TA-50

Department of Energy
Albuquerque Operations Office
Office of Los Alamos Site Operations
Los Alamos, New Mexico 87544

APR 1 1 2002

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

Dear Mr. Bearzi:

Subject: Transmittal of the Department of Energy (DOE)/University of California (UC) Response to NMED's Notice of Deficiency Technical Adequacy Review, TA-50 RCRA Permit Application, December 2000, Revision 2.0 Los Alamos National Laboratory, EPA ID NO. NM0890010515

The purpose of this letter is to transmit to you the Department of Energy (DOE) and the University of California's (UC) response to the above referenced Notice of Deficiency (NOD) dated March 4, 2002. This document responds to each of the comments presented in the NOD with some exceptions. As explained in the response's general comments, DOE/UC has reevaluated its need for hazardous waste storage at Technical Area 50 (TA-50) and has decided to close all the storage units with the exception of the two TA-50-69 units. It is anticipated that the units in question will be closed within a year and a half. With this change, there is no reason to respond to comments that addressed those units that will be closed instead of permitted.

Your staff was informed of this change in approach for TA-50 by telephone on April 2, 2002. At that time, the timing for closing the TA-50 1-59, 114 and 37 units was discussed. DOE/UC will prepare closure plans based upon the closure plan proposed in the TA-50 permit application and already reviewed by your staff. DOE/UC would like to coordinate the transmission of those documents so they coincide with the New Mexico Environment Department's (NMED) schedule, and will contact your staff soon to schedule this activity.

Upon review of the NOD, the Request for Supplemental Information (RSI) for TA-50, the responses to both, together with other recent permitting correspondence, it is evident a pattern of confusion, poor communication, and a lack of understanding exists on both sides. I wish to assure you that it is DOE/UC's desire to function in a non-confrontational relationship with NMED. In this regard, DOE/UC wishes to propose that, in lieu of addressing issues through the mail, that an effort be made to resolve them

8927

openly and face to face. It is understood that DOE/UC and NMED will not agree philosophically on every point, but many of the issues such as using the results of swipe samples to verify closure could be worked out in discussions and not through multiple letters.

If you have questions concerning this matter, please feel free to contact either Gene Turner of my staff at (505) 667-5794 or Jack Ellvinger of UC/LANL at (505) 667-0633.

Sincerely,

Joseph C. Vozella
Associate Director
Office of Facility Operations

OFO:3GT-023

Enclosure

cc:
See page 3

cc w/o enclosure:
John E. Kieling, Manager
RCRA Permits Management Program
Hazardous Waste Bureau
2905 Rodeo Park Drive East, Building 1
Santa Fe, NM 87505-6303

Carl Will
LANL Permits Project Leader
RCRA Permits Management Program
Hazardous Waste Bureau
2905 Rodeo Park Drive East, Building 1
Santa Fe, NM 87505-6303

Dave Neleigh, Chief (6PD-N)
New Mexico/Federal Facilities Section
Environmental Protection Agency – Region 6
1445 Ross Avenue, Suite 1200
Dallas, Texas 75202-2733

C. Cruz, DIR, OLASO
D. Martinez, DIR, OLASO
G. Turner, OFO, OLASO
B. Osheim, Counsel, OLASO
J. Brown, DIR, LANL, MS-A100
J. Holt, ADOPS, LANL, MS-A100
L. Abercrombie, ESH-19, LANL, MS-K490
R. Alexander, FWO-WFM, LANL, MS-E518
J. Ellvinger, ESH-19, LANL, MS-K490
S. French, FWO-WFM, LANL, MS-J595
J. Harper, E-ET, LANL, MS-E517
E. Louderbough, OGC, LANL, MS-A187
D. McLain, FWO-WFM, LANL, MS-J593
B. Ramsey, RRES-DO, LANL, MS-K492
A. Stanford, FWO-DO, LANL, MS-K492
D. Stavert, ESH-DO, LANL, MS-J978

Response to Notice of Deficiency; TA-50 Part B Permit Application, Revision 2.0, March 4, 2002

LA-UR-02-2013
April 2002

Prepared by:
Los Alamos National Laboratory
Hazardous and Solid Waste Group (ESH-19)
Los Alamos, New Mexico 87545

Notice of Deficiency
TA-50 Part B Permit Application, Revision 2.0, March 4, 2002

INTRODUCTION

The following document provides the response by Los Alamos National Laboratory (LANL) to a Notice of Deficiency (NOD) sent by the New Mexico Environment Department (NMED) on March 4, 2002. The full title of the NOD is "Notice of Deficiency; Technical Adequacy Review, TA-50 RCRA Permit Application, December 2000, Revision 2.0, Los Alamos National Laboratory, EPA ID No. NM0890010515," officially received by the U.S. Department of Energy (DOE) Office of Los Alamos Site Operations on March 11, 2002. The NMED required that the comments provided in the NOD be resolved in order for the "Los Alamos National Laboratory Technical Area 50 Part B Permit Application," Revision 2.0 (LANL, 2000), submitted to the NMED in December 2000, to be evaluated for technical adequacy. Hereinafter, the permit application document will be referred to as "the application".

This document responds to the 25 comments contained in the NOD and includes appendices with information to supplement the individual responses to the numbered comments. NMED's original comments are included as italicized text for ease of review. A copy of the original NOD is also included as Appendix A.

GENERAL COMMENTS

General Comment #1: LANL submitted a permit application to NMED for review, and will provide any additional information needed by the agency to complete its technical review of the permit application. LANL has determined it is not in its best interest to revise the permit application other than to correct errors or omissions in that document. For LANL to make any other changes would result in an application that is a hybrid of LANL and NMED positions. This would be confusing to the reader and limit LANL's rights and abilities to subsequently comment and appeal a given section of the draft permit. The LANL permit application describes and supports LANL's waste management activities. In response to the application, LANL expects that NMED will draft a permit that complies with regulatory requirements and reflects its position on waste management practices.

General Comment #2: LANL has reviewed this NOD and the preceding RSI. The intent of the TA-50 application is to explain the waste management operations that occur at TA-50. Corrective action activities at TA-50 are addressed in the permit application on corrective action, submitted to NMED on September 1999. LANL expects that all corrective actions issues will be addressed in the chapter devoted to corrective action.

General Comment #3: The NOD follows the path laid out in the RSI. Many of the issues raised in the RSI and resurrected in the NOD deal with programs that fall outside

the RCRA permit. The Clean Water Act (CWA) regulates the National Pollution Discharge Elimination System (NPDES) outfalls and Storm Water run-off at LANL. The Air Quality Regulations and the Federal Clean Air Act (CAA) regulate emissions from the stacks at the Laboratory. DOE orders and the Nuclear Regulatory Commission (NRC) regulations govern how the Laboratory manages radioactive material. None of these programs are preempted by the federal or state regulations governing the handling the hazardous waste.

General Comment #4: The volume of detail requested by the NMED to permit container storage areas (CSA) is of concern to the Laboratory. The U.S. Environmental Protection Agency (EPA) has proposed a "Standardized Permit" for CSAs because they are routine and repetitive. The EPA suggests that, in lieu of an application, a letter of intent to operate a hazardous waste CSA be submitted to the regulatory agency. All other required documentation would be maintained on site. The existing regulations provide goals such as the closure performance standard. If that standard is met, then the closure is complete. LANL is concerned that the amount of detail being requested through the RSI and NOD process will result in an overly prescriptive permit that will be difficult to implement without improving facility safety. In addition, the more detailed the information in the permit the more frequently it will require modification, a process that requires money and resources from both the NMED and LANL.

General Comment #5: Numerous assertions have been made in this NOD regarding the newly revised Solid Waste Management Unit (SWMU) report. LANL is updating the old 1990 SWMU report as a vehicle to provide the NMED and public with the most recent information regarding LANL's SWMUs. LANL negotiated the format of this revised SWMU report with the NMED prior to beginning the process. A prototype version was presented to the NMED to ascertain if the new report meets the NMED's needs. LANL has incorporated the NMED's comments into the final version of the report.

LANL has provided the new SWMU report information for those technical areas currently being reviewed for a permit. LANL developed this information as a draft TA-50 SWMU Report and provided it to the NMED for review and comment. It was that draft that provoked the response seen in this NOD. LANL has since finalized the TA-50 SWMU Report, incorporating NMED's comments. Initial review by the NMED indicated that it was acceptable. The finalized version of the TA-50 SWMU Report is provided in Appendix B in response to NMED's questions concerning the TA-50 SWMUs.

General Comment #6: LANL reviewed its waste management operations at TA-50, and will amend its application to permit two CSAs at TA-50. Three other CSAs will be closed. Therefore, LANL will not address a number of the comments raised by the NMED in this NOD. LANL seeks to permit the TA-50-69 indoor and outdoor CSAs only. LANL will submit a closure plan(s) for the three CSAs located at TA-50-1, TA-50-114, and TA-50-37.

NOD COMMENTS AND RESPONSES

This section responds to the comments provided in the NOD. The NMED comments appear in italics and were copied directly from the NMED document.

1. (NMED RSI Comment No. 1) Permittees response stating that the Application format was directed by NMED in correspondence to Permittees dated February 5, 1998, is inaccurate. The February 5, 1998 letter proposed a format for the permit, and does not address the Application format. NMED's concern with the current structure of the Application is the confusion created by having required information for individual units spread between three separate sections and the resulting increased difficulty in review by NMED and the public. NMED suggests that Section 2.0 be divided between Attachments A, Facility Description, and Attachment G, Container Management. Sections 2.1, 2.2, and 2.3 could be incorporated into Attachment A, and Sections 2.1.1 through 2.1.12 could be incorporated into Attachment G. All of Sections 2.1.1 through 2.1.12 deal with container management issues and should be included in the Attachment G Container Management.

> **LANL Response:** LANL is unaware of any regulatory requirements dictating the format for a permit application. Additionally, NMED has published no guidance document identifying a preferred format for the development of a permit application. LANL, in developing each of its applications for the various portions of the Laboratory requiring a permit for treatment or storage activities, worked with then-members of the NMED staff to determine an acceptable format. Mr. Stu Dinwiddie provided the February 5, 1998 letter (cited above) as the format that he intended to follow in developing the permit for LANL. LANL agreed to submit applications that would follow that format as closely as possible to allow for ease of the permit writer in constructing the permit. Please refer to General Comment #1 for discussion regarding revision of the application.

In addition, there are several inconsistencies in the description between the different sections. For example:

1) *The description of the TA-50-69 Outdoor Container Storage Area (CSA) provided on page 2-4, Section 2.1, states, "tranportainers and other weather protective structures ... **Provide Optional** weather protection..." Attachment A, page A-4, Section A.1.5, states, "Transportainers and other weather protective structures ... **will** be used to store waste." (Emphasis added.)*

> **LANL Response:** LANL finds no inconsistency in the above statements. The transportainers are structures that protect storage containers in the same fashion as a building. These transportainers provide optional weather protection for container storage at the TA-50-69 outdoor CSA just as the roof, walls and floors provide that same protection for container storage at the TA-50-69 indoor CSA. Please note that some containers

(steel B25s and standard waste boxes [SWB]) are stored outside of the transportainers on the asphalt pad. These containers are elevated by design and are provided with weather protection by tarps.

2) *The surface drainage description for the TA-50-69 Outdoor CSA on page 2-4, Section 2.1, states "The pad slopes gently (approximately 1 to 5 percent) from east to west and up to 2.5 percent* ***toward the centerline****." In Attachment G, page G-7, Section G.2.1.2, states, "Run-on... is prevented because both CSAs [TA-50-114 and TA-50-69 Outdoor] are* ***elevated by design****" and that "drainage swales ... divert storm water* ***away from the CSA****." (Emphasis added.) Provide and engineered diagram of the TA-50-69 Outdoor CSA that shows the drainage and run-on/runoff control features.*

LANL Response: As discussed in General Comment #6, TA-50-114 will be closed and therefore the response to this comment excludes that structure.

The transportainers and containers (steel B25 boxes and SWBs) at the TA-50-69 outdoor CSA are located on an asphalt pad and are elevated above ground level by design. The asphalt pad is sloped to promote drainage and is surrounded by swales to prevent run-on by water draining from surrounding areas. The drainage is controlled by a Storm Water Prevention Plan dictated by the CWA. The information in Attachment G of the application provides a more detailed description of the drainage features and run-on/off control then that in Section 2.0. Appendix C of this response provides a map with the drainage and run-on/off control features as requested. Please see the pictures and video clips provided earlier on a CD as a supplement to the permit for further confirmation.

3) *The description of Building 114 on page 2-3, Section 2.1 states, "The CSA is* ***divided into two separate lockers*** *by a metal wall, and has a grated floor above a recessed area..." The Description in Attachment A, page A-4, reads, "The locker contains an elevated grated floor above a* ***divided recessed area****..." (Emphasis added.)*

LANL Response: As discussed in General Comment #6, TA-50-114 will be closed instead of permitted and therefore a response is not necessary.

4) *Page 2-4, Section 2.1.1, states that various sized steel or poly drums will be used. Attachment G, page G-1. Section G.1.1 mentions steel drums only.*

LANL Response: Section G.1.1 states: "Containers that will be used to store these wastes include 5-, 30-, 55-, 83-, 85-, and 110-gallon steel drums; standard fiberglass-reinforced plywood (FRP) boxes; steel SWBs; metal over pack boxes; steel B25 boxes; various small containers; and oversized, irregularly shaped plain plywood and FRP boxes." That section goes on to say: "Table 2-2 of Section 2.0 of this TA-50 Part B lists

container types for each CSA." Saying "these containers include" prefaces this list. This means others may be used even though they are not listed. LANL also specified that various small containers might be used but did not identify their materials of construction. Table 2-2 (page 2-10 of the application) lists the containers to be stored in each specific CSA. It breaks out the containers by size but does not limit the materials of construction. LANL finds no inconsistency in any of the above sections. For clarity LANL will insert the language "these containers include, but are not limited to" into Section G.1.1 when the final revision of the TA-50 permit application is developed.

Resolve these discrepancies in the revised Application.

2. *(Comment No.4) In addition to stating that no free liquid will be stored at the TA-50 CSAs, include in the revised Application procedures for determining the presence of free liquid, results or documentation to show that the wastes do not contain free liquids, and a reference to the section of the Waste Analysis Plan that addresses these procedures. [§270.15(b)(1)]*

   LANL Response: As discussed in General Comment #6, TA-50-114, TA-50-1 (Room 59), and TA-50-37 (Rooms 114, 117 and 118) will be closed and therefore the response to this comment excludes those structures.

   The determination of no free liquid for containers at the TA-50-69 CSAs is made through the use of process knowledge and Real Time Radiography (RTR). The waste containers are initially characterized by the generator, shipped to TA-54 Area G for storage, further characterized by RTR, and then sent to TA-50-69 for final characterization/certification prior to disposal at the Waste Isolation Pilot Plant. The CSAs at TA-50-69 provide storage for the containers while they undergo further confirmation of the drum contents through sorting and surveying of their contents. The process knowledge and acceptable knowledge activities associated with these wastes are documented in the Waste Analysis Plan.

3. *(Comment No.7) There is a discrepancy in the capacity of Room 118 between the response text and figure provided in the response Appendix B. The response states that Room 118 has a capacity of 5500 gallons or 100 55-gallon drums. The figure indicates a capacity of 108 55-gallon drums or 5940 gallons. See also Comment 23 below regarding adequate aisle space.*

   LANL Response: As discussed in General Comment #6, TA-50-37 (Room 118) will be closed and therefore a response is not necessary.

4. *(Comment No.9) The NMED comment was directed toward the issue of fact, not legal authority. The effluent discharge is ongoing and it is inaccurate to describe it in the past tense. The statement on Application page 4-4, section 4.1.4, that "The area where treated effluent was discharged..." (emphasis added), indicates that this*

effluent discharge point was either moved or is otherwise no longer used to discharge effluent from the Radioactive Liquid Waste Treatment Facility. As stated in Permittees' response, this is an active discharge. Therefore, revise the Application language to describe the effluent discharge in the present tense. As requested in the RSI, include a summary table of outfall effluent contaminate levels and alluvial, intermediate, and regional groundwater sampling results. Only information on sediment and soil samples was submitted. No data was submitted for groundwater sampling results from the alluvial, intermediate, or regional wells installed to monitor this location. A complete summary table including sediment, soil and groundwater data for the Contaminants of Potential Concern (COPC's) must be submitted in the revised Application.

LANL Response: The NMED is correct. The Radioactive Liquid Waste Treatment Facility (RLWTF) continues to discharge under a CWA NPDES permit and is exempt from regulation under the New Mexico Hazardous Waste Regulations. This outfall, however, is located in Mortandad Canyon and not at the head of Ten Site Canyon. The text in question refers to an old outfall location where an operational spill (SWMU No. 50-006a) occurred due to a sump overflow at TA-50. The outfall and piping to it were removed and the soil remediated. This old outfall is not active and is correctly referred to in the past tense.

All of the available monitoring data for soil, tuff and sediment have been submitted to the NMED either in response to the RSI for TA-50 or in LANL's response to the RSI, February 2001. Well data has also been submitted to the NMED through the following sources:

- Environmental Surveillance Report
- Quarterly GIT Meetings
- Environmental Restoration Quarterly Technical Reports
- Well Completion and Geochemical Reports

Discharges from the RLWTF are monitored weekly and reported monthly to both EPA and the NMED Surface Water Bureau in the Discharge Monthly Reports.

5. *(Comment No. 10) Include the response language in the revised Application. Also, provide a legible map (Appendix E) and the title for the referenced 1996 RFI Report.*

LANL Response: Please review General Comment #1 regarding the revision of the permit application. A new figure has been provided in Appendix D of this response as requested.

The referenced report is:

- LANL, 1996, "RFI Report for Potential Release Sites at TA-50," LA-UR-96-148, Los Alamos National Laboratory, Los Alamos, New Mexico.

6. *(Comment No.11) Include the response language in the revised Application, either as text in the document or in the SWMU Report, and include the titles of the referenced reports and a COPC summary table as requested.*

   LANL Response: The language from LANL's response to Comment No. 11 of the June 25, 2001, RSI on the RCRA Permit Application; TA-50 Part B, has been incorporated into the revised TA-50 SWMU Report which has been reviewed and accepted by the NMED.

   The referenced reports are:

   - LANL, 1992, "RFI Work Plan for Operable Unit 1147," LA-UR-92-969, Los Alamos National Laboratory, Los Alamos, New Mexico.
   - LANL, 1995, "RFI Report for TA-50: PRS's 50-006(a), 50-006(c), 50-007, and 50-008," LA-UR-95-2738, Los Alamos, New Mexico.
   - LANL, 1997, "Interim Action Report Removal of Hummock Located in Ten-site Canyon as Part of PRS 50-006(a)," Los Alamos National Laboratory, Los Alamos, New Mexico.

7. *(Comment No. 12) Include information on air emission and deposition contaminant levels in the SWMU Reports to be submitted to fulfill the requirements of 20.4.1.900 NMAC (incorporating 40 C.F.R. §270.14(d)).*

   LANL Response: Information regarding historic air emission and deposition contaminant levels has been incorporated in the TA-50 SWMU Report for SWMU 50-006(c).

8. *(Comment Nos. 13 and 14) In discussions with the Permittees about their response to the RSI, NMED agreed that submittal of updated SWMU Reports, meeting the requirements of 20.4.1.900 NMAC (incorporating 40 C.F.R. §270.14(d)) could fulfill the requirement to include SWMU information in the Application under 20.4.1.900 NMAC (incorporating 40 C.F.R. §270.14(d)). NMED agreed to this after Permittees provided verbal assurance to NMED prior to submittal of the SWMU Reports that the Reports would indicate where there were significant detections of contaminants. NMED specifically cited MDA C as an example of a site with significant contamination that was not adequately described in the Application, because tritium was detected at MDA C at up to 23,000,000 pci/L. When the SWMU Report for MMA C was submitted, it only stated that tritium was detected "at a range of*

concentrations." Because Permittees did not provide an indication of the significance of the detections, as requested by NMED and as agreed to by the Permittees, NMED will require the submittal for a COPC summary table and other information originally requested in the RSI for sites with significant contamination.

LANL Response: The TA-50 SWMU Report has been revised to summarize all COPCs exceeding background values, (where applicable) and residential Screening Action Levels (SALs) in a Sampling Summary Table. An RFI report for MDA C is currently under preparation, which will evaluate the significance of detected COPCs. Nature and extent of contamination associated with MDA C has not yet been determined; data gaps to complete this determination will be presented in the forthcoming RFI report.

9. *(Comment No. 15) Include the response language, including Appendix I, in the revised Application. Delete the sentence beginning "However, because the TA-50 SWMUs..."*

LANL Response: The information provided in Appendix I of the TA-50 RSI response is intended for informational purposes only. LANL will not include this information in the revised application. A review of the response language does not reveal a sentence beginning "However, because the TA-50 SWMUs..." Further investigation shows that sentence in the original application. LANL declines to remove this language from the permit application; please review General Comment #1 for additional discussion.

10. *(Comment No. 16) Permittees' response does not address the schedule for corrective action and determining risk from the operational releases, for example airborne releases from stack emissions and effluent discharge, discussed in Section 4.1.4 as requested in the RSI. Revise the Application as requested.*

LANL Response: As discussed in LANL's response to RSI Comment No. 16, there are no previous known releases from the TA-50 CSAs (i.e., the operating units). The revised language in Section F.1.1 in the application states: "Decontamination activities will be conducted to ensure the removal of waste residues from the waste storage units addressed in this permit application to meet closure performance standards." The schedule for corrective action and risk determination for SWMUs such as soil deposition from stack emissions (SWMU 50-006(c)) and effluent discharges (SWMU 50-006(a)) will be addressed in the Annual Work Schedule portion of the Permit. In addition, the schedule was provided to NMED as part of the ER Baseline in the response to the RI dated February 12, 2001.

11. *(Comment No. 17) Address run-off from the site as a whole, not just from the CSA units. Revise the Application to include a discussion of potential run-off of surface*

contamination from TA-50 as a whole, including from sources such as airborne emissions and MDA C.

LANL Response: The run-off from the site as a whole is regulated under the CWA and controlled by a Storm Water Pollution Prevention Plan. LANL has reviewed the citations provided by the NMED and notes that they apply to the hazardous waste management units and not the entire complex. As discussed in LANL's response to the NMED RSI, there is no potential run-off from the hazardous waste management units located at TA-50 to the surrounding canyons.

12. *(Comment No.18) NMED disagrees with Permittees' position that "LANL meets the definition of an existing facility contained in 20.4.1.500 NMAC §260.10 and, therefore, the requirement cited (§264.18) is not applicable to TA-50." Under 20.4.1.500 NMAC (incorporating 40 C.F.R. §264.10), "existing facility" means "a facility which was in operation or for which construction commenced on or before November 19, 1980" and "facility" means "all contiguous land...used for treating, storing, or disposing of hazardous waste." Therefore, new units not on land contiguous to existing hazardous waste management units are not exempt from the requirements of 20.4.1.500 NMAC (incorporating 40 C.F.R. §264.18(a)). NMED* ***does agree*** *that those units at TA-50 to be permitted under the Application are exempt from seismic standards, because they are on land contiguous with treatment or storage units, provided Permittees submit documentation that hazardous waste management units at TA-50 were in operation on or before November 19, 1980.*

LANL's Response: All of the CSAs at TA-50 were included in either the Part A for initial notification by November 19, 1980, or the Mixed Waste Part A (submitted January 25, 1991) as required by law/regulation, six months after NMED obtained authority to regulate mixed waste (July 25, 1990). There are new units LANL seeks to permit included in the applications for several technical areas. NMED's definition of "contiguous" is unclear. The new units will be located on land that is "contiguous" to existing waste management units.

The agency position would require LANL to seek a new EPA Facility ID number for new units not immediately adjacent to existing units. Functioning under several EPA Facility ID numbers would raise issues of waste transportation between technical areas as well as enforcement issues. NMED's staff attorneys have made it clear in numerous conversations that LANL is one facility for purposes of enforcement. The regulations do not recognize one facility for enforcement and multiple facilities for permitting. LANL has operated under one EPA Facility ID Number since it filed its notification of waste management activities in 1980. LANL has been/is inspected by both the NMED and EPA under that Facility ID number, and continues to function under interim status and an operating permit under that single Facility ID number.

13. *Comment No. 20) Permittees' response references Appendix J, "Copy of the 'U.S. Department of Energy Report 2000 LANL Radionuclide Air Emissions' LA-13839-MS." NMED believes Permittees intended Appendix I, "Information on Groundwater and Drinking Water Monitoring Programs," and NMED' response is to Appendix I. Permittees' response is not adequate. Appendix I describes the following: Mortandad Canyon Groundwater\Discharge Plan alluvial monitoring at four unspecified locations for generally identified analytes not including organics; Canada del Buey Discharge Permit alluvial, intermediate, and regional monitoring at unspecified locations for generally identified analytes, not including organics; SDWA monitoring; drinking water monitoring; and Hydrogeologic Work Plan characterization. This does not describe a groundwater-monitoring program adequate to detect releases from TA-50. NMED will require adequate groundwater monitoring as a Permit condition.*

LANL Response: LANL provided the all the available information in the response to NMED Comment No. 20 of the RSI. The application submitted to the NMED for consideration was for CSAs. It did not and will not (upon revision) include land disposal units and is not subject to groundwater monitoring requirements. §264.90(a)(2) of the regulations states:

> "All solid waste management units must comply with the requirements of §264.101. A surface impoundment, waste pile, and land treatment unit or landfill that receives hazardous waste after July 26, 1982 (hereinafter referred to as a "regulated unit") must comply with the requirements of §§264.91 through 264.100 in lieu of §264.101 for purposes of detecting, characterizing and responding to releases to the uppermost aquifer."

The CSAs at TA-50 do not qualify as "regulated units," therefore; a groundwater-monitoring program for those units is not required.

The corrective action for MDA C and other SWMUs at TA-50 including the implementation schedule will be established during the Corrective Measure Study (CMS)/Corrective Measure Implementation (CMI) process. The necessity for groundwater monitoring for MDA C and other SWMUs at TA-50 will also be determined during the CMS/CMI process and should be addressed in the Corrective Action Chapter of the Permit. This determination will be made in part through ongoing characterization of the vadose zone to establish groundwater gradient, flow directions, potential transport mechanisms, and waste-specific migration from the SWMU.

14. *(Comment No. 24) Include the last sentence of the third bullet of the response in the revised Application, with the revision that the methods of disposition of the waste will be provided as an amendment to the Closure Plan at the time of closure and not as information provided in a closure report as stated in the response.*

Application Sections F.1.11.3 and F.1.11.5, referenced in the response, deal with decontamination of sampling equipment, not the procedures for the decontamination of equipment and structures used during waste handling operations.

Revise Section F.1.11.7 to include the analytical methods and procedures for radionuclide sampling.

Revise the Closure Plan to provide more detail of the following:

a. *Procedures for cleaning equipment;*
b. *Procedures for collecting samples and test methods for surface swipe samples. Sections F1.1, F.1.10.4, and F.1.13 of the Application reference collection of surface samples and analytical evidence. However, Section F1.11 addresses only the procedures for collecting soil and wash water samples. In order to satisfy the requirements of 20.4.1.500 NMAC (incorporating 40 C.F.R. §264.112(b)(4)), Permittees must include procedures on when, where, how many, an how surface swipe samples will be collected, the procedures for collecting these samples, and test methods.*

LANL Response: As stated in LANL's response to the RSI issued by the NMED, the permit application satisfies the regulatory requirements for closure of a storage unit. The edits suggested in this NOD are inconsistent with LANL's approach as described in the application.

NMED states that Application Sections F.1.11.3 and F.1.11.5, referenced in the response, deal with decontamination of sampling equipment, not the procedures for the decontamination of equipment and structures used during waste handling operations. This is true. The Table of Contents for the closure plan (page F-i) states that F.1.11.3 and F.1.11.5 deal with cleaning soil or sediment samplers and cleaning liquid samplers respectively. Further the table indicates that sections F.2.2, F.3.2, F.4.2, F.5.2 and F.6.2 discuss equipment decontamination in each of the storage units described in the permit application.

LANL will follow all applicable DOE and NRC procedures, requirements, and guidelines for determining decontamination of structures and equipment contaminated with radioactive waste. However, it is inappropriate to include these procedures, requirements, and guidelines in the Permit Application. Please review Comment #3 for additional discussion.

In response to a) of the NMED NOD Comment #14, please see the discussion in paragraph 2 of LANL's response to NOD Comment # 14 above.

In response to b) of the NMED NOD Comment #14, the surface samples mentioned in Sections F.1.1, F.1.10.4, and F.1.13 may be collected during

operational and pre-closure activities at the CSAs. The purpose of these samples (if collected) is to serve as process knowledge for potential constituents. They are not intended to serve as a means of decontamination verification; therefore, procedures regarding their collection are not appropriate for inclusion in the application. LANL will utilize soil and/or wash water samples to verify decontamination. Please see the response to Comment #19 for additional discussion regarding swipe sampling for decontamination verification.

15. *(Comment No. 45) The Application, page F-8, line 2, states that "soil samples will be collected from areas showing evidence of contamination..." Evidence of contamination is not always obvious and therefore cannot be relied upon exclusively for determining sampling locations. The reference in the comment to failed containment systems is in reference to failed storage structures such as deteriorated surfaces or cracks in the floors or walls. Revise the Application to include language stating that samples will be collected from "areas showing evidence of contamination, areas of potential contamination such as sumps, drainages, etc., and areas of deteriorated or failed surfaces."*

    The Application, page F-7, Section F.1.10, states that wall and floor surfaces will be inspected to identify defects that could result in failure to contain wash water and that if defects are found they will be repaired or sealed. Revise the Application to discuss how these failed surfaces will be monitored or sampled to ensure that no contamination had migrated through these failed surfaces prior to them being sealed.

    LANL Response: The statement is correct due to the previous sentence, which stipulates that "soil sampling will be deemed necessary based on analytical evidence or the operational history of the unit." The CSAs are operated such that surfaces and other containment features are maintained to remain free of cracks and gaps. The operational history for each CSA includes records of unit inspections and spill clean up. Inspection records will indicate the presence of any cracks or defects in the containment surfaces, the severity of the defects, and what actions are taken for repair. Spill clean up records will include the location, nature, and severity of the spill and what actions were taken to clean the spill up. LANL believes that how the CSAs are operated, the information in the operation record, and analytical data from operational and pre-closure wipe downs of the walls, surfaces, and sumps is sufficient to determine if soil sampling is necessary at a given CSA.

    In addition, waste is stored inside buildings, structures, and/or containers (steel B25 boxes and SWBs) and provided with weather protection. Only solid waste materials are stored at the CSAs. Spills of these solid materials (if they occur) are addressed immediately, recorded in the operating record, and cleaned up in accordance with the Contingency Plan provided in Attachment E of the application. Soil contamination, if

any, is unlikely to result from container storage activities. Soil contamination at the site is likely to be attributed to SWMUs (i.e., MDA-C, stack emission, effluent discharges) and the asphalt pad used for container storage at the site

16. *(Comment No.41) Instead of deleting the section on post-closure care, replace the language in this section with language stating that "All hazardous waste and waste residues will be removed or decontaminated at closure in compliance with 20.1.500 NMAC (incorporating 40 C.F.R. 264.178). Therefore these units will not be subject to the post closure care requirements."*

LANL Response: In the RSI for TA-50, the NMED required that the Laboratory "Either identify units at TA-50 subject to post-closure care or delete this section." LANL responded that all of the units were scheduled for clean closure and therefore if that demonstration were made, no post-closure care would be required. In this NOD the NMED has reversed its previous position and wants to edit the existing language in the application. As discussed in the General Comment #1, LANL will not revise the application to include these edits.

17. *(Comment No. 43) In the revised Application replace "if appropriate" in the response with if above standards."*

LANL Response: The text "if appropriate" is the correct language for this portion of the application. The CSAs at TA-50 are located inside buildings, structures, and/or containers (steel B25 boxes and SWBs) provided with weather protection. Only solid waste materials are stored at these CSAs. Spills of these solid materials (if they occur) are addressed immediately, recorded in the operating record, and cleaned up in accordance with the Contingency Plan provided in Attachment E of the application. Soil contamination, if any, is unlikely to result from container storage.

LANL maintains that soil sampling will be conducted during closure if it is appropriate given the operating record of the CSA. Please see the response for Comment #15 for additional discussion.

18. *(Comment No. 44) Use of the word "and" between "hazardous and radioactive" means that both must be present in order for the wash water to be managed properly. This is not the case; both hazardous and radioactive contaminated wash water must be managed properly. Permittees' proposed language precludes hazardous waste that is not mixed waste. Revise the Application as requested in the RSI, unless the Permittees object to a statement that they will appropriately manage radioactive waste.*

LANL Response: LANL stands by its response. Mixed waste is a subset of hazardous waste. There are no special waste codes for mixed waste and therefore if a waste is designated as a D, F, K, P or U waste, the

hazardous waste regulations make no distinction between mixed or hazardous waste. As discussed in the General Comment #1, LANL will not revise the application to include these edits.

In addition, as discussed in General Comment #3, LANL manages these wastes in accordance with the DOE orders and NRC regulations.

19. *(Comment No. 47) Basing decontamination verification on sampling of the wash water only is inadequate. The use of the wash water solution may be appropriate for loose contamination, but will not remove fixed contamination. In addition, use of wash water to determine decontamination can result in significant dilution of constituents and does not allow for the identification of contaminant hot spots. Therefore, NMED requires that swipe samples be collected at closure of container storage areas. Swipe samples shall be collected from all areas showing signs of contamination, in areas of likely contamination such as sumps and basins, with a minimum of four samples per room or on a grid of one sample per every 100 square feet. In addition, decontamination verification for radionuclides should also be performed using swipe-sampling analysis pursuant to Nuclear Regulatory Commission Regulatory Guide 1.86. Revise the Application accordingly.*

LANL Response: LANL does not believe that the use of swipe sampling is the best or only method for closure decontamination determinations, particularly to the extent of replacing rinse water sampling for that purpose. Swipe samples are not an approved methodology for hazardous waste constituent sampling; their use may not be appropriate for some analytes and circumstances.

The only approved sampling methodologies that LANL has been able to identify that use direct swipe sampling are for polychlorinated biphenyl (PCB) decontamination determination (as discussed in "Verification of PCB Spill Cleanup by Sampling and Analysis" *EPA-560/5-85-026* [EPA, 1985], and as included in Attachment A of *SW-846*, Method 8290A) and for Occupational Safety and Health Administration (OSHA) surface contamination sampling (OSHA, 1999). The first use is limited to sampling for PCBs, a non-volatile and normally somewhat viscous compound. The technical intent of this sampling method is also limited to establishing the presence of the compound at a concentration of 10 ppm or higher, a relatively gross level of contamination compared to the risk-based concentration limits required for closure determinations. The second method limits the use of swipe sampling to act as a quality control to ensure that a cleaning procedure is being implemented effectively. The method states specifically that this type of sampling is not attempting to assess health risk resulting from contamination. However, the decontamination criteria used in the most recent relevant LANL container storage area closures (TA-21-61, TA-50-37) have been the U.S. EPA Risk-Based Concentration Limits as stipulated by the NMED. Those criteria are specifically health based. The use of these sampling

methodologies has not been expressly extended or approved beyond the stated purpose or context, although swipe samples are commonly used as a screening tool.

Swipe sampling may not be the best or most appropriate method of sampling for other types of contaminants. Materials that have hardened, that reside in relatively rougher surface features (e.g., cracks, surface irregularities), or that will not go into solution with the type of wetting agent used or the conditions for the swipe may not be successfully collected using this method. Swipe sampling is dependent upon the efficiency of the contact between the analyte and the collection medium. The reproducibility of the obtained results is also affected. There are two areas in which rinse water sample collection may be superior. Using the decontamination rinse water (water and decontamination agent) to collect the analyte potentially increases the solubility because there is a higher potential that an acknowledged decontamination agent such as Alconox will solubilize the range of closure plan-specified analyzed compounds versus a compound-specific material (see *SW-846* Method 8290A). In addition, the total surface area contacted is probably higher when the area is decontaminated by the rinse water rather than randomly sampled by the swipe. Therefore, swipe sampling does not necessarily represent an improvement over rinse water sampling in collection ability.

Swipe sampling, by nature, does not involve the collection of samples from the entire surface being tested. Therefore, the method relies upon a statistical random sampling approach to determine decontamination. A large number of samples (with associated costs) are necessary to assure that a sufficiently high confidence level has been achieved to assure decontamination. A significant advantage of the rinse water sampling approach is that the entire area of the surface being tested has been sampled.

LANL has minimized the potential problem of rinse water dilution in past closure activities. Minimization is accomplished by limiting the amount used for the sample collection portion of the decontamination and by utilizing low analytical detection levels and/or concentration techniques.

Finally, LANL has used the rinse water sampling approach, when appropriate, for all past closure activities conducted in container storage areas. This approach has never been previously questioned by NMED permit writers or inspectors and is currently included in approved container storage area closure plans in LANL's Hazardous Waste Facility Permit. Additionally, NMED has usually required prior approval of detailed sampling and decontamination activities prior to the start of the closure process unless LANL proceeds "at risk" (i.e., subject to changes made by NMED). Rinse water sampling has not been identified as a problem in previous closure plan reviews and approvals. The requirement to replace

the methodology with another without supporting scientific basis appears arbitrary and restricts LANL's closure options.

In addition, decontamination verification for radionuclides should also be performed using swipe-sampling analysis pursuant to Nuclear Regulatory Commission Regulatory Guide 1.86. Revise the Application accordingly.

LANL stipulates that NRC requirements and guidelines are appropriate for decontamination verification of radionuclides. However, it is inappropriate to include the NRC guidelines in this Permit Application. Please review General Comment #1 and #3 for further discussion.

20. *(Comment No. 48) NMED will require the requested closure criteria as a Permit condition. The use of technical or administrative controls implies that hazardous waste or hazardous waste residues are left in place at the unit, and that closure therefore does not meet the requirement to remove or decontaminate hazardous waste and hazardous waste residues under 20.4.1.500 NMAC (incorporating 40 C.F.R. §264.178). There is flexibility available in the means of achieving closure standards, but Permittees must meet those standards in order to demonstrate removal or decontamination 20.4.1.500 NMAC (incorporating 40 C.F.R. §264.178).*

LANL Response: The five criteria listed in the closure plan are intended to demonstrate clean closure or clean closure equivalency as agreed upon with NMED at the time of closure. The requested closure criteria are restrictive and may not allow sufficient flexibility to demonstrate decontamination. Each of the criteria suggested in the RSI are listed below and provided with a specific response as to applicability.

1. "For surfaces such as container storage area floors and walls, submit proposed cleanup standards."

LANL intends to clean close the CSAs at TA-50. Clean closure will be demonstrated by analytical data that indicates no detectable hazardous constituent residues, and/or detectable concentrations that are at or below existing regulatory action levels as established by the NMED.

If clean closure cannot be demonstrated, LANL intends to demonstrate clean closure equivalency as agreed upon with the NMED at the time of closure. Clean closure equivalency will be demonstrated by analytical data that identifies no statistically significant concentrations of hazardous constituent residues above baseline data; provides detectable concentrations at or below levels agreed upon with the NMED to be protective of human health and the environment (risk based); and/or provides detectable concentrations that cannot be removed or decontaminated to agreed upon levels and which will be allowed to remain provided that the constituents do not pose an unacceptable risk when

combined with technical or administrative control measures agreed upon with the NMED.

It is preferable in either situation to agree upon clean up standards at the time of closure. This allows the operating record of the unit to be utilized to determine the constituents that were stored in the unit and identify the nature and extent of spills (if any) that may have occurred.

2. For soils, use NMED soil screening, ecological risk, or risk assessment methods as appropriate to calculate cleanup levels as established by NMED or applicable law.

LANL stipulates that if the operating record indicates that soil sampling is required, risk assessment methods will be employed to determine appropriate cleanup levels. Please refer to the response to Comment #15 for additional discussion.

3. For groundwater, use the lower of New Mexico Water Quality Control Commission regulations or Maximum Contamination Levels under the Safe Drinking Water Act.

Groundwater monitoring is not required for the TA-50 CSAs. Please refer to the response to Comment #13 for additional discussion.

21. *(Comment No. 50) Although waste is to be stored in self-contained structures at the TA-50-69 Outdoor CSA, the storage pad does not have any cover that protects it from the weather. The likelihood of waste escaping to the surrounding environment is therefore greater at this CSA than at those units contained within a building. Therefore, NMED requires that soil sampling be performed at the Outdoor CSA during closure and that sampling locations take into consideration accumulation areas, such as the down gradient end of the storage pad, drainages, and low points, in addition to the use of records and visual inspection. Revise the Application to include this requirement.*

LANL Response: Waste is stored at the TA-50-69 outdoor CSA in transportainers (i.e., drums located inside a structure) or containers (steel B25 boxes and SWBs). The transportainers are structures that provide weather protection and containment in a similar fashion to Building 69. Storage containers are elevated by design and covered with a tarp to provide weather protection. Please note that only solid waste materials are stored at this CSA. Spills of these solid materials (if they occur) are addressed immediately, recorded in the operating record, and cleaned up in accordance with the Contingency Plan provided in Attachment E of the application.

Storm water is managed by swales to prevent run on by water draining from the area surrounding the CSA. The water is regulated by the CWA

and is controlled by a Storm Water Prevention Plan. Soil contamination, if any, is unlikely to result from container storage activities at this CSA. Soil contamination at the site is likely to be attributed to SWMUs (i.e., MDA-C, stack emissions, effluent discharges) and the asphalt pad used for container storage at the site. Please review General Comment #1 regarding revision of the application.

22. *(Comment No. 52) The description of the loading/unloading operations addressed in the Section G.1.2.2 is inadequate. 20.4.1.900 NMAC (incorporating 40 C.F.R. §270.14(b)(8)) requires a description of procedures, structures, and equipment used to prevent hazards during unloading operations. Revise the Application to describe all loading/unloading areas, including their location in relation to the CSAs, a description of how these areas are designed to prevent hazards and procedures and equipment used to prevent hazards during loading/unloading operations. In addition, figure A-9, page A-19, does not show the loading/unloading area for Building 37. Revise Figure A-9 to show the loading/unloading area.*

LANL Response: Section G.1.2.2 of the TA-50 portion of the permit application for LANL discusses the movement of containers within the LANL facility. This section also introduces the reader of the application to the precautions that are taken by Laboratory personnel to prevent hazards. Sections 2.0, G.2, G.3, G.4, and G.5 of the application complement this information, which address the issues required by the citation.

As discussed in General Comment #6, TA-50-37 will be closed, and therefore a response is not included. However, a new figure depicting the loading/unloading areas for the TA-50-69 indoor and outdoor CSAs is provided in Appendix E of this response. This figure is provided for informational purposes only.

New Comments:

23. *Page 2-5, Section 2.1.4, Aisle Space and Section G.3, Storage configuration: Provide the specific aisle width to be maintained at the CSA's. If the width varies between each CSA, provide the aisle widths in the appropriate sections in the Application, Attachment G. Typically an aisle space of three feet is used. If a narrower width is used, provide justification that the width will not interfere with inspections or the unobstructed movement of personnel, fire, and spill equipment during an emergency.*

LANL Response: The aisle space at each of the CSA's differs depending on the waste containers being managed in the particular area. LANL's current permit requires an aisle space of two feet, which is typically maintained as the minimum required aisle space for container storage at TA-50. In areas where large heavy containers are stored a wider aisle

space is necessary to allow for the use of a forklift to move containers. There is no regulatory requirement for a specific aisle space.

> §264.35 states: "The owner or operator must maintain aisle space to allow the unobstructed movement of personnel, fire protection equipment, spill control equipment, and decontamination equipment to any area of facility operation in an emergency, *unless* it can be demonstrated to the Regional Administrator that aisle space is not needed for any of these purposes."

LANL follows this requirement and discusses it in both Section 2.0 and Attachment G of the TA-50 portion of the LANL application.

24. *Page 2-6, Section 2.1.8, Management of Containers: Include in the revised Application a copy of the written facility-specific procedures for container management referenced in this Section.*

LANL Response: Facility specific procedures for container management are intended to meet the operational requirements of the facility and are subject to frequent changes to update management structure, non-hazardous waste operations, and/or developing missions. It is inappropriate for these procedures to be included in the Permit Application and subsequently the permit due to their dynamic nature, which could require a permit modification each time they are updated. Section 2.1.8 of the permit application provides criteria by which waste containers at the TA-50 CSAs are managed. These criteria include:

- Waste containers will be closed or vented, handled, staged, and stored to prevent rupture, leakage, or spillage.
- Only equipment designed for moving waste containers will be used.
- Small waste containers may be handled manually or with dollies
- The CSAs are equipped with structures and equipment to facilitate safe loading, unloading, and movement of waste containers.

In addition to Section 2.1.8, detailed information regarding container management is provided in Attachment G of the application. This information includes:

- Storage Configuration (G.3.1)
- Movement of Containers (G.3.2)
- Containment (G.4)
- Hazard control (G.2 and G.5)

25. *Pages A-2 and A-3, Section A.1, Facility Description: Submit a list of all hazardous waste management units at TA-50, that were at any time permitted or interim status units, and that are not included as units to be permitted in the Application. Include a*

description of the closure status of each such unit. According to Permittees' List of Permitted and Interim Status Units at LANL, dated January 10, 2002, and submitted NMED on January 16, 2002, TA-50-37 Room 112 does not currently exist, while the Application, page A-3, states that Room 112 is an existing interim status or permitted unit. Clarify the status of Room 112.

LANL Response: As discussed in General Comment #6, TA-50-37 will be closed instead of permitted and therefore a response is not necessary.

REFERENCES

EPA, 1985, "Verification of PCB Spill Cleanup by Sampling and Analysis," EPA-560/5-85-026, U. S. Environmental Protection Agency.

LANL, 2000, "Los Alamos National Laboratory Technical Area 50 Part B Permit Application," Revision 2.0, Los Alamos National Laboratory, Los Alamos, New Mexico.

LANL, 1997, "Interim Action Report Removal of Hummock Located in Ten-site Canyon as Part of PRS 50-006(a)," Los Alamos National Laboratory, Los Alamos, New Mexico.

LANL, 1996, "RFI Report for Potential Release Sites at TA-50," LA-UR-96-148, Los Alamos National Laboratory, Los Alamos, New Mexico.

LANL, 1995, "RFI Report for TA-50: PRS's 50-006(a), 50-006(c), 50-007, and 50-008," LA-UR-95-2738, Los Alamos, New Mexico.

LANL, 1992, "RFI Work Plan for Operable Unit 1147," LA-UR-92-969, Los Alamos National Laboratory, Los Alamos, New Mexico.

OSHA, 1999, "OSHA Technical Manual," U.S. Department of Labor, Occupational Safety and Health Administration, Directive Number TED 1-0.15A, Washington D.C.

APPENDIX A

COPY OF "NOTICE OF DEFICIENCY: TEHCNICAL ADEQUACY REVIEW TA-50 RECRA PERMIT APPLICATION, DECMBER 2000, REVISION 2.0, LOS ALAMOS NATIONAL LABORATORY, EPA ID NO. NM0890010515

State of New Mexico
ENVIRONMENT DEPARTMENT
Hazardous Waste Bureau
2905 Rodeo Park Drive East, Building 1
Santa Fe, New Mexico 87505-6303
Telephone (505) 428-2500
Fax (505) 428-2567
www.nmenv.state.nm.us

GARY E. JOHNSON
GOVERNOR

PETER MAGGIORE
SECRETARY

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

March 4, 2002

Dr. John C. Browne, Director
Los Alamos National Laboratory
P.O. Box 1663, MS A100
Los Alamos, NM 87545

Mr. David A. Gurule, Area Manager
Los Alamos Area Office
Department of Energy
528 35th Street, MS A316
Los Alamos, NM 87544

RE: NOTICE OF DEFICIENCY
TECHNICAL ADEQUACY REVIEW
TA-50 RCRA PERMIT APPLICATION
DECEMBER 2000, REVISION 2.0
LOS ALAMOS NATIONAL LABORATORY
EPA ID NO. NM0890010515
HWB-LANL-99-048

Dear Dr. Browne and Mr. Gurule:

The New Mexico Environment Department (NMED) has reviewed the Los Alamos National Laboratory and U.S. Department of Energy ("Permittees") response to a Request for Supplemental Information (RSI) issued by NMED on June 25, 2001, for the above-referenced Application. The Permittees' response is dated November, 2001.

Attachment A to this Notice of Deficiency (NOD) specifies information that was not adequately addressed in the RSI response. The requested information must be submitted to NMED within 30 days of receipt of this letter, and incorporated into the final revision of the TA-50 Application.

If you have any questions or need additional information, please contact Steve Jetter of my staff at (505) 841-9488.

Sincerely

James Bearzi
Chief
Hazardous Waste Bureau

Attachment

cc: J. Kieling, NMED HWB
D. Cobrain, NMED HWB
C. Will, NMED HWB
S. Jetter, NMED HWB
A. Ortiz, NMED OGC
D. Neleigh, EPA Region 6
J. Ellvinger, LANL ESH-19, MS K490
G. Bacigalupa, LANL ESH-19, MS K490
G. Turner, DOE LAAO, MS A316

file: Reading and LANL TA-50

ATTACHMENT A
NOTICE OF DEFICIENCY
TECHNICAL ADEQUACY REVIEW

TA-50 RCRA PERMIT APPLICATION
DECEMBER 2000, REVISION 2.0

LOS ALAMOS NATIONAL LABORATORY
EPA ID NO. NM0890010515

March 4, 2002

Deficiencies in Permittees' November, 2001, Response to NMED's June 25, 2001, Request for Supplemental Information (RSI)

1. (NMED RSI Comment No. 1) Permittees response stating that the Application format was directed by NMED in correspondence to Permittees dated February 5, 1998, is inaccurate. The February 5, 1998, letter proposed a format for the permit, and does not address the Application format. NMED's concern with the current structure of the Application is the confusion created by having required information for individual units spread between three separate sections and the resulting increased difficulty in review by NMED and the public. NMED suggests that Section 2.0 be divided between Attachments A, Facility Description, and Attachment G, Container Management. Sections 2.1, 2.2, and 2.3 could be incorporated into Attachment A, and Sections 2.1.1 through 2.1.12 could be incorporated into Attachment G. All of Sections 2.1.1 through 2.1.12 deal with container management issues and should be included in the Attachment G, Container Management.

In addition, there are several inconsistencies in the description between the different sections. For example:

1) The description of the TA-50-69 Outdoor Container Storage Area (CSA) provided on page 2-4, Section 2.1, states, "transportainers and other weather protective structures ... **provide optional** weather protection...." Attachment A, page A-4, Section A.1.5, states, "Transportainers and other weather protective structures ... **will** be used to store waste." (Emphasis added.)
2) The surface drainage description for the TA-50-69 Outdoor CSA on page 2-4, Section 2.1, states "The pad slopes gently (approximately 1 to 5 percent) from east to west and up to 2.5 percent **toward the centerline**." In Attachment G, page G-7, Section G.2.1.2, states, "Runon ... is prevented because both CSAs [TA-50-114 and TA-50-69 Outdoor] are **elevated by design**" and that "drainage swales ... divert storm water **away from the CSA**." (Emphasis added.) Provide an engineered diagram of the TA-50-69 Outdoor CSA that shows the drainage and runon/runoff control features.
3) The description of Building 114 on page 2-3, Section 2.1 states, "The CSA is **divided into two separate lockers** by a metal wall, and has a grated floor above a recessed area...." The

description in Attachment A, page A-4, reads, "The locker contains an elevated grated floor above a **divided recessed area**...." (Emphasis added.)

4) Page 2-4, Section 2.1.1, states that various sized steel or poly drums will be used. Attachment G, page G-1, Section G.1.1 mentions steel drums only.

Resolve these discrepancies in the revised Application.

2. (Comment No. 4) In addition to stating that no free liquid will be stored at the TA-50 CSAs, include in the revised Application procedures for determining the presence of free liquid, results or documentation to show that the wastes do not contain free liquids, and a reference to the section of the Waste Analysis Plan that addresses these procedures. [§270.15(b)(1)]

3. (Comment No. 7) There is a discrepancy in the capacity of Room 118 between the response text and figure provided in the response Appendix B. The response states that Room 118 has a capacity of 5500 gallons or 100 55-gallon drums. The figure indicates a capacity of 108 55-gallon drums or 5940 gallons. See also Comment 23 below regarding adequate aisle space.

4. (Comment No. 9) The NMED comment was directed toward the issue of fact, not legal authority. The effluent discharge is ongoing and it is inaccurate to describe it in the past tense. The statement on Application page 4-4, section 4.1.4, that "The area where treated effluent **was** discharged ..." (emphasis added), indicates that this effluent discharge point was either moved or is otherwise no longer used to discharge effluent from the Radioactive Liquid Waste Treatment Facility. As stated in Permittees' response, this is an active discharge. Therefore, revise the Application language to describe the effluent discharge in the present tense.

As requested in the RSI, include a summary table of outfall effluent contaminant levels and alluvial, intermediate, and regional groundwater sampling results. Only information on sediment and soil samples was submitted. No data was submitted for groundwater sampling results from the alluvial, intermediate, or regional wells installed to monitor this location. A complete summary table including sediment, soil and groundwater data for the Contaminants of Potential Concern (COPC's) must be submitted in the revised Application.

5. (Comment No. 10) Include the response language in the revised Application. Also, provide a legible map (Appendix E) and the title for the referenced 1996 RFI Report.

6. (Comment No. 11) Include the response language in the revised Application, either as text in the document or in the SWMU Report, and include the titles of the referenced reports and a COPC summary table as requested.

7. (Comment No. 12) Include information on air emission and deposition contaminant levels in the SWMU Reports to be submitted to fulfill the requirements of 20.4.1.900 NMAC (incorporating 40 C.F.R. § 270.14(d)).

8. (Comments Nos. 13 and 14) In discussions with the Permittees about their response to the RSI, NMED agreed that submittal of updated SWMU Reports, meeting the requirements of 20.4.1.900 NMAC (incorporating 40 C.F.R. § 270.14(d)), could fulfill the requirement to include SWMU information in the Application under 20.4.1.900 NMAC (incorporating 40 C.F.R. § 270.14(d)). NMED agreed to this after Permittees provided verbal assurance to NMED prior to submittal of the SWMU Reports that the Reports would indicate where there were significant detections of contaminants. NMED specifically cited MDA C as an example of a site with significant contamination that was not adequately described in the Application, because tritium was detected at MDA C at up to 23,000,000 pci/L. When the SWMU Report for MDA C was submitted, it only stated that tritium was detected "at a range of concentrations." Because Permittees did not provide an indication of the significance of the detections, as requested by NMED and as agreed to by the Permittees, NMED will require the submittal of a COPC summary table and other information originally requested in the RSI for sites with significant contamination.

Permittees' proposed language modification describing the presence of radionuclides within or directly below MDA C is misleading. Permittees have not determined that contamination exists only within the perimeter of MDA C. There has been insufficient investigation at depth along the perimeter to determine whether or not contamination has spread beyond the perimeter of MDA C. Revise the Application to state that neither the vertical or horizontal extent of contamination has been determined.

9. (Comment No. 15) Include the response language, including Appendix I, in the revised Application. Delete the sentence beginning "However, because the TA-50 SWMUs...."

10. (Comment No. 16) Permittees' response does not address the schedule for corrective action and determining risk from the operational releases, for example airborne releases from stack emissions and effluent discharge, discussed in Section 4.1.4 as requested in the RSI. Revise the Application as requested.

11. (Comment No. 17) Address run-off from the site as a whole, not just from the CSA units. Revise the Application to include a discussion of potential run-off of surface contamination from TA-50 as a whole, including from sources such as airborne emissions and MDA C.

12. (Comment No. 18) NMED disagrees with Permittees' position that "LANL meets the definition of an existing facility contained in 20.4.1.500 NMAC §260.10 and, therefore, the requirement cited (§264.18) is not applicable to TA-50." Under 20.4.1.500 NMAC (incorporating 40 C.F.R. § 264.10), "existing facility" means "a facility which was in operation or for which construction commenced on or before November 19, 1980" and "facility" means "all contiguous land . . . used for treating, storing, or disposing of hazardous waste." Therefore, new units not on land contiguous to existing hazardous waste management units are not exempt from the requirements of 20.4.1.500 NMAC (incorporating 40 C.F.R. § 264.18(a)). NMED does

agree that those units at TA-50 to be permitted under the Application are exempt from seismic standards, because they are on land contiguous with treatment or storage units, provided Permittees submit documentation that hazardous waste management units at TA-50 were in operation on or before November 19, 1980.

13. (Comment No. 20) Permittees' response references Appendix J, "Copy of the 'U.S. Department of Energy Report 2000 LANL Radionuclide Air Emissions' LA-13839-MS." NMED believes Permittees intended Appendix I, "Information on Groundwater and Drinking Water Monitoring Programs," and NMED's response is to Appendix I. Permittees' response is not adequate. Appendix I describes the following: Mortandad Canyon Groundwater Discharge Plan alluvial monitoring at four unspecified locations for nitrate, fluoride, and TDS; Mortandad Canyon Annual Surveillance alluvial and regional aquifer monitoring at unspecified locations for generally identified analytes not including organics; Canada del Buey Discharge Permit alluvial monitoring at one unspecified location for nitrate, chloride, and TDS, reported to the NMED Groundwater Quality Bureau; Annual Surveillance alluvial, intermediate, and regional monitoring at unspecified locations for generally identified analytes, not including organics; SDWA [?] monitoring; drinking water monitoring; and Hydrogeologic Work Plan characterization. This does not describe a groundwater monitoring program adequate to detect releases from TA-50. NMED will require adequate groundwater monitoring as a Permit condition.

14. (Comment No. 24) Include the last sentence of the third bullet of the response in the revised Application, with the revision that the methods of disposition of the waste will be provided as an amendment to the Closure Plan at the time of closure and not as information provided in a closure report as stated in the response.

Application Sections F.1.11.3 and F.1.11.5, referenced in the response, deal with decontamination of sampling equipment, not the procedures for the decontamination of equipment and structures used during waste handling operations.

Revise Section F.1.11.7 to include the analytical methods and procedures for radionuclide sampling.

Revise the Closure Plan to provide more detail of the following:

a) Procedures for cleaning equipment;
b) Procedures for collecting samples and test methods for surface swipe samples. Sections F1.1, F.1.10.4, and F.1.13 of the Application reference collection of surface samples and analytical evidence. However, Section F.1.11 addresses only the procedures for collecting soil and wash water samples. In order to satisfy the requirements of 20.4.1.500 NMAC (incorporating 40 C.F.R. § 264.112(b)(4)), Permittees must include procedures on when, where, how many, and how surface swipe samples will be collected, the procedures for collecting these samples, and test methods.

15. (Comment No. 45) The Application, page F-8, line 2, states that "soil samples will be collected from areas showing evidence of contamination...." Evidence of contamination is not always obvious and therefore cannot be relied upon exclusively for determining sampling locations. The reference in the comment to failed containment systems is in reference to failed storage structures such as deteriorated surfaces or cracks in the floors or walls. Revise the Application to include language stating that samples will be collected from "areas showing evidence of contamination, areas of potential contamination such as sumps, drainages, etc., and areas of deteriorated or failed surfaces."

The Application, page F-7, Section F.1.10, states that wall and floor surfaces will be inspected to identify defects that could result in failure to contain wash water and that if defects are found they will be repaired or sealed. Revise the Application to discuss how these failed surfaces will be monitored or sampled to ensure that no contamination had migrated through these failed surfaces prior to them being sealed.

16. (Comment No. 41) Instead of deleting the section on post-closure care, replace the language in this section with language stating that "All hazardous waste and waste residues will be removed or decontaminated at closure in compliance with 20.4.1.500 NMAC (incorporating 40 C.F.R. 264.178). Therefore these units will not be subject to the post closure care requirements."

17. (Comment No. 43) In the revised Application replace "if appropriate" in the response with "if above standards."

18. (Comment No. 44) Use of the word "and" between "hazardous and radioactive" means that both must be present in order for the wash water to be managed properly. This is not the case; both hazardous and radioactive contaminated wash water must be managed properly. Permittees' proposed language precludes hazardous waste that is not mixed waste. Revise the Application as requested in the RSI, unless the Permittees object to a statement that they will appropriately manage radioactive waste.

19. (Comment No. 47) Basing decontamination verification on sampling of the wash water only is inadequate. The use of the wash water solution may be appropriate for loose contamination, but will not remove fixed contamination. In addition, use of wash water to determine decontamination can result in significant dilution of constituents and does not allow for the identification of contaminant hot spots. Therefore, NMED requires that swipe samples be collected at closure of container storage areas. Swipe samples shall be collected from all areas showing signs of contamination, in areas of likely contamination such as sumps and basins, with a minimum of four samples per room or on a grid of one sample per every 100 square feet. In addition, decontamination verification for radionuclides should also be performed using swipe-sampling analysis pursuant to Nuclear Regulatory Commission Regulatory Guide 1.86. Revise the Application accordingly.

20. (Comment No. 48) NMED will require the requested closure criteria as a Permit condition. The use of technical or administrative controls implies that hazardous waste or hazardous waste residues are left in place at the unit, and that closure therefore does not meet the requirement to remove or decontaminate hazardous waste and hazardous waste residues under 20.4.1.500 NMAC (incorporating 40 C.F.R. § 264.178). There is flexibility available in the means of achieving closure standards, but Permittees must meet those standards in order to demonstrate removal or decontamination under 20.4.1.500 NMAC (incorporating 40 C.F.R. § 264.178).

21. (Comment No. 50) Although waste is to be stored in self contained structures at the TA-50-69 Outdoor CSA, the storage pad does not have any cover that protects it from the weather. The likelihood of waste escaping to the surrounding environment is therefore greater at this CSA than at those units contained within a building. Therefore, NMED requires that soil sampling be performed at the Outdoor CSA during closure and that sampling locations take into consideration accumulation areas, such as the downgradient end of the storage pad, drainages, and low points, in addition to the use of records and visual inspection. Revise the Application to include this requirement.

22. (Comment No. 52) The description of the loading/unloading operations addressed in Section G.1.2.2 is inadequate. 20.4.1.900 NMAC (incorporating 40 C.F.R. § 270.14(b)(8)) requires a description of procedures, structures, and equipment used to prevent hazards during unloading operations. Revise the Application to describe all loading/unloading areas, including their location in relation to the CSAs, a description of how these areas are designed to prevent hazards, and procedures and equipment used to prevent hazards during loading/unloading operations. In addition, figure A-9, page A-19, does not show the loading/unloading area for Building 37. Revise Figure A-9 to show the loading/unloading area.

New Comments:

23. Page 2-5, Section 2.1.4, Aisle Space and Section G.3, Storage Configuration: Provide the specific aisle width to be maintained at the CSA's. If the width varies between each CSA, provide the aisle widths in the appropriate sections in the Application, Attachment G. Typically an aisle space of three feet is used. If a narrower width is used, provide justification that the width will not interfere with inspections or the unobstructed movement of personnel, fire, and spill equipment during an emergency.

24. Page 2-6, Section 2.1.8, Management of Containers: Include in the revised Application a copy of the written facility-specific procedures for container management referenced in this Section.

25. Pages A-2 and A-3, Section A.1, Facility Description: Submit a list of all hazardous waste management units at TA-50, that were at any time permitted or interim status units, and that are not included as units to be permitted in the Application. Include a description of the

closure status of each such unit. According to Permittees' List of Permitted and Interim Status Units at LANL, dated January 10, 2002, and submitted to NMED on January 16, 2002, TA-50-37 Room 112 does not currently exist, while the Application, page A-3, states that Room 112 is an existing interim status or permitted unit. Clarify the status of Room 112.

7001 1940 0004 3929 1004

SANTA FE NM MAR 06 '02

PB METER 7119268

4.40 U.S. POSTAGE

NAME [illegible]
Z#
DATE 3/11/2002

State of New Mexico

ENVIRONMENT DEPARTMENT
Hazardous Waste Bureau
2905 Rodeo Park Drive East - Building 1
Santa Fe, New Mexico 87505
www.nmenv.state.nm.us

Dr. John C. Browne, Director
Los Alamos National Laboratory
P.O.BOX 1663, Mail Stop A100
Los Alamos, New Mexico 87545

520440

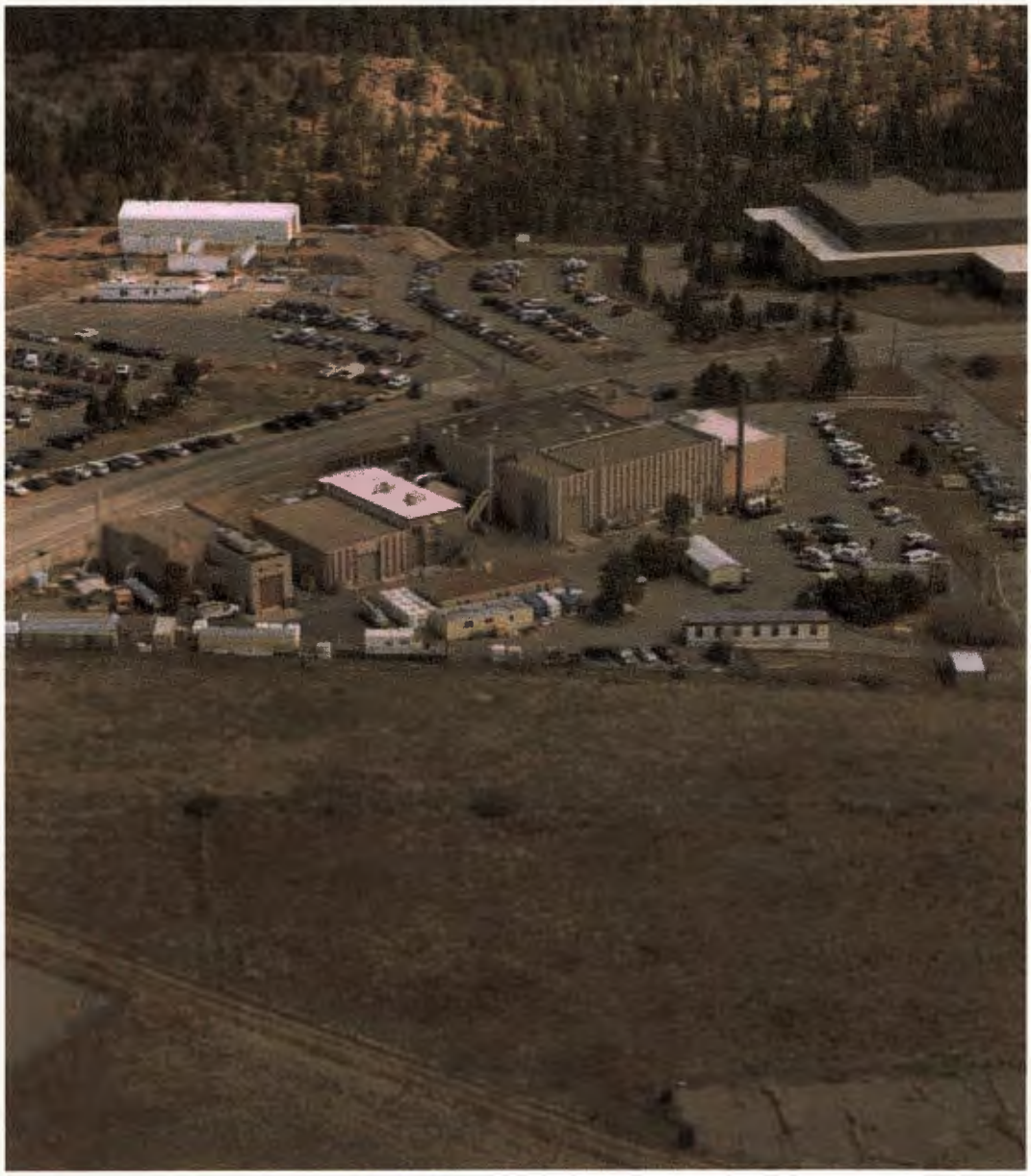
APPENDIX B

TA-50 SWMU REPORT

TA-50, Waste Management Site

TA-50 is located near the center of the LANL complex. The site contains 33 waste management structures (including office trailers, tanks, storage sheds, and buildings). Waste management activities include treating radioactive liquid waste, reducing the size and volume of TRU wastes, and characterizing TRU wastes.

The facilities at TA-50 support LANL's waste management activities for several types of waste, including storing or disposing of solid and liquid, low-level radioactive waste, low-level mixed waste, TRU waste, and hazardous waste. The major facilities at TA-50 are the RLWTF; the WCRRF, formerly known as the Size Reduction Facility; and the RAMROD Facility.



TA-50 — Waste Management Site

This page intentionally left blank.

SWMU 50-001(a) — Active waste treatment facility TA-50-1

Administrative Authority	NMED	**Former Operable Unit**	OU 1147
Technical Area	TA-50	**Dates of Operation**	1963-Present
Has ER Sampled the Site?	No	**ER Remedial Action Conducted?**	No
Structure Number	50-1	**Other Remedial Action Conducted?**	No

Unit Description

SWMU 50-001(a) is an active radioactive liquid waste treatment plant (Building 50-1) that has operated continuously since its construction in 1963. Building 50-1 is designed to treat 250 gal./min of wastewater, primarily to remove TRU elements through neutralization, flocculation and clarification, pH control, ion exchange, and filtration. Building 50-1 treats only low-level liquid wastes from many TAs to remove target contaminants and then monitors and discharges treated effluent to NPDES-permitted Outfall 051 in Mortandad Canyon [SWMU 50-006(d)]. Treatment sludges subsequently are managed at TA-54, MDA G. Building 50-1 houses three container storage areas, one in Room 59 [AOC 50-003(a)], the second in a storage locker [structure 50-114, which was former AOC 50-003(d)], and the third in the basement of the Decontamination Operations Facility (in Rooms 34B/34C, 35, 36, and 38/38A). A system of drainlines [SWMU 50-001(b)] and tanks [SWMUs 50-002(a) and 50-002(b)-00] is used to transfer, treat, and temporarily store the liquid waste and treatment sludge associated with Building 50-1. In July 1990, core samples collected from boreholes drilled through the floor around the pH adjustment tank or "grit chamber" indicated that the inlet line or the chamber leaked. Influent wastes subsequently were rerouted to flow directly into the pH adjustment tank in Building 50-2.

ER Project Activities

Information presented in this section was derived from previously published documents. RFI activities conducted at this site are described in detail in the documents listed in the reference section below.

This SWMU was proposed for NFA in an August 2000 permit modification request based on its active status and because the hazardous waste container storage areas within Building 50-1 are listed in Module VIII of LANL's Hazardous Waste Facility Permit. No additional RFI activities have been conducted at this site.

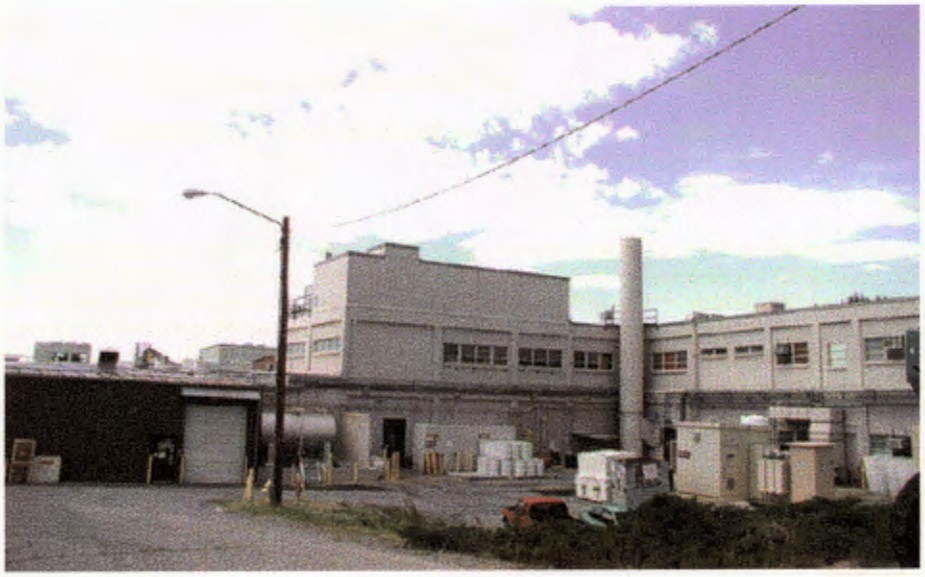
ER Project Sampling Summary

No analytical samples were collected at this site.

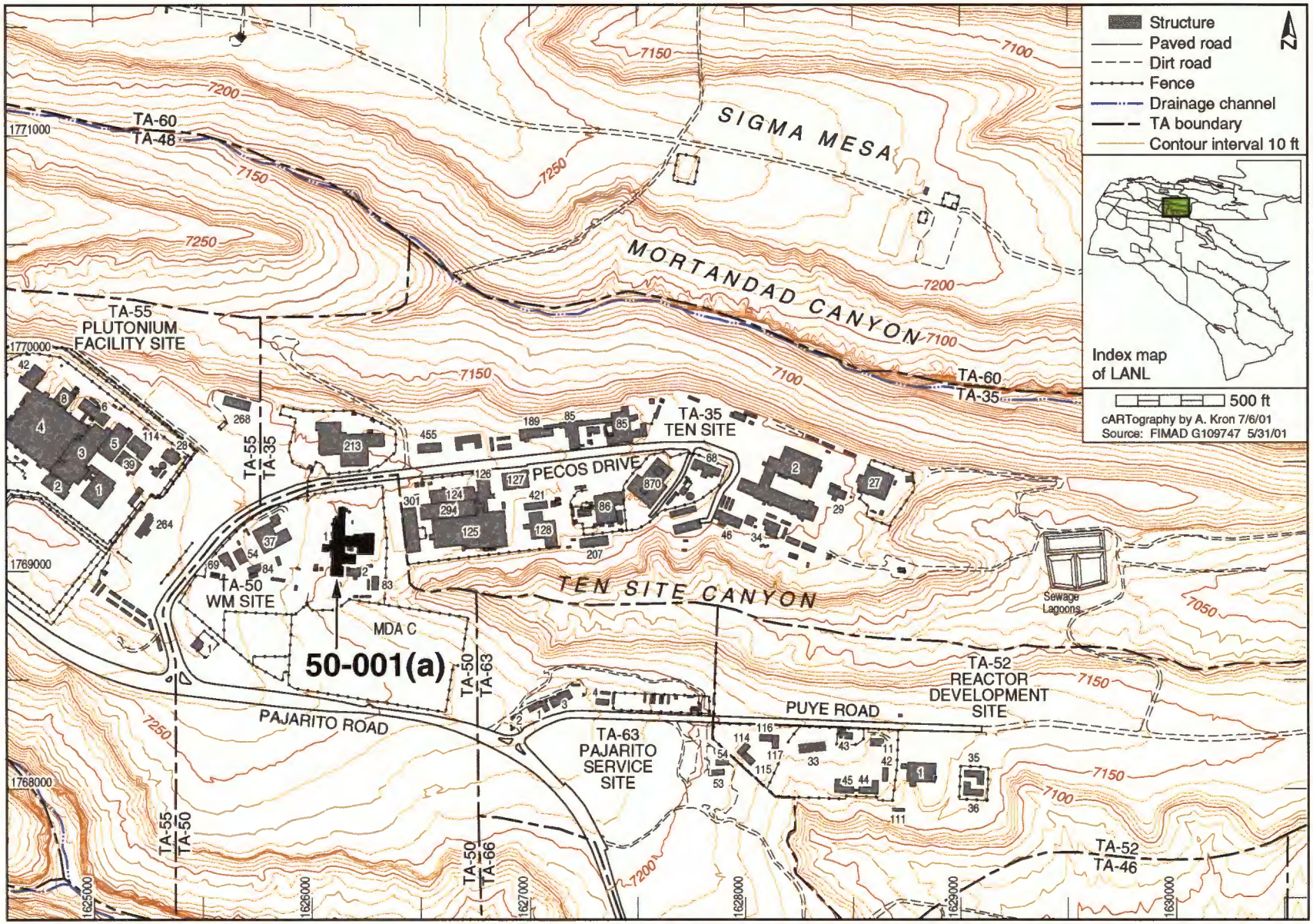
References

RFI Work Plan for Operable Unit 1147 — LA-UR Number: 92-0969

Class I Permit Modification Request, No Further Action Proposals, August 2000 — LA-UR Number: N/A



View of SWMU 50-001(a)


Structure
Paved road
Dirt road
Fence
Drainage channel
TA boundary
Contour interval 10 ft
N
Index map of LANL
500 ft
cARTography by A. Kron 7/6/01
Source: FIMAD G109747 5/31/01
SIGMA MESA
MORTANDAD CANYON
TEN SITE CANYON
TA-60
TA-48
TA-60
TA-35
TA-55
PLUTONIUM
FACILITY SITE
TA-35
TEN SITE
PECOS DRIVE
TA-50
WM SITE
MDA C
50-001(a)
PAJARITO ROAD
PUYE ROAD
TA-63
PAJARITO
SERVICE
SITE
TA-52
REACTOR
DEVELOPMENT
SITE
TA-52
TA-46
Sewage Lagoons
TA-55
TA-35
TA-55
TA-50
TA-50
TA-63
TA-50
TA-66
1771000
1770000
1769000
1768000
1625000
1626000
1627000
1628000
1629000
1630000
7200
7150
7250
7100
7050

This page intentionally left blank.

AOC 50-001(b) — Waste lines and manholes

Administrative Authority	DOE	**Former Operable Unit**	OU 1147
Technical Area	TA-50	**Dates of Operation**	1963-Present
Has ER Sampled the Site?	No	**ER Remedial Action Conducted?**	No
Structure Number	Various	**Other Remedial Action Conducted?**	No

Unit Description

AOC 50-001(b) is the active underground drainline system through which liquid waste is transferred to a radioactive liquid waste treatment facility (Building 50-1). A manhole (structure 50-72) is the central collection area for most incoming liquid waste. Three lines feed into structure 50-72. A major line connecting several TAs to this manhole was constructed in 1982 to replace an old line [SWMU 50-004(a)-00]. The new line is a double polyethylene pipe that enters structure 50-72 from the north side of Pecos Drive. Another waste line into structure 50-72, completed in 1982, transports low-level radioactive liquids from structure 50-73, which receives wastes from Building 50-69 (a volume reduction facility, AOC 50-008) and Building 50-37 (the incinerator complex, AOC 50-007). This line is a 6-in. polyethylene line encased in a 10-in. polyethylene line that has leak monitor and vacuum test capabilities. A third line, also installed in 1982, transports low-level radioactive waste from TA-55 to structure 50-72 through manholes 50-016 and 50-78. The line consists of an inner stainless steel pipe encased in a PVC pipe and has leak-monitor and vacuum test capabilities. All manholes that transport wastewater to Building 50-1 are monitored continuously. A single drainline carried all influent from structure 50-72 into the grit tank at Building 50-1 until a leak around the grit tank was detected in 1990. The line now bypasses the grit chamber and passes through the neutralization chamber before it connects to the structure 50-2 tank farm [SWMU 50-002(a)]. The line consists of an inner 8-in. schedule 40 stainless steel pipe and an outer 10-in. schedule 10 stainless steel pipe. Structure 50-7, another component of the influent waste system, is connected to the waste line from the tank truck unloading station (structure 50-77). Structure 50-7 has been out of service since the early 1990s.

Four other waste lines run from TA-55 to Building 50-1 through structure 50-106 to tanks in an underground vault (structure 50-66). Three of the lines are 1.5-in. stainless steel lines, each encased in 3-in. PVC. Two of the three lines carry caustic and acid wastes with high radioactivity; the third line is a spare that has never been used. The fourth line, which is for industrial waste, is a 2-in.-diameter stainless steel line encased in 3-in. PVC. The lines operate by gravity flow, and the end of each is continuously monitored at TA-55, at structure 50-57, and at structure 50-66 by a drip-tray and conductivity-probe system wired to a computer for continuous readout. The three nonindustrial waste lines were replaced in 1994; however, the new lines have not yet been put into service. Soil sampling was scheduled to determine if contaminants had leaked from the pipes. According to the 1990 SWMU report, there was some concern about contamination from the waste lines carrying TA-55 effluent because the original vacuum seals had lost their integrity; however, the drip pans have never collected fluid that indicated the inner lines were leaking. The area where the lines run into Building 50-1 and the area west and north of the tank farm (structure 50-2) were sampled in August 1990. Sample results showed no radionuclides above BVs.

ER Project Activities

RFI activities conducted at this site are described in detail in the documents listed in the reference section below. No additional RFI activities have been conducted at this site.

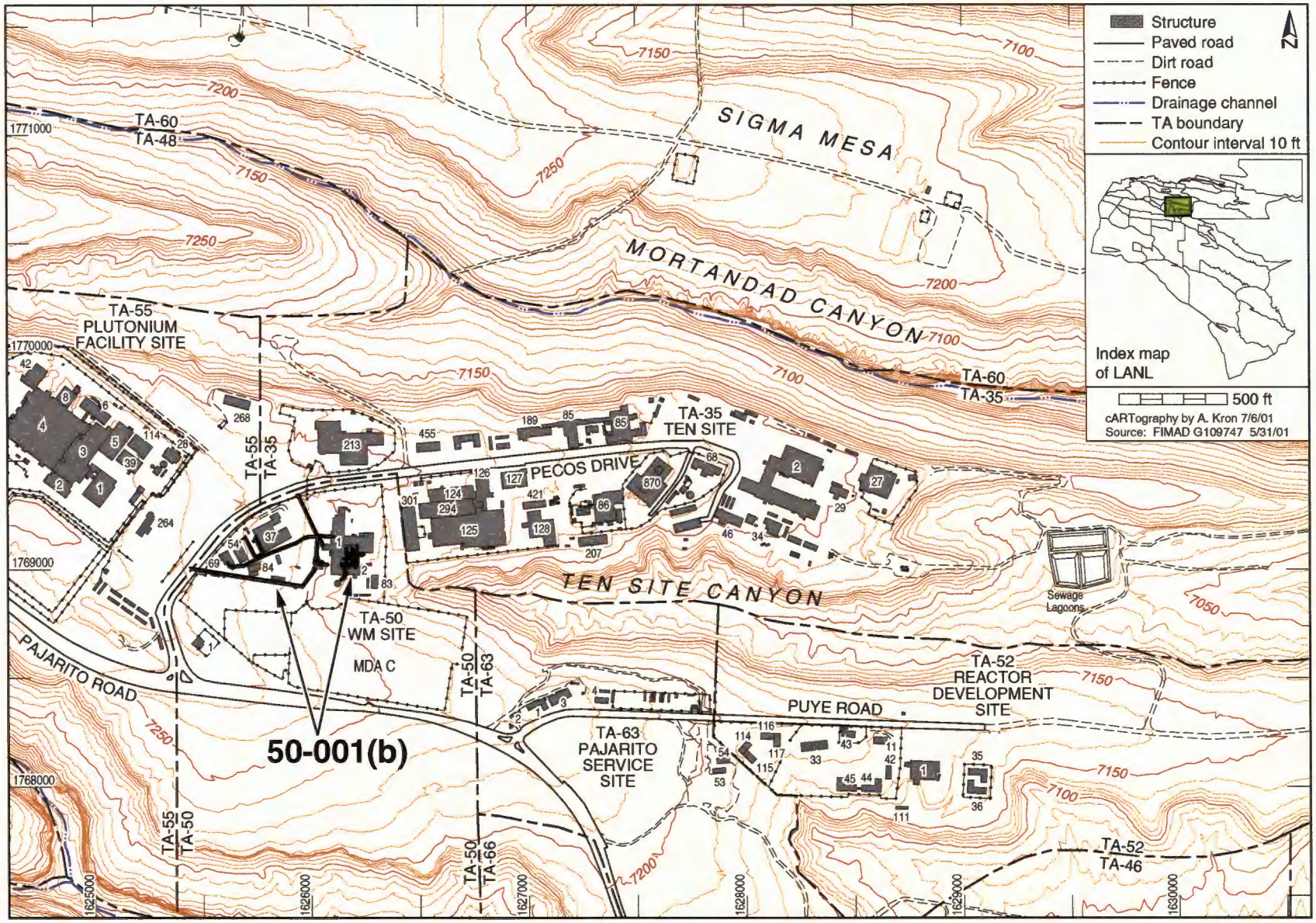
ER Project Sampling Summary

No analytical samples were collected at this site.

References

RFI Work Plan for Operable Unit 1147 — LA-UR Number: 92-0969

No photo; subsurface unit


Structure
Paved road
Dirt road
Fence
Drainage channel
TA boundary
Contour interval 10 ft
N
Index map of LANL
500 ft
cARTography by A. Kron 7/6/01
Source: FIMAD G109747 5/31/01
SIGMA MESA
MORTANDAD CANYON
TEN SITE CANYON
TA-60
TA-48
TA-55
PLUTONIUM FACILITY SITE
TA-35
TEN SITE
PECOS DRIVE
TA-50
WM SITE
MDA C
50-001(b)
PAJARITO ROAD
TA-63
PAJARITO SERVICE SITE
PUYE ROAD
TA-52
REACTOR DEVELOPMENT SITE
TA-46
Sewage Lagoons
7200
7150
7250
7100
7050
1771000
1770000
1769000
1768000
1625000
1626000
1627000
1628000
1629000
1630000

SWMU 50-002(a) — Underground tanks

Administrative Authority	NMED	**Former Operable Unit**	OU 1147
Technical Area	TA-50	**Dates of Operation**	1963-Present
Has ER Sampled the Site?	Yes	**ER Remedial Action Conducted?**	No
Structure Number	50-2	**Other Remedial Action Conducted?**	No

Unit Description

SWMU 50-002(a) consists of an underground, reinforced-concrete tank vault (structure 50-2) housing six flow-through process tanks, an equipment room, and waste-transfer lines associated with a radioactive liquid waste treatment facility (Building 50-1). The floor of the vault is 17 ft below ground. Holding tanks located within the vault (structure 50-2) include two incoming raw-waste tanks (25,000 gal. and 75,000 gal.); one 25,000-gal. low-level sludge tank; and two 25,000-gal. tanks used to store treated waste before discharge to NPDES-permitted Outfall 051 [SWMU 50-006(d)], which discharges to Mortandad Canyon. One of these tanks is used to store waste during D&D activities. Wastes are transported to the vault (structure 50-2) through the system of transfer lines. Waste-transfer lines include six cast-iron lines (including waste lines 55 and 67) connecting Building 50-1 to the equipment room in structure 50-2; four steel lines added in 1984 to connect Room 61 in Building 50-1 to the equipment room in structure 50-2; five cast-iron lines from drains in Building 50-1 to the D&D tank in structure 50-2; a cast-iron line from a sink in the vehicle-decontamination facility to the D&D tank in structure 50-2; an influent line connecting Building 50-2 to a 100,000-gal. emergency holding tank (structure 50-90); and an effluent line connecting structure 50-90 to one of the 25,000-gal. influent tanks in structure 50-2. Two accidental operational releases from the overflow of a sump in structure 50-2, causing untreated wastewater to be discharged to waste lines 55 and 67 (the waste lines for treated effluent) and into the outfall area at the head of Ten Site Canyon [see SWMU 50-006(a)]. The releases occurred in July and September 1974. In February 1975, waste line 67 was plugged at its outfall. The integrity of the tank farm and the pipelines tied to Building 50-1 were checked in 1990, and no leaks were found. The 75,000-gal. influent tank and 25,000-gal. sludge tank were taken offline in June 2001 and are scheduled for decontamination in FY2002.

ER Project Activities

Information presented in this section was derived from previously published documents. RFI activities conducted at this site are described in detail in the documents listed in the reference section below.

One sample was collected at this SWMU in 1995; no additional RFI activities have been conducted at this site.

ER Project Sampling Summary

The following table shows the number of analytes that exceeded BVs, FVs, and SALs that were in use in calendar year 2002. These data reflect site conditions before any remedial activities that may have occurred, as discussed in the ER Project activities section above. BVs are naturally occurring concentrations of inorganic chemicals and radionuclides in soil, sediment, or tuff before any influence from LANL operations. FVs are concentrations of radionuclides in soil, sediment, or tuff that resulted from global atmospheric deposition unrelated to LANL releases. SALs are concentrations of chemicals or radionuclides based on a residential exposure, below which there is no potential unacceptable risk to human health.

Analytical Suite Sampled	No. of Chemicals Detected	No. of Chemicals >CY2002 BV/FV (If Applicable)	No. of Chemicals >CY2002 SAL (Residential)
Inorganic chemicals	17	0	1
PCBs	0	N/A	0
Radionuclides	3	1	1
SVOCs	0	N/A	0
VOCs	0	N/A	0

The following table provides the maximum concentrations of analytes that exceeded CY2002 SALs.

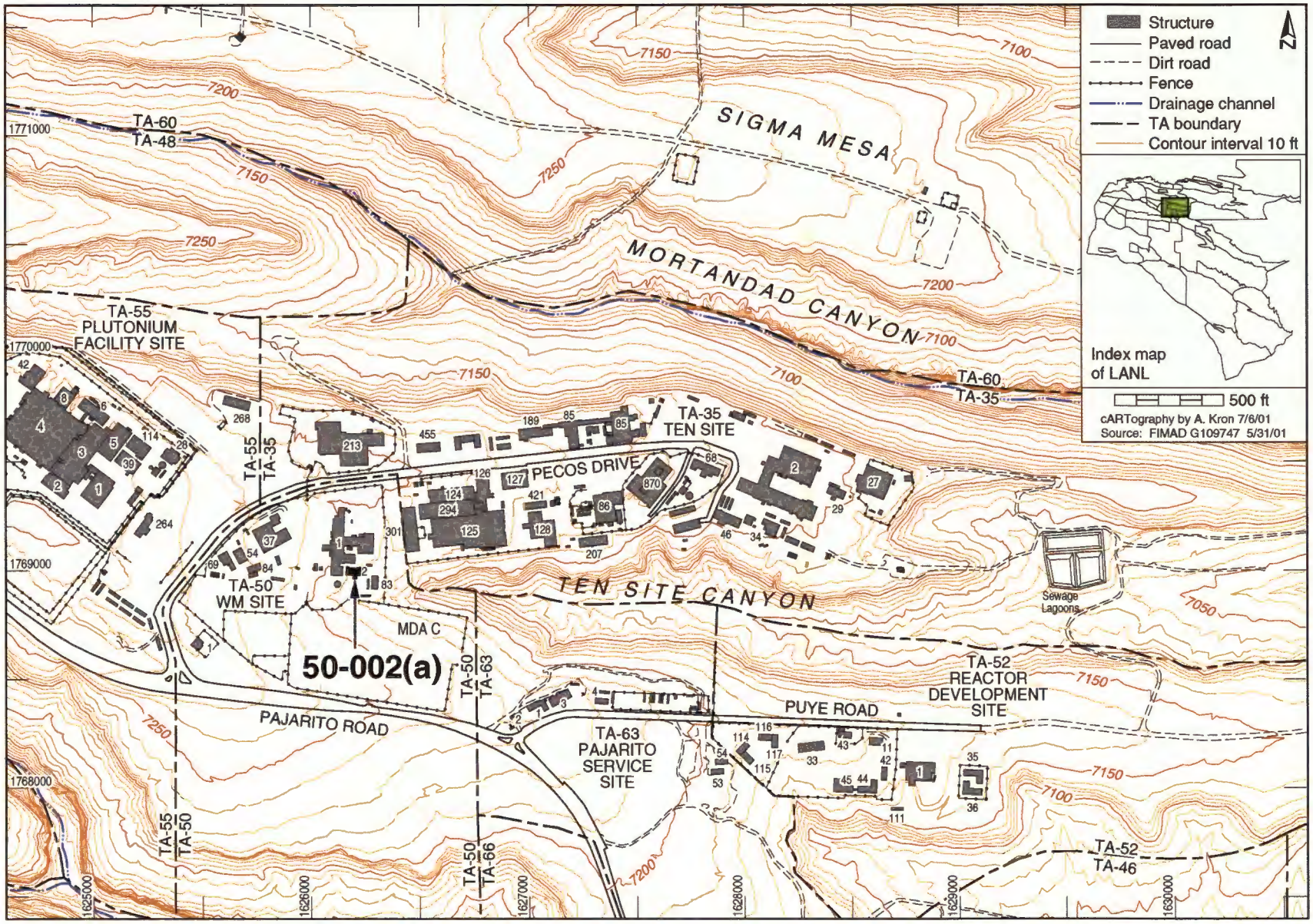
Analytical Suite	Analyte	Maximum Concentration	CY2002 SAL (Residential)
Inorganic chemicals	Arsenic	1.4 mg/kg	0.39 mg/kg
Radionuclides	Tritium	2620 pCi/g	880 pCi/g

References

RFI Work Plan for Operable Unit 1147 LA-UR Number: 92-0969

View of SWMU 50-002(a)

View of SWMU 50-002(a)


Structure
Paved road
Dirt road
Fence
Drainage channel
TA boundary
Contour interval 10 ft
N
Index map of LANL
500 ft
cARTography by A. Kron 7/6/01
Source: FIMAD G109747 5/31/01
SIGMA MESA
MORTANDAD CANYON
TEN SITE CANYON
TA-60
TA-48
TA-60
TA-35
TA-55 PLUTONIUM FACILITY SITE
TA-35 TEN SITE
PECOS DRIVE
TA-50 WM SITE
MDA C
50-002(a)
PAJARITO ROAD
TA-63 PAJARITO SERVICE SITE
PUYE ROAD
TA-52 REACTOR DEVELOPMENT SITE
Sewage Lagoons
TA-52
TA-46
TA-55
TA-35
TA-55
TA-50
TA-50
TA-63
TA-50
TA-66
1771000
1770000
1769000
1768000
1625000
1626000
1627000
1628000
1629000
1630000
7200
7150
7250
7100
7050

This page intentionally left blank.

SWMU 50-002(b)-00 — Vaulted underground tanks for TA-55 wastes

Administrative Authority	NMED	**Former Operable Unit**	N/A
Technical Area	TA-50	**Dates of Operation**	Unknown
Has ER Sampled the Site?	No	**ER Remedial Action Conducted?**	No
Structure Number	50-67, 50-68	**Other Remedial Action Conducted?**	No

Unit Description

Consolidated SWMU 50-002(b)-00 consists of former SWMUs 50-002(b) and 50-002(c), two active waste tanks (structures 50-67 and 50-68) and their associated inlet and outlet lines housed in an underground, reinforced-concrete tank vault (structure 50-66) at the radioactive liquid waste treatment facility [Building 50-1, SWMU 50-001(a)]. The concrete vault measures 18 ft x 16 ft x 14 ft deep and is located about 30 ft from the southwest corner of Building 50-1. The tanks and vault were constructed exclusively to store radioactive caustic waste (structure 50-67) and acidic waste (structure 50-68) from TA-55, where TRU wastes are generated. TRU wastes are processed separately from other wastes. The inlet lines consist of four stainless steel pipes encased in PVC. One line is a capped backup. The second line carries radioactive acid waste to the acid waste tank. The third line carries radioactive caustic waste to the caustic tank. Wastes are transferred from the tanks through two double stainless steel lines to Room 60, Building 50-1. The operation is monitored for criticality hazards, and necessary adjustments are made before treatment; from 10 to 12 containers of treated TRU waste are generated annually. The fourth line carries radioactive liquid wastes to a manhole (structure 50-72) [see AOC 50-001(b)]. No documented releases are associated with SWMU 50-002(b)-00.

ER Project Activities

RFI activities conducted at this site are described in detail in the documents listed in the reference section below. No additional RFI activities have been conducted at this site.

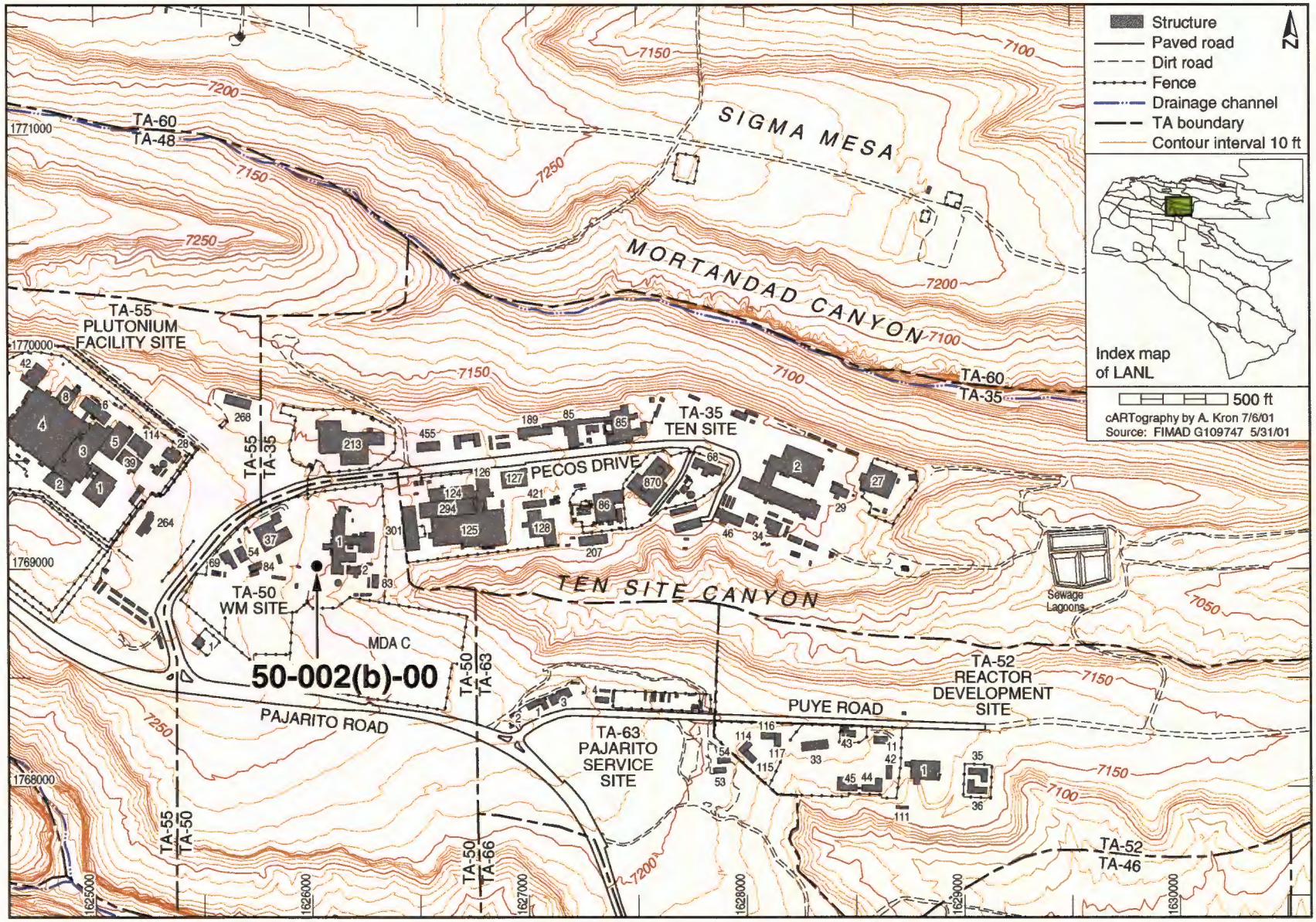
ER Project Sampling Summary

No analytical samples were collected at this site.

References

RFI Work Plan for Operable Unit 1147	LA-UR Number: 92-0969

View of SWMU 50-002(b)-00


Structure
Paved road
Dirt road
Fence
Drainage channel
TA boundary
Contour interval 10 ft
N
Index map of LANL
500 ft
cARTography by A. Kron 7/6/01
Source: FIMAD G109747 5/31/01
SIGMA MESA
MORTANDAD CANYON
TEN SITE CANYON
TA-60
TA-48
TA-35
TA-55
PLUTONIUM FACILITY SITE
TA-35
TEN SITE
PECOS DRIVE
TA-50
WM SITE
MDA C
50-002(b)-00
PAJARITO ROAD
TA-63
PAJARITO SERVICE SITE
PUYE ROAD
TA-52
REACTOR DEVELOPMENT SITE
Sewage Lagoons
TA-52
TA-46
TA-55
TA-50
TA-63
TA-66
1771000
1770000
1769000
1768000
1625000
1626000
1627000
1628000
1629000
1630000
7200
7150
7250
7100
7050

AOC 50-002(d) — Aboveground storage tank

Administrative Authority	DOE	**Former Operable Unit**	OU 1147
Technical Area	TA-50	**Dates of Operation**	1964-1996
Has ER Sampled the Site?	No	**ER Remedial Action Conducted?**	No
Structure Number	50-5	**Other Remedial Action Conducted?**	Yes

Unit Description

AOC 50-002(d) is a decommissioned aboveground 5000-gal. stainless steel tank (structure 50-5) previously used for the storage of unused product (nitric acid). The storage tank was part of the ion-exchange column system, which was designed to remove any radioisotopes not removed by the clariflocculator system at the radioactive liquid waste treatment facility (Building 50-1). Because the clariflocculator system was successful in removing radioisotopes from wastewater to levels consistently below DOE limits, the ion-exchange column was rarely used and the tank was never filled to capacity. The tank (structure 50-5) is located adjacent to the north wall of Room 60D at Building 50-1 and replaced the original nitric acid tank in late 1964 after the original rubber-lined carbon steel tank reportedly leaked. The new tank (structure 50-5) is supported on concrete saddles that extend 5 ft below ground surface. A concrete sump filled with limestone chips (structure 50-12) was installed beneath the new tank. The tank was vented to the sump to neutralize any nitric acid vapors emitted when the tank was filled. Retaining walls and a concrete slab were installed in 1988 to contain any spillage. The tank was decommissioned (emptied, triple rinsed, and all piping disconnected) in 1996.

ER Project Activities

Information presented in this section was derived from previously published documents. RFI activities conducted at this site are described in detail in the documents listed in the reference section below.

The original tank was replaced after a reported leak, and the new tank (structure 50-5) was managed in accordance with LANL's Spill Prevention Control and Countermeasures Plan. No documented releases have occurred from structure 50-5. AOC 50-002(d) was recommended for NFA in a 2000 RFI report.

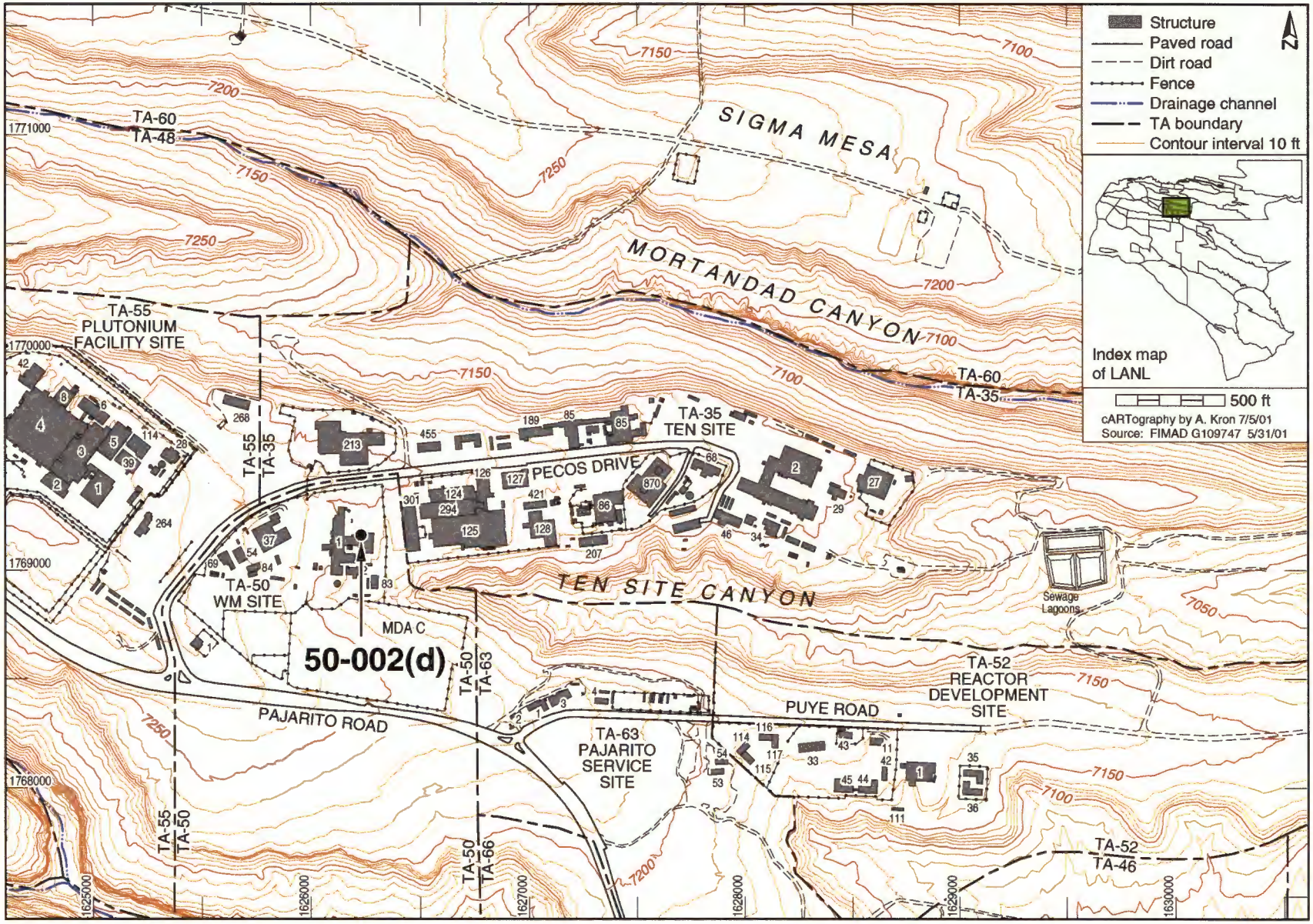
ER Project Sampling Summary

No analytical samples were collected at this site.

References

RFI Work Plan for Operable Unit 1147	LA-UR Number: 92-0969
RFI Report for Potential Release Site 50-002(d)	LA-UR Number: 00-2514

View of AOC 50-002(d)


Structure
Paved road
Dirt road
Fence
Drainage channel
TA boundary
Contour interval 10 ft
N
Index map of LANL
500 ft
cARTography by A. Kron 7/5/01
Source: FIMAD G109747 5/31/01
SIGMA MESA
MORTANDAD CANYON
TEN SITE CANYON
TA-60
TA-48
TA-60
TA-35
TA-55
PLUTONIUM
FACILITY SITE
TA-35
TEN SITE
PECOS DRIVE
TA-50
WM SITE
MDA C
50-002(d)
PAJARITO ROAD
TA-63
PAJARITO
SERVICE
SITE
PUYE ROAD
TA-52
REACTOR
DEVELOPMENT
SITE
TA-52
TA-46
Sewage
Lagoons
TA-55
TA-35
TA-55
TA-50
TA-50
TA-63
TA-50
TA-66
1771000
1770000
1769000
1768000
1625000
1626000
1627000
1628000
1629000
1630000
7200
7150
7250
7100
7050

This page intentionally left blank.

AOC 50-003(a) — Container storage area

Administrative Authority	DOE	**Former Operable Unit**	OU 1147
Technical Area	TA-50	**Dates of Operation**	Unknown
Has ER Sampled the Site?	No	**ER Remedial Action Conducted?**	No
Structure Number	N/A	**Other Remedial Action Conducted?**	No

Unit Description

AOC 50-003(a) is a RCRA interim status mixed-waste container storage area located in Room 59 of the radioactive liquid waste treatment facility (Building 50-1). Room 59 was constructed with steel framing and insulated metal roofing and siding; the design capacity is the equivalent of twenty-seven 55-gal. containers of solid mixed low-level, mixed TRU, and hazardous waste. The area is used to store containers of solid cemented mixed TRU sludge resulting from waste treatment activities in Room 60A; waste containing any free liquids cannot be stored in Room 59. The cementation process is generator treatment being performed in a less-than-90-day storage area. Following cementation, containers of mixed TRU waste are temporarily stored in Room 59 in accordance with the permit requirements. The waste containers are subsequently transported to other LANL RCRA-permitted mixed-waste management facilities for storage.

ER Project Activities

Information presented in this section was derived from previously published documents. RFI activities conducted at this site are described in detail in the documents listed in the reference section below.

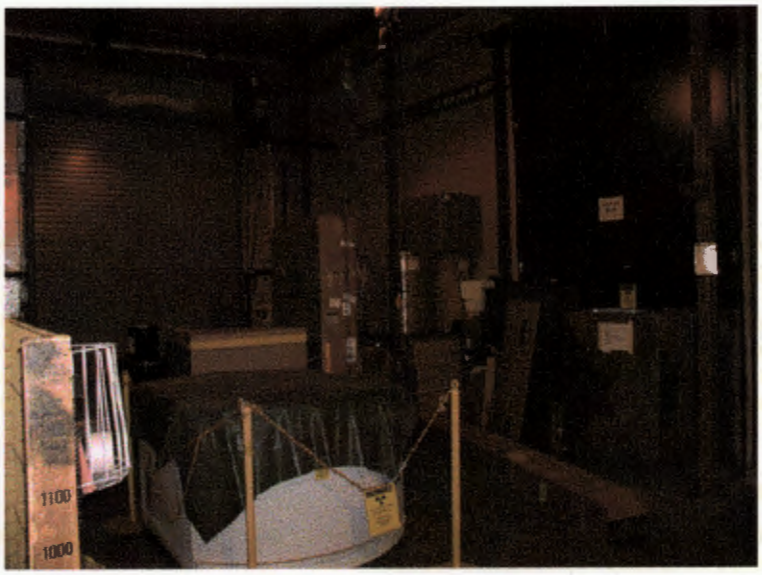
AOC 50-003(a) is designed and operated in accordance with 20 NMAC 4.1 Subpart V and 40 CFR 264 Subpart B, C, and I requirements. Collectively, these requirements address the active management of the waste. AOC 50-003(a) was recommended for NFA in a 1999 RFI report.

ER Project Sampling Summary

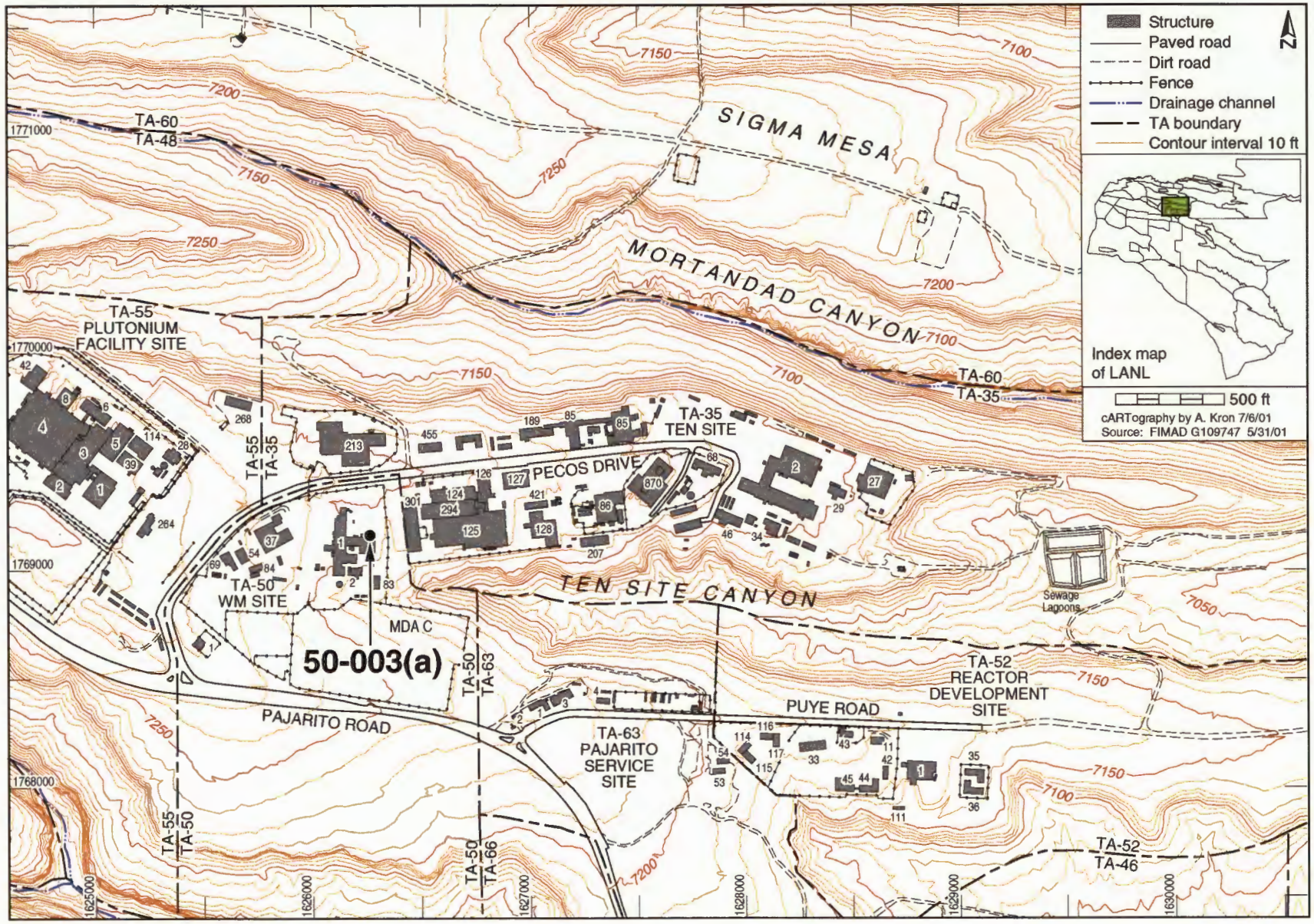
No analytical samples were collected at this site.

References

RFI Work Plan for Operable Unit 1147	LA-UR Number: 92-0969
RFI Report for Potential Release Site 50-003(a) (Container Storage Area)	LA-UR Number: 99-4834



View of AOC 50-003(a)


Structure
Paved road
Dirt road
Fence
Drainage channel
TA boundary
Contour interval 10 ft
N
Index map of LANL
500 ft
cARTography by A. Kron 7/6/01
Source: FIMAD G109747 5/31/01
SIGMA MESA
MORTANDAD CANYON
TEN SITE CANYON
TA-60
TA-48
TA-60
TA-35
TA-55
PLUTONIUM
FACILITY SITE
TA-35
TEN SITE
PECOS DRIVE
TA-50
WM SITE
MDA C
50-003(a)
TA-50
TA-63
PAJARITO ROAD
TA-63
PAJARITO
SERVICE
SITE
PUYE ROAD
TA-52
REACTOR
DEVELOPMENT
SITE
Sewage Lagoons
TA-55
TA-35
TA-55
TA-50
TA-50
TA-66
TA-52
TA-46
7200
7150
7250
7100
7050
1771000
1770000
1769000
1768000
1625000
1626000
1627000
1628000
1629000
1630000

This page intentionally left blank.

SWMU 50-004(a)-00 — Historical waste lines and underground vault, Radioactive Liquid Waste Treatment Facility

Administrative Authority	NMED	**Former Operable Unit**	N/A
Technical Area	TA-50	**Dates of Operation**	1963-1989
Has ER Sampled the Site?	Yes	**ER Remedial Action Conducted?**	No
Structure Number	Various	**Other Remedial Action Conducted?**	Yes

Unit Description

Consolidated SWMU 50-004(a)-00 consists of former SWMUs 50-004(a), 50-004(b), and 50-004(c), all former components of the radioactive liquid waste treatment facility, Building 50-1.

Former SWMU 50-004(a) includes locations through which underground radioactive liquid waste and industrial waste lines were routed to the TA-50 radioactive liquid waste treatment facility from LANL technical areas located along Pajarito Road. The majority of these waste lines were decommissioned and removed in 1975; excavated soils were characterized for radioactive constituents and remediated to meet ALARA levels.

Former SWMU 50-004(b) is the location of a decommissioned underground vault (structure 50-3) that housed three stainless steel-lined concrete storage tanks, ranging in volume from 1000 to 4500 gal., used to collect and store wastewater from the Omega Reactor. Waste lines and manholes to the collection tank structure included waste line 49 from TA-35 and waste line 50 from Building 50-1. Waste line 49, the vault, and the tanks were removed in 1989. Soil sampled during decommissioning was screened for radionuclides and chemical constituents. No elevated concentrations were detected.

Former SWMU 50-004(c) consists of 13 industrial waste lines (44, 45, 45a, 46, 47, 48, 48a, 49, 54, 55, 56, 65, and 67) and three associated manholes (structures 50-6, -55, and -56) that discharged to the decommissioned underground vault (structure 50-3). All of the waste lines and manholes associated with former SWMU 50-004(b) were removed between 1981 and 1989, with the exception of waste line 56, which remains in service. Radionuclide contamination discovered during decommissioning of the waste lines and manholes was remediated to ALARA levels through removal of pipe and affected soil to approximately 19 ft below grade. Field screening for radionuclides confirmed that ALARA levels had been met; however, no samples were analyzed for hazardous constituents.

ER Project Activities

Information presented in this section was derived from previously published documents. Any discussion of BVs, FVs, and SALs is taken from the referenced documents and reflects the values in use at the time the documents were written. RFI activities conducted at this site are described in detail in the documents listed in the reference section below.

In 1994, an RFI was conducted at former SWMUs 50-004(a) and 50-004(c), with the objective of filling data gaps identified in the RFI work plan and to determine the presence and/or absence of radionuclides and hazardous constituents from historical operational releases. The RFI at former SWMU 50-004(a) included the trench and manholes through which a 520-ft section of the original 6-in. VCP waste line passed. Part of the waste line was removed in 1975 to clear the area for construction of Building 50-37 (a new line, acid waste line 45, bypassed the Building 50-37 construction zone and replaced the decommissioned line until 1984, when the recently installed waste line also was removed). Five vertical boreholes located approximately 100 ft apart were advanced along the waste line trench to the contact between trench fill and trench bottom. Eleven samples, collected from the five locations, were field-screened for radionuclides and organic vapors. Radionuclide screening results were all at or near BVs and organic vapor results were below 1 ppm. The samples were subsequently submitted to an off-site laboratory for analysis for inorganic chemicals, organic chemicals, and radionuclides. Elevated levels of beryllium, plutonium-238, and plutonium-239 were detected at levels above BVs, but none of the detects exceeded SALs. At former SWMU 50-004(c), 67 samples were collected from depths up to approximately 14 ft in 29 locations. Samples were field-screened for radionuclides and organic vapors and submitted for off-site laboratory analysis for organic chemicals, inorganic chemicals, and radionuclides. Analytical results showed elevated levels of beryllium, copper, chromium, lead, mercury, calcium, potassium, nickel, zinc, plutonium-238, plutonium-239, and uranium-235. The human health risk assessment, documented in the RFI report, indicated that the contaminants identified above BVs were not considered COPCs when compared with risk-based SALs. An ecological screening assessment was not completed for either of the former SWMUs. Former SWMUs 50-004(a) and 50-004(c) were recommended for NFA in the RFI report, which is currently under review by the NMED. No additional RFI activities have been conducted at former SWMU 50-004(b).

Based on common operational history, waste streams, geographical proximity, contaminant transport mechanisms, and the investigation required to assess nature and extent of contamination, all three former SWMUs were consolidated during the FY2000 annual unit audit. Based on the current SAL screening, presented in the table below, only arsenic exceeds SALs at a maximum detected value of 6.5 mg/kg.

ER Project Sampling Summary

The following table shows the number of analytes that exceeded BVs, FVs, and SALs that were in use in calendar year 2002. These data reflect site conditions before any remedial activities that may have occurred, as discussed in the ER Project activities section above. BVs are naturally occurring concentrations of inorganic chemicals and radionuclides in soil, sediment, or tuff before any influence from LANL operations. FVs are concentrations of radionuclides in soil, sediment, or tuff that resulted from global atmospheric deposition unrelated to LANL releases. SALs are concentrations of chemicals or radionuclides based on a residential exposure, below which there is no potential unacceptable risk to human health.

Analytical Suite Sampled	No. of Chemicals Detected	No. of Chemicals >CY2002 BV/FV (If Applicable)	No. of Chemicals >CY2002 SAL (Residential)
Inorganic chemicals	17	16	1
PCBs	0	N/A	0
Radionuclides	8	6	0
SVOCs	0	N/A	0
VOCs	3	N/A	0

The following table provides the maximum concentrations of analytes that exceeded CY2002 SALs.

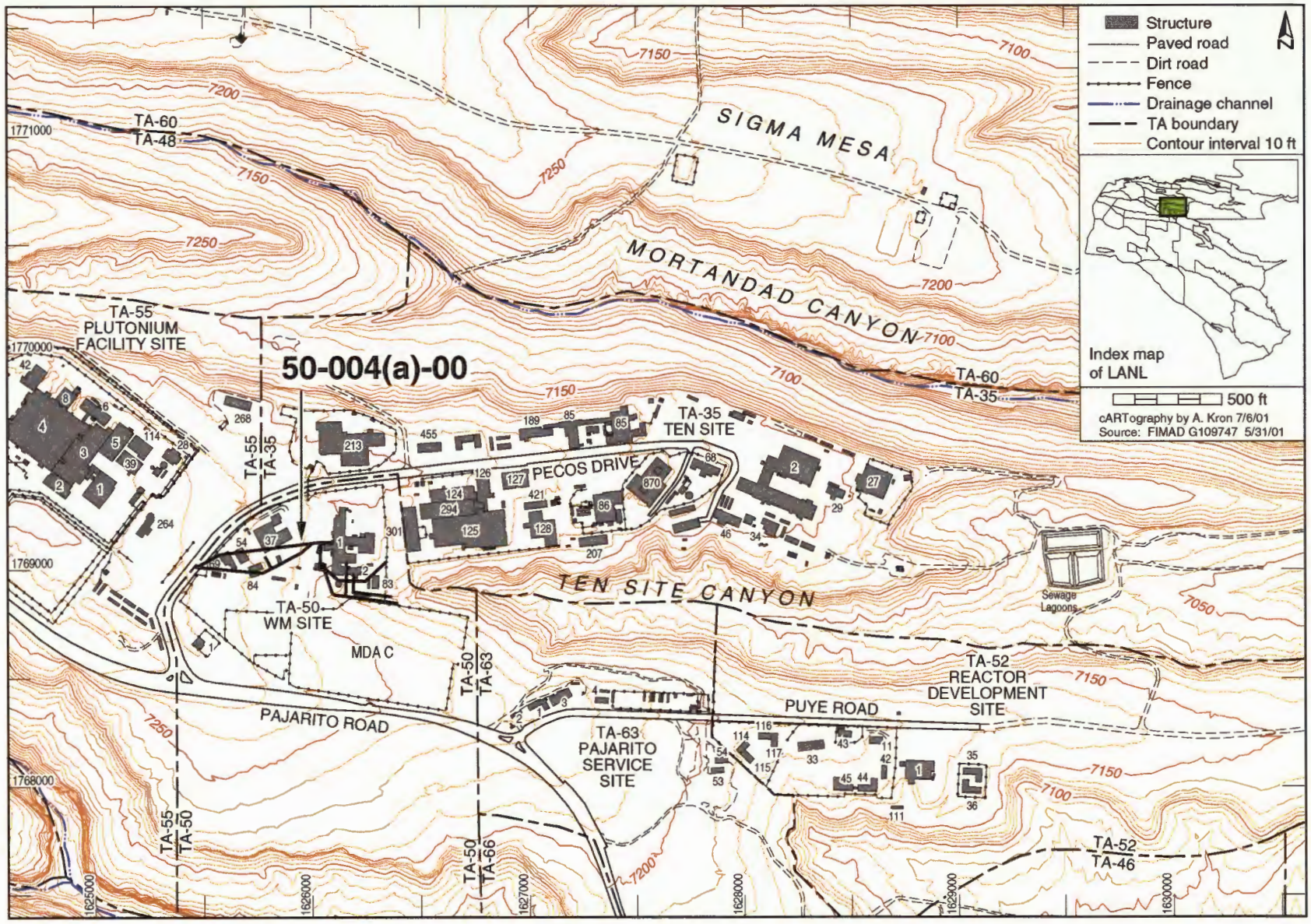
Analytical Suite	Analyte	Maximum Concentration	CY2002 SAL (Residential)
Inorganic chemicals	Arsenic	6.5 mg/kg	0.39 mg/kg

References

RFI Work Plan for Operable Unit 1147 — LA-UR Number: 92-0969

RFI Report for Potential Release Sites at TA-50: 50-004(a), 50-004(c), 50-011(a) (Located in Former Operable Unit 1147) — LA-UR Number: 96-148

No photo; subsurface unit


Structure
Paved road
Dirt road
Fence
Drainage channel
TA boundary
Contour interval 10 ft
Index map of LANL
500 ft
cARTography by A. Kron 7/6/01
Source: FIMAD G109747 5/31/01
SIGMA MESA
MORTANDAD CANYON
TEN SITE CANYON
50-004(a)-00
TA-60
TA-48
TA-55
PLUTONIUM
FACILITY SITE
TA-35
TEN SITE
PECOS DRIVE
TA-50
WM SITE
MDA C
PAJARITO ROAD
TA-63
PAJARITO
SERVICE
SITE
PUYE ROAD
TA-52
REACTOR
DEVELOPMENT
SITE
Sewage
Lagoons
TA-46
1771000
1770000
1769000
1768000
1625000
1626000
1627000
1628000
1629000
1630000
7200
7150
7250
7100
7050

This page intentionally left blank.

SWMU 50-006(a) — Operational release

Administrative Authority	NMED	**Former Operable Unit**	OU 1147
Technical Area	TA-50	**Dates of Operation**	1963-Present
Has ER Sampled the Site?	Yes	**ER Remedial Action Conducted?**	Yes
Structure Number	N/A	**Other Remedial Action Conducted?**	No

Unit Description

SWMU 50-006(a) is the outfall area at the head of Ten Site Canyon impacted by two accidental operational releases when a sump in a pumping station (Building 50-2) overflowed, causing untreated wastewater to be discharged to waste lines 55 and 67 (the waste lines for treated effluent). The releases occurred in July and September 1974. In February 1975, waste line 67 was plugged at its outfall. A soil sample collected from the outfall area when waste line 67 was plugged showed elevated levels of gross-alpha radioactivity. Analysis of additional soil samples collected below the waste line 67 outfall in September 1976 showed elevated levels of gross-alpha radioactivity extending 984 ft downgradient from the outfall. In 1981, both waste lines were completely removed. During the waste line removal operation, elevated levels of radionuclides, including plutonium-239, ruthenium-106, cesium-137, strontium-89, and yttrium-90, were detected. As a result, the outfall area was partially decontaminated by the removal of 70 cubic meters of contaminated soil [see description for SWMU 50-004(a)-00)]. The contaminated outfall area in Ten Site Canyon was subsequently marked with signs and tape.

ER Project Activities

Information presented in this section was derived from previously published documents. Any discussion of BVs, FVs, and SALs is taken from the referenced documents and reflects the values in use at the time the documents were written. RFI activities conducted at this site are described in detail in the documents listed in the reference section below.

The ER Project conducted an RFI at SWMU 50-006(a) in 1993 to determine the nature and extent of radionuclide and hazardous chemical contamination in and around the Ten Site Canyon outfall area. Sample locations were sited below the former waste line outfalls, on both banks of the drainage channel, and in the canyon drainage channel at regular intervals over a distance of approximately 1300 ft downstream from the TA-50 boundary. Samples were field-screened for organic vapors and radioactivity. Elevated gross-alpha radiation was found at one screening sample location, resulting in the selection of additional sample locations upstream and downstream from the area with elevated gross-alpha radiation. A total of 134 samples were collected from 53 locations during the RFI. Samples were analyzed for inorganic chemicals, VOCs, SVOCs, PCBs/pesticides, and radionuclides. Analytical results showed concentrations of PAHs, lead, mercury, nickel, silver, thallium, PCBs, thorium-232, cesium-137, cobalt-60, plutonium-238; plutonium-239/240, and strontium-90 above their respective BVs and/or SALs. Samples collected from a hummock in the stream channel approximately 500 ft downgradient of the outfall area showed the highest levels of cesium-137, plutonium-238, plutionium-239/240, and strontium-90. Because the hummock could be dislodged in a rain event, the 1995 RFI report recommended an interim action to remove the contaminated sediment.

The ER Project implemented an interim action to remove the hummock in November 1996. Approximately 0.72 cubic yards of radioactively contaminated soil was excavated and removed from the location in the stream channel where the highest levels of radionuclides had been detected during the RFI. Ten confirmation samples were collected from the excavated area and analyzed for gross-alpha and -beta radioactivity. Results reported in the 1997 interim action report showed gross-alpha radiation levels ranging from 8.91 pCi/g to 23.5 pCi/g, and gross-beta levels ranging from 0.0 pCi/g to 23.8 pCi/g, indicating that the interim action cleanup levels had been met.

ER Project Sampling Summary

The following table shows the number of analytes that exceeded BVs, FVs, and SALs that were in use in calendar year 2002. These data reflect site conditions before any remedial activities that may have occurred, as discussed in the ER Project activities section above. BVs are naturally occurring concentrations of inorganic chemicals and radionuclides in soil, sediment, or tuff before any influence from LANL operations. FVs are concentrations of radionuclides in soil, sediment, or tuff that resulted from global atmospheric

deposition unrelated to LANL releases. SALs are concentrations of chemicals or radionuclides based on a residential exposure, below which there is no potential unacceptable risk to human health.

Analytical Suite Sampled	No. of Chemicals Detected	No. of Chemicals >CY2002 BV/FV (If Applicable)	No. of Chemicals >CY2002 SAL (Residential)
Inorganic chemicals	12	11	1
PCBs	2	N/A	2
Radionuclides	10	10	6
SVOCs	16	N/A	4
VOCs	6	N/A	0

The following table provides the maximum concentrations of analytes that exceeded CY2002 SALs.

Analytical Suite	Analyte	Maximum Concentration	CY2002 SAL (Residential)
Inorganic chemicals	Arsenic	4.6 mg/kg	0.39 mg/kg
PCBs	Aroclor-1254	6 mg/kg	0.22 mg/kg
	Aroclor-1260	1.25 mg/kg	0.22 mg/kg
Radionuclides	Americium-241	170.9 pCi/g	39 pCi/g
	Cesium-137	72.83 pCi/g	5.3 pCi/g
	Cobalt-60	1.2991 pCi/g	1.2 pCi/g
	Plutonium-238	5190 pCi/g	49 pCi/g
	Plutonium-239	453 pCi/g	44 pCi/g
	Strontium-90	57.7 pCi/g	5.7 pCi/g
SVOCs	Benzo(a)anthracene	1.1 mg/kg	0.62 mg/kg
	Benzo(a)pyrene	1.2 mg/kg	0.062 mg/kg
	Benzo(b)fluoranthene	1.5 mg/kg	0.62 mg/kg
	Indeno(1,2,3-cd)pyrene	0.66 mg/kg	0.62 mg/kg

References

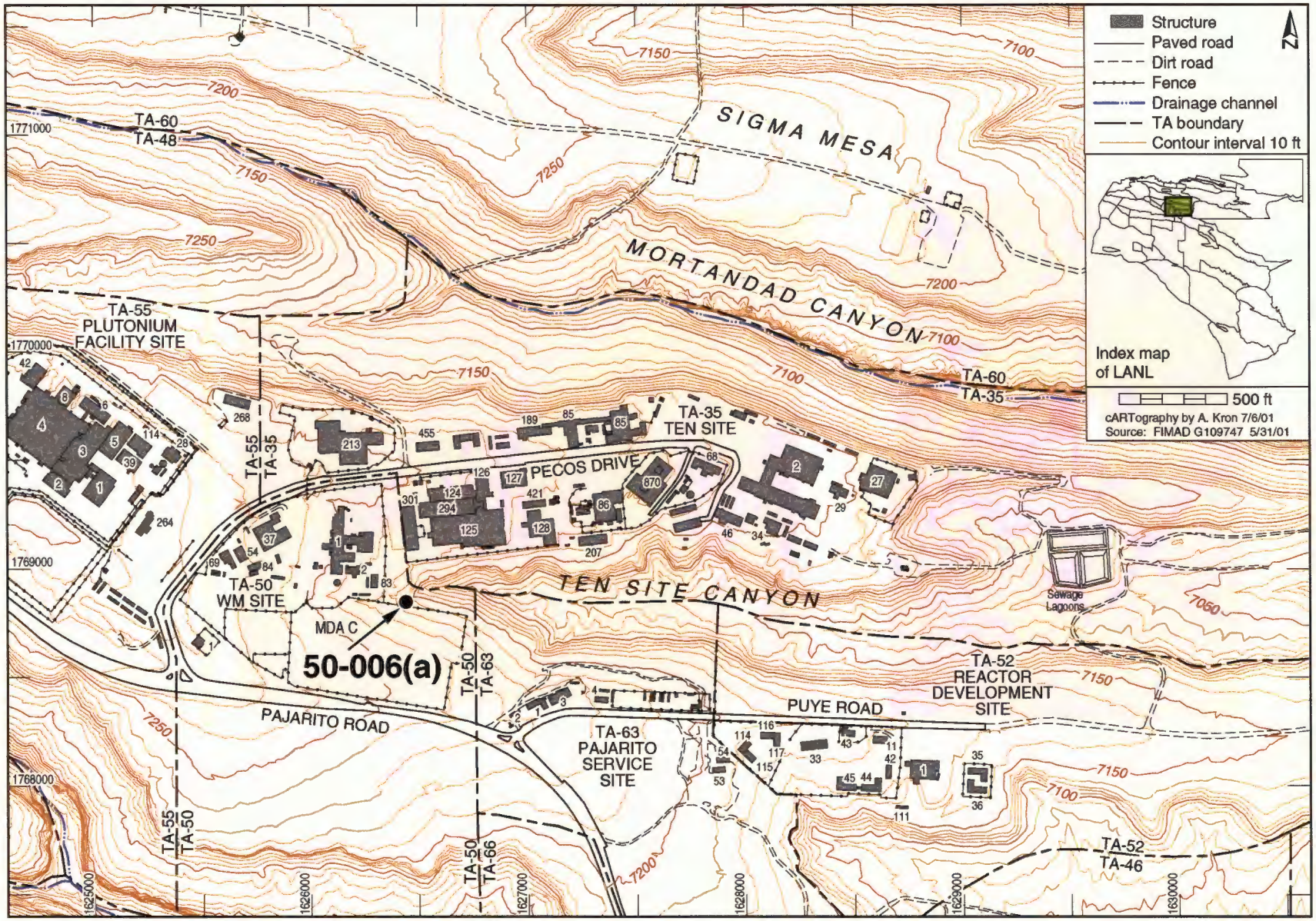
RFI Work Plan for Operable Unit 1147 — LA-UR Number: 92-0969

RFI Report for TA-50: PRSs 50-006(a), 50-006(c), 50-007, 50-008 — LA-UR Number: 95-2738

Interim Action Report for TA-50: PRS 50-006(a) — LA-UR Number: N/A

View of exclusion zone (SWMU 50-006(a))

View of SWMU 50-006(a), after remediation, looking southwest


Structure
Paved road
Dirt road
Fence
Drainage channel
TA boundary
Contour interval 10 ft
N
Index map of LANL
500 ft
cARTography by A. Kron 7/6/01
Source: FIMAD G109747 5/31/01
SIGMA MESA
MORTANDAD CANYON
TEN SITE CANYON
TA-60
TA-48
TA-55
PLUTONIUM FACILITY SITE
TA-35
TEN SITE
PECOS DRIVE
TA-50
WM SITE
MDA C
50-006(a)
TA-63
PAJARITO SERVICE SITE
PAJARITO ROAD
PUYE ROAD
TA-52
REACTOR DEVELOPMENT SITE
TA-46
Sewage Lagoons
7050
7100
7150
7200
7250
1771000
1770000
1769000
1768000
1625000
1626000
1627000
1628000
1629000
1630000

SWMU 50-006(c) — Operational release

Administrative Authority	NMED	**Former Operable Unit**	OU 1147
Technical Area	TA-50	**Dates of Operation**	1963-Present
Has ER Sampled the Site?	Yes	**ER Remedial Action Conducted?**	No
Structure Number	N/A	**Other Remedial Action Conducted?**	No

Unit Description

SWMU 50-006(c) refers to surface soil contamination from the deposition of radioactive contaminants (primarily plutonium and americium) from historical stack emissions from operations at TA-50. Emission sources included seven exhaust stacks that ventilated hoods for specific operations at the facility. A previous investigation showed slightly elevated plutonium levels in nearby soils. The only stack emission at TA-50 that has an Air Quality Permit is the Portable Flash Evaporation System. That permit is not held by LANL but by an independent firm called HydroChem Industrial Services; permit number: 2310-REV-1. Buildings 50-1, 50-37, and 50-69 are all monitored for radioactive emissions, and resulting data are reported to EPA Region VI.

ER Project Activities

Information presented in this section was derived from previously published documents. Any discussion of BVs, FVs, and SALs is taken from the referenced documents and reflects the values in use at the time the documents were written. RFI activities conducted at this site are described in detail in the documents listed in the reference section below.

The ER Project conducted an RFI at SWMU 50-006(c) in the summer of 1993 to confirm results from previous surface soil samples and to determine the nature and extent of any radionuclides and RCRA-listed chemicals for which data were lacking when the OU 1147 work plan was written. The RFI included AOCs 50-007 and 50-008, surface soil contamination from airborne releases from the incinerator complex (Building 50-37) and the volume reduction facility (Building 50-69), respectively. The one SWMU and two AOCs were investigated as an aggregate because their boundaries were indistinguishable. Samples were collected from surface soils from five unpaved areas around Buildings 50-1, 50-37, and 50-69. Sample locations were biased toward natural drainage channels, and soil samples were collected from a total of 51 locations. The samples were analyzed for inorganic and organic chemicals, PCBs, and radionuclides. Analytical results showed elevated concentrations of beryllium, cadmium, chromium, nickel, and silver near a pipe rack. Because the pipe rack was still in use at the time of the RFI, the RFI report recommended that the area be recharacterized when the pipe rack was removed. In addition, cobalt-60, radium-226, several PAHs, and PCBs (Aroclor 1254) were detected above their respective BVs and/or SALs. The RFI report indicated that these contaminants were not considered COPCs when compared with risk-based SALs and/or PRGs. An ecological screening assessment was not completed for the SWMU. The RFI report recommended NFA for SWMU 50-006(c).

ER Project Sampling Summary

The following table shows the number of analytes that exceeded BVs, FVs, and SALs that were in use in calendar year 2002. These data reflect site conditions before any remedial activities that may have occurred, as discussed in the ER Project activities section above. BVs are naturally occurring concentrations of inorganic chemicals and radionuclides in soil, sediment, or tuff before any influence from LANL operations. FVs are concentrations of radionuclides in soil, sediment, or tuff that resulted from global atmospheric deposition unrelated to LANL releases. SALs are concentrations of chemicals or radionuclides based on a residential exposure, below which there is no potential unacceptable risk to human health.

Analytical Suite Sampled	No. of Chemicals Detected	No. of Chemicals >CY2002 BV/FV (If Applicable)	No. of Chemicals >CY2002 SAL (Residential)
Inorganic chemicals	12	8	4
PCBs	2	N/A	2
Radionuclides	7	4	1
SVOCs	14	N/A	5

The following table provides the maximum concentrations of analytes that exceeded CY2002 SALs.

Analytical Suite	Analyte	Maximum Concentration	CY2002 SAL (Residential)
Inorganic chemicals	Arsenic	12.3 mg/kg	0.39 mg/kg
	Cadmium	170 mg/kg	70 mg/kg
	Chromium (total)	810 mg/kg	210 mg/kg
	Silver	410 mg/kg	380 mg/kg
PCBs	Aroclor-1254	1 mg/kg	0.22 mg/kg
	Aroclor-1260	0.52 mg/kg	0.22 mg/kg
Radionuclides	Cobalt-60	1.5192 pCi/g	1.2 pCi/g
SVOCs	Benzo(a)anthracene	1.8 mg/kg	0.62 mg/kg
	Benzo(a)pyrene	2.4 mg/kg	0.062 mg/kg
	Benzo(b)fluoranthene	2.2 mg/kg	0.62 mg/kg
	Dibenz(a,h)anthracene	0.69 mg/kg	0.062 mg/kg
	Indeno(1,2,3-cd)pyrene	1.6 mg/kg	0.62 mg/kg

References

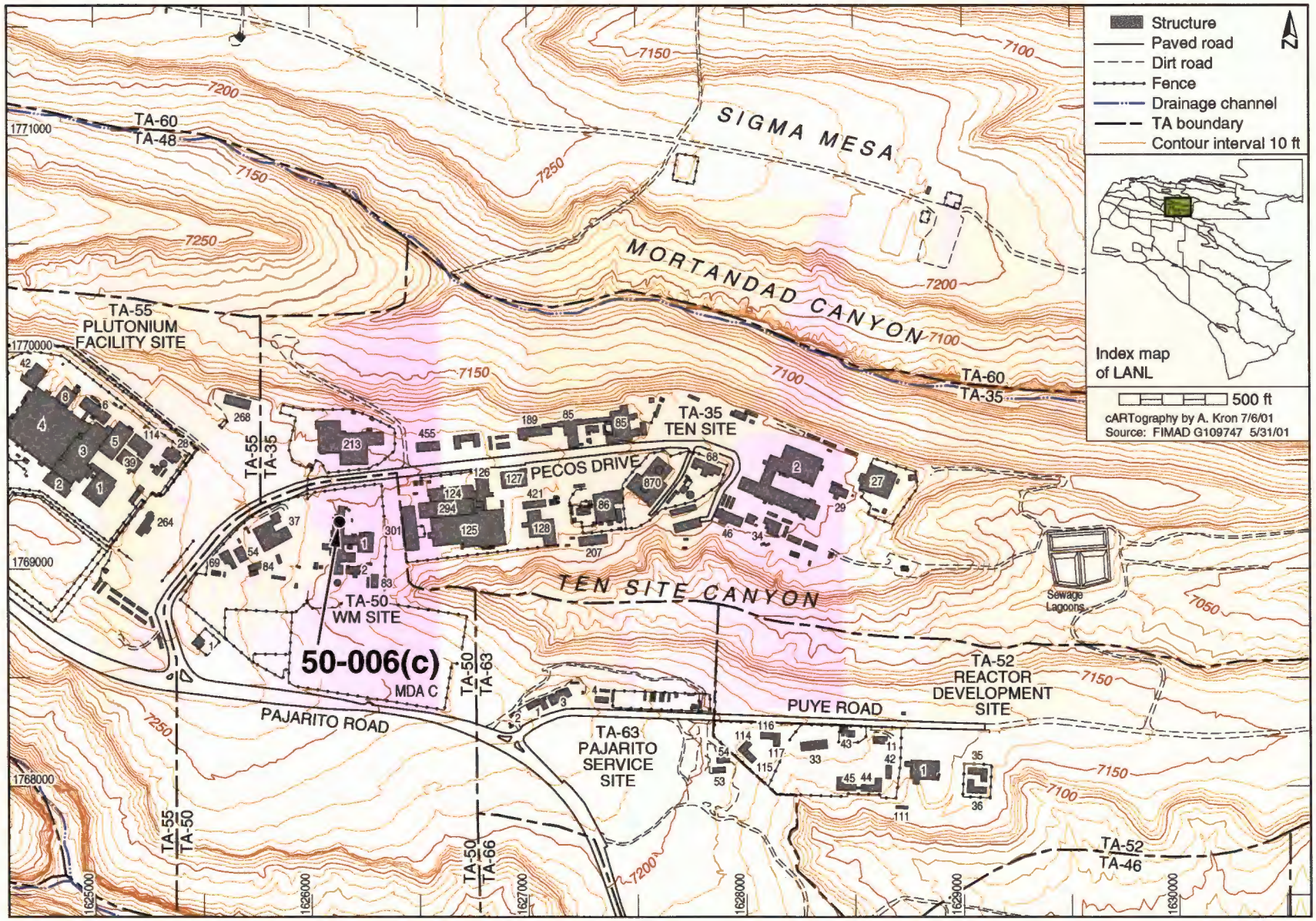
RFI Work Plan for Operable Unit 1147 — LA-UR Number: 92-0969

RFI Report for TA-50: PRSs 50-006(a), 50-006(c), 50-007, 50-008 — LA-UR Number: 95-2738

View of SWMU 50-006(c)

View of SWMU 50-006(c)

View of SWMU 50-006(c)


Structure
Paved road
Dirt road
Fence
Drainage channel
TA boundary
Contour interval 10 ft
N
Index map of LANL
500 ft
cARTography by A. Kron 7/6/01
Source: FIMAD G109747 5/31/01
SIGMA MESA
MORTANDAD CANYON
TEN SITE CANYON
TA-60
TA-48
TA-60
TA-35
TA-55
PLUTONIUM
FACILITY SITE
TA-35
TEN SITE
PECOS DRIVE
TA-50
WM SITE
50-006(c)
MDA C
PAJARITO ROAD
TA-63
PAJARITO
SERVICE
SITE
PUYE ROAD
TA-52
REACTOR
DEVELOPMENT
SITE
Sewage
Lagoons
TA-55
TA-35
TA-55
TA-50
TA-50
TA-63
TA-50
TA-66
TA-52
TA-46
1771000
1770000
1769000
1768000
1625000
1626000
1627000
1628000
1629000
1630000
7200
7150
7250
7100
7050

SWMU 50-006(d) — Effluent discharge

Administrative Authority	NMED	**Former Operable Unit**	OU 1147
Technical Area	TA-50	**Dates of Operation**	1963-Present
Has ER Sampled the Site?	Yes	**ER Remedial Action Conducted?**	No
Structure Number	N/A	**Other Remedial Action Conducted?**	No

Unit Description

SWMU 50-006(d) consists of a drainline (structure 64) and NPDES-permitted Outfall 051 in Mortandad Canyon for treated wastewater from the radioactive liquid waste treatment facility (Building 50-1). Structure 64 is a 6-in.-diameter iron discharge pipe that was rerouted in 1983 to accommodate construction of the target fabrication facility (Building 35-213). In 1985, EPA Region VI issued an administrative order to DOE requiring modification of the outfall to mitigate ongoing stream bank erosion caused by the discharge pipe ending 25 ft short of the stream channel. DOE extended the pipe into the stream channel, and the order was subsequently closed by EPA in 1986.

ER Project Activities

Information presented in this section was derived from previously published documents. RFI activities conducted at this site are described in detail in the documents listed in the reference section below.

At the time the OU 1147 RFI work plan was prepared in 1992, 13 NPDES permit violations had been issued for Outfall 051 for exceedances of permit levels for iron and copper. The work plan stated that the nature and extent of contaminants in Mortandad Canyon would be addressed as part of the Canyons Focus Area investigations. No additional RFI activities have been conducted at SWMU 50-006(d).

ER Project Sampling Summary

The following table shows the number of analytes that exceeded BVs, FVs, and SALs that were in use in calendar year 2002. These data reflect site conditions before any remedial activities that may have occurred, as discussed in the ER Project activities section above. BVs are naturally occurring concentrations of inorganic chemicals and radionuclides in soil, sediment, or tuff before any influence from LANL operations. FVs are concentrations of radionuclides in soil, sediment, or tuff that resulted from global atmospheric deposition unrelated to LANL releases. SALs are concentrations of chemicals or radionuclides based on a residential exposure, below which there is no potential unacceptable risk to human health.

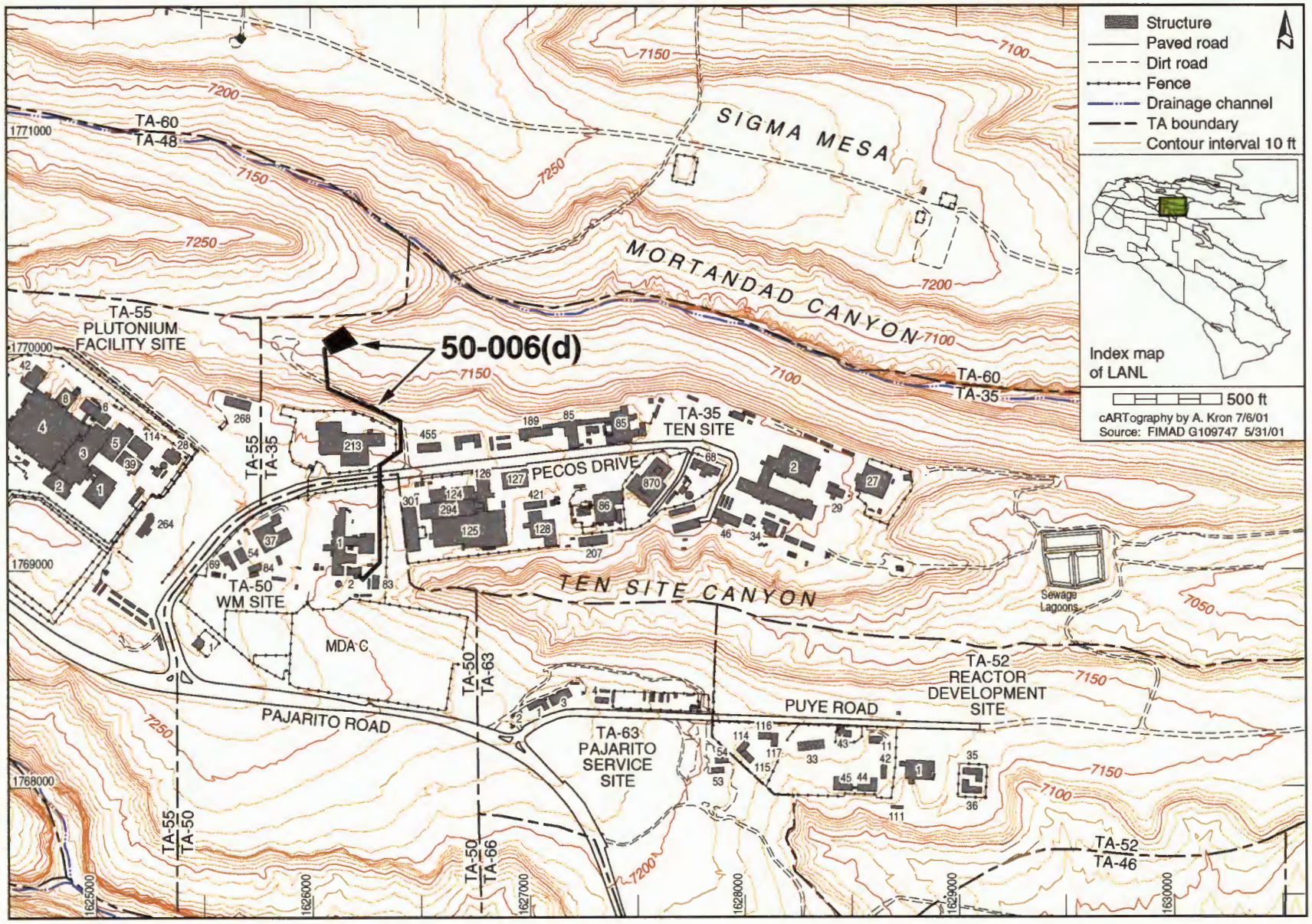
Analytical Suite Sampled	No. of Chemicals Detected	No. of Chemicals >CY2002 BV/FV (If Applicable)	No. of Chemicals >CY2002 SAL (Residential)
Inorganic chemicals	12	8	1
PCBs	1	N/A	0
Radionuclides	12	12	5
SVOCs	3	N/A	0
VOCs	5	N/A	0

The following table provides the maximum concentrations of analytes that exceeded CY2002 SALs.

Analytical Suite	Analyte	Maximum Concentration	CY2002 SAL (Residential)
Inorganic chemicals	Arsenic	5.18 mg/kg	0.39 mg/kg
Radionuclides	Americium-241	71.003 pCi/g	39 pCi/g
	Cesium-137	203.02 pCi/g	5.3 pCi/g
	Cobalt-60	2.4397 pCi/g	1.2 pCi/g
	Plutonium-239	47.816 pCi/g	44 pCi/g
	Strontium-90	18.3 pCi/g	5.7 pCi/g

View of SWMU 50-006(d)

View of SWMU 50-006(d)


Structure
Paved road
Dirt road
Fence
Drainage channel
TA boundary
Contour interval 10 ft
N
Index map of LANL
500 ft
cARTography by A. Kron 7/6/01
Source: FIMAD G109747 5/31/01
SIGMA MESA
MORTANDAD CANYON
TEN SITE CANYON
50-006(d)
TA-60
TA-48
TA-55
PLUTONIUM
FACILITY SITE
TA-35
TEN SITE
PECOS DRIVE
TA-50
WM SITE
MDA C
PAJARITO ROAD
TA-63
PAJARITO
SERVICE
SITE
PUYE ROAD
TA-52
REACTOR
DEVELOPMENT
SITE
Sewage Lagoons
TA-52
TA-46
TA-55
TA-35
TA-50
TA-63
TA-66
1771000
1770000
1769000
1768000
1625000
1626000
1627000
1628000
1629000
1630000
7200
7150
7250
7100
7050

This page intentionally left blank.

AOC 50-007 — Incinerator

Administrative Authority	DOE	**Former Operable Unit**	OU 1147
Technical Area	TA-50	**Dates of Operation**	1975-1987
Has ER Sampled the Site?	No	**ER Remedial Action Conducted?**	No
Structure Number	50-37	**Other Remedial Action Conducted?**	No

Unit Description

AOC 50-007 was an incinerator complex housed in Building 50-37. The complex was constructed in 1975 and consisted of the incinerator, various waste-feed components, and two waste-feed tanks. The incinerator was conceived as a research and development project to demonstrate the application of commercially available incineration technology for the safe treatment of TRU-containing wastes. The incinerator was located in Room 112, and the former solid and liquid waste-feed system was in Room 115. The liquid feed system preparation room was bermed and had no floor drains. The maximum waste inventory allowed in Room 115 was 600 gal. in two waste-feed tanks. The incinerator complex was equipped with an off-gas treatment unit, and the exhaust air system from the incinerator included two HEPA filters. Liquid effluent generated by the off-gas aqueous scrub system was filtered to remove solids before transfer to a double instrument-monitored pipeline to the radioactive liquid waste treatment facility (Building 50-1). Ash was stabilized in concrete. From 1978 to 1987, 23 test burns were successfully conducted for RCRA and TSCA wastes. EPA issued a permit for the incineration of PCBs in 1984, and NMED included the incinerator in LANL's 1989 Hazardous Waste Facility Permit. Actual waste streams incinerated at Building 50-37 after the permits were issued included radioactively contaminated PCBs and scintillation cocktails. Operation of the incinerator was discontinued in 1987 to allow for system upgrades. A previous investigation showed slightly elevated plutonium levels in nearby soils. The incinerator complex was removed and underwent RCRA closure in 1998. According to Part B of LANL's Hazardous Waste Facility Permit, Building 50-37 currently houses one container storage area consisting of rooms 112, 115, 117 and 118. The container storage area operates under RCRA interim status and stages waste undergoing characterization and verification.

ER Project Activities

Information presented in this section was derived from previously published documents. RFI activities conducted at this site are described in detail in the documents listed in the reference section below.

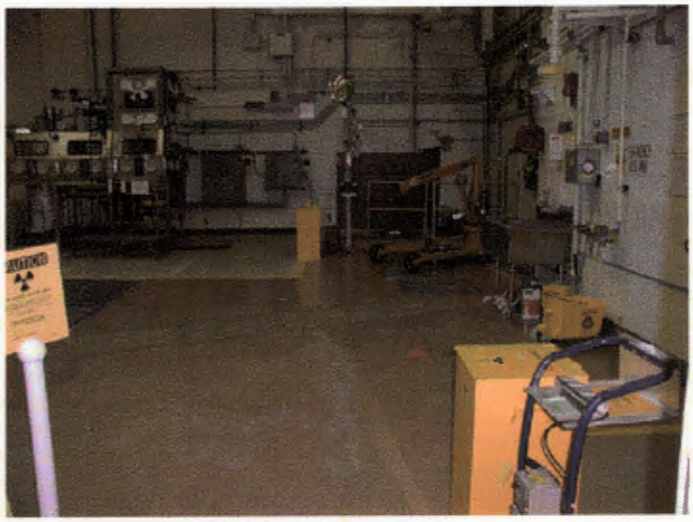
The ER Project conducted an RFI at AOC 50-007 in the summer of 1993 to confirm results from previous surface soil samples to determine the nature and extent of any radionuclides and RCRA-listed chemicals that were lacking data when the OU 1147 work plan was written. The RFI included SWMU 50-006(c) and AOC 50-008, surface soil contamination from airborne releases from Building 50-1 and the volume reduction facility (Building 50-69), respectively. The two AOCs and one SWMU were investigated as an aggregate because their boundaries were indistinguishable. Data collected during these activities are associated with SWMU 50-006(c). An ecological screening assessment was not completed for the site. The RFI report recommended NFA for AOC 50-007.

ER Project Sampling Summary

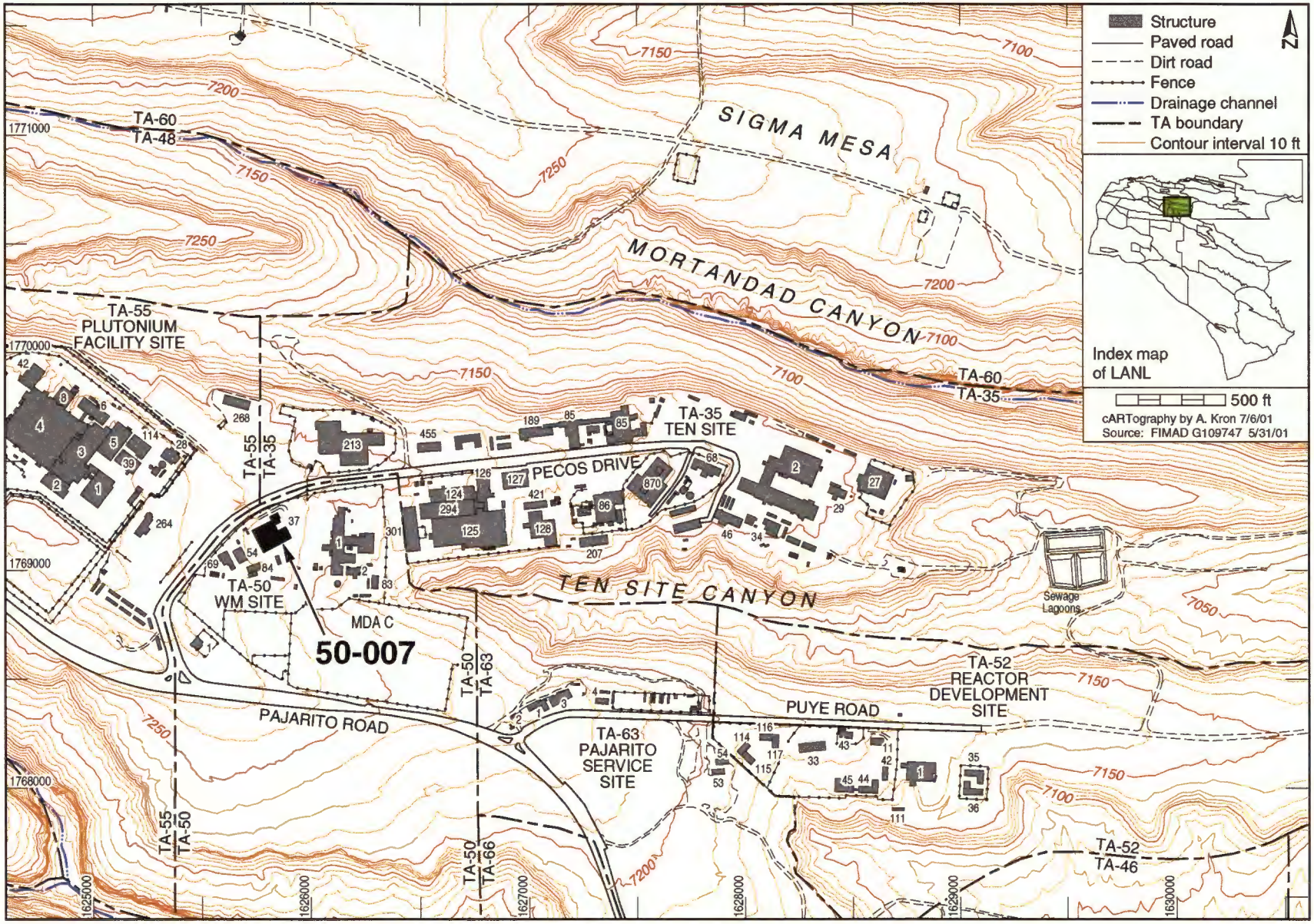
No analytical samples were collected at this site.

References

RFI Work Plan for Operable Unit 1147	LA-UR Number: 92-0969
RFI Report for TA-50: PRSs 50-006(a), 50-006(c), 50-007, 50-008	LA-UR Number: 95-2738



View of AOC 50-007


Structure
Paved road
Dirt road
Fence
Drainage channel
TA boundary
Contour interval 10 ft
N
Index map of LANL
500 ft
cARTography by A. Kron 7/6/01
Source: FIMAD G109747 5/31/01
SIGMA MESA
MORTANDAD CANYON
TEN SITE CANYON
TA-60
TA-48
TA-55
PLUTONIUM
FACILITY SITE
TA-35
TEN SITE
PECOS DRIVE
TA-50
WM SITE
MDA C
50-007
PAJARITO ROAD
TA-63
PAJARITO
SERVICE
SITE
PUYE ROAD
TA-52
REACTOR
DEVELOPMENT
SITE
TA-46
Sewage Lagoons
7200
7150
7250
7100
7050
1771000
1770000
1769000
1768000
1625000
1626000
1627000
1628000
1629000
1630000

This page intentionally left blank.

AOC 50-008 — Reduction site

Administrative Authority	DOE	**Former Operable Unit**	OU 1147
Technical Area	TA-50	**Dates of Operation**	1982-1991
Has ER Sampled the Site?	No	**ER Remedial Action Conducted?**	No
Structure Number	50-69	**Other Remedial Action Conducted?**	No

Unit Description

AOC 50-008 is the volume reduction facility (now called the waste characterization, reduction, and repackaging facility) located in Building 50-69. The facility was constructed in 1979 to size-reduce large TRU-contaminated metallic items (e.g., glove boxes, metal ducts, and plenums) and repackage them into standard-sized containers for ultimate disposal at WIPP. The facility was first used to size-reduce TRU waste in 1982. Previous swipe samples indicated that Building 50-69 may be moderately contaminated with radionuclides. No outfalls are associated with Building 50-69; all liquid wastes are processed at the radioactive liquid waste treatment facility (Building 50-1). Operations at Building 50-69 were stopped in 1991, while upgrades were made to allow for continued long-term operation. A previous investigation showed slightly elevated plutonium levels in nearby soils.

ER Project Activities

Information presented in this section was derived from previously published documents. RFI activities conducted at this site are described in detail in the documents listed in the reference section below.

The ER Project conducted an RFI at AOC 50-008 in the summer of 1993 to confirm results from previous surface soil samples and to determine the nature and extent of any radionuclides and RCRA-listed chemicals that were lacking data when the OU 1147 work plan was written. The RFI included SWMUs 50-006(c) and AOC 50-007, surface soil contamination from airborne releases from Building 50-1 and the incinerator complex (Building 50-37), respectively. The two AOCs and one SWMU were investigated as an aggregate because their boundaries were indistinguishable. Data collected during these activities are associated with SWMU 50-006(c). An ecological screening assessment was not completed for the AOC. The RFI report recommended NFA for AOC 50-008.

According to Part B of LANL's Hazardous Waste Facility Permit, the waste characterization, reduction, and repackaging facility (Building 50-69) houses one permitted mixed waste operation that is currently a RCRA permitted facility.

ER Project Sampling Summary

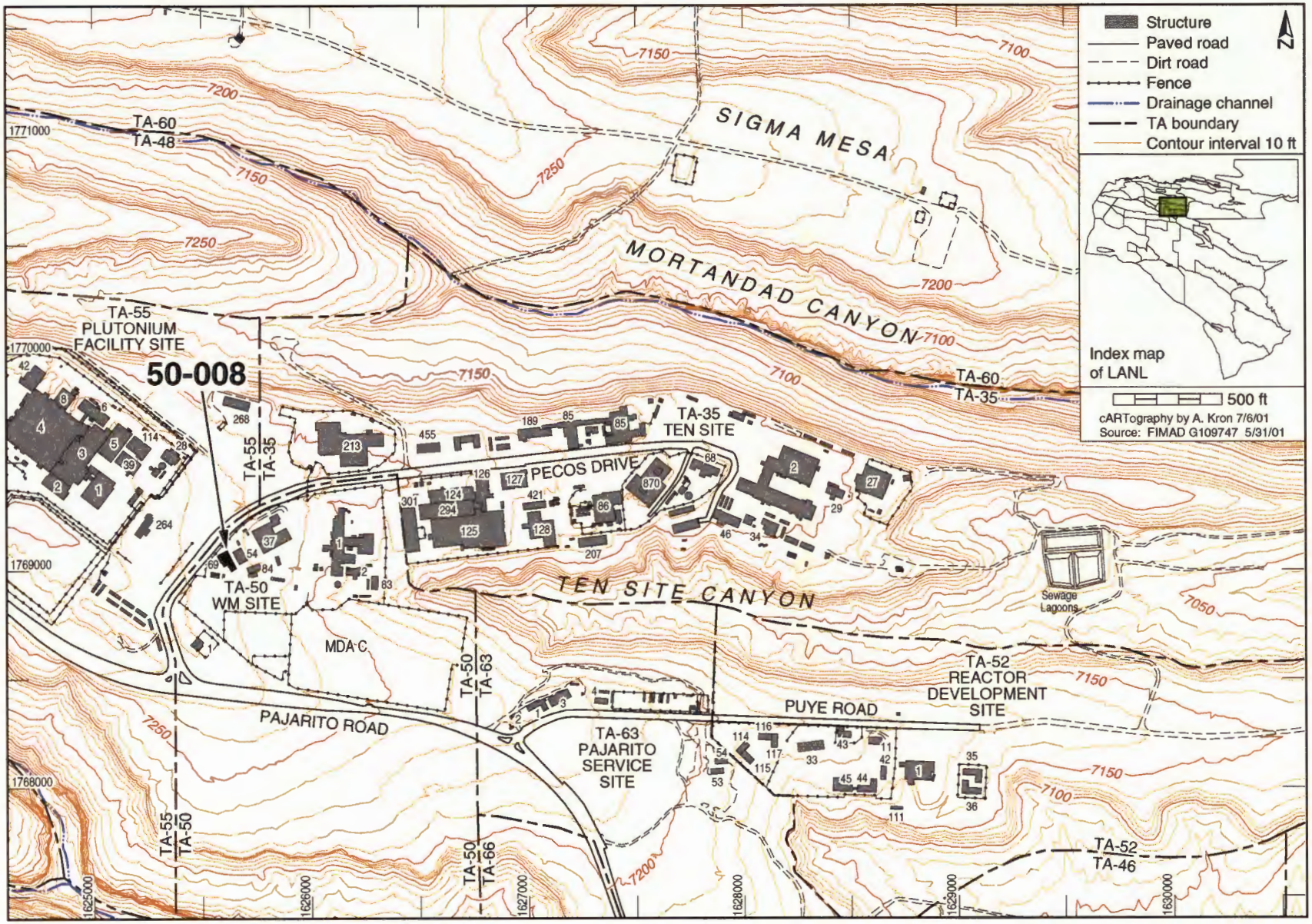
No analytical samples were collected at this site.

References

RFI Work Plan for Operable Unit 1147	LA-UR Number: 92-0969
RFI Report for TA-50: PRSs 50-006(a), 50-006(c), 50-007, 50-008	LA-UR Number: 95-2738

View of AOC 50-008

View of AOC 50-008


Structure
Paved road
Dirt road
Fence
Drainage channel
TA boundary
Contour interval 10 ft
N
Index map of LANL
500 ft
cARTography by A. Kron 7/6/01
Source: FIMAD G109747 5/31/01
SIGMA MESA
MORTANDAD CANYON
TEN SITE CANYON
TA-60
TA-48
TA-60
TA-35
TA-55
PLUTONIUM
FACILITY SITE
50-008
TA-35
TEN SITE
PECOS DRIVE
TA-50
WM SITE
MDA C
PAJARITO ROAD
TA-63
PAJARITO
SERVICE
SITE
PUYE ROAD
TA-52
REACTOR
DEVELOPMENT
SITE
TA-52
TA-46
Sewage Lagoons
TA-55
TA-35
TA-55
TA-50
TA-50
TA-63
TA-50
TA-66
1771000
1770000
1769000
1768000
1625000
1626000
1627000
1628000
1629000
1630000
7200
7150
7250
7100
7050

This page intentionally left blank.

SWMU 50-009 — Material disposal area (MDA C)

Administrative Authority	NMED	**Former Operable Unit**	OU 1147
Technical Area	TA-50	**Dates of Operation**	1948-1974
Has ER Sampled the Site?	Yes	**ER Remedial Action Conducted?**	No
Structure Number	N/A	**Other Remedial Action Conducted?**	Yes

Unit Description

SWMU 50-009 is inactive MDA C, established in May 1948 to replace MDA B (SWMU 21-015). MDA C covers 11.8 acres and consists of 7 pits, 107 shafts, and 1 unnumbered shaft that was used for a single strontium-90 disposal. Pits and shafts were used for burial of hazardous chemicals, uncontaminated classified materials, and radioactive materials. TRU waste also was buried in unknown quantities in the pits. The landfill was used until April 1974 but received waste only intermittently from 1968 to 1974. COPCs include inorganic chemicals, VOCs, SVOCs, and radionuclides. According to the OU 1147 work plan, most of the radioactivity at MDA C is associated with tritium.

Pits 1 through 5 are located in the eastern half of MDA C. Pits 1 through 4 are approximately 610 ft x 40 ft x 25 ft deep; pit 5 is 110 ft x 705 ft x 18 ft deep. Pit 1 operated from 1948 to 1951, pit 2 operated from 1950 to 1951, pit 3 operated from 1951 to 1953, pit 4 operated from 1951 to 1955, and pit 5 operated from 1953 to 1959. Pits 6 and 7 are located in the northwestern part of MDA C. Pit 6 is 100 ft x 505 ft x 25 ft deep and operated from 1956 to 1960. Pit 7, the chemical pit, is 25 ft x 180 ft x 12 ft deep and operated from 1960 to 1964. Pit 7's designation and use as a chemical disposal pit was spurred by several chemical fires, first at MDA B and later at MDA C. The pit was fenced off from the rest of MDA C and was used to bury chemicals, pyrophoric metals, natural uranium powders and hydrides, sealed vessels containing sodium-potassium alloy, compressed gases, and unspecified equipment. According to the OU 1147 work plan, some radioactively contaminated materials were disposed of in pit 7.

The shafts are grouped chronologically and were used to dispose of radioactively contaminated waste from TA-35 and elsewhere. Group 1 consisted of 12 shafts that were used from February through October 1959. Group 1 shafts are located between pits 4 and 5 and measure 2 ft in diameter x 10 ft deep. The shafts originally were numbered 1 through 12 and were renumbered 56 through 67 in 1962. Group 2 shafts, numbered 1 through 55, were used from November 1959 to May 1967. The shafts were located between pits 1 and 3 and are 2 ft in diameter x 15 ft deep. Group 3 shafts, numbered 68 through 107, are located along the western edge of pits 1 through 5 and were used from October 1962 to February 1966. Shafts 68 through 97 are unlined 2-ft-diameter shafts that vary in depth from 20 ft to 25 ft. Shafts 98 through 107 are lined with 12-in.-thick concrete and have an inner diameter of 1 ft. The strontium-90 shaft (no assigned number) was used in the 1950s or 1960s to bury a single strontium-90 source. This shaft is located a few feet from the south fence near the entrance gate at MDA C.

Water infiltration tests were performed at LANL, including MDA C, by the US Geological Survey from 1956 to 1961. In 1976, 1977, and 1980 to 1983, soil and vegetation sampling confirmed the presence of radionuclides in localized areas on the surface of MDA C. In 1984, as part of an interim action to cover the contaminated soil surface, a new soil cover was placed over most of MDA C. In 1985 and 1986, a field-instrument and soil-sampling effort took place at MDA C. Readings taken at 18 locations in 1985 were all near BVs. Tritium concentrations were at or below the average LANL BVs in about half the samples and above that level in the remaining samples. Samples from the north and east perimeter and the western third of the site exceeded BVs for tritium, whereas samples from the east-central portions of MDA C were consistently low in tritium. In many cases, tritium levels increased with sampling depth. In 1986, more samples were collected to confirm 1985 sample results.

ER Project Activities

Information presented in this section was derived from previously published documents. Any discussion of BVs, FVs, and SALs is taken from the referenced documents and reflects the values in use at the time the documents were written. RFI activities conducted at this site are described in detail in the documents listed in the reference section below.

RFI activities were conducted at MDA C from 1993 through 1996. Surface soil sampling was conducted during the summer of 1993; a subsurface investigation was performed during parts of 1994, 1995, and early 1996.

Only one contaminant was found in surface soil samples at concentrations exceeding SALs. PCBs exceeded SALs in 4 out of 183 surface soil samples analyzed for pesticides/PCBs. Several inorganic chemicals and radionuclides were found to exceed BVs in surface soil samples. Out of 69 surface soil samples analyzed for inorganic chemicals, lead concentrations exceeded BVs in 6 and silver concentrations exceeded background in 2. In the 69 surface soil samples analyzed for radionuclides, several had exceedances of BVs for americium-241, plutonium-238 and -239, and uranium-235 and -238.

In subsurface samples, several inorganic chemicals were detected at concentrations greater than BVs. Each of the following inorganic analytes exceeded BVs in at least 2 of the 81 subsurface soil samples analyzed for inorganic chemicals: aluminum, antimony, barium, cadmium, calcium, chromium, cobalt, copper, cyanide, lead, magnesium, selenium, silver, and vanadium. The following 7 organic chemicals, including acetone, bis(2-ethylhexylphthalate, 1,1-dichloroethene, hexachlorobutadiene, 2-methylphenol, methylene chloride, and toluene were detected in isolated core samples out of the 70 samples analyzed for organic chemicals. Americium-241, cesium-137, cobalt-60, plutonium-238 and -239, strontium-90, and tritium were all measured above the minimum detectable activity in at least 1 of the 81 subsurface samples analyzed for radionuclides. Only isotopic uranium has a subsurface BV, and uranium-234, -235, and -238 all exceeded their respective BVs in at least one subsurface sample.

A data gap was identified by the ER Project after conducting 1995 RFI fieldwork at MDA C. The ER Project learned from work at TA-54 that VOCs do not adsorb to the tuff but are present in the pore gas. To complete the RFI, data were needed to determine whether there is a VOC vapor phase plume from the chemical pit (pit 7) at MDA C. The first of two vapor-monitoring boreholes was installed in FY2000 to collect pore-gas samples. The ER Project field-screens 10 sampling ports quarterly from this monitoring borehole; the deepest is 315 ft below ground surface. Based on field-screening data, two samples are collected quarterly for analysis by a fixed analytical laboratory. The second borehole was installed in June 2001 to provide a second reference point to delineate the plume. The pore-gas monitoring project is being conducted in parallel with similar characterization activities at MDAs G and L at TA-54, and results are reported in ER Project quarterly reports. The data will be used to complete the MDA C RFI, and the RFI results will feed into the corrective measures study for MDA C to determine if remedial action is required.

A geophysical investigation was conducted in 2001 to confirm the locations of the disposal pits and shafts at MDA C, as well as estimate the thickness of cover materials at the site. To achieve this objective, an integrated geophysical survey was performed using terrain conductivity, high-sensitivity metal detector, and digital ground-penetrating radar techniques. The results of this investigation indicate that the actual locations of disposal pits 1 through 4 are offset approximately 40 ft to the east relative to the historically reported locations of the pits. The thickness of cover materials at MDA C ranges from 0.0 ft to 8.76 ft.

ER Project Sampling Summary

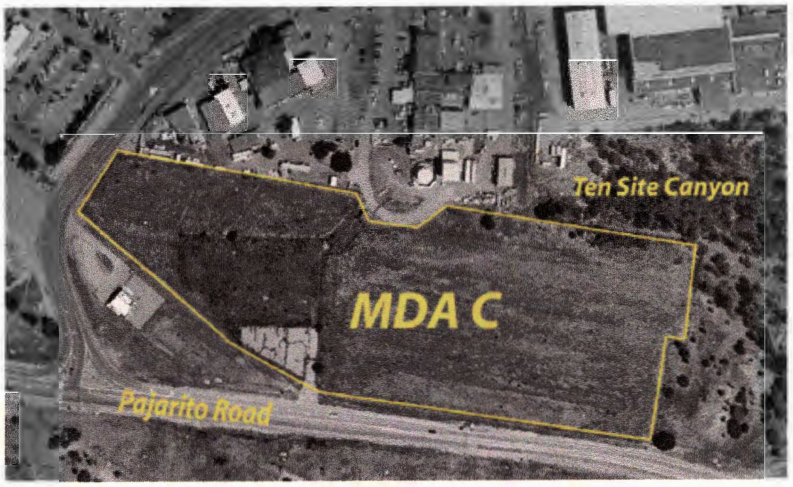
The following table shows the number of analytes that exceeded BVs, FVs, and SALs that were in use in calendar year 2002. These data reflect site conditions before any remedial activities that may have occurred, as discussed in the ER Project activities section above. BVs are naturally occurring concentrations of inorganic chemicals and radionuclides in soil, sediment, or tuff before any influence from LANL operations. FVs are concentrations of radionuclides in soil, sediment, or tuff that resulted from global atmospheric deposition unrelated to LANL releases. SALs are concentrations of chemicals or radionuclides based on a residential exposure, below which there is no potential unacceptable risk to human health.

Analytical Suite Sampled	No. of Chemicals Detected	No. of Chemicals >CY2002 BV/FV (If Applicable)	No. of Chemicals >CY2002 SAL (Residential)
Inorganic chemicals	23	19	2
PCBs	2	N/A	1
Pesticide/PCBs	0	N/A	0
Radionuclides	16	13	1
SVOCs	4	N/A	0
VOCs	4	N/A	0

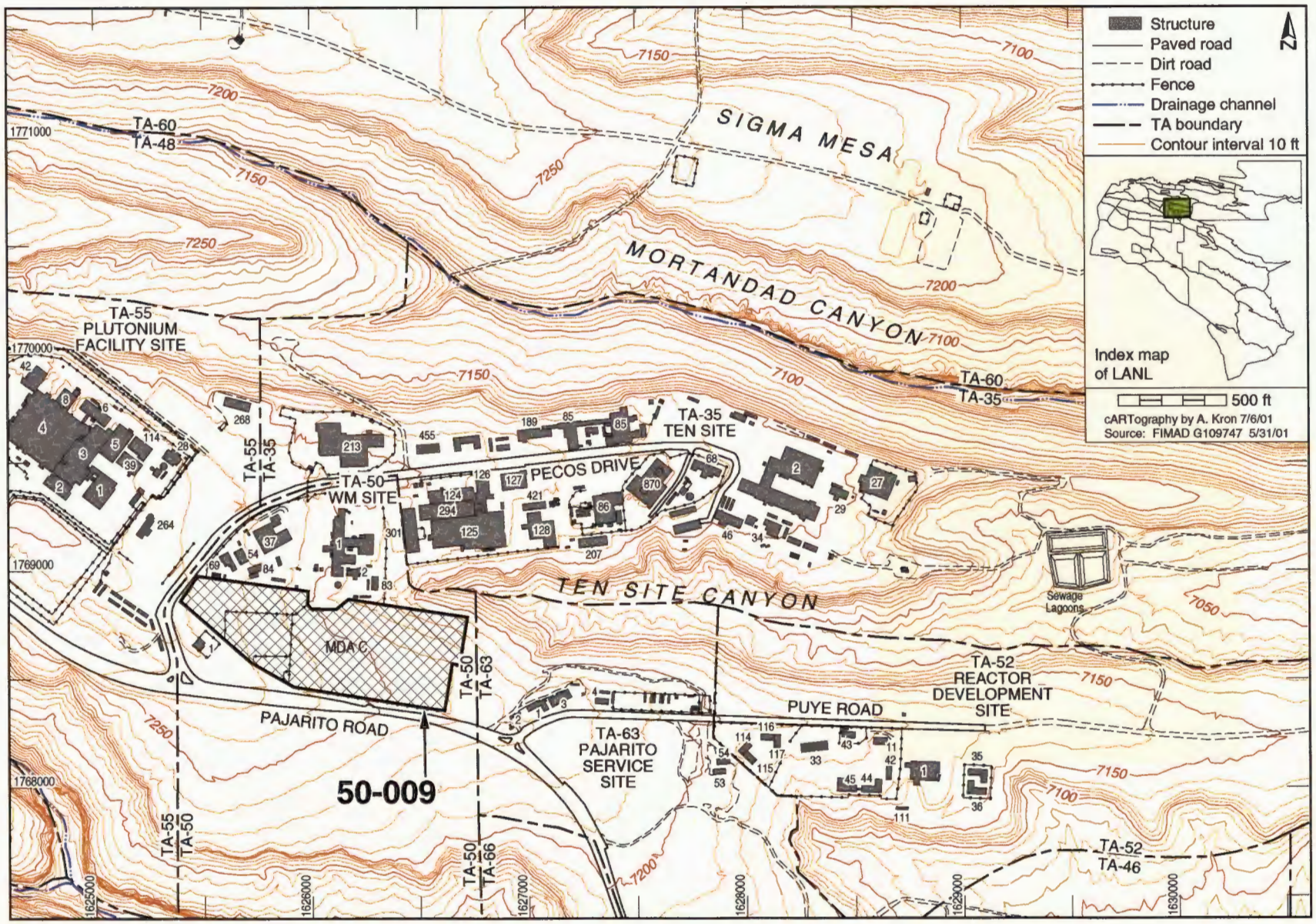
The following table provides the maximum concentrations of analytes that exceeded CY2002 SALs.

Analytical Suite	Analyte	Maximum Concentration	CY2002 SAL (Residential)
Inorganic chemicals	Arsenic	8 mg/kg	0.39 mg/kg
	Thallium	12 mg/kg	6.1 mg/kg
PCBs	Aroclor-1254	1 mg/kg	0.22 mg/kg
Radionuclides	Tritium	1,660,000 pCi/g	880 pCi/g

References



Aerial of SWMU 50-009 (MDA C)


Structure
Paved road
Dirt road
Fence
Drainage channel
TA boundary
Contour interval 10 ft
N
Index map of LANL
500 ft
cARTography by A. Kron 7/6/01
Source: FIMAD G109747 5/31/01
SIGMA MESA
MORTANDAD CANYON
TEN SITE CANYON
TA-60
TA-48
TA-35
TA-55
PLUTONIUM FACILITY SITE
TA-35
TEN SITE
PECOS DRIVE
TA-50
WM SITE
MDA C
PAJARITO ROAD
TA-63
PAJARITO SERVICE SITE
PUYE ROAD
TA-52
REACTOR DEVELOPMENT SITE
Sewage Lagoons
TA-46
50-009
7200
7150
7100
7250
7050
1771000
1770000
1769000
1768000
1625000
1626000
1627000
1628000
1629000
1630000

AOC 50-010 — Decontamination facility

Administrative Authority	DOE	**Former Operable Unit**	OU 1147
Technical Area	TA-50	**Dates of Operation**	1963-1999
Has ER Sampled the Site?	No	**ER Remedial Action Conducted?**	No
Structure Number	N/A	**Other Remedial Action Conducted?**	No

Unit Description

AOC 50-010 is an inactive vehicle decontamination area located in Room 34B of the radioactive liquid waste treatment facility (Building 50-1). The area was used to clean radioactive contamination from vehicles and large objects used to transport radioactive liquid waste to TA-50. Liquid wastes generated during decontamination activities were transferred to tanks at structure 50-2 through a floor drain and waste line. The decontamination bay was operated from 1963 through October 1999. It was enclosed in 1983. According to the OU 1147 work plan, there is no documented evidence of contaminant releases from this facility.

ER Project Activities

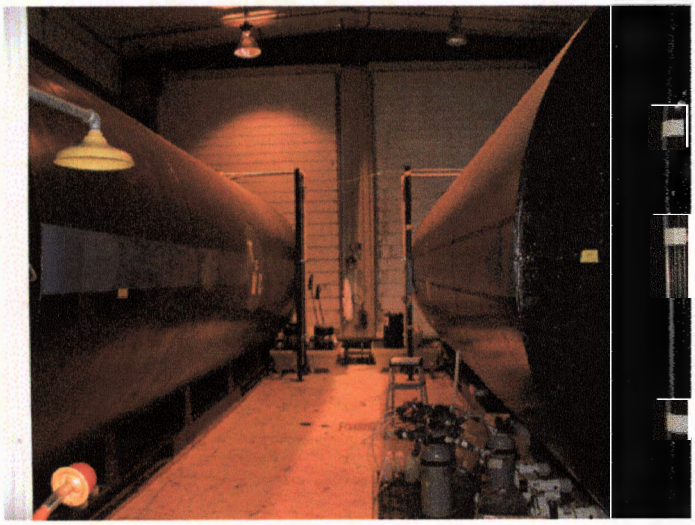
RFI activities conducted at this site are described in detail in the documents listed in the reference section below. No additional RFI activities have been conducted at this site.

ER Project Sampling Summary

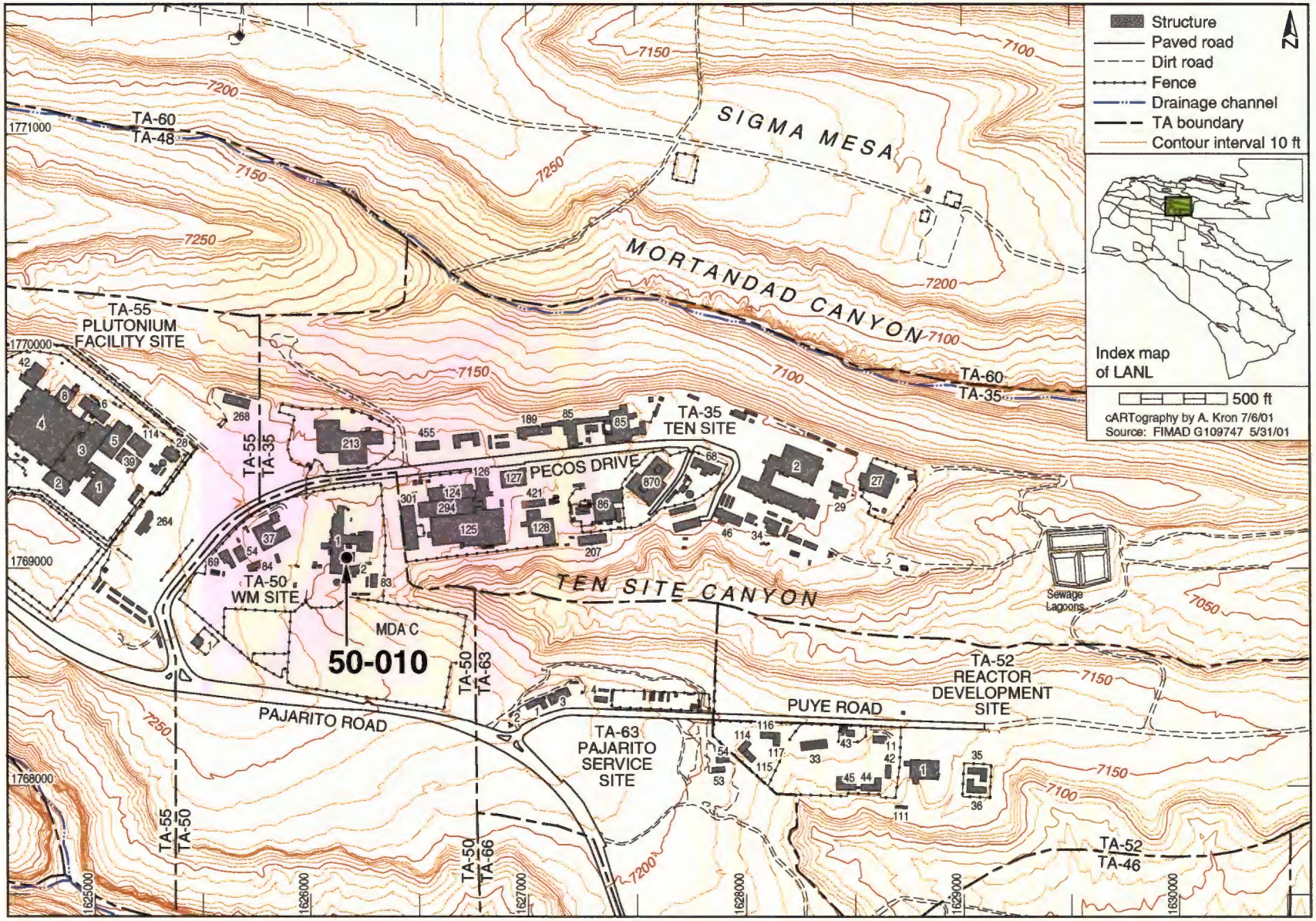
No analytical samples were collected at this site.

References

RFI Work Plan for Operable Unit 1147	LA-UR Number: 92-0969



View of AOC 50-010


Structure
Paved road
Dirt road
Fence
Drainage channel
TA boundary
Contour interval 10 ft
Index map of LANL
500 ft
cARTography by A. Kron 7/6/01
Source: FIMAD G109747 5/31/01
SIGMA MESA
MORTANDAD CANYON
TEN SITE CANYON
TA-60
TA-48
TA-55
PLUTONIUM FACILITY SITE
TA-35
TEN SITE
PECOS DRIVE
TA-50
WM SITE
MDA C
50-010
PAJARITO ROAD
TA-63
PAJARITO SERVICE SITE
PUYE ROAD
TA-52
REACTOR DEVELOPMENT SITE
Sewage Lagoons
TA-46
TA-66
1771000
1770000
1769000
1768000
1625000
1626000
1627000
1628000
1629000
1630000

SWMU 50-011(a) — Septic system

Administrative Authority	NMED	**Former Operable Unit**	OU 1147
Technical Area	TA-50	**Dates of Operation**	1964-1983
Has ER Sampled the Site?	Yes	**ER Remedial Action Conducted?**	No
Structure Number	50-9, 50-10, 50-11	**Other Remedial Action Conducted?**	Yes

Unit Description

SWMU 50-011(a) is the location of decommissioned septic system that was installed in 1964 at the south end of the radioactive liquid waste treatment facility (Building 50-1). The system consisted of an influent line from Building 50-1 that discharged to a manhole (structure 50-9) and then to a septic tank (structure 50-10). The effluent line from the tank tied to a distribution box (structure 50-11), which discharged to four parallel perforated pipes traversing a leach field. A 4-ft-diameter x 50-ft-deep shaft was drilled at the east end of the leach field in 1978 to address problems with standing water on the ground surface. A 4-in. perforated pipe was installed in the shaft, and the annulus was backfilled to within 4 ft of the ground surface (seepage pit). The outlets of the four parallel pipes were then tied into the 4-in. perforated pipe. The septic system, except for the perforated pipe (seepage pit), was removed in 1983. Currently, the former location of the leach field and the section of the effluent line between the former septic tank and the leach field are the only portions of the old system not covered by a storage building (Building 50-83). These areas are beneath an asphalt pad located between the pumping station (structure 50-2) and Building 50-83. The 50-ft-deep shaft is currently located beneath the southeast corner of Building 50-83. Previous investigations of the areas surrounding this SWMU were conducted in 1986, during decommissioning of the radioactive liquid waste line; excavated soils were characterized for radioactive constituents and remediated to meet ALARA levels.

ER Project Activities

Information presented in this section was derived from previously published documents. Any discussion of BVs, FVs, and SALs is taken from the referenced documents and reflects the values in use at the time the documents were written. RFI activities conducted at this site are described in detail in the documents listed in the reference section below.

The ER Project conducted an RFI at SWMU 50-011(a) in 1994 to determine the presence of and define the nature and extent of any contamination from previous operational releases. The investigation involved the collection of seven soil samples from four 10-ft-deep vertical boreholes. The samples were analyzed for inorganic and organic chemicals, PCBs, and radionuclides. No elevated chemical concentrations were detected, and the RFI report recommended NFA for SWMU 50-011(a). In a May 1997 RSI, NMED approved the drilling of an additional borehole adjacent to the seepage pit to a depth of 60 ft.

In December 2001, geotechnical and waste characterization samples were collected from eight boreholes, including one adjacent to the seepage pit, to determine the feasibility of constructing a new pump house and influent storage tank vault at TA-50.

ER Project Sampling Summary

The following table shows the number of analytes that exceeded BVs, FVs, and SALs that were in use in calendar year 2002. These data reflect site conditions before any remedial activities that may have occurred, as discussed in the ER Project activities section above. BVs are naturally occurring concentrations of inorganic chemicals and radionuclides in soil, sediment, or tuff before any influence from LANL operations. FVs are concentrations of radionuclides in soil, sediment, or tuff that resulted from global atmospheric deposition unrelated to LANL releases. SALs are concentrations of chemicals or radionuclides based on a residential exposure, below which there is no potential unacceptable risk to human health.

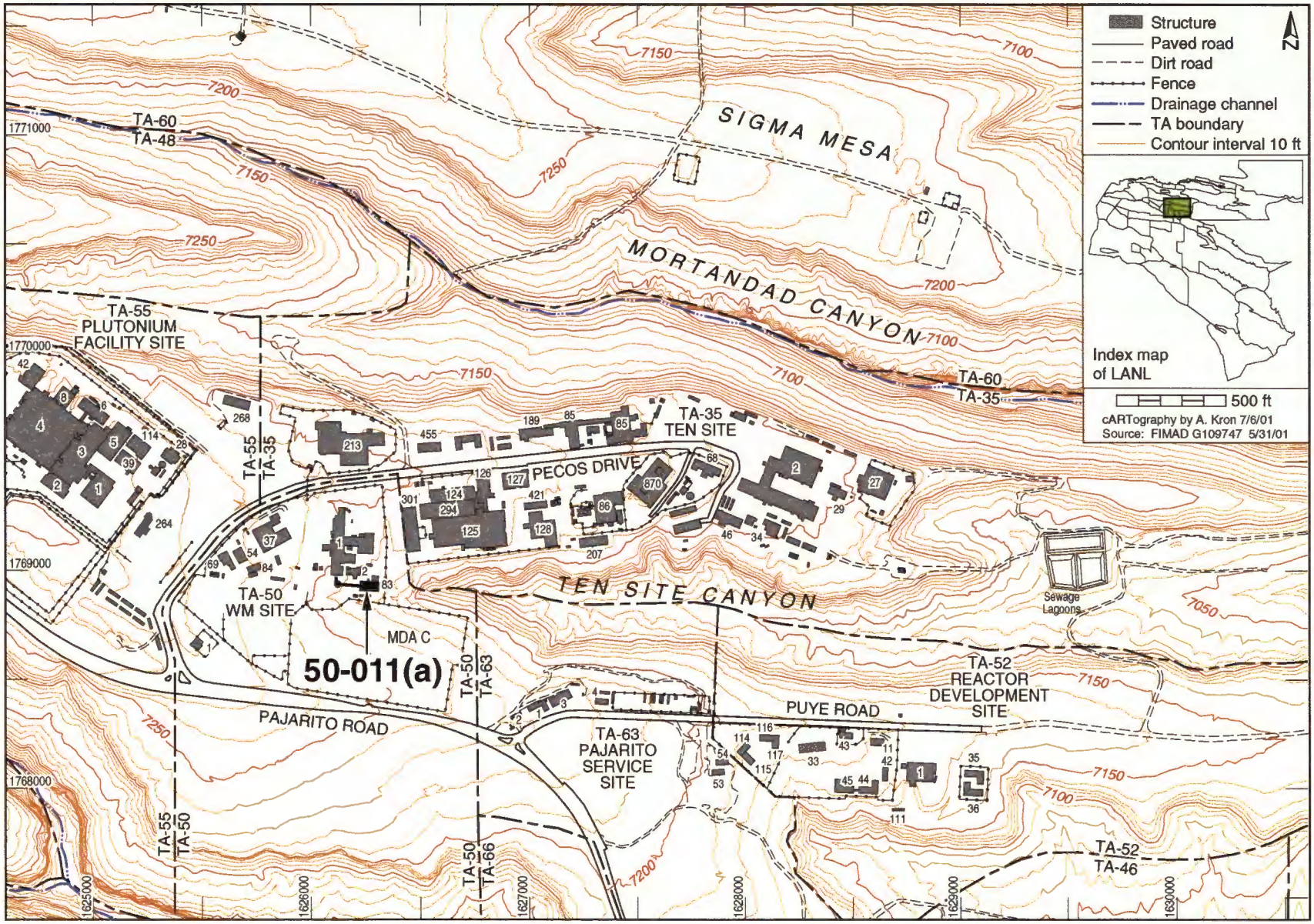
Analytical Suite Sampled	No. of Chemicals Detected	No. of Chemicals >CY2002 BV/FV (If Applicable)	No. of Chemicals >CY2002 SAL (Residential)
Inorganic chemicals	6	0	0
PCBs	0	N/A	0
Radionuclides	5	3	0
SVOCs	0	N/A	0
VOCs	2	N/A	0

Data collected at this site indicate that there have been no constituents detected above SALs at this SWMU.

References

RFI Work Plan for Operable Unit 1147	LA-UR Number: 92-0969
RFI Report for Potential Release Sites at TA-50: 50-004(a), 50-004(c), 50-011(a) (Located in Former Operable Unit 1147)	LA-UR Number: 96-148

No photo; subsurface unit


Structure
Paved road
Dirt road
Fence
Drainage channel
TA boundary
Contour interval 10 ft
N
Index map of LANL
500 ft
cARTography by A. Kron 7/6/01
Source: FIMAD G109747 5/31/01
SIGMA MESA
MORTANDAD CANYON
TEN SITE CANYON
TA-60
TA-48
TA-60
TA-35
TA-55
PLUTONIUM
FACILITY SITE
TA-35
TEN SITE
PECOS DRIVE
TA-50
WM SITE
MDA C
50-011(a)
PAJARITO ROAD
TA-63
PAJARITO
SERVICE
SITE
PUYE ROAD
TA-52
REACTOR
DEVELOPMENT
SITE
TA-52
TA-46
Sewage
Lagoons
TA-55
TA-35
TA-55
TA-50
TA-50
TA-63
TA-50
TA-66
1771000
1770000
1769000
1768000
1625000
1626000
1627000
1628000
1629000
1630000
7200
7150
7250
7100
7050

This page intentionally left blank.

AOC 50-011(b) — Lift stations

Administrative Authority	DOE	**Former Operable Unit**	OU 1147
Technical Area	TA-50	**Dates of Operation**	1983-Present
Has ER Sampled the Site?	No	**ER Remedial Action Conducted?**	No
Structure Number	50-90, 50-91	**Other Remedial Action Conducted?**	No

Unit Description

AOC 50-011(b) is composed of two active sanitary wastewater lift stations (structures 50-91 and 50-92) and approximately 400 ft of piping that transport sanitary wastewater from the radioactive liquid waste treatment facility (Building 50-1) to the main line that serves the SWSC Plant. The lift stations are located on the north and south sides of Building 50-1. This sanitary wastewater system, AOC 50-011(b), was installed as part of a utility upgrade in 1983. At that time, the septic tank and drainfield [SWMU 50-011(a)] that had served Building 50-1 since 1963 were removed. One lift station serves the north end of Building 50-1, and a second lift station serves the south end of the building. This sanitary wastewater system is still active and is approximately 16 years old. The 400 ft of piping that runs between the lift stations and out to Pecos Drive was also installed in 1983. Effluent lines exit near the southwest and the northwest corners of Building 50-1 and drain to the lift stations. The wastewater is pumped through 4-in. laterals at each lift station to a 6-in. main on the west side of the building. The 6-in. main runs across Pecos Drive to a sanitary sewer manhole; then it joins the 5-in. gravity main to the SWSC Plant at TA-46.

ER Project Activities

Information presented in this section was derived from previously published documents. RFI activities conducted at this site are described in detail in the documents listed in the reference section below.

This AOC was recommended for NFA in a 1999 RFI report. The SWSC Plant, which is the ultimate repository for the sanitary waste handled by these lift stations, is operated in accordance with LANL's NPDES Permit, NM0028355, for Outfall 13S. To support the treatment and discharge standards specified by the NPDES Permit, the SWSC Plant requires detailed evaluation of all incoming waste streams, and all incoming wastes are required to meet the waste acceptance criteria specified for sanitary liquid waste (Chapter 19 of the LANL Waste Acceptance Criteria, Sanitary Liquid Waste, March 1999). Samples are collected from the SWSC Plant outfall on a regular basis to demonstrate the effectiveness of the program, as specified in the permit. The Water Quality and Hydrology Group at LANL (ESH-18) also periodically collects samples from this permitted outfall as a quality assurance and quality control measure. Collectively, these requirements comprise a program that addresses the active management and treatment of the sanitary wastewater generated at TA-50.

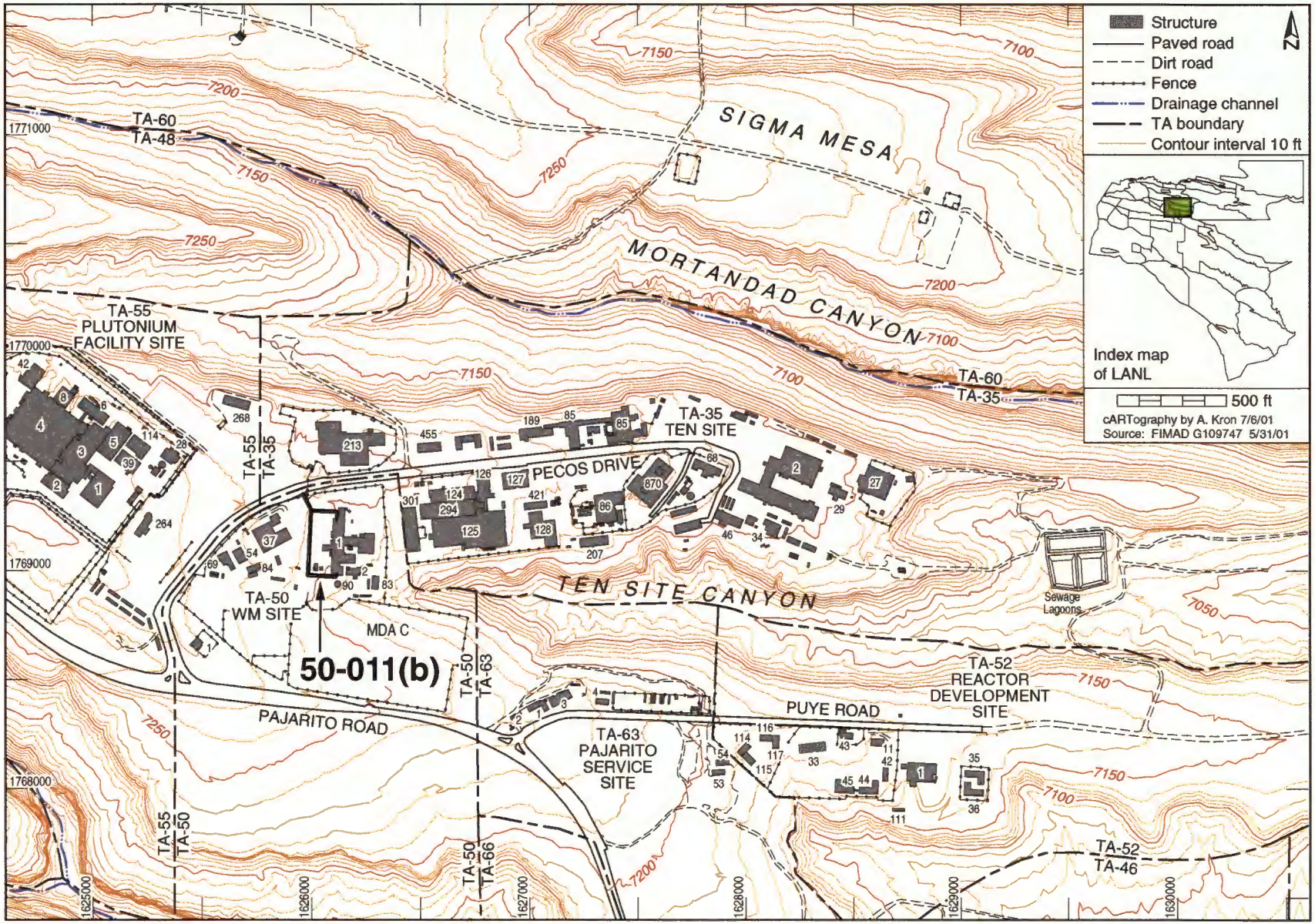
ER Project Sampling Summary

No analytical samples were collected at this site.

References

RFI Work Plan for Operable Unit 1147	LA-UR Number: 92-0969
RFI Report for Potential Release Site 50-011(b) (Sanitary Sewage System)	LA-UR Number: 99-4968

View of SWMU 50-011(b)


Structure
Paved road
Dirt road
Fence
Drainage channel
TA boundary
Contour interval 10 ft
Index map of LANL
500 ft
cARTography by A. Kron 7/6/01
Source: FIMAD G109747 5/31/01
SIGMA MESA
MORTANDAD CANYON
TEN SITE CANYON
TA-60
TA-48
TA-35
TA-55
PLUTONIUM FACILITY SITE
TA-35 TEN SITE
PECOS DRIVE
TA-50 WM SITE
MDA C
50-011(b)
PAJARITO ROAD
TA-63 PAJARITO SERVICE SITE
PUYE ROAD
TA-52 REACTOR DEVELOPMENT SITE
Sewage Lagoons
TA-52
TA-46
TA-55
TA-50
TA-63
TA-66
1771000
1770000
1769000
1768000
1625000
1626000
1627000
1628000
1629000
1630000
7050
7100
7150
7200
7250

This page intentionally left blank.

AOC C-50-001 — Transformer - PCB only site

Administrative Authority	DOE	**Former Operable Unit**	OU 1147
Technical Area	TA-50	**Dates of Operation**	1963-1994
Has ER Sampled the Site?	No	**ER Remedial Action Conducted?**	No
Structure Number	N/A	**Other Remedial Action Conducted?**	Yes

Unit Description

AOC C-50-001 is the former location of a PCB transformer that was installed when the radioactive liquid waste treatment facility (Building 50-1) was built in 1963. The site is a 20 ft x 10 ft concrete pad surrounded by asphalt and is located east of Building 50-1. According to the historical research conducted at this AOC, the concrete pad was expanded in recent years, and a containment system was installed along the inside edge of the pad. One documented release occurred from the transformer at AOC C-50-001. A minor seep from a valve was discovered in August 1989 during a routine daily inspection. The valve was cleaned, and metal epoxy was used to seal the valve. Oil staining was noted on the concrete pad after the PCB transformer was removed in 1994. A sample collected by ESH-19 confirmed the presence of PCBs. The staining remained within the perimeter boundary of the transformer pad. The pad subsequently was scraped clean and double washed/rinsed five times using an alkaline detergent, in accordance with EPA's PCB Spill Cleanup Policy (40 CFR 761). The cleaned area was encapsulated with polymeric paint/sealer before the replacement non-PCB transformer was positioned on the pad.

ER Project Activities

Information presented in this section was derived from previously published documents. RFI activities conducted at this site are described in detail in the documents listed in the reference section below.

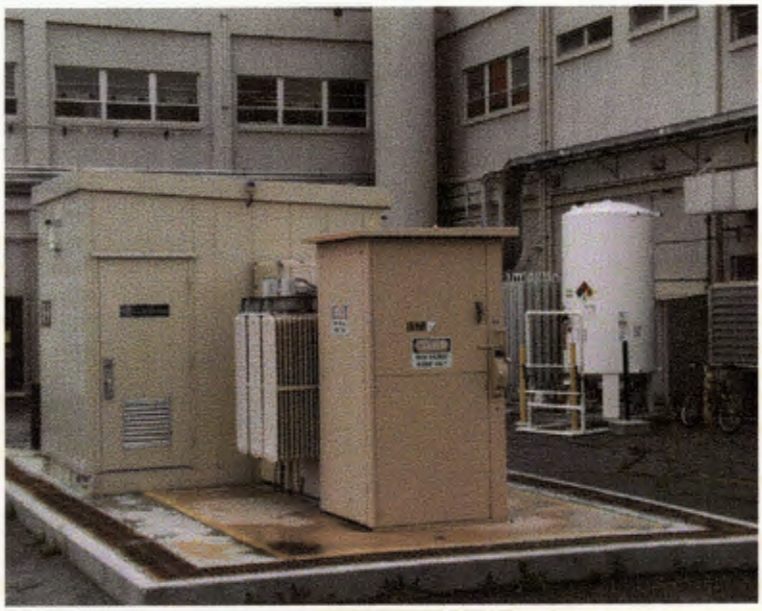
The June 2000 RFI report for AOC C-50-001 recommended NFA at this AOC because the site has been managed in accordance with 40 CFR 761 requirements and LANL's PCB management policy. Releases from AOC C-50-001 were cleaned up in accordance with regulatory requirements, and the PCB-containing transformer was replaced with a non-PCB transformer.

ER Project Sampling Summary

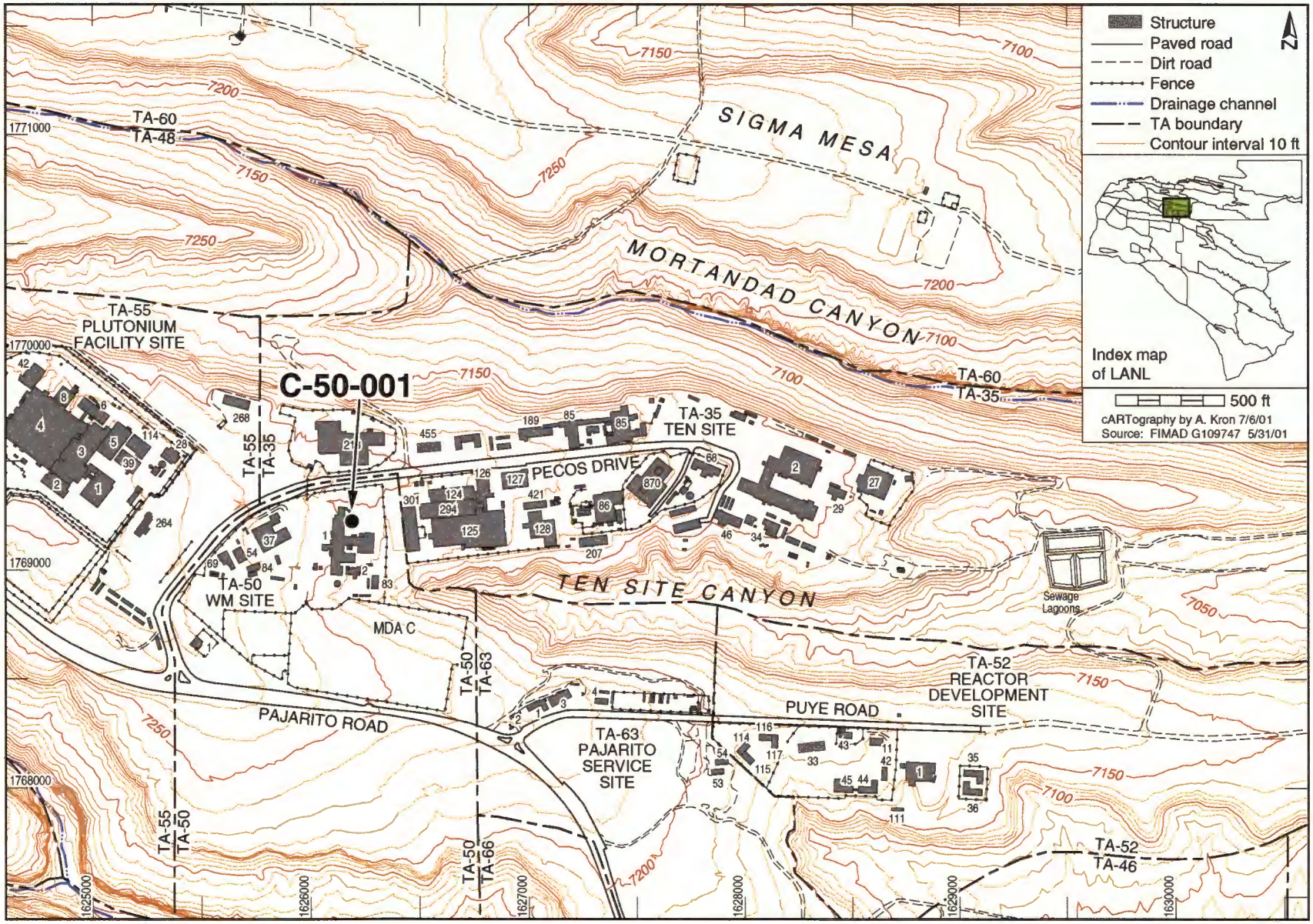
No analytical samples were collected at this site.

References

RFI Report for Potential Release Site C-50-001 — LA-UR Number: 00-2515



View of AOC C-50-001


Structure
Paved road
Dirt road
Fence
Drainage channel
TA boundary
Contour interval 10 ft
N
Index map of LANL
500 ft
cARTography by A. Kron 7/6/01
Source: FIMAD G109747 5/31/01
SIGMA MESA
MORTANDAD CANYON
TEN SITE CANYON
TA-60
TA-48
TA-60
TA-35
TA-55
PLUTONIUM
FACILITY SITE
C-50-001
TA-35
TEN SITE
PECOS DRIVE
TA-50
WM SITE
MDA C
TA-55
TA-35
TA-50
TA-63
TA-55
TA-50
TA-50
TA-66
PAJARITO ROAD
TA-63
PAJARITO
SERVICE
SITE
PUYE ROAD
TA-52
REACTOR
DEVELOPMENT
SITE
TA-52
TA-46
Sewage
Lagoons
7200
7150
7100
7250
7050
1771000
1770000
1769000
1768000
1625000
1626000
1627000
1628000
1629000
1630000

This page intentionally left blank.

APPENDIX C

STORM WATER POLLUTION PREVENTION PLAN
RUN ON/OFF MAP

DESCRIPTION OF POTENTIAL POLLUTION SOURCES

INCLUDES SIGNIFICANT MATERIALS EXPOSED TO POLLUTION, SPILLS AND LEAKS, FLOWS WITH POTENTIAL FOR EROSION, MISCELLANEOUS SITE ACTIVITIES, NON-STORM WATER DISCHARGES

1. Non-RCRA Regulated waste storage area.
2. Rad waste storage area
3. Rad waste storage area (50-125)
4. Rad waste dumpster
5. RCRA Regulated Storage Area (FMU-66)
6. Transformer
7. Transformer (50-82)
8. SWMU 50-008 - Waste Characterization, Reduction & Repackaging Facility
9. Transformer (50-48), HAS SECONDARY CONTAINMENT CURB
10. Vaulted diesel fuel storage tank with a 1,000 gallon capacity. (50-183)
11. SWMU 50-007 - Controlled Air Incinerator Facility
12. HEPA filter is situated on the east side of the roof of building 50-37. The roof drains south into drainage area B.
13. SWMU 50-006(c) - airborne contaminants from facility stack emissions
14. Raw metal storage Removed Summer 2001
15. Loading/unloading
16. Fire Hydrant that discharges under storage trailers
17. HEPA filter
18. 2.5 gal. oil spill 9/96
19. 30 gal. rainwater with fire retardant spill 7/96
20. Radioactive waste holding area

BUILDING DESCRIPTIONS

37	RAMROD FACILITY
69	WCRCF

OUTFALL LOCATIONS (STORM WATER SAMPLING POINTS)	TYPES OF DISCHARGES CONTAINED IN DRAINAGE AREA
SWO-50-IW	SHEET FLOW PARKING LOT
SWO-50-IN	SHEET FLOW PARKING LOT
SWO-50-IS	INCLUDES DISCHARGE FROM SWO-50-IW, SURFACE RUNOFF FROM DRAINAGE AREA "D", SHEET FLOW PARKING LOT

NO.	DATE	CLASS REV.	REVISIONS	DWN	DES	CHKD	SUB	APP
1	12/01		Updated Dwg to Item#14	LA				

MERRICK Engineers & Architects
600 Sixth Street, Los Alamos, New Mexico, 87544, USA
(505) 662-0808, Fax (505) 662-3851

TA-50 RAMROD/ WCRRF
SWPP PLAN

LEGEND

DRAWN	JCF
DESIGN	
CHECKED	
DATE	3/25/99

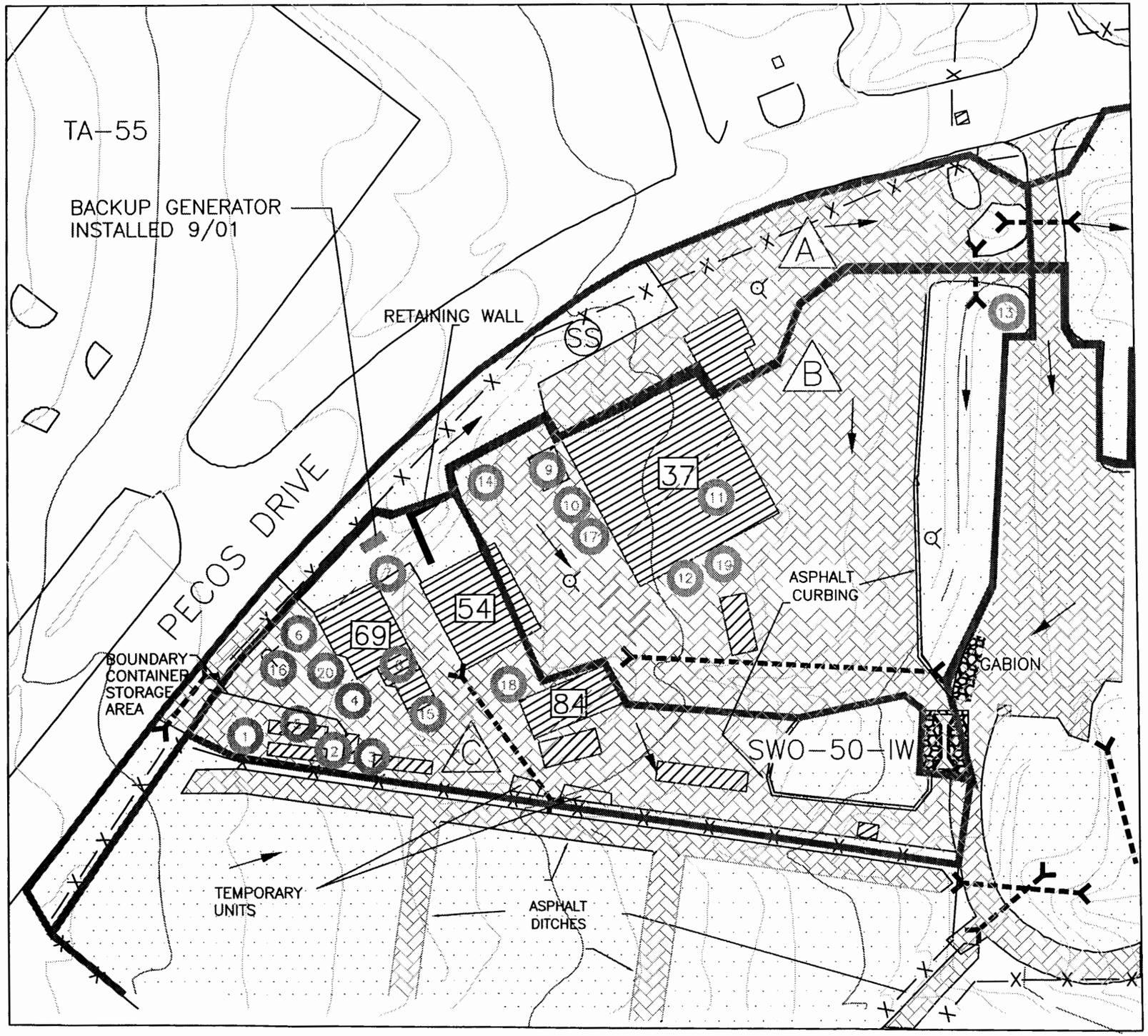
SUBMITTED | APPROVED FOR RELEASE

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

SHEET 1 OF 3

CLASSIFICATION | REVIEWER | DATE

PROJECT ID | DRAWING NO. | REV. 0



SYMBOLS LEGEND	
	DRAINAGE BOUNDARY
	DIRECTION OF STORM WATER FLOW
	DIRT ROAD
	ASPHALT COVERED SURFACE
	SOILS COVERED
	EXISTING BUILDING
	CULVERT
SS	SANITARY SEWER MANHOLE
	STORM WATER CATCH BASIN
	EXISTING FLUME
-x-x-x-	FENCE
	FIRE HYDRANT

SEE SHEET 1 FOR POINT DESCRIPTIONS

N

NO.	DATE	CLASS REV.	REVISIONS	DWN	DES	CHKD	SUB	APP
2	12/01		Added Backup Generator	LA				
1	10/00		Added temporary units	LA				

MERRICK Engineers & Architects
600 Sixth Street, Los Alamos, New Mexico, 87544, USA
(505) 662-0808, Fax (505) 662-3051

TA-50 RAMROD/ WCRCF
SWPP PLAN

SITE MAP

DRAWN: JCF
DESIGN:
CHECKED:
DATE: 3/25/99

SUBMITTED
APPROVED FOR RELEASE

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

SHEET 3 OF 3

CLASSIFICATION | REVIEWER | DATE

PROJECT ID | DRAWING NO. | REV. 0

I:\JOB\30013326\SWPP\IND\TA-50\TA-50-3.DWG

APPENDIX D

MAP SHOWING REMOVED PROCESS LINES

NORTH, NM State Plane

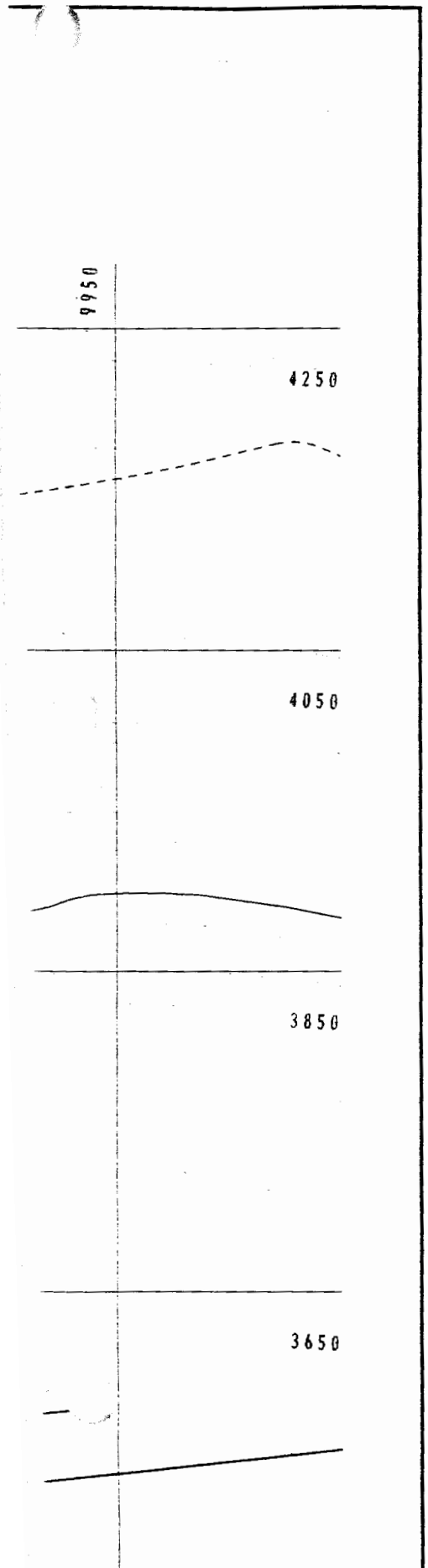
Grid provides NMSP coordinates, in feet

Grid interval, in feet: 200

0 100 200 300 FEET ON GROUND

NOTICE: Information on this map is provisional
and has not been checked for accuracy

University of California
Los Alamos National Laboratory
Earth & Environmental Sciences Division
FIMAD Facility for Information Management, Analysis and Display
Produced by: Liz Evans
Date: 92-05-10



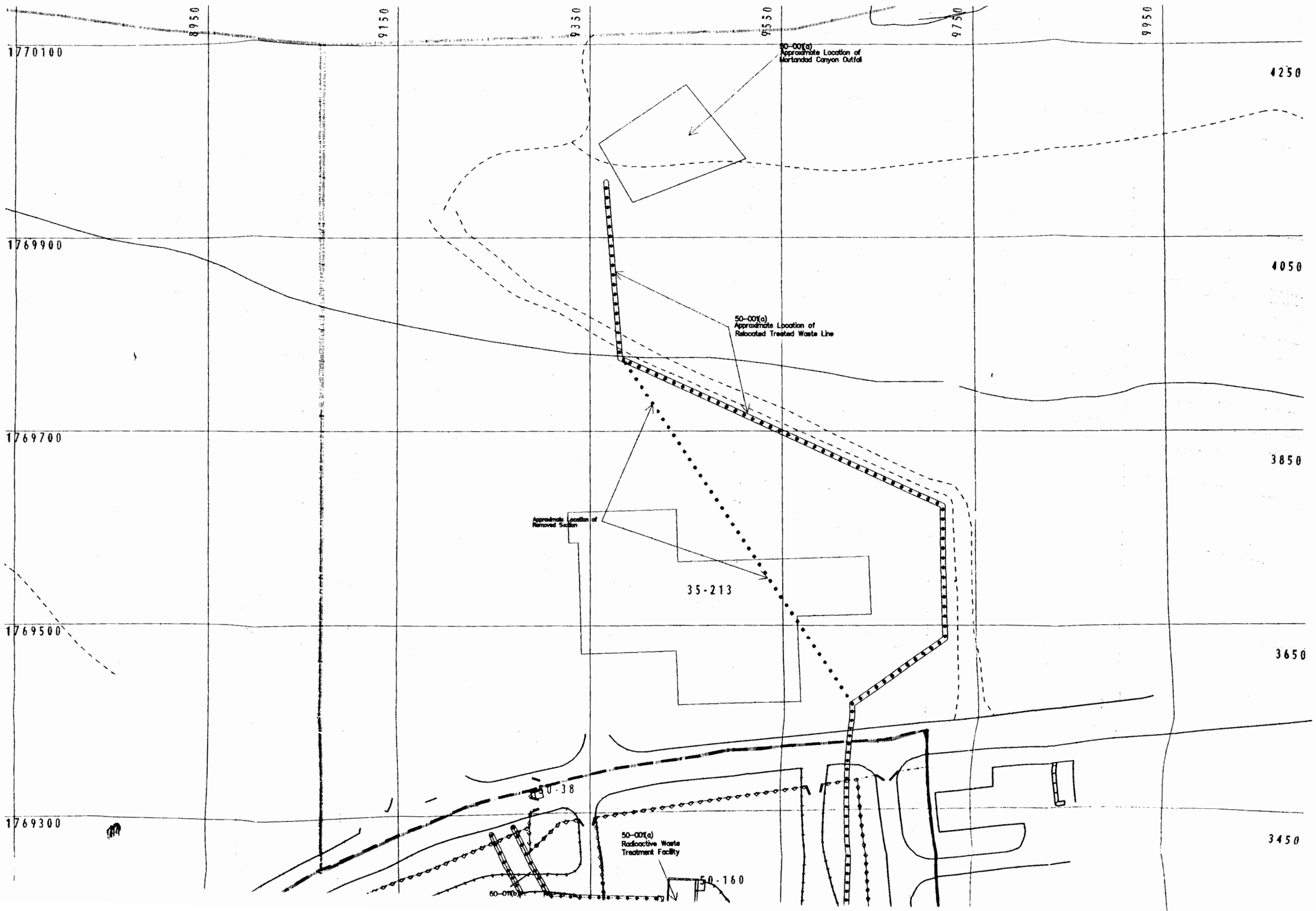
LEGEND

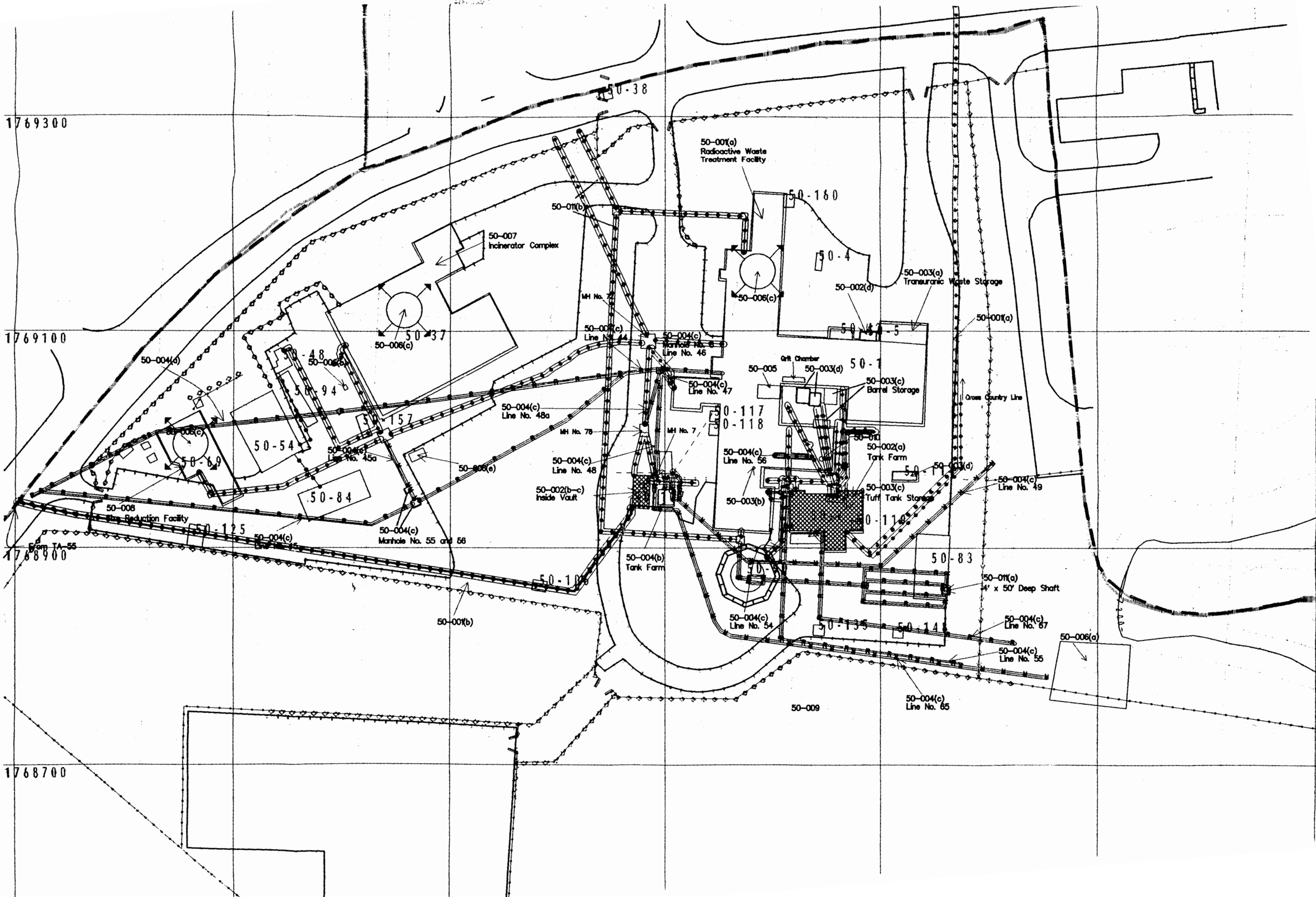
- Boundary, TA
- Contours, 10 foot
- Fence, Industrial
- Fence, Security
- Gate
- Material Disposal Area
- Roads, Dirt
- Roads, Paved
- Road/Trail
- SWMU, Present
- SWMU, Probable
- SWMU, Possible
- Permanent Structure
- Temporary Structure
- Underground Structure

OUPL DATA

- Acid Transfer Line
- Acid Waste Line
- Acid Waste Line, Abandoned
- Acid Waste Line, Removed
- Sewer Line
- Sewer Line, Removed
- TA-50 Parking
- TA-50 Fence
- Treated Waste Line
- Source of Ground Contamination

OU-1147 SWMUs with OUPL Data

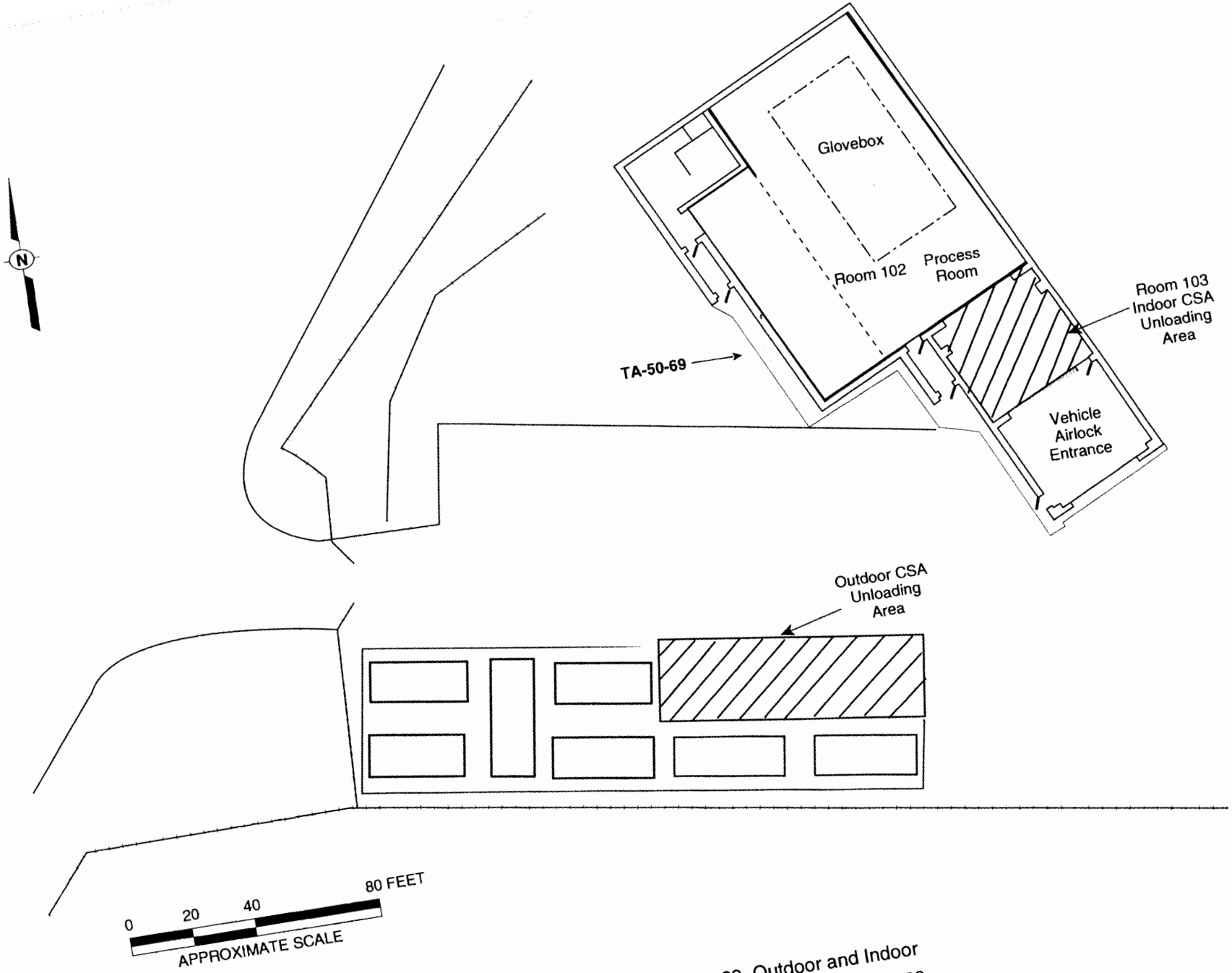




1769300
1769100
1768900
1768700
50-38
50-001(a)
Radioactive Waste
Treatment Facility
50-160
50-011(b)
50-007
Incinerator Complex
50-4
50-003(a)
Transuranic Waste Storage
50-002(d)
50-006(c)
50-001(a)
50-37
50-006(c)
50-48
50-004(d)
50-94
50-004(c)
Line No. 44
50-004(c)
Manhole No. 8
Line No. 46
50-004(c)
Line No. 47
Grit Chamber
50-005
50-003(d)
50-1
50-003(c)
Barrel Storage
Cross Country Line
50-157
50-004(c)
Line No. 48a
50-117
50-118
MH No. 78
MH No. 7
50-54
50-69
50-004(c)
Line No. 45a
50-006(e)
50-004(c)
Line No. 48
50-002(a)
Tank Farm
50-004(c)
Line No. 56
50-003(d)
50-003(c)
Tuff Tank Storage
50-003(b)
50-004(c)
Line No. 49
50-002(b-c)
Inside Vault
50-84
50-008
Size Reduction Facility
50-125
50-004(c)
Manhole No. 55 and 56
From TA-55
50-004(b)
Tank Farm
50-83
50-011(a)
4' x 50' Deep Shaft
50-001(b)
50-004(c)
Line No. 54
50-135
50-004(c)
Line No. 67
50-006(a)
50-004(c)
Line No. 55
50-004(c)
Line No. 65
50-009

APPENDIX E

MAP SHOWING LOADING/UNLOADING AREAS FOR THE TA-50-69 INDOOR AND OUTDOOR CONTAINER STORAGE AREAS



Technical Area (TA) 50, Building 69, Outdoor and Indoor Container Storage Area (CSA) Loading/Unloading Areas

CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

James L. Holt

4/11/02
Date Signed

James L. Holt
Associate Director, Operations
Los Alamos National Laboratory
Operator

Joseph C. Vozella

4/11/02
Date Signed

Joseph C. Vozella
Assistant Area Manager
Office of Los Alamos Site Operations
U.S. Department of Energy
Albuquerque Operations
Owner/Operator