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TA-54



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CERTIFIED MAIL
RETURN RECEIPT REQUESTED

October 20, 2004

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

G. Pete Nanos, Director
Los Alamos National Laboratory
P.O. Box 1663, Mail Stop A100
Los Alamos, NM 87545

**RE: NOTICE OF DISAPPROVAL FOR CORRECTIVE MEASURES STUDY
REPORT FOR MDA H, SWMU 54-004, AT TA-54
LOS ALAMOS NATIONAL LABORATORY EPA ID No: NM0890010515
HWB-LANL-03-007**

Dear Messrs. Gregory and Nanos:

The New Mexico Environment Department (NMED) has received and reviewed the United States Department of Energy and the Regents of the University of California (collectively, the Permittees) report entitled *Corrective Measures Study Report for MDA H, SWMU 54-004, at TA-54* dated May, 2003, and referenced by LA-UR-03-3354 and ER2003-0121. NMED hereby issues this Notice of Disapproval of the aforementioned document. The Permittees must respond to the comments as outlined in the attachment to this letter within thirty days of receipt of this letter.



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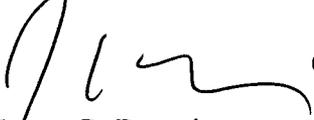
Messrs. Gregory and Nando

October 20, 2004

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Please contact Neelam Dhawan at (505) 428-2540 should you have any questions.

Sincerely,



James P. Bearzi

Chief

Hazardous Waste Bureau

JPB:nd

Attachment

cc: N. Dhawan, NMED HWB
M. Leavitt, NMED SWQB
C. Voorhees, NMED DOE OB
S. Yanicak, NMED DOE OB, MS J993
L. King, EPA 6PD-N
J. Vozella, DOE LAAO, MS A316
B. Ramsey, LANL RRES-DO, MS J591
D. Stavert, LANL RRES-DO, MS J591
N. Quintana, LANL RRES-ER, MS M992
D. McInroy, LANL RRES-ER, MS M992

File: Reading and LANL/TA 54

ATTACHMENT
NOTICE OF DISAPPROAL COMMENTS FOR CORRECTIVE MEASURES STUDY
REPORT FOR MDA H SWMU 54-004, AT TA-54

General Comments:

1. The corrective action objectives indicate that the selected remedy will result in an excess cancer risk of between 10^{-6} and 10^{-4} for the design life of the proposed cover. While this risk range is consistent with the Environmental Protection Agency's (EPA) National Oil and Hazardous Substance Pollution Contingency Plan (40 CFR 300.430(e)(2)(i)(A)(2)), the New Mexico Environment Department (NMED) generally enforces a target risk level of 10^{-5} for establishing cleanup levels for regulated substances (see Section VIII of Draft *Compliance Order on Consent*, dated September 1, 2004). While it is noted that the resulting risks estimated in the report are below the EPA target risk range, the corrective action objectives should still focus the risk discussion to show that risks will not exceed the NMED target level of 10^{-5} .

2. The evaluation of potential alternatives and the selection of a corrective action remedy were based upon assessment of human health risks only, as an ecological risk assessment has not been conducted for the site. While the report indicates that an ecological evaluation will be conducted, a general conclusion is made that there is no ecological impact of concern and that while some of the alternatives may have short-term impacts on the environment, there will be no long-term environmental impacts. These conclusions do not incorporate data obtained during the facility investigation. As summarized in Department of Energy and the Regents of University of California (Permittees) April 2002 report "Compliance Demonstration with 40 CFR Part 264, Subparts G and F under Corrective Action Procedures For Material Disposal Area H at Technical Area 54," tritium was detected in plants at Material Disposal Area (MDA) H at concentrations that are three orders of magnitude higher than in plants located in the background reference area. In addition, soil has been shown to exhibit concentrations of tritium two to three times higher than background. While results of sediment analyses from the affected drainage channels indicated that contaminant concentrations were below respective screening action levels, the aforementioned report also indicated that an ecological risk assessment would be conducted. Based upon review of previously submitted data and reports, there is sufficient reason to assume that there could be significant impacts to the environment as a result of activities at MDA H. The exclusion of an evaluation of these potential impacts and a more in-depth evaluation of how alternatives may impact both ecological receptors and habitat precludes the selection of the best alternative for corrective action. The Corrective Measure Study (CMS) must include the results of a detailed ecological risk assessment and must also provide specific information as to how each alternative will affect the environment. The Permittees must revise the report accordingly.

3. The risks to an industrial worker were estimated in Appendix H. Since during the first 100 years, institutional controls will be in place to prevent disturbance of soil (e.g., intrusive activities), the evaluation of a non-intrusive industrial worker is reasonable for the first 100 years. However, after the first 100 years, no provisions for institutional controls will be in place to limit activity to only surface work. Therefore, it is reasonable to assume that sometime after year 100, some construction or other intrusive activity could occur. As such, the risks to an intrusive worker should be evaluated. The Permittees must revise the report to include risks for a construction/intrusive worker scenario.
4. Low-level volatile organic chemicals (VOCs) were detected in the pore gas at 50 feet below ground surface during investigations conducted at MDA H in 2001. The analytical results of these investigations were reported in the "Addendum to the RFI Report for Material Disposal Area H, (Solid Waste Management Unit 54-004) at Technical Area 54" (October 2002. ER2002-0382). The report indicated that direct sampling and analysis of ambient air were to be conducted in fiscal year 2003 to determine VOC concentrations at the surface (page 19). Include the results of ambient air sampling, if conducted, or provide an explanation for why it was not done. This recent data, if available, should be included in the risk assessments (human health and ecological), as appropriate.
5. As stated in "Addendum to the RFI Report for Material Disposal Area H, (Solid Waste Management Unit 54-004) at Technical Area 54" (October 2002 ER2002-0382 page 19), data from the ongoing TA-54 groundwater investigation was to be reported and incorporated in the CMS Report, but no data from ongoing groundwater investigations at TA-54 was included in the report. The Permittees must include the data collected from groundwater investigations and monitoring conducted to date and discuss the results as they relate to MDA H (e.g. data collected from wells R-20, R-21, R-22, R-23, and R-31).
6. As stated in the "Corrective Measures Study Plan for Material Disposal Area H at Technical Area 54" (dated March 2001 and referenced by ER20000217, page 16), long-term stewardship issues were to be considered while evaluating corrective measure alternatives. No such discussion was included in the report. Include a discussion on long-term stewardship issues for all relevant alternatives.
7. The Permittees have developed and used a system model to evaluate potential long-term human health impacts from contaminants released over time at MDA H. NMED will not select a preferred remedy based on conclusions drawn by the use of models. If a containment alternative is selected as a preferred remedy, NMED will require and rely on monitoring data to evaluate the performance of the selected remedy. NMED may in the future require additional remedial action at the site based on the results of long-term site monitoring data.

Specific Comments:

1. Section 2.0, Identification and Development of the Corrective Measure Alternatives, Page 4.

As required by Module VIII of the Permittees Hazardous Waste Facility Permit (i.e. Scope of work for a RCRA Corrective Measure Study, page 56), the Permittees should have identified that Laboratory and Bench-Scale studies are not required for most of the alternatives and provided a rationale for inapplicability of such a requirement. Revise the report accordingly.

2. Section 2.1, Description of Current Site Conditions, Page 4.

This section should include a discussion of the results and conclusions of the RCRA Facility Investigation (RFI) conducted at MDA H. Providing a reference to the RFI report is not adequate. A description of the results of the investigation regarding the nature and extent of contamination present at the site, and a table summarizing the analytical results of samples obtained from the site must be included. A summary of information obtained from additional sampling conducted at MDA H at the direction of NMED must also be provided.

3. Section 2.1.3, Site Characteristics, Page 13.

The report provides a list of site specific aspects of the natural setting of MDA H that are important for assessing the potential future impacts posed by releases of contamination. The presence of fractures should have been included in the list, as it may provide significant pathway for contaminant transport. Revise the report to consider migration of contaminants through fractures.

4. Section 2.1.3.1, Climate and Ecology, page 14.

The last sentence in this section states that "[T]he mesa geometry also enhances exposure of the subsurface to evaporative processes such as high solar radiation, strong winds, and enhanced air circulation." NMED does not agree with the Permittees' concept of surface-subsurface air circulation. No response required.

5. Section 2.2, Establishment of Corrective Action Objectives, page 19.

The Permittees must provide details that these corrective action objectives will satisfy the requirements of 40 CFR 264, Subparts F and G (the groundwater monitoring requirements, and closure and post-closure care requirements) for Shaft 9. The Permittees had committed to describing "...in detail, how the recommended corrective measure will meet the substantive requirements of Subparts F and G..." in the final CMS Report (letter dated February 6, 2002, and referenced by ER2002-0095).

6. Section 2.2, Establishment of Corrective Action Objectives; 2. Protect the Environment, Page 20.

The report indicates that an environmental assessment is being prepared outside of the CMS. The evaluation of potential ecological impacts was not included in the CMS and therefore the document is incomplete. A final decision on the selection of a corrective action alternative

cannot be made without all information related to potential impacts and preservation of ecological receptors and habitat. The document referenced in the CMS report "Predecisional Draft Environmental Assessment for Proposed Corrective Measures conducted at MDA H" (referenced by DOE/EA-1464, March 22, 2004 that was prepared for National Environmental Policy Act) does not address long-term ecological risk. The environmental impacts of corrective measure alternatives should be evaluated in terms of potential damage to the environment and cultural resources during the implementation of the corrective measure, as well as potential long-term ecological risk at the site after the implementation of the corrective measure alternative. Discuss how the conclusions of the environmental assessment will be incorporated into the CMS and final remedy selection.

7. Section 2.2, Establishment of Corrective Action Objectives; 3. Attain Action Levels, Page 21.

The third corrective action objective indicates that a contaminant transport model was used to assess the effectiveness of containment alternatives with respect to the point of compliance. However, the report also indicates that the point of compliance has not been determined and would be negotiated between NMED and the Permittees. Discuss how the point of compliance used in the transport modeling was determined and discuss whether the point of compliance used was based on conservative assumptions. Action levels and points of compliance should have been developed before the report was written so that the no action and containment alternatives could be evaluated appropriately. Action levels and points of compliance for no action and containment alternatives should have been developed and recommended to NMED in the CMS report as proposed in "Corrective Measures Study Plan for Material Disposal Area H at Technical Area 54" (dated March 2001 and referenced by ER20000217, pages 13 and 14). The Permittees must revise the report to include action levels and points of compliance.

8. Section 2.2, Establishment of Corrective Action Objectives; 4. Source Control, Page 21.

The control of the source to eliminate or to reduce further releases from the site that may pose a threat to the environment is an important factor in consideration of selection of a corrective measure alternative. The Permittees are proposing to use a contaminant transport model during the design phase of the corrective measure after it is selected. Source control must be evaluated for each alternative before the selection of a final corrective measure.

9. Section 2.5, Final Corrective Measure Alternatives, page 35.

The source material would be left in place for the proposed three containment alternatives (alternatives 1, 2, and 3). If any of these alternatives is selected, monitoring of the vadose zone would be required to monitor for the potential release of contaminants from the shafts. Revise the text and include monitoring of the vadose zone as a requirement for these three alternatives.

10. Section 2.5.1, Final Corrective Measure Alternative 1: Upgrade Existing Surface Layer, page 36.

The existing concrete covers on individual shafts provide a barrier against vertical intrusion by plants and animals into the shafts, but do not protect against lateral migration of plants and

animals into the shafts in the tuff. Revise the text to include the discussion on potential lateral intrusion of plants and animals into shafts.

11. Section 3.3.1.1, Conceptual Model of Long-Term Performance, page 60.

The text discusses that contaminants in the MDA H shafts have the potential to be released and transported away from the disposal sites in three ways. Groundwater is not included in these discussions. As the land use at MDA H may not be restricted after the first 100 years, the long-term effectiveness of the corrective measures are evaluated after the first 100 years for a resident. The residential scenario, as discussed on page 62 of the report, includes exposure through potentially contaminated groundwater. Because the groundwater has been identified as a potential exposure medium, groundwater should be discussed as a potential contaminant transport pathway. This migration route and contamination of groundwater should be discussed. Revise the report to include a discussion of contaminant transport to groundwater and via groundwater.

12. Section 3.4.1, Institutional Concerns for Alternatives 1, 2, and 3 Upgrade Existing Surface Layer, Engineered ET Cover, and Encapsulation Alternatives, page 70.

The report discusses the use of deed restrictions. However, it is unclear how a deed restriction could be enforced, as deed restrictions cannot be placed on government (e.g., DOE) land. Typically a land use restriction is placed on a site and is enforced through a post-closure permit. Discuss how land use restrictions would be actively placed on the site and enforced in the event of a land ownership change.

13. Section 3.5 Cost Estimate of Corrective Measure Alternatives, page 70

This section and Appendix K do not provide enough details or a cost breakdown for each WBS Element. Provide the details on how cost estimates for these alternatives were calculated. Define WBS in the acronym list.

14. Section 3.5.1, Estimate for Capital Cost, page, 71.

Capital costs for Alternative 3a, Partial Shaft Encapsulation, were not included in this section. Provide capital costs for Alternative 3a or explain why it was excluded from capital cost calculations.

15. Section 3.5.1 Estimates for Capital Costs, page 73.

Fix the typographical error. The calculations for contingencies for Alternatives 4 and 5 are provided on page K-17 and not on K-19 of Appendix K.

16. Section 3.5.2, Operation and Maintenance Costs, page 75.

As determined by the RFI, tritium and VOCs are present in the sub-surface. Implementation of Alternatives 1, 2 and 3 would require vadose zone monitoring. The annual cost estimates for Alternatives 1, 2 and 3 should be revised to include vadose zone monitoring costs. In addition, groundwater monitoring requirements for MDA H were to be combined with the groundwater monitoring to be done for entire TA-54. A portion of the cost of monitoring groundwater at TA-54 should be attributed to MDA H and included in the cost estimates for Alternatives 1, 2 and 3.

17. Section 3.5.3, Present Value Analysis, page 76.

The report assumes that Department of Energy will maintain institutional controls and conduct maintenance of the site for at least 100 years. Timeframes of 100 years and 1000 years have been used throughout the report for evaluation of corrective measure alternatives, but for calculating present value, the time frame of 30 and 1000 years was used. Provide an explanation for using a 30-year timeframe instead of 100 years for calculating present value. As stated in EPA guidance (A Guide to Developing and Documenting Cost Estimates During the Feasibility Study, July 2000), present value is the amount needed to be set aside at the initial point in time (base year) to assure that funds will be available in the future as they are needed. The calculations assume that the amount set aside would earn interest over time. Because federal entities are exempt from the financial assurance requirements, use of present value analysis does not seem appropriate for cost comparisons. Additionally, the CMS report uses a discount rate of 7% but the guidance suggests a discount rate of 7% should be used for non-federal facility sites. Clarify if the 7% discount rate used in the calculations, is the real discount rate found in Appendix C of the Office of Management and Budget Circular A-94 as recommended in the guidance. Provide cost estimates of monitoring for 100 and 1000 years for the corrective measure alternatives that will require long-term monitoring and include the cost of long-term monitoring in the total projected cost.

18. Table 3.5-10, Present Value Analysis, page 76.

Clarify if the cost of the first two years of moisture monitoring is included in the total cost provided for Alternatives 1, 2 and 3 in Table 3.5-10. Clarify if the cost of annual neutron logging for the first two years that was estimated at \$42,000 (page 74), is included in the total costs projected for Alternatives 1, 2 and 3 or explain the reasons for not including it.

19. Section 4.0, Justification and Recommendation of the Corrective Measure, page 77.

Fix the typographical error. It is Task VIII, not VII, of the Module VIII of the Permittees Hazardous Waste Facility Permit that requires the comparison of alternatives with respect to technical, human health and environmental criteria.

20. Section 4.3, Environmental, page 81.

The report draws the conclusion that there would be no adverse environmental impacts due to any of the alternatives. However, it is not clear how this conclusion can be made when the ecological risk assessment has not been conducted. The conclusions concerning the potential ecological impacts should be reserved until the ecological risk assessment has been conducted. Revise the report accordingly to account for the results of ecological risk assessment.

21. Section 4.5, Summary Comparison of Alternatives, page 82.

The summary of the environmental impacts indicates that while alternatives 4 and 5 will have substantial short-term impacts on biological resources, there would be no long-term impacts. As the ecological risk assessment has not been conducted, it is not clear how this conclusion can be justified. It is agreed that the actions outlined in alternatives 4 and 5 will directly affect both ecological receptors as well as habitat. The long-term impact on these actions should be considered in the ecological risk assessment. It is suggested that all conclusions concerning the

potential impact on the environment due to the selection of either alternative 4 or alternative 5 be reserved until the ecological risk assessment has been completed.

22. Section 5.0, Recommended Corrective Measure, page 82.

An updated "crosswalk" describing the specific means for ensuring compliance with substantive requirements of Part 264, Subparts F and G must be included in the report as stated in the "Compliance Demonstration with 40 CFR Part 264, Subparts G and F under Corrective Action Procedures For Material Disposal Area H at Technical Area 54," April 2002.

23. Section 5.0, Recommended Corrective Measure, page 85.

The statement in fifth bullet that Alternative 2 will provide the same benefits as Alternatives 3, 4, and 5 at markedly reduced cost is not accurate. Initial implementation costs for Alternatives 4 and 5 may be more than Alternative 2, but they have an additional benefit of permanent source removal or substantial reduction of the source volume. Additionally, Alternative 4 does not require long-term monitoring, so long-term stewardship becomes irrelevant. Considering the nature of the waste disposed in these shafts (i.e. radionuclides with long half-lives), long-term monitoring costs could outweigh the benefit of initial lower costs for implementation of Alternative 2. No response required.

24. Section 5.1, Design Approach, page 85.

Vapor monitoring will be required at MDA H, if proposed Alternative 2 is selected as a final corrective measure. Include long-term subsurface vapor monitoring for tritium and VOCs in the design process.

25. Section 5.1.1, Performance Expectations, page 86.

The statement that the cover will provide reasonable assurance of protection of the environment is not supported since the ecological risk assessment has not been conducted for MDA H for the proposed corrective measure alternatives; see General Comment 2 and Specific Comment 6. The contingency plan proposed in Section 5.3.4 is not adequate. The Permittees will have to reevaluate the corrective measure if the cover does not perform as expected and may have to implement an alternative remedy at the site. Revise the report accordingly.

26. Section 5.1.4, Long-Term Monitoring Requirements, page 87.

In addition to groundwater and moisture monitoring, monitoring requirements will include air monitoring and pore gas sampling for VOCs. Revise the report accordingly.

27. Section 5.3.4, Operation and Maintenance Cost Estimate, page 90.

Include the cost of long-term subsurface pore gas monitoring for tritium and VOCs to the operation and maintenance cost estimates.

28. Section 5.3.4, Contingency Plan, page 90.

The Permittees are proposing to upgrade the vegetative cover if vadose-zone monitoring indicates that volumetric water content has risen above 11% from depth of 60 to 100 feet. Provide a rationale for using 11% volumetric water content as a trigger. The Permittees are

required to obtain NMED approval on selection of triggers. If Alternative 2 is selected as a corrective measure for MDA H and subsequent monitoring data indicates that a vegetative cover is not effective in controlling downward transport of moisture, then NMED may require reevaluation of the site and may direct the Permittees to implement a more effective remedy at the site.

29. Appendix G, Section G-1.1, WGEN Model, page G-2.

The last sentence in the first paragraph of this section states that “WGEN also has the capability to generate daily wind speed, but wind speeds generated by WGEN were not used in this analysis.” It is not clear why the model calculated wind speeds were not used in the analysis, especially if the modeled wind speeds were greater than the default values input to the model. Provide a discussion why the model generated wind values were ignored.

30. Appendix G, Section G-1.2, HELP Model, page G-3.

The third paragraph in this section states that the background cover case was modeled with a “0.08-m clay loam topsoil over a 1.75-m crushed tuff layer. The purpose of this simulation is to determine runoff and percolation characteristics for the site without any other influences.” While the purpose of the background case is understood, it is not clear from the text how the thicknesses used in the background case were derived. Clarify, if the 0.08-m clay loam topsoil and 1.75-m crushed tuff layers are characteristic of the MDA H area, or some other area at the laboratory. Revise the text to provide clarification how these thicknesses were selected.

31. Appendix G, Section G-1.2, HELP Model, page G-5.

The text on page G-5 states “The evaporative zone depth is a sensitive parameter as was shown by Springer . . . for MDA G using a model similar to HELP.” Since the evaporative zone depth value is a sensitive parameter, it is critical to understand how this value was selected. It is not specified in the text if this value was derived from previous studies at MDA G, or was selected based on the thickness of the crushed tuff layer overlying the concrete disposal shaft (note that the evaporative zone depth value in Table G-1.2-5 is the same as the crushed tuff thickness value shown in Table G-1.2-3). Revise the text to provide a discussion how this value was selected.

32. Appendix, H, Section H-2.2, Biotic Transport Submodels, page H-7.

Table H-2.2-1, Plants and Animal Employed in the Biointrusion Models, lists present-day and climatic densities for various species. The present-day densities are based upon current conditions, which include engineering controls. While the climatic densities appear to represent natural conditions after institutional controls have ceased and the site is allowed to return to natural conditions. However, the climatic densities for several of the species decline once the site returns to natural conditions. Intuitively, this does not appear logical. It would seem more likely that the population of deer mice and pocket gophers would increase with less institutional controls. Please provide a discussion of how densities were determined by Mr. Shuman and discuss why several of the species show a decline at climax.

33. Appendix H, Section H-3.1.1, Residential Scenario Equations, page H-24.

Table H-3.1-1 presents the parameter values used in the health effects equations for the resident (farmer scenario), recreationist, and worker. However, most of the data provided in the table was based upon the Exposure Factor's Handbook (EPA 1997). The EPA Office of Solid Waste and Emergency Response (OSWER) has subsequently updated many of values for the exposure parameters listed in Table H-3.1-1 (OSWER 9355.4-24 – Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites, March 2001). The data presented in this OSWER guidance has been used by EPA and NMED for referencing exposure parameters and supercedes data provided in the now outdated Exposure Factor's Handbook. This document was available during the drafting of the CMS report. Therefore, the exposure parameters provided in the OSWER document should have been used. Revise the data in Table H-3.1-1 and all subsequent calculations to incorporate the most recent EPA-approved exposure parameter data.

34. Appendix I, Vapor-phase Contaminant Transport Modeling, page I-1.

The modeling is based upon an assumption that the infiltration rate is small (1 mm/yr), which affects the diffusional transport rate. However, as discussed in Appendix F (page F-8), 1 mm/yr assumes a base-case flow rate while a value of 10 mm/yr would represent a high flow rate through the shafts and mesa. Discuss the sensitivity of the infiltration rate on the FEHM model and the overall affect the high flow rate of 10 mm/yr may have on vapor-phase transport.