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CERTIFIED MAIL - RETURN RECEIPT REQUESTED

June 27, 2008

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RE: NOTICE OF DISAPPROVAL
INVESTIGATION REPORT FOR PUEBLO CANYON AGGREGATE AREA
LOS ALAMOS NATIONAL LABORATORY
EPA ID #NM0890010515
HWB-LANL-08-009

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) *Investigation Report for Pueblo Canyon Aggregate Area* (Report), dated March 2008 and referenced by LA-UR-08-1853/EP2008-0115. NMED has reviewed the Report and hereby issues this Notice of Disapproval (NOD).

General Comments:

1. The Permittees conducted human health risk screening assessments for all sites included in the Report. Various risk scenarios (e.g., residential, industrial and recreational) were evaluated for each of the solid waste management units (SWMUs), areas of concern (AOCs), and Consolidated Units (CUs).

The rationale used to determine where industrial risk was evaluated is unclear from review of the information provided in the site histories (Section 2.0) and Appendix H (Risk Assessments). The

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industrial scenario is essentially comparable to an evaluation of an office worker, with limited exposure to site contaminants, as only soil up to a depth of one foot was included in the evaluation.

Given the mixed use of the areas, it is plausible to assume that re-development of most of the areas could occur. Thus, it is not clear why a construction scenario, with exposure to soil up to ten feet below ground surface (bgs), was not evaluated over the office worker. The construction scenario must be evaluated at all sites as the more realistic scenario.

Revise the report to include the decision criteria used to determine where an industrial (office) worker was evaluated. In addition, revise the risk assessment to address site risks associated with a construction (intrusive) scenario.

Specific Comments:

1. **Section 8.1.1, SWMU 00-018(a), Sludge Bed WWTP, Pueblo Canyon, Nature and Extent, page 41:**

Permittees' Statement: "The lateral and vertical extent for inorganic, radionuclide, and organic [chemicals of potential concern] COPCs are defined for SWMU 00-018(a)..."

NMED Comment: Although the site investigation was generally conducted in accordance with the approved May 2005 Pueblo Canyon Aggregate Area Work Plan (LA-UR-05-2366, ER2005-0119, [Plan]), contaminant evaluation of the Wastewater Treatment Plant (WWTP) buildings and other site structures, including the central sludge bed, was not addressed in the Plan.

In Specific Comment 4 of NMED's July 26, 2005 Notice of Disapproval (NOD) (HWB-LANL-05-006) for the Plan, the Permittees were directed to collect one sample of sludge and one sample of the underlying tuff from the western-most sludge bed to evaluate potential vertical contaminant migration below the sludge bed. Table 3.9-2, page 157, of the Report indicates two samples and a duplicate sample were collected from the west sludge bed (location ID 00-25532). All samples were described as being "fill". This implies that sludge and tuff were not sampled from the west sludge bed and it is unclear what the nature of the sampled fill was.

According to the Report (Section 2.1.1, first paragraph, page 3), Los Alamos County (County) assumed control of the plant in the 1960s and decommissioned the plant in 1991 and 1992. At the time the Report was submitted, the plant structures still existed and remained connected to the main County sewer system; wastewater bypassed the plant structures and pipelines.

During a June 19, 2008 site visit, NMED noted that the decommissioned WWTP structures and sludge beds were in the process of being dismantled and demolished by a County contractor. The Permittees were not notified by the County that the site was being dismantled and that the SWMU was being disturbed. At the time of the site visit, the sludge beds had been removed and most of

most of the plant structures had been removed or were in the process of being removed. The remains of the sludge digestion tank still contained liquids during the site visit. The County's demolition contractor indicated that below grade steel and concrete structures would be removed to a depth of three feet bgs and disposed offsite.

In light of the site activities and changed conditions at the SWMU discussed above, the Permittees must submit one or more site figures showing the locations of the former WWTP underground piping and associated control valves and structures. The Permittees must review underground piping layouts and propose additional sampling locations to determine potential impacts on undisturbed soil and tuff beneath piping, valves and other structures that may be contaminant source areas. The Permittees must submit a work plan that provides for the collection of representative samples of the soil-tuff interface and the underlying tuff from (two locations each) in the former west and central sludge beds. The work plan must include provision for collection and analyses of a liquid sample from the sludge digestion tank. The work plan must include provisions for sampling the undisturbed soil, soil-tuff interface and underlying tuff beneath the former trickling filter tank (four sample locations), the former sludge digestion tank (one sample location), the primary settling tank (one sample location) and the former final settling tank (one sample location). In the event concrete flooring remains beneath one or more of the former tanks after demolition activities are completed, the Permittees may propose use of angled borings or other measures to assess undisturbed soil below the concrete. All collected samples must be analyzed for the same chemical parameters originally proposed for the former west sludge bed location (ID 00-25532).

2. Figures 3.9-2, 7.4-1, 7.4-2 and 7.4-3, pages 66, 85, 86 and 87:

NMED Comment: Based on observations made during the June 19, 2008 site visit, the figures do not reflect the current configuration of the existing sludge beds at AOC 00-018(b) (Sludge Bed WWTP, Bayo Canyon). Additionally, sometime after the Report was submitted, the County decided to deactivate the Bayo Canyon WWTP.

The affected figures must be revised to reflect current site conditions with respect to configuration of the site sludge beds. The Report text must be revised to reflect current and planned site operations. The Permittees must submit a letter to the appropriate County authorities informing them that the site remains an AOC and that the Permittees must be notified in writing prior to commencing any activities that may or will disturb this or other AOCs or SWMUs. The Permittees response to the NOD must include a signed copy of the Permittees' letter to the County.

The Permittees must submit a work plan for NMED approval no less than 60 days prior to the time of demolition of the site.

3. Section 8.3.1, AOC 00-030(d), Septic System, Nature and Extent and Section 8.3.2, Human Health Risk Screening, page 43:

Permittees' Statements: "The lateral and vertical extent for inorganic, radionuclide, and organic COPCs are defined for AOC 00-030(d)..." and, "The total excess cancer risk for the residential scenario is 6 x 10^{-5} which is above the NMED target risk level of 1 x 10^{-5}..."

NMED's Comment: The concentrations of several polycyclic aromatic hydrocarbons (PAHs) are elevated at sample location ID 00-04890 which was collected within the assumed septic tank basin area at a depth of 7.0-7.8 feet bgs. As indicated on Figure 7.5-3, page 90, and in Table 7.5-3, page 217, the concentration of benzo(a)pyrene exceeds the current NMED residential soil screening level for the compound. Since deeper sample intervals were not collected at this location, the vertical extent of PAH contamination has not been determined. However, a nearby sample (ID 00-04891) obtained at a similar depth (7.0-7.6 feet bgs) indicated much lower PAH concentrations and samples obtained adjacent to (ID 00-25491) the basin or angled beneath the basin (ID 00-25490) did not contain detectable concentrations of PAHs, indicating the lateral extent of PAHs within the basin is very limited. See also Specific Comment 14 below.

4. Section 8.9.1, AOC 00-030(n), Septic System, Nature and Extent, page 48:

Permittees' Statement: "The lateral and vertical extent for inorganic, radionuclide, and organic COPCs are defined for AOC 00-030(n)..."

NMED Comment: Arsenic exceeds the NMED residential soil screening level in the 4.5-5.0 foot sample interval at location ID 00-04782. Since deeper sample interval data is not available, the vertical extent of arsenic has not been determined at this location. However, nearby samples at comparable (or deeper) depths do not indicate a significant site problem with arsenic. No response is required.

5. Section 8.11.1, AOC 00-030(p), Septic System, Nature and Extent, page 50:

Permittees' Statement: "The lateral and vertical extents for all inorganic, radionuclide, and organic COPCs are defined for AOC 00-030(p)."

NMED Comment: The sample collected farthest down slope from the AOC (ID 00-25517) contained arsenic at concentrations above background values and above NMED residential soil screening levels. Although arsenic was not detected in the deepest sample increment at this location, the sample location was closest to the sewer line compared to the locations corresponding to sample IDs 00-25515 and 00-25516. The Permittees must submit a plan for collection of an additional sample immediately down slope from location ID 00-25517 to verify that the horizontal and vertical extent has been defined with respect to the canyon area.

6. Section 9.2.1, Sites Recommended for Additional Characterization or Remediation, AOC 00-030(eS), Septic System:

NMED Comment: The Permittees have recommended additional evaluation of the site at location ID 00-25486 by collecting two deeper samples for analyses of Target Analyte List (TAL) metals. NMED concurs with the Permittees' recommendation. The Permittees must submit a plan outlining the proposed activities required to complete the evaluation.

7. Section 9.2.2, Sites Recommended for Additional Characterization or Remediation, AOC 00-030(h), Septic System, last paragraph :

NMED Comment: The Permittees have recommended a limited removal action at the site to target PAHs and other contributors to excess cancer risk in the former tank and outfall areas. NMED concurs with the Permittees' recommendation. The Permittees must submit a plan outlining the proposed removal activities, associated confirmation sampling, and re-evaluation of the site risks.

8. Section 9.2.2, Sites Recommended for Additional Characterization or Remediation, SWMU 31-001, Septic System:

NMED Comment: The Permittees have recommended additional evaluation of the site at location ID 31-01008 by collecting two deeper samples for analyses of TAL metals. NMED concurs with the Permittees' recommendation. The Permittees must submit a plan outlining the proposed activities required to complete the evaluation.

9. Section 9.2.2, Sites Recommended for Additional Characterization or Remediation, Consolidated Unit 45-001-00, SWMU 45-004, Sanitary Sewer Emergency Bypass:

NMED Comment: The Permittees have recommended additional evaluation of the site at location ID 31-01008 by collecting two deeper samples for analyses of TAL metals. NMED concurs with the Permittees' recommendation since implementation of the recommendation will provide for determination of the vertical extent of contamination at that location. However, the Permittees must also propose two additional sampling locations, one to be located farther west and down slope of ID 31-01008 and one to be located east and up slope of ID 31-01008. These locations will assist in further delineation of the lateral and vertical extent of contamination at SWMU 45-004. The Permittees must submit a plan outlining the proposed activities required to complete the evaluation.

10. Figures 7.6-1, 7.6-2, 7.6-3 and Tables 7.6-1, 7.6-3, AOC 00-030(eN), Septic System

NMED Comment: Sample ID discrepancies were noted between the site figures and data summary tables. For example, Table 7.6-1 lists sample IDs of PU-60137 and PU-60138 while Figure 7.6-1 shows sample IDs PU-601317 and PU-601318. Review the figures and tables, edit as

as needed, and submit corrected versions of each.

11. Appendix H, Section H-3.1, Receptors and Exposure Pathways, page H-5.

NMED Comment: Ecological risk was evaluated for exposure to residual contamination at each site unless the site was paved. While an asphalt surface acts as an engineering control to limit or prevent ecological exposure to potential contamination underlying the paved surface, it is uncertain whether the pavement will remain in place at any given site in the future.

Either address the ecological risk posed by underlying soil or provide controls to ensure that the sites will remain paved or indicate other measures that will be taken to protect ecological receptors from underlying soil.

12. Appendix H, Section H-4.1, Soil Screening Levels, page H-11.

NMED Comment: The second sentence should indicate that soil screening levels were adjusted from a risk level of 10^{-6}, not 10^{-5}. Correct the error and submit the corrected revision.

13. Appendix H, Section H-4.2.2, AOC 00-018(b), page H-12.

NMED Comment: The second sentence should refer to the industrial scenario and not the recreational scenario. Correct the error and submit the corrected revision.

14. Appendix H, Section H-4.3.2, Exposure Assessment, AOC 00-030(d), page H-18.

NMED Comment: The total excess cancer risk for the residential scenario was exceeded due to the use of the maximum detected concentration for four polycyclic aromatic hydrocarbons (PAHs). When average concentrations were applied for these PAHs, the total cancer risk dropped to within acceptable limits. However, the use of the mean concentration is not typical practice and is inconsistent with EPA guidance (OSWER 9285.6-10); rather, an estimate of the mean (upper confidence level of the mean) is preferred. It is noted that in reviewing the data for these PAHs provided in Table B-4.3-1, insufficient data were available to calculate an upper confidence level of the mean (UCL) and further, when data were input into the ProUCL software, the maximum detected values were indicated to be outliers. The maximum detected concentrations were all from approximately 7-7.5 feet bgs in the former septic tank area. As deeper samples within the septic tank were not collected, there is uncertainty whether the vertical extent of contamination in this area has been delineated,. contradicting the conclusion presented in Section B-17.4.3 (page B-41) of the report, that the vertical extent of contamination has been determined across the site. The Permittees must determine whether deeper samples are or are not necessary to determine the vertical extent of contamination in the septic tank area. In addition, based upon the detections above residential risk-based levels with depth in the septic tank, it does not appear that the site meets the criteria for residential release with no restrictions. See also Specific Comment three above

15. Appendix H, Section H-4.3.2, Exposure Assessment, AOC 00-030(h), page H-19.

NMED Comment: The total excess cancer risk is above the target risk level when calculated using the maximum detected concentrations as exposure point concentrations (EPCs). However, when average concentrations were applied, the target level was still exceeded. Even using average concentrations (see above comment concerning use of average over an UCL), sufficient justification has not been provided to demonstrate that residual contamination in this area is acceptable for free/residential release. An industrial risk assessment should be conducted (industrial and construction scenario) and if risk limits allow, based on these analyses, restrictions limiting use to industrial use only will be placed on this site.

16. Appendix H, Section H-5.4.4, Comparison with Background Concentrations, page H-34.

NMED Comment: For each of the areas addressed under this investigation, justification was provided for exclusion of chemical of potential ecological concern (COPEC) from additional evaluation in the ecological risk assessments based upon a relative comparison of the EPCs to background concentrations for both soil and tuff. The concern with this approach is that background metals concentrations between soil and tuff may vary greatly. By not distinguishing whether the potentially elevated concentration is associated with a sample collected from soil or tuff, one of the media could potentially be elevated with respect to background and require additional analysis. For SWMU 00-018(a), barium must be retained as a COPEC and additional analysis of whether there is unacceptable risk must be evaluated. Revise Section H-5.4.4 to include a medium-specific background evaluation of COPECs detected in soil and tuff at each site.

17. Appendix H, Table H-5.3-1, Ecological Screening Levels for Terrestrial Receptors, pages H-213 – H-217.

NMED Comment: The Los Alamos Ecorisk database (release 2.2) was the only source used for obtaining ecological screening levels (ESLs) used in the ecological screening assessment. However, several chemicals are excluded from evaluation, for which toxicity data and screening levels are available in literature and on the Environmental Protection Agency's (EPA) Integration Risk Information System (IRIS) database. As a limited example, toxicological data are available for 4,4'-DDD, nitrate, ethylbenzene, isopropylbenzene, styrene, aldrin, and endosulfan sulfate. Exclusion of these chemicals in Ecorisk may be a function of the database being over three years old. Revise the ESLs to include a more complete assessment of toxicological data, derivation of ESLs and associated risks.

18. Appendix H, Tables H-5.4-1 through H-5.4-12, pages H-252 - H-257.

NMED Comment: These tables provide a comparison of the 95% UCLs to the background reference values. Background concentrations are represented by the upper tolerance level (UTL) (refer to EM/ER 98-372). As described in the EPA supplemental guidance to Risk Assessment Guidance for Superfund (Calculating the Concentration Term, Vol. 1, No. 1), exposure to site contaminants over a long period of time using the arithmetic average concentration is most representative. As individuals are assumed to move randomly across an exposure area over time, the spatially averaged soil concentration should be used to estimate the true average contaminant concentration contacted over time. Therefore, the 95% UCL is used for comparison to a screening level that is protective of soil ingestion/inhalation. However, the 95% UTL represents a value that 95% of the population will fall below with 95% confidence. Only individual data points from the site should be compared to the background UTL; developing a statistically-derived, averaged value (i.e., 95% UCL) from site data for comparison to the background UTL is not acceptable. Thus, comparing the EPCs, which are 95% UCLs, to background UTLs is not acceptable risk assessment practice.

Revise the risk assessment for each site where individual concentrations exceed the background UTL, and provide additional lines of evidence to justify exclusion of constituents as COPCs. For these sites, additional site attribution analyses using non-parametric statistics may be warranted.

The Permittees must address all comments and submit a revised Report by July 25, 2008. As part of the response letter that accompanies the revised Report, the Permittees shall include a table that details where all revisions have been made to the 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. The Permittees must submit a redline-strikeout version that includes all changes and edits to the Report (electronic copy) with the response to this NOD. Additionally, the Permittees must develop the work plans required in Specific Comments one, five, six, seven, eight and nine. The plans must be submitted on or before October 24, 2008.

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

Sincerely,

James P. Bearzi
Chief
Hazardous Waste Bureau

cc:

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