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CERTIFIED MAIL – RETURN RECEIPT REQUESTED

January 28, 2009

David Gregory
Federal Project Director
Los Alamos Site Office
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David McInroy
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Los Alamos National Security, L.L.C.
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Los Alamos, NM 87545

RE: NOTICE OF DISAPPROVAL FOR CORRECTIVE MEASURES EVALUATION REPORT FOR MATERIAL DISPOSAL AREA A, SOLID WASTE MANAGEMENT UNIT 21-014, AT TECHNICAL AREA 21 LOS ALAMOS NATIONAL LABORATORY (LANL), EPA ID #NM0890010515 HWB-LANL-08-023

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) *Corrective Measures Evaluation Report for Material Disposal Area A, Solid Waste Management Unit 21-014, at Technical Area 21* (Report), dated September 2008 and referenced by LA-UR-08-5520/EP2008-0448. NMED has reviewed the Report and hereby issues this Notice of Disapproval (NOD).

General Comments:

1. The Permittees must evaluate viable remediation technologies based on the criteria set out in Section VII of the March 1, 2005 Consent Order (Order) for their suitability for use at Material Disposal Area (MDA) A and ensure all technologies are evaluated equally. In Table 6.0-1, *Results of Technology Threshold Screening for the MDA A Corrective Measure*, the Permittees assess the remediation technologies using the threshold criteria and indicate that most of the technologies pass. However, in Section 6.1, *Technologies Evaluation*, the Permittees dismiss many of the technologies that originally passed the threshold criteria. For example, in situ vitrification meets all of the criteria listed in Table 6.0-1; however, the

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Permittees state in Section 6.1.1.3. *In Situ Vitrification*, that it is not a suitable corrective measure alternative for MDA A. The Permittees must ensure that their conclusions are consistent throughout the Report. The Permittees' evaluation process and basis for eliminating technologies is not well explained or supported. The Permittees must revise the Report to provide well-supported evaluations of the technologies and support their decisions.

2. Alternatives 1 and 2 include leaving the waste in place with ET covers. In the assessment of these alternatives, the Permittees do not discuss the disadvantages of leaving waste in place. The Permittees must revise the Report to include discussion of both the advantages and disadvantages of leaving waste in place for both Alternative 1 and Alternative 2.

3. The Permittees do not adequately discuss the technologies for monitoring, landfill covers, and source removal (pages 31-32, Sections 6.2.3, 6.2.4, and 6.2.5). Monitoring technology should include vapor monitoring. The Permittees discuss which cover would be the best cover, but do not discuss the cover technologies. In the discussion of the source removal technology, the Permittees discuss the geometry and volume of the pits, but do not discuss technology for the source removal. The Permittees must revise the Report to discuss the technologies related to monitoring, landfill covers, and source removal in greater detail.

4. For Alternative 3, complete removal of the waste, the Permittees must propose confirmation sampling following excavation activities. Excavated trenches must be sampled at specific intervals. For example, at MDA B the Permittees are using a systematic-random sampling method along with biased sampling of intervals with evidence of contamination based on field-screening, visual staining, the presence of fractures, or elevated moisture content. The Permittees must revise the Report to include a similar confirmation sampling routine as part of this alternative.

5. Investigation data reveal that the concentrations of several contaminants increase in concentration with depth. For example, toluene increases with depth in borehole (BH) 21-26485; tritium in BH 21-26595 and BH 21-26596; butanone [2-] in BH 21-26484, BH 21-26590; acetone in BH 21-26480, BH 21-26481, BH 21-26482, BH 21-26484, BH 21-26485, BH 21-26588, BH 21-26590, BH 21-26593, BH 21-26595, BH 21-26597. Most of the concentrations, except tritium, are not above industrial screening levels; however, the Permittees must revise the Report to address the migration of contaminants in the subsurface, potential contaminant transport pathways, and vapor monitoring for VOCs.

6. The Permittees state in Table 10.0-1, *Consent Order Milestones*, that installation of a permanent vapor monitoring well at BH-08 is a milestone activity. The Permittees do not mention vapor monitoring as part of any of the corrective measures alternatives. The Permittees repeatedly state that volatile organic compounds (VOCs) are not a concern at MDA A. However, the levels of some VOCs increase with depth, indicating movement of the VOCs in the subsurface. Also, tritium detected in the subsurface at MDA A is a potential source of contamination. The Permittees must propose vapor monitoring in addition to the proposed neutron probes as part of any corrective measures alternative. The Permittees must revise the Report to include vapor monitoring for VOCs and tritium as part of each corrective measures alternative. The vapor monitoring must consist of a monitoring network that includes existing BH-08. The permanent vapor monitoring well at BH-08 is scheduled to be installed by June 2, 2009 with quarterly monitoring continuing after the permanent well is

installed. The Permittees must follow the reporting procedures described in accordance with Section XI.D of the Order when reporting the ongoing vapor monitoring at BH-08. The Permittees must also include a cost estimate for the vapor monitoring for each of the alternatives.

7. Table 2.5-12, *Summary of VOCs and Tritium Detected in Pore Gas at MDA A*, lists the contaminant concentrations for each constituent. The table lists the depth interval of each sample, but the list is not in order according to depth (e.g., the depths listed for borehole 21-26480 start with the deepest sample and end with the shallowest, some depths are listed in no order at all). The Permittees must present the data in a format that lists the depth intervals of the samples in order from shallowest to deepest for all tables.

8. On page 226, Table 2.6-1, *VOC Pore-Gas Screening Results*, the Permittees list the maximum detected concentration and the groundwater screening level in different units. The Permittees must convert the $\mu g/m^3$ to $\mu g/L$ for data comparison. The Permittees must provide conversions in such cases for assessment purposes.

9. The cost estimates presented in Appendices F, G and H are presented in a format that is not easily interpreted and the Permittees do not discuss the cost estimates in detail in the main text. Additionally, cost estimates for vapor monitoring must be added to all cost estimates. The printout of the financial assessment may be used as supporting documentation, but the Permittees must present the data in a clear, concise manner similar to Tables 8.1-1, 8.2-1, 8.3-1, and 8.4-1 in the CME Report for MDA G.

Specific Comments

1. **Page 4, Section 2.1.7, Summary of Subsurface Utilities, paragraph 6**

   Permittees' Statement: "The following sections provide a summary of site information. Further information about the current site conditions at MDA A is presented in detail in the approved investigation work plan (LANL 2006, 095046) and the MDA A IR and supplemental report (LANL 2006, 095046) and the status report for supplemental sampling (LANL 2007, 100482). These three documents describe the site and include information on the disposal units, waste inventories, characterization activities, analytical sampling results, and assessments of potential present-day risks to human health and the environment. The following sections summarize the information about the site."

   NMED Comment: The Permittees must correct the reference to the Investigation Work Plan for MDA A. The correct reference is LANL 2005, 088052.113. The Permittees must use correct citations for the reference documents.

2. **Page 9, Section 2.5.1, DP Canyon Slope, paragraph 2**

   Permittees' Statement: "The distribution of inorganic COPCs was not widespread. Elevated lead concentrations were localized and defined vertically and laterally. Perchlorate and nitrate were detected across the site at low concentrations (less that 0.13 mg/kg and 3.0 mg/kg, respectively), with no discernible distribution trends."

NMED Comment: The extent of lead contamination was not defined on the canyon slope. The highest concentration was found in the 1.5-2 foot interval of BH 21-26488. In Appendix I. the slope is projected to host possible recreational activities in the future (Appendix I. page I-6. Section I-2.3. *Current and Reasonably Foreseeable Future Land Use*, paragraph 3); the concentrations of lead found in soils on the slope exceeds the recreational soil screening level (SSL). The Permittees must revise the Report to discuss the erosion potential of the canyon slope and the risk of exposure. If the risk of exposure to the lead during recreational activities is real, then the Permittees must revise the Report to remove mention of using the canyon slope for recreational activities. The Permittees must. for all corrective measures alternatives. revise the Report to address lead contamination in soils on the slope.

3. **a. Page 11, Section 2.5.4, Pore-Water Vapor, paragraph 1**

Permittees' Statement: "The maximum detected activity of tritium (1,092,486 pCi/L) was at location 21-26593 at a depth of 34-35 ft south of the eastern disposal pits. An increase in activity was noted from the near-surface sample concentration of 1300 pCi/L at 3 ft to the maximum activity at 34 ft. However, adjacent boreholes (location 21-26595 and 21-26594) located approximately 40-70 ft from location 21-26593 had lower tritium pore-water-vapor activities at the same depth. The deep borehole (location 21-26588). approximately 70 ft from location 21-26593, had substantially lower tritium at TD (360ft); here tritium was detected at 1762.9 pCi/L instead of the 1,092,486 pCi/L at location 21-26593. Tritium activity in the deep borehole decreased with depth. Activity also decreased laterally away from locations 21-26593 and 21-26588."

b. Page 14, Section 2.6.4, Tritium, paragraph 2

Permittees' Statement: "Tritium results from 2007 were over an order of magnitude lower than levels measured in the same locations in 2006. Tritium levels in 2007 ranged from nondetect to 1073.84 pCi/L. Tritium activities either remained relatively consistent or decreased with depth. Concentrations decreased laterally away from the maximum activity measured in 2007 at borehole location 21-26596. The vertical and lateral extent of tritium in pore water vapor are defined at MDA A. The maximum detected level of tritium was approximately 5% of the MCL for tritium. Therefore, the tritium detected in the subsurface of MDA A is not a potential source of groundwater contamination."

NMED Comment a and b: There is a large discrepancy between the vapor monitoring data from 2006 and 2007. The Permittees must continue to conduct quarterly monitoring of the tritium levels at MDA A. The Permittees must revise the Report to include vapor monitoring for tritium in all corrective measures alternatives.

4. **Page 13, Section 2.6.2, VOCs, paragraph 3**

Permittees' Statement: "Distribution of the nine most prevalent compounds in the boreholes with maximum concentrations indicated concentrations decreased with depth for five of the compounds [...] remained unchanged for two of the compounds [...], and increased with depth for two of the compounds (acetone and trichloroethene)."

NMED Comment: The increase in the concentration of acetone and trichloroethene with depth indicates contaminant migration due to moisture flux. Fractures may be a pathway for contaminant migration through the tuff since fractures with roots were observed in BH 21-28485 and BH 21-26590. The Permittees must revise the Report to address the increase of VOCs with depth for each of the corrective measure alternatives.

5. **Page 20, Section 3.4.5, Groundwater, paragraph 6**

Permittees' Statement: "The regional aquifer is approximately 1265 ft bgs at MDA A (Figure 3.4-2). Because groundwater was not encountered beneath MDA A during the 2006 investigation to a depth of 360 ft bgs, groundwater is not a medium of concern at MDA A."

NMED Comment: Groundwater is a medium of concern at MDA A regardless of whether or not it was encountered during investigation activities at MDA A. In accordance with Section VII.D of the Order, the Permittees must address potential contaminant migration to groundwater.

6. **Page 21, 4.2.1, Contaminant Transport Pathways, paragraph 3**

Permittees' Statement: "Contaminants released from the disposed waste may be redistributed with and beyond the site by the following primary transport pathways:

* vapor-phase transport of volatile chemicals (VOCs and tritium) into the surrounding unsaturated zone with potential for transport to the regional aquifer
* vapor-phase transport of volatile chemicals (VOCs and tritium) into the atmosphere
* surface-water transport of contaminated surface soils as eroded sediment to adjacent canyons by runoff
* airborne transport of small particulates brought to the surface by biointrusion or erosion:
* unsaturated transport of contaminants with infiltrating water through the thick (1200-ft) unsaturated zone
* saturated-zone transport of contaminants, if contaminants reach the regional aquifer
* biointrusion transport via plant roots and burrowing animals"

NMED Comment: Section VII.D.2, item 7, of the Order states that the CME Report must include: "[a]n identification and description of contaminant migration pathways." Pathways such as pipeline trenches, abandoned shafts, fractures, and paleochannels represent potential pathways for increased contaminant migration. The Permittees must revise the Report to address all potential contaminant pathways.

7. **Page 25, Section 5.1.4, Pore Gas, paragraph 2**

Permittees' Statement: "Equation 5-2 was used to screen the VOC pore-gas data for the supplemental investigation at MDA A. The screening was performed using the maximum detected value from the deepest stratigraphic unit sampled, which is the Otowi Member of the Bandelier Tuff. Data from the deepest unit were used in screening because this unit is closest to the regional aquifer. Thirty-one VOCs having MCLs, NMWQCC standards, and/or HHMSSLs were detected (LANL 2006, 095046, Appendix I, p. 1-45). These results show the SV is below 1 in every case. Based on these screening results, the VOCs detected in

subsurface pore gas at MDA A do not presently appear to be a potential source of groundwater contamination. Therefore, the corrective measure alternatives do not address VOCs in pore gas."

NMED Comment: See General Comment number 4.

8. **Page 25, Section 5.2.1, Threshold Criteria**

Permittees' Statement: "This screening process was applied to eight corrective measure alternatives as detailed in section 7."

NMED Comment: The three chosen corrective measure alternatives are detailed in Section 7 and the rest of the corrective measure alternatives are described in Section 6. The screening process the Permittees used to reduce the eight options to three is not discussed adequately. The Permittees failed to discuss or explain in the Report how alternatives were eliminated or retained through the initial screening process. See General Comment number 1. NMED is therefore unable to evaluate whether or not the screening process was conducted properly and whether alternatives were appropriately eliminated or retained. The Permittees must revise the Report, where appropriate, to justify why the remedy alternatives were eliminated and describe the screening process in detail.

9. **Page 26, Section 5.2.2, Balancing Criteria, paragraph 2**

Permittees' Statement: "These criteria closely overlap with the evaluation criteria described in Section XI.F.9 of the Consent Order. Therefore, these criteria were combined with the evaluation criteria in section 5.2.3. The combined criteria were used to evaluate three corrective measure alternatives that passed the initial screening in section 6. This evaluation is discussed in section 7."

NMED Comment: Section XI.F.9 of the Order describes the identification of the corrective measures options for a CME Report, not the requirements for evaluating corrective measure options. The threshold criteria and the balancing criteria must be evaluated separately. The Permittees must adhere to the evaluation criteria outlined in Section VII of the Order and revise the Report to follow the criteria.

10. **Page 26, Section 5.2.3, Evaluation Criteria, paragraph one**

Permittees' Statement: "Section XI.F.10 of the Consent Order required the evaluation of corrective measure alternatives based on the following: 1) applicability 2) technical practicability 3) effectiveness 4) implementability 5) human health and ecological protectiveness 6) cost"

NMED Comment: Section XI.F.10 of the Order is meant to be used as an outline for the Report. Section VII.D.4.b of the Order describes the evaluation criteria for the corrective measures and should be used as the reference for evaluation of the remedy alternatives. The Permittees must ensure that they adhere to the evaluation criteria identified in Sections VII.D.4.i through VII.D.4.v of the Order.

11. Page 26, Section 5.2.4, Selection Criteria, paragraph one

Permittees' Statement: "Based on the evaluation of the three final corrective measure alternatives, one alternative was selected as the recommended corrective measure alternative. Compliance of this alternative with a final set of criteria described in Section XI.F.11 of the Consent Order is detailed in section 8 of this report. The criteria used in the description of the final selection were as follows: 1) achieve cleanup objectives in a timely manner 2) protect human health and ecological receptors 3) control or eliminate the sources of contamination 4) control migration of released contaminants 5) manage remediation waste in accordance with state and federal regulations."

NMED Comment: See Specific Comment number 10 above.

12. Page 27, Section 5.4, Hazardous Waste Regulations

Permittees' Statement: "A waste management plan is not included in this report because the selected remedy is not expected to generate any appreciable waste streams."

NMED Comment: In Section 8.2.5, *Manage Remediation Waste in Accordance with State and Federal Regulations*, the Permittees state, "[t]he existing ET covers (Alternatives 1 and 2) monitoring system installations may generate small quantities of low-level chemical and radiologically contaminated drill cuttings that would require handling and disposal as investigation-derived waste." The Permittees must submit a waste disposal and develop a hazardous waste management plan for any corrective measure action chosen since any corrective measure will create waste (e.g., drilling of neutron probe holes and vapor monitoring holes). The type of contaminants in the pits is not known with any certainty and hazardous waste may be present. The Permittees must treat all soil as hazardous until proven otherwise.

13. Page 28, Section 6.1.1.1, In Situ Grouting

Permittees' Statement: "In situ grouting for macroencapsulation is dismissed for use as a corrective measure relative to the disposal pits because the waste form is such that there may not be continuous void spaces available to accept the grout. What would result is a partially encapsulated mass that would be ineffective in isolating the waste from the environment. However, this screening technology is suitable for use on the General's Tanks waste because of the small residual volume of waste within the large void space of each tank. An engineering feasibility test was performed on a surrogate waste using similar geometry as anticipated for the General's Tanks (AEA 2004, 102711). The results of the test indicate the waste remaining in the tanks can successfully be encapsulated. Further bench-scale tests are required to demonstrate the performance of the grouted material on the actual waste contained in the tanks. Uncertainty remains regarding the ability of the 70-plus-year-old tanks to withstand the mixing process without leaking."

NMED Comment: The condition of the General's Tanks could be an issue when pumping out the waste heel (all alternatives) and removing the tanks (alternative 3). The Permittees must address the condition of the General's Tanks and their ability to withstand pumping and

removal of the waste. The Permittees must propose contingencies should the tanks be unable to withstand partial or complete waste removal.

14. Page 29, Section 6.1.1.3, In Situ Vitrification

Permittees' Statement: "In situ vitrification has been successfully used to turn soil and rock masses into glass monoliths. The application of the technology to the wastes found at MDA A is not considered practical for the following reasons. A demonstration was conducted at MDA V (LANL 2003, 080923) absorption beds (crushed tuff, gravel, cobbles, and boulders plus underlying tuff bedrock) with the resulting melt material having small metal inclusions but otherwise successfully encapsulating the radioactivity and other contaminants in a durable glass material. However, application of this technology to waste disposal pits would likely be unsuccessful. Large metal objects present in the melt would like result in pools of metal in and below the melt. Cardboard and other flammable materials could result in small fires. The resulting emissions of carbon monoxide and carbon dioxide would require additional treatment. The power consumption to treat a mass the size of MDA A would be very large. The resulting glass would resemble obsidian rock and might be used as a resource in the future for human activities. For these reasons, in situ melting is eliminated."

NMED Comment: Most problems with vitrification as a potential remedy can be mitigated in the field: off-gas systems are part of the in situ vitrification (ISV) process; dynamic disruption has proven effective in controlling problems with sealed containers and voids. Danger from small fires may be negligible, because the vitrification is in situ and underground. However, because only a few studies have been done with vitrification in waste pits, it is difficult to say whether or not vitrification would be successful at MDA A compared to the cost of the technology. Future use of the vitrified soil and rock by humans could be controlled. Even if the Permittees believe that humans would use the obsidian-like vitrified soil and rock in the future, leaving the waste in place would present a similar exposure problem for future residents, especially if institutional and long-term access controls break down. The Permittees must revise the Report to follow the evaluation criteria discussed in General Comment 1 and Specific Comments 8 and 10 and provide better explanations for dismissal of this technology as a corrective measure alternative.

15. Page 31, Section 6.2.3, Monitoring Technologies, paragraph 1

Permittees' Statement: "The time periods applicable to monitoring and maintenance for MDA A following completion of the corrective action are presented in Table 6.2-1. There are a broad range of monitoring technologies available for monitoring present or former inactive waste disposal areas. Detailed monitoring options will be specific to the technologies used for a selected corrective measure. The broad range of monitoring options include cover and waste unit monitoring over time to determine moisture migration into and out of the cap, monitoring the vadose zone below the waste, and no monitoring if wastes are no longer present."

NMED Comment: In Table 6.2-1 the Permittees list monitoring and maintenance for 30 years after complete removal. The Permittees must clarify what the monitoring and maintenance will entail if complete removal is chosen as the corrective action. Additionally, the Permittees must address vapor monitoring in this section.

16. Page 31, Section 6.2.3, Monitoring Technologies, paragraph 2

Permittees' Statement: "ET caps are proven technology and do not require monitoring to demonstrate the technical effectiveness. Because contaminant migration is controlled from the disposal pits into the vadose zone below MDA A and above the regional or perched aquifer (not identified as present to the depth drilled in the remedial investigation) by the downward movement of moisture present in the bedrock, monitoring for potential contaminants is not necessary. The effectiveness of the remediation can be monitored by determining the change in moisture content below the waste over time. If the waste is removed, no monitoring is required."

NMED Comment: While the Permittees' modeling shows VOCs are not a concern at MDA A, the monitoring results from the 2006 and 2007 show inconsistencies in detected VOC and tritium concentration. The variability of the field results makes it necessary for vapor monitoring to be a part of any corrective measure alternative for MDA A. Furthermore, NMED does not agree with the statement that, "ET caps are proven technology and do not require monitoring to demonstrate the technical effectiveness." ET caps perform well in arid and semi-arid climates, however Los Alamos is a wetter environment and snow is especially bad for ET covers. ET covers are proven to leak, thus must be monitored. The Permittees must propose vapor monitoring locations (including BH-08) as part of the monitoring technology for MDA A. See General Comment number 6.

17. Page 35, Section 6.3.3, Alternative 3, Source / Waste Removal, paragraph 8

Permittees' Statement: "The northward slope to the site allows an excavation to be made for the waste that daylights into DP canyon. A minor (less than 2ft) backfill thickness to support vegetation in the bottom of the excavation will be placed. The bottom will be contoured in a swale of less than 0.5% to drain outward to DP Canyon."

NMED Statement: The Permittees discuss waste that daylights into DP Canyon for Alternative 3, but do not mention the canyon in their discussion of other alternatives. The Permittees must clarify what they mean by "waste that daylights," identify the waste, identify the area on a map and explain why this waste should not be immediately removed. The Permittees must address the canyon contaminants in terms of cleanup for all corrective measure alternatives.

18. Page 48, Alternative 3, Section 7.3.2, Technical Practicability

Permittees' Statement: "In the long-term, the performance, reliability, and minimization of hazards at the site are optimal because no waste remains at MDA A. This alternative does, however, present short-term considerations. The large volume of material to be transported for off-site disposal may impact the practicability of this alternative. The estimated volume of material, both waste and contaminated soil contained in and around the disposal units to be excavated and transported is 28,700 yd^3 and does not account for the bulking factor upon removal. This estimate assumes that a portion of the overburden is not contaminated and will be used for backfill cover of the excavation. Because the waste is probably similar to that at MDA B (expected to be heterogeneous debris, soil, and mixed contaminated media), with

similar uncertainty as to waste type, the excavation will be similarly conducted in a ventilated enclosure to mitigate off-site releases of dust and contaminants."

NMED Comment: Complete waste removal is planned for MDA B, a larger site at TA-21 with similar waste, and is therefore likely a feasible remedy for MDA A. Removal of the waste at MDA B can be used to help plan the removal of waste from MDA A. The schedule for removal at MDA A can be integrated into the schedule of MDA B and the same equipment can be used. The advantages (e.g. reduced short-term residual risks, establishment of more natural conditions, reduced long-term risks, little if any long-term monitoring and maintenance) of complete removal should be contrasted with the disadvantages (e.g. cost, increased short-term exposure risks). The amount of waste to be removed at MDA A is 28,700yd^3 (pit volume, plus contaminated soil around the pits), less than the amount approved for removal at MDA B (38,607yd^3). The amount of waste removed from the pits should not significantly affect the practicability of this alternative at least compared to MDA B. The Permittees must revise the Report to discuss the potential of complete removal with a comparison to the planned removal at MDA B.

19. Page 49, Section 7.3.3, Effectiveness

Permittees' Statement: "This alternative is least effective of the three in short-term at mitigating the impact of contamination. Disturbance and excavation of the disposal units increase the possibility of accidental release of hazards and/or radioactive materials. The possibility of release upon disturbance of the units containing unknown waste materials increases the short-term risk and dose from dispersal of contamination."

NMED Comment: NMED disagrees. The units containing unknown waste materials also increase the risk and uncertainties of leaving the waste in place. Short-term risks can be mitigated by using the administrative and engineering safety controls discussed in the Report. The Permittees must revise the Report to discuss the effectiveness of this alternative with the uncertainty of the waste inventory and mitigating factors for safety in mind.

20. Page 49, Alternative 3, Section 7.3.4, Implementability

Permittees' Statement: "Implementation of this alternative requires: conducting a hazardous waste categorization and hazard analysis to identify requirements associated with unknown wastes materials"

NMED Comment: The identification of requirements has been performed at MDA B, which has similar waste streams as MDA A, and can therefore be used as guidance. The Permittees must use information gathered from waste categorization during operations at MDA B to inform the waste categorization at MDA A, should the excavation alternative be selected.

21. Page 52, Section 8.2.4, Control Migration of Released Contaminants

Permittees' Statement: "The current site conditions are such that contamination of soils and bedrock outside the waste pits meets industrial screening levels. Therefore, one alternative is not better than the other for controlling or mitigating already released contaminants. As presented in Appendix E, modeling indicates little potential for a groundwater pathway to

exist at MDA A. Once the waste in the General's Tanks is removed the potential for future migration of contaminants to the surrounding bedrock will be removed. Modeling indicates near steady state conditions have been established below the existing cover and that increases in moisture content necessary for additional contaminants to migrate from the waste will not occur."

NMED Comment: Modeling may indicate a low potential for a groundwater pathway to exist at MDA A; however, this is not necessarily the case. Removing the General's Tanks removes a portion of the source, but there is potential for future migration of contaminants from the eastern and central pits if the proposed cap fails. In addition, there is field evidence which suggests that moisture migration in the vadose zone is facilitating the migration of contaminants. See Specific Comment number 4. The Permittees must revise the Report to discuss how recent field data was applied to the evaluation of potential remedy alternatives.

22. Page 59, Section 9.7, Long-Term Monitoring Requirements, paragraph 1

Permittees' Statement: "Groundwater monitoring of the regional aquifer beneath MDA A will be consolidated with the Laboratory-wide groundwater-monitoring program. No additional groundwater-monitoring wells are proposed. The vadose zone will be monitored for 30 yr using neutron probes in the proposed boreholes shown in Figure-6.3-1. The use of neutron access holes allows the monitoring of moisture content changes below the cover system, an indicator of the cover system performance. Because contaminant transport at MDA A is driven by moisture flux below the waste units, an increase in moisture would indicate a downward movement of contaminants. The neutron access holes will be located close to the eastern waste units where there is a higher potential for chemical wastes and uncontrolled disposal practices, and they will extend approximately 20 ft below the maximum depth of contamination (LANL 2006, 095046)."

NMED Comment: The vadose zone monitoring locations must cover a broader area than the proposed locations and include monitoring of the central pit. The Permittees must add or change the locations of the neutron probe boreholes to monitor a larger area of the site. Additionally, neutron probes are not adequate as the sole mechanism for monitoring the vadose zone at MDA A. Long-term monitoring must include vapor monitoring as required by the Order, particularly at sites where waste is left in place. The Permittees also must further discuss groundwater monitoring. The Permittees must revise the Report accordingly, see General Comment number 6.

23. Page I-6, Section I-2.3, Current and Reasonably Foreseeable Future Land Use, paragraphs 2 and 3

Permittees' Statement: "Historically, MDA A has been used for industrial purposes. Current land use for the MDA A site is industrial; the area is fenced and access control is maintained by the Laboratory. It is expected that the land use will remain industrial in the reasonably foreseeable future.

MDA A is located on DP Mesa, near the commercial district of Los Alamos and separated from the DP Canyon slope by the paved North Perimeter Road. The DP Canyon slope north of MDA A is currently undeveloped and is covered by natural vegetation. It is expected that

the canyon slope will remain undeveloped. Potential future land use could include recreational activities, such as hiking, bird watching, or children playing (extended backyard scenario)."

NMED Comment: The land at MDA A may be transferred to Los Alamos County since it represents a potential for land development, particularly considering its close proximity to an established commercial district. In this case, the land use must be unrestricted for commercial zoning by Los Alamos County and possibly also residential use. On page 27, Section 5.3, *DOE Directives and Criteria for Radioactive Waste and Radiation Protection of the Public and the Environment*, paragraph 2, the Permittees state, "[b]ecause the primary radionuclides at MDA A are plutonium and americium, both with significant half lives, DOE or its successor will need to maintain institutional control of the site indefinitely, unless the radionuclide inventory is removed." Therefore, it would be in the Permittees' best interest to consider complete removal of the inventory at MDA A. The Permittees must revise the text to discuss additional possibilities for future land use.

The Permittees state in Section 6.3.3, Alternative 3, Source / Waste Removal, "waste that daylights" into the canyon. The Permittees must clarify the meaning of "daylights" especially in the context of recreational activities on the canyon slope. See Specific Comment number 17.

The Permittees must address all comments and submit a revised Report by February 27, 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. In addition, the Permittees shall submit a redline-strikeout version that includes all changes and edits to the Report (electronic copy) with the response to this NOD.

Please contact Kristen Van Horn at (505) 476-6046 should you have any questions.

Sincerely,

James P. Bearzi
Chief
Hazardous Waste Bureau

cc:

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