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RETURN RECEIPT REQUESTED

January 8, 2007

David Gregory
Federal Project Director
Los Alamos Site Office
Department of Energy
528 35th Street, Mail Stop A316
Los Alamos, NM 87544

David McInroy
Remediation Services Deputy Project Director
Los Alamos National Laboratory
P.O. Box 1663, MS M992
Los Alamos, NM 87545

RE: NOTICE OF DISAPPROVAL
INVESTIGATION REPORT FOR CONSOLIDATED UNIT 21-018(a)-99,
MATERIAL DISPOSAL AREA V, AT TECHNICAL AREA 21,
LOS ALAMOS NATIONAL LABORATORY,
EPA ID #NM0890010515
HWB-LANL-06-021

Dear Messrs. Gregory and McInroy:

The New Mexico Environment Department (NMED) is in receipt of the *Investigation Report for Consolidated Unit 21-018(a)-99, Material Disposal Area V, at Technical Area 21* (Report), referenced by LA-UR-06-6609/ER2006-0436 and dated October 2006. NMED has reviewed this document and hereby issues this Notice of Disapproval (NOD).

Specific Comments

1) **Section 5.3 SWMU 21-013(b) and AOC 21-013(g), Slope Debris Removal, page 27, paragraph 5:**

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Permittees' Statement: "This final slope grading was performed after grid sampling was completed (section 3.4.1) but before the spot removals, described above, were conducted. Because location 21-24650, where benzo(a)anthracene exceeded the residential SSL, is situated on the upper portion of the western half of the slope, it is possible that it was affected by the regrading. The extent to which location 21-24650 was affected by the regrading, and therefore the efficacy of the removal action, is not known."

NMED Comment: The Permittees attempted to remove the soil contaminated above residential SSLs; however, the removal occurred after regrading of the slope. The Permittees did not complete any additional sampling following the removal action and therefore have no way of knowing whether the contaminated soil in question was ever actually removed. NMED cannot grant a "Corrective Action Complete Without Controls" if the residential cleanup goals were not achieved. The Permittees must complete additional surface sampling in the area where benzo(a)anthracene was originally detected to confirm that the residential SSLs have been achieved. In the response to NOD, the Permittees must propose for NMED review and approval, locations and depths for the additional sampling.

2) Section 9.0 Recommendations, page 34:

Permittees' Statement: "Based on the results, no restrictions on future land use are necessary. Neither additional corrective action nor further characterization is warranted at Consolidated Unit 21-018(a)-99. The Laboratory recommends that the four SWMUs and one AOC within the Consolidated Unit 21-018(a)-99 boundary [SWMU 21-018(a), 21-018(b), 21-013(b), 21-023(c), and AOC 21-013(g)] be designated as "Corrective Action Complete without Controls"."

NMED Comment: Due to potentially unsuccessful spot removal of benzo(a)anthracene at SWMU 21-013(b) and AOC 21-013(g) and the lack of any evaluation of vapor intrusion as an exposure pathway, NMED cannot grant a "Corrective Action Complete without Controls" for MDA V. Once the risk assessment has been revised to include vapor intrusion, and additional sampling is completed on the slope to confirm that residential SSLs have been achieved, the Permittees may resubmit their request for a "Corrective Action Complete without Controls" designation for MDA V.

3) Section 8.1.1 SWMUs 21-018(a) and 21-018(b), page 31:

Permittees' Statement: "The results of sampling indicate that the vertical and lateral extent of contamination of inorganic chemicals, radionuclides, and organic chemicals have been defined."

NMED Comment: NMED concurs that the lateral and vertical extent of inorganic and organic contamination is defined; however, the vertical extent of radionuclides is not defined, specifically vapor phase tritium. In the second round of pore-gas sampling (2006) at MDA V, tritium was detected in borehole 21-24524 (BH-1) at a concentration of 132,100 pico-curies per liter (pCi/L) at a depth of 379-380 feet -- 2 times higher than the concentration of 64,700 pCi/L reported at a

depth of 14-15 feet in the same borehole. Similar conditions were observed in borehole 21-24538 (BH-11), where tritium was detected at a concentration of 1500 pCi/L at a depth of 14-15 feet and 17,400 pCi/L at a depth of 54-55 feet. An increase in tritium concentrations with depth suggests the likelihood of preferential pathways for downward transport of contaminants beneath the site that may result in more rapid contaminant transport toward the regional water table. The Permittees must therefore return to borehole BH-1 or advance a new borehole at the same location and define the extent of vapor-phase VOC and tritium contamination. The Permittees must collect a pore-gas sample in the Cerro Toledo interval (310 feet to 360 feet) and at the depth of the deepest detected contamination in the original borehole (380 feet), in addition to defining the extent. The results of the additional pore-gas sampling must be included in the revised Report.

4) Figure 7.6-4, Pore-gas tritium detected in borehole locations collected in 2006 Investigation at Consolidated Unit 21-018(a)-99, page 55:

NMED Comment: Figure 7.6-4 shows a TD of 55 feet at borehole location 21-24538 (BH-11); however, the figure also shows a tritium pore-gas sample was obtained at 84-85 feet. Additionally, Table 3.1-1 provides a summary of samples collected in each borehole and the deepest sample obtained at BH-11 was from 53-55 feet. NMED assumes that this is an editorial error (54-55 feet, rather than 84-85 feet), but the Permittees must nevertheless explain this discrepancy.

5) Section B-5.1.2, Radionuclides, page B-15, paragraph 3:

Permittees' Statement: "A sample was collected for analysis of radionuclides and inorganic chemicals, but as of the publication of this report, the laboratory data are not available for review. Further investigation and, if necessary, remediation of this area will be undertaken as part of the DP Aggregate Investigation."

NMED Comment: NMED concurs that any additional investigation or remediation of the area of elevated radioactivity (south of location 21-02523 and north of absorption bed 3) will be addressed under the DP Site Aggregate Area Investigation. However, NMED cannot grant a "Corrective Action Complete without Controls" until the residential SSLs/SALs have been achieved. Also see Comment # 2.

6) Section H-3.1, Receptors and Exposure Pathways, page H-6, paragraph 2:

Permittees' Statement: "Pathways from subsurface contamination to potential human receptors are complete only if contaminated soil or tuff is excavated and brought to the surface."

NMED Comment: Soil pore gas data were not considered in the identification of potential exposure pathways. No justification is provided for excluding the vapor intrusion pathway. Several VOCs were detected in pore gas at SWMUs 21-018(a) and 21-018(b) (See Table 2.5-1

Summary of COPCs at SWMUs 21-018(a) and 21-018(b) by Media, on page B-108 and -109 of Appendix B), indicating vapor intrusion to be a potentially complete exposure pathway. It is possible to model pore gas data and evaluate the vapor intrusion pathway for the migration of VOCs from pore gas into buildings. The "vapor migration into indoor air" pathway should be identified as a complete exposure route and evaluated using available guidance, such as USEPA's *Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils (Subsurface Soil Vapor Intrusion Guidance)* EPA 530-F-02-052, Office of Solid Waste and Emergency Response, Washington, D. C. This guidance provides default shallow and deep soil gas screening levels that are protective of indoor air. In addition, the guidance references the use of a spreadsheet model, such as the Johnson and Ettinger model. The Permittees must provide additional evidence for determining that the pore gas data are not applicable to the risk assessment as a source for indirect exposure via inhalation, or the data should be used in a quantitative evaluation of this pathway.

7) Section H-3.3, Environmental Fate and Transport, Inorganic Chemicals, page H-8, paragraph 1:

Permittees' Statement: "Lithium was only analyzed for in three samples, the concentrations detected are probably naturally occurring levels, and its extent was defined."

NMED Comment: Generalized assertions cannot be used to exclude chemicals as representative of representative of a release. Rather, specific references to background comparison tables or figures are required. While supporting information for contaminants is provided throughout the report, this information is not provided within Appendix H. The Permittees must revise the human health screening assessment to substantiate the exclusion of specific inorganics and radionuclides as constituents of potential concern (COPCs).

8) Section H-4.2.2, Exposure Assessment, Similarity to Background, page H-18:

NMED Comment: Throughout the human health risk screening assessment, arsenic is highlighted as the primary risk driver for carcinogenic risk (*i.e.*, contributing greater than 70% of the carcinogenic risk). However, the uncertainty analysis indicates that arsenic is "similar to background." This conclusion is not substantiated by citations or references to relevant sections in the report, which demonstrate that the arsenic concentrations are not significantly different from background. While arsenic is likely to be representative of background conditions, a reference to the relevant sections in the report that verify this conclusion must be provided. The Permittees must revise the text where appropriate.

9) Section H-5.4.6, Population Area Use Factors, page H-25:

Permittees' Statement: "If the maximum detected concentration is used rather than the 95% UCL (1.51 mg/kg), the HQs for the deer mouse and shrew are approximately 0.5 and 0.7, respectively."

NMED Comment: This statement indicates that the ecological screening assessment utilized the 95% upper confidence level of the mean (UCL95), even if the UCL95 was higher than the maximum concentration. Standard risk assessment practice (USEPA, 2002) uses the lower of the UCL95 or maximum concentration, if adequate samples have been collected to estimate a population mean. The approach taken was more conservative. However, in future risk assessments, the maximum concentration should be used if the UCL95 is predicted to be higher than the maximum concentration when adequate samples are collected to estimate a population mean.

10) Figure H-3.1-1, Conceptual site model flow diagram for Consolidated Unit 21-018(a)-99, page H-33:

NMED Comment: The soil pore gas data indicate detections of a number of volatile organic compounds (VOCs). However, the conceptual side model does not address the presence of vapors in the subsurface as a potential source contributing to the vapor intrusion exposure pathway. The Permittees must revise the figure to include inhalation exposure from subsurface vapors and revise the text to include rationale for including/excluding this pathway from further analyses.

The Permittees must address all comments and submit a response to this NOD within thirty (30) days of receipt of this letter. As part of the response, the Permittees must propose for NMED review and approval a submittal date for the revised report, which must include the results of the additional work required by this NOD. 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.

Should you have any questions, please contact Kathryn Chamberlain at (505) 476-6046.

Sincerely,

James P. Bearzi
Chief
Hazardous Waste Bureau

JPB:kmc

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file: Reading and [redacted]
013(b), AOC 21-013(g), and 21-023(c))