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Date: January 31, 2008
Refer To: EP2008-0025

James P. Bearzi, Bureau Chief
Hazardous Waste Bureau
New Mexico Environment Department
2905 Rodeo Park Drive East, Building 1
Santa Fe, NM 87505-6303

Subject: Submittal of the Response to Notice of Disapproval for the Investigation Work Plan for Sites at Technical Area 49 Inside the Nuclear Environmental Site Boundary and Revision 1

Dear Mr. Bearzi:

Enclosed please find two hard copies with electronic files of the response to the notice of disapproval for the Investigation Work Plan for Sites at Technical Area 49 Inside the Nuclear Environmental Site Boundary and Revision 1. Also enclosed is an electronic copy of a redline/strikeout version of the changes. A table detailing the revisions to the original work plan that cross-references the New Mexico Environment Department's comments is also included.

If you have any questions, please contact John McCann at (505) 665-1091 (jmccann@lanl.gov) or Ed Worth at (505) 606-0398 (eworth@doeal.gov).

Sincerely,

Susan G. Stiger, Associate Director
Environmental Programs
Los Alamos National Laboratory

Sincerely,

David R. Gregory, Project Director
Environmental Operations
Los Alamos Site Office

SS/DG/DM/JM/:sm

Enclosures: Two hard copies with electronic files:
1) Response to the Notice of Disapproval for the Investigation Work Plan for Sites at Technical Area 49 Inside the Nuclear Environmental Site Boundary (EP2008-0025)
2) Investigation Work Plan for Sites at Technical Area 49 Inside the Nuclear Environmental Site Boundary, Revision 1 (EP2008-0026)
3) An electronic copy of the redline-strikeout version of the plan that includes all changes and edits to the plan
4) Cross-reference table of NMED comments

Cy: (w/enc.)
Neil Weber, San Ildefonso Pueblo
Kim T. Birdsall, Northwind
Ed Worth, DOE-LASO, MS A316
John McCann, EP-CAP, MS M992
RPF, MS M707 (with two CDs)
Public Reading Room, MS M992

Cy: (Letter and CD only)
Laurie King, EPA Region 6, Dallas, TX
Steve Yanicak, NMED-OB, White Rock, NM
Peggy Reneau, WES-DO, MS M992
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Cy: (w/o enc.)
Tom Skibitski, NMED-OB, Santa Fe, NM
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Susan G. Stiger, ADEP, MS J591
Carolyn A. Mangeng, ADEP, MS J591
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Dave McInroy, EP-CAP, MS M992
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Cross-Reference between NMED Notice of Disapproval Comments (December 20, 2007) on "Investigation Work Plan for Sites at Technical Area 49 Inside the Nuclear Environmental Site Boundary" and the Revised Work Plan

NMED Comment No.	Section(s), Table(s), or Figure(s) in Original Work Plan	Page(s) in Original Work Plan	Section(s), Table(s), or Figure(s) in Revised Investigation Work Plan	Page(s) in Revised Work Plan	Nature of Revision to Investigation Work Plan
General Comments					
1	Table 4.4-1	154	Table 4.4-1	159–161	Table 4.4-1 has been reformatted to match the formatting of Tables 4.1-1 through 4.5-1 of the "S-Site Aggregate Area Investigation Work Plan." Additional information regarding borehole sampling intervals has also been added to Table 4.4-1.
Specific Comments					
1	Section 1.0, Introduction	1, ¶ 6	Section 1.0, Introduction	1, ¶ 6	SWMU 49-008(c) is a deferred site. No surface sampling is proposed for SWMU 49-008(c). In addition, SWMU 49-003 does not have a surface component; therefore, LANL is not proposing surface sampling for it. The text in section 1.0 has been revised to read, "Investigation of surface soil contamination at AOC 49-008(c) is deferred per Table IV-2 of the Consent Order. Therefore, no surface investigation is proposed at AOC 49-008(c), however subsurface investigation is proposed for this AOC. SWMU 49-003, a subsurface leachfield, is located within the boundary of AOC 49-008(c). Because SWMU 49-003 has no surface component no surface investigation is proposed in this work plan for this SWMU."
2	Section 2.4.1, Area 1: SWMU 49-001(a), Experimental Shafts, Site Description	8, ¶ 1	Section 2.4.1, Area 1: SWMU 49-001(a), Experimental Shafts, Site Description	8, ¶ 3	The text of the work plan has been revised to indicate that the maximum depth of the 22 shafts at Area 1 is 85 ft.
3	Section 4.3.1, Surface Sampling	31	Section 4.3, Surface Sampling Table 4.4-1	30–36 159–161	Radionuclides are the primary contaminants of concern at TA-49 based on past operations and confirmed by the results of RFI activities. Inorganic chemicals that are present due to historic operational activities would potentially occur with radionuclides because they were used concurrently during historical operations (e.g., experimental activities).

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3 (continued)	Section 4.3.1, Surface Sampling	31	Section 4.3, Surface Sampling Table 4.4-1	30–35 159–161	Furthermore, concentrations of lead and other metals detected above BVs have been limited to central portions of each investigation area. Therefore, gross alpha and gross beta screening techniques will be used to target low level radionuclide activity (see sections 4.3.1.1, 4.3.1.2, and 5.1.3). LANL has evaluated and eliminated the XRF as a field-screening method at TA-49. XRF was eliminated because TA-49 lacks widespread, low-level inorganic contamination and because XRF screening data at LANL has historically indicated significant false positives (with respect to detecting the presence of inorganic chemicals above their respective BVs). The iterative approach, presented in section 4.3.1.1, will evaluate the extent of contamination using gross alpha and gross beta field-screening and subsequent laboratory results will identify the presence of radionuclides as well as any coexisting inorganic contaminants. LANL provided additional text, and added flow charts to clarify the iterative sampling strategy discussed in section 4.3.1. Due to the iterative sampling approach, a predetermined amount of samples cannot be provided, only the minimum is presented.
4	Section 4.3.6, Sediment in Drainage Channels	34, ¶ 1	Section 4.3.6, Sediment in Drainage Channels Figure 4.3-5	35–36, ¶ 2 117	LANL has added that fine-grained sediment will also be targeted in section 4.3.6. In addition, LANL has revised Figure 4.3-5 to clearly show the transect lines and proposed sediment sampling locations.

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4 (continued)	Section 4.3.6, Sediment in Drainage Channels	34, ¶ 1	Section 4.3.6, Sediment in Drainage Channels Figure 4.3-5	36, ¶ 1 117	The original text has been removed and the following text has been added to section 4.3.6: "To provide a snapshot of contaminant distribution within each drainage feature at TA-49, three samples will be collected along a transect perpendicular to the direction of flow at each location. One sample will consist of a composite of three samples collected from sediment within the active channel bed (see callout box in Figure 4.3-5); if a sediment accumulation zone is less than 6 ft wide (perpendicular to flow), only one sample will be collected from the center of the channel sediment (rather than a composite of three samples). The other two samples will be collected from either side of the outer edge of the sediment accumulation zone along the same perpendicular transect. A survey of each drainage channel will be conducted before sampling to identify zones of sediment accumulation near each sampling location. Zones of fine-grained sediment will be targeted. Discrete samples will be collected from each transect location at depths of 0 to 6 in. and 6 to 18 in. to obtain gross alpha and gross beta results and to obtain laboratory analyses for gamma spectroscopy, isotopic americium, isotopic plutonium, isotopic uranium, TAL metals, and PCBs.
5	Section 4.3.6, Sediment in Drainage Channels	34, ¶ 2	Section 4.3.6, Sediment in Drainage Channels Figure 4.3-5	36, ¶ 2 117	A brief summary has been added to the work plan describing the investigation planned under the "South Canyons Investigation Work Plan." A figure has also been added to this work plan to show the reaches proposed for sampling under the "South Canyons Work Plan."

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5 (continued)	Section 4.3.6, Sediment in Drainage Channels	34, ¶ 2	Section 4.3.6, Sediment in Drainage Channels Figure 4.3-5	36, ¶ 2 117	The drainage sampling strategy proposed in this work plan will be integrated with data collected by other Laboratory environmental sampling programs, including the "South Canyons Investigation Work Plan." The approved "South Canyons Investigation Work Plan" (LANL 2006, 093713) addresses sources of contamination and the nature and extent of contamination in sediments, surface water of active stream channels, and groundwater beneath canyon floors. The South Canyons investigation includes sampling and analysis of media from the watersheds associated with TA-49 and representative sections of its reaches. For TA-49, the South Canyons investigation has proposed collecting 10 samples per reach in reaches WA-3, A-1, A-2 and AN-1 (Figure 4.3-5). Analytical suites for these reaches include perchlorate, TAL metals, cyanide, pesticides, PCBs, PAHs, SVOCs, VOCs, radionuclides, and explosive compounds (LANL 2006, 093713, p. 14). The South Canyons work plan will provide more geomorphic data for TA-49 reaches. The TA-49 work plan proposes sampling alluvial sediment in reaches A-1, A-2, and AN-1 and this information will overlap with the South Canyons work plan to provide a thorough overview of any contaminant migration.
6	Section 4.4.2, Areas 1, 3, and 4 (Experimental Shafts): SWMUs 49.001(a), 49-001(e), and 49-001(f)	37, ¶ 2	Section 4.4.2, Areas 1, 3, and 4 (Experimental Shafts): SWMUs 49-001(a), 49-001(e), and 49-001(f)	39, ¶ 5	The text in section 4.4.2 has been revised to include language indicating that the boreholes will be drilled within 25 ft from the perimeter of each experimental shaft area.
7	Section 4.4.8, Analysis Plan	40, ¶1	Section 4.4.8, Analysis Plan Table 4.4-1	42–43, ¶ 3 159–161	The text in section 4.4.8 has been changed to clarify that samples will be submitted for laboratory analysis based on the criteria detailed in the work plan; therefore, only a subset of samples will be sent for laboratory analysis.

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7 (continued)	Section 4.4.8, Analysis Plan	40, ¶ 1	Section 4.4.8, Analysis Plan Table 4.4-1	42–43, ¶ 3 155–157	Historical records do not indicate that organic compounds were used in any areas other than Areas 11 and 12. Therefore, LANL did not propose this analysis in the work plan for areas other than Areas 11 and 12. LANL will, however, collect additional samples for VOC and SVOC analyses from one borehole at each area (Areas 1, 2, 2A, 2B, 3, 4, 11, and 12). One sample will be collected from or immediately below the depth of the nearest shaft and at the TD of each hole. Field-screening detections of organic compounds in the core during drilling will result in the collection of additional samples for laboratory analysis.
8	Section 4.4.8, Analysis Plan	40, ¶ 5	Section 4.4.1.2, 4.4.2, 4.4.4, 4.4.5, 4.4-6, 4.4-7, and 4.4.8, Analysis Plan Table 4.4-1	42–43 159–161	Sections 4.4.1.2, 4.4.2, 4.4.4, and 4.4.5 of this work plan originally proposed the following: "[p]ore-gas samples will be collected from each borehole using a single straddle packer in advance of the drill bit during borehole advancement to isolate discrete depths (minimum 10-ft intervals) within the borehole as determined by field screening. These samples will be submitted for analyses of VOCs and tritium." Based upon additional review and discussions with NMED, LANL proposes that vapor-phase samples collected for laboratory analysis of VOCs and tritium will be collected from boreholes *after* the completion of borehole installation and core sampling and screening activities, rather than *during* installation. The collection of vapor-phase samples in this manner has also previously been conducted at TA-54 MDA L and MDA G with NMED approval. Because historical documentation indicates organic compounds have not been used extensively at TA-49 and only one significant stratigraphic feature is likely to be encountered (surge beds at the base of unit Qbt 4), LANL also proposes that, rather than collecting pore-gas samples from minimum 10-ft intervals, vapor-phase samples will be collected from (1) intervals corresponding to elevated organic compound concentrations indicated during head-space screening of core samples; (2) from within the interval corresponding to the surge beds (base of unit formation Qbt 4); (3) from the interval corresponding to the TD of the closest experimental shaft or subsurface feature; and (4) from the TD of each borehole.

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8 (continued)	Section 4.4.8, Analysis Plan	40, ¶ 5	Section 4.4.1.2, 4.4.2, 4.4.4, 4.4.5, 4.4-6, 4.4-7, and 4.4.8, Analysis Plan Table 4.4-1	42–43 159–161	LANL also proposes that if VOCs are detected in vapor-phase samples at concentrations greater than 10% of screening levels based on equilibrium partitioning with groundwater cleanup levels (maximum contaminant levels [MCLs]), or if tritium is detected in vapor-phase samples at concentrations greater than the groundwater MCL, each borehole will be completed as a vapor-monitoring well. Because there are no screening levels for VOCs in pore gas that address the potential for groundwater contamination, screening levels are based on EPA groundwater MCLs, or New Mexico Water Quality Control Commission groundwater standards, and Henry's law constants that describe the equilibrium relationship between vapor and water concentrations. Sections 4.4.1.2, 4.4.2, 4.4.4, 4.4.5, 4.4.6, 4.4.7, 4.4.8, and 5.2.3 of this work plan have been amended to reflect proposed changes in the vapor-phase sampling approach. In addition, section 4.4.8 has been revised to state that if VOC contamination is detected at concentrations greater than 10% of screening levels based on equilibrium partitioning with groundwater MCLs or if tritium is detected in vapor-phase samples at concentrations greater than the groundwater MCL in one vapor-phase sample collected from one of the boreholes at Areas 1, 3, or 4, then all remaining proposed boreholes within the affected area will also be sampled for pore gas. Section 5.3.4 was also added to the work plan detailing vapor phase sample collection.

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9	Section 4.4.9, Groundwater Monitoring	41	na*	na	The work plan proposed that R-30 would be drilled following completion of key vadose zone characterization that would guide optimal placement of R-30. This statement was made with prior agreement with NMED and was confirmed in conversations with NMED staff following issuance of this NOD. Per that discussion, the NMED has requested that the Laboratory document the agreement in a letter stating that drilling of R-30 would follow in schedule the completion of vadose zone characterization under this work plan. That letter will follow submittal of this NOD response.
10	Section 4.4.9, Groundwater Monitoring	41, ¶ 2	na	na	Per discussion with NMED, the Laboratory will include a discussion in the investigation report on the suitability of R-27, and other applicable wells, as downgradient monitoring wells. This evaluation will also be used to propose a final location for the placement of R-30, as discussed above in the Laboratory's response to NMED comment #9.
11	Section 5.2.3, Vapor-Monitoring Well Installation	44	Section 5.2.3, Vapor-Monitoring Well Installation	46	The text in section 5.2.3 has been revised to clearly define the criteria to be used to determine whether vapor-monitoring wells will be constructed.
12	Section 5.4.3, Laboratory Analytical Methods	47	Section 5.4.3, Laboratory Analytical Methods	50	The text in section 5.4.3 has been revised to cite the correct table, Table 4.4-2.
13	Section 6.3, Sediment and Surface Water	48, ¶ 2	Figure 2.11-4	96	Figure 2.11-4 has been revised to distinguish between the different types of media sampled.

*na = Not available.