**Response to the Notice of Disapproval for the
Investigation Work Plan for Starmer/Upper Pajarito Canyon Aggregate Area,
Los Alamos National Laboratory, EPA ID No: NM0890010515, HWB-LANL-10-077,
Dated January 5, 2011**

INTRODUCTION

To facilitate review of this response, the New Mexico Environment Department's (NMED's) comments are included verbatim. The comments are divided into general and specific categories, as presented in the notice of disapproval. Los Alamos National Laboratory's (LANL's or the Laboratory's) responses follow each NMED comment. 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(DOE) policy.

GENERAL COMMENTS

NMED Comment

1. ***Solid Waste Management Units (SWMUs), Areas of Concern (AOCs), and Consolidated Units (CUs) Where 20 Percent of the Soil Samples are Proposed for Polychlorinated Biphenyl (PCB) Analyses:***

   In the case where 20 percent of the samples will be analyzed for PCBs, it is not clear how the Permittees will determine which samples will be analyzed. The Permittees must state the proposed criteria for selecting the sample intervals selected for analyses of PCBs (e.g., only surface samples will be selected; only sample intervals found to contain semi volatile organic compounds (SVOCs)). Revise the document accordingly.

LANL Response

1. Text has been added to section 8.9 stating the criteria used to select sampling locations and depth intervals of samples to be submitted for polychlorinated biphenyl (PCB) analysis. The first criterion is to identify sampling locations at the likely source of PCBs. The second criterion is to separate the locations spatially into areas most likely to define lateral extent of PCBs if they are present. The third criterion is to include PCB analysis for all depth intervals at each sampling location selected by the first two criteria to define the vertical extent where PCBs have been detected.

NMED Comment

2. ***PCB sampling and TA-08:***

   The Permittees propose sampling select locations for PCBs at the SWMUs, AOCs, and CUs located within TA-08. The Permittees indicate in Section 2.2.1 (TA-08), page 3, that transformer stations were constructed; specific locations are not provided. The Permittees must analyze soil samples for PCBs at all sampling locations within TA-08, or provide the locations of the transformers, and rationale for sampling PCBs from only select locations (i.e., only 20 percent of the samples) and why PCB analyses are not needed at other locations (e.g., PCB's were not proposed in the analytical suite for

AOC 08-001(a) and AOC 08-001(b), but 20 percent of the samples were proposed for PCB analysis at SWMU 08-002, SWMU 08-003(a), and SWMU 08-009(a), and all samples from SWMU 08-004(b) are proposed to be analyzed for PCBs). Revise the Work Plan to explain how PCB analysis is chosen at all locations, in addition to TA-08. See General Comment 1 above.

LANL Response

2. The only site in TA-08 where transformers are known to be associated with a solid waste management unit (SWMU) or area of concern (AOC) is AOC 08-009(c). All samples at AOC 08-009(c) are proposed for PCB analyses. At most other sites, transformers or PCBs are not known to have been present, but their existence cannot be eliminated with certainty. Therefore, PCB analyses are proposed for 20 percent of samples at all other sites to be investigated in Technical Area 08 (TA-08) (see response to Comment 1 above), with the following exceptions:

    - SWMUs 08-004(b), 08-004(c), 08-005, and 08-006(a) and AOC 08-009(f)—All samples will be analyzed for PCBs because 10 or fewer samples will be collected (see revised section 8.9). Text in section 4.5.3 and Table 4.5-1 have been revised to include PCB analysis for all samples at SWMU 08-004(c).

    - AOCs 08-001(a) and 08-001(b), off-gas system only─No PCB contamination is possible; therefore, no PCB analyses are proposed.

    - SWMU 08-004(d)—no PCB analyses are proposed because the SWMU consists of drainline contamination resulting from a spill of strontium-90 only.

    Text has been added to section 8.9 explaining how locations and samples are selected for PCB analyses.

NMED Comment

3. References in text and figures:

The figures and plates depict sewer and drainlines as separate lines. The text in the scope of activities sections frequently propose sampling along a drainline, while the figures associated with these descriptions include sampling locations shown along a sewer line instead of a drainline. For example, Section 6.3.1.3 (Scope of Activities for SWMU 22-010(b) states "[o]ne hundred sixty-nine surface and subsurface samples will be collected from 58 locations adjacent to the tank inlet, septic tank, tank outlet, drainlines, and at the sand filter and outfall area (Plate 12)." Plate 12 includes drainlines and sewer lines, but sample locations are shown along the sewer lines, contrary to what is indicated by the text. Revise the Work Plan to ensure the text and figures are consistent, and clarify whether or not the terms "sewer line" and "drainline" are interchangeable.

LANL Response

3. The term "drainline," used in this and similar documents, is a general term that refers to a line that drains liquids from one location to another location. A "sewer line" is the term the Laboratory uses to label all nonindustrial drainlines in its geographic information system (GIS). However, the Laboratory's GIS is incomplete and does not include many existing and former drainlines. Therefore, Laboratory staff responsible for drafting investigation documents must research engineering drawings to supplement the GIS. Those lines that supplement the GIS are indicated on figures simply as "drainlines." Likewise, in the text, the term "drainline" is preferred because it is a general and inclusive

term. This terminology has been used throughout Laboratory documents for several years. No revision to the work plan is necessary.

NMED Comment

4. Sites Where Structures Were Destroyed by Intentional Burning:

In accordance with facility practices and policies in effect at the time, some buildings were destroyed by intentional burning. These structures may have had wood framing that were, or may have been, in contact with high explosives (HE) (e.g., Technical Area 9 (TA-9), SWMU 09-003(g)). While explosive compounds do not typically contain chlorine, wood and various plastics do. With a chlorine source, dioxins and furans can be generated by combustion. At any AOC, SWMU, or CU where burning was conducted, soil samples must be collected and analyzed for dioxin/furans. Due to the relative low mobility of these compounds in soil, NMED will accept sampling proposals for individual AOCs, SWMUs and CUs which target the upper sample interval(s) at locations slated for sample collection at multiple depths. In proposing sample locations for these analytes, the Permittees must consider past and current site drainage patterns and target the drainages. Revise the Work Plan accordingly.

LANL Response

4. These World War II–era buildings were simple wooden structures. There is no reason to suspect these wood-framed structures contained any chlorine source that would, in turn, contribute to the formation of dioxins and furans when they were burned. In other Laboratory investigation work plans approved by NMED for aggregate areas where similar structures were destroyed by burning (e.g., LANL 2006, 091698; LANL 2007, 097687; LANL 2007, 102622); analysis for dioxins and furans was not required. Structures burned as part of the decontamination and decommissioning (D&D) efforts are not a potential source of these contaminants discernibly different from forest fires or other background sources. No revision to the work plan is necessary.

NMED Comment

5. Sites containing fill material

Excavations resulting from the removal of former sewers, sumps and septic systems have been backfilled with imported fill. The Permittees must ensure the proposed samples are collected below fill material in native soil or tuff. Revise the Work Plan, where applicable, to indicate samples are being collected below fill material and from native media.

LANL Response

5. The intent of the proposed sampling is to sample native material, unless fill material was in place at the time the SWMU or AOC originated and, therefore, could potentially have been contaminated by activities or releases at the site. Text in some Scope of Activities sections for sites known to include fill material has been revised to indicate that only native material is to be sampled, and that sampling depths will be adjusted in the field as necessary to ensure that only native soil, tuff, or sediment is sampled. Proposed sampling tables have also been revised in these cases to indicate where

sampling depths are measured below the fill, not from ground surface. The revised sections and tables are as follows:

- section 5.17.3, Table 5.17-1
- section 5.18.3, Table 5.18-1
- section 5.20.3, Table 5.20-1
- section 5.24.3, Table 5.24-3
- section 7.3.3, Table 7.3-1

NMED Comment

6. Discrete verses Composite Sampling

The document does not state whether discrete or composite samples will be collected. Nonetheless, all samples must be collected as discrete samples, including investigation derived waste samples analyzed for volatile organic compounds (VOCs).

LANL Response

6. All environmental characterization samples proposed in this work plan will be collected as discrete samples in accordance with section IX.B of the Compliance Order on Consent (Consent Order). This is reflected in the text, tables, and figures, which indicate discrete samples by specifying single locations and unique sample depths for each sample. No revision to the work plan is necessary.

SPECIFIC COMMENTS

NMED Comment

7. Section 2.3.4 (Cleanup Standards), page 7:

Permittees' Statement: *"[a]s specified in section VII.B.1 of the Consent Order, soil screening levels will be used as soil cleanup levels unless they are determined to be impractical or unless values do not exist for the current and reasonably foreseeable future land use. Human health screening levels for chemicals and radionuclides are provided in analytical data tables."*

NMED Comment:

a. Section VII.B.1 of the Consent Order addresses interim measures while section VIII of the Consent Order addresses cleanup and screening levels. Revise the Work Plan to reference the correct section of the Consent Order.

b. Explain how the soil cleanup levels would be determined to be impractical, and under what circumstances would the soil cleanup levels not exist for the current and reasonably foreseeable future land use.

c. Specify in which tables the human health soil screening levels for chemicals and radionuclides are provided (e.g., cite the screening levels as listed in a separate table).

LANL Response

7. a. The text in section 2.3.4 has been revised to refer to section VIII.B.1 rather than to section VII of the Consent Order.

   b. The language in the Permittees' statement, quoted in the comment above, is from the Consent Order (section VIII.B.1, second paragraph) and is standard language included in investigation work plans and reports. Section VIII.B.1 of Consent Order refers the reader to section VIII.E of the Consent Order for details of how levels are determined to be impractical. Clarification has been added to section 2.3.4.

   c. As indicated in the text, the soil screening levels (SSLs) are presented in the analytical data tables for each site. Clarification has been added to section 2.3.4.

NMED Comment

8. Section 4.1 (AOC 08-001(a), Off-Gas System), page 16:

The discussion of historical uses of AOC 08-001(a) does not indicate if any drains, sumps, or sinks are or were located in building 08-1. The Permittees must revise this section to provide such a discussion and propose sampling. Include engineering drawings of building 08-1, if available.

LANL Response

8. NMED's comment implies that AOC 08-001(a) is building 08-1, which is not the case. AOC 08-001(a) is described in this work plan and in earlier documents (LANL 1990, 007511) as an off-gas ventilation that served building 08-1 from 1943 to 1968. The system consists of duct work, five exhaust vents, an exhaust fan in the darkroom at the southwest corner of the building, and an exhaust fan in the boiler room at the east end of the building. As such, no drains, sumps, or sinks are included as part of AOC 08-001(a), and sampling of these features is inappropriate in the context of investigating this AOC. The proposed sampling approach is intended to characterize potential releases from the AOC (i.e., fallout from airborne releases). No revision to the work plan is necessary.

NMED Comment

9. Section 4.2 (AOC 08-001(b), Off-Gas System), page 17:

The Permittees must revise this section to discuss any drains, sinks, or sumps associated with building 08-2. If present, the Permittee must propose sampling at these locations and provide engineering drawings, if available.

LANL Response

9. As with AOC 08-001(a), AOC 08-001(b) is the off-gas system that served building 08-2, not building 08-2 itself. See the response to Comment 8 above. No revision to the work plan is necessary.

NMED Comment

10. Section 4.3 (SWMU 08-002, Gun Site) and Section 4.3.3 (Scope of Activities for SWMU 08-002), pages 17-18:

Propose surface clearance to remove any potential debris and propose sampling in the drainages in the vicinity of the site and the drainages associated with Anchor Ranch Road.

LANL Response

10. Section 4.3.3 has been revised to propose conducting a walkover survey before sampling to determine if any surface debris or unexploded ordnance (UXO) remains at the site. If UXO or related debris is identified at the surface, a pickup activity will be performed before the proposed samples are collected. Only UXO, shrapnel, or related material will be removed, and any debris with potential historic value will not be disturbed.

    SWMU 08-002 consists of a firing site where solid projectiles were fired into sand butts. Contamination at the site is expected to consist of scattered fragments of steel, tungsten carbide, depleted uranium, copper, and lead that are unlikely to have been transported into the drainages associated with Anchor Ranch Road. To account for the stated maximum debris scatter radius, however, three sampling locations have been added in the two small drainages to the east of former structure 08-5. The text in section 4.3.3, Table 4.3-1, and Figure 4.3-2 have been revised to include these additional sampling locations.

NMED Comment

11. Section 4.4.1.3 (Scope of Activities for SWMU 08-003(a)), page 20, Figure 4.4-2, Proposed sampling locations for Consolidated Unit 08-003(a)-00 [SWMUs 08-003(a), 08-004(a), and 09-009(a)], and Table 4.4-1, Proposed Sampling at SWMU 08-003(a):

In Figure 4.4-2, the Permittees propose to collect one sample (3a-15), located between proposed sample locations 3a-14 and 9a-8 along a 60 foot sewer line. In addition to sample 3a-15, the Permittees must propose an additional sample between 3a-14 and 9a-8. Revise the text, figures, and tables accordingly.

LANL Response

11. One additional sampling location (3a-16) has been added between locations 3a-14 and 9a-8. The text in section 4.4.1.3, Table 4.4-1, and Figure 4.4-2 have been revised to account for the additional sampling location.

NMED Comment

12. Section 4.4.3 (SWMU 08-004(b), Drainline), page 21:

Permittees' Statement: *"Building 08-2 was built in 1943 and served as a process building for the gun site (SWMU 08-002). After World War II, the building was used as a machine shop and for storage."*

NMED Comment: *The proposed sampling locations and chemical analyses are addressed in Section 4.4.3.3 (Scope of Activities for SWMU 08-004(b)). Because Building 08-2 was used as a machine shop, the soil samples must also be analyzed for diesel range organics (DRO) and oil range*

organics (ORO). Revise the Work Plan to include these analytical methods for proposed samples 4b-1 through 4b-5.

LANL Response

12. As stated in section 4.4.3, only one drainline exits the building (LASL 1943, 110447). The drainline served as a closed-loop condensate discharge associated with the building's steam-heating system and therefore could not be affected by building operations. It is therefore not necessary to add diesel range organics (DRO) and oil range organics (ORO) to the analytical suites. No revision to the work plan is necessary.

NMED Comment

13. Sections 4.5.1 (Summary of Pervious Investigations for SWMU 08-004(c)) and 4.5.3 (Scope of Activities for SWMU 08-004(c)), page 23:

Permittees' Statement: *"[n]o previous investigations have been conducted at SWMU 08-004(c) because the approved 1993 work plan states that characterization of SWMU 08-004(c) will be deferred until removal of building 08-3 (LANL 1993, 020949, pp. 5-27−5-28)." "[t]he floor drains inside the building will not be sampled in consideration of historic restoration to the building in the near future."*

NMED Comment: *SWMU 08-004(c) must be characterized upon removal of building 08-3.*

LANL Response

13. Text has been added to sections 4.5 and 4.5.3 to clarify that building 08-3 is being prepared for historic restoration and preservation and will therefore not be removed in the foreseeable future. However, the site will be characterized if and when the building is removed.

NMED Comment

14. Section 4.5 (SWMU 08-004(c), Floor Drain and Sumps, and Section 4.5.3 (Scope of Activities for SWMU 08-004(c)), page 23:

Permittees' Statements: *"[b]uilding 08-3 was originally constructed to house diesel-powered electrical generators that provided the electricity necessary to support operations at buildings 08-1 and 08-2 and the gun site" and "[t]he drainage further downgradient will be characterized by sampling at SWMU 08-003(a) (section 4.4.1.3)."*

NMED Comment: *Because building 08-03 historically housed diesel powered electrical generators, all samples associated with SWMU 08-003(a) and 08-004(c), including associated drainages, must be analyzed for DRO and ORO. Revise the Work Plan to include proposed DRO and ORO analyses in the appropriate sections.*

LANL Response

14. The text in sections 4.4.1.3 and 4.5.3 and Tables 4.4-1 and 4.5-1 have been revised to include total petroleum hydrocarbon (TPH) DRO and TPH-ORO analysis.

NMED Comment

15. Section 4.6 (SWMU 08-004(d), Drains), page 24:

The Permittees discuss sampling around the concrete foundation of former building 08-24 (Isotope Building) and adjacent to the associated drainline (the drainline is labeled as a sewer line on Figure 4.6-2). The Permittees indicate that this location was contaminated with strontium-90 and state that "[a] radiation survey, conducted one month following the spill, detected contamination in concrete cracks on the loading dock and between dock sections, and the area was sealed with concrete to avoid spreading the contamination." Because contamination was detected in the cracks of the concrete, the Permittees must discuss how they will determine if contaminants penetrated below the concrete. Revise the Work Plan accordingly.

LANL Response

15. SWMU 08-004(d) consists of the drains only and does not include the loading dock (LANL 1990, 007511). The loading dock was discussed in the site description because it was the source of the contamination that was released to the drainlines (via decontamination activities). Because radioactive contamination is known to have penetrated the concrete, the affected concrete was sealed to prevent further release of contamination. When the concrete slab is removed, the DOE will determine whether radioactive contaminants are present below the slab and whether any additional characterization or cleanup is necessary. No revisions to the text were necessary.

NMED Comment

16. Section 4.6 (SWMU 08-004(d), Drains), page 25:

Permittees' Statement: *"[s]amples adjacent to the drainlines will be collected at 50-ft intervals along the path of the drainline, beginning at the point of exit from the building or tank up to the point where the drainline is plugged or disconnected, to coincide with the expected locations of the pipe joints. Samples from these locations will be collected at two depth intervals (immediately below the level of the drainline or tank and 5 ft below the level of the drainline or tank)."*

NMED Comment: *The above paragraph references a tank that was not mentioned in earlier descriptions of this SWMU. Revise the Work Plan to indicate if a tank is present, and if so, include a description of the tank (e.g., address its location, dimensions, what it stored).*

LANL Response

16. The reference to a tank at SWMU 08-004(d) is incorrect. No tank is associated with SWMU 08-004(d). The text of section 4.6.3 has been revised to remove the reference to a tank.

NMED Comment

17. Section 4.7.3 (Scope of Activities for SWMU 08-005), page 26:

Permittees' Statement: *"[s]amples will not be analyzed for radionuclides because the sump was used only for handling HE with no record or indication of radionuclide use at the site."*

NMED Comment: *The Permittees state this sump was only used for handling HE. Revise the Work Plan to include the analyses of explosive compounds for all samples collected from SWMU 08-005.*

LANL Response

17. The text referring to a sump was incorrect. There is no sump at SWMU 08-005 and no historic use of explosive compounds. The text in section 4.7.3 has been revised to remove the reference to the sump. The proposed analytical suites were based on the chemicals historically used at this site. No revision to the analytical suites is necessary.

NMED Comment

18. Section 4.8 (SWMU 08-006(a), MDA Q), page 26:

The Permittees have limited information about the location and dimensions of MDA Q. The Permittees propose to collect four soil samples, one from each side of the approximate location of MDA Q from the depths of 0-1 ft and 4 to 5 ft. The proposed sampling is too limited to characterize the vertical and horizontal extent of contamination, nor does it address the drainages. To address these deficiencies and definitively locate the landfill, the Permittees must dig three trenches within the approximate boundaries of MDA Q, as shown in Figures 4.8-2. The Permittees must also collect a representative number of samples within the trenches to determine the vertical and horizontal extent of contamination. The Permittees may use field screening to guide the investigation. Revise the Work Plan to include the locations of the exploratory trenches, describe field screening methods that will be used, include proposed sample locations within the trenches, and propose sampling locations in the associated drainage pathways. If waste is discovered, the Permittees must remove it during excavation activities or propose to submit a work plan to remove the waste in the Recommendations Section of the Investigation Report

LANL Response

18. As stated in section 4.8, although the location of SWMU 08-006(a), Material Disposal Area (MDA) Q, was unclear in the 1990 SWMU report (LANL 1990, 007511), the location was later identified by geophysical methods, including two electromagnetic surveys and a ground-penetrating radar survey conducted in December 1993 (Wilson 1994, 048763). The outline of SWMU 08-006(a) shown in Figures 4.8-1 and 4.8-2 bounds the area where the geophysical surveys indicated the site to be. The objective of the investigation is to characterize the nature and extent of any releases from the site, not to characterize the contents of the MDA or to remove the waste, unless the results of the proposed sampling indicate the need for waste removal. The proposed sampling locations are designed to meet this objective. Because SWMU 08-006(a) is a subsurface disposal site that contains discrete objects (naval guns, inert projectiles, expended casings, and nonnuclear prototypes for the Little Boy weapon) rather than chemicals, there are no surface releases, and sampling of drainages is not warranted. The Laboratory is not prepared to excavate trenches in the MDA itself or to remove the waste as part of this investigation. No revision to the work plan is necessary.

NMED Comment

19. Section 4.9 (AOC 08-009(c), Drainline and Outfall), pages 26 and 27:

AOC 08-009(c) includes a drainline, outfall, and french drain that surround building 08-23. The Permittees proposed sampling only at the outfall and downgradient of the outfall. Revise the Work Plan to propose sampling of the french drain system and along the drainline.

LANL Response

19. The French drain is not part of AOC 08-009(c), but only feeds stormwater to the AOC 08-009(c) drainline, as stated in section 4.9. The text in section 4.9.3 has been revised to indicate that samples will be collected along the drainline, subject to possible access restrictions near the active facility. Figure 4.9-3 and Table 4.9-3 have also been revised to include the additional sampling locations.

NMED Comment

20. Section 4.9 (AOC 08-009(c), Drainline and Outfall), pages 27:

Permittees' Statement: *"[t]he Betatron building was built in 1950 and housed a 20-million-volt betatron, electron accelerator that was used to radiograph large items such as nuclear fuel elements, waste containers, and weapon assemblies. In 1990, approximately 1 pint of oil containing an unknown concentration of PCBs is reported to have spilled from transformers placed in the building's basement. The spill was cleaned. Following the spill, all transformers were replaced. Because the basement floor drains could not be plugged because of the possibility of flooding the transformers, a trough and absorbent boom were installed to intercept any future leaks. The floor drains were subsequently plugged in 1996."*

NMED Comment: *The Permittees propose to analyze only for PCBs. From the description above, other potential contaminants include radionuclides, metals, VOCs, SVOCs, and ORO. All samples collected from 2-3 feet must be analyzed for metals, radionuclides, VOCs, and ORO, and for SVOCs if ORO is detected at or above 200 mg/kg. Revise the Work Plan accordingly.*

LANL Response

20. The proposed analysis is for PCBs only because the basement of building 08-23 (the Betatron building) is known to have housed transformers with PCB-containing oil. The three floor drains located in the basement of building 08-23 and their associated outfall served the basement only. No operational activities were conducted in the basement other than housing the transformers (LANL 1993, 020949, pp. 5-8–5-9; LANL 1994, 038539, p. 6). The drainlines associated with operational activities conducted elsewhere in the building were not connected to the basement drainlines or to the outfall in question (LANL 1994, 038539, p. 6). Therefore, no additional analyses are necessary, and samples will be analyzed for PCBs only. Explanatory text and a reference have been added to section 4.9.

NMED Comment

21. Section 4.10 (SWMU 08-009(d), Drains), pages 27 and 28:

The Permittees propose sampling at the outfall and downstream from the outfall, but do not propose sampling from the drain in building 08-22, at the drainline as it leaves the building, or along the drainline to the outfall. Revise the Work Plan to propose sampling locations at the drain located in Building 08-22, the location where the drainline leaves the building, and along the drainline to the outfall. Include a description of the drainline construction.

LANL Response

21. Building 08-22 is an active facility, and sampling inside the building will not be performed at this time. Section 4.10.3 has been revised to include additional sampling locations along the drainline to the outfall and where the drainline exits the building, subject to potential access restrictions. Text has also been added to section 4.10.3 stating that sampling at locations within the building footprint will be delayed until the building is removed. Figure 4.10-2 and Table 4.10-1 have been revised to include the additional sampling locations. Samples to be analyzed for PCBs will be identified and collected in accordance with the response to Comment 1.

NMED Comment

22. Section 4.11 (SWMU 08-009(e), Outfall), pages 28 and 29:

The Permittees do not propose to collect samples along the drainlines from building 08-21 to the former NPDES outfall 06A075. Further, Figure 4.11-2 includes a location labeled "Drop Inlet" without indicating its function or purpose. Revise the Work Plan to propose collection of samples as the drainline leaves building 08-21, along the drainline west and east of the Drop Inlet and at the Drop Inlet itself. Include a description of the drop inlet and its purpose.

LANL Response

22. Section 4.11 has been revised to include a description and purpose of the drop inlet, which receives only stormwater from a grassy island and is not otherwise associated with the site. Section 4.11.3 has been revised to include sampling along the drainline where it exits the building and west and east of the drop inlet. Sampling along the active drainline and next to the active building may be subject to access restrictions that limit the locations that may be sampled. Figure 4.11-2 and Table 4.11-1 have been revised to include the additional sampling locations.

NMED Comment

23. Section 4.12 (AOC 09-009(f), Outfall) and Figure 4.12-2 (Proposed sampling locations for AOC 08-009(f)), page 30:

The proposed sample locations for this AOC are provided in Figure 4.12-2 (Proposed sampling locations for AOC 08-009(f)). Include additional sample locations at outfall 08-0074 and along the storm drain.

LANL Response

23. Structure 08-0074 is not an outfall but a manhole, as indicated by the symbol used on Figure 4.12-2. The outfall associated with AOC 08-009(f) is located at proposed sampling location 9f-1, and is marked with an outfall symbol. The manhole is located on a sewer line (not a storm drain as indicated in the comment) that is unrelated to the AOC 08-009(f) drainline and outfall. Figure 4.12-2 has been revised to more clearly indicate that structure 08-0074 is a manhole and to include a symbol for sewer lines in the legend. No additional sampling locations are proposed for the manhole and sewer line.

NMED Comment

24. Sections 4.13 (AOC C-08-014, Building) and 4.13.3 (Scope of Activities for SWMU AOC C-08-014), pages 30 and 31:

Permittees' Statement: *"AOC C-08-014 is building 08-21 at TA-08." "[b]uilding 08-21 is currently active. Therefore, it is proposed that characterization of the building be delayed until the building is removed."*

NMED Comment: *Indicate in the Investigation Report that investigation at AOC C-08-014 will be delayed until the building is removed.*

LANL Response

24. Comment noted. The text in section 4.13.3 has been revised to indicate that sampling at AOC C-08-014 will be performed when building 08-21 is removed.

NMED Comment

25. Section 5.3.3 (Scope of Activities for SWMU 09-001(d)), page 36:

SWMU 09-001(d) contains two former firing chambers associated with building 09-01. The Permittees propose sampling south and southwest of the firing chambers. Because the firing chambers and associated building 09-1 have been removed, the Permittees must also propose sampling within the footprint of the firing chambers and within the footprint of building 09-1. Revise the Work Plan accordingly.

LANL Response

25. Figure 5.3-2 has been revised by adjusting the proposed sampling locations to include points within the footprints of the firing chambers. SWMU 09-001(d) includes only the firing chambers adjacent to building 09-1. The building is not part of the SWMU. Building 09-1 was separated from the firing chambers by heavily reinforced blast walls, and no contamination would have impacted the footprint of the former building. Therefore, no sampling locations are proposed within the footprint of former building 09-1.

NMED Comment

26. Section 5.3.3 (Scope of Activities for SWMU 09-001(d)), page 36:

The Permittees indicate in the text that 20 percent of the samples will be analyzed for PCBs. However, Table 5.3-1 (Proposed Sampling at SWMU 09-001(d)) does not include any samples proposed for PCB analysis. Revise Table 5.3-1 to indicate which samples will be analyzed for PCBs.

LANL Response

26. Table 5.3-1 has been revised to include PCB analysis for the selected samples. The samples to be analyzed for PCBs will be identified and collected in accordance with our response to Comment 1.

NMED Comment

27. Section 5.7 (SWMU 09-003(g), Former Sump and Pipes), page 40:

Permittees' Statement: *"SWMU 09-003(g) (Figure 5.7-1) is identified in the 1990 SWMU report (LANL 1990, 007511) as the sumps and associated pipes in former building 09-2 (a photo darkroom and boiler plant)…[t]he condensate pits and pipes associated with former building 09-2 were removed in 1965."*

NMED Comment: *This section describes only the sumps and does not include a description or location of the associated piping, nor sampling at the pipes. Revise the Work Plan to indicate if piping was present at this SWMU, and if so, include its location in the associated figure(s). Propose adequate sampling for the piping.*

LANL Response

27. No additional details are available on the piping inside former building 09-2. Figure 5.7-2 has been revised to include four additional sampling locations within the footprint of the former building, which will be adequate given the size of the building (35 ft × 20 ft). Section 5.7.3 and Table 5.7-1 have been revised to include the additional sampling locations.

NMED Comment

28. Section 5.7 (SWMU 09-003(g), Former Sump and Pipes) and Section 5.7.1 (Summary of Previous Investigations for SWMU 09-003(g)), page 40:

Permittees' Statement: *"[b]uilding 09-2 was decommissioned in 1959 and intentionally destroyed by burning in 1960." "[a]n RFI was conducted at SWMU 09-003(g) in April 1994. SWMU 09-003(g) was sampled as part of a set of sites referred to as the Anchor Ranch East Site set. SWMUs 09-001(d), 09-003(h), and 09-003(i) were also part of this set. The set was grouped because of past activities (HE research, development, and testing) and demolition and decommissioning of their associated structures (buildings 09-1, 09-2, 09-3, and 09-13)."*

NMED Comment: *Building 09-2 may have had wood framing that may have had contact with HE. The Permittees must therefore also analyze for dioxins and furans. Clarify if buildings 09-1, 09-3, and 09-13 were also destroyed by intentional burning, and if so, include analysis for dioxins and furans at these sites. See General Comment 4. Revise the Work Plan accordingly.*

LANL Response

28. These World War II–era buildings were simple wooden structures. There is no reason to suspect wood-framed structures such as building 09-2 contained any chlorine source that would, in turn, contribute to the formation of dioxins and furans when they were burned. In other Laboratory investigation work plans approved by NMED for aggregate areas where similar structures were destroyed by burning (e.g., LANL 2006, 091698; LANL 2007, 097687; LANL 2007, 102622), analysis for dioxins and furans was not required. Structures burned as part of the D&D efforts are not a potential source of these contaminants discernibly different from forest fires or other background sources. This site was not identified as a SWMU based on the potential for dioxin/furan contamination. Buildings 09-1, 09-3, and 09-13 are not directly associated with SWMU 09-003(g) but are addressed with other SWMUs. No revision to the work plan is necessary.

NMED Comment

29. Section 5.8 (SWMU 09-003(h), Former Sump and Pipes), page 41:

This Section discusses a catch basin that functioned as a settling tank that received wastewater from drain troughs located in both sections of the building. The description did not discuss associated discharge piping. Revise this Section to discuss the discharge piping at this SWMU. If piping was present, propose sample locations along the former piping.

LANL Response

29. The text in section 5.8 has been revised to state that the drain troughs were located in the original building only, and that the catch basin had no discharge lines. Therefore, the catch basin presumably was periodically pumped. Figures 5.8-1 and 5.8-2 have been revised to show the locations of the drain troughs and the drainline from the drain troughs to the catch basin. The location of the catch basin is shown on the northwest side of the original building, labeled as SWMU 09-003(h). The drainline was very short, extending only a few feet from the building to the catch basin. The proposed sampling locations are sufficient to characterize both the drainline and the catch basin. No additional sampling locations are necessary.

NMED Comment

30. Sections 5.8 SWMU 09-003(h), Former Sump and Pipes) and 5.8.3 (Scope of Activities for SWMU 09-003(h)), pages 41-42:

Permittees' Statement: "*SWMU 09-003(h) (Figure 5.8-1) is identified in the 1990 SWMU report (LANL 1990, 007511) as the sump and associated pipes in former building 09-3 (an HE casting facility). Engineering drawings show the "sump" in building 09-3 consisted of a single catch basin that functioned as an HE settling tank…The catch basin received wastewater from drain troughs in both sections of the building…Building 09-3 was decommissioned in 1959 and removed in 1965, including the catch basin and drain troughs."*

NMED Comment: *The proposed sampling does not include the drain troughs or associated discharge piping, nor were these included in Figure 5.8-2 (Proposed sampling locations for SWMU 09-003(h)). Revise the Work Plan to include the drain trough locations and associated discharge piping in Figure 5.8.2, and propose sampling within and around the troughs and along the associated piping. If sampling cannot be conducted, provide an explanation why the sampling cannot be conducted during this phase of investigation.*

LANL Response

30. The response to Comment 29 addresses adding the troughs to the Figure 5.8-2 and states that no discharge piping from the catch basin existed. Sampling of the troughs is not proposed because the troughs were not part of the SWMU 09-003(h). SWMU 09-003(h) is the former catch basin and its associated piping. No additional sampling locations are necessary.

NMED Comment

31. Section 5.9 (SWMU 09-003(i) Former Sump and Pipes), page 42:

Section 5.9 indicates SWMU 09-003(i) is comprised of a former sump and piping that served former building 09-13. Figure 5.9.2 (Proposed sampling locations for SWMU 09-003(i)) only depicts SWMU 09-003(i) as building 09-13 and does not include the locations of the former sump and associated piping. Revise Figure 5.9.2 to show the locations of the sump and piping. See also Comment 32.

LANL Response

31. Very little information exists about former building 09-13, other than one engineering drawing which shows where the building was located but shows no building details. Therefore, it is not possible to indicate on Figure 5.9-2 where in the former building the sump and piping were located. No revision to the work plan is necessary.

NMED Comment

32. Section 5.9.3 (Scope of activities for SWMU 09-003(i)), pages 43:

Permittees' Statement: *"[t]welve subsurface samples will be collected from six locations beneath and around the perimeter of the former sump (Figure 5.9-2). Four subsurface samples will be collected from two locations beneath the former location of the sump from two depths (4–5 and 9–10 ft bgs). Eight subsurface samples will be collected around the perimeter of the former sump from two depths (4–5 and 9–10 ft bgs)."*

NMED Comment: *Figure 5.9-2 (Proposed sampling locations for SWMU 09-003(i)) includes the two sample locations within the footprint of building 09-13 and one sample located on each side of the building perimeter. Revise the Work Plan to verify that the sampling locations include the locations of the sump and piping. Because building 09-13 was 17 feet wide by 20 feet long, additional sample locations are required. Propose one additional sampling location on either side of building 09-13 (i.e., each side of building 09-13 must have two sample locations).*

LANL Response

32. As stated in the response to Comment 31, it is not possible to determine the locations of the sump and piping relative to the building footprint with existing information. Four sampling locations, one on each side of the former building, have been added at SMWU 09-003(i). Figure 5.9-2 has been revised to show these additional sampling locations. The text in section 5.9.3 and Table 5.9-1 have been revised to reflect the additional sampling locations.

NMED Comment

33. Section 5.10 (Consolidated Unit 09-004(a)-99), page 43:

The SWMUs included in this consolidated unit are sumps that discharged to a drainline, shown as an industrial waste line in Plate 4 (Proposed sampling locations for Consolidated Unit 09-004(a)-99 [SWMUs 09-004(a), SWMUs 09-004(b), SWMUs 09-004(c), SWMUs 09-004(d), SWMUs 09-004(e), SWMUs 09-004(f), SWMUs 09-004(h), SWMUs 09-004(i), SWMUs 09-004(j), SWMUs 09-004(k), SWMUs 09-004(l), SWMUs 09-004(m), SWMUs 09-004(n)]). Revise this section of the Work Plan to

describe the drainline (e.g., size and composition) and indicate if this line is still in place. If the drainlines are still present, specify if there are plans for removal and, if so, include the details pertaining to its removal.

LANL Response

33. Section 5.10 has been revised to indicate the industrial waste line consists of 8-in.-diameter vitrified-clay pipe and is still in place but currently inactive. While some sumps are still active, all discharge drainlines from the sumps have been plugged, and most sumps have been filled and covered with concrete. The remaining sumps are pumped out periodically. There are currently no plans to remove the industrial waste line.

NMED Comment

34. Section 5.10 (Consolidated Unit 09-004(a)-99), page 43:

The SWMUs included in this consolidated unit (SWMU 09-004(a), SWMU 09-004(b), SWMU 09-004(c), SWMU 09-004(d), SWMU 09-004(e), SWMU 09-004(f), SWMU 09-004(h), SWMU 09-004(i), SWMU 09-004(j), SWMU 09-004(k), SWMU 09-004(l), SWMU 09-004(m), and SWMU 09-004(n)) are sumps that discharged to drainlines, all associated with buildings that likely also have discharged wastewater to them. The Permittees did not propose any sampling from the drains located within any of the buildings. Revise the Work Plan to propose sampling at all floor drains located within the buildings for each associated SWMU. The text, tables, and plates must be revised accordingly.

LANL Response

34. The SWMUs included in Consolidated Unit 09-004(a)-99 include only the sumps, which are located outside the buildings; the buildings and the drains within the buildings are not part of the SWMUs. Further, all but two of the buildings are currently in place, and some are still active facilities. The proposed sampling is sufficient to characterize the sumps, the drainlines from the buildings to the sumps, the drainlines from the sumps to the industrial waste line, and the industrial waste line itself. No revision to the work plan is necessary.

NMED Comment

35. Section 5.10.5 (SWMU 09-004(e), Sump), Section 5.10.5.3 (Scope of Activities for SWMU 09-004(e)), Section 5.10.6 (SWMU 09-004(f), Sump), and Section 5.10.6.3 (Scope of Activities for SWMU 09-004(f)), pages 47-48:

The descriptions for SWMU 09-004(e) and SWMU 09-004(f) indicate they are still operational. For both SWMUs, the Permittees propose limited sampling, but none around the sump or from the drainline(s) leaving the building. Revise the Work Plan to include sampling around and beneath the sumps and along the drainlines leading from buildings (09-45 and 09-46) to the sumps, provide an explanation why sampling cannot be completed. In that case, propose when such sampling will be conducted.

LANL Response

35. Buildings 09-45 and 09-46 are active facilities. Plate 4 has been revised to include proposed sampling locations similar to those proposed for the other SWMUs at Consolidated Unit 09-004(a)-99. Sections 5.10.5.3 and 5.10.6.3 have been revised to include the additional sampling locations. Tables 5.10-6 and 5.10-7 have been revised to include the additional sampling locations. Because buildings 09-45 and 09-46 are active facilities, access restrictions may limit the ability to collect samples at some locations.

NMED Comment

36. Section 5.10.6.3 (Scope of Activities for SWMU 09-004(f)), page 48:

Permittees' Statement: *"[a]ll samples will be analyzed for TAL metals, nitrate, perchlorate, total cyanide, explosive compounds, PCBs, SVOCs, VOCs, americium-241, gamma-emitting radionuclides, isotopic plutonium, isotopic uranium, and pH. Samples will not be analyzed for radionuclides because the sump was used only for handling HE with no record or indication of radionuclide use at the site. Table 5.10-7 provides a summary of the proposed sampling strategy, locations, depths, and analytical suites."*

NMED Comment: *The above statement indicates samples will be analyzed for americium-241, gamma-emitting radionuclides, isotopic plutonium, and isotopic uranium, but also states samples will not be analyzed for radionuclides. Revise the Work Plan to resolve this discrepancy. The text must also be consistent with Table 5.10-7.*

LANL Response

36. There is no record of use of radionuclides at SWMU 09-004(f). The text in section 5.10.6.3 and Table 5-10.7 have been revised to indicate that radionuclides are not included in the proposed analytical suite for SWMU 09-004(f).

NMED Comment

37. Section 5.10.7.3 (Scope of Activities for SWMU 09-004(h)), page 49:

Permittees' Statement*: "[t]hirty-eight surface and subsurface samples will be collected from 19 locations adjacent to the drainlines, the sump inlet, the sump, and the sump outlet as well as at the outfall and in the drainage (Plate 4)."*

NMED Comment: *The Permittees propose sample collection from the sump, sump inlet, and sump outlet found in Plate 4. Plate 4 does not depict any sample locations at or around the sump, or from the drainline leaving the building. Revise the Work Plan to provide sampling locations around and directly beneath the sump and from the drainline leaving the building or explain why sampling cannot be completed (see also Comment 33).*

LANL Response

37. Plate 4 has been revised to include five additional locations, one on each side of the sump and one where the drainline exits the building and leads to the sump. Because of the size of the sump, collection of samples at locations directly adjacent to the sump at depths below the bottom of the sump is sufficient to characterize potential releases from the sump. Access restrictions may prevent

collection of samples at some locations. The text in section 5.10.7.3 and Table 5.10-8 have been revised to include the additional sampling locations.

NMED Comment

38. Section 5.10.7.3 (Scope of Activities for SWMU 09-004(h)), page 49:

Permittees' Statement: *"[t]wenty-two samples will be collected from 11 locations adjacent to the common drainline where the outlet drainlines of SWMUs 09-004(h, a, b, i, l) connect. The samples will be collected at approximately 100-ft intervals along the path of the drainline, beginning at the joint of the outlet drainline of SWMU 09-004(h), to coincide with the locations of the pipe bends and the joints of the outlet drainlines of SWMUs 09-004(a, b, i, l). Each location will be sampled at two depth intervals (immediately below the level of the drainline and 5 ft below the level of the drainline)."*

NMED Comment: *The Permittees propose sampling locations at approximately 100 foot intervals along the drainline. For all other SWMUs associated with Consoilidated Unit 09-004(a)-99, the Permittees propose 50-ft sampling intervals. The Permittee must collect samples along the drainline from SWMU 09-004(h) at 50-ft intervals, or provide sufficient justification for sample collection at 100-ft intervals.*

LANL Response

38. Additional sampling locations have been added so that the spacing along the drainline is approximately 50 ft. The text in section 5.10.7.3, Plate 4, and Table 5.10-8 have been revised to reflect the additional sampling locations.

NMED Comment

39. Table 5.10-11 (Proposed Sampling at SWMU 09-004(k)):

The sample locations identified in the last row of the "Location Number" column denotes 4k-7 through 4k-10. These locations are provided on Plate 4. Plate 4 also includes sample location 4k-11. Revise Table 5.10-11 to include sample location 4k-11.

LANL Response

39. Table 5.10-11 has been revised to include location 4k-11.

NMED Comment

40. Section 5.10.11.3 (Scope of Activities for SWMU 09-004(l)), page 52:

The Permittees state samples will be collected along the path of the drainline to coincide with the expected locations of the pipe bends and joints. Include an additional sample location north of location 4l-8 at the intersection where the industrial waste line and sewer line meet. Revise the text, associated tables, and plates accordingly.

LANL Response

40. Plate 4 has been revised to include an additional sampling location (4l-9) at the point where the industrial waste line and sewer line meet north of location 4l-8. The text in section 5.10.11.3 and Table 5.10-12 have been revised to include this additional sampling location.

NMED Comment

41. Section 5.10.12.3 (Scope of Activities for SWMU 09-004(m), page 53:

The Permittees propose to analyze for radionuclides at the proposed sample locations. Because the drainline from this sump connects with the drainline associated with SWMU 09-004(n); all drainline and outfall sampling associated with SWMU 09-004(n) must be analyzed for radionuclides (sample locations 4n-8 through 4n-29). Revise the Work Plan accordingly.

LANL Response

41. The text in section 5.10.13.3 has been revised to indicate that the drainline and outfall samples associated with SWMU09-004(n) will be analyzed for radionuclides. Table 5.10-14 has been revised to include radionuclide analyses for samples collected at SWMU 09-004(n).

NMED Comment

42. Section 5.10.13.3 (Scope of Activities for SWMU 09-004(n)), page 54:

Permittees' Statement: *"Twenty-two samples will be collected from 11 locations adjacent to the common line where the outlet drainlines of SWMUs 09-004(f and n) connect. The samples will be collected at approximately 50-ft intervals along the path of the drainline, beginning at the joint of the outlet lines of SWMUs 09-004(f and n), to coincide with the locations of the pipe bends as well as adjacent to the inlet and outlet of a manhole and the manhole itself. Each location will be sampled at two depth intervals (immediately below the level of the drainline and 5 ft below the level of the drainline), except at the manhole where samples will be collected at two depths (immediately below the level of the manhole and 5 ft below the level of the manhole)."*

NMED Comment: *The Permittees discuss sampling adjacent to the inlet and outlet of a manhole and the manhole itself. The manhole location does not appear in Plate 4, nor is a manhole symbol present in the Legend. Revise the Work Plan to identify the location of the manhole on Plate 4 and identify in table 5.10-14 (Proposed Sampling at SWMU 09-004(n)) which samples are associated with the manhole.*

LANL Response

42. The text in section 5.10.13.3 refers to a manhole (structure 09-138) at the junction of the east-west industrial waste line that drains eastward from SWMU 09-004(n) and the north-south industrial waste line that drains northward. Proposed sampling location 4n-9 is at the location of the manhole, and samples will be collected below the inlet to the manhole. Plate 4 has been revised to include a symbol and label for the manhole and to include one additional sampling location (4n-30) at the outlet of the manhole. The text in section 5.10.13.3 has been revised to include the structure number of the manhole and to clarify that samples will be collected from locations at the inlet and outlet lines of the manhole. Table 5.10-14 has been revised to include the additional sampling location, 4n-30.

NMED Comment

43. Section 5.11.3 (Scope of Activities for SWMU 09-004(g)), page 55:

The Permittees do not propose to collect samples from the floor drain within building 09-50, from the drainline as it leaves building 09-50, or from the drainline as it enters the sump SWMU 09-004(g). The Permittees proposed to collect one sample at the drainline between where it leaves the building and enters the sump. Revise the Work Plan to include sample locations from the floor drain within the building, from the drainline as it leaves the building, and from the drainline as it enters the sump.

LANL Response

43. Building 09-50 is an active facility and is not part of SWMU 09-004(g), which is the sump. Samples will not be collected from the floor drain inside the building. Figure 5.11-2 has been revised to include one sampling location (4g-1) at the drainline where it exits building 09-50. Proposed location 4g-7 is located where the drainline enters the sump. Access restrictions may limit or prevent the collection of proposed samples adjacent to building 09-50. The text in section 5.11.3 has been revised to include the revised sampling, and Table 5.11-1 has been revised accordingly.

NMED Comment

44. Section 5.12.3 (Scope of Activities for SWMU 09-004(0)), page 55:

The Permittees propose sampling at and downstream of the outfall, but not from the floor drains in the associated building (09-48), drainlines from the building to the sump, the drainline from the sump that connects to the sewer line, and along the sewer line to the outfall. Revise the Work Plan to propose sampling at these locations, or explain why sampling is unnecessary.

LANL Response

44. Figure 5.12-3 has been revised to include sampling locations at each of the individual drainlines from the building, at the sump, at the inlet and outlet to the sump, and along the industrial waste line to where it joins the sewer line. No sampling will be performed at floor drains inside building 09-48, which is an active facility and is not part of SWMU 09-004(o). Locations adjacent to the building and along the industrial waste line may be subject to access restrictions that limit or prevent the collection of samples. The text of section 5.12.3 and Table 5.12-3 have been revised to include the additional sampling locations.

NMED Comment

45. Section 5.13 (SWMU 09-005(g), Septic System), page 56:

It is not clear from the description if SWMU 09-005(g) is still in use. Revise the Work Plan to clarify the current status of the septic system.

LANL Response

45. The text in section 5.13 has been revised to clarify that the septic system is in place and the outlet drainline was plugged in 1989. Building 09-50 is still active, and there is no documentation to show that the inlet line has been plugged. The septic tank (structure 09-109) is currently listed as abandoned in the Laboratory's Archibus facility information database, indicating it is not in use.

NMED Comment

46. Section 5.13.3 (Scope of Activities for SWMU 09-005(g)), page 56:

The Permittees discuss the proposed sampling locations but do not address sampling around the septic tank itself. Propose sample locations at the point the sewer line leaves building 09-50, along the sewer line from building 09-50 to the septic tank (structure SWMU 09-005(g)), the locations where the sewer line enters and leaves the septic tank (structure SWMU 09-005(g)), and around and beneath structure SWMU 09-005(g).

LANL Response

46. Figure 5.11-2 has been revised to include eight additional sampling locations where the sewer line exits building 09-50, along the line between the building and the septic tank, at the inlet and outlet of the tank, and next to the tank (structure 09-109). The text in section 5.13.3 and Table 5.13-1 have been revised to include the additional sampling locations.

NMED Comment

47. Section 5.14.3 (Scope of Activities for SWMU 09-006), page 58, Table 5.14.-4 (Proposed Sampling at SWMU 09-006), and Figure 5.14-4 (Proposed sampling locations for SWMU 09-006):

The Permittees discuss the proposed sample locations in the scope of services. The proposed sample locations are found in Table 5.14-4 and Figure 5.14-4. Two sample locations (6-11 and 6-12) found in Figure 5.14-4 are not included in Table 5.14-4. Revise Table 5.14-4 to include sample locations 6-11 and 6-12.

LANL Response

47. Table 5.14-4 has been revised to include proposed sampling locations 6-11 and 6-12. The text in section 5.14.3 has been revised to reflect the proposed sampling shown in Figure 5.14-4 and Table 5.14-4.

NMED Comment

48. Section 5.15.2.3 (Scope of Activities for SWMU 09-005(d)), page 60 and Figure 5.15-5 (Proposed sampling locations for Consolidated Unit 09-008(b)-99 [SWMUs 09-005(a), 09-005(d) and 09-008(b)]:

In Figure 5.15-5, the Permittees must include an additional sample location west of proposed sample location 5d-1 at the location where the four sewer lines intersect. Revise the Work Plan accordingly.

LANL Response

48. Figure 5.15-5 has been revised to include an additional sampling location (5d-7) at the sewer line junction. The text in section 5.15.2.3 and Table 5.15-6 have been revised to include the additional sampling location.

NMED Comment

49. Section 5.15 (Consolidated Unit 09-008(b)-99), page 58:

Permittees' Statement: *Section 5.15.1 (SWMU 09-005(a), Former Septic System), page 58: "[i]nstalled in 1950, the SWMU 09-005(a) septic system served buildings 08-20, 08-21, 08-22, 08-23, 09-2 (LASL 1944, 110443), and 08-24, where the strontium-90 spill occurred in 1954 (see section 4.6)." Section 5.15.2 (SWMU 09-005(d), Septic Tank), page 59: "[t]he septic tank was installed in 1970 as part of a sanitary-system upgrade that consisted of replacing septic tank 09-81 [SWMU 09-005(a)]. All former discharge to septic tank 09-81 was rerouted to septic tank 09-211. Septic tank 09-211 received effluent from buildings 08-20, 08-21, 08-22, 08-23, and 08-24, where the strontium-90 spill occurred in 1954 (see section 4.6). The septic tank discharged to the SWMU 09-008(b) oxidation pond. In 1988 the contents of septic tank 09-211 were removed, the access ports were removed, sand was backfilled over the tank, and the tank was decommissioned (LANL 1996, 054586)."*

NMED Comment: *As indicated above, buildings 08-20, 08-21, 08-22, 08-23, 08-24, and 09-2 discharged wastewater to various SWMUs associated with CU 09-008(b)-99). The Work Plan does not propose any sampling from the drains located in these building to the septic lines or along the septic lines to the septic tanks. Propose sampling locations from the floor drains within the buildings, the locations where the sewer lines leaves each building, and along the sewer lines at fifty foot intervals and at the septic tank inlet locations.*

LANL Response

49. SWMU 09-005(a) consists of the former septic system that served the six buildings listed. The only documented release to the septic system was related to the 1954 spill of strontium-90 at former building 08-24. Because the drainlines from the buildings were gravity driven, the strontium-90 from that release would not have entered any building lines other than those of former building 08-24 and the main sewer line. The Laboratory proposes to collect samples along the sewer line from former building 08-24 to the septic tank at SWMU 09-005(a). A portion of this line is already proposed for sampling in association with SWMU 08-004(d) (from former building 08-24 to the point where the sewer line was plugged, as shown in Figure 4.6-2). Additional sampling locations are proposed from that point eastward (at approximately 50-ft intervals) to the sewer line junction (sampling location 5d-7) just west of SWMU 09-005(a). The septic tank inlet and outlet locations were already included in the proposed sampling for SWMU 09-005(a). The proposed additional sampling locations are shown in revised Figure 5.15-5. Text in section 5.15.1.3 and Table 5.15-5 have been revised to include the additional sampling locations.

NMED Comment

50. Section 5.16 (SWMU 09-009, Surface Impoundment), page 61:

Permittees' Statement: *"[t]he two sand filters, which cover a total area of 33 ft wide × 60 ft long, have a flexible membrane liner and are surrounded by a concrete curb…The surface impoundment and sand filter system were decommissioned when the Sanitary Wastewater Systems Consolidation (SWSC) came online in 1992."*

NMED Comment: *The Permittees must describe the depths of the sand filters. The above description identifies two sand filters; however, Figures 5.16-1 (Site features of SWMU 09-009) and 5.16-2 (Proposed Sampling locations for SWMU 09-009) only depict one sand filter. These Figures must be revised to show the locations of both sand filters. Finally, the Permittees indicate the surface impoundment and sand filter system were decommissioned in 1992. The Permittees must explain if the structures have been removed or will be removed in the future. Revise the Work Plan accordingly.*

LANL Response

50. The text in section 5.16 has been revised to indicate that the sand filters are 4 ft deep. Figures 5.16-1 and 5.16-2 have been revised to illustrate the two sand filters. The use of the term "decommissioned" indicates that a structure is no longer in use but is still in place. The sand filters have not been removed.

NMED Comment

51. Section SWMU 09-009, Surface Impoundment, page 61:

Permittees Statement: *[t]he surface impoundment was constructed in 1961 to treat sanitary waste from buildings 09-20, 09-21, 09-28, 09-29, 09-32, 09-33, 09-34, 09-35, 09-37, and 09-38 (LANL 1993, 020949, p. 5-45) and discharged to an outfall approximately 300 ft to the northwest. After the sand filters were installed in 1974, the surface impoundment discharged effluent to the sand filters."*

NMED Comment: *SWMU 09-009 treated sanitary sewer wastewater from ten buildings. The Permittees must indicate whether only sanitary sewer entered the sewer lines leading to the surface impoundment. If non-sanitary waste was discharged to the surface impoundment through drains in the buildings to the sewer lines, this must be discussed in the revised Work Plan. A description of building activities must also be included to identify potential waste streams. If non-sanitary waste entered the sewer lines, the Permittees must propose sampling locations from the building floor drains, outlets from the buildings to the sewer lines and along the sewer lines or provide an explanation why this is not needed.*

LANL Response

51. The surface impoundment received sanitary waste only. The text in section 5.16 has been revised accordingly.

NMED Comment

52. Figure 5.16-1 (Site features of SWMU 09-009):

Figure 5.16-1 does not show the locations of buildings 09-20, 09-21, 09-28, 09-29, 09-32, 09-33, 09-34, 09-35, 09-37, and 09-38, which are all sources of waste discharge to SWMU 09-009. Include a figure that depicts the building locations and sewer lines related to SWMU 09-009.

LANL Response

52. Figure 5.16-1 has been revised to include the locations of buildings 09-20, 09-21, 09-28, 09-29, 09-32, 09-33, 09-34, 09-35, 09-37, and 09-38. The sewer lines related to SWMU 09-009 were already shown on Figures 5.16-1 and 5.16-2.

NMED Comment

53. Figures 5.16-2 (Proposed Sampling Locations for SWMU 09-009):

Include additional sampling locations as described below:

a. *One sample location at the intersection of the three sewer lines, west of 9-1. Samples must be collected from directly below the sewer line at the fill-soil/tuff interface and five feet below the sewer line.*

b. *One sample location at the intersection where the sewer lines split leaving the surface impoundment. A sample must be collected from directly below the sewer line at the fill-soil/tuff interface and five feet below the line.*

c. *Two sample locations beneath the middle of the sand filter(s); one location must be between 9-21 and 9-23 and the other location between 9-20 and 9-22. Samples must be collected from 0-1 and 4-5 feet below ground surface (bgs).*

d. *All samples collected from the sand filters must be collected below the depth of the sand filters from native soils; this must be clarified in the revised Report.*

e. *One surface sample must be located east of outfall 05A066, between 09-16 and 09-29 (on the point of contour line 7510), from 0-1 and 2-3 feet bgs.*

LANL Response

53. Figure 5.16-2 has been revised to include the additional sampling locations as described in the comment. The text in section 5.16.3 and Table 5.16-1 have been revised to include the additional sampling locations. The text in section 5.16.3 has also been revised to specify that samples must be collected from native material below the bottom of the sand filters. Samples along sewer lines or drainlines will be collected at depths of 0–1 ft and 5–6 ft below the drainline or sewer line. Samples will not be collected at the soil-tuff interface because drainlines and sewer lines are typically placed in trenches dug into the tuff; therefore, the soil-tuff interface would in most cases be above the drainline. Additionally, samples collected at the interface are problematic during comparisons with soil or tuff background concentrations, as the samples retain characteristics of both materials.

NMED Comment

54. Table 5.16-1 (Proposed Sampling at SWMU 09-009):

The Permittees propose PCB analysis only from the sample locations associated with the drainlines. If PCBs are detected at any of the drainline sample locations, the Permittees must analyze for PCBs at the proposed sample locations within the surface impoundment, sand filters, outfalls, and downgradient of the outfall from the 0-1 foot interval. Revise the Work Plan to include this sampling scenario.

LANL Response

54. The text in section 5.16.3 has been revised to state that PCB analyses will be added to samples from the surface impoundment, sand filters, outfalls, and downgradient of the outfalls if PCBs are detected at any of the drainline sample locations. A statement concerning additional PCB analysis has been added to Table 5.16-1 as a footnote. Table 5.16-1 has also been revised to clarify that sample collection depths at SWMU 09-009 will begin below the bottom of the surface impoundment and sand filters, not below ground surface.

NMED Comment

55. Section 5.17.1 (Summary of Previous Investigations for AOC 09-010(a)) and 5.18.1 (Summary of Previous Investigations for AOC 09-010(b)), pages 63-64:

Permittees' Statement: *The Permittees state in both Sections "[t]he former sites of the footing[s] for the steel pipe posts were backfilled with gravel."*

NMED Comment: *For both AOCs, the Permittees discuss the collection of samples from 0-1 and 4-5 feet bgs. The Permittees must clarify in the revised Work Plan if the proposed samples collected from 0-1 foot and 4-5 feet will collected from native soils below the gravel fill at the footing locations.*

LANL Response

55. Samples collected at AOC 09-010(a) and AOC09-010(b) will be from native material, not gravel fill. The text in sections 5.17.3 and 5.18.3 and Tables 5.17-1 and 5.18-1 have been revised to clarify that only native material will be sampled.

NMED Comment

56. Section 5.19.1 (Summary of Previous Investigations for AOC 09-011(b)), page 64:

Permittees' Statement: *"[a]dditional sampling was conducted as part of the same RFI in April 1997. Four additional surface (0-0.5 ft bgs) samples were collected from a drainage channel that received runoff from the site."*

NMED Comment: *The Permittees do not propose sampling in the drainage channel that received runoff from the site. Revise the scope of work for AOC 09-011(b) to propose sampling within the drainage channel.*

LANL Response

56. Two proposed sampling locations (four samples) have been added in the drainage at AOC 09-011(b). Figure 5.19-2 has been revised to include the additional sampling locations. The text in section 5.19.3 and Table 5.19-2 have been revised to reflect this change.

NMED Comment

57. Section 5.20.3 (Scope of Activities for AOC 09-011(c), page 65:

The Permittees propose to collect a surface and subsurface sample from one location at depths of 0-1 and 4-5 feet bgs. Clarify in the revised Work Plan that the samples will be collected from native material rather than fill.

LANL Response

57. Section 5.20.3 has been revised to clarify that native material will be sampled at the proposed sampling locations.

NMED Comment

58. Section 5.21 (AOC 09-012, Disposal Pit[s]), page 66:

The Permittees indicate that the disposal pit consists of 15 circular nonvegetated sites approximately 6 feet in diameter, but do not provide the pit depths. Revise the Work Plan to include the depths of the disposal pits or indicate that the depths will be determined during the investigation.

LANL Response

58. The pit depths are unknown and it is unknown if these units were excavated or simply used for surface disposal of liquids that infiltrated into the soil. The proposed samples are expected to be deep enough to extend beyond the depth of the pits, whether or not they were excavated. The depths of the pits will not be specifically investigated, but standard observations (sampled media, presence of artifacts or waste material, staining, etc.) recorded while collecting the proposed samples may indicate the depths of the pits. The text in section 5.21 has been revised to indicate that the depths of the disposal pits are unknown.

NMED Comment

59. Section 5.21.3 (Scope of Activities for AOC 09-012), page 67:

The Permittees propose to collect one sample from the center of each of the circular nonvegetated disposal pits. These disposal pits appear to be on a slope, but the Permittees do not propose to collect any samples downhill from the disposal pits. Revise the Work Plan to include a sufficient number of sample locations downhill from each of the 15 disposal pits. Samples must be collected from depths of 0-1 foot and 2-3 feet bgs. If such samples cannot be collected, provide justification and propose alternative sampling locations.

LANL Response

59. Any disposal of liquids at these pits infiltrated into the soil as indicated by the nonvegetated areas, which are very localized and do not extend down the slope. Therefore, contamination is confined to the 15 circular areas and directly below. Surface and shallow subsurface samples at downgradient locations are not representative of the pits and are not warranted. The slope is very gradual, and there is no evidence of runoff from the site.

NMED Comment

60. Section 5.22 (SWMU 09-013, MDA M), page 67:

Permittees' Statement: *"[t]he main area occupies about 3.2 acres and is located approximately 1600 ft southeast of building 22-120. The 150 ft wide x 260 ft long satellite area is located approximately 750 ft northwest of the main area."*

NMED Comment: *According to Plate 5 (Site Features of 09-013), the main area is located southwest (not southeast) of building 22-120. Revise the Work Plan to correct this discrepancy. In addition, the Permittees do not discuss the depths of the two disposal areas. Revise the Work Plan to include this information.*

LANL Response

60. The text in section 5.22 has been revised to indicate that the site is southwest of building 22-120. As stated in section 5.22, MDA M consists of two surface disposal areas where debris was deposited on the ground surface. There are no subsurface disposal pits at MDA M.

NMED Comment

61. Section 5.22 (SWMU 09-013, MDA M), page 67:

Permittees' Statement: *"[s]tructures were flash burned to remove any HE residue and deposited over the MDA surface. Debris from the construction of current TA-08 and TA-09 facilities (1949−1965) and other sites (1960−1965) were also deposited at MDA M. Materials present at the MDA included metal debris, wood debris, laboratory appliances and fixtures, and metal and glass containers."*

NMED Comment: *Wood structures that were flashed burned were potentially contaminated with HE. While explosive compounds do not typically contain chlorine, wood and various plastics do. With a chlorine source, dioxins and furans can result from combustion. The soil sample locations 13-1 through 13-29 collected from the 0-1 foot intervals must be analyzed for dioxin/furans. Revise the associated text and tables within the Work Plan to include the dioxin/furan analyses. Depending on whether dioxins and furans are detected, sample locations 13-30 through 13-33 may also require analyses of dixons/furans as well. See also General Comment 4.*

LANL Response

61. These World War II–era buildings were simple wooden structures. There is no reason to suspect these wood-framed structures contained any chlorine source that would, in turn, contribute to the formation of dioxins and furans when they were burned. In other Laboratory investigation work plans approved by NMED for aggregate areas where similar structures were destroyed by burning (e.g., LANL 2006, 091698; LANL 2007, 097687; LANL 2007, 102622), analysis for dioxins and furans was

not required. Structures burned as part of the demolition and decontamination efforts are not a potential source of these contaminants that would be discernibly different than those from forest fires or other background sources. This site was not identified as a SWMU based on the potential for dioxin/furan contamination. No revision to the work plan is necessary. (See response to General Comment 4.)

NMED Comment

62. Section 5.22.3 (Scope of Activities for SWMU 09-013), page 68:

Permittees' Statement: *"[t]he samples will be collected in a grid pattern of 50-ft intervals with additional samples beyond the SWMU boundary in the downgradient direction from four depths (0–1 ft, 4–5 ft, 9–10 ft, 19–20 ft bgs)."*

NMED Statement: *The locations shown on Plate 6 (Proposed Sampling Locations for SWMU 09-013) are at approximately 70 to 100 foot intervals. Therefore, additional sample locations maybe required. Revise Plate 6 to depict sample locations at 50 foot intervals.*

LANL Response

62. The spacing of proposed sampling locations ranges from approximately 50 to 100 ft. The layout is based on an irregular grid with rows of two to five locations spanning each of the SWMU areas. The grid as presented on Plate 6 is sufficient to define the lateral extent of contamination both across the SWMU and downgradient; therefore, the plate will not be revised. However, the text in section 5.22.3 has been revised to more accurately reflect the distribution of sampling locations as shown on Plate 6.

NMED Comment

63. Section 5.23 (AOC 09-014, Firing Site), Section 5.23.3 (Scope of Activities for AOC 09-014), pages 68-69, and Figure 5.23-2 (Proposed sampling locations for AOC 09-014):

Permittees' Statement: *"[t]he Nu Site firing point was to the east of the camera mount building. The firing point consisted of a 3.5-ft-wide × 12–ft-long × 1-ft-thick reinforced concrete apron containing two small firing pits (LANL 1993, 020949). The apron was on the west side of an earth mound within a loop access road that is visible on 1958 aerial photographs (USAF 1958, 015887). The apron faced toward the camera mount building to the west. The firing point was used from 1945–1950 to test lens charges of up to 135 lb of HE. Smaller shots were conducted in the two firing pits. Shots large enough to damage the apron were occasionally fired in unspecified locations outside the slab but within camera range (LANL 1994, 020949, pp. 5-69, 6-114). It is likely that these larger shots took place in the nonforested areas immediately north and south of the apron (USAF 1958, 015887).*

NMED Comment:

a. The locations of the firing pits described above were not provided in Figure 5.23-2 (Proposed sampling locations for AOC 09-014). Revise Figure 5.23-2 to include these features.

b. In Figure 5.23-2, AOC-14 is identified as a green area that encompasses the Camera Mount Structure, the Firing Site, and the Concrete Apron Structure. While the description indicates that firing occurred within the green area provided in the figure, sampling was not proposed in this

area. Revise the Work Plan to propose sampling within the area defined as AOC 09-014 (green area) of Figure 5.23-2.

c. *While larger shots may have occurred in the nonforested areas immediately north and south of the apron, the Permittees proposed sampling is limited to the north of the Concrete Apron. Propose sampling at locations south of the concrete apron in the revised Work Plan.*

LANL Response

63. a. Figures 5.23-1 and 5.23.2 have been revised. What was labeled as the "Firing Site" has been relabeled as "Firing Point (Concrete Apron)." What was labeled as "Concrete Apron (Structure 09-76)" has been relabeled as "Personnel Shelter Structure 09-76." It is not possible to depict the location of the two firing pits within the concrete apron because the only engineering drawings available do not specify this detail.

b. Figure. 5.23-2 has been revised so proposed sampling locations are centered over the AOC and expanded to cover the entire shaded area.

c. After adjustment, some of the proposed sampling locations are south of the site as directed by NMED.

NMED Comment

64. Section 5.24 (SWMU C-09-001, Area of Soil Contamination), page 69

Permittees' Statement: *"SWMU C-09-001 (Figure 5.24-1) is a former area of soil contamination located at TA-09 near the southeast corner of building 09-31 (a chemical storage building). The contaminated area consisted of a 2 ft wide x 3 ft long region of stained soil beneath the drainpipe at the southeast corner of the building. Before being plugged (at an unknown date), the drainpipe, discharged effluent from spill containment trays within the building."*

NMED Comment: *The Permittees state that chemicals were stored in building 09-31, but do not describe what types of chemicals stored, or building activities that may have created or released chemicals. Further, the Permittees indicate that a drain pipe discharged effluent from spill containment trays, but do not identify the effluent waste stream. Revise the Work Plan to identify the types of chemicals stored in building 09-31 and the effluent composition.*

LANL Response

64. The types of chemicals stored in building 09-31 are not documented. Because the types of chemicals stored in the building are unknown, it is not possible to describe the composition of the effluent. For this reason, a full suite of analyses was proposed in the work plan. The text in section 5.24 has been revised to indicate that the types of chemicals stored in building 09-31 are not documented.

NMED Comment

65. Section 5.24.1 (Summary of Previous Investigations for SWMU C-09-001), page 70:

Permittees' Statement: *"[t]he site was restored by filling the excavated area with clean material, recontouring it, and reseeding it with native grasses."*

NMED Comment: *The Permittees propose the collection of samples from 0-1 and 2-3 feet bgs. It is unclear how much clean material was used when the site was restored. All proposed soil samples must be collected from native media below the clean fill material. Revise the Work Plan to indicate samples will be collected from native media; revisions to the sample intervals may also be necessary.*

LANL Response

65. The text in section 5.24.3 has been revised and a footnote has been added to Table 5.24-3 to state that if fill material is encountered, the sampling depths will be adjusted so that all samples are collected from native material, not fill.

NMED Comment

66. Section 5.24.3 (Scope of Activities for SWMU C-09-001), page 70:

Permittees' Statement: *"[t]he initial excavation will extend 3 ft in each direction from the existing location, and screening samples will be collected to determine if additional lateral excavation is required. Soil will be removed, stepping out laterally as needed, until PAH concentrations are below industrial SSLs or risk screening assessment results indicate no potential unacceptable risk from residual contamination. To define the vertical extent of contamination, 10 samples will be collected at the former sampling locations after excavation at two additional depths (2–3 ft bgs and 5–6 ft bgs)."*

NMED Comment: *The Permittees must revise Section 5.2.4.3 of the Work Plan as directed below:*

a. The Permittees state that screening samples will be collected. Clarify that "screening samples" is in reference to field screening; the field screening instrument must also be identified.

b. The Permittees will be analyzing for various constituents (e.g., TAL metals, perchlorate, total cyanide, VOCs). Explain why only polynuclear aromatic hydrocarbons (PAHs) will be used to guide the lateral extent of excavation.

c. Clarify that contaminant removal will be demonstrated with the collection of discrete confirmation samples analyzed by an outside laboratory.

LANL Response

66. a. No field screening for polycyclic aromatic hydrocarbons (PAHs) will be conducted. The text in section 5.24.3 has been revised to state that samples will be collected and submitted to an off-site analytical laboratory for analysis of PAHs. Accelerated analytical results will be requested so that decisions can be made regarding whether additional excavation is necessary. No field-screening instrument, other than standard field screening, will be used.

b. As stated in section 5.24.3, excavation is proposed at SWMU C-09-001 because concentrations of PAHs exceeded industrial SSLs. Concentrations of other constituents were not sufficiently elevated to warrant excavation on their own. Therefore, the excavation will be guided by concentrations of PAHs and will be extended until (1) they are below industrial SSLs or (2) risk-screening assessment results indicate no potential unacceptable risk from residual contamination.

c. The revised text of section 5.24.3 states that samples used to guide the excavation will be submitted to an off-site analytical laboratory. A sentence has been added to the second

paragraph of section 5.24.3 stating that samples collected at the former sampling locations after excavation will be submitted to an off-site analytical laboratory and will be used as confirmation samples for the remediation. The response to Comment 6 states that all sampling will be performed using discrete samples.

NMED Comment

67. Section 5.24.3 (Scope of Activities for SWMU C-09-001), page 70:

Permittees' Statement: *"[t]o define the lateral extent of contamination, three additional samples will be collected from one location at the point the drainline exited the building, and nine samples will be collected from three downgradient locations. These samples will be collected from three depth intervals (0-1 ft, 2-3 ft, and 5-6 ft bgs).*

NMED Comment: *One sample at the point the drain line exited the building will not define the lateral extent of contamination. The Permittee must propose additional sampling locations around the perimeter of SWMU C-09-001 (on the east, west, and south sides of the green box) and one sample approximately 10 feet east of sample 1-6. The samples must be collected from intervals of 2-3 feet and 5-6 feet bgs; the samples must be collected from native media. Revise the text, tables, and figures of the Work Plan accordingly.*

LANL Response

67. The lateral extent sampling at SWMU C-09-001 will be conducted in conjunction with the excavation of five previous sampling locations (09-10025, 09-10026, 09-10027, 09-10028, and 09-10029). Those locations are along a line parallel to and approximately 5 ft south of building 09-31 and in the immediate vicinity of the designated boundary of SWMU C-09-001 shown in Figure 5.24-3. Additional sampling locations within 2–3 ft of the locations listed above will also be removed during the excavation at proposed locations 1-1, 1-2, and 1-3, and will not provide data for lateral extent. Proposed locations 1-7, 1-8, and 1-9 are approximately 15–20 ft south of building 09-31 and beyond the likely extent of the excavation and will be used to define the lateral extent of contamination. Section 5.24-3 has been revised to state that if the excavation continues beyond these proposed locations, additional locations will be sampled accordingly to define the lateral extent.

NMED Comment

68. Section 6.1 (SWMU 22-011, Disposal Pit) and Section 6.1.3 (Scope of Activities for SWMU 22-011), pages 71-72:

Permittees Statement: *"[t]he Van Vessem memo mentions both TD Site and Twomile Mesa Site. The two sites were located adjacent to each other on Twomile Mesa. TD Site lies within the current boundaries of TA-22, and the Twomile Mesa site lies within the current boundaries of TA-06. The Van Vessem memo states that the disposal pits excavated on Twomile Mesa, including the 1946 classified objects pit referred to in the Bradbury memo, were all located in the area designated as MDA F [SWMU 06-007(a)], which is within TA-06. The new information provided in the Van Vessem memo substantiates that the SWMU report incorrectly placed the 1946 disposal pit within TA-22 rather than in TA-06. Therefore, the SWMU 22-011 disposal pit is a duplicate of SWMU 06-007(a), MDA F." "[n]o sampling is proposed for SWMU 22-011. SWMU 22-011 is recommended for NFA based on Criterion 1: The site cannot be located or has been found not to exist, is a duplicate SWMU or AOC, or is located within and therefore investigated as part of another SWMU or AOC."*

NMED Comment: *Figure 1-3 of the* RFI Work Plan for Operable Unit 1111 Environmental Restoration Program, *(OU-111) dated August 1993, referenced by LA-UR-93-2611 includes a location that appears to be SWMU 6-007(a) and a location for SWMU 22-011; these sites are not close to one another. Even though the text of the OU-111 document and the Work Plan suggests these SWMUs are duplicates, both locations must be investigated. Revise the Work Plan to propose sampling in and around 22-011 to confirm that this location is not a disposal pit or was not contaminated by unidentified historic activities. Also indicate if SWMU 6-007(a) is being investigated under a separate Work Plan; if not, this site must also be investigated under this Work Plan. Revise the Work Plan accordingly.*

LANL Response

68. The Laboratory maintains that the SWMU 22-011 disposal pit is the same disposal pit as MDA F [SWMU 06-007(a)], which is being investigated as part of the Twomile Canyon Aggregate Area. The rationale that these sites are duplicates is not based on the text in the Resource Conservation and Recovery Act (RCRA) facility investigation (RFI) work plan (LANL 1993, 026068) but rather is based on the archival evidence summarized as follows.

    The 1987 Comprehensive Environmental Assessment and Response Program (CEARP) report (DOE 1987, 008663) provides a brief discussion of a disposal pit that had been prepared at TD Site as described in a May 15, 1946 memo from Los Alamos Scientific Laboratory Director Norris Bradbury to division and group leaders (Bradbury 1946, 015076). The pit was to be used for the disposal of obsolete classified material and would remain open only until June 1 of 1946, or approximately 6 weeks. The memo provides no information as to where at TD Site the disposal pit was located, and the pit does not appear on any of the engineering drawings provided in the CEARP for TA-22.

    The 1987 CEARP report provided the background material for the 1990 SWMU report (LANL 1990, 007511). The 1990 SWMU report gives the same vague information as provided in the CEARP report but includes an additional note stating “[h]owever, there are warning signs at this area.” Although the warning signs were actually posted to keep intruders away from a high explosives filter pit [SWMU 22-015(d)], personnel who prepared the SWMU report mistook the posted signs to be associated with the classified disposal pit described in the CEARP report and mistakenly identified the area where the warning signs were posted to be the location of SWMU 22-011. Thus, the location depicted for SWMU 22-011 (southwest of building 22-1) on the map provided in the SWMU report is incorrect.

    The field team repeated the error made by personnel who prepared the SWMU report and the RFI work plan and placed SWMU 22-011 in the same location as incorrectly presented in these documents. Thus, the location depicted for SWMU 22-011 is incorrect.

    An extensive search of archival records yielded no structure location maps or engineering drawings for a TD Site disposal pit. Other than the Bradbury memo, the archival search yielded no additional information concerning the existence of a disposal pit at TD Site.

    Both TD Site (TA-22) and TA-06 are located on Twomile Mesa, adjacent to and within 600 ft of each other. The Van Vessem memo clearly states that all disposal pits located on Twomile Mesa, including the 1946 pit used for the burial of obsolete classified nonexplosive components, were excavated “in the general area of the fences now designated MDA F” (Van Vessem 1992, 015073).

    In summary, the 1990 SWMU report and subsequent RFI work plan incorrectly located SWMU 22-011, which resulted in the SWMU being incorrectly depicted on maps within both of those

documents. No specific location other than at TD Site is given for the disposal pit in the Bradbury memo. In contrast, the Van Vessem memo states that all disposal pits located on Twomile Mesa were excavated in the area of MDA F. The Van Vessem memo substantiates that the SWMU report incorrectly placed the 1946 disposal pit within TA-22 rather than within TA-06 at MDA F [SWMU 06-007(a)]. Thus SWMU 22-011 is a duplicate of SWMU 06-007(a).

Because the location of SWMU 22-011 is incorrectly identified in the investigation work plan as being located south of building 22-1, it is inappropriate to sample that area. Therefore, no additional samples will be collected south of building 22-01. The last two sentences of the text of section 6.1 have been revised to clarify that SWMU 06-007(a) (MDA F), is being investigated as part of the Twomile Canyon Aggregate Area. To facilitate NMED's review of the Laboratory's response to this comment, the Bradbury and Van Vessem memos are included as Attachment 1 to this notice of disapproval response.

NMED Comment

69. Section 6.2 (SWMU 22-015(c), Drainline and Outfall), page 72:

Permittees' Statement: *"[t]he outfall received discharge from the floor drains in building 22-52, which were connected to the outfall via a 6-in.-diameter vitrified-clay pipe (VCP)."*

NMED Comment: *The floor drains that received discharge to the outfall in building 22-52 are not identified in any of the Plates, nor was sampling of the floor drains discussed. Revise Work Plan to include sampling at the floor drains in building 22-51, or explain why sampling cannot be completed.*

LANL Response

69. The floor drains inside building 22-52 are not part of SWMU 22-015(c), and therefore will not be sampled as part of this investigation. Sampling is proposed along the drainline from where it exits the building to the outfall and from the outfall down the drainage to the toe of the slope in Pajarito Canyon. No revision to the work plan is necessary.

NMED Comment

70. Section 6.2.3 (Scope of Activities for SWMU 22-015(c), page 73:

Permittees' Statement: *"[f]our samples will be collected at two locations adjacent to the drainline. Each location will be sampled at two depth intervals (immediately below the level of [the] line and 5 ft below the level of line)."*

NMED Comment: *Revise the Work Plan to clarify what the "level of the line" is referring to (e.g., drainline). The "level of the line" terminology is used in other passages of the Work Plan. Clarify all sections where this term is used.*

LANL Response

70. Text in section 6.2.3 and Table 6.2-4 have been revised to indicate that the proposed sample depths are 0–1 ft and 5–6 below the line (text) or 0–1 ft and 5–6 ft below the drainline (table). Other sections with similar text and the associated tables have also been revised for clarity and consistency.

NMED Comment

71. Table 6.3-1 (Proposed Sampling at SWMU 22-010(b) and Plate 12 (Proposed sampling locations for Consolidated Unit 22-015(d)-99 [SWMUs 22-010(b), 22-012, 22-015(d), 22-015(e), and 22-016]:

Some sample identifications, descriptions, and intervals provided in Table 6.3.1 do not correspond with the labels included in Plate 12. Review the Table and Plate 12 and make appropriate corrections. NMED has indentified additional discrepancies between Table 6.3.1 and Plate 12, and has added sample locations as follows:

a. Table 6.3.1 identifies sample locations 10b-5 through 10b-8, 10b-23, 10b-25, 10b-37, and 10b-38 as being located in a leach field and that samples will be collected from immediately below, 5 feet below and 10 ft below the level of the line or tank. In Plate 12, sample locations 10b-23, 10b-25, 10b-37, and 10b-38 are not associated with a line or tank. It is not clear from what depths these latter samples will be collected.

b. Clarify throughout the table the depths that samples will be collected (e.g., directly below a tank, from five feet and ten feet). For example, it is not clear whether sample locations 10b-26 through 10b-36 will be collected below the "level of the line" and from five and 10 ft below the "level of the line," or only from 10 feet below the "level of the line."

c. Clarify that the statement "immediately below the level of the line" indicates a drainline, sewer line, or some other feature. See also Comment 70.

d. Proposed sample locations to be added to the apparent drainage east of sample 10b-13 (between sample locations 10b-13 and 10b-30), south of 10b-32 (between 10b-32 and 10b-33), south of 10b-14 (between 10b-14 and 10b-15), south of 10 b-15 (between 10b-15 and 10b-16), and south of 10b-16 (between 10b-16 and 10b-17).

LANL Response

71. a. Table 6.3-1 has been revised to clarify that locations 10b-5 through 10b-8 are associated with the drainline from the tank, and locations 10b-23, 10b-25, 10b-37, and 10b-38 are located beyond the end of the leach fields. Samples at those locations will be collected at 0–1 ft, 5–6 ft, and 10–11 ft below the depth of the leach field lines. A footnote has been added to Table 6.3-1 to clarify that depths are relative to the depth of the leach field lines. The text in section 6.3.1.3 has also been revised to clarify which locations are associated with which features.

b. Table 6.3-1 has been revised to state that proposed sample depths are below ground surface, below a drainline or a tank, below the depth of leach field drainlines, or below the sand filter.

c. Table 6.3-1 has been revised to clarify that proposed depths are beneath specific features (drainlines, tank, leach field drainlines, sand filter) or beneath ground surface. The text of section 6.3.1.3. has also been revised to clarify relative depths.

d. The proposed additional sampling locations (10b-59 through 10b-63) have been added to Plate 12. The text in section 6.3.1.3 and Table 6.3-1 have been changed to reflect the additional sampling locations.

NMED Comment

72. Section 6.3.1.3 (Scope of Activities for SWMU 22-010(b)), page 74:

Permittees' Statement: *"[t]he drainlines north of the septic tank 22-51 are active and the inlet to the tank is plugged."*

NMED Comment: *Sampling was not proposed along the active drain lines that lead to SWMU 22-010(b). The Permittees will be required to investigate these drainlines in the future when they are no longer in use. The need for future sampling must be specifically identified in the Investigation Report.*

LANL Response

72. Comment noted. However, to be consistent with responses to other comments, two proposed sampling locations (10b-64 and 10b-65) have been added to Plate 12, along the active drainline from where it exits building 22-1 to the septic tank (structure 22-51). Section 6.3.1.3 and Table 6.3-1 have been revised to include the additional sampling locations. Samples will be collected if not prevented by facility access restrictions. If all the proposed samples can be collected, there will be no need for future sampling. If some samples cannot be collected as proposed, the need for future sampling will be identified in the investigation report.

NMED Comment

73. Section 6.3.2.3 (Scope of Activities for SWMU 22-012), page 75:

Permittees' Statement: *"[s]ix surface and subsurface samples will be collected at three locations around the perimeter of the concrete decontamination pad from two depths (0–1 and 4–5 ft bgs) (Plate 12)."*

NMED Comment: *Plate 12 depicts the location of two samples, not three. Revise the Work Plan to include the third sample location (12-3) in Plate 12.*

LANL Response

73. Plate 12 has been revised to include a third sampling location (12-3) at the south side of the decontamination pad. The text in section 6.3.2.3 and Table 6.3-2 included the third location and do not require revision.

NMED Comment

74. Section (6.3.3.3 Scope of Activities for SWMU 22-015(d)), page 76:

Permittees' Statement: *"[s]ix samples will be collected from three locations adjacent to the inlet drainline. The samples will be collected at approximately 50-ft intervals along the path of the line, beginning at the point of exit from the building (proposed sampling location 15d-1)."*

NMED Comment: *According to Plate 12, sample location 15d-1 is not located at the exit point of the building and the additional locations are not located at 50 foot intervals. Revise Plate 12 to accurately show the locations as identified in the text; additional locations will likely be necessary. Table 6.3-5 (Proposed Sampling at SWMU 22-015(d) must also be revised accordingly.*

LANL Response

74. An additional sampling location (15d-9) has been added along the drainline where it exits building 22-1. Plate 12 has been revised to include this additional location. Location 15d-1 is near the south side of the decontamination pad. According to the scale for Plate 12, locations 15d-1, 15d-2, 15d-3, and 15d-4 are each 50 ft apart. No further revision to Plate 12 is necessary. Table 6.3-5 and section 6.3.3.3 have been revised to include the additional sampling location and for clarification.

NMED Comment

75. Section 6.3.4 (SWMU 22-015(e), Sump), page 77:

Permittees' Statement: *"[t]he sump was installed in 1950 to receive discharge from a sink and floor troughs located within building 22-1, as well as wastewater from an equipment wash area (SWMU 22-012) located directly south of the sump."*

NMED Comment: *The Permittees do not propose any sample locations beneath the floor troughs located within building 22-1. Revise the Work Plan to include sample locations, or explain why such sampling cannot be conducted.*

LANL Response

75. Sampling of the floor troughs was not proposed because the floor troughs are not part of SWMU 22-015(e). No revision to the work plan is necessary.

NMED Comment

76. Section 6.3.4.3 (Scope of Activities for SWMU 22-015(e)), page 77:

NMED Comment: *Sample location 15e-7 is identified as an outfall location to be collected from 0-1 and 2-3 feet below ground surface. Because this is the point where the outfall discharges, the Permittees must also collect a sample from five feet bgs. Revise the Work Plan accordingly.*

LANL Response

76. The text in section 6.3.4.3 has been revised to state that the outfall location will include a third sample depth of 5–6 ft below ground surface (bgs). Table 6.3-6 has been revised to include the additional sample depth.

NMED Comment

77. Plate 12 (Proposed sampling locations for Consolidated Unit 22-015(d)-99 [SWMUs 22-010(b), 22-012, 22-015(d), 22-015(e), and 22-016]:

NMED Comment: *Plate 12 identifies features 22-7 through 22-12; it is not clear what these features are; they appear to be manmade. Identify whether these features are mounds or basins, and include at least two contour elevation lines within each feature. This may require additional sampling east and south of SWMU 22-012 and SWMU 22-015(e).*

LANL Response

77. Buildings 22-7 and 22-9 through 22-12 are magazines, and building 22-8 is a process building. Each of these buildings are covered on three sides and the top by earthen berms. Plate 12 has been revised to include contour labels for the berms. No additional sampling east and south of SWMUs 22-012 and 22-015(e) is necessary because that area and the structures located there are not related to SWMUs 22-012 and 22-015(e). No additional revision to the work plan is necessary.

NMED Comment

78. Section 6.3.5.3 (Scope of Activities for SWMU 22-016), page 78:

Permittees' Statement: *"[a] geophysical survey will be conducted to locate the septic tank. Eight samples will be collected at four locations adjacent to the tank inlet, the septic tank, and tank outlet. Each location will be sampled at two depths (immediately below the level of the line or tank and 5 ft below the level of the line or tank).*

"If the tank is located as described in the 1997 RFI report (LANL 1997, 056664, p. 160), it distributed to the discharge system of SWMU 22-010(b), which will be characterized by sampling at SWMU 22-010(b). If the tank is located away from SWMU 22-010(b), it will be sampled as follows.

"The drainline from the tank will be located by trenching. If the drainline is located, samples will be collected at approximately 50-ft intervals along the path of the line, beginning at the point of exit from the tank. Each location will be sampled at two depth intervals (immediately below the level of the line and 5 ft below the level of the line)."

NMED Comment: *The proposed sampling is unclear. Make the following revisions:*

a. In the second paragraph above, the Permittees reference a discharge system of SWMU 22-010(b). The Work Plan must be revised to define the discharge system (e.g., a leach field, a drainline which extends from the tank outlet, an outfall).

b. In reference to the second paragraph above, if the discharge system at SWMU 22-010(b) is the same for SWMU 22-016, clarify which sample locations will be used to characterize the discharge system (e.g., 10b-14 through 10b-21 or 10b-29, 10b-32, 10b-33, and 10b-39).

c. Clearly state that regardless of how the features associated with SWMU 22-016 are identified, the following proposed samples will be collected: "[e]ight samples will be collected at four locations adjacent to the tank inlet, the septic tank, and tank outlet. Each location will be sampled two depths (immediately below the level of the line or tank and 5 ft below the level of the line or tank) and "[i] f the discharge point is located, sampling will be conducted at the outfall and at three downgradient locations to bound the outfall. If a discernable drainage is present, the drainage will be sampled approximately at 30-ft intervals. All outfall and drainage samples will be collected at two depth intervals (0–1 and 2–3 ft bgs)."

LANL Response

78. a. The discharge system referred to is SWMU 22-010(b), which is described in section 6.3.1 and shown on Plates 11 and 12. The SWMU 22-010(b) discharge system includes a septic tank (structure 22-51), drainlines, a leach field, a sand filter, and an outfall The estimated location of the SWMU 22-016 septic tank (as shown on Plate 12) is near the drainline leading to the sand

filter and outfall, part of SWMU 22-010(b). If the SWMU 22-016 septic tank outlet drainline is found to be connected to the SWMU 22-010(b) drainline, proposed locations 10b-39 through 10b-58 would serve to characterize the portion of SMWU 22-016 below the septic tank. Section 6.3.5.3 has been revised to clarify the (possible) relationship between SWMU 22-010(b) and SWMU 22-016.

b. Section 6.3.5.3 has been revised to indicate that locations 10b-39 through 10b-58 will characterize the portion of SMWU 22-016 below the septic tank if the septic tank is found to have been connected to the SMWU 22-010(b) drainline. A footnote has been added to Table 6.3-7 to account for this contingency.

c. Section 6.3.5.3 has been revised to include eight samples from four locations around the septic tank regardless of the location of the tank (if the tank is located).

NMED Comment

79. Table 6.3.7 (Proposed Sampling at SWMU 22-016)

The locations identified in 6.3-7 (16-1 through 16-5) are not identified on Plate 12. Clarify whether this was intentional, since the exact location of this SWMU is unknown. Revise Plate 12 to include these locations, but note that the locations are approximate.

LANL Response

79. The proposed sampling locations for SWMU 22-016 were intentionally omitted from Plate 12 because the location of the septic system is unknown. Plate 12 is a complex figure including 65 proposed sampling locations and numerous drainlines. Adding the approximate locations of the proposed sampling for the septic tank would make the figure difficult to decipher. Because the text in section 6.3.5.3 and Table 6.3-7 clearly describe and are sufficient to ensure the required sampling will be performed if the septic system is located, and because the figure is already complex, the proposed sampling locations have not been added to Plate 12. No changes are necessary to the work plan.

NMED Comment

80. Section 7.1 (SWMU 40-001(c), Septic Tank), Section 7.1.3 (Scope of Activities for SWMU 40-001(c)), page 80 and Table 7.1-1 (Proposed Sampling at SWMU 40-001(c):

Clarify if SWMU 40-001(c) is still in operation, has been decommissioned, or was removed. Propose sampling along the sewer line shown in Figure 7.1-2, and for SWMU 40-001(c). The proposed sampling locations described in Table 7.1-1 and 7.1.3 are not depicted in Figure 7.1-2. In addition, the proposed sample locations 1c-9 through 1c-17 are not included in Figure 7.1-2. Revise the Work Plan accordingly.

LANL Response

80. The septic tank [SWMU 40-001(c)] is currently in place and is still active. The text in section 7.1 has been revised accordingly. Figure 7.1-2 has been revised to include all proposed sampling locations at SWMU 40-001(c), including along the sewer line (drainline) north to Twomile Canyon and along the sewer line (drainline) south to Pajarito Canyon, and at each outfall. Locations 1c-1 through 1c-8 are along the drainline from the building to the tank, at the tank, and at the tank inlet and outlet; locations

1c-9 through 1c-12 are at and downgradient of the former outfall in Twomile Canyon; locations 1c-13 through 1c-15 are from the sewer line junction north to the former Twomile Canyon outfall; locations 1c-16 through 1c-20 are along the sewer line (drainline) south from the sewer line junction and in the drain field; locations 1c-21 through 1c-23 are at and downgradient of the outfall in Pajarito Canyon. Section 7.1.3 and Table 7.1-1 have been revised to account for all proposed sampling locations and to clearly state the areas targeted by all sampling locations.

NMED Comment

81. Section 7.2 (SWMU 40-003(a), Open Detonation Area), page 80:

This Section discusses the locations of two open detonation areas but does not discuss their dimensions. Revise the Work Plan to include the dimensions of the open detonation areas, including depths.

LANL Response

81. The western open detonation area is approximately 30 ft in diameter, and the eastern detonation area is approximately 90 ft (east-west) by 110 ft (north-south). Section 7.2 has been revised to include these dimensions. Because these are surface detonation areas, depth is not relevant, and no revision to include depths is necessary.

NMED Comment

82. Section 7.2 (SWMU 40-003(a), Open Detonation Area), page 80:

Permittees' Statement: *"[i]n 1958, several instances occurred where intact detonators and pieces of HE were discharged during detonations. Efforts to recover all the scattered detonators and HE were unsuccessful (Anderson and Tucker 1959, 007559)."*

NMED Comment: *With the exception of the statement above, the Permittees do not discuss the delineation, sampling, or clearance of material in the kickout areas. Revise the Work Plan to discuss the delineation, sampling, and clearance of the kickout areas.*

LANL Response

82. Section 7.2.3 has been revised to state that an UXO walkover survey will be performed at each detonation area before investigation. The surveys will serve to better delineate the detonation areas by identifying areas where UXO or other debris are present. Visible UXO will be picked up and disposed of. If the surveys determine that debris is present beyond the current boundaries of the detonation areas as shown in Figure 7.2-1, additional sampling locations may be proposed to include the expanded area(s).

NMED Comment

83. Section 7.2 (SWMU 40-003(a), Open Detonation Area), page 80:

Permittees' Statement: *"[t]his second site is approximately 1300 ft east of structure 40-15, within a natural amphitheatre at the end of an unnamed dirt road. At the second site, scrap explosive materials were detonated and controlled remotely from structure 40-15. After each detonation,*

scattered debris was picked up and transported to an appropriate waste disposal site. Rock rubble and crushed tuff that sloughed from the amphitheater wall was pushed to the south, creating an area of fill that extended nearly to the edge of Pajarito Canyon."

***NMED Comment:** Revise the Work Plan to address sampling of the rock debris at the edge of Pajarito Canyon.*

LANL Response

83. To characterize the area of rock debris, three transects, each with three sampling locations, have been added in the area south of the eastern detonation area to the mesa edge. Figure 7.2-2 has been revised to include these additional sampling locations (3a-26 through 3a-34). The text in section 7.2.3 and Table 7.2-1 have been revised to include the additional sampling locations.

NMED Comment

84. Section (7.1.3 Scope of Activities for SWMU 40-001(c)), page 81 and Table 7.2-1 (Proposed Sampling at SWMU 40-003(a)) and Figure 7.2-2 (Proposed sampling for SWMs 40-003(a) and 40-003(b)):

The Permittees describe the proposed sampling locations and depths in Section 7.1.3, Table 7.2-1, and Figure 7.2-2.

a. *The Permittees state "[t]wenty-four surface and subsurface samples will be collected from 12 locations at the first detonation area in a grid pattern of 25-ft intervals (Figure 7.2-2). Samples will be collected from two depth intervals (0–1 ft and 4–5 ft bgs)." Review the sample interval column of Table 7.2-1; it appears not all samples will be collected from the 4-5 foot bgs interval (3a-8 through 3a-12). Ensure samples will be collected from the bottom of the detonation area and five feet below the base of the detonation area. This must be included in the revised Work Plan.*

b. *The first row of Table 7.2-1 identifies samples locations 3a-1, 3a-2, 3a-4, 3a-5, and 3a-8 through 3a-12 being located "within the detonation area and around the boundary." The second row identifies sample locations 3a-3, 3a-6, 3a-7 as being within the detonation area. The Permittees have not clearly defined the detonation area. The Figure shows locations that are defined as within the detonation area (e.g., 3a-1) that are in the same locations that are defined as "around the boundary" (e.g., 3a-11). Revise the Work Plan to clearly define the detonation area, the area "around the boundary," and clearly define which samples are associated with these areas.*

c. *The depths at which the samples will be collected are unclear. For example, the first row indicates samples will be collected from 0-1 ft, 4-5 ft, and 0-1 foot. It is not clear what samples apply to the second 0-1 ft interval. The last row indicates sample 3a-25 will be collected from a depth of 2-3 ft twice. This comment applies to all rows associated with the column titled sample interval. Review the sample intervals presented in Table 7.2-1 and correct the discrepancies.*

d. *Samples are proposed to be collected from 12 locations in the detonation area located 450 ft east of structure 40-15. Ensure the samples are collected from the bottom of the detonation area and five feet below the base of the detonation unit. The proposed sample locations outside of the detonation area must be clearly described. Samples in the kickout area must be collected from 0-1 and 2-3 ft depths. Revise the Work Plan accordingly.*

e. *The Permittees do not propose sampling in the associated drainages. Revise the text, tables, and figures to propose sampling in the drainages associated with both detonation areas.*

LANL Response

84. a. Cells in Table 7.2-1 had shifted so that sampling depths were not aligned properly with the description rows. The table has been revised to present the correct sampling depths for each location. Because the detonation area is a surface feature, any sample collected from below the surface of the detonation area is at a depth below its bottom. Therefore, no revision to the text is necessary.

b. Table 7.2-1 has been revised to clarify the locations specified. Locations 3a-3, 3a-5, 3a-6, 3a-7, and 3a-10 are now described as "Detonation point (western) and nearest locations to north, south, east, and west," while the remaining locations at the western area are described as "outside detonation area (western)." At the eastern detonation area, locations 3a-13 through 3a-17 are described as "Detonation point (eastern) and nearest locations to north, south, east, and west" and the remaining locations are described in terms of their distance from the detonation point. Locations 3a-6 and 3a-13 are now described in section 7.2.3 as being centered on the detonation points, and the detonation areas are now described in the text, corresponding to the green-shaded areas in Figure 7.2-2.

c. Table 7.2-1 has been revised to accurately reflect the text in section 7.2.3 (see response to Comment 84a).

d. Because the detonation areas are surface sites, all sampling depths are below ground surface, as indicated in the text in section 7.2.3 and in Table 7.2-1. Locations are clearly described in the revised text in section 7.2.3 and shown in Figure 7.2-2. The text in section 7.2.3 and Table 7.2-1 have been revised to indicate that samples at the locations not being sampled at three depths will be collected from 0–1 ft and 2–3 ft bgs.

e. Sampling in drainages is not proposed because there are no drainages in the immediate vicinity of the detonation areas. The proposed sampling locations are adequate to characterize each detonation area. The proposed walkover surveys will determine if debris is present beyond the currently defined areas, and additional sampling locations may be proposed if the surveys indicate that additional sampling is warranted.

NMED Comment

85. In Section 7.3 (AOC 40-003(b), Burn Site), page 81

The Permittees provide a limited description of the burn pit. Revise the Work Plan to describe what the burn pit was used for, including what materials burned and ignition sources.

LANL Response

85. A list of materials burned in both the burn pit and burn cage has been added to section 7.3. As stated in section 7.3, the ignition source used was kerosene ignited by detonators that were remotely fired.

NMED Comment

86. In Section 7.3 (AOC 40-003(b), Burn Site), page 81 and Section 7.3.1 (Summary of Previous Investigations for AOC 04-003(b), pages 81 and 82;

Permittees' Statement: *Section 7.3 states "[t]he burn site consists of three small burning areas and a burn pit. From 1960 to 1985, a wire burn cage (4 ft wide × 4 ft long × 5 ft high) with a steel-plate floor was used [at] three different locations…The burn pit is located between the two northern locations of the burn cage and measures approximately 12 ft wide × 50 ft long × 12 ft deep." Section 7.3.1 states "[t]he Closure Certification Report for the TA-40 Scrap Detonation Site (IT Corporation 1995, 057521) documents that characterization samples were collected at SWMU 40-003(b) in October 1994. These characterization samples were used to identify two small surface areas—approximately 4 ft × 4 ft and 6 ft × 6 ft—requiring remediation based on analytical results that indicated elevated levels of lead…The excavated sites were restored with clean backfill that was compacted and graded to the original contours of the surrounding terrain (IT Corporation 1995, 057521, p.15). A 20-ft-long × 20-ft-wide × 4-ft-deep excavated area called the "burn pit" was discovered to be beyond the scope of the intended remediation."*

NMED Comment: *Clarify the following in the revised Work Plan:*

a. Clarify if the wire burn cage (4 ft wide × 4 ft long × 5 ft high) discussed in Section 7.3 is the same structure as the small surface area approximately 4 ft × 4 ft and 6 ft × 6 ft discussed in Section 7.3.1. If these are different areas, the small surface areas discussed in Section 7.3.1 must be depicted in Figure 7.2-2 (Proposed sampling locations for SWMUs 40-004(a) and 40-003(b)) and additional sampling must be proposed or if all contaminants above background values (BV) were removed, state so in the revised Work Plan.

b. Clarify whether the burn pit (12 ft wide × 50 ft long × 12 ft deep) discussed in Section 7.3 is the same burn pit discussed in Section 7.3.1 (A 20-ft-long × 20-ft-wide × 4-ft-deep excavated area called the "burn pit"). If these are separate burn pits, both must be included in Figure 7.2-2 and the Permittees must propose additional sampling locations. If these are the same locations, the Permittees must determine the actual dimensions of the burn pit. In addition, the Permittees must propose pit sidewall sampling.

c. The Permittees state the excavated sites were restored with clean backfill that was compacted and graded to the original contours of the surrounding terrain. Identify by name the excavated sites (e.g., the restored sites are the two small surface areas approximately 4 ft by 4 ft and 6 ft by 6 ft).

LANL Response

86. a. Text has been added to section 7.3.1 to clarify that one of the areas in question is the southernmost burn cage location, and the other is east of the burn pit and includes the eastern burn cage location. Some of the areas designated as burn pit locations in Figures 7.2-1 and 7.2-2 were mislabeled and should have been designated as burn cage locations. The labels have been corrected on the figures and the excavated areas discussed in section 7.3.1 have also been added to the figures. Lastly, the first paragraph of section 7.3.1 already clearly states that all contaminated soil was removed.

b. The dimensions of the burn pit provided in section 7.3 are correct. The text in 7.3.1 has been revised to clarify that the 20 x 20 ft area described in that section was excavated from the eastern portion of the burn pit, but the remaining portion of the burn pit was not excavated.

c. The paragraph describing the backfilling of the excavated sites applies to all excavated areas. The paragraph has been revised to state by name the areas that were backfilled during the 1994–1995 closure activities, and that the entire burn pit had previously been backfilled by 1976. The revised paragraph has been moved to the end of section 7.3.1.

NMED Comment

87. Section 7.3.3 (Scope of Activities for AOC 40-003(b), page 82:

Revise the sampling locations to include pit side-wall samples, and ensure the entire extent of the burn pit is being sampled. In addition, the text, Figure 7.2-2, and Table 7.3-1 do not address sampling at the burn cages or along the drainage to Pajarito Canyon. All samples must be collected from below the imported fill. Revise the Work Plan accordingly. See also Comment 86.

LANL Response

87. As stated in the revised text of sections 7.3 and 7.3.1, the burn pit was backfilled by 1976. It is therefore not possible to collect pit side-wall samples. The proposed sampling locations (three within the pit area and two north and south of the pit) are sufficient to characterize the 12 ft × 50 ft pit. The burn cage locations were remediated in 1994–1995 and underwent RCRA closure, are therefore not part of AOC 40-003(b), and are not included in this investigation. Sampling is not proposed in the drainage because the burn pit had no surface releases that could affect the drainage. Table 7.3-1 has been revised to indicate that sampling depths within the burn pit are to be 0–1 ft and 4–5 ft below the fill in native material.

NMED Comment

88. Section 7.3.3 (Scope of Activities for AOC 40-003(b), page 82:

Because kerosene was used at the burn cages (Section 7.3), include analysis for diesel range organics (DRO) extended in the analytical suite for all samples associated with the burn cages.

LANL Response

88. TPH-DRO analysis has been added for all samples at AOC 40-003(b). The text in section 7.3.3 has been revised to reflect this change, and a column has been added to Table 7.3-1 for TPH-DRO.

NMED Comment

89. Section 7.4 (SWMU 40-004, Storage Area), page 83:

Permittees' Statement: *"[t]he information described in the SWMU report is not in the CEARP report, so it is not known how the SWMU report derived its description of the SWMU 40-004 storage area and the products stored there. The RFI work plan states that this storage area is located beneath the southwest wing of building TA-40 (LANL 1993, 026068, p. 5-95); however, no references are provided as to how this information is known."*

NMED Comment: *The Permittees indicate the Storage Area could potentially be located beneath the southwest wing of building TA-40. Identify building TA-40 in Figure 7.4-2 (Proposed Sampling locations for SWMU 40-004). Indicate whether sampling will be conducted during this investigation, and propose sample locations beneath the building or propose to investigate this area when the building is demolished. Revise the Work Plan accordingly.*

LANL Response

89. The second paragraph of section 7.4 incorrectly referred to "building TA-40." The text has been corrected to reference building 40-9. Text has been added to the first paragraph of section 7.4 stating that according to the 1990 SWMU Report (LANL 1990, 007513), all contaminated soil at the site had been removed. Text has been added to section 7.4.3 stating that because the contaminated soil was removed, sampling beneath building 40-9 is not necessary. The proposed sampling locations are intended to determine the nature and extent of any residual contamination south of building 40-9. These sampling locations are distributed on the south side of building 40-9 to account for uncertainty in the location of the former storage area.

NMED Comment

90. Section 7.4 (SWMU 40-004, Storage Area), page 83:

The Permittees describe the location of the Storage Area. Revise the Work Plan to identify the dimensions of SWMU 40-004. Based on the dimensions, additional samples may be required.

LANL Response

90. Section 7.4 has been revised to indicate that the storage area as described in the 1990 SWMU report (LANL 1990, 007513) was confined within a 15 ft × 15 ft area. Because of the small size of the former storage area, the removal of contaminated soil before 1990, and the apparent location of the former storage area beneath building 40-9, the proposed sampling locations are placed to determine if any residual soil contamination is present along the south side of the building. The proposed sampling locations are sufficient for this purpose.

NMED Comment

91. Section 7.4.3 (Scope of Activities for SWMU 04-004), page 83:

The Permittees discuss the sample analyses in this section. Because vacuum pump oil was stored in this area and oil stains were observed, analyze for DRO. Revise the Work Plan accordingly.

LANL Response

91. TPH-DRO analysis has been added for all proposed samples at SWMU 40-004. Section 7.4.3 and Table 7.4-1 have been revised to reflect this change.

NMED Comment

92. Section 7.5 (SWMU 40-006(a), Firing Site), Section 7.5 (SWMU 40-006(b), Firing Site), and Section 7.7 (SWMU 40-006(c), Firing Site), pages 83-86:

The Permittees defer investigation of these firing sites per Section IV.A.5.b and Table IV-2 of the Consent Order. This deferral must be stated in the Investigation Report.

LANL Response

92. Comment noted. The fact that these firing sites are deferred per Table IV-2 of the Consent Order will be included in the investigation report.

NMED Comment

93. Section 7.8 (AOC 40-007(a), Storage Area), Section 7.9 (AOC 40-007(b), Storage Area), and Section 7.10 (AOC 40-007(c), Storage Area), pages 86-87:

The Permittees defer investigation of these Storage Areas after they are removed because they are currently active. State in the Investigation Report that investigations at AOC 40-007(a), AOC 40-007(b), and AOC 40-007(c) will be deferred until the buildings are removed.

LANL Response

93. Comment noted. The delayed investigation of these sites will be stated in the investigation report.

NMED Comment

94. Section 7.12 (SWMU 40-009, Landfill), page 88:

Permittees' Statement: *"The SWMU report provides only a vague location for the landfill, stating that debris from TA-15 was taken to TA-40 and disposed of in the canyon between buildings 40-5 and 40-15. The RFI investigating field team walked the canyon area between the two buildings and found two prominent earthen berms on the steep hillside directly south of building 40-9 (LANL 1995, 063947). The field team suspected the berms to be the landfill (LANL 1995, 063947)."*

NMED Comment: *Include the locations of building 40-5 and 40-15 in the Figure 7.12-1 (Site features of SWMU 40-009) and discuss the dimensions (including depth) of the landfill. Revise the Work Plan accordingly.*

LANL Response

94. The locations of buildings 40-5 and 40-15 have been added to the site features map (Figure 7.12-1). The text in section 7.12 has been revised to state that the dimensions of the landfill are unknown.

NMED Comment

95. Section 7.12.3 (Scope of Activities for 40-009), pages 88 and Figure 7.12.5 (Proposed sampling locations for SWMU 40-009):

The Permittees discuss the proposed sampling locations associated with SWMU 40-009. Include the following alternate sample locations:

a. Assuming the width of the landfill is approximately 120 feet, at each side, include two samples 40 and 80 feet from one end of the landfill.

b. Clarify whether samples 9-14 to 9-20 are located at the toe of the colluvium in Pajarito Canyon, or at other locations within the canyon.

LANL Response

95. a. Because the dimensions of the landfill are not known, proposed sampling locations (9-5 on the west and 9-9 on the east) were placed beyond the depicted footprint of the landfill. Additional sampling locations 40 to 80 ft beyond those locations would be placed in areas potentially influenced by other SWMUs or AOCs. Therefore, no additional sampling locations have been added. Section 7.12.3 has been revised to state that if debris is found at either location 9-5 or 9-9 (west and east of the current site perimeter), additional sampling locations may be proposed.

b. Sampling locations 9-14 and 9-16 through 9-20 extend downslope to the toe of the slope in Pajarito Canyon. Text has been added to section 7.12.3 accordingly.

NMED Comment

96. Section 7.13 (SWMU 40-010, Surface Disposal Area), page 89:

The Permittees provide a description of SWMU 04-010. Clarify in the revised Work Plan if this SWMU cannot be removed due to archaeological features. In addition, indicate the depth of the disposal area (beneath the pre-Manhattan Project debris).

LANL Response

96. The text in section 7.13 has been revised to state that the pre–Manhattan Project debris cannot be removed because of its archaeological significance. Because the SWMU is a surface disposal area and SWMU-related debris is scattered on the surface of the site, the depth of the surface disposal area is not relevant.

NMED Comment

97. Section 7.13.3 (Scope of Activities for SWMU 40-010), page 89:

Ensure samples are collected from the bottom of and beneath the Surface Disposal Pit. Based on this information gained from these samples, revisions to the sampling intervals may be necessary. In addition, ensure sampling occurs from the edge of Pajarito Canyon to the toe of the colluvium. Revise the Work Plan accordingly.

LANL Response

97. SWMU 40-010 is a surface disposal area, not a surface disposal pit. Therefore, the site has no features with depths. Therefore, sampling depths, as stated in the text of section 7.13.3 and in Table 7.13-1, are 0–1 ft and 2–3 ft bgs. Because of the steepness of the slope below SWMU 40-010 and the problem of accessibility of the slope, additional sampling locations are not proposed to the toe of the slope in Pajarito Canyon. However, Pajarito Canyon reach PA-1E is located directly below SWMU 40-010 (see Plate 1), and data from that reach, as reported in the revised Pajarito Canyon investigation report (LANL 2009, 106939), will be used (if necessary) to define the lateral extent of contamination to the toe of the slope. Text has been added to section 7.13.3 stating that the steepness of the slope makes sampling impractical and potentially unsafe and that data from reach PA-1E will be used as necessary to define lateral extent.

NMED Comment

98. Section 7.13.3 (Scope of Activities for SWMU 40-010), page 89:

Permittees' Statement: *"[t]he area contained various debris, including twenty 30-gallon drums (LANL 1993, 026068, p. 5-56). This area also contains debris from farm and home implements that predate Manhattan Project activities. Post-Cerro Grande fire activities removed all the drums and exposed debris, with the exception of the pre-Manhattan Project debris, which is considered to be of archaeological importance."*

NMED Comment: *Because this area was burned in the Cerro Grande Fire, analyze for dioxins/furans. Revise the Work Plan accordingly.*

LANL Response

98. Analyzing the potential consequences of an event such as the 2000 Cerro Grande fire is beyond the scope of activities for this work plan and of the Consent Order. No revision to text is necessary.

NMED Comment

99. Section 8.1 (Establishing Sampling Locations), page 90:

The Permittees indicate that the proposed locations may be adjusted pending field conditions. Include language in this section that indicates any deviations from the Work Plan (change in proposed sample locations) will be addressed in the investigation report.

LANL Response

99. Text in section 8.1 has been revised to state that changes to sampling locations will be reported as deviations from the work plan in the appropriate section(s) of the investigation report.

REFERENCES

Bradbury, N.E., May 15, 1946. "Disposal Pit at Two Mile Mesa, TA-6-H (Disposal Pit at TD Site)," Los Alamos Scientific Laboratory memorandum to Division and Group Leaders from N.E. Bradbury, Los Alamos, New Mexico. (Bradbury 1946, 015076)

DOE (U.S. Department of Energy), October 1987. "Phase I: Installation Assessment, Los Alamos National Laboratory," draft, Volume 1 of 2, Comprehensive Environmental Assessment and Response Program, Environment and Health Division, Environmental Programs Branch, Albuquerque Operations Office, Albuquerque, New Mexico. (DOE 1987, 008663)

LANL (Los Alamos National Laboratory), November 1990. "Solid Waste Management Units Report," Vol. I of IV (TA-0 through TA-9), Los Alamos National Laboratory document LA-UR-90-3400, Los Alamos, New Mexico. (LANL 1990, 007511)

LANL (Los Alamos National Laboratory), July 1993. "RFI Work Plan for Operable Unit 1157," Los Alamos National Laboratory document LA-UR-93-1230, Los Alamos, New Mexico. (LANL 1993, 020949)

LANL (Los Alamos National Laboratory), August 1993. "RFI Work Plan for Operable Unit 1111," Los Alamos National Laboratory document LA-UR-93-2166, Los Alamos, New Mexico. (LANL 1993, 026068)

LANL (Los Alamos National Laboratory), May 20, 1994. "Response to Notice of Deficiency Concerning Operable Unit 1157 Field Investigation Work Plan, Work Breakdown Structure Number 1.4.2.6.1.28.1.2," Los Alamos National Laboratory letter (EM/ER:94-J219) to J.C. Vozella (DOE-LAAO) from D. McInroy (EM/ER Acting Program Manager), Los Alamos, New Mexico. (LANL 1994, 038539)

LANL (Los Alamos National Laboratory), September 2006. "Investigation Work Plan for Cañon de Valle Aggregate Area," Los Alamos National Laboratory document LA-UR-06-4960, Los Alamos, New Mexico. (LANL 2006, 091698)

LANL (Los Alamos National Laboratory), September 2007. "Investigation Work Plan for S-Site Aggregate Area," Los Alamos National Laboratory document LA-UR-07-5427, Los Alamos, New Mexico. (LANL 2007, 097687)

LANL (Los Alamos National Laboratory), December 2007. "Investigation Work Plan for Middle Cañada del Buey Aggregate Area, Revision 1," Los Alamos National Laboratory document LA-UR-07-8316, Los Alamos, New Mexico. (LANL 2007, 102622)

LANL (Los Alamos National Laboratory), August 2009. "Pajarito Canyon Investigation Report, Revision 1," Los Alamos National Laboratory document LA-UR-09-4670, Los Alamos, New Mexico. (LANL 2009, 106939)

LASL (Los Alamos Scientific Laboratory), October 1943. "TA-8, Anchor West, Bldg AW-2," Engineering Drawing ENG-C-12322, sheet number R-AS-2, Los Alamos, New Mexico. (LASL 1943, 110447)

Van Vessem, A.D., November 4, 1992. “Material Disposal at Two Mile Mesa,” Los Alamos National Laboratory memorandum to C.K. Rofer (EES-1) from A.D. Van Vessem (EES-1), Los Alamos, New Mexico. (Van Vessem 1992, 015073)

Wilson, C., March 16, 1994. “Sampling Locations for New Location of MDA Q,” ERM/Golder memorandum to B. Kopp, R. Conrad, and T. Glatzmaier from C. Wilson, Los Alamos, New Mexico. (Wilson 1994, 048763)

Attachment 1

Bradbury 1946 and Van Vessem 1992 Memorandums

TA-6-H

17-0018 (1)

May 10, 1946

AREA F!

Covered over now located near Concrete bowl

To: Division and Group Leaders

From: N. E. Bradbury

Subject: Disposal Pit at ~~TD Site~~ Two Mile Mesa

Completed May 7, 1946 ?

An obsolete material pit for the disposal of classified objects and shapes has been prepared at TD Site where such material will be made secure by burying. This pit will be open until 1 June. It is urged that divisions and groups "clean house" of obsolete, non-usable, but classified material by the use of this pit.

Division and group leaders desiring to use the pit will notify Security Office, Ext. 541, prior to their delivery of the obsolete classified material. The Security Office will record and locate such material in the pit.

N. E. Bradbury
Director

Called Wilhoyts office re audio, Ranch Barnes & staff attendant there, also Allen & Newell, went over & talk to Hightower. Talked to Ken Hauffle

Los Alamos
Los Alamos National Laboratory
Los Alamos, New Mexico 87545

(1) 17-0045

memorandum

TO: C. K. Rofer, EES-1, MS D462

DATE: November 4, 1992

FROM: A. D. Van Vessem, EES-1

MAIL STOP/TELEPHONE: D462/7-2988

SYMBOL: EES-1

SUBJECT: **MATERIAL DISPOSAL AT TWO MILE MESA**

I came to Los Alamos on March 13, 1944, as a member of the Army Special Engineer Detachment. I was assigned to Group X-2b, whose mission at the time was development of methods for recovery of active material from the Trinity shot, in case the conventional explosives detonated without a nuclear detonation. This group's mission later involved the assembly of the Fat Man device for the Trinity shot and the assembly of the Fat Man weapon, which was detonated over Nagasaki, Japan.

In the recovery effort, I worked on the Jumbo and Jumbino tests and on the water recovery method tested in the large concrete bowl (TA-6-37) on Two Mile Mesa. After the war ended, I went to Bikini Atoll to participate in testing there, and on returning from there in 1946, I joined Group X-7, which was located at Two Mile Mesa Site and TD Site. I continued with this group, which was later designated GMX-7, WX-7, and M-7, until my retirement in 1981.

This memo is in response to a draft memo dated October 6, 1992, by L. W. Creamer, which summarizes documentation on disposal pits on Two Mile Mesa.

My recollection of disposal practices at Two Mile Mesa is that all disposal pits were dug in the general area of the fences now designated Materials Disposal Area F (MDA F). I recall the 1946 pit very well. It was used for the burial of large obsolete classified non-explosive components, such as bomb casings, that were difficult to destroy in other ways. I have no recollection of the 1947 burial pit, but feel quite sure it again was used only for non-explosive obsolete classified objects. I also have no recollection of Job Orders for pits 6' x 6' x 6' and 2' x 2' x 4'.

Some of the documentation refers to the possibility of high explosives having been buried in these pits. Safety rules at Los Alamos have required that high explosives be disposed of by burning or detonation, and I do not recall exceptions to these rules.

Spark gaps listed in memos by C. Kunz were disposed of in holes drilled in the ground, in the area of the smaller fence at MDA F.

I talked to R. W. Drake on October 24 and 29, 1992 about disposal on Two Mile Mesa. Drake was the Assistant Division Leader of X Division, later GMX, WX, and finally some of the groups in M Division. He came to Los Alamos in 1948. He stated that he recalled the 1949 burial pit memo and said he remembered that this was mainly for burying classified X-Units (Fat Man firing units). Again, the purpose of burying these units was to protect their classification. They were primarily electronic and contained nothing more hazardous than solder. The fact that Charles Kunz was the contact tends to confirm this, since he was the X-7 Section Leader for Detonator Firing.

I mentioned to Drake that there were rumors that HE had been buried in these pits. He stated, as I did, that Division policy was burning or detonating as the only means of destroying explosives.

In Spring 1945, I personally helped with the disposal of more than 100 defective Fat Man HE charges by detonating them on Two Mile Mesa, on the ground in the general area between MDA F and the road. Some of these charges contained Baratol, and it may be desirable to test soil for barium in this area. Building TA-6-3 was the control point, and a firing line ran down to the area where the smaller fence now is at MDA F. This disposal by detonation may account for the depressions south of Two Mile Mesa Road that have been identified as pits in the SWMU Report and the DOE Environmental Survey.

My judgment, after considering what I remember of waste disposal practices, walking this area of Two Mile Mesa, and having studied a number of aerial photos, is that the three largest pits are probably side by side in the general area of the larger fence.

Cy: M. M. Backsen, IS-11, MS M700
L. W. Creamer, M-7, MS P950
J. D. Griffin, M-7, MS P950
G. D. Guthrie, EES-1, MS D462
W. H. Meyers, EES-1, MS D462
L. O. Ticknor, A-1, MS F600
B. P. Wilcox, EES-15, MS J495
EES-1, MS D462

Cross-Reference of NMED NOD Comments and Revisions to Starmer/Upper Pajarito Canyon Aggregate Area Investigation Work Plan

NMED NOD Comment No.	Summary of NOD Comment	Section(s)/Page(s) in Original Report	Section(s)/Page(s) in Revised Report	Nature of Revision
General Comments				
1	State the proposed criteria for selecting the sample intervals for analyses of polychlorinated biphenyls (PCBs).	Sites where soil samples were proposed for PCB analyses	Section 8.9	Text has been added to section 8.9 stating the criteria used to select sampling locations and depth intervals of samples to be submitted for PCB analysis.
2	Analyze all soil samples at Technical Area 08 (TA-08) for PCBs, or provide locations of transformers and rationale for sampling PCBs from only selected locations.	Section 4	Section 8.9 Section 4.5.3 Table 4.5-1	Text has been added to section 8.9 explaining rationale. Text and table for solid waste management unit (SWMU) 08-004(c) have been revised to include PCBs for all samples (fewer than 10 samples proposed).
3	Revise work plan to ensure text and figures are consistent, clarify whether terms “sewer line” and “drainline” are interchangeable.	Figures, plates, Scope of Activities sections	n/a*	Map labels for drainlines, sewer lines, industrial waste lines, etc. are determined by facility or utility requirements; “drainline” is a generic term and can refer to sewer lines and other types of lines. No revisions were necessary.
4	Collect and analyze samples for dioxins/furans at any site where burning was conducted. Revise work plan accordingly.	Sections describing sites where buildings or other structures were destroyed by intentional burning	n/a	No revision to text has been made. The wood-framed structures did not contain any chlorine source and are not a potential source of dioxins and furans.
5	Ensure proposed samples are collected below fill material in native soil or tuff. Revise the work plan accordingly.	Sections where fill is present but text did not specify collection of native material only (e.g., 5.17.3, 5.20.3, 5.24.3)	Section 5.17.3 Section 5.18.3 Section 5.20.3 Section 5.24.3 Section 7.3.3 Table 5.17-1 Table 5.20-1 Table 5.24-3 Table 7.3-1	Text has been revised to state that samples will be collected from native material; tables have been revised to state that depths are below fill.
6	All samples must be collected as discrete samples, not composite samples.	Scope of Activities sections	n/a	All investigation samples are collected as discrete samples, as indicated by unique locations and sampling intervals for all samples. No revisions were necessary.

NMED NOD Comment No.	Summary of NOD Comment	Section(s)/Page(s) in Original Report	Section(s)/Page(s) in Revised Report	Nature of Revision
Specific Comments				
7	a. Reference correct section of Compliance Order on Consent (Consent Order) for cleanup and screening levels. b. Explain how soil cleanup levels would be determined to be impractical, and under what circumstances cleanup levels do not exist. c. Specify in which tables soil screening levels (SSLs) are provided.	Section 2.3.4	Section 2.3.4	Text has been revised to a. correctly reference section VIII of the Consent Order. b. (1) refer the reader to the Consent Order for the determination of impractical soil cleanup levels (2) clarify circumstances when SSLs may not exist for current or future land use c. state that SSLs are provided in individual analytical results tables (if available) for each site.
8	Discuss any drains, sumps, or sinks in building 08-1.	Section 4.1	n/a	No revision to text was necessary. Area of concern (AOC) 08-001(a) is an off-gas system; drains, sumps, and sinks are not relevant.
9	Discuss any drains, sumps, or sinks in building 08-2.	Section 4.2	No revision	No revision to text was necessary. AOC 08-001(b) is an off-gas system; drains, sumps, and sinks are not relevant.
10	Propose surface clearance to remove debris, propose sampling in drainages.	Sections 4.3 and 4.3.3	Section 4.3.3 Table 4.3-1 Figure 4.3-2	The text has been revised to include a proposed walkover survey and pickup for unexploded ordnance (UXO). Text, table, and figure have been revised to include three additional sampling locations in drainages.
11	Propose one additional sampling location between locations 3a-14 and 9a-8. Revise text, figures, and tables accordingly.	Section 4.4.1.3, Figure 4.4-2, Table 4.4.1	Section 4.4.1.3 Table 4.4-1 Figure 4.4-2	Text, table, and figure have been revised to account for the additional sampling location.
12	Because building 08-2 was used as a machine shop, analyze samples at SWMU 08-004(b) for diesel range organics (DRO) and oil range organics (ORO).	Section 4.4.3	n/a	No revisions were necessary. The drainline was a closed-loop condensate discharge, which could not have been affected by building operations.

NMED NOD Comment No.	Summary of NOD Comment	Section(s)/Page(s) in Original Report	Section(s)/Page(s) in Revised Report	Nature of Revision
13	SWMU 08-004(c) must be characterized upon removal of building 08-3.	Section 4.5.1 Section 4.5.3	Sections 4.5 and 4.5.3	Text has been added to explain that the building is being prepared for historic preservation and will not be removed in the foreseeable future. However, the site will be investigated if/when the building is removed.
14	Analyze samples at SWMU 08-004(c) for DRO and ORO.	Section 4.5 Section 4.5.3	Sections 4.4.1.3 and 4.5.3; Tables 4.4-1 and 4.5-1	Total petroleum hydrocarbon (TPH) DRO and TPH-ORO have been added to the analytical suites for SWMUs 08-003(a) and 08-004(c).
15	Discuss how to determine if contaminants penetrated below concrete of loading dock.	Section 4.6	n/a	The loading dock is not part of SWMU 08-004; therefore no text revisions were necessary.
16	Indicate if a tank is present, and if so, include description of tank (location, dimensions, contents).	Section 4.6	Section 4.6.3	The reference to a tank in section 4.6.3 was incorrect; no tank is or was present at this site. The text has been corrected.
17	Revise the work plan to include analyses of explosive compounds for all samples at SWMU 08-005.	Section 4.7.3	Section 4.7.3	Text has been revised to state that there was no sump at this site and no explosives were used at this site.
18	Dig three trenches; collect samples within trenches. Propose sampling in associated drainages. If waste is discovered, remove it during excavation or propose to submit a work plan to remove the waste in the Recommendations section of the investigation report.	Section 4.8	n/a	No excavation or removal is proposed. No revision to the work plan is necessary. The outline shown in Figures 4.8-1 and 4.8-2 bounds the area where the geophysical surveys indicated the site to be.
19	Propose sampling of the French drain system and along the drainline.	Section 4.9	Section 4.9.3 Figure 4.9-3 Table 4.9-3	The French drain is not part of AOC 08-009(c), and no sampling is proposed. Sampling locations have been added along the drainline, and samples will be collected if access is allowed. Section 4.9.3, Figure 4.9-3, and Table 4.9-3 have been revised to include the additional sampling locations.

NMED NOD Comment No.	Summary of NOD Comment	Section(s)/Page(s) in Original Report	Section(s)/Page(s) in Revised Report	Nature of Revision
20	All samples collected from 2–3 ft must be analyzed for metals, radionuclides, volatile organic compounds, and ORO, and for semivolatile organic compounds of ORO detected above 200 mg/kg.	Section 4.9	Section 4.9	The basement of building 08-23 was used only for housing transformers, no other operational activities occurred in the basement. Samples will be analyzed for PCBs only. Explanatory text and a reference have been added to section 4.9.
21	Propose sampling at drain in building 08-22, where the drainline exits the building, and along the drainline to the outfall. Include description of drainline construction.	Section 4.10	Section 4.10.3 Figure 4.10-2 Table 4.10-1	Building 08-22 is active; drain will not be sampled until building is removed. Sampling locations have been added along drainline from building exit to outfall.
22	Propose collection of samples where drainline exits building 08-21, along drainline west and east of drop inlet and at drop inlet; include description of drop inlet and its purpose.	Section 4.11	Section 4.11 Section 4.11.3 Figure 4.11-2 Table 4.11-1	The drop inlet receives storm water only and is unrelated to the SMWU. Sampling locations have been added along drainline; they will be sampled if access is allowed.
23	Include additional sample locations at outfall 08-0074 and along the storm drain.	Section 4.12 Figure 4.12-2	Figure 4.12-2	Structure 08-0074 is a manhole, on a sewer line unrelated to AOC 08-009(f). Figure 4.12-2 has been revised to clarify structure as manhole. No additional sampling proposed.
24	Indicate in the investigation report that investigation at AOC C-08-014 will be delayed until the building is removed.	Section 4.13 Section 4.13.3	Section 4.13.3	Section 4.13.3 text has been revised to state that sampling at AOC C-08-014 will be performed when building 08-21 is removed.
25	Propose sampling within footprint of firing chambers and within footprint of building 09-1.	Section 5.3.3	Figure 5.3-2	Figure 5.3-2 has revised to shift all proposed sampling locations so that firing chamber footprints are included. No samples are proposed in building footprint because the building was not part of the site and it was separated from chambers by blast walls.
26	Indicate in Table 5.3-1 which samples will be analyzed for PCBs.	Section 5.3.3 Table 5.3-1	Table 5.3-1	Table 5.3-1 has been revised to indicate samples selected for PCB analyses.
27	Indicate if piping was present; if so, include on figure. Propose adequate sampling for the piping.	Section 5.7	Section 5.7.3 Figure 5.7-2 Table 5.7-1	No details of piping are available. Four sampling locations have been added within the building footprint, and the text, table, and figure have been revised accordingly.

NMED NOD Comment No.	Summary of NOD Comment	Section(s)/Page(s) in Original Report	Section(s)/Page(s) in Revised Report	Nature of Revision
28	Include dioxins/furan analyses; clarify if buildings 09-1, 09-3, and 09-13 were burned; if so, include dioxins/furan analyses for them.	Section 5.7 Section 5.7.1	n/a	No revision to text has been made. The wood-framed structures did not contain any chlorine source and are not a potential source of dioxins and furans.
29	Discuss discharge piping. If discharge piping was present, propose sampling along former piping.	Section 5.8	Section 5.8 Figures 5.8-1 and 5.8-2	Text has been revised to state that there was no discharge piping from the catch basin. Figures have been revised to show drain troughs and drainline to catch basin. No additional sampling is proposed.
30	Show drain trough locations and associated discharge piping on Figure 5.8-2; propose sampling within and around the troughs and along associated piping.	Section 5.8 Section 5.8.3	Figure 5.8-2	See response to Comment 29. Drain troughs are not part of SWMU 09-003(h), which includes only catch basin and associated piping. Piping is very short, and no discharge piping appears on engineering drawings. Figure 5.8-2 has been revised to show troughs and associated piping.
31	Show locations of the sump and piping on Figure 5.9-2.	Section 5.9	n/a	No information is available on sump and piping locations. No revision is necessary.
32	Verify that the sampling locations include locations of sump and piping. Additional sampling locations are required because of size of building 09-13; propose one additional location on each side of building.	Section 5.9.3	Section 5.9.3 Figure 5.9-2 Table 5.9-1	It is not possible to determine locations of sump and piping. Four sampling locations have been added, one on each side of building footprint, and text, table, and figure have been revised accordingly.
33	Describe drainline and indicate if still in place. If still present, specify if there are plans for removal; include details of removal.	Section 5.10	Section 5.10	Section 5.10 has been revised to state drainline is 8-in.-diameter vitrified-clay pipe; still in place but inactive. All discharge lines from sumps plugged. No plans to remove line.
34	Propose sampling at all floor drains located within buildings.	Section 5.10	n/a	No revision to the work plan is necessary. The SWMUs referenced include only the sumps, not the buildings. All but two of the buildings are in place and some are active facilities. The proposed sampling is sufficient to characterize the sumps, drainlines, and industrial waste line.

NMED NOD Comment No.	Summary of NOD Comment	Section(s)/Page(s) in Original Report	Section(s)/Page(s) in Revised Report	Nature of Revision
35	Propose sampling around and beneath the sumps and along drainlines leading from buildings to the sumps; or provide an explanation why sampling cannot be completed, propose when sampling will be conducted.	Section 5.10.5 Section 5.10.5.3 Section 5.10.6 Section 5.10.6.3	Section 5.10.5.3 Section 5.10.6.3 Plate 4 Table 5.10-6 Table 5.10-7	Text, plate, and tables have been revised to indicate 14 additional sampling locations total (7 each) at SWMUs 09-004(e) and 09-004(f). New locations are at sump and along drainlines from buildings. Sampling at some locations may be subject to access restrictions.
36	Revise text and Table 5.10-7 for consistency in whether radionuclides will be analyzed.	Section 5.10.6.3	Section 5.10.6.3 Table 5.10-7	Text and table have been revised to eliminate radionuclide analyses; no record of radionuclide use at SWMU 09-004(f).
37	Propose sampling locations around and beneath sump and along drainline leaving the building.	Section 5.10.7.3	Section 5.10.7.3 Table 5.10-8 Plate 4	Text, table, and plate have been revised to reflect five additional sampling locations, one on each side of sump and one where drainline exits building. No sampling beneath sump because building and sump are active. Access restrictions may prevent collection of some samples.
38	Collect samples along drainline from SWMU 09-004(h) at 50-ft intervals, or provide justification for sample collection at 100-ft intervals.	Section 5.10.7.3	Section 5.10.7.3 Plate 4 Table 5.10-8	Text, table, and plate have been revised to reflect additional sampling locations for sampling at 50-ft intervals along drainline.
39	Revise Table 5.10-11 to include sampling location 4k-11.	Table 5.10-11	Table 5.10-11	Location 4k-11 has been added to Table 5.10-11.
40	Include an additional sampling location north of location 4l-8 at intersection of industrial waste line and sewer line.	Section 5.10.11.3	Section 5.10.11.3 Table 5.10-12 Plate 4	One sampling location (4l-9) has been added to text, table, and plate.
41	Samples along drainline from SWMU 09-004(n) must be analyzed for radionuclides because SWMU 09-004(m) drainline connects to it.	Section 5.10.12.3	Section 5.10.13.3 Table 5.10-14	Text and table have been revised to reflect radionuclide analyses added for all samples at SMWU 09-004(n).

NMED NOD Comment No.	Summary of NOD Comment	Section(s)/Page(s) in Original Report	Section(s)/Page(s) in Revised Report	Nature of Revision
42	Identify location of manhole on Plate 4; identify in Table 5.10-4 which samples are associated with manhole.	Section 5.10.13.3 Table 5.10-14	Section 5.10.13.3 Table 5.10-14 Plate 4	The text has been revised to include the structure number of the manhole. Table 5.10-14 has been revised to include the additional sampling location and to indicate which locations are associated with the manhole. A manhole label, along with an additional location at the outlet of the manhole, have been added to Plate 4.
43	Propose sampling locations at floor drain within building, drainline where it exits the building, and drainline where it enters sump.	Section 5.11.3	Section 5.11.3 Table 5.11-1 Figure 5.11-2	Building is active and is not part of the site; floor drain will not be sampled. Text, table, and figure has been revised to reflect two additional sampling locations, one along drainline at building exit and one at sump inlet.
44	Propose sampling locations at floor drains inside building, along drainlines from building to sump, along drainline from sump to sewer line, and along sewer line to outfall.	Section 5.12.3	Section 5.12.3 Figure 5.12-3 Table 5.12-3	Building is active and is not part of the site; floor drains will not be sampled. Text, figure, and table have been revised to reflect 12 additional locations along drainlines, at sump, inlet and outlet to sump, and along industrial waste line.
45	Clarify current status of septic system.	Section 5.13	Section 5.13	Section 5.13 has been revised to clarify that septic system is abandoned (not in use); outlet drainline has been plugged.
46	Propose sampling locations where sewer line leaves building 09-50, along line from building to septic tank, around the tank, and at tank inlet and outlet.	Section 5.13.3	Section 5.13.3 Table 5.13-1 Figure 5.11-2	Text, table, and figure have been revised to reflect additional eight sampling locations at building exit, along drainline, at tank, and at tank inlet and outlet.
47	Revise Table 5.14-4 to include sampling locations 6-11 and 6-12 as shown in Figure 5.14-4.	Section 5.14.3 Table 5.14-4 Figure 5.14-4	Section 5.14.3 Table 5.14-4	Text has been revised to reflect correct number of sampling locations; locations 6-11 and 6-12 have been added to Table 5.14-4.
48	Include additional sampling location west of proposed location 5d-1, at the location where four sewer lines intersect.	Section 5.15.2.3 Figure 5.15-5	Section 5.15.2.3 Table 5.15-6 Figure 5.15-5	Text, table, and figure have been revised to reflect additional sampling location (5d-7) at sewer line junction.

NMED NOD Comment No.	Summary of NOD Comment	Section(s)/Page(s) in Original Report	Section(s)/Page(s) in Revised Report	Nature of Revision
49	Propose sampling locations from floor drains within buildings (08-20, 08-21, 08-22, 08-23, 08-24, 09-2), where lines exit buildings, along sewer lines at 50-ft intervals, and at septic tank inlets.	Section 5.15	Section 5.15.1.3 Table 5.15-5 Figure 5.15-5	Text, table, and figure have been revised to reflect additional sampling locations at 50-ft intervals along sewer line from former building 08-24 to sewer line junction just west of SWMU 09-005(a). No sampling is proposed for floor drains and sewer lines at other buildings, which involved sanitary waste only.
50	Describe the depths of the sand filters. Show locations of both sand filters on Figures 5.16-1 and 5.16-2. Explain current status of sand filters, stated as decommissioned in 1992.	Section 5.16	Section 5.16 Figure 5.16-1 Figure 5.16-2	Text has been revised to indicate sand filters are 4 ft deep. Figures have been revised to show the two sand filters. "Decommissioned" indicates no longer in use but still in place.
51	Indicate whether only sanitary waste entered sewer lines leading to surface impoundment. Include description of building activities to identify potential waste streams. If nonsanitary waste entered sewer, propose sampling locations from building floor drains, building exits, and along sewer lines, or provide explanation for why sampling is not needed.	Section 5.16	Section 5.16	Surface impoundment received sanitary waste only. Text has been revised to state that only sanitary waste discharged to the surface impoundment.
52	Show locations of buildings 09-20, 09-21, 09-28, 09-29, 09-32, 09-33, 09-34, 09-35, 09-37, and 09-38, and sewer lines related to SWMU 09-009.	Figure 5.16-1	Figure 5.16-1	Figure has been revised to include locations of the buildings listed. Sewer lines are shown.
53	Include additional sampling locations: a. one location at sewer line intersection west of 9-1 b. one location where sewer lines split leaving the surface impoundment c. two locations beneath middle of sand filters d. samples at sand filter locations must be from native material below the sand filters e. one location east of outfall 05A066	Figure 5.16-2	Figure 5.16-2 Section 5.16.3 Table 5.16-1	Figure, text and table have been revised to reflect five additional sampling locations. Text and table have been revised to indicate sand filter locations will be sampled below sand in native material.

NMED NOD Comment No.	Summary of NOD Comment	Section(s)/Page(s) in Original Report	Section(s)/Page(s) in Revised Report	Nature of Revision
54	If PCBs are detected at any drainline sampling locations, must analyze for PCBs in all samples within surface impoundment, sand filters, outfalls, and downgradient of outfall.	Table 5.16-1	Table 5.16-1 Section 5.16.3	Text has been revised to state PCBs will be analyzed in all samples if detected in any drainline sample. A footnote has been added to the table indicating contingent PCB analysis. The table has also been revised to clarify that sample collection depths will begin below bottom of surface impoundment or sand filters.
55	Clarify that samples will be collected from native material, not fill.	Section 5.17.1 Section 5.18.1	Section 5.17.3 Section 5.18.3 Table 5.17-1 Table 5.18-1	Text and tables have been revised to indicate that native material below fill will be sampled if fill is encountered.
56	Propose sampling in drainage channel that received runoff from the site	Section 5.19.1	Section 5.19.3 Table 5.19-2 Figure 5.19-2	Text, table, and figure have been revised to reflect two additional sampling locations in drainage.
57	Clarify that samples will be collected from native material, not fill.	Section 5.20.3	Section 5.20.3	Text has been revised to indicate that native material below fill will be sampled if fill is encountered.
58	Include depths of disposal pits or indicate that the depths will be determined during the investigation.	Section 5.21	Section 5.21	Text has been revised to indicate that depths of pits are not known. Relatively deep sampling is proposed to account for the uncertainty in pit depths.
59	Propose sampling locations downgradient of 15 disposal pits, collect from 0–1 ft and 2–3 ft below ground surface (bgs).	Section 5.21.3	n/a	Contamination is likely very localized, as shown by nonvegetated areas, pits would not have surface releases; downgradient sampling is not warranted. No revision is necessary.
60	Correct text to state that the main area of the SWMU is located southwest of building 22-120. Include information on depths of disposal areas.	Section 5.22	Section 5.22	Text has been revised to correctly state position relative to building 22-120. Site consists of surface disposal area; debris was deposited on surface, so depth of disposal areas is not relevant.

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61	Propose to analyze samples for dioxins/furans because buildings were burned.	Section 5.22	n/a	No revision to text has been made. The wood-framed structures did not contain any chlorine source and are not a potential source of dioxins and furans.
62	Revise Plate 6 to depict sample locations at 50-ft intervals, additional sampling locations may be required.	Section 5.22.3 Plate 6	Section 5.22.3	Text has been revised to state that locations are on an irregular grid with spacing of approximately 50 to 100 ft. The grid spans the disposal areas and is sufficient to define lateral extent. No revision to Plate 6 is necessary.
63	a. Show locations of firing pits in Figure 5.23-2. b. Revise work plan to propose sampling within the green area defined as AOC 09-014. c. Propose sampling at locations south of concrete apron.	Section 5.23 Section 5.23.3 Figure 5.23-2	Figure 5.23-1 Figure 5.23-2	It is not possible to show locations of firing pits because they are not shown on engineering drawings. The labeling on figures has been corrected. All sampling locations have been adjusted to be centered on firing site (green area on figures), and some proposed locations have been placed south of firing site.
64	Identify types of chemicals stored in building 09-31 and effluent composition.	Section 5.24	Section 5.24	Text has been revised to state that types of chemicals used in building 09-31 are not documented.
65	Indicate samples will be collected from native material, not fill.	Section 5.24.1	Section 5.24.3 Table 5.24-3	Text and table have been revised to indicate that native material below fill will be sampled if fill is encountered.
66	a. Clarify that “screening samples” refers to field screening; identify field-screening instrument. b. Explain why only polycyclic aromatic hydrocarbons (PAHs) will be used to guide the lateral extent of excavation. c. Clarify that cleanup will be demonstrated by collection of discrete confirmation samples analyzed by an outside laboratory.	Section 5.24.3	Section 5.24.3	a. Text has been revised to state that samples will be submitted to off-site laboratory for PAH analyses; no field-screening instrument will guide excavation. b. Because PAHs exceed SSLs, PAHs only will guide excavation. c. Text has been revised to state discrete confirmation samples will be submitted to off-site laboratory.

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67	Propose additional sampling locations around the perimeter of SWMU C-09-001, on east, west, and south sides of green box; collect samples from native media.	Section 5.24.3	n/a	Sampling will be in conjunction with cle0anup of previous locations, which includes the green box. The previously proposed locations (1-1, 1-2, and 1-3) will fall within excavation, but the currently proposed locations (1-7,1-8, and 1-9) will likely define lateral extent beyond the excavation. The text has been revised to state that if excavation continues beyond these proposed locations, additional locations will be sampled accordingly to define lateral extent.
68	Propose sampling at both SWMU 06-007(a) and 22-011. Propose sampling at SWMU 22-011 to confirm it is not a disposal pit or was not contaminated by unidentified historic activities. Indicate if SWMU 06-007(a) is being investigated under a separate work plan; if not, it must be investigated under this work plan.	Section 6.1 Section 6.1.3	Section 6.1	SWMU 22-011 is a duplicate of SWMU 06-007(a). Text has been revised to clarify that SWMU 06-007(a) is being investigated as part of Twomile Canyon Aggregate Area. Bradbury and Van Vessem memos are included as Attachment 1 to the notice of disapproval response.
69	Propose sampling of floor drains in building 22-52, or explain why sampling cannot be completed.	Section 6.2	n/a	The floor drains are not part of SWMU 22-015(c),and are therefore not proposed for sampling. No revision is necessary.
70	Clarify what “level of the line” is referring to. Clarify all sections where this term is used.	Section 6.2.3 and other passages in the work plan	Section 6.2.3 and other passages in the work plan	Text and tables have been revised to remove references to level of the line, stating instead the proposed depths as 0–1 ft and 5–6 ft below the line or drainline.

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71	Review Table 6.3-1 and Plate 12 and correct discrepancies. a. Clarify what features are associated with locations 10b-5 through 10b-8, 10b-23, 10b-25, 10b-37, and 10b-38.Clarify at what depths samples will be collected from locations 10b-23, 10b25, 10b37, and 10b-38. b. Clarify the relative depths from which samples will be collected. c. Clarify that "immediately below the level of the line" indicates a drainline, sewer line, or other. d. Propose additional sampling locations.	Table 6.3-1 Plate 12	Section 6.3.1.3 Plate 12 Table 6.3-1	Table and Plate 12 reviewed for consistency. a. Table has been revised to clarify that locations 10b-5 through 10b-8 are associated with drainline from tank; other locations are beyond the end of leach fields. Table has also been revised to specify sampling depths for the locations beyond the leach field. Text has been revised to clarify which locations are associated with which features. b, Table has been revised to list depths relative to features (drainline, tank, etc.) or ground surface for all samples. c. Table has been revised to clarify features. Text has been revised to clarify features and relative depths. d. Plate, text, and table have been revised to reflect five additional sampling locations.
72	Will be required to investigate active drainlines that lead to SWMU 22-010(b). The need for future sampling must be specifically identified in the investigation report.	Section 6.3.1.3	Section 6.3.1.3 Table 6.3-1 Plate 12	Two sampling locations have been added along active drainline north of septic tank 22-51 and at exit from building 22-1. Samples will be collected if access is permitted by facility. Otherwise, sampling will be addressed in the investigation report.
73	Show third proposed sampling location (12-3) on Plate 12.	Section 6.3.2.3 Plate 12	Plate 12	Plate 12 has been revised to indicate the missing proposed sampling location 12-3 at south side of decontamination pad. No revisions to text or table are necessary.
74	Revise Plate 12 to show sampling location 15d-1 at exit point of drainline from building; revise locations at 50-ft intervals along line; additional locations will likely be necessary.	Section 6.3.3.3 Plate 12	Section 6.3.3.3 Table 6.3-5 Plate 12	Text, table, and plate have been revised to reflect additional sampling location where drainline exits building 22-1.

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75	Propose sampling locations beneath floor troughs within building 22-1 or explain why such sampling cannot be conducted.	Section 6.3.4	n/a	The floor troughs are not part of SWMU 22-015(e). Sampling is proposed only at sump, along drainline, at outfall, and downgradient of outfall. No revision is necessary.
76	Collect additional sample from 5 ft bgs at outfall location 15e-7.	Section 6.3.4.3	Section 6.3.4.3 Table 6.3-6	Text and table have been revised to reflect third sample depth at location 15e-7.
77	Identify features 22-7 through 22-12; include at least two labeled contour lines on each feature; additional sampling may be required east and south of SWMUs 22-012 and 22-015(e).	Plate 12	Plate 12	Structures 22-7 through 22-12 are buildings; each is surrounded on three sides and top by earthen berms. Plate 12 has been revised to show contour line labels. The buildings are not related to SWMUs 22-012 and 22-015(e).
78	a. Define the discharge system at SWMU 22-010(b). b. Clarify which sampling locations will be used to characterize the discharge system. c. Clarify that eight samples will be collected at four locations adjacent to the septic tank, the tank inlet, and tank outlet.	Section 6.3.5.3	Section 6.3.5.3 Table 6.3-7	a. The 22-010(b) system is described in section 6.3.1. b. Text has been revised to clarify that if the septic tank outlet drainline is connected to the SWMU 22-010(b) drainline, proposed locations 10b-39 through 10b-58 will also be used to characterize the portion of SWMU 22-016 downstream of the septic tank. A corresponding footnote has been added to Table 6.3-7. c. Text has been revised to include eight samples from four locations as described in comment.
79	Clarify whether proposed locations (16-1 through 16-5) were intentionally left off Plate 12. Revise Plate 12 to include the locations, but note that the locations are approximate.	Table 6.3-7 Plate 12	n/a	Locations were intentionally left off Plate 12 because the location of septic system is not known; text in section 6.3.5.3 and Table 6.3-7 clearly describe and will ensure that sampling is performed. Plate 12 was not revised to avoid additional crowding and to avoid collection of samples at “approximate” locations.

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80	Clarify if SWMU 40-001(c) is still in operation, decommissioned, or removed. Propose sampling along sewer line. Include proposed locations described in Table 7.1-1 and section 7.1.3 in Figure 7.1-2. Also include locations 1c-9 through 1c-17 on figure.	Section 7.1 Section 7.1.3 Table 7.1-1 Figure 7.1-2	Section 7.1 Section 7.1.3 Figure 7.1-2 Table 7.1-1	Section 7.1 has been revised to state septic tank is in place and active. Text in section 7.1.3, Table 7.1-1, and Figure 7.1-2 have been revised to include sampling locations along drainlines north to Twomile Canyon and south to Pajarito Canyon and at each outfall.
81	Include dimensions of the open detonation area, including depths.	Section 7.2	Section 7.2	Text has been revised to state western part of SWMU is approximately 30 ft in diameter; eastern part is approximately 90 ft by 110 ft. These are surface detonation areas, so depth is not relevant.
82	Revise work plan to discuss delineation, sampling, and clearance of kickout areas.	Section 7.2	Section 7.2.3	Text has been revised to include UXO walkover survey and pickup of UXO.
83	Revise work plan to include sampling of rock debris to edge of Pajarito Canyon.	Section 7.2	Section 7.2.3 Table 7.2-1 Figure 7.2-2	Text, table, and figure have been revised to reflect nine additional sampling locations south of eastern detonation area to edge of Pajarito Canyon.

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84	a. Review sample interval column of Table 7.2-1; ensure samples will be collected from 4–5 ft bgs; ensure samples will be collected below base of detonation area. b. Clearly define the detonation area, area around boundary; define which samples are associated with each. c. Clarify sampling intervals, correct discrepancies in Table 7.2-1. d. Ensure samples are collected from below base of detonation area; clearly describe locations outside detonation area; samples in kickout area must be collected from 0–1 ft and 2–3 ft depths. e. Propose sampling in drainages associated with both detonation areas.	Section 7.1.3 Table 7.2-1 Figure 7.2-2	Table 7.2-1 Section 7.2.3	a. Table 7.2-1 has been revised to correct row alignment. Because the detonation is a surface feature, all sample depths will be below ground surface. b. The table has been revised to more clearly describe sampling locations. c. Rows in the table have been corrected to correspond with text in section 7.2.3 d. Surface detonation areas only, so all depths are below ground surface. Locations are clearly described in text and shown in Figure 7.2-2. Text and table have been revised to indicate that samples at locations not being sampled at 3 depths will be from 0–1 ft and 2–3 ft bgs. e. No drainage sampling proposed because no drainages clearly associated with detonation or kickout areas.
85	Revise work plan to describe what the burn pit was used for, including what materials burned and ignition sources.	Section 7.3	Section 7.3	List of materials burned has been added to text; ignition source was kerosene.

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86	a. Clarify if wire burn cage in section 7.3 is same as structure discussed in section 7.3.1; if different areas, propose additional sampling. If all contaminants above background values were removed, state so in work plan. b. Clarify if burn pit discussed in section 7.3 is same burn pit discussed in section 7.3.1; if different, propose additional sampling; if same, determine actual dimensions of burn pit. Propose pit sidewall sampling. c. Identify by name the excavated sites.	Section 7.3 Section 7.3.1	Section 7.3.1 Figure 7.2-1 Figure 7.2-2	a. Text has been revised to clarify that one area is southernmost burn cage, the other is east of the burn pit and includes the eastern burn cage location. Section 7.3.1 states that all contaminated soil was removed. Figures have been revised to clarify site features. b. Dimensions of the burn pit in section 7.3 are correct. Section 7.3.1 has been revised to clarify that the 20 × 20 ft area described was excavated from the eastern portion of the burn pit; the remaining portion of burn pit was not excavated. Sidewall sampling is not proposed because burn pit was backfilled; text has been revised to state entire site was backfilled and covered. c. The paragraph describing backfilling of excavated sites applies to all excavated areas; paragraph was moved to end of section 7.3.1 for clarity.
87	Propose pit side-wall sampling, ensure entire extent of burn pit is sampled. Text, figure, and table do not address sampling at the burn cages or along drainage to Pajarito Canyon. All samples must be from below fill material.	Section 7.3.3 Figure 7.2-2	Section 7.3 Section 7.3.1 Section 7.3.3 Table 7.3-1	The burn pit was backfilled by 1976; therefore pit side-wall sampling is not possible; sections 7.3 and 7.3.1 have been revised accordingly. Burn cages are not part of AOC 40-003(b) and have been closed under the Resource Conservation and Recovery Act. Drainage samples are not proposed because the burn pit was not a surface site; there was no surface transport of contaminants into drainage. Table 7.3-1 now indicates that sample depths are to be below the fill.
88	Because kerosene was used at burn cages, include DRO analyses for all samples associated with burn cages.	Section 7.3.3	Section 7.3.3 Table 7.3-1	TPH-DRO analyses have been added for all samples at AOC 40-003(b). Text and table have been revised accordingly.

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89	Identify building TA-40. Indicate whether sampling will be conducted beneath building, propose sampling locations, or propose to investigate when building is removed.	Section 7.4	Section 7.4 Section 7.4.3	Text has been corrected to refer to building 40-9. Text has been added stating that because all contaminated soil was removed, sampling beneath the building is not necessary. Proposed sampling is to determine if there is any residual contamination south of building.
90	Revise work plan to identify dimensions of SWMU 40-004; additional samples may be required based on dimensions.	Section 7.4	Section 7.4	Text has been revised to state that the former storage area was confined to a 15 ft × 15 ft area. No additional sampling is proposed (see response to Comment 89).
91	Because vacuum pump oil was stored and oil stains were observed, analyze samples for TPH-DRO.	Section 7.4.3	Section 7.4.3 Table 7.4-1	Text and table have been revised to reflect TPH-DRO analysis for all samples at SWMU 40-004.
92	Deferral of these sites must be stated in the investigation report.	Section 7.5 Section 7.6 Section 7.7	n/a	Comment noted; deferral of SWMUs 40-006(a), 40-006(b), and 40-006(c) will be stated in the investigation report.
93	Delayed investigation of these sites until buildings are removed must be stated in the investigation report.	Section 7.8 Section 7.9 Section 7.10	n/a	Comment noted; delayed investigation of AOCs 40-007(a), 40-007(b), and 40-007(c) will be stated in the investigation report.
94	Include locations of buildings 40-5 and 40-15 in Figure 7.12-1. Discuss the dimensions (including depth) of the landfill.	Section 7.12 Figure 7.12-1	Figure 7.12-1 Section 7.12	The figure has been revised to include locations of buildings 40-5 and 40-15. Text has been revised to state that dimensions of the landfill are unknown.
95	Assume the landfill is 120 ft wide; at each side include two locations 40 ft and 80 ft from one end of the landfill. Clarify whether locations 9-14 through 9-20 are located at the toe of the colluvium in Pajarito Canyon or at other locations within the canyon.	Section 7.12.3 Figure 7.12-5	Section 7.12.3	No additional sampling locations are proposed; locations 9-5 and 9-9 are placed well beyond the expected footprint of the landfill, and additional locations farther east and west would be in areas potentially affected by other SWMUs or AOCs. Text has been revised to state that locations 9-14 and 9-16 through 9-20 extend downgradient to the toe of the slope in Pajarito Canyon.

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96	Clarify if SWMU 40-010 cannot be removed because of archaeological features. Indicate the depth of the disposal area (beneath pre–Manhattan Project debris).	Section 7.13	Section 7.13	Text has been revised to state that pre–Manhattan Project debris cannot be removed because of archaeological significance. Both pre–Manhattan Project and SWMU-related debris is scattered on the surface; depth is not relevant.
97	Ensure samples are collected from bottom of and beneath the surface disposal pit. Ensure sampling occurs from the edge of Pajarito Canyon to the toe of the colluvium.	Section 7.13.3	Section 7.13.3	SWMU 40-010 is a surface disposal area, not a pit. All sample depths proposed are below ground surface. Samples are not proposed on the Pajarito Canyon slope because of its steepness. Text has been revised to state that data form reach PA-1E in Pajarito Canyon (located directly below SWMU 40-010) will be used as necessary to define lateral extent downgradient of the disposal area.
98	Because the area was burned in the Cerro Grande Fire, analyze for dioxins/furans.	Section 7.13.3	n/a	Analyzing the potential consequences of an event such as the 2000 Cerro Grande fire is beyond the scope of activities for this work plan and of the Consent Order.
99	Include language indicating that any changes in proposed sampling locations will be documented in the investigation report.	Section 8.1	Section 8.1	Text has been added stating that changes to sampling locations will be documented in the appropriate sections of the investigation report.
n/a	n/a	Throughout	Throughout	Minor editorial changes were made throughout the document for the sake of correctness and clarity.

*n/a = Not applicable.