

TA21

~~Kathryn Chamberlain~~

To: Ron Rager

Subject: MDA B Comments

Ron,

Here are the NOD comments for MDA B. Let me know if you need anything else.

Katie

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10788

Attachment

**Investigation Work Plan for Material Disposal Area B at Technical Area 21,
Solid Waste Management Unit 21-015**

General Comments:

1. All figures must include pertinent features and structures, underground utilities, and existing well and borehole locations. For example, Figure 1 (MDA B site plan), does not show the location of the abandoned radioactive liquid waste line along the southern boundary of the site, or the Los Alamos County sanitary sewer lift station near the southeast corner of the site. Also, Figure B-26 appears to be inaccurate with respect to the distance between the MDA B and MDA V boundaries. This information could affect the proposed sampling locations and therefore the overall work plan. Rather than resubmit these figures, ensure these changes are reflected in the Investigation Report.
2. The page numbers in the Table of Contents in this work plan are incorrect, beginning with section 5.6 (HazCat and Definitive Identification Screening Methods). The Permittees must update the Table of Contents with the correct page numbers.
3. NMED believes that Appendix B, Historical Investigation Report, is deficient with respect to moisture content data at MDA B. For example, historical borehole DPS-12 had a show of water (page B-32), likely from fracture-fill. Moisture data from cores collected in the tuff, especially from the upper units, is unreliable. The dry matrix surrounding the water-filled fractures tends to absorb the fluids/water rendering a much lower fluid saturation content. Also, during the 700 feet of drilling of the seven angled boreholes completed during the 1998 investigation, the Permittees did not bias sample selection enough at areas suspected of transmitting fluids and/or contaminants, such as fractures. On average, there were about seven samples selected from the 100 feet of core from each borehole, and of the approximately 70 samples, only three were derived from locations described as being fractured. Upper tuff units will most likely only transmit fluids/gases via fractures or along cooling units. The Permittees must bias any future sampling to target areas of higher permeability such as surge beds and fractures/fracture fill material, and moist zones.
4. The Permittees must include as an objective to remove material determined to "pose an immediate threat to either human or environmental safety" and determine whether it is stored, packaged, treated, or disposed on or off-site.

Specific Comments:

1. Section 3.2 Subsurface Conditions, page 6:

Permittees' Statement: "There is an abandoned radioactive liquid waste line running along the southern boundary of the site, outside the fence, that served other LANL facilities."

NMED Comment: The Permittees must provide more information regarding the abandoned radioactive liquid waste line. This information should include whether the waste line was identified in the 1998 geophysical survey, whether the anomaly along the southern boundary of MDA B in Figure B-26 could be this waste line, and how the Permittees will address this issue if it is determined that the waste line has not been removed.

2. Section 3.2.3.1 Infiltration, page 7, paragraph 4:

Permittees' Statement: "Only in situations when substantial infiltration occurs from the ground surface, as was potentially the case under the active absorption beds, will the fractures become wet and conduct water."

NMED Comment: NMED disagrees with this statement. Because ponding can occur at MDA B, infiltration is possible. Therefore any time there is ponding, the fractures beneath MDA B can become wet and conduct water. The Permittees must consider infiltration as a possible contaminant pathway and must propose and implement a remedy to this issue. In addition, as stated in more detail in specific comment #14, paragraph 5, moisture may accumulate underneath the asphalt, and potentially transport contaminants through gravity flow (fractures) and capillary forces.

3. Section 4.0 Scope of Activities, pages 9-10:

Paragraph 1:

Permittees' Statement: "An implementation plan will be developed prior to beginning activities described in the work plan."

NMED Comment: The Permittees must remove the section describing the implementation plan. Most of the elements described in this section are neither requirements nor concerns and should not be included as part of the work plan. Six of the last seven bullets (waste management, compositing, and packaging; definitive identification of unknown chemicals and materials; an electronic inventory management and tracking system; sample collection, handling, and documentation; surveying of sample locations, and trench geometries and features of excavations; and backfilling of exploratory trenches and test pits) should be detailed in sections 4 and 5 of this work plan. The clean cover replacement and compaction element should not be included in the work plan. This element implies final remediation activities and this work plan only addresses the objective of waste characterization.

Paragraph 3:

Permittees' Statement: "To mitigate the hazards associated with operating combustion engineering equipment within the enclosure, scrubbers may be installed on the equipment, the equipment may be vented outdoors, or a ventilation system may be installed"

NMED Comment: The Permittees should be aware that they will be required to inform the NMED Air Quality Bureau to ensure no additional permits are required in order to install scrubbers on equipment, vent equipment outside the enclosure, or install a ventilation system.

4. Section 4.1 Justification of Alternative Scope of Work, page 11:

Paragraph 1

Permittees' Statement: "Because no record of HE production or HE usage at TA-21 has been found, the Laboratory's approach will use field screening for HE to determine if HE needs to be analyzed for in the MDA B disposal trenches."

NMED Comment: On page V of the Executive Summary, The Permittees state "there are no official waste inventory records for MDA B." On page 3, Section 2.1, Operational History, the Permittees state that, "During the fire, several cartons of waste caused minor explosions and, on one occasion, a cloud of pink gas arose from the debris in the dump." Based on the fact that the Permittees have no records of what types of waste were disposed of at MDA B and explosions have occurred at the site, the Permittees must include HE in their analytical suite for all trench and boring samples in accordance with Section IV.C.2.d.iv, number 6 of the proposed Consent Order.

Paragraph 2 (Table 1, Summary of Proposed Alternatives to NMED Order Specifications and Justification for Alternatives, page 39)

Permittees' Statement: "The Laboratory's proposed approach will use past sampling results from boreholes drilled according to the 1998 SAP to define nature and extent of contaminants in the intermediate range bedrock below the disposal trenches. With the exception of tritium, the extent of subsurface contamination has been defined by the angled boreholes completed in 1998 (section B-4.3.1)"

NMED Statement: NMED does not agree that the 1998 angled boreholes define extent of contamination at MDA B. Large areas of the estimated pit locations (estimated by the geophysical survey) shown on Figure 1 (MDA B Site Plan) were not sampled during the 1998 sampling event (subsurface), nor did the Permittees complete a full analytical suite on the 1998 samples. Only TAL metals, SVOCs, americium, tritium, isotopic plutonium, isotopic uranium, and strontium were analyzed. The Permittees must excavate four additional trenches (See attached Figure) to more adequately ascertain the likely locations and contents of the estimated pit locations within MDA B. The Permittees must also drill two vertical boreholes to the base of the Cerro Toledo interval (See paragraph 5 comment

below for additional information). In accordance with Section IX.B.2.d of the Consent Order appropriate technology must be utilized to detect vapors during drilling and sampling operations. If vapor-phase contamination is detected during drilling activities, vapor-monitoring wells will be installed. If groundwater (perched or regional) is encountered during drilling activities or if geophysical results indicate possible zone(s) of saturation, monitoring wells must be installed.

Paragraph 5:

Permittees' Statement: "A deep borehole is planned at MDA V, 100 ft east of MDA B, which will provide permeability data for the tuff overlying the Cerro Toledo interval in proximity to MDA B."

NMED Comment: The Permittees cannot use the planned borehole at MDA V as justification for alternative work and/or define permeability, subsurface conditions, perched groundwater, or any other subsurface features. The Permittees must drill two boreholes to the Cerro Toledo interval in locations based on the results of the exploratory trenches. Borehole locations must be approved by NMED. Sampling must be in accordance with Section IV.C.2.d.iv of the proposed Consent Order.

5. Section 4.2 Regulatory Basis for Technical Approach, page 12:

Paragraph 1:

Permittees' Statement: "The regulatory basis for handling waste materials during the MDA B investigation is based on application of the EPA's area of contamination (AOC) concept." "The AOC concept provides for areas of contiguous contamination to be designated as a RCRA "unit" (for example, a landfill) for the purposes of implementing a remedy. In general, activities such as excavation, movement, consolidation, in-situ treatment, and redeposition of hazardous remediation wastes within the AOC will not trigger RCRA Subtitle C requirements because they are not considered treatment, storage, or disposal."

NMED Comment: NMED requires the Permittees to submit a request for approval of an area of contamination (AOC) designation. The Permittees have not requested approval for the AOC designation. Delineation of an AOC must be reviewed and approved by NMED prior to implementation of this work plan. EPA defines an AOC as certain discrete areas of generally dispersed contamination that can be equated to Resource Conservation and Recovery Act (RCRA) units or landfills. Wastes may be either consolidated or treated in-situ within the AOC without triggering RCRA requirements. Neither of these actions is proposed at MDA B. NMED believes the Permittees are not applying the AOC concept properly to this site. While NMED doesn't agree with the Permittees' application of the AOC Concept to this site, NMED approves of the Permittees' proposal to return environmental media to its point of origin at MDA B. As stated in Section 4.4.2, Guidelines for Excavated Materials, "environmental media include surface soils, bedrock, sand,

gravel, cobbles, and boulders." Although NMED approves this activity, please note that this is not considered a final remedy for this site and the Permittees may be required to remediate/excavate MDA B at a future date. Although environmental media (as defined above) will be permitted to return to its point of origin, the Permittees must manage their waste (drill cuttings, decontamination water, PPE, and all other IDW) from other activities in accordance with Section IX.B.5 of the Consent Order.

Paragraph 2:

Permittees' Statement: "MDA B is identified as SWMU 21-015 in the Laboratory's RCRA operating permit. MDA B, a land-based SWMU, meets the definition of a landfill in accordance with the RCRA regulations (40 CFR 260.10)."

NMED Comment: The Permittees must explain the relevance of their conclusion that MDA B meets the definition of a landfill in accordance with 40 CFR 260.10.

Paragraph 3

Permittees' Statement: "At the conclusion of the investigation, most of the landfill materials will be returned to the exploratory trenches. These operations will not constitute new acts of treatment, storage, or disposal for the purposes of RCRA. Therefore, the RCRA subtitle C hazardous waste requirements will not apply to the proposed investigation activities."

NMED Comment: Based on the definition of treatment provided in Section 40 C.F.R. part 260.10, segregation of wastes once excavated will render material less hazardous, non-hazardous, or will recover material sources from the waste and is therefore considered treatment and can be subjected to the RCRA Subtitle C hazardous waste requirements. However, because this is not considered a final remedy, wastes may be returned to the trenches. NMED may require excavation of these materials as part of a final remedy.

6. Section 4.4.2 Guidelines for Excavated Materials, page 15, paragraph 2:

Permittees' Statement: "Environmental media from MDA B may be returned to the landfill if it will not interfere with future activities and does not increase the potential impact on human health and the environment."

NMED Comment: The Permittees must explain how they will determine if environmental media can be returned to MDA B without increasing the potential impact on human health and the environment.

Permittees' Statement: "According to the EPA's AOC concept (EPA 1996, 82288), materials managed within the AOC boundary do not constitute newly generated waste."

NMED Comment: See NMED Comment #5, paragraph 1.

7. Section 4.7 Removal of Chemical Containers, page 16:

Permittees' Statement: "If caches of intact chemical containers are encountered in the exploratory trenches, they will be removed."

NMED Comment: The Permittees must inspect all containers for leaks, and sample medium at locations of leaks. The Permittees must explain if the containers will be double contained on site, whether they will be sent to a staging area, and the location of final disposal.

Permittees' Statement: "Removal will continue until chemical containers have been removed to the extent that the excavation can be safely backfilled."

NMED Comment: The Permittees must provide additional information regarding the meaning of 'safely backfilled' and who will make this determination.

8. Section 4.8 Exploratory Trench Logging and Identification of Excavated Materials, pg 17:

Permittees' Statement: "To ensure accuracy, quality, and consistency, a formal logging procedure will be developed specifically for this activity."

NMED Comment: The Permittees must include the following information on their logs: the soil or rock type classified in general accordance with ASTM D2487 (Unified Soil Classification System) and D2488, or AGI Methods for soil and rock classification, the name of the qualified engineer or geologist inspecting the samples, presence of water-bearing zones, and any unusual or noticeable conditions encountered during excavation.

9. Section 4.9 Hazard Characterization (HazCat) Screening, page 17:

Permittees' Statement: "The HazCat screening process will provide the basic information needed for segregating waste materials by physical form (solid, liquid, or gas) and hazard class (radioactive, reactive, corrosive, or flammable). This screening will also ensure the safe segregation and compatibility of materials in waste staging areas."

NMED Comment: NMED has reviewed Table 3, which includes the instruments to be used for field screening, the screening methods, and the sequence associated with the HazCat screening process. NMED has concluded that the proposed methods for providing basic information and performing primary identification are suitable for initial screening, however, off-site laboratory analysis must be performed prior to shipment of wastes off-site and must be used for site characterization.

10. Section 4.10.1 Waste Compositing, page 18:

Permittees' Statement: "A systematic characterization approach will be used to evaluate the acceptability of compositing different materials of similar hazard categories into common containers. HazCat and definitive identification screening will serve as compatibility-screening analyses to ensure that the compositing process is conducted safely and will not produce adverse reactions."

NMED Comment: Please refer to comment #9 above. Additionally, using field-screening methods only to categorize waste for compositing increases the risk of waste dilution, which is treatment under RCRA and would require a permit.

11. Section 4.15 Exploratory Trench Backfilling, Compaction, and Clean Cover Replacement, Page 19:

Permittees' Statement: "The cover thickness and composition will be consistent with the existing landfill cover material."

NMED Comment: The Permittees must provide additional information regarding the existing cover material. There is no documentation describing the thickness, composition, or origin of the existing cover material. All that is known is that a soil cover was placed over the eastern side of MDA B in 1982. Also, compaction and clean cover replacement are remediation activities and should not be addressed in this work plan.

12. Table 1, Summary of Proposed Alternatives to NMED Order Specifications and Justification for Alternatives, pages 38-43:

General Comment: Items associated with nature and extent of contamination; previous investigations; analytical results; investigation and sampling methods and requirements; monitoring-well installation (groundwater and vapor); and field-screening and laboratory sample selection. NMED does not agree with the justifications provided by the Permittees in Table 1 for these items. The following comment will address the problems with the justifications of the items specified above.

Items 2, 3, 10, & 16:
See Comment #4, paragraph 5

Item 11:
See Comment #9

Items 12 & 13:
Based on the objective of characterizing and quantifying waste outlined in this work plan, the number and location of samples within the exploratory trenches proposed by the

Permittees is acceptable. However, once waste has been characterized and quantified, the Permittees must provide a plan outlining the remaining characterization and any remediation activities for MDA B. The eight exploratory trenches, two deep boreholes, and previous sampling and analysis events may not be sufficient for defining the extent of contamination and additional subsurface sampling may be required.

Specific Comments:

Item 3, page 39:

Permittees' Statement: "The deep MDA V borehole and the outcrop of Cerro Toledo interval exposed on the cliff face of Los Alamos Canyon approximately 250 ft southeast of MDA B are sufficiently close to MDA B to confirm the absence of perched water at the Cerro Toledo contact."

NMED Comment: The Permittees must explain which deep borehole they are referring to in this statement. Do the Permittees mean the previous deep borehole at MDA V, which is located approximately 370 ft east of MDA B, or the planned deep angled borehole proposed in the work plan for MDA V?

Item 10, page 40:

Permittees' Statement: "A deep angled borehole is planned for MDA V and will intersect the Cerro Toledo at a horizontal distance of approximately 300 ft from MDA B. Permeability data for the tuff overlying the Cerro Toledo interval will be collected."

NMED Comment: See NMED Comment # 4, paragraph 5

Item 11, page 41:

Permittees' Statement: "Samples will be collected as specified (see Table 4 and section 5.8 in this plan). The field-screening methods specified in Table 4 meet or exceed those described in the Order."

NMED Comment: The reference to Table 4 in this section of the Justification Table is incorrect. The reference should be made to Table 3.

Item 13, page 41:

Permittees' Statement: "Deeper subsurface VOC contamination was characterized using pore-gas sampling data from the 1998 angled boreholes (see section 2.2.2). HE analysis of new samples will confirm the absence of HE. HE compounds were not indicated in

previous SVOC analyses (see section 2.2). Dioxins and furans have limited mobility and are most likely to be detected at, or immediately below, trench bottoms.”

NMED Comment: As a reminder, the Permittees must sample beneath the pits into the tuff to background levels. They are not permitted to sample only within the estimated boundaries of the waste pits. Additionally, SVOC analysis will only detect some HE compounds. Therefore, previous HE analysis and sampling will not be sufficient to meet the requirements for this work plan. Refer to comment #4, paragraph 1.

Item 16, page 42:

Permittees' Statement: “The deep borehole which was completed at MDA V, near MDA B, was advanced beyond the Cerro Toledo interval to a depth of 660 ft and did not encounter perched water.”

NMED Comment: The Permittees may not use the previous deep borehole completed at MDA V as justification for not completing two deep boreholes at MDA B. The MDA V borehole is approximately 370 ft east of MDA B and cannot predict the subsurface conditions around and beneath MDA B. Perched groundwater and vapor-phase contamination could be locally encountered closer to and beneath MDA B. Also, the additional borings should be focused in directions and depths that follow typical fracture orientation, the old alluvium, and the paleotopography controlling the Cerro Toledo interval.

13. Appendix B, Historical Investigation Report, Section B-2.2.2, MDA B Subsurface Features, page B-3, paragraph 1:

Permittees' Statement: “The approximate trench locations from historical information in the RFI work plan are shown on Figure B-6.”

NMED Comment: Figure B-6, entitled Surface Water run-off at MDA B, illustrates run-off from the site, not trench locations. The Permittees must ensure that all Figures in this document are referenced appropriately in the text.

14. Appendix B, Historical Investigation Report, Section B-4.4.2, 1998 RFI Surface Soil Investigation, page B-16 & B-17:

NMED Comment: The references to all tables in paragraph one of this section are inaccurate. The text must be revised to reflect the correct referenced table numbers.

Permittees' Statement: “There are indications from other Laboratory sites (MDA AB at TA-49 in particular) that the presence of asphalt covers may increase subsurface moisture content by restricting the natural loss of moisture from the soil profile through evaporation

and transpiration by plants. The average moisture content for the six MDA B soil samples collected beneath the asphalt cover was 10.9% (by weight). By comparison, the average moisture content in the 24 surface samples collected during the same 1998 investigation, from surrounding locations without asphalt cover, was 5.1% (by weight). Tritium was not detected in the soil immediately beneath the asphalt."

NMED Comment: The document mentions that the asphalt pad that partially covers the site may "increase subsurface moisture content by restricting the natural loss of moisture from the soil profile through evaporation and transpiration by plants." Not unlike MDA AB at Technical Area 49, the lack of evapotranspiration at the site may be producing and potentially transporting, through gravity flow and capillary forces, contaminated water. This condition, if it exists, is a major component of the hydro-contaminant conceptual model for the site, and therefore needs to be incorporated into the investigation plan. It is required that at least one or two of the exploratory trenches be placed across areas that show topographic lows as indicated by geophysics and that a contingency plan be developed to address the characterization of water should it be intercepted during the trenching process.

15. Appendix B, Historical Investigation Report, Section B-5.2, General Discussion of Sediment, page B-19, paragraph 1:

Permittees' Statement: "Plutonium-239 is found in the channel sediments between 1 and 5 pCi/g, consistent with concentrations on the slopes south of MDA B (Figure B-49). No apparent trend for plutonium-239 (increasing or decreasing) is observed in the sediments or soils."

NMED Comment: In Appendix B, Section B-5.1, General Discussion of Surface Data, the Permittees state that "Plutonium-239 activities are elevated along the perimeter of MDA B, and the concentrations decrease, in general, with distance away from the site as shown in Figure B-49." Based on Figure B-49, there is no obvious trend of Plutonium-239 in surface soils or sediments. The Permittees must explain why they have conflicting statements regarding a trend in Plutonium-239 concentrations at MDA B.

16. Appendix C Investigation Derived Waste Management, page C-1-C-2:

NMED does not approve the Permittees' plan for handling Investigation Derived Waste (IDW). Specifically, the Permittees may not return drill cuttings, decontamination water, PPE or other IDW to their point of origin. Rather, the Permittees must contain all IDW, and characterize it to ensure proper handling, including but not limited to, final disposal.

In their description of the methods and procedures used to characterize and manage all IDW, the Permittees may not substitute a reference to their SOPs for a description of its procedures (see Section IX.A of the proposed Consent Order).

Drill cuttings, purge and decontamination water, personal protective equipment (PPE), and all other IDW must be containerized and characterized prior to disposal. Each container of waste generated must be properly labeled immediately following containerization. All IDW must be sampled and analyzed for hazardous contaminants that are suspected or detected prior to or during investigation activities. All suspected radioactively contaminated waste/material should be sampled or surveyed for radionuclides. All IDW must be disposed of properly at an appropriate disposal facility. The methods used to store, control, and transport each waste type and classification must be included in the investigation report.

~~Table C-1, page C-2:~~

The Permittees have estimated 100 yd³ of Transuranic (TRU) and mixed TRU waste to be excavated from the exploratory trenches and test pit spoils. All waste discovered at MDA B will have been disposed of prior to 1970. If TRU waste is discovered in intact drums, with accurate labeling, the Permittees must determine under what legal authority/justification this waste will be disposed of at the Waste Isolation Pilot Plant (WIPP).

The Permittees cannot assume that PPE, plastic, and other IDW are solid, low-level waste to be disposed of at TA-54, Area G. As stated above, all IDW must be sampled and analyzed for hazardous contaminants prior to storage or disposal off-site.