

**Response to the Second Notice of Disapproval for the Phase II Investigation Report for
Material Disposal Area C, Solid Waste Management Unit 50-009, at Technical Area 50,
Los Alamos National Laboratory EPA ID No: NM0890010515, HWB-LANL-09-017
Dated October 15, 2009**

INTRODUCTION

To facilitate review of this response, the New Mexico Environment Department's (NMED's) comments are included verbatim. Los Alamos National Laboratory's (LANL's or the Laboratory's) responses follow each NMED comment. The comments are divided into general and specific categories, as presented in the second notice of disapproval (NOD). The comment numbers are from the original NOD and therefore are not consecutive. This response contains data on radioactive materials, including source, special nuclear, and byproduct material. Information on radioactive materials and radionuclides, including the results of sampling and analysis of radioactive constituents, is voluntarily provided to NMED in accordance with U.S. Department of Energy policy.

GENERAL COMMENTS

NMED Comment

3. *The intent of NMED's comment was not to eliminate the relevant information in Appendix F, but to combine all information related to data analysis in one section to facilitate NMED's review of the Report. In the Response, the Permittees assert that Appendix F has been included in all previous reports. Until this recent review, NMED had not made a direct comparison of the Permittees' current investigation report format to Section XI.C of the Order. Section XI.C (specifically Sections XI.C.9.a through XI.C.9.1) of the Order provides the requirements for discussing site contamination in investigation reports. Section 6.0 (Site Contamination) and 7.0 (Conclusions) of the Report appear to satisfy the requirements of Sections XI.C.9.a through XI.C.9.1 and Section XI.C.10 (Conclusions), respectively. There is no requirement in the Order for the equivalent of the Report's Appendix F. In the future, the Permittees must combine Section 6.0 and Appendix F (as Section 6.0) of the Report to facilitate NMED's review of the document.*

LANL Response

3. During a meeting held at NMED on November 18, 2009, NMED and the Permittees discussed incorporating the information in data review appendix into the main text of investigation reports. In a letter to NMED dated December 21, 2009, the Laboratory indicated that the data review information will be included in the main text of all future investigation reports.

SPECIFIC COMMENTS

NMED Comment

5. *The Permittees' state in their response that "[t]he definition of the vertical extent of VOC contamination does not require vertical extent to be defined in every borehole used to characterize the site." NMED has required vertical extent be defined in every borehole at other sites at the Laboratory (e.g., DP Aggregate, MDA U, and MDA V) and Section IV.C.3.iii of the Order specifically states, "[t]he*

*borings shall be advanced a minimum of 25 ft below the deepest detected vapor-phase, soil, rock, or groundwater contamination as detected by field screening or previous investigations, whichever is deeper." The Permittees may have decreasing trends; however, the deepest samples collected from boreholes 50-24771/50-603471, 50-24783/50-603472, 50-24813, 50-603467, and 50-603063 all contained concentrations of TCE above the Permittees' own proposed target level of 2100 ug/m³. The Permittees will address this comment in the Phase III Investigation Work Plan described in NMED's **Direction** below.*

LANL Response

5. The approved Phase II investigation work plan (LANL 2007, 098425; NMED 2007, 098440) describes the Laboratory's proposed approach for determining the vertical extent of vapor-phase contamination at Material Disposal Area (MDA) C. Based on the results from the Phase II investigation, the Laboratory proposes installing three new boreholes next to existing vapor-monitoring wells at locations 50-4771, 50-603472, and 50-603468 and one new borehole to the south of MDA C, across Pajarito Road (Figure 4.2-1 in Phase III investigation work plan). As described in the Phase III work plan, the Laboratory proposes to advance these boreholes to the base of the Guaje Pumice Bed (approximately 650 ft below ground surface) rather than rely upon field screening to determine borehole depth.

These locations are the same as those specified in the direction in the NOD. Before these boreholes are installed, however, two quarterly rounds of samples will be collected from the 14 existing vapor-monitoring wells at MDA C to verify the results of the Phase II investigation. The first round of sampling was started the week of January 25, 2010, and the second is planned for April 2010. Based on the results of this sampling, the number and location of proposed vapor-monitoring boreholes may be revised. Any such revisions will be discussed with NMED and submitted to NMED for review and approval.

NMED Comment

7. *No explanation is given for why the 60 minute purge was determined to be longer than necessary to purge the entire collection system when collecting vapor samples. The Permittees must always describe their methods and rationale for determining purge times in work plans and reports where vapor-sampling is proposed.*

LANL Response

7. Comment noted. Methods and rationale for the purge times employed in implementing the Phase III investigation work plan will be described in the Phase III investigation report.

NMED Comment

8. *Although it is appropriate for the Permittees to compare analytical data to background values, residential SSLs/SALs, and industrial SSLs/SALs, it is not appropriate for the Permittees to conduct a risk assessment in the Report because extent of contamination is not defined at the site and NMED has not approved a risk scenario for MDA C.*

LANL Response

8. As stated in the NOD, extent has not been defined for vapor-phase organic compounds and tritium. The risk assessment presented in the Phase II investigation report addressed near-surface inorganic and organic chemicals and radionuclides in soil and tuff. As described in the Phase II investigation report, the extent of contamination has been defined for these contaminants in these media. Risk and dose were evaluated for the industrial scenario, which is consistent with the current and reasonably foreseeable future land use, and the residential scenario, which is required by the Compliance Order on Consent. Following completion of the Phase III investigation, the risk assessment will be updated to incorporate the Phase II and III results for pore gas.

NMED Comment

9. *In reference to the metals concentrations detected in the Tschicoma Formation, the Permittees state in their response that "[i]t is possible, therefore, that the interval sampled may have been more highly weathered than if it had been collected deeper in the formation." The Permittees imply that the sample collected at the top of the formation was weathered. The borehole logs do not indicate any evidence of weathered material at the top of the Tschicoma. Furthermore, the Permittees were asked to discuss the characteristics of the formation which may have resulted in elevated concentrations of metals but instead the Permittees discussed EPA extraction method 3050. The Permittees will address this comment in the Phase III Investigation Work Plan described in NMED's **Direction** below.*

LANL Response

9. Because of the difficulty in collecting core from the Tschicoma Formation dacite, it was not possible to discern the degree of weathering at the top of the dacite. The discussion of U.S. Environmental Protection Agency (EPA) extraction method 3050 was provided to explain why the results from the analysis of the dacite sample from borehole 50-603470 could not be compared to existing background data for dacite. The existing background data were obtained using methods that provide the total concentration of metals in the rock matrix, whereas EPA Method 3050 provides the concentration of acid-leachable metals. The Phase III investigation work plan includes proposed activities to evaluate background concentrations of metals in dacite that can be compared to the results from the sample from borehole 50-603470.

NMED Comment

11. *Decreasing trends in contaminant concentrations do not always define the extent of contamination. For example, tritium was detected at a concentration of 52,700 pCi/L in borehole 50-603383 at 450-feet (the total depth of the borehole); therefore, the vapor-phase tritium plume is not defined at that location. The Permittees will address this comment in the Phase III Investigation Work Plan described in NMED's **Direction** below.*

LANL Response

11. As noted in the response to Specific Comment 5, the Phase III investigation work plan describes the Laboratory's proposed approach for determining vertical extent of vapor-phase contamination, including tritium, at MDA C. The existing vapor-monitoring wells at MDA C are being resampled for tritium to provide updated data on the vertical distribution of tritium in the subsurface. These data will be used to refine the proposed approach for determining vertical extent of tritium.

NMED Comment

16. *The approved Work Plan stated that "drilling would continue in 50-ft intervals until concentrations were below the target levels of 2100 ug/m³ for TCE and 3800 ug/m³ for PCE." If during the course of investigation activities the Permittees discovered that TCE screening was not a useful indicator in determining total depth of boreholes, the Permittees should have notified NMED, obtained NMED's approval, and provided an explanation in the Report. The Permittees took none of these actions. That PCE may show a stronger correlation between screening results and final analytical data, as the Permittees assert, does not change the requirements of the approved Work Plan, especially if the Permittees didn't notify NMED of this finding. The Permittees will address this comment in the Phase III Investigation Work Plan described in NMED's **Direction** below.*

LANL Response

16. The Phase III investigation work plan describes the Laboratory's proposed approach for determining vertical extent of vapor-phase contamination at MDA C, including trichloroethene and tetrachloroethene. As described in section 4.2 of the Phase III investigation work plan, field screening will not be used to guide installation of boreholes. Instead, boreholes will be installed to target depths based on stratigraphic units.

NMED Comment

20. *The Permittees assert that evaluation of the potential for vapor intrusion is unnecessary. Although there are no buildings within the boundary of MDA C, there are several buildings within 100 ft of the solid waste management unit (SWMU). Additionally, the CMRR Building, located approximately 300 ft west of the site, contains several below-ground facilities. The vapor intrusion pathway is complete and must therefore be evaluated. Once the extent of contamination is defined at MDA C, the Permittees must include the vapor intrusion scenario in any human health risk assessment.*

LANL Response

20. As noted in the response to Specific Comment 8, the risk assessment will be updated to include the results of the Phase II and III pore gas investigations. The updated risk assessment will include an evaluation of the vapor-intrusion scenario.

REFERENCES

LANL (Los Alamos National Laboratory), July 2007. "Phase II Investigation Work Plan for Material Disposal Area C, Solid Waste Management Unit 50-009, at Technical Area 50, Revision 1," Los Alamos National Laboratory document LA-UR-07-5083, Los Alamos, New Mexico. (LANL 2007, 098425)

NMED (New Mexico Environment Department), August 13, 2007. "Approval with Modifications for the Phase II Investigation Work Plan for Material Disposal Area (MDA) C, Solid Waste Management Unit 50-009, at Technical Area 50," New Mexico Environment Department letter to D. Gregory (DOE-LASO) and D. McInroy (LANL) from J.P. Bearzi (NMED-HWB), Santa Fe, New Mexico. (NMED 2007, 098440)