important.

It is not clear why comparison of site data to the soil-to-groundwater SSLs based upon a dilution attenuation factor (DAF) of 20 was not applied. As part of this review, the SSLs and HHMSSLs were compared to the maximum detected concentrations for each chemical of potential concern (COPC). Based upon the discussion presented in Section H-3.3, as well as an independent comparison to the SSLs and HHMSSLs, NMED concurs with the conclusions presented in this section. However, for future reports, comparison to the SSLs is required.

6. **Appendix H, Section H-3.3, Environmental Fate and Transport, pages H-5 and H-6:**

NMED Comment: The partition coefficients (Kd) were selected based upon a default pH of 6.8. However, as noted on page H-6, the range of pH for the area of elevated radioactivity was 7.3 to 8.9, with the average pH being greater than 7.5. Given the relatively high pH for MDA V, it is not clear why Kd values were not selected for a default pH of 8.0. This might provide for a more realistic evaluation of fate and transport. Although using Kds based upon a pH would not change the conclusions of the report, the Permittees must discuss the rationale for using Kds based on a pH of 6.8 in the revised risk assessment. The Permittees must also provide clarification whether or not removal of soil containing elevated radioactivity resulted in residual soils with a lower pH (closer to 6.8).

7. **Appendix H, Section H-4.1, Screening Evaluation, page H-8:**

NMED Comment: See specific comment # 3.

8. **Appendix H, Table H-3.3-1, page H-23:**

NMED Comment: The Kd for chromium in this section is representative of trivalent chromium. However, the screening level for chromium (see Table H-4.1-1) is based upon total chromium (trivalent and hexavalent). The Technical Background Document (reference EPA 2006 092513) states that the presence of hexavalent chromium will lower the Kd and, if a mixture is assumed or if the speciation of chromium is unknown, the Kd for hexavalent chromium should be used. Given that the SSL for total chromium was applied, it appears that there is some uncertainty pertaining to the speciation of chromium. The Permittees must provide an explanation for using the Kd for trivalent chromium rather than the Kd for hexavalent chromium.

9. **Appendix H, Table H-3.3-2, page H-24:**

NMED Comment: The table indicates that a Kd is not available for tritium. While it is typically assumed that tritium would exist as tritiated water, the listed source for the radionuclide Kds (EPA 1996 064708) does provide a Kd datum for tritium (9.9). The Permittees must discuss why this Kd value was not used.

The Permittees must address all comments and submit a revised Report by April 30, 2008. A revised Vapor-Monitoring Plan must also be submitted by April 30, 2008 as a separate document. The Permittees shall include a table that details where all revisions have been made to the Vapor-Monitoring Plan and revised Report 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. In addition, the Permittees shall submit a redline-strikeout version that includes all changes and edits to the Vapor-Monitoring Plan and revised Report (electronic copy) with the response to this NOD.

Please contact Kathryn Roberts at (505) 476-6041 should you have any questions.

Sincerely,

James P. Bearzi
Chief
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cc:

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file: Reading and LANL'08, TA-21 (Consolidated Unit 21-018(a)-99)